Bhagwat Swaroop Sharma

From: Bhagwat Swaroop Sharma
Sent: Monday, May 30, 2022 12:21 PM
To: iro.gandhingr-mefcc@gov.in; eccompliance-guj@gov.in
Cc: ec-rdw.cpcb@gov.in; ro-gpcb-kute@gujarat.gov.in; ms-gpcb@gujarat.gov.in; direnv@gujarat.gov.in; Snehal Jariwala
Subject: Half Yearly EC Compliance Report AMSIPL-2010 Submission for Period Oct'21 to Mar'22
Attachments: 6. EC Compliance Report_AMSIPL 2010_Oct'21 to Mar'22.pdf

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APSEZL/EnvCell/2022-23/022 **Date: 2**

To
The Inspector General of Forest / Scientist C,
Integrated Regional Office (IRO),
Ministry of Environment, Forest and Climate Change,
Aranya Bhawan, A Wing, Room No. 409,
Near CH 3 Circle, Sector – 10A,
Gandhinagar – 382007.
E-mail: eccomplinace-guj@gov.in, iro.gandhingr-mefcc@gov.in

Sub : Half yearly Compliance report for Environment Clearance for the "Township and area project" at Survey no. 141 (part), village: Mundra, Dist. Kutch, by M/s. Adani Infrastructure Pvt. Ltd."

Ref : Environment clearance granted to Adani Mundra SEZ Infrastructure Pvt. Ltd. vide lett February, 2010 bearing SEIAA letter no. SEIAA/GUJ/EC/8(b)/44 /2010.

Dear Sir,

Please refer to the above cited reference for the said subject matter. In connection to the same, it is copy of the compliance report for the Environmental Clearance for the period of October-2021 to M being submitted through soft copy (e-mail communication & CD).

Kindly consider above submission and acknowledge.

Thank you,
Yours Faithfully,
For, **M/s Adani Ports and Special Economic Zone Limited**

Douglas Charles Smith
Chief Executive Officer
Mundra & Tuna Port

Thanks & Regards,

Bhagwat Swaroop Sharma
Sr. Manager - Environment
Mundra & Tuna port

Adani Ports & Special Economic Zone Ltd.

Environment Cell | 1st floor | Adani House | Mundra Kutch | 370421 | Gujarat | India
Mob +91 6357231713 | Ext. 52474 | www.adani.com

O/C

adani

Ports and
Logistics

APSEZL/EnvCell/2022-23/022 **Date:** 27.05.2022

To
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Douglas Charles Smith
Chief Executive Officer
Mundra & Tuna Port

Encl: As above

Copy to:

1) The Zonal Officer, Regional Office, CPCB – Western Region, Parivesh Bhawan, Opp. VMC Ward Office No. 10, Subhanpura, Vadodara – 390023.
2) The Member Secretary, GPCB – Head Office, Paryavaran Bhavan, Sector 10 A, Gandhi Nagar – 382010.
3) The Member Secretary, SEIAA, Gujarat, Paryavaran Bhavan, GPCB, Sector 10 A, Gandhi Nagar – 382010.
4) The Regional Officer, Regional Office GPCB (Kutch-East), Gandhidham – 370201.

01/06/2022

Gujarat Pollution Control Board
Head Office
Sector No. 10-A,
Gandhinagar-382010

Adani Ports and Special Economic Zone Ltd
Adani House,
PO Box No. 1
Mundra, Kutch 370 421
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Ports and Logistics

APSEZL/EnvCell/2022-23/022 **Date:** 27.05.2022

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Ports and Logistics

Environmental Clearance Compliance Report

of

Township and Area Development Project, Village: Mundra, Dist. Kutch, Gujarat

of

Adani Mundra SEZ Infrastructure Pvt. Limited

for the period of

October-2021 to March-2022

Index

Compliance Report of Environment Clearance

Half yearly Compliance report for Environment Clearance for the project "Township and area development project at Mundra, Dist. Kachchh, Gujarat of M/s. Adani Mundra SEZ Infrastructure Pvt. Ltd." issued vide letter no. SEIAA/GUJ/EC/8(b)/44/2010 dated 20th February 2010.

Sr. No.	Conditions	Compliance Status as on 31-03-2022
A. Specific Conditions		
A.1	**Construction Phase:**	
1.	Minimum Aerial distance of 100 m shall be kept between processing & non – processing areas of SEZ, as proposed.	Complied during the construction phase. Not applicable at present. This reply covers Condition No. 1 to 27 of Construction Phase. The details of the compliances with respect to construction phase are submitted in Oct'16 to March'17 compliance report. Construction work for the project is partially completed. However, no construction activity carried out during the compliance period of Oct'21 to Mar'22. All the specific conditions provided for construction phase will be considered upon recommencement of construction activity in future.
2.	Height of the buildings in the project shall be restricted to 42 meter (in view of the height restriction specified by the aviation authority) or the height permissible under the bylaws prescribed the SEZ authority, whichever is more stringent. This, however, shall not increase the total population envisaged under the EIA report prepared and submitted to SEAC and SEIAA and shall not increase in the resource consumption like total water usage or wastes generated.	
2(a)	The requirement for fire prevention, line safety in relation to fire and fire protection of the building shall be fulfilled in the project, as per the National Building Code of India so as to minimize danger to life and property from fire.	
2(b)	All high rise buildings shall have at least two staircases with a condition that the nearest staircases shall be available at every 30 meter	

Sr. No.	Conditions	Compliance Status as on 31-03-2022
	from all places in a given building.	
3.	The project proponent shall not obstruct the flow of river Bhukhi passing through the social infrastructure area and shall not do any encroachment on the said river, as per their undertaking dated 21/07/2009. All necessary precautions and measures shall be taken in order to ensure that natural drainage of river Bhukhi passing through the project site is not altered / affected.	Complied during the construction phase. Not applicable at present. The details of the compliances with respect to construction phase are submitted in Oct'16 to March'17 compliance report. Construction work for the project is partially completed. However, no construction activity carried out during the compliance period of Oct'21 to Mar'22. All the specific conditions provided for construction phase will be considered upon recommencement of construction activity in future.
4.	Additional bridge / walkthrough over the Bhukhi river passing through the site shall be provided between the two bridges planned to be provided so as to reduce distance to be travelled during the emergency situations.	
5.	If SEZ authority permits, adequate parapet / fencing shall be provided along the banks of river Bhukhi passing through the site for preventing fall of animals / humans.	
6.	All required sanitary and hygienic measures shall be provided before starting the construction activities and to be maintained throughout the construction phase.	
7.	The construction site shall be provided with adequately barricades of at least 3 m height on its periphery with adequate signage	
8.	Adequate first aid facilities shall be provided in the project	

Sr. No.	Conditions	Compliance Status as on 31-03-2022
	both during construction and operation of the project.	
9.	Adequate drinking water, sanitation and other amenities shall be provided for construction workers at the site. The safe disposal of wastewater and solid wastes generated during the construction phase should be ensured.	Complied during the construction phase. Not applicable at present. The details of the compliances with respect to construction phase are submitted in Oct'16 to March'17 compliance report. Construction work for the project is partially completed. However, no construction activity carried out during the compliance period of Oct'21 to Mar'22. All the specific conditions provided for construction phase will be considered upon recommencement of construction activity in future.
10.	Provision should be made for the supply of fuel (Kerosene or cooking gas), utensils such as pressure cookers etc. to the laborers during construction phase.	
11.	The project proponent shall ensure that the construction labours are provided with adequate amenities for lighting, drinking water, sanitation etc. to ensure that do not ruin the existing environmental condition.	
12.	Adequate personal protective equipments shall be provided to the construction workers to ensure their safety and the project proponent shall ensure its usage by the labours.	
13.	All topsoil excavated during construction activities should be stored separately for use in horticultural / landscape development within the project site.	
14.	Disposal of debris including the excavated material during construction phase shall not create adverse effect on	

Sr. No.	Conditions	Compliance Status as on 31-03-2022
	neighbouring communities and shall be disposed of only at the approved sites with the approval of the competent authority after taking the necessary precautions for general safety and health aspects.	
15.	Use of diesel generator sets during construction phase should be enclosed type and confirm to EPA rules for air and noise emission standards.	Complied during the construction phase. Not applicable at present. The details of the compliances with respect to construction phase are submitted in Oct'16 to March'17 compliance report. Construction work for the project is partially completed. However, no construction activity carried out during the compliance period of Oct'21 to Mar'22. All the specific conditions provided for construction phase will be considered upon recommencement of construction activity in future.
16.	Ready-made mix concrete should be used so far as possible	
17.	Water demand during construction should be reduced by use of curing agents, plasticizers and other best practices.	
18.	Vehicles hired for bringing construction material at site should be in good conditions and confirm to applicable air and noise emission standards and should be operated only during non-peak hours.	
19.	Ambient noise levels shall conform to residential standards both during day and night. Incremental pollution load on the ambient air and noise quality should be closely monitored during construction phase.	
20.	Fixtures for showers, toilet, flushing and drinking should be of low flow either by use of aerator or pressure reducing devices or sensor based control.	
21.	Fly ash should be used as	

Sr. No.	Conditions	Compliance Status as on 31-03-2022
	building material in the construction as per provision of Fly Ash Notification under EPA.	Complied during the construction phase. Not applicable at present. The details of the compliances with respect to construction phase are submitted in Oct'16 to March'17 compliance report. Construction work for the project is partially completed. However, no construction activity carried out during the compliance period of Oct'21 to Mar'22. All the specific conditions provided for construction phase will be considered upon recommencement of construction activity in future.
22.	Structural design aspects in accordance to the seismic zone shall be strictly adhered to.	
23.	No ground water shall be used and the water required during construction phase shall be sourced from Gujarat Water Infrastructure Ltd.	
24.	The construction materials and debris shall be properly stored and handled to avoid negative impacts such as air pollution and public nuisances by blocking the roads and public passages. Appropriate barricading shall be done and signboards shall be put at such site.	
25.	Ambient Air Quality Monitoring / Noise monitoring shall be carried out during the construction. The location of ambient air quality monitoring stations and its frequency shall be decided in consultation with GPCB.	
26.	The provisions of the buildings and other construction workers rules shall be met with by the project proponent in addition to other statutory requirements under different environmental pollution control and safety related acts and rules.	
27.	Environment Management Cell shall be formed, which will supervise and monitor the	

Sr. No.	Conditions	Compliance Status as on 31-03-2022
	environment related aspects of the project during construction and operational phases in addition to observance of Gujarat Building and other constructions workers act and rules including registration of the project under this act.	
A.2	**Operation Phase:**	
28.	Fresh water requirement during the operation phase shall not exceed 9 MLD and it shall be sourced from Gujarat Water Infrastructure Ltd. Metering of the water shall be done and its records shall be maintained. No ground water shall be extracted.	Complied. No ground water is being extracted. Fresh water requirement for Samudra township and Adani Hospital is approximately average 946 KLD during compliance period which has been sourced through Gujarat Water Infrastructure Ltd. (GWIL) pipeline from Narmada water supply and APSEZ desalination plant. No ground water is being extracted. Record maintained for quantity of water usage during the period Oct'21 to Mar'22 is attached as **Annexure – 1.**
29.	The total sewage generation from the proposed social infrastructure project shall not exceed 7.2 MLD.	Complied. During compliance period Oct'21 to Mar'22 average quantity of sewage generation was **1031.5 KLD** from Samudra township, Adani Hospital & Mundra Village. Average quantity of treated sewage discharge was **856 KLD** during compliance period. Generated sewage is being treated in STP of Samudra Township and treated water is being utilized for horticultural purpose within AMSIPL premises. AMSIPL has been granted Consent to Operate from Gujarat Pollution Control Board for receiving 1.0 MLD of domestic sewage from Mundra village for treatment in Samudra township STP and final disposal on land for horticulture purpose within AMSIPL as well as APSEZ premises. Details of the same were submitted along with half yearly compliance report for the period Apr'20

Sr. No.	Conditions	Compliance Status as on 31-03-2022
		to Sep'20. During compliance period Oct'21 to Mar'22 an average **228 KLD** of domestic sewage received from Mundra village to Samudra township STP for treatment. Details of sewage generated from township, received from Adani hospital & Mundra village and treated water discharge during the period Oct'21 to Mar'22 is attached as **Annexure – 1.**
30.	The project proponent shall install and operate adequate sewage treatment plants (STP) comprising of 3 modules of STP (each of 2.5 MLD) to achieve ultimate capacity of 7.5 MLD, for treatment of sewage. These STP modules shall be operated regularly and effectively to achieve the GPCB norms.	Complied. STP having capacity of 2.5 MLD with advance MBR technology is constructed and operated in township area. Treated sewage is being utilized for horticulture purposes after achieving discharge norms of GPCB. We have dismantled the Adani Hospital STP having 30 KLD capacity and the domestic sewage generated from hospital is being discharged in to STP of Samudra Township through underground pipeline for treatment and disposal. Consent to Operate for the same has been granted from Gujarat Pollution Control Board. Details of the same were submitted along with half yearly compliance report for the period Apr'20 to Sep'20. Pre-treatment facility i.e. Disinfection treatment is being provided for domestic sewage at hospital before discharging in to Samudra Township STP. During compliance period Oct'21 to Mar'22 avg. **12.5 KLD** domestic sewage received from hospital for treatment. Third party analysis of the treated water is being carried out twice in a month by NABL and MoEF&CC accredited agency namely M/s. Pollucon Laboratories Pvt. Ltd. Surat and Unistar Environment and Research Labs Pvt. Ltd., Vapi. Summary of the same for duration from Oct'21 to Mar'22 is mentioned below.

Sr. No.	Conditions	Compliance Status as on 31-03-2022

Locations: STP (Township)

Parameters	Unit	Min	Max	Average	Perm. Limit[$]
pH	--	7.44	8.04	7.59	6.5 – 9.0
TSS	mg/L	8.00	18.00	13.33	100
BOD (3 Days @ 27 °C)	mg/L	10.00	17.00	12.67	30
Fecal Coliform	MPN/ 100 ml	80.00	430.00	165.83	< 1000
Residual Chlorine	mg/L	0.60	0.90	0.73	--

[$] as per CC&A granted by GPCB

Please refer **Annexure – 2** for detailed analysis reports. Approx. INR 14.31 Lakh is spent for all environmental monitoring activities during FY 2021 - 2022 for overall APSEZ, Mundra.

GPCB is also doing sampling and analysis of treated water during their routine visit and details of the same were submitted along with half yearly compliance report for the period Apr'20 to Sep'20.

<table>
<tr><th>Sr. No.</th><th>Conditions</th><th>Compliance Status as on 31-03-2022</th></tr>
<tr><td>31.</td><td>Two modules of STP of 2.5 MLD (i.e. total 5 MLD) shall be installed on one side of the Bhukhi River and one module of STP of 2.5 MLD shall be installed on the other side of the Bhukhi River passing through the social infrastructure project. Hence no any cross drainage civil work shall be carried out.</td><td>Complied.

At present one STP of 2.5 MLD is installed on one side of Bhukhi river for Samudra Township.

Below underground pipeline network has been laid for receiving sewage from Mundra town and Adani hospital for treatment as well as treated water discharge to Adani hospital for horticulture purpose with requisite permissions from GPCB.

<table>
<tr><th>Sr. No.</th><th>Pipeline Connectivity</th><th>Purpose</th><th>Length</th><th>Dia.</th><th>Make</th></tr>
<tr><td>1</td><td>Mundra Village to Samudra Township Existing Sewage Collection Tank</td><td>For treatment of 1 MLD Domestic sewage</td><td>4.2 Km</td><td>315 mm</td><td>HDPE</td></tr>
<tr><td>2</td><td>Adani Hospital to Existing Mundra Village – Samudra Township Collection tank pipeline</td><td>For treatment of 25 KLD Domestic sewage</td><td>323 mtr</td><td>90mm</td><td>HDPE</td></tr>
<tr><td>3</td><td>Samudra Township treated water tank to Adani hospital 40m^3 tank</td><td>For utilization of treated water @ 150 KLD for gardening purpose</td><td>1.56 Km</td><td>90mm</td><td>HDPE</td></tr>
</table>
</td></tr>
<tr><td>32.</td><td>Out of total 7.2 MLD of treated sewage conforming the GPCB norms, 2 MLD treated sewage shall be utilized within the project area for plantation / gardening whereas balance 5.2 MLD of treated sewage shall be utilized in the identified area of MPSEZL for plantation / gardening.</td><td>Complied.

During Oct'21 to Mar'22 Avg. 856 KLD of treated water was used for gardening / plantation purpose within Township area / Hospital area / APSEZ area.</td></tr>
<tr><td>33.</td><td>In no case, the wastewater / treated sewage shall be</td><td>Complied</td></tr>
</table>

Sr. No.	Conditions	Compliance Status as on 31-03-2022
	discharged into the river Bhukhi passing through the social infrastructure project.	During Oct'21 to Mar'22 avg. 856 KLD of treated water from STP was used for gardening / plantation purpose within township area, hospital area and other APSEZ area. Hence in no case, the wastewater / treated sewage is discharged into the river Bhukhi passing through the social infrastructure project.
34.	Best available technology shall be used for disinfection of treated sewage before reuse / discharge.	Complied. Chlorination treatment is provided for disinfection before reuse / discharge.
35.	Rain water harvesting of roof top run off of the building to be constructed as a part of social infrastructure as per the plan submitted shall be implemented. Before recharging the rain water, pre-treatment must be done to remove suspended matter.	Complied. Location of rain water harvesting was earmarked at one of location in identified SEZ area based on direction of flow of storm water channel. However underground water is saline in nature due to sea water ingress and harvested water is likely to get contaminated in high tide. The project will be taken up upon finding out the solution for rain water harvesting within project boundary. However, APSEZ has carried out rainwater harvesting activities in the nearby villages for benefit of the locals. Water conservation Projects i.e. Roof Top Rain Water Harvesting, Desilting of Check dams, Bore Well Recharge and Pond deepening were taken up in past years, review and monitoring of all water harvesting structures had been taken up. Including this a big recharge operation by bunding was taken up for Zarpara village. To make connections between human actions and the level of biological diversity found within a habitat and/or ecosystem, this year Adani Foundation launch project "Sanrakshan" in coordination with GUIDE and Sahjeevan. Since 10 years considerable Water Conservation Work carried out in Mundra Taluka. Due to satisfactory rain in current year 1.11 mtr ground water table increased as per increased in coastal belt of Mundra as per Government Figures.

Sr. No.	Conditions	Compliance Status as on 31-03-2022
		Our water conservation work is as below. • A large number of water harvesting structure (Total 21 Nos. of check dams and Augmentation of 2 check dams (1 Check dam current year). • Ground recharge activities (pond deepening work for more than 56 ponds) individually and 26 ponds under Sujlam Suflam Jal Abhiyan • Pond deepening and bund strengthen of Rampar village pond increase water storage capacity. • Roof Top Rain Water Harvesting 115 Nos. (50 Nos current FY 2021-22) which is having 10,000 litre storage which is sufficient for one year drinking water purpose for 5 people family. • Recharge Borewell 189 Nos (83 Nos current FY 2021-22) which is best ever option to. • Drip Irrigation 1158 Farmers (180 formers are supported with 15% of amount of total cost for maximum 4.0 lac. in current FY 2021-22) • Bund construction on way of Nagmati River could save more than 575 MCFT water quantity which recharged in ground due to which borewell depth decreased by 50-100 Ft in Zarpara, Bhujpur and Navinal Vadi Vistar. • Luni Pond Bund Repairing Work. With the objective of to preserve the rainwater to reduce the impact of salinity and recharge the ground water (the main source of water) to facilitate the Agricultural activities as well as for drinking water. Please refer **Annexure – 3** for full details of CSR activities carried out by Adani Foundation in the Mundra region. Budget for CSR Activity for the FY 2021-22 is to the tune of INR 1628.45 lakh. Out of which, Approx. INR 1492.6 lakh are spent during current FY period and Approx. INR 1069.42 lakh are spent during current compliance period Oct'21 to Mar'22.
36.	The Municipal Solid Waste (MSW) shall be properly collected and segregated at source and it shall be disposed as per the guidelines of the MSW Rules 2000, as may be	Complied. A well-established system for Municipal Solid Waste (MSW) management is in place. Municipal solid waste collection from AMSIPL area is

Sr. No.	Conditions	Compliance Status as on 31-03-2022
	amended time to time. The dried biomass from the STP will be used as manure in gardening / plantation.	being done on daily bases. Collected dry waste is being transported to APSEZ Material Recovery Facility (MRF) where it is being sorted out in different streams e.g. paper/plastic/cardboard/glass/metal. These sorted wastes are further transported for recycling, whereas remaining non-recyclable waste is bailed and sent to cement plant (M/s. Ambuja Cement Ltd., Kodinar) for Co-processing as RDF (Refused Derived Fuel). Food / Organic Waste generated from AMSIPL premises is being diverted to Organic Waste Converter and Bio gas plant installed within APSEZ premises for converting food / organic waste in to manure and / or biogas. Generated manure is being utilized by horticulture department in green belt area and biogas is being utilized in kitchen area for cooking food. Total 412.96 MT organic / food waste generated from entire APSEZ, Mundra was processed for converting in to reach manure and bio gas during the compliance period i.e. Oct'21 to Mar'22 and utilized within APSEZ area. Dry waste collection drive including plastic free drive and waste segregation drive is being organised on regularly basis.
37.	The Bio-medical Waste (BMW) shall be disposed as per guidelines of BMW rules 1998 as may be amended from time to time.	Complied. Multispecialty hospital has taken the necessary approvals from GPCB for the disposal of Bio Medical Waste. Total 3621 kg of bio medical waste was disposed to Common Bio Medical Waste Treatment facility of M/s Distormed Kutch Services Pvt. Ltd., Bhuj during the compliance period i.e. Oct'21 to Mar'22 at the frequency of once in two days. Logbook showing the record of Bio-medical Waste collection is attached as **Annexure – 4**.
38.	Hazardous wastes, if any generated during the operation phase shall be handled as per the Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008, as may be amended from time to time.	Point Noted. No hazardous waste was generated during the compliance period of Oct'21 to Mar'22. If any hazardous waste generation in future, it will be disposed through authorised agency only as per Hazardous Waste Rules – 2016.
39.	54,600 sq.m. area shall be	Complied.

Sr. No.	Conditions	Compliance Status as on 31-03-2022
	earmarked for the parking purpose as proposed. The area earmarked for the parking shall be used for parking only. No other activity shall be permitted in this area.	Construction work for the project is partially completed. Entire parking area is earmarked for parking as per National Building Code requirement within township premises. This parking is used for said purpose only.
40.	Necessary signage including continuous display of status of parking availability at entry, exit and all other appropriate places shall be provided which should have appropriate size of letters and shall be visible from the at least 50 meter distance from the adjacent road.	Complied. Parking area is earmarked as per National Building Code requirement. Trained security guards are deputed round the clock to guide/help for entry, exit and parking. Continuous display regarding status of parking availability will be installed once project is in full-fledged operation.
41.	No public space shall be used or blocked for the parking and the trained staff shall be deployed to guide the visitors for parking and helping the senior citizens and physically challenged people	Complied. Adequate parking area has been provided as per National Building Code. Trained security guards are available round the clock to guide/help for entry, exit and parking to senior citizens and physically challenged people.
42.	Traffic congestion near the entry and exit points from the roads adjoining the proposed project site must be avoided.	Complied. Separate entry and exits have been provided at main gate with architectural divider for proper traffic management. Appropriate arrangements are made for emergency situations.
43.	Common utilities like drinking water facility, toilets etc shall be provided on each floor with adequate signage thereof. Adequate distance shall be maintained between the drinking water and toilet blocks.	Complied. Common utilities like drinking water facility, toilets etc. are provided at Adani Hospital and commercial building with adequate distance between drinking water & toilet facilities.
44.	The green belt shall be developed in 50 Hectares area in terms of peripheral green belt around the project site, road side plantation and green belt on either side of the	Complied. AMSIPL has developed 57.27 ha area as green belt with plantation of 63,722 saplings in AMSIPL premises. The open spaces inside the social infrastructure project are suitably landscaped and covered with green lawn and other vegetation.

Sr. No.	Conditions	Compliance Status as on 31-03-2022
	Bhukhi river. The project proponent shall plant at least 20,000 trees in green belt, as proposed. The open spaces inside the social infrastructure project shall be suitably landscape and covered with vegetation of indigenous variety.	So, far APSEZ has developed 486.19 ha. area as greenbelt with plantation more than 9.4 Lacs saplings within the APSEZ area. Details of the green belt development activity done by APSEZL, Mundra are attached as **Annexure – 5**.
45.	The area earmarked as green area shall be used only for green belt and shall not be altered for any other purpose. The fund earmarked for green belt development shall not be diverted for any other purpose.	Complied. The area earmarked as green area is used only for green belt and not altered for any other purpose. Separate budget for the horticulture department is earmarked every year. The spent budget of Horticulture Department for the period of financial year 2021-22 is INR 921 lacs. Details upon green belt development are provided in condition no. 44 above.
46.	The project proponent shall explore the application of solar energy and shall be incorporated for the illumination of common areas, lighting of internal roads and passages in addition to solar water heating, if any.	Complied. Solar power system of **1.5 MW** at roof top of residential blocks of Samudra Township and **69 KW** at Adani Hospital has been installed and commissioned. Information has been already submitted to MoEF&CC along with Half Yearly Compliance Report Apr'16 to Sep'16. Total **1239 MWH** of solar power generated and supplied to the grid energy during compliance period i.e. Oct'21 to Mar'22.
47.	The acoustic enclosures shall be installed at all noise generating equipments and the noise level shall be maintained as per the MoEF / CPCB guidelines / norms both during day and night time.	Complied. D.G. Sets having acoustic enclosures are provided as stand-by and used in case of main power failure only. However, regular noise monitoring is being carried out. Noise (once in a month) monitoring is being carried out by NABL and MoEF&CC accredited agency namely M/s. Pollucon Laboratories Pvt. Ltd. Surat and Unistar Environment and Research Labs Pvt. Ltd., Vapi. Summary of the same for duration of Oct'21 to Mar'22 is

<table>
<tr><th>Sr. No.</th><th>Conditions</th><th>Compliance Status as on 31-03-2022</th></tr>
<tr><td></td><td></td><td>mentioned below.

Total Sampling Locations & Frequency: 2 Nos. (Monthly)

<table>
<tr><th>Noise</th><th>Unit</th><th>Leq Min</th><th>Leq Max</th><th>Leq Average</th><th>Leq Perm. Limit$</th></tr>
<tr><td>Day Time</td><td>dB(A)</td><td>53.25</td><td>70.50</td><td>62.61</td><td>75</td></tr>
<tr><td>Night Time</td><td>dB(A)</td><td>50.43</td><td>66.20</td><td>57.40</td><td>70</td></tr>
</table>
$ as per CC&A granted by GPCB

Please refer Annexure – 2 for detailed analysis reports. Approx. INR 14.31 Lakh is spent for all environmental monitoring activities during FY 2021 - 2022 for overall APSEZ, Mundra.</td></tr>
<tr><td>48.</td><td>The project proponent shall install the electric appliances, which are energy efficient and meeting with the Bureau of Energy Efficiency norms, wherever applicable.</td><td>Complied.

Energy Conservation through Installation of Motion Sensor (Occu switch) & AC Temp. Controls in buildings are provided. AMSIPL has installed the electric appliances which meets the Energy Efficiency norms.</td></tr>
<tr><td>49.</td><td>The energy audit shall be conducted at regular interval for the project and the recommendations of the audit report shall be implemented with spirit.</td><td>Complied.

Energy audit is being carried on regular basis Last audit has been carried out from 18th to 20th January' 2022 by M/s. ECO ENERGY SOLUTION. Energy audit report for Samudra Township is attached as Annexure-6.</td></tr>
<tr><td>50.</td><td>The roof should meet regulatory requirement as per Energy Conservation Building Code by using appropriate thermal insulation material to fulfil requirements.</td><td>Complied.

Energy Conservation Building Code is considered during the development of buildings.</td></tr>
<tr><td>51.</td><td>Use of glass shall be minimal to reduce the electricity consumption and load on air-conditioning.</td><td>Complied.

Minimal glass is used in air conditioning areas to reduce electricity consumption and load on air-conditioning.</td></tr>
<tr><td>52.</td><td>Risk estimation shall be carried out for the project and disaster management plan</td><td>Complied.

Emergency Response Plan was prepared by Trivedi &</td></tr>
</table>

Sr. No.	Conditions	Compliance Status as on 31-03-2022
	shall be prepared and its recommendations shall be implemented in the time bound manner.	Associates Technical Services Pvt. Ltd in August, 2015 for AMSIPL which included risk estimation for medical emergency, fire emergency, natural calamities. Detail are submitted to the MoEF & CC along with half yearly compliance report for the period from Apr – 2015 to Sep – 2015. Various plans as fire service plan, communication plan, mutual aid plan, and evacuation plan are implemented to combat with emergency situations.
53.	The raw water sumps will be equipped with suction differential head / partition so as to insure that minimum 500 KL water shall remain reserved as fire water as proposed.	Complied. 250 KL of fire water is reserved with fire hydrant system for Adani hospital. Approximately 400 KL water is available in 6 different water tanks at various sectors of Samudra Township. In total, more than 500 KL water is reserved as fire water at AMSIPL.
54.	Necessary emergency lighting system along with emergency power back up system shall be provided. In addition, emergency public address system arrangement and signage for emergency exit route shall be provided on each floor.	Complied. Power is supplied through M/s MPSEZ Utilities Limited to the project site. Power failure is the rarest situation in the area and in case of such emergency, there is provision of 125 KVA D.G. set at Samudra Township and 500 KVA D.G. set at Adani Hospital. Public address system is available with the security staff in the vicinity. Emergency contact is display each block as below Security control – 8980048877 Township Security control – 8980015046 Medical Adani hospital reception – 2838-619555 Medical Emergency Number - – 2838-619667 Medical Emergency mobile Number – 7574848413 Fire control room- – 2838-255801 Fire control room mob. – 9879114996
55.	Necessary auto glow, signage at all appropriate places shall	Complied. Auto glow signage is provided at adequate locations to

Sr. No.	Conditions	Compliance Status as on 31-03-2022
	be provided to guide the people towards exits and assembly points during the unforeseen emergency and eventuality conditions.	provide guidance to the people towards exits. Also the township & Adani Hospital is under security guard surveillance to combat with unforeseen emergency conditions. Photograph showing the auto glow signages were submitted along with compliance report submission for the duration of Oct'16 to Mar'17. Photographs showing the emergency signages were submitted along with EC Compliance report for the period Apr'19 to Sep'19.
56.	Training to the staff for the First Aid and Fire Fighting Alarm with regular mock drill shall be conducted regularly and shall be made in integral part of the disaster management plan of the project.	Complied. For first aid situations a First Aid centre is provided at Samudra Township. Multispecialty Hospital is part of the project activity which can be utilised for medical emergencies. Regular mock drill and fire training is also being conducted at project site. Home fire safety awareness and firefighting training was conducted in township on 18th April, 2021 and total 114 residents participated in the same.
57.	Ozone Depleting Substance (Regulation and Control) rules shall be followed while designing the air conditioning system of the project.	Complied. Ozone Depleting Substance inventory was produced and is maintained during the compliance period of Oct'18 to Mar'19. New gas being used in refilling of ACs is ozone friendly in nature.
58.	Environment Management Cell shall be formed by the project proponent during operation phase which will supervise and monitor the environment related aspects of the project including incremental pollution loads on the ambient air quality, noise and water quality periodically till the management of the project remains with the project proponent.	Complied. APSEZL has a well-structured Environment Management Cell, staffed with qualified manpower for implementation of the Environment Management Plan at site. Site team report to Sr. Manager (Environment) at Corporate, who heads the Environment Management Cell who directly reports to the top management. Environment Management Cell Organogram were submitted as part of compliance report submission for the duration of Apr'21 to Sep'21. And there is no further change. Ambient Air Quality (twice in a week) and Noise (once in a month) monitoring are being carried out by NABL and

<table>
<tr><th>Sr. No.</th><th>Conditions</th><th>Compliance Status as on 31-03-2022</th></tr>
<tr><td></td><td></td><td>MoEF&CC accredited agency namely M/s. Pollucon Laboratories Pvt. Ltd. Surat and Unistar Environment and Research Labs Pvt. Ltd., Vapi. Summary of the same for duration from Oct'21 to Mar'22 is mentioned below.

Total Sampling Locations & Frequency: 2 Nos.
<table>
<tr><th>Parameter</th><th>Unit</th><th>Min</th><th>Max</th><th>Average</th><th>Perm. Limit$</th></tr>
<tr><td></td><td colspan="5">AAQM</td></tr>
<tr><td>PM_{10}</td><td>$\mu g/m^3$</td><td>40.36</td><td>88.56</td><td>68.14</td><td>100</td></tr>
<tr><td>$PM_{2.5}$</td><td>$\mu g/m^3$</td><td>14.56</td><td>34.23</td><td>24.53</td><td>60</td></tr>
<tr><td>SO_2</td><td>$\mu g/m^3$</td><td>5.11</td><td>18.14</td><td>9.03</td><td>80</td></tr>
<tr><td>NO_2</td><td>$\mu g/m^3$</td><td>7.15</td><td>24.19</td><td>17.68</td><td>80</td></tr>
<tr><th>Noise</th><th>Unit</th><th>Leq Min</th><th>Leq Max</th><th>Leq Average</th><th>Leq Perm. Limit*</th></tr>
<tr><td>Day Time</td><td>dB(A)</td><td>53.25</td><td>70.50</td><td>62.61</td><td>75</td></tr>
<tr><td>Night Time</td><td>dB(A)</td><td>50.43</td><td>66.20</td><td>57.40</td><td>70</td></tr>
</table>
$ as per NAAQ standards, 2009
* as per CC&A granted by GPCB

Please refer Annexure – 2 for detailed analysis reports. Approx. INR 14.31 Lakh is spent for all environmental monitoring activities during FY 2021 – 2022 for overall APSEZ, Mundra.</td></tr>
<tr><td colspan="3">B. General Conditions</td></tr>
<tr><td>59.</td><td>The project proponent shall permit the outside people to use the social infrastructures like hospital, schools, colleges etc. coming up in the proposed project, as per their undertaking dated 21/07/2009.</td><td>Complied.
Outside people are allowed to use the social infrastructures like hospital and school.

Total 1079 patients including OPD (Outpatient Department) as well IPD (In-Patient Department) from nearby villages were treated in the Hospital during this compliance period. Approx. INR 9.11 Lakh worth of free medical services given to nearby villagers during the compliance period Oct'21 to Mar'22.</td></tr>
<tr><td>60.</td><td>Various provisions of the Environment (Protection) Act,</td><td>Point noted.</td></tr>
</table>

Sr. No.	Conditions	Compliance Status as on 31-03-2022
	1986 and the Rules / Notifications issued there under by the Ministry of Environment and Forest, Govt. of India, from time to time shall be strictly complied with.	
61.	No further expansion or modification in the plant shall be carried out without prior approval of the MoEF/SEIAA as the case may be. In case of deviations or alterations in the project proposal from those submitted to MoEF / SEIAA / SEAC for clearance, a fresh reference shall be made to the SEIAA / SEAC to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	Point noted.
62.	The project authorities shall earmark adequate funds to implement the conditions stipulated by SEIAA as well as GPCB along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purpose.	Complied. Separate budget for the Environment cell is earmarked every year. All environmental and horticulture activities are considered at group level and budget allocation is also done accordingly. Budget for environmental management measures (including horticulture) for the FY 2021-22 is to the tune of INR 1521.59 lakh. Out of which, Approx. INR 1371.79 lakh are spent during the year 2021-22. Detailed breakup of the expenditures for the past 3 years is attached as **Annexure – 7**.
63.	The applicant shall inform the public that the project has been accorded Environmental Clearance by the SEIAA and i.e. copies of the clearance letter are available with the GPCB and may also be seen at the website of SEIAA / SEAC / GPCB. This shall be advertised	Already complied. Not applicable at present. The advertisement was circulated in Gujarati language through local newspaper – Kutchh Mitra as well as in English language through local newspaper – Indian Express on the date of 10.03.2010. Information has been already submitted to MoEF & CC along with half yearly compliance report April – 2015 to

<table>
<tr><th>Sr. No.</th><th>Conditions</th><th>Compliance Status as on 31-03-2022</th></tr>
<tr><td></td><td>within seven days from the date of the clearance letter, in at least two local newspaper that are widely circulated in the region, one of which shall be in the Gujarati language and the other in English. A copy each of the same shall be forwarded to the concerned regional office of the Ministry.</td><td>Sep – 2015.</td></tr>
<tr><td>64.</td><td>It shall be mandatory for the project management to submit half yearly compliance report in respect of the stipulated prior Environmental Clearance terms and conditions in hard and soft copies to the regulatory authority concerned, on 1st June and 1st December of each calendar year.</td><td>Complied.

Compliance report of EC conditions is uploaded regularly. Last compliance report including results of monitoring data for the period of Apr'21 to Sept'21 was submitted to Regional Office of MoEF&CC @ Bhopal, Zonal Office of CPCB @ Baroda, GPCB @ Gandhinagar & Gandhidham and SEIAA, Gandhinagar vide our letter dated 27.11.2021. Copy of the same is also available on our web site https://www.adaniports.com /ports-downloads. A soft copy of the same was also submitted through e-mail on 30.11.2021 to all the concern authorities. Please refer below for the details regarding past six compliance submissions.

<table>
<tr><th>Sr. No.</th><th>Compliance period</th><th>Date of submission</th></tr>
<tr><td>1</td><td>Apr'18 to Sep'18</td><td>30.11.2018</td></tr>
<tr><td>2</td><td>Oct'18 to Mar'19</td><td>31.05.2019</td></tr>
<tr><td>3</td><td>Apr'19 to Sep'19</td><td>28.11.2019</td></tr>
<tr><td>4</td><td>Oct'19 to Mar'20</td><td>20.05.2020</td></tr>
<tr><td>5</td><td>Apr'20 to Sep'20</td><td>26.11.2020</td></tr>
<tr><td>6</td><td>Oct'20 to Mar'21</td><td>25.05.2021</td></tr>
<tr><td>7</td><td>Apr'21 to Sep'21</td><td>30.11.2021</td></tr>
</table>
</td></tr>
<tr><td>65.</td><td>The project authorities shall also adhere to the stipulations made by the Gujarat Pollution Control Board.</td><td>Point noted.</td></tr>
<tr><td>66.</td><td>The project authorities shall inform the GPCB, regional office of MoEF and SEIAA about the date of financial closure and final approval of</td><td>Complied</td></tr>
</table>

Sr. No.	Conditions	Compliance Status as on 31-03-2022
	the project by the concerned authorities and the date of start of the project.	
67.	The SEIAA may revoke or suspend the clearance, if implementation of any of the above conditions is not found satisfactory.	Point noted.
68.	The company in a time bound manner shall implement these conditions. The SEIAA reserves the right to stipulate additional conditions, if the same is found necessary. The above conditions will be enforced inter-alia under the provisions of the water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981, the environment (Protection) Act, 1986, Hazardous Wastes (Management and Handling) Rules 2003 and the Public Liability Insurance Act, 1991 along with their amendments and rules.	Complied. The company has implemented the provided conditions and the compliance report is being submitted regularly. Please refer Condition No. 64 for further details.
69.	This environmental clearance is valid for five years from the date of issue.	Point noted.
	Additional condition – (amendment to Environment Clearance Order No. SEIAA/GUJ/EC/8(b)/44/2010 dated 20 February 2010	
--	The applicant shall carry out comparative carbon footprint study of low rise building with large ground coverage v/s high rise building with low ground coverage through reputed institute like CEPT or GIDR and submitted to SEIAA within one year from the issuance of EC.	Complied. Comparative carbon footprint study report submitted to the MoEF & CC along with half yearly compliance report Oct – 2014 to March – 2015.

Annexure – 1

Water Consumption and Wastewater Generation Details for AMSIPL (Oct'21 to Mar'22)			
Month	**Water Consumption (Samudra Township + Adani Hospital), KL**	**Total STP Inlet Water (Samudra Township + Adani Hospital+ Mundra Town), KL**	**Total STP Outlet Water, KL**
Oct-21	32599	30304	25412
Nov-21	26672	29267	25040
Dec-21	27054	34131	25040
Jan-22	28143	30616	24698
Feb-22	26161	29519	25924
Mar-22	31558	33834	29732
Total	**172187**	**187671**	**155846**
Avg. Per Day	**946**	**1031.5**	**856**

Sewage Received at Samudra Township STP (Oct'21 to Mar'22)			
Month	**Samudra Township, KL**	**Adani Hospital, KL**	**Mundra Town, KL**
Oct-21	27539	554	2211
Nov-21	22244	377	6646
Dec-21	22940	453	10738
Jan-22	24387	425	5804
Feb-22	22025	195	7299
Mar-22	24758	264	8812
Total	**143893**	**2268**	**41510**
Avg. Per Day	**791**	**12.5**	**228**

Annexure – 2

TEST REPORT FOR NOISE LEVEL MONITORING

Customer's Name and Address :

M/S. ADANI MUNDRA SEZ INFRASTRUCTURE PVT. LTD. (AMSIPL) **PLOT NO. /SURVEY NO. 141 (PART),** **VILLAGE - MUNDRA, TAL. –MUNDRA,** **DIST. - KUTCH - 370421**	Test Report No. : **PL/AM 0955** Issue Date : **16/11/2021** Customer's Ref. : **As Per W.O**

NOISE LEVEL MONITORING REPORT

Sampling Date	: **As per table**	Sampling By	: **Pollucon Laboratories Pvt. Ltd.**
Test Method	: **IS 9876 : 2013 / IS 9989 : 2014**	Protocol (purpose)	: **Noise Level Monitoring**
Instrument Used	: **SLM-100 , 268 DTF 2014**		

RESULT TABLE

SR NO	SAMPLING LOCATION & GPS LOCATION			DATE OF SAMPLING	DAY TIME RESULTS IN Leq dB(A)							
AMSIPL					06:00 - 07:00	07:00 - 08:00	08:00 - 09:00	09:00 - 10:00	10:00 - 11:00	11:00 - 12:00	12:00 - 13:00	13:00 - 14:00
1	Samundra Township STP	N 22°48.568'	E 69°43.411'	13/10/ 2021	60.5	58.4	62.5	69.4	65.4	66.3	66.7	64.9
2	Samundra Township Customer Care	N 22°48.200'	E 69°42.797'	06/10/ 2021	64.4	68.8	65.3	68.5	62.3	66.1	61.8	65.5

SR NO	SAMPLING LOCATION & GPS LOCATION			DATE OF SAMPLING	DAY TIME RESULTS IN Leq dB(A)							
AMSIPL					14:00 - 15:00	15:00 - 16:00	16:00 - 17:00	17:00 - 18:00	18:00 - 19:00	19:00 - 20:00	20:00 - 21:00	21:00 - 22:00
1	Samundra Township STP	N 22°48.568'	E 69°43.411'	13/10/ 2021	66.8	63.6	64.8	62.2	68.4	67.1	60.2	63.4
2	Samundra Township Customer Care	N 22°48.200'	E 69°42.797'	06/10/ 2021	69.2	70.5	62.8	63.3	63.7	64.6	66.9	65.8

SR NO	SAMPLING LOCATION & GPS LOCATION			DATE OF SAMPLING	DAY TIME RESULTS IN Leq dB(A)		
AMSIPL					AVERAGE	MAX	MIN
1	Samundra Township STP	N 22°48.568'	E 69°43.411'	13/10/2021	64.4	69.4	58.4
2	Samundra Township Customer Care	N 22°48.200'	E 69°42.797'	06/10/2021	65.6	70.5	61.8

Ravi Jariwala
Sr. Environmental Scientist

Dr. Arun Bajpai
Lab Manager (Q)

Note: This report is subject to terms & conditions mentioned overleaf.

TEST REPORT FOR NOISE LEVEL MONITORING

Customer's Name and Address :

M/S. ADANI MUNDRA SEZ INFRASTRUCTURE PVT. LTD. (AMSIPL) **PLOT NO. /SURVEY NO. 141 (PART),** **VILLAGE - MUNDRA, TAL. –MUNDRA,** **DIST. - KUTCH - 370421**	Test Report No. : **PL/AM 0956** Issue Date : **16/11/2021** Customer's Ref. : **As Per W.O**

NOISE LEVEL MONITORING REPORT

Sampling Date	: **As per table**	Sampling By	: **Pollucon Laboratories Pvt. Ltd.**
Test Method	: **IS 9876 : 2013 / IS 9989 : 2014**	Protocol (purpose)	: **Noise Level Monitoring**
Instrument Used	: **SLM-100 , 268 DTF 2014**		

RESULT TABLE

SR NO	SAMPLING LOCATION & GPS LOCATION			NIGHT TIME RESULTS IN Leq dB(A)				
				DATE OF SAMPLING	22:00-23:00	23:00-00:00	00:00-01:00	01:00-02:00
1	Samundra Township STP	N 22°48.568'	E 69°43.411'	13 & 14/10/2021	66.2	62.7	64.5	60.1
2	Samundra Township Customer Care	N 22°48.200'	E 69°42.797'	06 & 07/10/2021	60.3	65.2	62.3	55.2

SR NO	SAMPLING LOCATION & GPS LOCATION			NIGHT TIME RESULTS IN Leq dB(A)				
				DATE OF SAMPLING	02:00-03:00	03:00-04:00	04:00-05:00	05:00-06:00
1	Samundra Township STP	N 22°48.568'	E 69°43.411'	13 & 14/10/2021	62.4	62.8	62.4	61.5
2	Samundra Township Customer Care	N 22°48.200'	E 69°42.797'	06 & 07/10/2021	62.9	60.7	65.3	60.5

SR NO	SAMPLING LOCATION & GPS LOCATION			DATE OF SAMPLING	NIGHT TIME RESULTS IN Leq dB(A)		
					AVERAGE	MAX	MIN
1	Samundra Township STP	N 22°48.568'	E 69°43.411'	13 & 14/10/2021	62.8	66.2	60.1
2	Samundra Township Customer Care	N 22°48.200'	E 69°42.797'	06 & 07/10/2021	61.6	65.3	55.2

Ravi Jariwala
Sr. Environmental Scientist

Dr. Arun Bajpai
Lab Manager (Q)

Note: This report is subject to terms & conditions mentioned overleaf.

TEST REPORT FOR SEWAGE WATER SAMPLE

Customer's Name and Address :

M/S. ADANI MUNDRA SEZ INFRASTRUCTURE PVT. LTD. (AMSIPL)
PLOT NO. /SURVEY NO. 141 (PART),
VILLAGE - MUNDRA, TAL. –MUNDRA,
DIST. - KUTCH - 370421

Test Report No.	:	**PL/AM 0957**
Issue Date	:	**16/11/2021**
Customer's Ref.	:	**As Per W.O**

Location Name	:	**Samundra Township**			
Description of Sample	:	**STP Water**	Quantity/No. of Samples	:	**02 Lit/Two**
Sampling Date	:	**06/10/2021**	Sampling Procedure	:	**Grab/ IS: 4733 1972**
Sampling By	:	**Pollucon Laboratories Pvt. Ltd.**	Lab ID	:	**AM/2110/03 & 04**
Sample Receipt Date	:	**07/10/2021**	Test Parameters	:	**As per table**
Packing/ Seal	:	**Sealed**	Date of Completion	:	**12/10/2021**
Date of Starting of Test	:	**07/10/2021**			

RESULT TABLE

SR. NO.	TEST PARAMETERS	UNIT	RESULTS		GPCB PERMISSIBLE LIMIT OF OUTLET**	TEST METHOD
			STP Inlet	STP Outlet		
1	pH	--	7.32	7.58	6.5 to 9.0	IS 3025 (Part–11) 2017 Electrometric Method
2	Total Suspended Solids	mg/L	81	16	100	IS 3025 (Part – 17) 2017
3	BOD (5 Days @ 20 °C)	mg/L	65	15	30	IS 3025 (Part–44) 2019
4	Residual Chlorine	mg/L	--	0.8	--	APHA (23rd Edition 2017) 4500 Cl G DPD Colorimetric method
5	Fecal Coliform	MPN Index/ 100 ml	--	350	1000	APHA(23rdEdi)9221 C&E 2017

**GPCB Limit consent Amendment order No. AWH-89533 Issue Date: 05/12/2017 Up to Date: 02/09/2022.

H. T. Shah
Lab. Manager

Dr. Arun Bajpai
Lab Manager (Q)

Note: This report is subject to terms & conditions mentioned overleaf.

"Pollucon House", Plot No.5/6, Opp.Balaji Industrial Society, Old Shantinath Silk Mill Lane, Near Gaytri Farsan Mart, Navjivan Circle,Udhana Magdalla Road, Surat-395007, Gujarat, India.
Phone : 0261-2635750, 0261-2635751, 0261-2635775, 07016605174, Web: www.polluconlab.com, E. mail: pollucon@gmail.com, info@polluconlab.com

TEST REPORT FOR SEWAGE WATER SAMPLE

Customer's Name and Address :

M/S. ADANI MUNDRA SEZ INFRASTRUCTURE PVT. LTD. (AMSIPL)
PLOT NO. /SURVEY NO. 141 (PART),
VILLAGE - MUNDRA, TAL. – MUNDRA,
DIST. - KUTCH - 370421

Test Report No.	:	**PL/AM 0958**
Issue Date	:	**16/11/2021**
Customer's Ref.	:	**As Per W.O**

Location Name	:	**Samundra Township**			
Description of Sample	:	**STP Water**	Quantity/No. of Samples	:	**02 Lit/Two**
Sampling Date	:	**19/10/2021**	Sampling Procedure	:	**Grab/ IS: 4733 1972**
Sampling By	:	**Pollucon Laboratories Pvt. Ltd.**	Lab ID	:	**AM/2110/23 & 24**
Sample Receipt Date	:	**19/10/2021**	Test Parameters	:	**As per table**
Packing/ Seal	:	**Sealed**	Date of Completion	:	
Date of Starting of Test	:	**19/10/2021**			

RESULT TABLE

SR. NO.	TEST PARAMETERS	UNIT	RESULTS		GPCB PERMISSIBLE LIMIT OF OUTLET**	TEST METHOD
			STP Inlet	STP Outlet		
1	pH	--	7.47	7.68	6.5 to 9.0	IS 3025 (Part–11) 2017 Electrometric Method
2	Total Suspended Solids	mg/L	73	14	100	IS 3025 (Part – 17) 2017
3	BOD (5 Days @ 20 °C)	mg/L	52	13	30	IS 3025 (Part–44) 2019
4	Residual Chlorine	mg/L	--	0.6	--	APHA (23rd Edition 2017) 4500 Cl G DPD Colorimetric method
5	Fecal Coliform	MPN Index/ 100 ml	--	430	1000	APHA(23rdEdi)9221 C&E 2017

**GPCB Limit consent Amendment order No. AWH-89533 Issue Date: 05/12/2017 Up to Date: 02/09/2022.

H. T. Shah
Lab. Manager

Dr. Arun Bajpai
Lab Manager (Q)

Note: This report is subject to terms & conditions mentioned overleaf.

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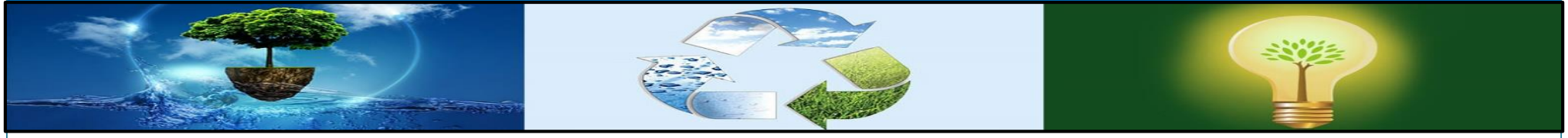

"Half Yearly Environmental Monitoring Reports "

For,

adani
Ports and Logistics

M/S. ADANI MUNDRA SEZ INFRASTUCTURE PVT. LTD. (AMSIPL)

PLOT NO/Survey No. 141 (Part), Village – Mundra, Tal.: Mundra, Dist. – Kutch.

Monitoring Period: November – 2021 to March - 2022

Submitted By

UniStar
Environment and Research Labs Pvt. Ltd.

UniStar Environment & Research Labs Pvt. Ltd.

White House, Near GIDC Office, Char Rasta, Vapi, Gujarat, India – 396195

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RESULTS OF STP OUTLET WATER

SR.NO.	TEST PARAMETERS	UNIT	SAMUNDRA TOWNSHIP STP OUTLET						GPCB Permissible Limit	TEST METHOD
			Nov-21		Dec-21		Jan-22			
			09-11-2021	24-11-2021	08-12-2021	20-12-2021	10-01-2022	19-01-2022		
1	pH @ 25 ° C	--	8.04	7.44	7.68	7.62	7.56	7.52	6.5 to 9	APHA 23rd Ed.,2017,4500-H^+B
2	Total Suspended Solids	mg/L	10	8	12	8	14	12	100	APHA 23rd Ed.,2017,2540 -D
3	Biochemical Oxygen Demand (BOD) (5 days at 20 ° C)	mg/L	12	10	16	14	12	10	30	APHA 23rd Ed,2017,5210-B 5-6
4	Residual chlorine	mg/L	0.7	0.8	0.7	0.6	0.8	0.7	0.5 Min.	APHA 23rd Ed.,2017,4500-Cl-B
5	Fecal Coliform	MPN Index/100ml	170	140	80	130	110	80	1000	IS 1622: 1981

Continue…

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MoEF&CC (GOI) Recognized Environmental Laboratory under the EPA-1986 (12.01.2020 to17.03.2023) | QCI-NABET Accredited EIA Consultant Organization | GPCB Recognized Environmental Auditor (Schedule-II) | ISO 9001:2015 Certified Company | ISO 45001:2018 Certified Company

RESULTS OF STP OUTLET WATER

SR.NO.	TEST PARAMETERS	UNIT	SAMUNDRA TOWNSHIP STP OUTLET				GPCB Permissible Limit	TEST METHOD
			Feb-22		Mar-22			
			08-02-2022	28-02-2022	10-03-2022	22-03-2022		
1	pH @ 25 ° C	--	7.51	7.46	7.45	7.58	6.5 to 9	APHA 23rd Ed.,2017,4500-H^+B
2	Total Suspended Solids	mg/L	16	14	18	18	100	APHA 23rd Ed.,2017,2540 -D
3	Biochemical Oxygen Demand (BOD) (5 days at 20 ° C)	mg/L	13	10	10	17	30	APHA 23rd Ed,2017,5210-B 5-6
4	Residual chlorine	mg/L	0.7	0.6	0.8	0.9	0.5 Min.	APHA 23rd Ed.,2017,4500-Cl-B
5	Fecal Coliform	MPN Index/100ml	140	110	140	110	1000	IS 1622: 1981

Mr. Nilesh Patel
Sr. Chemist

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Mr. Nitin Tandel
Technical Manager

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Results of Ambient Air Quality Monitoring

Name of Location		SAMUDRA TOWNSHIP – STP				
Sr. No.	Date of Monitoring	Parameter with Results				
		PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	CO mg/m³
1.	01-11-2021	65.78	27.51	7.12	17.50	--
2.	02-11-2021	56.78	23.25	6.14	15.83	--
3.	08-11-2021	51.60	20.48	10.23	21.34	--
4.	09-11-2021	70.34	33.18	8.76	19.45	--
5.	15-11-2021	66.45	27.16	9.15	17.32	--
6.	16-11-2021	62.78	23.85	6.70	18.15	--
7.	22-11-2021	55.44	21.90	6.94	21.20	--
8.	23-11-2021	69.32	28.45	9.12	17.25	--
9.	29-11-2021	47.84	19.45	11.23	19.28	--
10.	30-11-2021	59.21	23.18	8.70	17.45	--
11.	05-12-2021	55.78	21.30	5.15	12.60	--
12.	06-12-2021	61.20	22.65	5.67	10.34	--
13.	13-12-2021	68.34	19.26	7.54	16.80	--
14.	14-12-2021	60.32	22.30	6.15	15.21	--
15.	20-12-2021	65.25	17.30	5.14	13.21	--
16.	21-12-2021	56.82	20.16	7.13	12.19	--

Continue…

Name of Location		SAMUDRA TOWNSHIP – STP				
Sr. No.	Date of Monitoring	Parameter with Results				
		PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	CO mg/m³
17.	27-12-2021	40.36	14.56	5.15	12.36	--
18.	28-12-2021	46.23	18.32	6.15	13.45	
19.	03-01-2022	60.50	19.45	8.12	15.21	0.07
20.	04-01-2022	52.70	15.80	6.10	14.50	0.14
21.	10-01-2022	72.90	23.50	9.15	17.30	0.11
22.	11-01-2022	65.70	20.80	7.14	12.15	0.10
23.	17-01-2022	60.50	24.60	6.18	16.23	0.06
24.	18-01-2022	52.60	19.80	9.11	15.43	0.09
25.	24-01-2022	66.80	21.50	7.20	18.42	0.13
26.	25-01-2022	70.30	23.40	5.11	15.17	0.11
27.	31-01-2022	85.10	20.50	8.13	16.25	0.06
28.	03-02-2022	87.15	28.44	7.15	13.28	--
29.	07-02-2022	84.21	31.20	11.23	22.45	--
30.	10-02-2022	80.45	25.67	8.21	19.34	--
31.	14-02-2022	76.43	33.23	10.25	17.84	--
32.	16-02-2022	79.15	25.34	5.13	15.10	--
33.	21-02-2022	88.34	21.28	12.17	22.38	--

Continue…

Name of Location		SAMUDRA TOWNSHIP – STP				
Sr. No.	Date of Monitoring	Parameter with Results				
		PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	CO mg/m³
34.	23-02-2022	73.12	34.23	8.26	20.21	--
35.	28-02-2022	85.44	30.15	17.10	23.45	--
36.	03-03-2022	73.20	22.10	10.45	17.23	--
37.	07-03-2022	70.45	19.40	8.15	14.56	--
38.	10-03-2022	83.80	27.80	14.32	20.16	--
39.	14-03-2022	72.45	31.30	12.31	17.89	--
40.	17-03-2022	75.50	28.12	9.13	16.20	--
41.	21-03-2022	85.10	29.75	10.56	14.32	--
42.	24-03-2022	78.60	30.12	11.30	18.80	--
43.	28-03-2022	80.40	27.34	15.32	21.45	--
44.	30-03-2022	71.20	23.42	18.14	23.17	--
Permissible Value as per NAAQMS		**100.0**	**60.0**	**80.0**	**80.0**	**2.0**
Test Method		**IS - 5182, Part- 23**	**UERL/AIR/SOP/11**	**IS - 5182, Part - 2**	**IS - 5182, Part - 6**	**IS - 5182, Part - 10**

Nikunj D. Patel
(Chemist)

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Results of Ambient Air Quality Monitoring

Name of Location		SAMUDRA TOWNSHIP CUSTOMER CARE				
Sr. No.	Date of Monitoring	Parameter with Results				
		PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	CO mg/m³
1.	01-11-2021	71.23	29.86	8.76	19.45	--
2.	02-11-2021	54.52	26.73	7.14	7.15	--
3.	08-11-2021	62.80	29.45	9.12	21.34	--
4.	09-11-2021	53.45	21.30	6.78	16.78	--
5.	15-11-2021	74.21	28.34	8.15	19.32	--
6.	16-11-2021	68.23	25.29	9.21	22.15	--
7.	22-11-2021	65.20	22.80	8.15	16.78	--
8.	23-11-2021	52.95	21.30	7.23	15.34	--
9.	29-11-2021	67.23	28.35	8.15	18.34	--
10.	30-11-2021	63.21	25.44	9.17	16.23	--
11.	05-12-2021	60.24	23.45	6.18	14.56	--
12.	06-12-2021	55.23	21.20	7.12	15.13	--
13.	13-12-2021	62.34	23.45	6.19	18.25	--
14.	14-12-2021	65.78	25.21	7.89	14.23	--
15.	20-12-2021	72.35	23.45	8.14	17.95	--
16.	21-12-2021	66.84	21.25	9.12	15.37	--

Continue…

Name of Location		SAMUDRA TOWNSHIP CUSTOMER CARE				
Sr. No.	Date of Monitoring	Parameter with Results				
		PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	CO mg/m³
17.	27-12-2021	44.53	16.14	7.18	14.15	--
18.	28-12-2021	50.21	20.23	8.12	15.21	
19.	03-01-2022	53.12	21.40	6.12	17.65	0.05
20.	04-01-2022	63.40	18.35	7.11	19.35	0.10
21.	10-01-2022	47.80	15.34	5.15	15.67	0.08
22.	11-01-2022	55.21	24.29	9.13	18.34	0.15
23.	17-01-2022	76.12	20.54	5.12	20.18	0.12
24.	18-01-2022	82.34	28.95	10.23	21.34	0.17
25.	24-01-2022	54.32	24.23	5.67	16.14	0.05
26.	25-01-2022	84.50	27.15	14.21	23.20	0.16
27.	31-01-2022	87.50	23.18	9.15	17.21	0.14
28.	03-02-2022	77.23	25.23	5.17	13.26	--
29.	07-02-2022	62.34	20.19	8.14	20.23	--
30.	10-02-2022	81.38	23.21	6.10	22.17	--
31.	14-02-2022	69.25	26.78	13.21	21.16	--
32.	16-02-2022	72.56	26.12	10.14	17.32	--
33.	21-02-2022	78.18	29.13	15.21	24.17	--

Continue…

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Name of Location		SAMUDRA TOWNSHIP CUSTOMER CARE				
Sr. No.	Date of Monitoring	Parameter with Results				
		PM_{10} µg/m³	$PM_{2.5}$ µg/m³	SO_2 µg/m³	NO_2 µg/m³	CO mg/m³
34.	23-02-2022	79.35	33.21	9.28	20.14	--
35.	28-02-2022	69.26	26.25	12.20	17.55	--
36.	03-03-2022	65.80	21.37	7.18	17.89	--
37.	07-03-2022	82.90	29.45	11.34	18.27	--
38.	10-03-2022	74.70	25.31	10.42	15.69	--
39.	14-03-2022	70.80	23.29	14.23	22.34	--
40.	17-03-2022	84.56	29.37	12.83	20.68	--
41.	21-03-2022	88.50	32.45	17.21	24.19	--
42.	24-03-2022	71.24	26.40	15.23	22.51	--
43.	28-03-2022	88.56	29.18	11.60	19.28	--
44.	30-03-2022	72.55	32.48	14.23	22.36	--
Permissible Value as per NAAQMS		100.0	60.0	80.0	80.0	2.0
Test Method		IS - 5182, Part- 23	UERL/AIR/SOP/11	IS - 5182, Part - 2	IS - 5182, Part - 6	IS - 5182, Part - 10

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Results of Noise Level Monitoring

Location Name		SAMUDRA TOWNSHIP – STP				
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) - Day Time				
		29-11-2021	22-12-2021	13-01-2022	16-02-2022	10-03-2022
1	06:00 to 07:00	62.8	63.5	61.2	62.76	61.44
2	07:00 to 08:00	62.5	64.2	62.86	63.45	64.57
3	08:00 to 09:00	64.5	62.5	60.95	61.76	62.35
4	09:00 to 10:00	68.5	64.5	65.15	64.32	63.84
5	10:00 to 11:00	63.5	62.9	62.86	63.89	64.27
6	11:00 to 12:00	66.2	67.5	65.14	66.74	65.43
7	12:00 to 13:00	58.5	60.4	62.35	63.25	62.34
8	13:00 to 14:00	63.9	62.8	61.4	62.87	61.28
9	14:00 to 15:00	65.6	65.1	63.2	64.87	63.78
10	15:00 to 16:00	61.6	63.3	62.3	61.22	60.37
11	16:00 to 17:00	57.5	63.5	65.55	66.97	65.31
12	17:00 to 18:00	58.9	62.8	63.4	62.45	61.85
13	18:00 to 19:00	60.4	61.7	59.35	60.97	59.36
14	19:00 to 20:00	63.5	60.2	58.43	59.43	58.76
15	20:00 to 21:00	64.2	59.5	55.75	56.34	55.27
16	21:00 to 22:00	60.5	61.3	56.35	57.43	56.37
Day Time		<75 dB (A)				

Continue...

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Location Name		SAMUDRA TOWNSHIP – STP				
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) – Night Time				
		29-11-2021	22-12-2021	13-01-2022	16-02-2022	10-03-2022
1	22:00 to 23:00	56.5	60.3	55.75	56.43	57.25
2	23:00 to 24:00	58.5	59.5	56.15	57.98	56.21
3	24:00 to 01:00	57.2	59.8	54.25	55.34	54.38
4	01:00 to 02:00	55.5	60.3	56.13	57.98	56.48
5	02:00 to 03:00	60.5	58.5	53.15	54.12	55.16
6	03:00 to 04:00	61.6	57.3	55.23	56.43	57.38
7	04:00 to 05:00	56.7	59.2	54.95	55.98	56.38
8	05:00 to 06:00	55.3	60.5	57.8	56.32	55.28
Night Time		<70 dB (A)				

Test Method	IS: 9989 : 1981

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UNISTAR ENVIRONMENT & RESEARCH LABS PVT. LTD. * GUJARAT VAPI.

Jaivik S. Tandel
(Manager - Operations)

Results of Noise Level Monitoring

Location Name		SAMUDRA TOWNSHIP CUSTOMER CARE				
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) - Day Time				
		30-11-2021	29-12-2021	12-01-2022	17-02-2022	17-03-2022
1	06:00 to 07:00	61.9	62.6	60.15	61.23	62.65
2	07:00 to 08:00	62.3	65.4	61.35	62.89	63.27
3	08:00 to 09:00	61.5	67.1	60.55	62.78	61.57
4	09:00 to 10:00	66.7	64.5	62.25	61.24	62.11
5	10:00 to 11:00	64.8	69.6	66.45	65.43	66.43
6	11:00 to 12:00	62.8	65.2	62.85	63.98	64.76
7	12:00 to 13:00	61.9	63.2	60.25	61.23	62.34
8	13:00 to 14:00	68.5	65.5	64.15	63.42	64.27
9	14:00 to 15:00	67.5	62.8	60.15	61.28	60.89
10	15:00 to 16:00	62.8	64.1	58.25	59.76	60.48
11	16:00 to 17:00	64.5	66.3	62.45	61.27	60.37
12	17:00 to 18:00	66.3	68.3	61.85	60.98	59.46
13	18:00 to 19:00	61.6	63.5	57.25	58.9	57.32
14	19:00 to 20:00	64.5	65.2	55.25	56.43	55.38
15	20:00 to 21:00	60.7	62.3	53.45	54.12	53.25
16	21:00 to 22:00	62.6	60.7	55.25	56.89	55.82
Day Time		<75 dB (A)				

Continue…

Location Name		SAMUDRA TOWNSHIP CUSTOMER CARE				
Sr. No.	Sampling Date and Time	Noise Level Leq. dB(A) - Night Time				
		30-11-2021	29-12-2021	12-01-2022	17-02-2022	17-03-2022
1	22:00 to 23:00	60.5	60.5	54.21	55.87	54.23
2	23:00 to 24:00	63.5	59.8	55.23	56.34	57.87
3	24:00 to 01:00	62.8	58.5	53.18	54.89	55.23
4	01:00 to 02:00	60.5	57.5	52.9	53.45	54.28
5	02:00 to 03:00	57.5	55.6	51.25	50.98	51.23
6	03:00 to 04:00	56.5	55.5	52.37	54.32	55.84
7	04:00 to 05:00	57.8	58.4	51.65	50.43	51.27
8	05:00 to 06:00	58.5	59.5	54.25	55.23	56.37
Night Time		<70 dB (A)				

Test Method	IS: 9989 : 1981

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Results of Stack Monitoring

Sr. No.	Parameter	Unit	December - 2021 Adani Hospital DG Set 15-12-2021	GPCB LIMIT	Method of Test
1	Particulate Matter	mg/Nm^3	18.7	**150**	**IS 11255 (Part - 1)**
2	Sulfur Dioxide as SO_2	ppm	5.25	**100**	**IS 11255 (Part - 2)**
3	Oxides of Nitrogen as NO_X	ppm	29.14	**50**	**IS 11255 (Part - 7)**

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Minimum Detection Limit

Ambient Air Quality Monitoring

Sr. No.	Test Parameter	Unit	MDL
1	Particulate Matter (PM10)	µg/m3	5 µg/m3
2	Particulate Matter (PM10)	µg/m3	5 µg/m3
3	Sulphur Dioxide (SO2)	µg/m3	4 µg/m3
4	Nitrogen Dioxide (NO2)	µg/m3	5 µg/m3
5	Carbon Monoxide (CO)	mg/m3	0.01 mg/m3
6	Ammonia (NH3)	µg/m3	5 µg/m3
7	Ozone (O3)	µg/m3	5 µg/m3
8	Lead (Pb)	µg/m3	0.5 µg/m3
9	Nickle (Ni)	ng/m3	1 ng/m3
10	Arsenic (As)	ng/m3	1 ng/m3
11	Benzene	µg/m3	1µg/m3
12	Benzo(o)Pyrene	ng/m3	0.1 ng/m3
14	Hydro Carbon	µg/m3	1 µg/m3

Stack Emission Monitoring

Sr. No.	Test Parameter	Unit	MDL
1	Suspended particulate matter	mg/Nm3	2 mg/Nm3
2	Sulphur Dioxide SOX	mg/Nm3	4 mg/Nm3
3	Oxides of Nitrogen NOX	mg/Nm3	5 mg/Nm3

STP Water			
Sr. No.	**Test Parameter**	**Unit**	**MDL**
1	pH @ 25 ° C	--	2
2	Total Suspended Solids	mg/L	4
3	Biochemical Oxygen Demand (BOD) (5 days at 20 ° C)	mg/L	1
4	Residual chlorine	mg/L	0.1
5	Fecal Coliform	MPN Index/100ml	<2

Annexure – 3

2021-22

Annual Report

CSR Kutch

Adani Foundation
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adani Foundation

Our journey

Corporate Social Responsibility in India is going through an accelerating phase where the need for community centered impact is increasingly becoming more crucial than ever before. It is not just about the compliance with the laws and regulations but also about transitioning beyond the mandated CSR, Stakeholder engagement is a critical tool to ensure a comprehensive approach in carrying out responsible business and within that community ownership holds an important place.

Mundra is now Industrial and employment hub. Tremendous development is expected in upcoming years. In Year 2021-22, **Uthhan Project expanded its wings from 17 Primary schools to 35 Primary schools** with **MOU with Education Department**. Sustainable Agriculture Initiatives i.e. Natural Farming, Home biogas, Drip Irrigation, Vermi compost, Tissue Culture and Various type of fodder growing are started as a mission with Capacity Building with **5500+ Farmers and 3500+ cattle owners**. Mangroves costal biodiversity, water harvesting structures and Home Biogas promotion is ongoing sustainable project with proper documentation and demarcation. Adani Vidya Mandir has proven best in education by reaching to its apex level of Quality Education through digital technology. It is nurturing fisher folk community students by enabling them access to Tablets to prepare them techno-savy.

Under the guidance of leadership team, Community Resource Centre is developed as a systematic model for empowering rural community with an aim to bridge the gap between underprivileged community who need support and government schemes. Adani Foundation firmly believes to carry all its project by involving community in its operations. The involvement of Fisherman community and women provides real-time feedback and leads to successful projects.

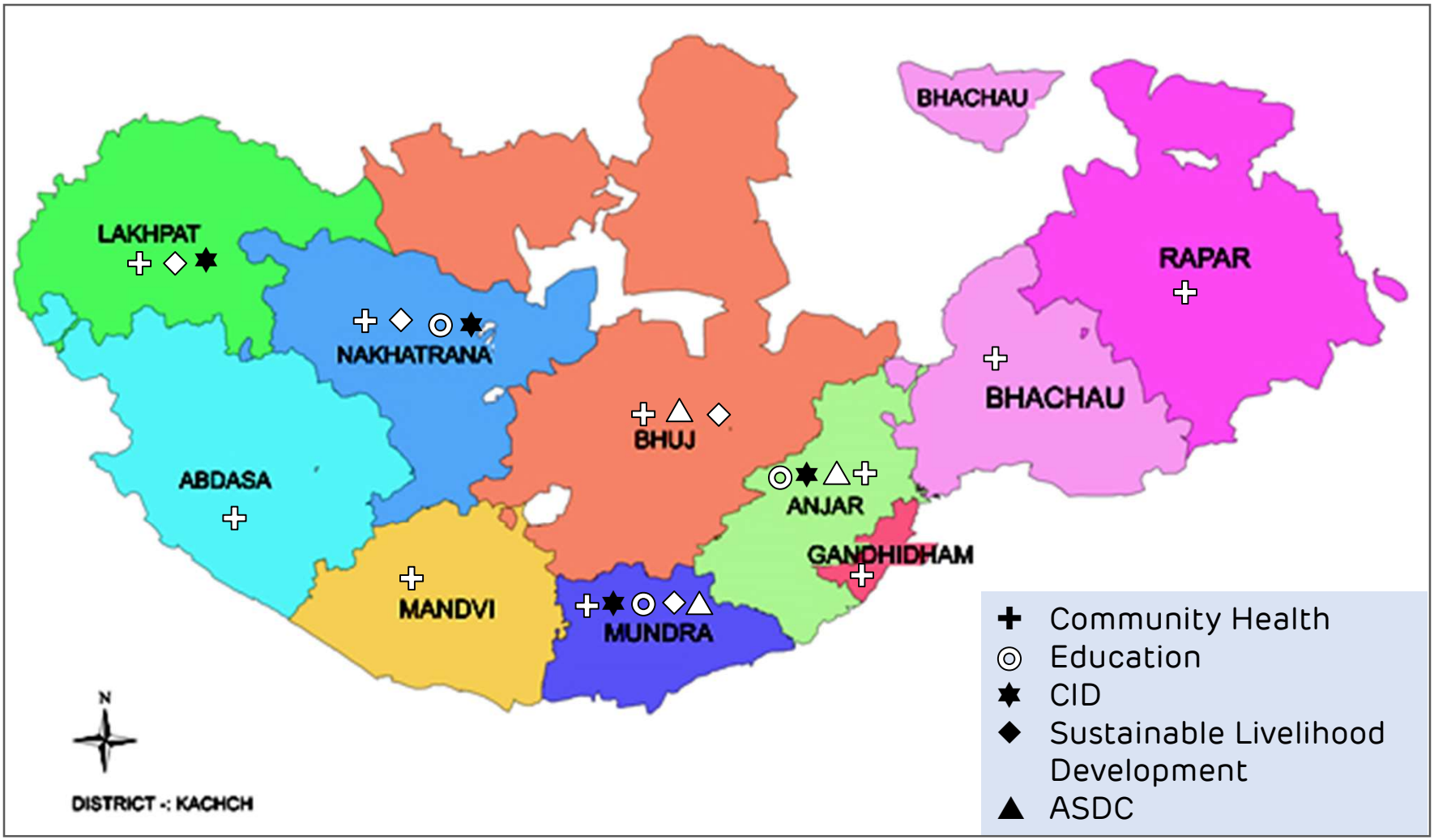
'Technical Training Program' by Adani Skill Development Centre for Fisher Folk community youth is a flagship program to provide them with a platform to get skilled and carve their future into new career options. The ASDC is committed to the cause of the deprived and underprivileged to generate employment through enhancing skills. It has been working relentlessly which resulted in rapport building with District Administration Kutch also.

Respected Shri Dr. Priti G. Adani, Chair Person, Adani Foundation with her charismatic leadership has transformed millions of lives through sustainable development initiatives. Along with her, Rakshit Shah, Executive Director, APSEZ has been a great mentor and involves himself thoroughly in all development initiatives. Mundra team would also like to acknowledge Shri Vasant Gadhvi, Executive Director, Adani Foundation for cultivating great ideas and guidance to the team. We are also grateful to Respected Gowda Sir (COO, AF) for being a source of motivation.

AF Mundra team acknowledges CEO - APSEZ, Human Resource Department- APSEZ, Finance Department-APSE for continuous support and facilitation.

Towards Growth with Goodness, Adani Foundation presents highlights of FY 2021 in this Annual Report!

Our Presence in Kutch



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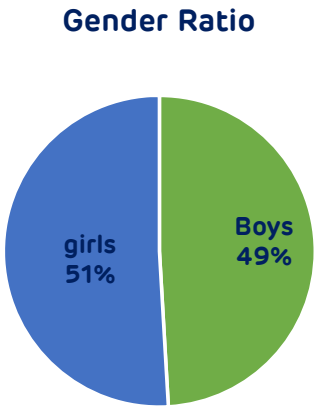
Education (SDG - 4/4.a)

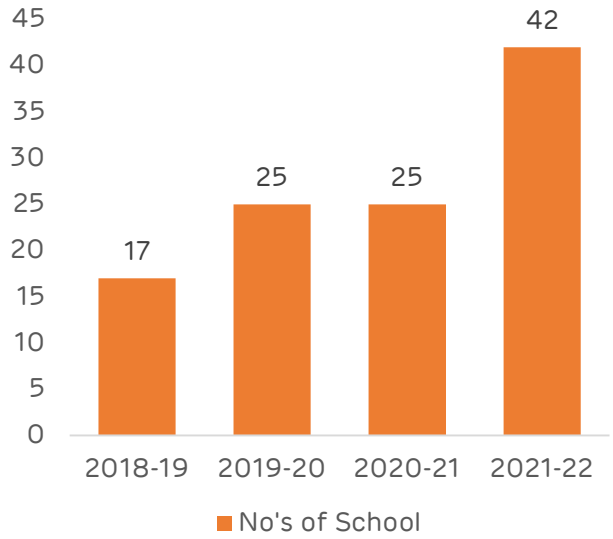
Education Projects

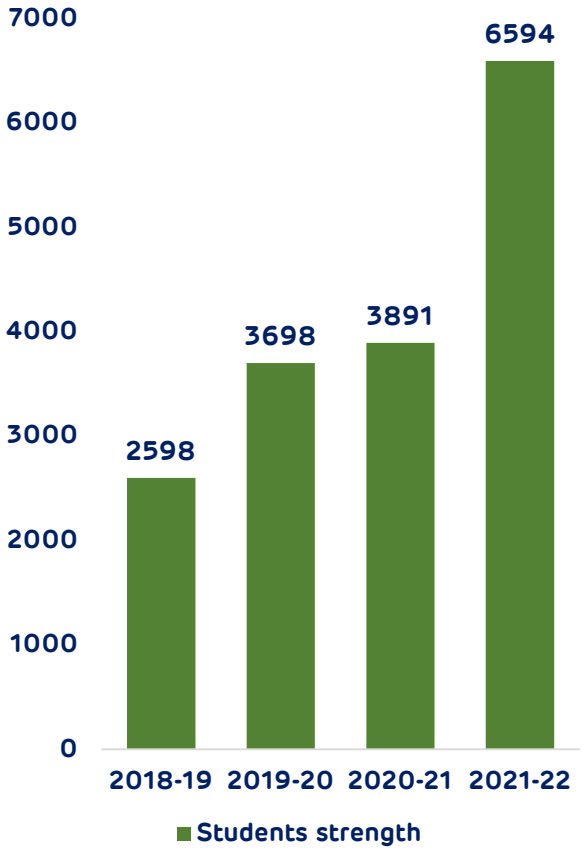
To foster students' learning abilities and achieve better learning outcomes at the grassroots, Adani Foundation charted an innovative intervention in Year 2018-19 through Project Utthan.

This comprehensive intervention entails:

- ✔ Adopting government primary schools
- ✔ Tutoring Priya Vidyarthi's (progressive learners)
- ✔ Arresting dropout rates
- ✔ Collaborating for teachers' capacity building
- ✔ Creating joyful learning spaces







Annual Achievement

- Introducing English as a third language.

Though talent has no barriers to success yet often rural community children and youth are devoid of higher education and better job opportunities only because of lack of command over English language. However, getting equipped with International language expands horizon of a student by opening wide communication mediums for them to learn and grow.

In Gujarat, The language gets introduced from Class4 whereas under the Project Utthan, Adani Foundation initiated to provide basics of English from class 1 with a structured syllabus. Utthan assisted 3,246 students to learn English from Class 1.

Table shows the result of Gunotsav of year 2021-22 for 18 Schools (24 Schools Results are awaited)

Gunotsav Result					
Academic year	Numbers of school in grade				
	A+	A	B	C	D
2020-21	1	0	30	11	0
2021-22	2	8	7	1	0

Utthan assisted

3246

students to learn English from Class 1

Class		Students are able for....
I	62 %	✔ Standing line, sleeping line, Left Slanting line, Right Slanting line, Left Curve, Right Curve, Up Curve, Down Curve ✔ Writing capital letter of A to Z, Identification of alphabet, Match alphabet with object
II	64 %	✔ Writing capital and small letters ✔ Vowel and consonant ✔ Week, month, and numbers up to 30
III	73 %	✔ Differentiate between capital and small letters ✔ Recite rhymes ✔ Numbers 1-50, English name of shapes, fruit, vegetable, and stationary items ✔ Action words: Sit down, stand up, Run, Walk, Jump
IV	76 %	✔ Capital and small letters ✔ Body parts, Golden words ✔ Self-introduction in 5-7 sentences

IT ON WHEELS
Benefited 3418 students

Digital literacy in early schooling is the first step to addressing access disparities in this evolving digital environment which is not feasible for rural students. This impede their development.

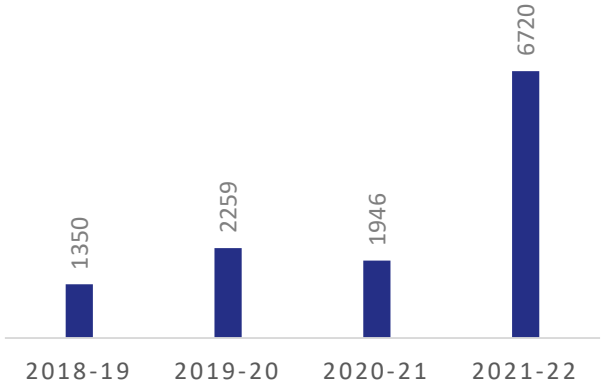
IT on wheel program is run to teach them Basic emphasizes elementary school digital literacy.

Highlights

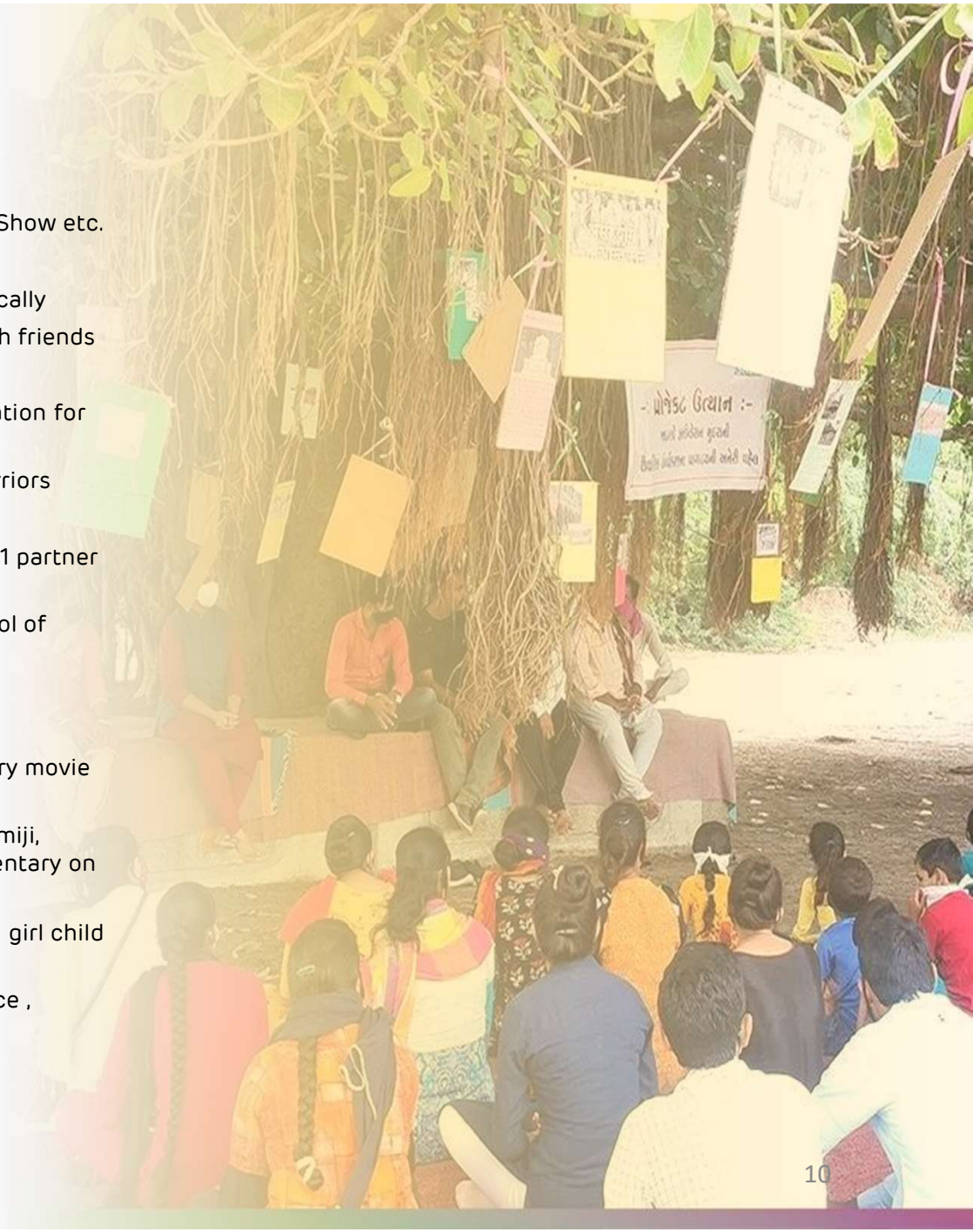
- ✔ 40 laptops + 2 IT instructor + 01 Van with customize basic syllabus
- ✔ Catering students from classes: 4-8
- ✔ IT on Wheel visits fortnightly to each school under project Utthan.

Annual Mother's meet

A child's maximum growth occurs in initial years of education where involvement of teacher as well as mother plays a key role in nurturing their character and personality. Many of the students are first generation learners with uneducated parents, in such case, Mother's meet helps mother and teacher are both in sync towards child's education. Moreover, mothers feel empowered and valued and gets insight of the school activities regularly.



Celebration/competition	Activities performed
World Book Day	▪ Virtual Group Reading, Puppetry Show etc.
Mother's Day	▪ Letter to supermom
International Yoga Day	▪ Performing Yoga Virtually + Physically
World emoji day	▪ Preparing emoji + exchanging with friends
Azadi ka Amrut Mahotsav	▪ Poster making competition
Rashtra Gaan	▪ Certificate from Ministry of Education for 'Recitation of Rashtragaan'.
Raksha Bandhan	▪ Eco Friendly Rakhi for Corona warriors
Teachers' day	▪ Gratitude wall for teachers
ISLM Participation	▪ Digital bookmark exchange with 11 partner schools from 5 countries
Virtual connection around the World	▪ Live connected with partner school of Croatia
Children's Day	▪ Paint party
World computer literacy day	▪ Restart of 'IT on Wheel'
National Maths Day	▪ Match Competition & Documentary movie on Shri Ramanujan.
National Youth Day	▪ Character sketch, Speech on Swamiji, Quote Competition ,Short documentary on Swamiji.
National Girl Child Day	▪ Contribution of Savitribai Phule in girl child education
National Science Day	▪ Girl/Women noble laurels in science , Model making ▪ Documentary on Raman effect
International Women's Day	▪ Women's Day with 1000 Mothers



Healthy competition inspires kids to exhibit their maximum potential. When students compete, they will become more inquisitive, research independently and learn to work with others. They will strive to do more than is required. These abilities prepare children for future situations of all kinds. Due to pandemic students were away from multiple competitions and celebrations were planned in school. Which helps them for-

- Improving teamwork and collaboration
- Enhancing social and emotional learning
- Increasing intrinsic motivation
- Facilitating growth mind-set
- Building mental toughness
- Virtual celebrations and competitions to engage students during lockdown period.


Government of Gujarat

Certificate of Completion

This is to certify that

Devalbai vachhiya shakhra

has successfully completed the course

on 05 March 2022

Capacity Building Program

To make the project sustainable, Utthan closely **works with block resource coordinators to organize monthly training sessions for Government teachers + Utthan sahayaks on various subjects.** Entire academic year teachers training is focused on National Education Policy 2020.

Utthan's outreach strategies to support children's learning

- 100 hours capacity building programs for Utthan sahayaks and school Teachers
- 90% students were involved in various activities under Aazadi ka Amrit Mahotsav
- 6600 hours were given in 'SAMAYDAAN'
- 100 % participation in 100 days reading campaign
- Project is in alignment with NIPUN Bharat: FLN
- Dedicatedly 80 hours provided for preparing JNV and NMMS examination. 19 number of students qualified for JNV and NMMS.

100% Utthan Schools are equipped with:

- ✓ Smart classrooms
- ✓ LED TV
- ✓ Library cupboard with 350 books
- ✓ Annual subscription of 07 magazines
- ✓ Sports materials
- ✓ Music instruments
- ✓ BALA Painting
- ✓ TLMs focusing language and numeracy
- ✓ Kitchen garden – 4200 plants planted

Reaching out to students with no smartphones at home

24,748 Voice messages sent to create awareness regarding Precautions during Covid19

All students taught during sheri shikshan by Utthan sahayaks

74% progressive learners virtually connected on various platform

12

Adani Vidya Mandir, Bhadreshwar (SDG - 4/4.1)

EDUCATION: FREE AND COMPULSORY – WHAT A WAY TO LEARN LOGIC!" The quote mentioned unfolds the distinguished vision of Adani Foundation to provide cost-free education, food, uniform, books to the children of economically challenged families of Mundra Bock. Adani Vidya Mandir, Bhadreshwar was established in June 2012, with aim of uplifting the communities through education.

The school is equipped with excellent infrastructure and resources required for all-round development of the student. The child is given admission in class 1 and is molded to be an educated and a good human being by experienced and compassionate teachers.

The school follows a curriculum designed by GSEB. Due to Covid Pandemic this year Class 1st Admission was done.

AVMB –Adani Vidhya Mandir, Bhadreswar is accredited By NABET under 'Quality Council of India'

SDG

- ✓ ***Quality education - 4***
- ✓ ***GenderEquality - 5***
- ✓ ***Reduced Inequality - 10***

National Accreditation Board for Education and Training is a constituent Board of Quality Council of India.

NABET is offering accreditation program for Quality School Governance in the Country, with a view to provide framework for the effective management and delivery of the holistic education program aimed at overall development of students.

State level First Gujarati Medium school accredited by NABET

Adani Vidya Mandir Bhadreshwar Gujarat Board Standard 10th Examination Result is 100% (27 students have passed the examination out of 27). Adani Foundation took complete responsibility of further study of students with respect to their interest.

The global upsurge of the Covid-19 pandemic and the resultant lockdown has brought all of us to face such unprecedented times and situations. The challenge was rural locality, network unavailability, lack of health awareness, apprehensions for technology and gadgets and financial crunch to spend on mobile / Internet.

But We did not Give-up and reached out to our students to pursuit educational through virtual platform by various initiative.

Objective

- Provide free and Quality Education to economically and socially under-privileged students
- Support to students for academics and co-curricular activities and overall well-being

Project Activity

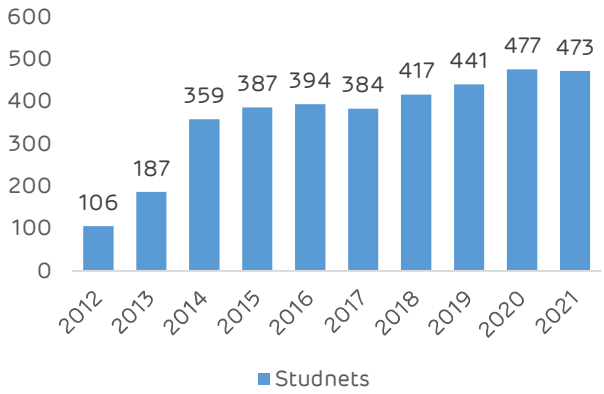
- Balwadis started in 2010, for students in age group of 2-5 yrs. In 2013, this school was built on a donated land
- Cost Free food, education, uniforms, online tablets
- Classes from Gr-I to Gr-X with 22 qualified teachers and 8 helping staffs
- Monthly stay of Gr-X students at school before exam, along with teachers

Outcome

- **473 underprivileged students** of Fisherman & Maldhari communities from **8 villages** taking education at the school
- Educated children have better opportunities of income beyond fishing
- Quality of life and change of mindset of students & families
- With education, many addictions reduced

AVMB STD - 10 SE BATCH RESULT
Year 2021-2022

SR NO	GRADE	STUDENTS
1	Above 80 %	01
2	Above 70 %	00
3	Above 60 %	07
4	Above 50 %	07
5	Above 35 %	12
	TOTAL	27

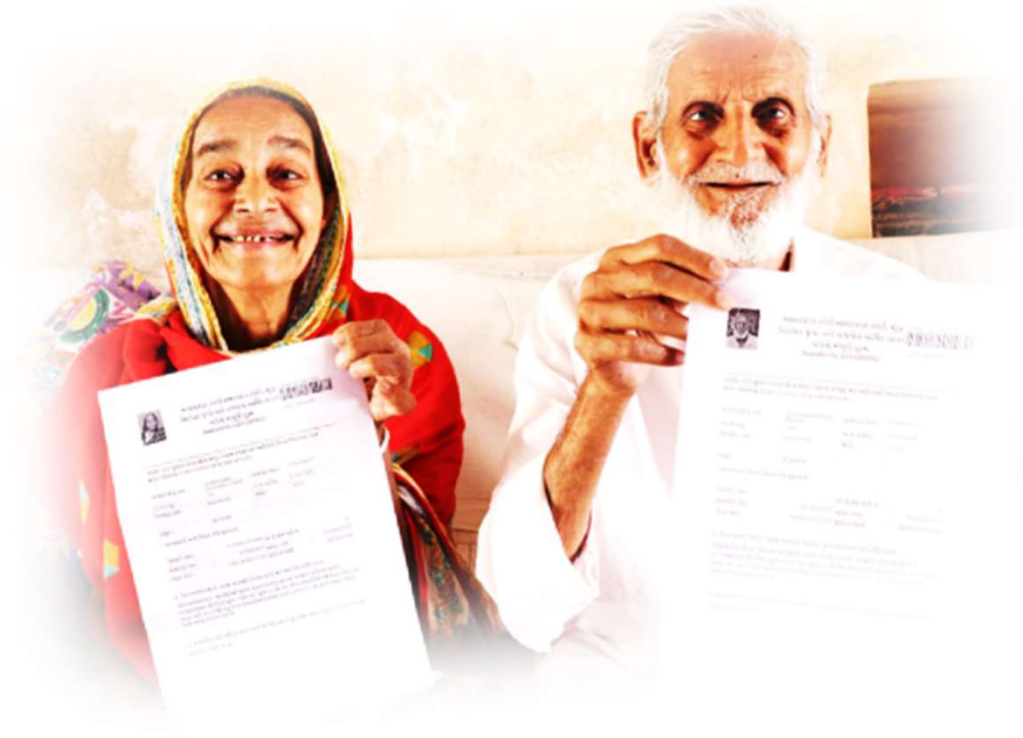


- Street Education popularly known as 'Sheri Shikshan' was initiated for the students who could not attend sessions online.
- Offline education was started for Class 10 students under the Covid19 Guidelines.
- 'Fit India week' celebrated by arranging various sports events, Elocution, Written and Drawing competition for class 9 and 10 students.
- Covid Vaccination drive for Class 10 students in coordination with GKGH, Bhuj Hospital.
- Various National and International day celebrations at School level with learn and fun activities as well as conducted Motivation Sessions.
- Motivating Girl Child from fisherfolk families for Education after 10th Standard.

Community Health Projects

Good Health is extremely important, invaluable and indispensable. A Healthy body paves the way for a healthy mind. Adani Foundation team at Kutch works towards better health of community and access to easy consultation with expert doctors in collaboration with G.K General Hospital, Bhuj and Adani Hospital, Mundra. For more than a decade, Community care is provided through Mobile Health Care Units, Rural Clinics and Health Cards for senior citizens.

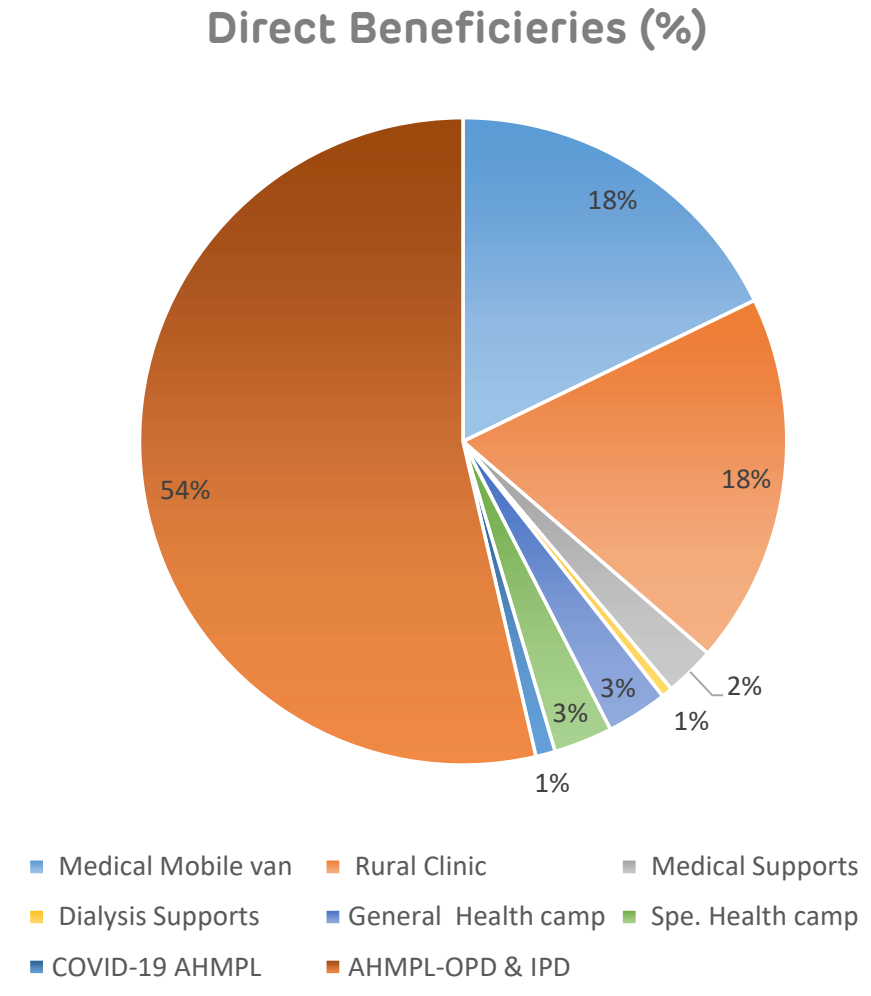
In span of 6 years, there are number of cases reported for Kidney related diseases. Under those circumstances, periodic and special health camps are scheduled to address this issue, provide them necessary treatment support. We also conduct awareness camps for preventive measures against kidney problems.



It is health that is real Wealth , not a piece of Gold and silver.

Preventive and curative healthcare are critical to sustaining community health and promoting economic prosperity. The objective is to find the proper balance that will lead to a long, healthy, and fulfilling life journey for that AF

Project	Direct Beneficiary	In-Direct Beneficiary
Medical Mobile van	10043	39844
Rural Clinic	10439	41436
Medical Supports	1409	5532
Dialysis Supports	314	30
General Health camp	1715	6852
Spe. Health camp	1655	6624
COVID-19 AHMPL	554	2770
AHMPL-OPD & IPD	31291	90573
Total	57420	193661



Rural Clinic & Mobile Health Care unit

Health is the most basic prerequisite for community development and in order to transform rural healthcare landscape Adani Foundation has initiated **'Mobile Health Care'** and **'Rural Clinic Service'** to providing primary, preventative and curative healthcare services accessible in inaccessible areas which is being executed since a decade. Adani Foundation has acted as catalyst to reduce health disparity and hardship of medical expenses among community.

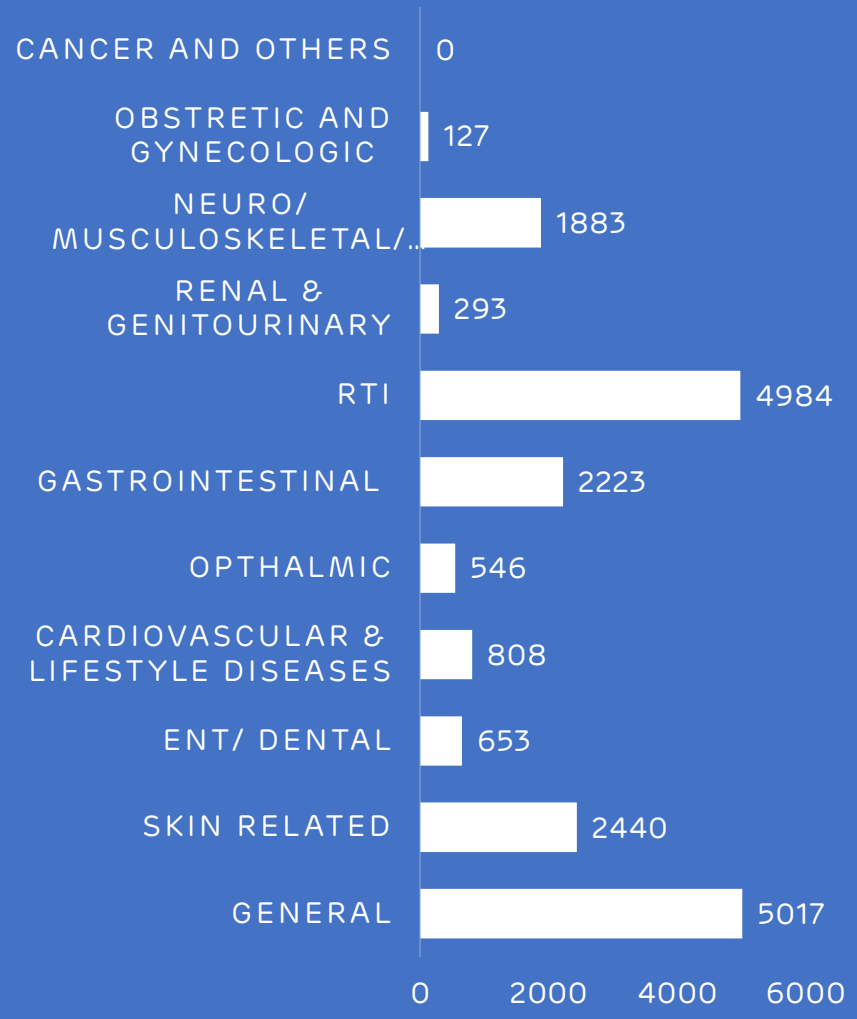
- ✓ Time saving
- ✓ Reduce Medical expenses
- ✓ diagnosis and treatment
- ✓ Preventive health screenings
- ✓ Early disease diagnosis
- ✓ Chronic disease management
- ✓ Health education & Counseling

The mobile health care unit is operated by Medical officer and health care assistant and equipped with various integrated medical devices that allows Medical staff to conduct preliminary check up. more than 90 types of general life saving medicines are available in MHCU and covered 29 villages and 07 fishermen settlements population. MHCU and Rural Clinics are providing services of Bloood pressure checking, Sugar testing and ECG as well,

Similarly rural clinics are serving at **9 Villages of Mundra 3 Villages of Anjar Block and Mandavi Block.**

The MHCU and Rural Clinics services are available with Token Charges Rs. 20 per patient.

DISEASE WISE DATA OF MHCU & RURAL CLINIC



Under the '**Preventive Health Care**' programme, specific screening and questionnaire are developed for Non communicable disease(NCD) like ***Blood pressure, Sugar, Thyroid*** and suspected patients are referred for secondary examination at Adani Hospital, Mundra.

More than **110 Patients are diagnosed with NCD and are cured before patient reaches to severity stage**.

Support to Vulnerable Patients

Adani foundation provide financial assistance to the most economically challenged patients who are suffering from life threatening diseases related to heart, liver, kidney and cancer cases with Minimum Participation.

In the current year total **1409 patients from Mundra, Mandavi and Anjar Block were supported in Adani Hospital Mundra.**

Dialysis Support

Patients with kidney disorders must undergo periodic dialysis, which is expensive and lends financial burden to family.

Adani Foundation has initiated a dialysis program to support foremost needy patients .

Till date 5 patients with critical and severe condition has been supported for dialysis with token charge of Rs. 150 per session. Regular dialysis has improved patients condition prolonging their life.

Senior Citizen Project

Adani Foundation has launched Senior citizen project with the aim to provide access for Promotive, Preventive and Curative health service to more than **8500+** elderly people of Mundra since 2011 to 2020 – A Decade.

After 2021 to make the project sustainable, Linkages with Government Schemes and senior citizens are initiated. Total **61 Senior citizens has been Facilitated with Senior Citizen and Widow Pension Scheme Rs. 1250/Month in 2021**. Till more than **750+ Senior citizens ARE Linked with Gov.schmes..**

Health camps

Getting the right health screenings and treatments is the key to living longer and better.

Major Activities

- Under Dignity of workforce program, weekly medical camps organized at labour colonies.
- General health check up of work force plus deaddiction counselling done by Medical Officers.
- Motivational sessions by "**Prajapita Brahmakumaris**" are also organized to make them strong against addiction.
- General Health camps, Specialty camps, Pediatric camp especially for Malnourished children are organized frequently to provide health care treatment to the community.

In this year **total 5200+ People are diagnosed and treated accordingly**.

Corona Related Work at GKGH and AHMPL

- Started Covid care centre service at **Samudra town ship** to Provide medical services at 24 x7 hrs. Home Visit for examining patients with severe conditions and providing them immediate relief.
- AHMPL, Mundra was converted into Covid Hospital with 100 bed Facilities with oxygen to extend treatment to Covid patients. All related coordination done by our team for more than **350+ OPDs and IPDs**.
- Provided Oxygen Concentrators to home isolated patients to safeguard their lives during pandemic.
- Provide hearses to shift Covid deceased patients to Crematorium with all dignity.
- Precautionary voice message dissemination through '*Awaj de*' voice message service **Over 11000+** Community.
- Sanitized villages, Distribution of Vitamin C tablet to **2300+people**
- Adani Foundation employees volunteered for providing service in G K General Hospital, Bhuj during pandemic.

Machhimar Ajivika Uparjan Yojana

The availability of water for personal and domestic hygiene has been found to be an important factor in decreasing the rates of water-related diseases such as ascariasis, diarrhea, schistosomiasis, and trachoma. **2091 female beneficiaries** at nine fisherfolk vasahats.

- To Reduce women drudgery to get water at fisherfolk settlement
- To Reduce Water borne disease

Sr. No	Vashat	Family	Requirement	Remarks
1	Luni	116	15000	9 Months
2	BavdiBandar	107	17500	9 Months
3	RandhBandar	245	25000	9 Month
4	KutdiBandar	118	-	Linkages with MSPVL
5	ZarapraVasahat	90	-	Linkages with Port
6	Virabandar	80	-	Linkage with GWIL
7	Junabandar	160	-	Linkage with Mundra GP
8	GhavarvaroBanada	60	-	Linkage with GWIL
9	Zaraprachacha	55	-	Linkages with Port GWIL
Total		**1031**		

Gujarat Adani Institute of Medical Science (GAIMS) - Bhuj

Adani Foundation Team has initiated coordination with GKGH hospital since 2015 and established a reception area for the smooth patient coordination.

•GKGH Hospital is Covid Care Hospital since 22nd March 2020. in the second wave of Covid Adani Foundation staff members supported in patient counselling, coordinating and supporting for dead body Covid care van.

•Total **7826** Covid patients got treatment from overall Kutch with satisfaction.

•Dead body medical van –Dignity to death is one of the noble initiatives taken up by the Adani Foundation. If any death occurs in GKGH, dead bodies are shifted to the native village of the concerned in the Kutch District free of cost. Total 1163 dead bodies privileged till now to different locations in Kutch including Covid Patients.

•Mahiti Setu, A Platform at GKGH to Guide and Assist to get Government health scheme benefit. Through Mahiti Setu 6923 beneficiaries are sourced and more than 947 beneficiaries are linked with Ayushman Yojna and MAA Yojna.

Facilitation of Government Bal sahay Yojna- Rs.50000 Financial support to **527 family** who had lost their members due to covid-19.

Patient Care and Coordination at GKGH Bhuj to avail proper treatment and Guide for 100% satisfaction.

Environment Sustainability

Environmental sustainability involves making decisions and taking actions that are in the interests of protecting the natural world, with particular emphasis on preserving the capability of the environment to support human life. It is an important topic at the present time, as people are realizing the full impact that businesses and individuals can have on the environment.

Sustainable development has many important facets/components like social, economic, environmental, etc. these components are closely interrelated and mutually re-enforcing. Under Corporate Environmental responsibility 10 km radius villages from SEZ Boundaries.

To make connections between human actions and the level of biological diversity found within a habitat and/or ecosystem, In year 2017-18 project "Sanrakshan" was launched in coordination with GUIDE. MOU has been signed with Dr. Vijay Kumar – GUIDE for conservation of five spices of mangroves.

Miyawaki–Nana Kapaya

Miyawaki is a technique pioneered by Japanese botanist Akira Miyawaki, that helps build dense, native forests. The Miyawaki method of reconstitution of "indigenous forests by indigenous trees" produces a rich, dense and efficient protective pioneer forest in 20 to 30 years. The approach is supposed to ensure that plant growth is 10times faster and the resulting plantation is 30 times denser than usual. It involves planting dozens of native species in the same area, and becomes maintenance-free after the first three years.

Nana Kapaya village and proposed site for Miyawaki-Dense Plantation is very close to many industries in and around the Mundra landscape. This area is also very close to main roads and coastal creeks. Mainly dense to sparse Prosopis Juliflora- (Ganda Bavar cover) is recorded surrounding to project site with very few scattered native trees like-Limda, Deshi Bavaretc. Shrubs species like-Akadoand Aavarare also predominant close to site; while, grasses like
Chhabarand Dhrabare recorded in proposed plot area.

As shared and discussed by villagers, this proposed plot is also very close to sewage water tank and nallahs; and proposing for watering to our proposed plantation.
As discussed with villagers and Adani Foundation, we proposed the close or dense plantation at site-called 1Miyawaki Types of Plantations with following four major compartments (45X20 meters approx.) and with following strategies:

1.Mixed Plantation dominant Drought Resistant Plants
2.Mixed Plantation dominant by Larger Leaves
3.Mixed Plantation dominant by Saline Resistant Plants
4.Mixed Plantation dominant by Medicinal Values.
Plantation of 4965 saplings of different 42 spices is completed which will result in dense forest within 2 years.

Smriti van

Smriti van Memorial park is a unique initiative by Prime Minister in order to commemorate the death of about 13,805 people during this massive earthquake which had its epicenter in Bhuj District.
The memorial will occupy around 406 acres of space of the Bhujia Dungar near Bhuj, Kutch that will show people's oppressive response to a natural disaster.
As a part of this Smritivan Memorial Park, it will have a museum, convention Centre, sunset point and Ecological park with around varied species of trees to attract different biodiversity.
For the ecological park, approx. 24 acres of land has been demarcated, wherein it is proposed to plant ~3 lakh local species trees.

Under Phase –1 project, Govt of Gujarat through GSDMA will be planting across 1 lakh trees, across 8 acres through "Miyawaki" methodology(Japanese technology of tree plantation). They have already enrolled the services of M/s Forest Creator, a Mumbai, based agency expertise in carrying out afforestation project, through Miyawaki technology.

Forest Creators have already been involved and completed 58such kind of project of Terrestrial afforestation, across India and this will be their 59thproject. (Details of project carried out Forest Creator attached)
Under this project, 60+ local species of trees will be planted and further the entire scope of development of Nursery, Soil enrichment, Plantation of saplings, mulching, biomass application, water supply & maintenance for 3 years are considered .
All Corporate of Kutch has supported fund for the same. APSEZ has done monitory support under CSR and Adani Foundation is coordinating for monitoring.

Coastal Bio diversity

Mangrove is a tropical tree or shrub that grows in swampy areas and has tangled roots located above ground. Mangroves, seagrass beds, and coral reefs work as a single system that keeps coastal zones healthy and provide essential habitat for thousands of Flora and Fauna.

Mangrove cover in India is 4992 km2 which is around 3% of global distribution and 0.15% of the country's total geographical area. With the second-largest mangrove cover in India, mangroves cover in Kutch increased from 794.77 km2 to 798.44 km2 *With dominant species of Avicennia marina, Rhizophora, Ceriops, Aegiceros* For the past two decades and APSEZ, Mundra is actively involved in mangrove conservation and management activities.

Adani Foundation contemplated to establishment of multi-species Mangrove Biodiversity Park to help disseminate knowledge on the mangrove ecosystem and simultaneously conserve the species with collaboration of Gujarat Institute of Desert Ecology (GUIDE), Bhuj, Kachchh.

Total 12 hector area have been developed with multi-species Mangrove plantation of ***Avicenna Marina ,Rhizophora Mucronata ,Ceriops Tagal ,Ceropos decandra at Luni Coast as phase wise in*** the year 2018-2019 (Phase-I). & Phase-II (2019-2020) with good survival rate.

So, to develop that as Bio- diversity park ,another 03 ha area coastal stretches have been planted with selected true mangrove species.

Fisheries Diversity

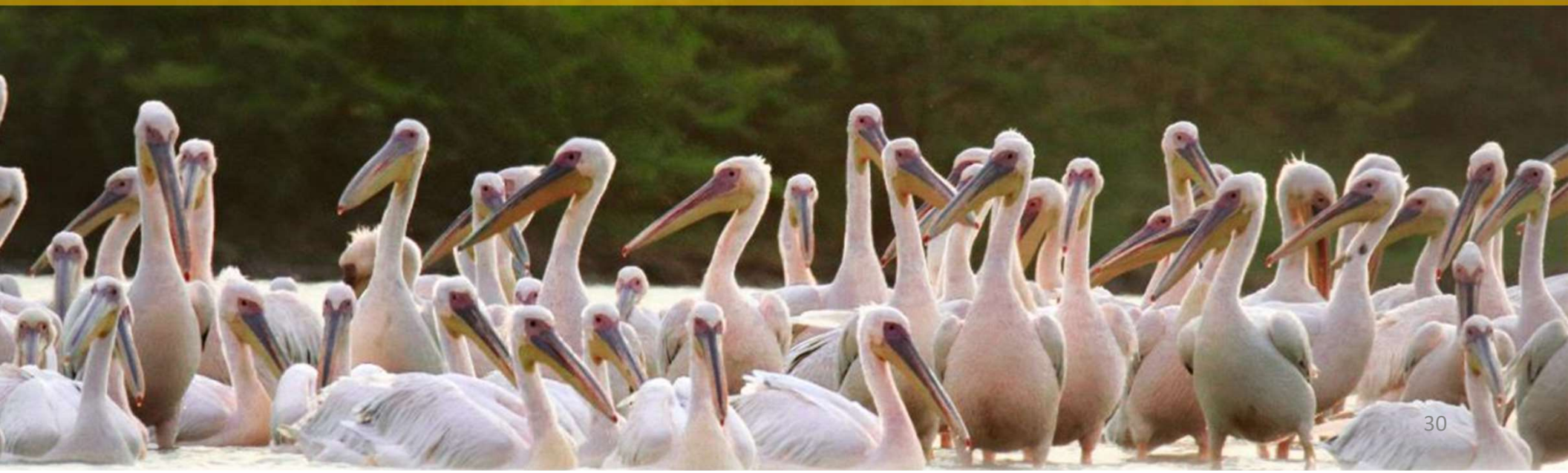
Mudskippers and bivalves were found near the waterfront. The gastropod, *Pirenella cingulata* few crabs ,Dead razor clams were also found inside the plantation site, A few crablets of *Scylla serrata* species and mud-skippers (*Periophthalmus waltoni*) were found in the cultivation site. In addition, catfish and mullets also occurred at the intertidal zone that the fisherman collected.



Macro Fauna

- *Gelasimus tetragonon*
- *Austruca variegata*
- *Periophthalmus waltoni*
- *Tubuca dussumieri*
- *Calidris pugnax Ardea cinerea*
- *Recurvirostra avosetta*
- *Larus fuscus*
- *Pirenella cingulata*
- *Solen sp.*
- *Painted strock*

- ✓ reduce carbon sequestration by 3 T per hector annually in early five years - after it reduces up to 20-25 T per hector
- ✓ provide alternate livelihood to fisherman by providing 3500 person days employment annually .
- ✓ Provide natural Habitat for Flora and Fauna.



Water Conservation (SDG 6/6.6)

At the turn of millennium, the state watched with growing alarm the steady depletion of its ground water and launched massive drive to achieve water security in Mundra region.

As a part of pre monsoon activities due to negligible rainfall we are getting less outcome of this intervention.

The Foundation's Water Conservation program, Swajal, is aimed at addressing the alarming depletion of groundwater levels and reduction in water sources in various parts of the country. Devising eco-friendly and cost-efficient methods of water body rejuvenation, the project works to revive existing water resources, plan sustainable infrastructure for protection of natural water bodies and improve ecological conditions around the area. Interventions are focused on groundwater recharge, sustainable agriculture and boosting livelihoods post stream rejuvenation.

Total 110 Roof Top Rain Water Harvesting, 190 Recharge Borewell and 56 Pond Deepening carried out in up to year.

Impact

- ✓ 218500 men, women, children and elderly impacted by this initiative.
- ✓ Total Dissolved Solids (TDS) in the ground water down by 16.7%.
- ✓ Ground water table up by 4.2 ft. over the last 5 years.
- ✓ In four villages water levels have increased by 15-20 ft. through bore-well recharging facility
- ✓ Storage capacities of check dams and ponds increased by 106.44 MCFT. Total area benefited 2857 hectors.
- ✓ Annually 10000 Liters of water saved and up to INR 10000 saved per family.
- ✓ 80% reduction in money spent on labour.
- ✓ Up to 20% less money spent on electricity bills.
- ✓ 50% less water used as compared to conventional methods.
- ✓ Potable water available at doorstep. Earlier on an average women used to walk 1.3 kms to fetch water.
- ✓ On an average there has been up to 25% decrease in expenses on healthcare.
- ✓ Water availability has also ensured safety, security and overall well-being of women and children in the area.
- ✓ Initiatives and efforts made under water projects by Adani Foundation continues to provides sustainable solutions for community for their improved farming and ease of living.

Initiative	FY 2021	Total
Roof Top Rain Water Harvesting	50	115
Bore & well recharge	83	189
Pond Deepening	-	56
Check dams	-	21
Drip Irrigation	180	1158

Drip Irrigation Project (SDG 2/2.4)

The fragile economy of Kutch is hampered by the salinity ingress and higher saline ground water which consequently impact on cultivation area and farmers yields as well.

Hence, To Conserve the Water. It is necessary to bring the land under **'Micro Irrigation System'** by allowing water to drip slowly to the roots of the plants, either from above the soil surface or buried below the surface we have started project Drip irrigation to Provide Financial support to adopt & Install Drip irrigation system.

This year **More than 180** farmers are supported with 15% Amount of Total Cost for maximum Rs.0.40lac.

Till the date Total **2229 acre of land are covered under Drip system by 1158 farmers** impacted to save their Money ,time and water and electricity as well.

The process to availing Benefits

- Farmers have to apply in the prescribed form of Adani foundation with photographs _
- Inspection and verification will be by AF representative.
- Ration card, work order of GGRC, 7/12 certificate, and all bills must be attached.
- Solutions to Queries .
- Primary information about farmer land will be recorded.
- Farm visit within 10 days of receipt of application and verified installation of the system as per map and material.
- Feedback from farmers.

Farmers selection Criteria

- Farmer should belong to the intervention villages of AF (Adhar Card) within Mundra block
- Small/marginal farmer – having maximum 3 hectors total family land were considered.
- Submit copy of application and copy of approval certificate from GGRC for drip irrigation .
- Consent to contribute and participate as per the provision of the AF scheme.
- Spot check/ field visit at the farmer's farmland by AF team before and after setting up the drip irrigation system and regular monitoring visit.
- Opening a bank account (the financial assistance was provided only through cheque).

Grassland Ecosystem Restoration project - Guneri

Lakhpat taluka is bestowed with rich mineral resources, lignite being the most important. Additionally, the area is also known for presence of tropical thorn forest. The region exhibits a great correlation between floral and faunal species and many rare and threatened species including Helichrysum cutchicum (endemic species), Cistanche tubulosa, Campylanthus ramoissimus, and Sida tiagii hence area is a proposed Biodiversity Heritage Site. However, the stress on this biological pool is constant, which arises primarily due to dynamic environmental conditions culminating in frequent droughts.

- With this background, and as a part of Biodiversity initiatives, to conceptualizing the landscape ecology and social-ecological systems together, by taking grassland restoration as its epicenter, APSEZ has proposed to take the pioneering steps towards building sustainable growth in the Lakhpat region, Kutch by taking **the initiation of restoring the natural grassland habitats (Ecological Restoration) along the Guneri village, i.e. ~40 Ha grassland ecosystem in gauchar land**, by collaboration with Gujarat Ecology Society (GES) – A Nonprofit Organization, based in Vadodara, Gujarat.

Grassland Ecosystem Restoration project - Guneri

Guneri village is situated north of Lakhpat fort with a population of 967 as per the 2011census. A Biodiversity Management Committee (BMC)already exists there and hence it becomes easy to undertake grassland restoration with the help of committee members. The gauchar land available for restoration is around 100 Ha and about 40 Ha of the area can be considered for restoration. The restoration process will be spread over a time period of three years, starting initially with 10 Ha and slowly moving up to 40 Ha by the third year.

The faunal survey was initiated in the month of December and continued till February 2022. This time is suitable to record the migratory birds. The survey highlights the presence of 9 threatened species based on IUCN (2021) viz., Monitor Lizard Black tailed Godwit, Black-headed Ibis, Common Pochard, Tawny Eagle, Steppe Eagle and White-backed Vulture were sighted in the area.

MILESTONES ACHIEVED

- Restoring the grasslands in the Gauchar lands.
- Preparatory phase for plantation activity.
- Capacity building of the locals in the ecological monitoring process and process of documentation and observation of changes.
- faunal Survey Mambles-07 species ,Reptiles-04 Species Birds-59 Species ,Threatened species-09 Species were Found.
- On Soil day celebration, An expert session was presented by Dr. Jayendra Lakhmapurkar for the APSEZ staff, students and farmers.
- International Wetland day was celebrated on 2nd February jointly by Adani port and logistics and GES with the theme "**Action on wetlands for people and nature'** . Key note speaker Dr. Deepa Gavali took insightful session to create awareness.

Sustainable Livelihood Projects

Empowering lives and broadening their scope for economic opportunities, Adani Foundation's initiatives introduced under 'Sustainable Livelihood Development Program', is formed to empower and uplift community towards better living and better livelihood.

At Mundra Taluka, several communities are economically side-lined and depend on a sole income source or are unemployed.

Sustainable livelihood projects have been launched to cater financial independence through building local partnerships, providing diverse livelihood avenues, inculcate the attitude to establish savings, equipping to earn and updating local skills by making use of existing resources to encourage self-reliant lifestyles. Participation is encouraged by launching specific projects for fishermen communities, farmers and cattle owners, youth and women.

A comprehensive program for Fishermen community is developed with holistic approach to improve their Education, health, economic status, Employment opportunities, Infrastructure and social awareness.

With support of Adani Foundation, Education Scenario is changing in fisher folk community which wasn't a cake walk but with the hard work and commitment Adani Foundation has created miracles to motivate this vulnerable students to pursue Education for their bright future .

To inculcate Education in first generation learners – **SMART Balwadis are set up with an aim to provide quality education,** scholarship support to girl child along with transportation facility.

SMART Balwadi

A child's early years experience provide strong base for their lifelong learning. A Balvadi center for their holistic development was set up at Four fishermen vasahat where trained Balvadi teachers looks after Children's Physical, cognitive, Emotional and Social development.

Initiatives taken to provide Study Material and Cycle are the distributed to keep fisher folk children motivated to continue their study as well as reduce financial burden of their parents.

68 fisher folk children studying in 9th to 12th standard were provided with educational material and stationary material and Cycle support to Juna bandar secondary school going students.

Economic Empowerment is necessary for "ATMA NIRBHAR BHARAT" and Skill Development is the base of comprehensive growth. To Develop various technical and Non-Technical Skills in youth - training was conducted for Fisher Youth and Women.

Digital literacy and spoken English class:- Basic computer and spoken English training for 152 Fisherfolk students of Zarpara and Luni Vasahat which will help them to grow with confidence.

sewing training given to 26 fisher women of Juna bandar to make them Self-reliance. Planning industry tie-ups to provide them with livelihood opportunities.

Awareness programs For fisherwomen :

Fisherfolk women are still living in 19th Century, due to lack of education they are having issues of addiction, hygiene and independence.

More then **1250+ women** participated in various sessions awareness workshop at Fisherfolk settlements periodically.

Process for livelihood support to Fisher folk
39 Fisher Youth were interviewed in various industries among that 12 are selected.

Mangroves Nursery Development

Optional livelihood provision during Two-month Fishing Offseason is taken care by Mangrove Planation and maintaining at Luni Hamiramora site.

Till the date 162 hector area have been planted with Avacinia marina mangrove species which provided **46247 person days** and create environment Sustainability as well.

Years	Mandays
2012-13	6943
2013-14	1480
2014-15	3240
2015-16	3533
2016-17	3125
2017-18	3666
2018-19	7539
2019-20	6261
2020-21	5020
2021-22	5440
Total	46247

Project Fish

Skill Enhancement of Fisher folk Youth

Objectives

- To Promote long-term socio-ecological effectiveness through focused interventions like employment through Skill enhancement.
- Engage more than 500 fisher folk youth in Skill Development Training to provide consistent scope of income
- Alternative incomes mean fishers are less pressured to go out to fish especially when the weather is bad
- Skill Enhancement in technical sector will motivate them for Education provision in future generations
- Livelihood interventions to improve fisheries dependent households and also reduce risk during open sea fishing

Project Goal

To develop new livelihoods opportunities for more than 500 fishing families and therefore to helping with family finances this leads to an increased sense of empowerment and confidence.

Pre-launch Activities

Brewing Big

Fish project ideation bring into existence after researching and analyzing the existing situation of Fisher folk youth and challenges they face due to which the future of the community was at stake.

The future of any community depends upon its youth. Considering this phenomenon, Adani Foundation targets fishermen youth at remotest location of Kutch district covering villages like Zarpara, Navinal, Mundra, Shekhadiya and others.

The key activities conducted before the launch were:

Mobilization - Team reaches out to villages to created awareness regarding the purpose of project and providing detailed information about training and the employment opportunities provided to them.

Counselling - A regular Interaction with every potential beneficiary to understand their educational background and interest areas along with mental and emotional capabilities. On the basis of individual's educational background and capabilities, counsellor suggests best fit course to the beneficiaries.

1 Jan' 2022

11 Jan' 2022

10 April 2022

Project Launch

Getting started

Project 'FISH' was inaugurated with an aim to enable fishermen community youth in 3 trades
Assistant Electrician, Mason and Digital Literacy.

52 aspirants from community were given an opportunity to get holistic skilled development environment by Adani Foundation under Adani Skill Development Centre. The certified training program of ___months. The expert trainers of ASDC acts as a catalyst to develop not just technical skills but to provide trainees a holistic learning platform to develop their personality and to make them industry ready.

Job Roles

- ❑ Mason General
- ❑ Bar Bender & Steel Mixer
- ❑ Assistant Electrician

Training & Beyond

Skill journey of Beneficiaries

Life at Skill Centre

Once beneficiary enrolls in a skill training program, he undergoes various modes and methods of training to develop his overall personality during his technical skill journey.

The training cycle started with theory sessions and practical sessions in respective job roles. Post that, Soft skills sessions and activity based learning sessions were conducted to boost their confidence. Though, beneficiaries start career at entry level, to grow themselves further ASDC prepares them with well with sessions like communication skills and Digital literacy.

I am happy that I am getting chance to get skilled and choose to make a living doing other occupation and no more dependent on just fishing. When my trainer appreciated my drawing skills for project and grasping power,
I got determined to study dedicatedly to score maximum in my assessment.

- Rahim Bhatti

In 3 months of training, I feel immense confidence in myself. My changed personality is even witnessed by my family and friends.
Post training session, I even do home study and discuss queries with trainers regularly to get myself prepare for my first job.

- Ayub Vagher

Initially I was hesitant to speak in class and also struggled in theory sessions. But our trainer is so supportive and helped me to understand better through practical.
I am looking forward to start my career post skill training and all set to enter into an occupation to make my parents and fishermen community proud.

- Abdullah Vagher

Transforming Lives

Home like meal service by SHG members

One of the interesting initiative of project the 'Fish' is the involvement of SHG group women named 'Saheli Gruh Udhyog' in the successful training of fishermen youth in the form of providing freshly cooked meal for the beneficiaries and arranging their lunch at training centre.

Adani Skill Development centre has given a meal service contract to SHG member and bears complete cost of beneficiaries meal and supporting SHG members in expanding their services.

About 'Saheli Gruh Udhyog'

It's a group of 10 members among whom, some are widows. They are making active efforts to run their SHG group by providing meal services for their sustenance.

Getting a chance to serve 52 young men for 3 months proved as a big achievement for their SHG group. *Moreover, food quality is appreciated by trainees and they express their gratitude by saying 'the food reminds them of home as it tastes like home'.*

Sustainable Livestock Management

The inadequate rainfall and high saline ground water acts as a threat for agriculture practices. Also, cattle sustenance is the main cause of concern due to dry arid region in lean months. Adani Foundation contributed its exceptional efforts in Mundra block for consistent betterment in livelihood sector.

The organization has carried out remarkable activities in the agricultural and animal husbandry sectors i.e. Cattle Health care, Natural Farming, Soil health enhancement, Fodder sustainability etc.

Pashudhan :

Fodder Support Programme, Individual Fodder Cultivation

- Adani Foundation provides good Quality dry and green fodder to 24 Villages. Project is covering total 14116 Cattle's / 3008 farmers and hence enhancing cattle productivity. Fodder support is of prime importance for sustaining the cattle in dry months.
- Fodder Cultivation- To made fodder sustain villages - 25 Acre Gaucher land of Siracha village is being cultivated for the same.
- Fodder support MOU- with Gram panchayat at Zarpara, Nana Kapaya, Borana, Mangara, Sadau, Shekhdiya , tuna , Rampar, Dharab, Navinal, Luni, Gundala, hamiaramora , Raga.
- Individual Farmer fodder cultivation supported for Maize seed and NB21 to more than 200 farmers which has created revenue of Rs. 27 Lacs.

Preventive Health Care

- Adani foundation and Government Animal hospital jointly organizing Cattle awareness camps total 22 villages .
- Vaccination of susceptible animals against foot-and-mouth disease (FMD) is a well established strategy for helping to combat the disease. Traditionally, FMD vaccine has been used **to control a disease incursion in countries where the disease has been endemic rather than in countries considered free of the disease**.
- Foot-and-mouth disease (FMD) and Deworming done with 1883 cattle owner benefitted to 15700 cattle.
- Sheep and goats have weakened immune systems when they are sick with other diseases, are quite young or old, and during highly stressful events such as lambing. Deworming strategies should seek to protect these higher at-risk groups, controlling parasite levels in all animals to prevent visible effects of parasitism.
- Special Camps organized at Kira Dungar Nakhatrana for camel which benefitted 525 camels.




To protect Cattles against **Bovine Brucellosis** zoonotic disease, Awareness and vaccination program is ongoing with Kutch fodder fruit & Forest development trust (KFFT) in our 13 Villages , Last year 287 families 2132 Animals benefited. In 2021, **In Total 666 families 5083 animal benefited.**

Bovine brucellosis is a chronic infectious disease of cattle that causes abortion, the birth of weak or dead calves, infertility and, as a consequence, reduced milk production. Cattle and buffaloes of all ages are susceptible, and infection can persist for many years. In females, abortion is the major clinical sign, typically occurring between five and seven months of gestation. Most infections result from ingestion of bacteria either from diseased animals or contaminated feed. Infection may also be acquired by respiratory exposure and by contamination of abraded skin and mucosal surfaces. Infected bulls can spread the disease through semen. This disease is also zoonotic (a disease that can be transmitted from animals to people or, more specifically, a disease that normally exists in animals but that can infect humans). Under this project following activities were carried out so far,

- Meeting with Gram Panchayat, Farmers and Livestock Owners.
- Development and Distribution of the Awareness Materials among the stakeholders.
- Mass Level awareness by pasting the poster and meetings with Village Leaders and Gram Panchayats.
- Primary Survey and Sample Collections i.e. Milk Ring Test, Blood Collection and testing.
- Brucella Vaccination and Ear Tagging etc.

Sustainable Agriculture

Sustainable agriculture is to protect the environment, public health, communities, and the welfare of animals. Sustainable agriculture also promotes economic stability for farms and helps farmers to better their quality of life.

Soil Enrichment, Crop Pattern, Agro Cover, Natural Farming, Orchard Development, Tissue Culture, Water Harvesting Practices, Replacement of chemical fertilizers and pesticides, Bio intensive Integrated Pest Management are the main parameters of Sustainable Agriculture Practices.

Sustainable Agriculture benefits are:

1. Contributes to Environmental Conservation
2. Saves Energy for Future
3. Prevents Soil Erosion
4. Enriches Soil quality
5. Biodiversity
6. Sustainable Livestock management
7. Economically Beneficial For Farmer
8. Quality Food to consumers

Home biogas

Home biogas is the Israel based company was founded in 2012 manufactures dynamic biogas unit not only for farm waste but for kitchen waste too.

- Reducing organic waste,
- Transitioning to renewable energy
- Motivation for reduction in use for fertilizer

And Improving the health and living conditions for the millions of families that are still cooking on charcoal and wood. Adani Foundation is not only supporting but creating awareness to save environment and health of the community who regularly cooking on Chula. It is proven that one hour cooking on Chula is as dangerous as smoking 40 cigarettes.

As a Main Process, Bacteria break down organic waste in a naturally occurring process, and Home Biogas stores and harnesses the energy created so that it can be used for gas.

Sustainable agriculture Project is revolving around Home biogas which is not just utilized for cooking gas but its by product is bio slurry which is replacement of chemical fertilizers and promotes soil enrichment.

Adani Foundation has supported for **223 Home biogas system** till date with 20% participation by the community.

As per SORI use of biogas each farmer can save Rs.23399/-year. Total 223 farmers can save Rs.5217977/- in a year.

Promotion of Natural Farming

To promote Natural farming Adani Foundation has originated cow based farming initiative with interconnected techniques which can increase farmer yield – our main objective is to improve quality of soil. Pre testing and post testing is carried out for designing carbon content management of soil.

Implementation

- Survey and identification of farmers to adopt Natural farming –**Total 150 Farmers were selected as criteria in first phase of the Project.**
- Arranged Workshop & Hands on training for them which was conducted by Agri expert ,KVK and Progressive farmers with 700+ farmers.
- **23 vermi compost unit have been set-up** to give guidance n training to other farmers. This units are provided Which is facilitated through Government with farmer Contribution.
- **150 Farmers have started to preparing JivaMrut & Gaukrupa Amrutam Bio-fertilizer** and using in agri crop. Series of Training is arranged by ATMA and Adani Foundation in which more than 700 farmers participated.
- Four Farmers Groups is registered with **ATMA –Agricultural technology management Agency – it will leverage Government schemes.**

Promotion of Horticulture : Kutch Kalptaru FPO

Kutch Kalpaturu Producer Company (KKPC) is established to address the challenges faced by the farmers, particularly to enhanced access for inputs, technology up gradation in Agri practices, output, Sorting, Grading, Value addition & marketing. by the farmers of Mundra Block in the year of 2020. The company is started with 350 shares of 280 holders, Right now it is on path of expansion up to 5000 Farmers.

Current year for the dates Packaging and Marketing, KKPC Started to sell **10 Kg capacity packaging Box** at Minimum Profit Margin At **Rs.29/Boxes** which resulted in turn over of Rs. **24 Lacs with Profit of 1 Lac.** This initiative has supported more than 1800 farmers indirectly.

Regular Director Board Meeting as well as capacity building Training were arranged.

In Coordination with KKPC, Adani Foundation has supported for Dates Offshoot plants to 100 farmers. It will start fruiting from 4th year and matured from 7th year. 4th year

expected yield is 50 Kg. and Minimum fetch rate is 50 per Kg so each farmer will produce 1000 Kg high quality dates and Rs.50000/- income from it and all 100 farmers will produce 100000 Kg dates and income will be generate Rs.50 Lacs in first fruiting year.

It will increasing year by year till 7th year, when dates plants matured and after that 2000 plants produced 300000 Kg expected high quality dates and expected income will 1.5 Cr. Approx.

Five farmers are cultivating Dragon Fruits in 2 acre each – Total 11000 plants.

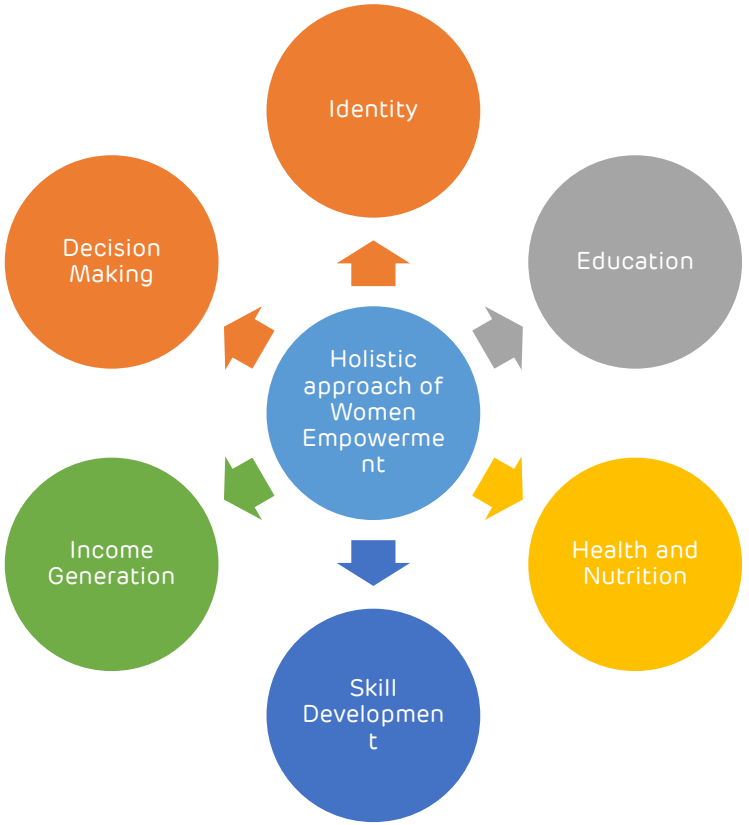
Women Empowerment Projects

Women are central to the entire development process, be it in an individual family, village, state or to a nation. Adani Foundation provides platform to community women to break the ceiling and move out as a change makers in their communities and among societies keeping their traditions intact. A considerable change has been witnessed in Mundra in terms of development of women beneficiaries in various fields of occupation like farming, self entrepreneurship, agriculture, etc. Adani Foundation has a special focus on empowering rural women and uplift by providing sustainable livelihood support resulting socio-economic shits in rural population.

The below mentioned figure shows determinants associated with the empowerment of women and these are the challenges for us as a CSR to work upon.

Adani Foundation focuses on is all parameters as a part of holistic approach towards empowering Women.

- Education – **More than 1200** girls are impacted under project Utthan. Project promotes girl child education, Creating awareness through various Govt schemes like Vahali Dikri Yojana, Sukanya Samriddhi Yojana and others.
- Health and Nutrition – Suposhan Project focus on adolescent and Reproductive age women nutrition part. Till date covered more than **12500 women** and **8700 adolescent** under this Project and brought them to considerable status.
- Skill Development and Income Generation – Adani Foundation is working with **15 Self help groups** and supporting to develop entrepreneur skills to become self reliant, sourcing more than 350 women to absorb in various job – this will give them identity, confidence and right to speak in any decision for home, village and working area.
- Drinking Water and Sanitation – Total **115** Roof Top Rain Water Harvesting is supported for hassle free household chores. **1057** families are supported for Potable water at Fisherfolk settlement to reduce drudgery of women.



Total 15 Active SHG Groups are engaged as mentioned in table Income generation activity. We facilitate them capacity building training for quality ,Marketing Finance and team work to made them self sustain.

Major Achievements:

- Saheli Swa Sahay Juth have **completed order of 15000 Sanitary pad** from District Health Department.
- "**Shradhha Saheli Sva sahay Juth**" has won tender to provide Catering service in Block level Government.
- **Tejasvini SHG has received order** of three layer mask preparation worth Rupees Nine Lacks
- **Sonal Saheli** Women SHG had **supplied 500 KG washing powder** to Adani port & Will mar.
- Shradha Saheli & Jay Adhar Saheli have been registered in FSSAI (Food safety and standards Authority of India.
- Turn over of Tejaswi Saheli, Shraddha Saheli and Meghdhanush Saheli is **@ 40 Lacs till date**.

Sr. No	Name of IG activity	Activity	Nos
1	Sonal Saheli Swa Sahay Juth	Phynale & Washing Powder	11
2	Jay Adhar Saheli Swa Sahay Juth	Dry Nasta	12
3	Tejasvi Saheli Swa Sahay Juth	Stiching,Uniform,Bag	12
4	Umang Saheli Swa Sahay Juth	Soft toys, Jula,	13
5	Vishvas Saheli Swa Sahay Juth	Tie & Die, Stitching	13
6	Jay Momay Saheli Swa Sahay Juth	Tie & Die, Stitching	12
7	Meghadhanush Saheli Swa Sahay Juth	Mud Works,	10
8	Saheli Swa Sahay Juth	Sanitary Pad	10
9	Radhe Saheli Swa Sahay Juth	Dhadaki, Small Godadi	14
10	Shraddha Saheli Swa Sahay Juth	Fresh Food	10
11	Chamunda Saheli Swa Sahay Juth	Tie & Die	10
12	Jay shakti Saheli Swa Sahay Juth	Stitching	10
13	Navdurga Saheli Swa Sahay Juth	Sanitary Pad Sale	10
14	Sakhi Saheli Swa Sahay Juth	Sanitary Pad Sale	10
15	Sonal Krupa Saheli Swa Sahay Juth	Stitching	10
		168 Members in Group	

Economic Empowerment of women means “Enhancing the role of women as drivers of poverty reduction, promoting female investors and entrepreneurs as per SDG 5” in this half year all 15 women groups did turn over of Rs. 11.5 Lacs. 43 women got job in various SEZ industries by AF intervention and 11 women got absorbed as Gram Rakshak Dal, Bank Sakhi and Bima Sakhi.

Registration Certificate
Government of Gujarat
Food And Drugs Control Administration
Food Safety and Standards Authority of India
Registration Certificate under FSS Act, 2006

/ Registration Number: **20721013000245**

1.	Name and permanent address of Food Business Operator (FBO)	JAY AADHAR SAHELI SVA SAHAY JUTH BAROI , Baroi , Mundra, BHUJ(KUTCHH), Gujarat-370421
2.	Address of location where food business is to be conducted / premises	BAROI, Baroi , Mundra, BHUJ(KUTCHH), Gujarat - 370421
3.	Kind of Business	General Manufacturing
4.	Photo Identity Card	N/A

This Registration certificate is issued under and is subject to the provisions of FSS Act, 2006 all of which must be complied with by the petty food business.

Place / BHUJ(KUTCHH)
Issued On / 12-03-2021 (New Registration)
Valid Upto: 11-03-2022 (For details, refer Annexure)

Registering Authority

Annexures:
1. Product Annexure
2. Validity Annexure
3. Registration Id Card

Note:
1. **Application for renewal of Registration Certificate can be filed as early as 180 days prior to expiry date of Registration Certificate. You can file application for renewal or modification of Registration Certificate by login into FSSAI's Food Safety Compliance System(https://foscos.fssai.gov.in) with your user id and password or call us at 1800112100 for any clarification.**
2. **This Registration Certificate is only to commence or carry on food businesses and not for any other purpose.**
3. **This is computer generated Registration Certificate and doesn't require any signature or stamp by authority.**
4. **This Registration Certificate is allowed to conduct food businesses activities having annual turnover upto Rs. 12 Lacs only.**

Community Resource Center

Adani foundation acting as bridge between Government and needy beneficiaries to facilitated government scheme leverages since 2015. and after our efforts and observation, we decided to established Community resource center, where people can have easy access for Guidance and complete all necessaries document for Government Scheme.

CRC is Located just near to Mundra Bus stand and known to all People.

In the year of 2021-22 Total 667 people have benefitted through CRC center.

Total 2243 beneficiaries have been benefited and get support through Government and Adani Foundation. Among them more than 712 people have been getting financial support as Monthly base that is. Rs16.Lacs.

Scheme Detail	Beneficiaries 2021-22	Remarks	Total Beneficiaries	Revenue Convergence (Rs)
Senior Citizen	10	Rs.750/ Month	104	78000
Online Application	13		13	
Widow Pension	289	Rs.1250/ Month	526	657500
Medical Certificate	59		59	
AF Support	32		32	
Divyang pension	2	Rs.1000/ Month	7	7000
E-Shram CARD	8		8	
Divyang Job	14		14	
Sukanya	123		123	
Vahali Dikri	23		23	
Bal Yog Yojna	51	Rs.2000/ Month	51	102000
Covid -Support	13	Rs.50000/ one time	13	650000
Aditya birla Scholarship	30		30	
palak mata pita		Rs.3000/ Month	9	27000
sanakat Mochan		Rs.40000- One Time	2	80000
Tool and Kits Support by through Government			1057	
Support By AF (Widow and Divyag)			159	
Ration support To Widow and Niradhar			13	
Total	667	0	2243	1601500

Project Swavlamban

Project Swavlamban Launched with an aim to make **differently abled people of MUNDRA TALUKA self sustainable.**

Our objectives:

- To increase awareness about Government schemes for Divyang people, widows and senior citizens and coordinate them with Social Welfare Department, Government of Gujarat.
- After getting income generation equipment support - Proper training provision to make them self-reliant in true sense!!
- Adani Foundation is playing key role as facilitator in case of tie up with Government Scheme for Widows, Senior Citizens and Handicapped people. The identity cards are issued for the handicapped in coordination with Bhuj Samaj Suraksha Khata which is beneficial for them to get specific kit for their disability type. This year **154 beneficiaries** linked up with pension scheme.
- The financial benefit of the senior citizen Yojana is Rs. 500 per month and the widow scheme is of Rs. 1250 per month. Jilla Samaj Suraksha Officer and team remain present every time.

Community Infrastructure Development

Building a strong community relationship is the key to progress of Adani Foundation. The programs such as Education, Health and Sustainable livelihood development play a very important role in building this strong relationship with the community. These three programs are incomplete without the inclusion of the Rural Infrastructure Development program.
This year on path of sustainability, we have taken some steps as follows...

Under Fisherfolk Development Project, Adani Foundation has constructed 46 shelters at Randh Bandar with pre cast structure. Fisherfolk Community cum Training center is the biggest project of current year and will also create impact as a boon for fisherfolk youth for various trainings.

Balwadi development work at Bandar and Shed for Adani Skill Development Center for technical trainings will also improve quality of many lives in true sense.

- 23 Fishermen of Randar bandar are benefitted to Pakka House constructed under AF Fishermen Avasa yojna
- Renovation and Up-gradation of Check Dam & River Rejuvenate work at siracha and Bhupur villages.
- RRWHS & Bore well recharge Construction at Various Villages.
- Basic amenities and maintenance and reparing work at all Fishermen vasahat.
- Community gathering and training Center construction at Different villages
- LED Street Light and Sky Lifter Structure at Municipality Mundra Baroi.
- Supply & Fixing of Hi Mask Tower at Gundala village work.

Adani Skill Development Centre

A section 8, not-for-profit company, registered on May 16, 2016, 'Adani Skill Development Centre' is an initiative of Adani Foundation. ASDC focuses on skill development activities to contribute towards nation building by bridging the skill gap demand & supply, in line with Government of India's Skill India Mission.

"SAKSHAM" is an ideology of the Adani Skill Development Centre to make youth of India 'SAKSHAM' (capable) of achieving their goals in life by becoming skilled professionals.

Mobilization and Counselling

Theory and Placement support

Practical training for all job roles

On the Job training

Post training placement support

A strategic model of skill training is implement by ASDC in which Mobilisers visit remotest locations to encourage youth and women to get skilled, Counsellors provide in-depth information and assist in suggesting need based course, Certified trainers with expertise provides theory and practical training. Trainees are provided with soft skills sessions and interview preparation sessions to make them employable and industry ready. For each batch, ASDC team will arrange Panel Interviews and Campus Interviews for trainees to get directly selected as soon as they complete training.

Practical Training : As a training part we are conducting other activities. We have conducted Learn with Fun activities, Parents Meeting, Certificate distribution program, Preparation for Interview etc.

Women's Day Celebration : Conducted 7 days seminar to empower female candidates in line with International Women's Day theme. More than 60 women participated.

Educational Exposure Visit of GDA candidates (DDU-GKY) at K. D. Hospital Ahmedabad. 21 candidates visited.

Guest session organised for trainees to provide them soft skills training and make them industry ready with a doze of motivation.

Certificate distribution to GDA batch Students

Course wise Admission Bhuj

Name of Trade	Total
General Duty Assistant	90
Digital Literacy	42
Financial Literacy	45
GST with Tally	169
Frontline Health Worker	11
Welding Technician	1
Basic Functional English	5
Beauty Therapist	5
Logistics & Supply Chain Management	1
Junior Crane Operator	3
Occupational Safety and Health Administration	1
Pedicurist and Manicurist	2
Domestic Data Entry Operator	2
Diet & Nutrition	41
First Aid	81
Total Admission	**499**

Name of Trade	Bhuj	Kutch University	Chanakya College	DDU-GKY	Total
Total Admission	97	179	191	32	**499**

Name of Trade	Total Trained	Placement	Self-Employed	Upskilled
General Duty Assistant	32	10	0	22
Digital Literacy	38	0	0	38
Financial Literacy	20	0	0	20
GST with Tally	92	0	0	92
Beauty Therapist	3	0	3	0
Junior Crane Operator	3	1	0	2
Pedicurist and Manicurist	1	0	1	0
Domestic Data Entry Operator	1	0	0	1
Diet & Nutrition	41	0	0	41
First Aid	41	0	0	41
Total	272	11	4	257

Name of Trade	Mundra
Basic Functional English	170
Digital Literacy	152
Self Employed Tailor	120
Pedicurist and Manicurist	107
Junior Crane Operator	54
Mason General	42
Bar Bender and Steel Fixer	42
Dori Work	22
Mud Work	18
Assistant Electrician	10
General Duty Assistant	6
GST with TALLY	5
Beauty Therapist	2
Data Entry Operator	3
Checker	1
5S	1
Total Admission	**755**

Placement Details for the F.Y. of 2021-22 (Mundra)

Name of Trade	Total Trained	Placement	Self-Employed	Upskilled
General Duty Assistant	6	0	0	6
Digital Literacy	99	0	0	99
GST with TALLY	5	0	0	5
Mud Work	18	0	18	0
Basic Functional English	105	0	0	105
Dori Work	22	0	22	0
Junior Crane Operator	46	25	1	20
Data Entry Operator	3	0	0	3
Pedicurist and Manicurist	27	0	27	0
Self Employed Tailor	29	0	29	0
Total Admission	**360**	**25**	**97**	**230**

CSR Nakhtrana

Adani Green Energy(MP) Limited (AGEMPL) proposes to setup an integrated wind energy project as Green Energy Works which includes Limestone 750 Mw, Through approx. **1250 windmill** at Dayapar to Nakhtrana in District Kutch (Gujarat).

- Socio economic survey of Widow women and than linked with Government Widow pension scheme Rs.1250 /Month. Total **246 widow women have been facilitated with Widow pension scheme** with convergence of Rs.307500 /Month on Regular basis.
- **Till the date 22 Bore well** were recharged at Ugedi and Deshalpar Villages. Two pond deepening work and **4 Old check dams** were repaired. Tree Plantation at Jinjay & Ugedi Villages Primary schools.
- **Government Scheme Awareness Session** was held at Deshalpar village on the silver Jubille of Foundation day .
- **Distribution of 1000+ Mangoes Sapling** to farmers of Ugedi and Deshalpar Villages for promotion of Horticulture farming.

CSR Lakhpat

Adani Cementation Limited (ACL) proposes to setup an integrated cement project as Lakhpat Cement Works which includes Limestone Mine in 251.9 ha area.

Main focus of Adani Foundation is to prevent community from life threatening diseases and provide basic healthcare services.

Activities:

- Barred land of the Kapurashi crematorium afforestation with **2222 different type of trees in collaboration of forest department and Bhagvati Gramaya Vikas trust**. Arranging **water pipelines to facilitate regular watering** of plants to ensure nurturing. Impact: Attracts peacocks and other birds at crematorium site.
- General health camp and speciality health camp was arranged frequently at villages. More than **425 Patients were diagnosed and refer to GK General Hospital** for further treatment and operation if needed.
- Sewing machine training was conducted Kapurashi women. Main objective of the training was to empower women to boost their self confidence and thus financial independency,

CSR Tuna Port (AKBPTL)

Adani Kandla Bulk Terminal Pvt. Ltd. is joint venture of Adani Ports and SEZ Limited and handles all types of dry bulk cargo including coal, fertilizers, minerals, industrial salt and agriculture products.

Various activities were carried out for the community development under core areas of Education ,Health ,SLD & community Infrastructure of Tuna ,Ramapar Vandi villages and Fishermen vasahat

Rural clinic and MHCU

Basic health facilities is being facilitated through Rural clinic Rampar, vandi and MHCU to vira bandar.

Specialist health camp was arranged at Tuna Villages. More than **184 patients was diagnosed and treated** as well as suggest to GKGH for Further test and treatment.

Drinking Water

Potable water supply to Dhavlavaro and Vira bandar vandi villages impact on fishermen health to reduce water born disease.

Covid Vaccination camp

covid vaccination camp was held at AKBTPL for labors and security Staff through government health department.

Fodder support

Fodder scarcity is always remained prime need of farmers which is being resolve through Fodder supply intervention to Rampar and Tuna village from April to July -2021 which improved cattle health and milk quality.

26680Kg Dry fodder support

721855Kg green fodder support

Pond deepening and bund strengthen of Rampar village pond increase water storage capacity.

Construction of Community gathering center at vandi village provide access for community function and training as well.

Water pipeline installation near to Rampar village pond to Watering tree planation which was developed by villagers and maintain regularly.

CSR Bitta

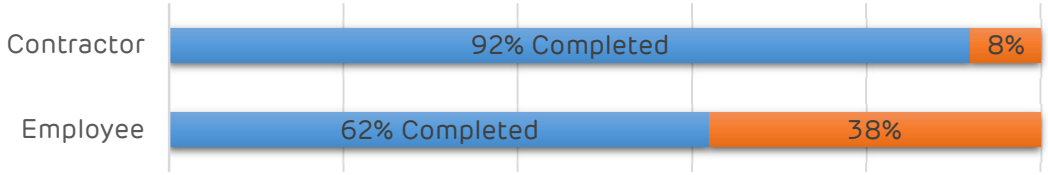
One of the Largest single location solar power project was commissioned by the Adani Group at Bitta, in Gujarat in year 2011. It spans a vast area of 450 acres. The massive plant comprises 2 lakh solar modules, 73782 foundations, 4500 tons of structure, 2800 km of cables, 56 inverters and 33 transformers. And now fully operational mode as well as connected with the 66 kV GETCO substation of GETCO TO powering 16,326 homes in a suitable manner and for the Sustainable rural development various Activities was carried by AF as mentioned.

- Avail Dinking Water and drainage line facilities by availing pipeline connection to Dhufi village which reduce drudgery and lead toward 'Swachh village'.
- Repairing and maintenance Bavnipar village cricket ground to offer hassle free playing ground as well; crated strong repo with Youth.
- Cleanliness of village Pond inlet in the Bita Village which lead more storage capacity and Village. Pond bunding construction in Dhufi village.
- Support Bita Primary school with Four Solar Light which reduce Electricity consumption and nurture renewable energy concept.
- Pota container and LED light support at Mathla check post for security and safety purpose.
- Cleanliness awareness session was conducted with Cleanliness program with youth involvement to create my Village clean village concept.
- Panchayat Building construction was carried out by Adani Foundation's support and technical guidance.

Dignity of Work Force Programe - EVP

India's National TB Elimination Programme (NTEP) aims to meet the ambitious goal, announced by the Honorable Prime Minister Shri. Narendra Modi, of ending the TB epidemic by 2025, five years ahead of the UN Sustainable Development Goals (SDG) of 2030. In response to this call, the Government of India and USAID jointly launched the Corporate TB pledge (CTP), in April 2019 to galvanized corporate support to end TB.

To continue the momentum and efforts, the USAID-supported iDEFEAT TB project, which is working towards institutional strengthening to accelerate actions for Tuberculosis (TB) and drug resistant TB (DR-TB) in India; was launched as USAID/India's flagship TB project. The project works in collaboration with the Central TB Division (CTD), Ministry of Health and Family Welfare (Mo HFW) of the Government of India across a network of diagnostic, treatment, and program management institutions.



No of sessions
155

No of Trainers:
89

No of days
44/50

Total no covered:
3433/3906

The CTP secretariat, hosted at The Union under the iDEFEAT TB project, provides technical assistance to government and corporates to adapt, implement TB interventions, and guide corporate resources for TB and DR-TB care.

Early diagnostics and treatment initiation are key to saving lives and minimizing disease transmission. In 2019, India reached a milestone of 24 lakh notified cases in India, an increase of 12% compared with 2018. Even then, an estimated 5.4 lakh were 'missing' across India, a serious drawback to our TB elimination efforts as what is not measured is unlikely to be improved. Diagnostic delays are also prevalent in India, with studies indicating that these can be attributed to patients as well as health systems.

Adani foundation with APSEZ, APML, AWL and MSPVL HR department in coordination of FOKIA has launched cluster based screening program to eliminate TB in labors under Dignity of workforce program. Adani Ports and SEZ Limited has initiated screening with 2300 work force in first phase with target of screening more than 10,000 workforce of all group businesses and SEZ Industries.

USAID/India team including Director – Health Office has planned to visit Adani Foundation CSR Activities related to community health. He visited Adani Hospital, GKGH Hospital and related activities.

"जन जन को जगाना है, टीबी को भगाना है"

Dignity of Work Force Programe - EVP

"Joy of giving week" celebrated by employees of APSEZ and AWL by distributing clothes and stationary items to labour workforce of APSEZ.

More than 7500 Clothes distributed to 650 workers of Labor Colony.

Support to children Vallabh Vidyalaya

In year 2018-19 year Adani group employees has adopted **704 students** and in year 2019-20 adopted **800 students** who are from families of migrant labourers working in various industries in and around Mundra.

And in 2021, **997 students were registered and** to make employees connected with children Vallabh Vidyalaya regularly send progress report twice in a year. Current year Women group of Samundra Ladies has donated Rs. 55,000 for support activities of School and motivation to teaching staff in street education.

De-addiction Awareness Campaign is going on with "Prajapati Brahmakumaris" at Labour Vasahat Areas. This campaign has changed life of many labours. Cleanliness Drive is organized in May and August with Adani Willmar Limited at vasahat areas. In this series of event 225+ labours remained present and 9 labours took pledge to leave liquor and Tabaco.

Events

Community Resource Inauguration

Inauguration of **'Community Resource Centre'** to support and facilitate community regarding various government schemes.

District Magistrate of Kutch Ms.Pravina D,K , IAS, District Development Officer was guest of Honour. Other dignitaries present was Mr Bhavya Verma – IAS ,Director, DRDA Mr Joshi , Director- Social welfare office Mr Arvind Rohadiya, Mr Chaudhary Sub Divisional Magistrate , Sarpach and volunteers from villages were remain present.

'**Schematic Guideline book super -51**' book launch on 3rd April . Book consists in-depth scheme information on , Health, Education, Fisher folk based schemes and Social welfare schemes.

All dignitaries along with National Rural Livelihood Mission (NRLM) **visited to Sanitary pad making unit**, ensuing support to create sustainable Group.

International Day of Persons with Disabilities

International Day of Persons with Disabilities is an international observance promoted by the United Nations since 1992. Since 2011 – **Adani Foundation Mundra is celebrating the day with enthusiasm and Zeal in coordination with District Social Welfare office** by planning various support to divyang people.

Adani Foundation has supported **more than 35 Divyang** to initiate their livelihood i.e. Stitching, Flour mill, Ration shop, E-Rickshaw, Gift Shop and Agarbatti making machine. In connection with this, current year Adani Foundation has organized **'Divyang Employment Fair'** in coordination with more than 14 Industries of Mundra on 1st December 2021. Same platform was utilized for distributing "**E-Shram Card**' with Labor Commissioner of GOG which will give benefit of Rs. 2 Lacs accidental Insurance and unique pension scheme (3000 INR per month for any Divyang after age of 60 years) for all Disable people of Mundra.

Total 28 Divyang had applied for interview and out of them 11 received confirmation for job. Apart from this 92 E-shram cards were developed.

World Wetlands Day programme

Adani Foundation, Mundra and Gujarat Institute of Desert Ecology (GUIDE), Bhuj-Kachchh has jointly organized the **World Wetlands Day programme on 2nd February 2022**

Shri. V. S. Gadhavi, IAS (Retd.) was the chief guest proceeded by Smt. Pankti Shah and officials from Adani Groups and Adani Foundation along with Dr. V. Vijay Kumar, Director, GUIDE and scientists from GUIDE were participated in the programme.

Eminent personalities; Prof. K. Padmakumar, Former PVC Kerala University of Fisheries and Ocean Studies, also Director, Centre for Marine Biodiversity, Department of Aquatic Biology and Fisheries, University of Kerala delivered an enlightening talk on "Mangroves Ecosystem – Global and Indian Perspectives".

Prof. I. R Gadhvi, Head, Dept of Marine Sciences, Maharaja Krishnakumarsinhji Bhavnagar University delivered a talk on "Mangrove Scenario of Kachchh" and in his talk highlighted the increase of mangrove cover especially in Kachchh district.

Dr. Sheetal Pachpande, Mangrove Foundation, Mumbai delivered a talk on "Mangrove Interpretation Center" that highlighted replication of such centers in Mundra, Kachchh for enhancing the knowledge among students, naturalists and local inhabitants in mangroves and marine sciences.

Students from the HSC Science school of Mundra .Block are Partcipated in Drawing competition and Students from Maharaja Krishnakumarsinhji Bhavnagar University, Bhavnagar; Atmiya University, Rajkot Did paper presentation. Among them decalared 1st winner for Paper presentation and 1st to 5th winner for Drawining competition as well Provide Precipitation certificate to all.

Apart Them Site Head and Adani foundation and All site head were remain present Virtually Program is conveyed by Mrs Panktiben Shah –UCH and concluded by Shri. V. S Gadhavi, in which he has pointed out the conservation and management of coastal and mangrove ecosystem and the need for the preparation of long-term action plan for the effective conservation of the same.

International Women's Day

Activities:

Bhuj
- Session on Gender Equality and Women Empowerment at G.K General Hospital, Bhuj. The guest of honour was Mr Nimaben Acharya, Speaker, Gujarat Vidhan Sabha.
- Felicitating **Disha Gada**, a woman pilot who rescued 275 students from Ukraine.

Mundra
- Session on Importance of Health and Hygiene for women organized in association with Rotary Club at Mundra.
- Honored 230 women of best two blocks of Anganwadi with certificate and memento for their successful contribution at work.

Nakhtrana
- General Health camp was organized at Nakhtrana Gram panchayat specially for women in collaboration with GKGH.

- Utthan
- Recreational activities for woman sahayaks, Educationalist, Principals, Sarpanch of 42 Utthan schools.

2059 Women participated in celebration of Women's Day week.

Fishermen Youth Employment Training

Inauguration of Technical Skill Development Training Program for the Fisher folk youth by Adani Foundation

Adani Foundation and Adani Skill Development Center had jointly inaugurated of the **"Technical Skill Development Training Program for Fisher folk youth on 10th January.** To Promote long-term socio-ecological effectiveness through focused interventions like employment through Skill enhancement and "To improve fisheries dependent households

In Phase I, 51 fish folk community youth will be skilled and certified in job roles like Assistant Electrician, Mason and Bar bender under 90 days training program supported by placements.

World Environment day Celebration

- Adani Foundation celebrated World Environment day on 5th June with Inauguration of Maiyawanki forest development.

Activities done on World Environment Day:

- **MOU with KSKV Kutch University** and Adani Foundation to provide technical guidance on **'Cow based'** natural farming.
- Conducted **training on 'Jivamrut' and 'Vermi compost preparation'** to farmers promote cow-based natural Farming with Home Bio-gas distribution.
- **Inauguration of Miyawaki forest developed at Nana Kapaya village** in 2.5-acre land with collaboration of Forest and Manrega Department and Gram Panchayat participation.
- **2000 trees have been planted with spreading awareness among people at various places of Mundra, Nakatrana and Tuna location.**

Adani Foundation Day

Silver Jubilee of Adani Foundation was celebrated on 11th August at Adani House Mundra. **11 women** were felicitated who have done Remarkable work in the their filed of Agriculture , Education , Entrepreneur, Government and having special recongnization among society and Communities for their work by Shree Rakshit Shah, Executive Managing Director- APSEZ and HR Head- APSEZ.

Also felicitated first fisherman youth- Shakil Manjaiya with Offer letter to work with APSEZ after completing Mechanical Diploma.

World water day celebration

World water day was celebrated on the Theme of "Groundwater, making the invisible visible" at Adani House auditorium **felicitating all progressive farmers with a memento** who have done remarkable work for water harvesting and management as an individual and at village level.

The event was graced by chief guest, Mr. Dipeshbhai Shroff, President of Kutch Nav Nirman, Mr. Rakshit Shah- EDM ,APSEZ , Mr. Yogesh bhai Jadeja Director of Arid Community and Technology, Mr. Niraj Kumar, Deputy director of NABARD ,Kutch.

Mr. Rakshit Shah, Executive Director, APSEZ expressed compliments to all **14** progressive farmers for their exceptional work for water conservation and management.

International Coastal Cleanup Drive

Indian Coast Guard, Adani Foundation team, NGO team, Students of SV Arts and Commerce College unanimously dedicated a day to clean Mandvi Beach and to create awareness among local community towards save guarding coastal areas by becoming responsible citizen towards clean ocean.

Utthan Second Phase Inauguration

Inauguration of Phase II of Utthan was inaugurated on 28th September spreading its impact to more 14 schools. On this occasion District Primary Education Officer, Utthan schools Principal and teachers have graced the occasion.

"Like an Oasis in a desert"

Dema ben's family has returned home from a neighbour country in 1971 war. Today Demaben is happy to be in her own country but prior to that she and her family faced lot of stress and underwent a lot of trauma living in a conflicted place away from home.

She lives with her Husband and daughters. Her one daughter is suffering from mental illness and completely dependent for care. Her husband is doing labour work in farms. He is sole bread earner of this vulnerable family. Being single earning person of the family doing labour work and a responsible father of a dependent daughter, his income is never sufficing which creates constant distress in family. Her willpower is strong, but all these did a toll on his health, and she suffered constant headache, Fatigue, High Blood Pressure, Nausea, etc.

Demaben Umed
Village Pragpar-2, Kutch

Dr. Mukesh Parmar, Adani Foundation inspected her condition, her BP was 197 /97 mmhg. He immediately started symptomatic treatment and later second follow-up, Dr started anti-hypertensive treatment and provided required medicines and advised her some lifestyle changes and list of food items to add in her regular intake of meals. On regular follow-up checkups and treatment, Dema ben followed her road to recovery. Dr has witnessed steady progress in her health, and she finally got a relief from a disease.

She expresses gratitude in her vernacular language expresses Adani Foundation as 'વિરાન જંગલ મા મીઠા જલ ની વિરડી સમાન' meaning 'Sweet water well in barren Jungle'.

"Live many more years Chacha!"

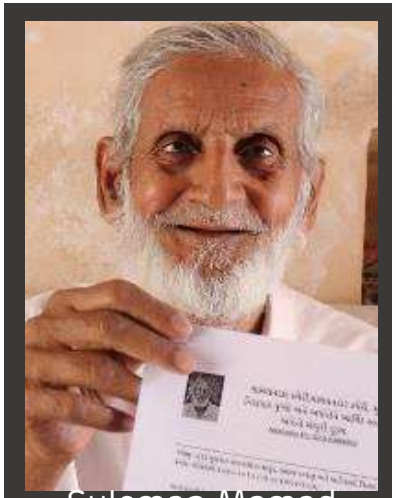
Ramzan Adam Chacha lives with his family at Juna Bandar. For the last 8 years he is the victim of Kidney Failure. He needs to go for dialysis regularly. However, the treatment facility was only available in Bhuj which compelled him to travel to Bhuj for 2 days in a week. He had to skip his work for the days, if there is any delay in his dialysis routine, which is very difficult situation for a fisherman whose income depends on daily catch, he need to skip his work to rest. Moreover, in his thin financial position, it was difficult for him to arrange money for the treatment and transportation too was a big issue. Learning about dialysis centre at Adani Hospital Mundra, he approached for aid from Adani Foundation.

Ramzan Adam Chacha
Village Shekhdiya, Kutch

In no time Adani Foundation team planned a routine dialysis for him against no cost. Earlier he used to visit thrice in a week and from the last two years, he is coming twice in a week. "Watching him every year is the biggest source of inspiration for not just me but our whole team. I wish Chaha to live many more years" says Manharbhai, Adani Foundation Employee.

"Mari toh umer vadhari didhi Adani Foundation e, treatment ma sahay kari," chuckles Ramzan Chacha in his local language. Meaning "Adani Foundation has prolonged my age by providing Dialysis support for the last 8 years".

: ‘Hands are softer than a stick’



Suleman Mamad Kevar
Village : Pragpar

A senior citizen named Suleman bhai hails from Pragpar village. Father of 6 girls out of which 5 got married. He lives with her wife and 1 daughter. Both Suleman bhai and his wife are senior citizens. Being a father of 6 girls, Suleman bhai was concerned about his financial situations, this did not stop him from giving best life to his daughters. 5 of them got married and youngest one is graduated. Suleman bhai and his wife along with daughters used to work as house helps and did labour work to earn living.

Due to their slim economic condition and constant labour work, Suleman Bhai's health started deteriorating. He started having blur vision, watery eyes and constant discomfort in his eyes. On consulting doctor, he got to know that he needs to undergo cataract surgery for both his eyes. It was heart wrenching to know for the family as the cost of surgery was too high. Someone recommended him to consultant Doctor from whom he got to know about ‘Adani Vadil Swasth Yojana’ under which Adani provides necessary health care support to senior citizens who are from underprivileged families. He inquired about the scheme and immediately completed all the necessary procedures to avail benefit of the scheme.

After completion of necessary formalities, He got his cataract surgery done for both the eyes on pro bono basis. He and his family were overjoyed that the surgery happened on time, saving his eyes from complete loss of vision. From here, Sulemanbhai stayed in constant touch with Adani Foundation team as a family.

He was also counselled about Vrudh Pension Yojana scheme of government by concerned Adani Foundation employee under which seniors above the age of 60 receives Rs. 750/- monthly in the form of pension. Adani Foundation has a dedicated group of employees working for rural senior citizens providing liasoning support to avail benefit of schemes to support the community. Under ‘Vrudh Pension Scheme’ both Sulemanbhai and his wife received Rs.1500/- every month. It might not be suffice but for them, it’s like a shade of tree from scorching heat.

On receiving amount for the first time, they contacted AF and expressed gratitude. He also encouraged his daughter Ruksana to spread awareness about these schemes to fellow villagers so that they can also get benefit from these schemes.

A naturalistic learner, shines bright in the class!

We have been fascinated to see how the holistic development took place in Seda Malshree Karaman, studying in class 5. An introverted student transforming into a dynamic learner is not only surprising to us but also to her family members. Mr. Mahendrasingh Solanki, School Principal of Zarpara Shala no. 3 says "I would like to congratulate Utthan team and Utthan Sahayk named Rajendra Chauhan for his commendable work in empowering progressive students and bringing them in line with average and above average performance level."

Malshree's story of transformation began during the pandemic period when schools were shut, and education was made available for the students at their doorstep under the title 'Sheri shikshan' provided by the Government of Gujarat. Seda Malshree Karaman was in class 4 in 2020. However, she is finding difficulties with the minimum level of learning.

During the home visit, Rajendra(Utthan Sahayak) met Seda Malshree. Initially, dealing with an introverted child was challenging. But slowly, within 10 days, he could boost her confidence.

On mentoring her regularly, Sahayak identified that she was a 'Naturalistic learner'. From the very next day, he started teaching Malshree with multiple natural resources which are easily available at her residence lived in 'Wadi'(backyard).

This was observed by her parents too. Slowly and steadily, Malshree took an interest in language and arithmetic. Gradually, Mr. Rajendra measured her learning outcomes by conducting a timely assessment. Her academic growth inspired other students too to give a lot of attention during classes. Today she is in class 5 where she can read, write, and do basic arithmetic calculations.

Name: Malshree Seda
School: Zarpara Shala No. 3

Hanif Mohammad
School: Deshalpar Group Shala

As Sunflower faces Sun, Progressive students always look forward to Sahayaks

Hanif, a small child was abandoned by his parents. Such young boy might even don't know what happened to him and why his parents left him. Hanif might not ask these questions today as he is too young to absorb all of it but it did affect him mentally and emotionally. It was obvious to feel isolated and different from other fellow student.

On one side, he is dealing with this somber transformation in life and adapting to living life with his uncle and aunt, and on other side, he has this immense interest and curiosity towards knowledge but lacked direction in life and also in academics. Under project Utthan, the purpose is to identify and uplift progressive students and bring them at par with fellow students. To do that, it's the duty of Sahayak to know a student inside out and that's what happened to Hanif.

On regular interaction, Uthhan sahayak motivated Hanif and taught him to start reading and practice writing skills. With consistent efforts Sahayak managed to make Hanif regular in school and made sure he does his homework daily. Not just that, Sahayak shared inspiring stories and motivated him to participate in 'Bal Mela Program' in which Hanif with the support of Sahayak prepared a Wind Mill from the waste. The project was successfully exhibited receiving appreciation from the visitors at Mela.

It is said that 'Distraction heals Pain' and in Hanif's case, he has completely changed his focus from pain towards his passion for learning. Hanif is rejuvenated to learn in this new academic year holding Utthan Sahayak's hand.

Anju Chauhan
Village : Zarpara

Uplifting progressive students

Little Anju studies in class 4th of Zarpara Primary School. She was in 2nd Class when the lockdown declared. Unlike urban schools, rural students do not get a chance to immediately start learning through online platforms. In such situation, Utthan Sahayak initiated online teaching and mentoring and tried to reach out to rural students who do not have access to mobile phones in their families.

Anju could not cope up with her education for 2 years and when she resumed school, she found out to be a progressive student due to her inability to read, write and count. School teachers noticed Anju's poor performance and handed over her case to Utthan Sahayak. It took few months, where one to one mentoring and teaching sessions were arranged for Anju and dedicated Utthan Sahayk made rigorous efforts to improve Anju's performance till examinations, preventing her from failing in class.

"Hard work and consistent efforts of Anju is appreciable. Yes, the start was tough but I was determined to bring Anju out of progressive students zone to average learner and we did it successfully." Says Bindya, Utthan Shayak

Adani Foundation as 'Moonbeem in Valima's lightless life.'

Valima is a senior citizen with disability (blind with both eyes) residing at Gurjarvas of Kutch District. Living in extremely poor condition. Her story is heart wrenching. She has proved to be an epitome of strength. She is a strong woman and even stronger as a mother who is taking care of her divyang and mentally challenged daughter who is 30 years old as of 2021.

One could get goose bumps to witness how this old blind mother takes care of her divyang daughter. Valima's two sons got married and started new life leaving mother and sister to suffer and survive on their own. With no vision but only pain in her eyes, Valima has fulfilled all responsibilities but now she is old. Adani Foundation's encounter with Valima was a beginning of the end of her problems. Earlier when her husband was alive, he used to make arrangements for family's survival. But now, Valima being blind and living in remote area is unaware of any of the schemes which can ease her living. Moreover, to get support from any of the rural development scheme, on needs identity proof and documents. Kanta, her daughter was not even having her identity proof, Valima was unaware of her widow pension rights and the support provided to divyang by government.

Here comes the role of Adani Foundation, to support the most needy and vulnerable who is completely devoid of information and their rights. Under project swavlamban, Adani Foundation provides end to end support to senior Citizens, Divyang and Widows. Adani Foundation team assisted valima to get necessary documents first. Starting from Ration card, Adhar Card, Voter Id, Disability card and Bank account was requested for her daughter and mother from respective departments . Post completion of all necessary compliances for documents, Valima started receiving 'Senior Citizen Pension', 'Widow Pension' and got free 'Bus Pass' for their ease of mobility.

Name: Valima L. Sibhi
Gurjasvas, Mundra

Narpant Singh Jadeja
Village Hatadi, Ta. Mundra

Overshadowing disability with his ability to make living.

Narpat singh resides in outskirts of Mundra. He lives a simple life. He, being Divyang, is unable to walk. Before few years, Adani Foundation provided him wheelchair for his ease of life. That's when he met Foundation team and stayed connected. His life was in routine before pandemic. He used to run flour mill and earn basic livelihood. At times, the mill does not work and creates problem. In those situations, Narpatbhai himself juggled with spare parts and repair it.

In 2021, His flour mill stopped working. He tried repeatedly but could not repair it by himself. Due to his less mobility, he was not able to move out and explore other options to repair it. With damaged machine, his income also stopped, and he got worried for his living. He contacted Adani Foundation again for the support. On inspecting his machine's condition, Adani Foundation decided that it does not require repairing, it requires total replacement.

Narpat Singh took a breath of relief as he was provided with new flour mill. 70% cost of flour mill was borne by Adani Foundation and 30% by Narpat Singh. Hearing about his new flour mill, villagers again started visiting Narpatsingh and his earning rose to 8000/- from 6000/- monthly.

Shakil Manjaliya
Village : Luni, Ta. Mundra

"From AVMA to APSEZ, Fishermen communities pride'

"From fishing to studying, from helping to hold a pencil to helping to have a social position, from my first book to my first offer letter, Adani has played a key role in my life." Proudly states Shakil

Shakil, A first generation learner of a fisherman community has studied in Adani Vidya Mandir School. It is an initiative of Adani Foundation to establish a school to provide free education to underprivileged and economically challenged community children providing best in class education for their bright future.

Hailing from fisherman community whose income mostly depends on daily wages, it was impossible for his parents to bare the cost of his education. Learning about Adani Vidya Mandir school, they applied for his admission. They fulfill the criteria of a deserving family and shakil's journey of change began by studying in school. He got 78percentage in 10^{th} standard, which motivated him to pursue engineering stream. He then, successfully completed Mechanical Engineering Diploma course and applied to APSEZ.

His intelligence and hard work surpassed his poor financial conditions. All the struggles he and family faced due to low income have come to an end. Shakil says "I used to dream in Adani Vidya Mandir that one day I will work and earn enough to change my family condition."

It's a fruit of his continuous sowing of hard work and dedication that he reaps employment in APSEZ. He got his first offer letter from Mr Rakshit Shah, EDM, APSEZ. Not just his family but even his teachers of Adani Vidya Mandir are proud of him today to see him grown so far and starting his career as first generation learner of his family who has managed to get livelihood in the form of job. Small steps taken for years will now lead to an socio-economic shift for all those fisher folk young boys and girls who have completed their education and will enter into a professional world with a dream to bring out community from a difficult living to an improved standard of living.

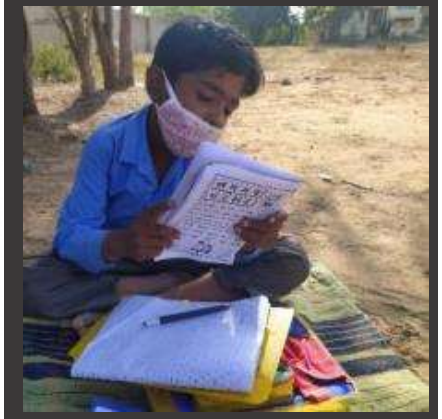
Ishaq
Village : , Ta. Mundra

"There is no greater disability in society, than the inability to see a person as more." – Robert M. hensel

Ishaq is a young 29-year-old responsible husband and a sole bread winner of a family. He was 14, when he got hit by Polio. He managed to complete his schooling and got H.S.C cleared successfully. He also achieved computer diploma degree to cope up with the present work scenario. Hailing from a Fisherman community, he is a first-generation individual who dreams to get employment. He always dreamt of working with Adani but never applied as he thought he is not ready yet. Therefore, He decided to get work experience for couple of years and apply confidently.

On one occasion where Adani Foundation organized 'Divyang Rojgar Mela' where Ishaq applied in an interview and showcased his knowledge, skills and dedication towards work. *Looking at his zeal and agility towards work and his preparedness, he was offered a job as a weight-bridge operator Job in APSEZ.*

Ishaq elated receiving an offer let his dream company and made his community extremely proud.
With open arms, Adani always welcomes Talent Divyang and Energetic Fisherman community to join hands for nation's growth with goodness.



Dipak Maheshwari
Village :

Getting back on track with Sheri Shikshan !

Dipak Maheshwari is a student of Muru Primary School. Losing his father at an early age has made him numb and inattentive in class. At first, he showed no interest in studies and slowly he started skipping lessons. His irregularity was concerning his school teachers where Utthan Sahayaks are contributing their mentorship and guidance to progressive student.

The root of his loss of interest in academics and difficulty to cope up with academics has started when his father was constantly keeping unwell and losing him has made Dipak vulnerable. He lost hope and was tired of making efforts to balance his emotions and studies. He chooses to remain at home.

On learning about Dipak's situation, Utthan Sahayak visited him to check on his mental and emotional condition. When Utthan Sahayak visited his place, Sahayak decided that it was not the right time to push Dipak to attend school, therefore he planned to teach Dipak under Sheri Shiksha teaching methodology (Study at home under the guidance of Sahayak).

Dipak found comfort and developed great understanding with Shayak and was able to grasp Foundation Learning Numeracy. Sometimes with written and other time by activities, Dipak used to study well. When he resumed his confidence and zeal back on track, Sahayak encouraged him to start his schooling again.

Utthan Sahayak keeps close contact with his family and still keeps a track on his academic performance.

Rasilaben Goyal

Right treatment at a right time !

Rasilaben is a 28year old woman from Fechariya village, Kutch. She has 6 sisters and 1 brother. Her father died due to cancer. Family's financial condition was stressful because they have incurred lot of expense for father's treatment but couldn't save him. Rasila, being the eldest among all sibling took all responsibilities on her shoulders. Loosing husband and a father of 7 children, Rasila's mother suffered a huge shock. She could not come out from the trauma and started keeping unwell. Unfortunately, her mother died in just few months after the father's demise. Situation could not get more worse than this for the family. Rasila had her uncle who used to run a small tea shop, he used to help family a bit as per his own capacity.

In 2013, Rasila started facing some health issues. She used to complaint of trouble in her stomach and also was facing gynecological problems. On her visit to hospital, she came to know that she has ulcers in her intestine. Her world had turned upside down, her siblings were not prepared to hear this devastating news. She started her treatment with a hope but continued to manage household chores and responsibilities of her siblings. But, the cost of treatment was 3,000 to 4,000 monthly, which is too much for a family to manage on their own. In such critical situation, they were in dilemma as to how to manage the cost of treatment when they don't have sufficient funds with them.

One her visit to G. K General Hospital, Rasila got satisfactory treatment but some of the medicines prescribed were supposed to be bought from pharmacy. She was not having enough money to purchase medicine regularly, therefore she approached Adani Foundation expecting some relief to support her in completing her treatment and medicines. Her issues were immediately taken into consideration, her medicines were arranged and provide to her for free.

For the past 2 years, Rasila's medicine expenditure is taken care by Adani Foundation observing fair improvement in her condition.

Ankita Bhatt
Beauty Therapist

'Smile on my client's face is my final touchup'

Ankita bhatt hails from Bhuj, kutch. She runs her own beauty parlor for the last 5 years now. Though her beauty treatment skills were good, she used to do selective basic treatment. Ankita believes, gone are the days, where we used to think this is a small service. Now, it's a booming industry where every year there is something new and advanced techniques comes up daily in beauty industry. Keeping up with industry is not an easy task.

Ankita's beauty skills were limited and stagnant and that's when she decided to take her profession seriously and master her beauty treatment skills and understanding through proper training. Also, the Covid years hit badly to small scale, self-entrepreneurs and service providers. She decided to utilize the no-rush time in developing new skills.

In Adani Skill Development Centre, online training program was a big hit in rural areas which enable women and girls to get trained just by sitting at home without Hustle. Post covid, all trainees were invited to complete their practical training at ASDC Bhuj Centre where Ankita cleared the program with flying colours and started earning better than before giving a new look to her parlour at home.

From Failures, one only gets better for the future!

Hetal Purabiya
General Duty
Assistant

"It was my mother's dream to see me working in Healthcare Industry. Even after ample efforts to get admission in GNM course to pursue dream, I didn't make it due to inadequate percentage. My confidence broke, thinking I will never get another chance to study further and will always remain a 12th pass.

I never knew any other way to fulfill my mother's dream until I learned about *GDA training course provided by Adani Skill Development Centre under DDUGKY scheme.* I decided to grab this moment to visit ASDC Centre. On my visit, I got amazed to see a hospital like setup which they call it as Practical Lab. I was well explained regarding the GDA training contents, systematic training methodology and as soon as I got to know that they are providing On the Job Training (OJT) with placement support, I got prompted to join immediately.

Unlike regular training centres, ASDC provides a lot more. *Regular guest sessions, activities and soft skills training helped us become industry ready.* Post completion of GDA course, it was the time to appear for interviews. I was confident not just because of the knowledge I gained but also because of my successful OJT period organized by ASDC. After undergoing GDA training, I became certified GDA , my lost confidence is back and I am determined to update and advance my health care skills to climb more ladders in future.

After 6 months of rigorous GDA training, OJT and placement support by ASDC, *my career kick started as Patient Care Assistant at Dr. Rashmi Shah Hospital, Kutch. I will never forget the moment when I hugged my mother and informed about my selection.*

ASDC has paved way for my successful career journey!" shares Hetal .

Hiral S. Darad
Beauty Therapist

From a next-door beautician to a professional one

"I am a 12th pass self-employed Beautician; I do beauty treatments at home. With no professional degree or certification, I never got a chance to take this work to the next level. Also, self-learning was not enough, I was looking for a training program, where I could get a mentor and practical training. In my locality, there was no option to learn beautician course and its difficult to learn from random videos. I am glad that I got recommendation from my friend about Adani Skill Development Centre, where Beauty Therapist training is provided in the form of certified course along with the planned theory and practical sessions. I got so happy thinking I will finally get to attend a professional training program which will add value to my basic skills and bring me close to my dream to become expert beautician.

It gave me lot of joy to see so many young girls and women coming to ASDC Centre while undergoing training at Centre, even housewives, working women joins courses as per their interest. In many of the cases, they have developed interest and became self-employed. One of the main reasons I love ASDC Centre is to see fellow friends/batch mates and develop a network of people with similar interests in our small town. Making friends and networking with trainees is very empowering. The reason is, we got to know stories of many women and how they are utilizing skills post completion of training course.

As I was also running beauty parlour before joining course, my aim was clear that I need to master beauty treatment skills and become professional. Not just me, but even my clients have witnessed a huge transformation in my beauty treatment methodologies post training. My training journey has been a most memorable one. Post completion of the course, my income increased significantly and the number of my clients rose to a level that most days I remain busy. "

Knowledge gives Degree, Skill gives employment.

Khushal Pargadu
General Duty Assistant

"I am a resident of Naliya village, Kutch district. I completed my Graduation and also did ITI. Coming from a village location, I couldn't find enough of job opportunities with me. Most youth of our locality, move out of hometown in search of job but this is not an option for many of us because of the responsibilities.

Khushal adds, "as much as I loved attending GDA sessions, I also thoroughly enjoyed my On-the-Job experience because we got to experience working directly under expert nurses and learnt that patient care which is the most critical and crucial element in any hospital. It was an overwhelming experience on initial days of OJT when we had to deal with lot of patients, managing time and serving patients with right kind of care in case-to-case basis. *No wonder why Health Care Providers are called as 'Warriors'. OJT was no less than a Healthcare training camp where me and my fellow batch mates were prepared to become Warriors to provide best of care to the patients."*

The major impact of GDA course run by ASDC Bhuj is that many young graduates who are from Bhuj and are looking for employment are preferring to come to the Centre because they don't have to move out of Bhuj to get skilled.

ASDC has provided a platform to get skilled under various courses and supports in placement which helps local residents to stay in their hometown and generate livelihood."

Awards

Adani Foundation received CII National Award for Excellent in Water Management 2021 for 'Water Conservation Project' on 7th January 2022 under National Competition for Water Management 2021. The Award ceremony was announced by Union Jal Shakti Minister in virtual presence of dignitaries from CII and nominees from other industries.

Adani Foundation awarded for CSR in water conservation at 3rd National Water Awards from the Ministry of Jal Shakti in the category of Best Industry for CSR activities, on 29 March 2022.

The award ceremony was conducted in the presence of President Shri Ramnath Kovind, Minister of State for Jal Shakti and Food Processing Industries, Shri Gajendra Singh Shekhawat, and Minister of State for Jal Shakti and Tribal Affairs, Shri Bishwesar Tudu.

Beneficiaries Data F.Y. 2021-2022

Sr.No	Program	Direct	Indirect	Remarks
1	Education	6585	26340	Utthan , Mundra & Nakhtrana
2	AVMB-Vidhyamandir	473	2365	AVMB Students
3	Community Health-Mundra	26129	193661	Rural clinic, MHCU,Health camp, AHMUPL
4	Community Health-Bhuj	16261	65044	Medical Support , Mahiti setu, Patients Care & Co-ordination
5	AHMUPL	31291		OPD and IPD Patients
6	SLD-Women	780	3900	SHG Group & Individual Incoem Generation
7	SLD-Agri & Animal Husbandry	7398	29731	Drip,Fooder,Home bio gas,Farmers training
8	SLD -Fisherfolk	6114	5490	Education, Mangrove, Water and Livelihood
9	CRC-Gov Schemes	667	3272	Government Schmes
10	CID	138174	189617	Fishermen Amenities & Shelter & Other Amenties
11	Nakhtrana	1428	5712	Utthan, Governemnt schems
12	Tuna	6601		Fodder,Health , Pond deepning
13	Bita	2150		CID & Pond deepning
14	Lakhpat	2455		women training and palnttaion
15	ASDC	1374	6870	soft skill and DL .GDA & Online Training
	Total	247880	657166	

Summary - Budget Utilization F.Y. 2021-2022

Rs. In lacs

Sr No	Particulars	Budget 2021-22	Utilization(LE) 2021-22	% of utilization
A.	General Management and Administration	76.12	79.27	104%
B.	Education	172.05	110.38	64%
B1	Utthan-Education -Mundra & Anjar	149.51	99.88	67%
B2	Utthan : Fisherfolk	22.54	10.50	47%
C.	Community Health	330.38	323.51	98%
D.	Sustainable Livelihood Development	426.28	453.84	106%
E.	Community Infrastructure Development	141.35	130.71	92%
F.	EDM Recommended Projects	100.00	82.01	82%
G.	COVID 19 Support	25.00	22.16	89%
	Total AF CSR Budget :	1,271.18	1,201.89	95%
[I]	Adani Vidya Mandir-Bhadreshwar	189.84	117.86	62%
[II]	Project Udaan-Mundra	167.42	66.85	40%
	TOTAL Budget with AVMB & UDAAN :	1,628.45	1386.60	85%
	Project "FISH"		106.00	
	GRAND TOTAL :	1,628.45	1,492.60	92%

Media coverage

અદાણી ફાઉન્ડેશન દ્વારા નાના કપાયા ખાતે ગાઢ જંગલ ઉભું કરાશે

અદાણી ફાઉન્ડેશન અને કચ્છ યુનિ. વચ્ચે સહયોગ થવા માટે એમઓયુ

કચ્છ પત્રિકા

અદાણી ફાઉન્ડેશન અને તાલુકા હેલ્થ ઓફીસના સંયુક્ત ઉપક્મે "ટી.બી.હારેગા દેશ જીતેગા" અંતર્ગત કાર્યક્રમ યોજાયો

કોરોનાકાળમાં મહિલાઓએ મેળવી રોજગારી

અદાણી સ્કિલ ડેવલપમેન્ટ દ્વારા મુંદરા વિસ્તારમાં તક ઊભી કરાઇ

અદાણી ફાઉન્ડેશનના પ્રયાસો રંગ લાવ્યા...

માછીમારનો દીકરો મિકેનિકલ એન્જિનીયર બન્યો, મોટી કંપનીમાં નોકરી પણ મળી

adani Foundation

અદાણી ફાઉન્ડેશનનો મંત્ર : સેવાનું ઉત્તરદાયિત્વ

મુંદરા એસઇઝેડ ઔદ્યોગિક વિવિધતાની ઓળખ

કચ્છ પત્રિકા

"શાળા બંધ પણ શિક્ષણ નહિ"

અદાણી વિદ્યા મંદિર , ભદ્રેશ્વર દ્વારા અંતરિયાળ ગામોમાં શેરી શિક્ષણ શરૂ કરાયું

કચ્છ

મુંદરામાં કોમ્યુનિટી રિસોર્સ સેન્ટરનો કરાયેલો પ્રારંભ

અદાણી ફાઉન્ડેશન દ્વારા બહેનો માટે કરવામાં આવતી કામગીરી

મુન્દ્રાની અદાણી હોસ્પિટલમાં કોરોના પોઝિટીવ દર્દીઓની કરાતી સેવા-ચાકરી

Media coverage

adani Foundation

અદાણી ફાઉન્ડેશનનો મંત્ર : સેવાનું ઉત્તરદાયિત્વ

મુંદરા એસઇઝેડ ઔદ્યોગિક વિવિધતાની ઓળખ

પ્રજાલક્ષી કાર્યોમાં અદાણી ફાઉન્ડેશન હંમેશાં અગ્રેસર

માનવ કલ્યાણ ટ્રસ્ટ સંચાલિત સાર્વજનિક સ્મશાનગૃહમાં પેવર બ્લોકના ફ્લોરનું ભૂમિપૂજન : માત્રમાં પેવર બ્લોક કરશે

મુંદરા, તા. ૨૯ : અહીંના માનવ કલ્યાણ ટ્રસ્ટ સંચાલિત સાર્વજનિક સ્મશાનગૃહમાં અદાણી ફાઉન્ડેશન દ્વારા બનાવાઇ પતરાંના શેડ અને માર્ગોમાં પેવર બ્લોકના ફ્લોરનું ભૂમિપૂજન કરાયું હતું. આ તકે કેપની પ્રજાલક્ષી કાર્યોમાં હંમેશાં સહયોગ આપતી એમ તેનું જણાવાયું હતું.

મુંદરાના માનવ કલ્યાણ ટ્રસ્ટ સંચાલિત સાર્વજનિક સ્મશાનગૃહ

કોરોના સામેના જંગમાં અદાણી ગ્રુપના પ્રયાસો

મુંદરામાં કોવિડ હોસ્પિટલ વિકસાવાઈ રહી છે, સીટી સ્કેન મશીન પણ સ્થપાશે : ઓક્સિજનની કટોકટી હળવી કરવા અનેક દેશોથી પુરવઠો મેળવવા ચક્રો ગતિમાન

વિશ્વ દિવ્યાંગ દિને અદાણી ફાઉન્ડેશન દ્વારા

મુન્દ્રામાં ૧૪ દિવ્યાંગને રોજગારી પૂરી પાડી દિવ્યાંગ દિવસની ઉજવણી કરાઈ

આત્મનિર્ભર બનાવવા ખુદની જરૂરિયાત થકી આજીવિકા પ્રાપ્ત કરી શકે તે દિશામાં સપ્રયાસો હાથ ધર્યાં છે.

કચ્છ પત્રિકા

અદાણી ફાઉન્ડેશન અને તાલુકા હેલ્થ ઓફીસના સંયુક્ત ઉપક્રમે "ટી.બી.હારેગા દેશ જીતેગા" અંતર્ગત કાર્યક્રમ યોજાયો

અદાણી ફાઉન્ડેશનના પશુ વિકાસ કાર્યક્રમ અંતર્ગત

પશુઓને રસીકરણ, કૃમિનાશક દવા તથા સારવાર

૧૨ ગામોના ૧૮૦૦૦ થી ૨૦૦૦૦ નાના અને મોટા પશુઓને આવરી લેવાના લક્ષ્યાંક સાથે શરૂઆત

'જોય ઓફ ગિવિંગ' અંતર્ગત ૭૫૦ જરૂરતમંદોને

અદાણી ગ્રૂપના કર્મચારીઓ દ્વારા કપડાં અને રમકડાંનું વિતરણ કરાયું

મુન્દ્રા

'જોય ઓફ ગિવિંગ' એટલે કે કંઈ આપવાના આનંદની ઉજવણી કરતા અદાણી ગ્રૂપના કર્મીઓએ અદાણી ફાઉન્ડેશનની માધ્યમની ત્રણ શ્રમિક વસાહતના ૭૫૦ જરૂરિયાતમંદ લોકોમાં કપડાં અને રમકડાંનું વિતરણ કર્યું હતું.

કોર્પોરેટ અફેર્સ પોર્ટ અને રમકડાં એકત્ર કરાયા હતા. તાજેતરમાં અદાણી વિલ્મર સામેની વસાહતોમાં અદાણી પોર્ટ અને સેઝના

અદાણી ફાઉન્ડેશનને

CSR પ્રવૃત્તિ માટે એવોર્ડ

કેન્દ્રીય જળ શક્તિ મંત્રાલય દ્વારા જાહેર કરાયેલા વિવિધ એવોર્ડ પૈકી ગુજરાત અદાણી ફાઉન્ડેશનને બેસ્ટ ઈન્ડસ્ટ્રી ફોર સીએસઆર એક્ટિવિટી માટે પ્રથમ નંબરના એવોર્ડની જાહેરાત કરાઈ છે. જળશક્તિ મંત્રાલય દ્વારા 11 વિવિધ શ્રેણીઓમાં રાજ્યો, સંસ્થાઓ અને વ્યક્તિઓ વગેરેને પુરસ્કાર અપાય છે.

Thank You

Annexure – 4

DISTROMED KUTCHH SERVICES PVT. LTD.

MONTH : Feb-22

Date	Challan No.	BMW WASTE CATEGORIES				Total Kg.	Sign.
		Category Yellow Yellow Bag	Category Red Red Bag	Category Blue Blue Bag/*C.B.	Category White *PPC		
1							
2	8-3-8433	11.200	7.200	1.200	0.800	20.400	
3							
4	8-3-8545	8	8.500	2.500	0.500	29.500	
5							
6							
7	8-3-8653	35.500	11.800	22.500	1.500	71.300	
8	8774						
9	8-3-87~~74~~	15.500	10.200	2.500	0.500	28.700	
10							
11	8-3-8884	20.580	11.500	5.800	0.500	38.380	
12							
13							
14	8-3-9004	33	15.500	11.200	1.200	60.900	
15							
16	8-3-9118	25.500	15.500	7.200	1.800	49.400	
17							
18	8-3-9227	10.050	10.500	6.600	0.500	27.650	
19							
20							
21	8-3-9345	40.500	25.280	10.200	1.120	77.100	
22							
23	8-6-0001	25.200	15.500	10	1	51.700	
24							
25	8-7-0052	20.050	11.120	9.900	0.600	41.670	
26							
27							
28	8-7-0210	40.500	22.200	15.600	1.500	79.800	
29							
30							
31							
	TOTAL	295.580	164.800	125.200	10.720	576.580	

*C.B. : Cardboard Box

Annexure – 5

Details of Greenbelt Development at APSEZ, Mundra

Total Green Zone Detail Till Up to March – 2022					
LOCATION	**Area (In Ha.)**	**Trees (Nos.)**	**Palm (Nos.)**	**Shrubs (SQM)**	**Lawn (SQM)**
SV COLONY	71.66	34920	7962	69696.00	100646.00
PORT & NON SEZ	81.61	149359	19220	75061.78	62966.38
SEZ	116.60	227120	20489	220583.60	28162.03
MITAP	2.52	8168	33	3340.00	4036.00
WEST PORT	109.37	256552	70831	24612.00	22854.15
AGRI PARK	8.94	17244	1332	5400.00	2121.44
SOUTH PORT	14.45	27530	3470	3882.00	3327.26
Samudra Township	57.27	63722	11834	23908.89	47520.07
Productive Farming (Vadala Farm)	23.79	27976	--	--	--
TOTAL (APSEZL)	**486.19**	**8,12,591**	**1,35,171**	**426484.27**	**271633.33**
		Total Saplings: 9,47,762 Nos.			

Annexure – 6

DETAILED ENERGY AUDIT REPORT

AT

Adani Ports & Special Economic Zone Ltd (Samudra Township)
Mundra,
Gujarat-392130, India

Prepared by

Eco Energy Solution

49, Sector 2, Sarika Society, Samrat Nagar, Isanpur,
Ahmedabad – 382443, Gujarat, INDIA

Feb 2022

ACKNOWLEDEMENT

We are grateful to the management of Adani Ports & Special Economic Zone Ltd for giving us an opportunity to contribute in their efforts towards efficient energy management by undertaking this Energy Audit study exercise.
Eco Energy Solution acknowledges with thanks the co-operation and support extended by management and operating personnel at Adani Ports & Special Economic Zone Ltd during the audit exercise. Detailed discussions and interaction were held with plant personnel throughout the course of the audit and awareness of energy conservation was noted as exemplary. We would also like to place on record our sincere thanks and appreciation for all plant executives. Our special thanks are to,

- Mr. D. Varu - Associate Manager
- Mr. G.Pavar - Assistant Manager
- Mr. J.Nandaya - Senior Engineer
- Mr. D.Joshi - Senior Engineer
- Mr. S.Trivedi - Senior Engineer

We are also thankful to the other staff members who were actively involved while collecting the data and conducting the field studies. We take this opportunity to also thank all the team members at various departments associated with this study of energy audit for extending cooperation during collection of on-site data.

We trust that the findings of this study will help plant management in improving the equipment performance thereby giving optimum energy consumption at Adani Ports & Special Economic Zone Ltd.

We have prepared this Energy Audit report document Adani Ports & Special Economic Zone Ltd, on a best judgment basis.

While all reasonable care has been taken in its preparation, details contained in this report have been compiled in good faith based on information provided and measurements undertaken at the facility.

For ECO ENERGY SOLUTION

Krunal Shah Lead Auditor (Partner)

Pushkar Khanna AEA 0260 (Partner)

Company Profile

Adani Ports and Special Economic Zone Limited (APSEZ) is the largest commercial ports operator in India accounting for nearly one-fourth of the cargo movement in the country. Its presence across 13 domestic ports in seven maritime states of Gujarat, Maharashtra, Goa, Kerala, Andhra Pradesh, Tamil Nadu and Odisha presents the most widespread national footprint with deepened hinterland connectivity. The port facilities are equipped with the latest cargo-handling infrastructure which is not only best-in-class, but also capable of handling the largest vessels calling at Indian shores. Our ports are equipped to handle diverse cargos, from dry cargo, liquid cargo, crude to containers.

Through its subsidiary Adani Logistics Ltd., APSEZ operates three logistics parks located at Patli in Haryana, Kila-Raipur in Punjab and Kishangarh in Rajasthan. With the ability to handle 500,000 twenty foot equivalent units (TEUs) annually, the Adani logistics business is growing at a rapid pace.

Over the years, APSEZ has evolved into a provider of integrated port infrastructure services, of which the Mundra SEZ in Gujarat is a landmark validation. Spanning over 8,000 hectares, the Mundra Economic Hub offers investment options as the largest multi-product SEZ, Free Trade and Warehousing Zone (FTWZ) and Domestic Industrial Zone.

The Company's integrated services across three verticals, i.e. Ports, Logistics and SEZ, has enabled it to forge alliances with leading Indian businesses making APSEZ an undisputed leader in the Indian port sector.

Along with its expertise in providing end-to-end logistics solutions, operational excellence, low-cost operations and synergies through acquisitions, APSEZ was also certified as a Great Place to Work in FY 2021-22. The Company is backed by a young and dynamic workforce that propels it to greater heights.

In order to reduce increasing energy costs, Adani Ports and Special Economic Zone Limited (APSEZ) approached ECO ENERGY SOLUTION for conduct of energy audit for their Mundra Plant at APSEZ, Mundra, Gujarat. This proposal was approved by plant vide its purchase order no 5702004681 dated 06.02.2022.

This energy audit report for APSEZ Mundra Port presents the analysis of the data collected, observations made and field trials undertaken from 18th to 20th Jan 2022. It is governed by the objectives, scope of work, and methodology discussed in ensuing report sections.

Key Result Areas for Energy Savings & Estimated Potential along with Broad Cost Benefit Analysis

Sr. No	Key Savings Areas	Remarks	Savings in power or Fuel	Annual Savings potential	Approx Investment cost	Simple payback period
			kWh or MT	Rs Lakh	Rs Lakh	Months
Short Term Areas						
1	Install M.D Controller to save penalty charges	Save Penalty Charges	1564779.6	19.56	2	1.22
2	Replace Main Irrigation Tank Submersible Pump by new Energy Efficient Pump	New Energy Efficient Pump to improve performance	12514.14	0.65	0.6	11.06
3	Savings Potential to optimized Pressure of STP Air Compressor	Reduction of pressure 2 kg/cm2	3888	0.21	Nil	Immediate
4	Savings potential to improve Efficiency of STP Samundra township Blowers	Improve performance of STP Blower	21546	1.12	0.3	3.2
Long Term Area						
5	Replace old 2 star to 5 star rated Energy Efficient AC's	New energy efficient 5 star rated AC	593750	30.88	105	40.8
6	Replace Conventional to Energy Efficient BLDC Fan	BLDC Fan Replacement	207360	10.78	48	53
	Total Electricity Savings	kWh	2403837.74	63.20	155.9	29.60

Intangible Savings:

AC'S:

- **Replacement with Inverter ACs**
  - Digital Inverter technology maintains precise control of room temperature and creates a comfortable environment. In conventional split Air Conditioners, the compressor switches off once the set temperature is reached, and switches on again after temperature drops. The time it takes for the Split Air Conditioner to switch on and off causes the room temperature to greatly fluctuate. With Digital Inverter, the inverter control reduces the compressor power once the desired temperature has been reached, but continues operating at a reduced state to maintain a stable room temperature with minimal fluctuations. By putting an end to on/off compressor operation, the inverter technology also allows Digital Inverter to significantly reduce noise levels; Superior reliability has been achieved, due to the reduction of the compressor ON/OFF cycles. Digital DC Inverter Air Conditioners provide this benefit to consumers, helping them to achieve various benefits such as saving of at least 25% of their energy costs. These air conditioners are much quieter and offer higher levels of efficiency as their noisier counterparts. The average AC power consumption as recorded during winter (present time) is about 55 KW. This is likely to be 30 to 35% higher during hot season. The average consumption could be put at 60 KW/month over year. The power savings with digital inverter type AC units would at 20% would be 12 KW/month. The annual energy conservation potential of this intervention is: 94,000 kWh/year.

- **Overhaul of Refrigerant Piping Insulation & Filter Maintenance**

  - The Gas pipe insulation was found to be damaged at various points on the AC units. Mending / replacement of insulation would improve the performance of AC units. Cleaning of filters of all indoor units and cleaning of condenser fins by jet pumps. Average life of typical Split Units is considered to be 10 years in dry climates without corrosive pollutants.
  - Using all Units at Specific Set Points can greatly reduce HVAC energy consumption. It was observed that the set-point for ACs was generally at 19 Deg C in the offices. All AC units may be set at 23/24 ^{0}C for optimum power consumption. The annual energy conservation potential of this intervention is: 28,500 kWh/year

- **Building-Envelope & Air-Conditioned Space Insulation**

  - Weather-Stripping of All Doors, especially the main entrance doors into all building cavities. Use of Air curtain on Ground Floor Entrance to curtail infiltration losses: Frequenting clients on Ground Floor through main entrance incurs losses due to infiltration. These could be curtailed using Air Curtains. The advantage would be more prominent during summa

- **Enhanced Use of Natural Lighting**

- Natural lighting available at the premises through the existing glass facades needs to be exploited to reduce the lighting load exerted. Currently, most of the glass facades are shielded using vertical-blinds and artificial lighting is used even in areas in the vicinity of glass panes. This intervention has the twin beneficial impact of reducing manufacturing related LCA impacts of lighting fixtures as well as reduced energy consumption. Some green architecture guidelines specify design lighting loads in the vicinity of 7.5 W/sq.m. For building occupancy of 10 hours/day, the average annual electricity conservation and GHG emissions mitigation per sq. m of naturally lit space relative to conventionally lit space is estimated to be 27 kWh/sq.m and 24 kgCO2e/sq. m.

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Chapter – 1
Introduction

General Information

Name of the Industry	**:** Adani Ports and Special Economic Zone Ltd (APSEZ) Samudra Township
Address	**:** PO Box No.1, Mundra, Kutch 370 421, Gujarat
Contact Person	**:** Mr. Jagmal Nandaniya Dy. Manager- Engineering Services
Industry Sector	**:** Township
Business Activity	**:** Township
Year of Establishment	:
Type of Work	: Detailed Energy Audit
Annual Electricity consumption	: 46,23,450 kWh (Feb-21 to Jan-22)
Address of the Auditors	: M/s Eco Energy Solution ECO HOUSE 49/2, Sarika Society, Samrat Nagar, Isanpur, Ahmedabad 382443 Gujarat, India
Energy Audit Team Members	: 1) Mr. Pushkar Khanna (AEA-0260) 2) Mr. Krunal Shah (Lead Auditor) 3) Mr. Nainesh Patel (Sr. Engineer) 4 Mr. Hadik Rabari (Engineer) 5) Mr. Anand Shah (Field Engineer) 6) Mr. Saif (Engineer) 7) Mr. Shiv Patel (Field Engineer)

1 Introduction

1.1 Preamble

- Adani Ports and Special Economic Zone Limited (APSEZ) is the largest commercial ports operator in India accounting for nearly one-fourth of the cargo movement in the country. Its presence across 13 domestic ports in seven maritime states of Gujarat, Maharashtra, Goa, Kerala, Andhra Pradesh, Tamil Nadu and Odisha presents the most widespread national footprint with deepened hinterland connectivity. The port facilities are equipped with the latest cargo-handling infrastructure which is not only best-in-class, but also capable of handling the largest vessels calling at Indian shores. Our ports are equipped to handle diverse cargos, from dry cargo, liquid cargo, crude to containers.

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- Over the years, APSEZ has evolved into a provider of integrated port infrastructure services, of which the Mundra SEZ in Gujarat is a landmark validation. Spanning over 8,000 hectares, the Mundra Economic Hub offers investment options as the largest multi-product SEZ, Free Trade and Warehousing Zone (FTWZ) and Domestic Industrial Zone.
- The Company's integrated services across three verticals, i.e. Ports, Logistics and SEZ, has enabled it to forge alliances with leading Indian businesses making APSEZ an undisputed leader in the Indian port sector.
- Average annual Electricity bill is in the range of Rs. 2.45 Cr. (Feb-21 to Jan-22) for APSEZ Samundra Township.
- In order to reduce increasing energy costs, APSEZ approached Eco Energy Solution for conduct of energy audit. Eco Energy Solution has submitted proposal. This proposal was accepted by APSEZ vide its Purchase order no. 5702004681 dated 06.01.2022. This energy audit report for Adani Ports and Special Economic Zone Limited (APSEZ) presents the analysis of the data collected, observations made and field trials undertaken by EES. It is governed by the objectives, scope of work, and methodology discussed in ensuing paragraphs.

1.2 Objectives

- To undertake an energy audit so as to identify areas for energy saving, both without and with investment.

- To prioritize distinct areas identified for energy savings depending upon saving potential, skills, and time frame for execution, investment cost, paybacks etc.

1.3 Scope of Work

- To correlate monthly data of production with electricity, fuels & water consumption, for a period of 12 months of normal operation to establish bench mark values for energy consumption.

- To study electrical energy metering, monitoring and control system existing at the plant and to recommend a suitable system for future monitoring.
- To study monthly power factor, maximum demand, working hours, load factor etc. for the reference period along with monthly electricity consumption and establish scope for MD control through possible optimization of load factor and through detailed load management study.
- To undertake a detailed motor load study on major continuously operating motors equal to and above 10 HP with the help of a clamp on multi-meter to identify instantaneous motor parameters like kW, KVA, P.F., A, V, frequency etc.
- Based on above, to evaluate the possibility of replacing major motors with energy efficient motors. To provide cost benefit analysis for the replacement policy.
- To study compressed air distribution system in the plant, in terms of compressor type, make, capacity, loading, motor type / size / loading etc. and to undertake output efficiency test for the operating compressors.
- To study existing requirements of energy provisions at present locations and to identify distinct possibilities of rationalization / savings.
- To study operation of utilities with the help of operating records kept and spot measurements taken during the field study and identify specific energy consumption of equipment in usage and identify scope for optimization through improved operating / maintenance practices.
- To study existing maintenance practices for utility systems and recommend areas for improvement in energy efficiency / savings.
- To identify, evaluate and prioritise energy saving opportunities into short, mid and long-term time spans depending upon investments, quantum of savings, skills and time required for implementation, etc.
- To recommend a time-bound action plan for implementation of accepted measures.
- To prepare draft energy audit report, present to management, undertake necessary modifications based on presentation meeting and submit the final report.

1.4 Methodology

- Eco Energy Solution deputed following team of experts for conducting the study and worked in close association with unit personnel.

  - Mr. Pushkar Khanna, Accredited Energy Auditor from BEE
  - Mr. Krunal Shah, Lead Auditor- Energy Management System
  - Mr. Nainesh Patel, Sr. Engineer
  - Mr. Anand Shah, Field Engineer
  - Mr. Hardik Rabari, Engineer
  - Mr. Saif, Engineer
  - Mr. Shiv Patel, Field Engineer

- Eco Energy Solution submitted an execution work plan for the assignment for which APSEZ personnel provided relevant data support.
- APSEZ Unit personnel nominated specific persons from engg. / Maintenance sections along with a coordinator of senior managerial level for this audit.
- Eco Energy Solution undertook an "Orientation Meeting" with management / engg. / Maintenance personnel prior to start of the audit.
- EES's team conducted all necessary field trials and measurements.
- EES provided all the instruments necessary for conducting the field trials.
- Following instruments were used by EES team.

Table 1 : Instrument Used by Audit Team

Sr. No.	Instrument Name	Specification
1.	Demand Analyzer	Suitable for 1φ, 3φ. 156 electrical parameters like voltage, current, frequency, harmonics, active & reactive power, power factor etc.
2.	Clamp-on Power Meter	0 - 1200 kW 0 - 600 Voltage, AC 0 - 800 Voltage, DC 0 - 2000 A, Current, AC / DC
3.	Power Quality Analyzer	3 Ph 4 Wire Recording Parameters: Voltage, Current, Frequency, Harmonics/ Inter harmonics up to 50th, THD of V, I and KW with K Factor, Transients, Voltage Sag- Swells, All Power Parameters, Inrush current, Load Unbalance, Flicker Recording etc. enabling graphical, vectorial, numerical representation, trending of data, monitoring of events etc.
4.	Lux Meter	0 - 50,000 lux level Non Contact Type
5.	Digital Thermo Anemometer	0 - 45 m / sec. ± 3%
6.	Relative Humidity and Temperature Indicator	RH – 10% to 95% Temp. – 0 – 100 °C Handheld unit
7.	Infrared Thermometers	40 ^{0}C to 500 ^{0}C
8.	Portable Temperature Indicator	50 ^{0}C to 1200 ^{0}C
9.	Ultrasonic Water Flow Meter	0 – 15 m/sec 25 – 5000 mm homogeneous liquids without gas bubbles +/- 0.5 %
10.	Stop Watch	--
11.	Flue gas Analyser	Flue gas analysis, %CO_2, O_2, CO, NOx, SOx, temp.
12.	Digital Pitot Tube	Air flow differential pressure for flow

Chapter 2
Energy Scene of the Plant

2 Energy Flow

2.1 Energy Scene

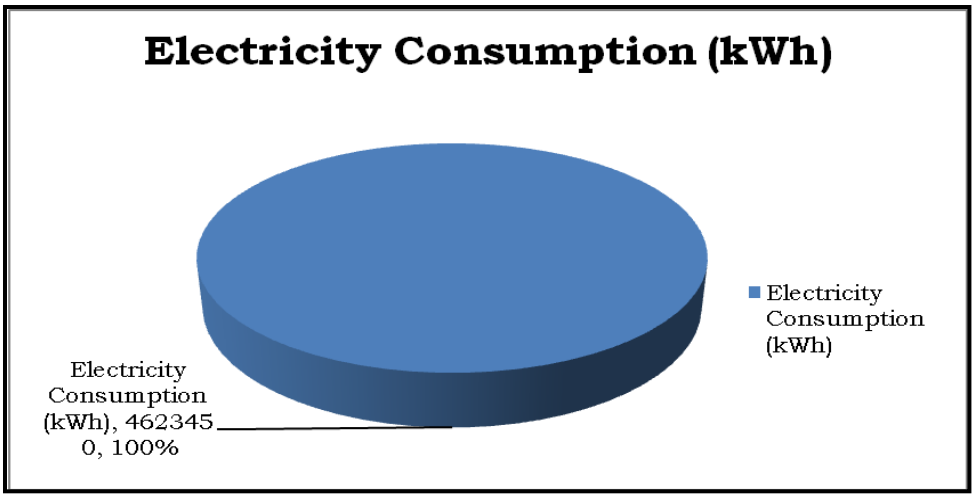
- Primary energy sources for the plant are Electricity. The primary energy sources are consumed for running of utilities and production equipment. Electricity is used for residential utility, STP and lighting system etc.

Table 2 : Overall Annual consumption of primary sources

Energy Consumption by Fuel Medium	Units
Electricity Consumption (kWh)	4623450

All Source of energy Consumption Conversion in kWh.

Figure 1 : Annual Energy consumption as per Energy Media



2.2 Energy: Sources & Utilisation

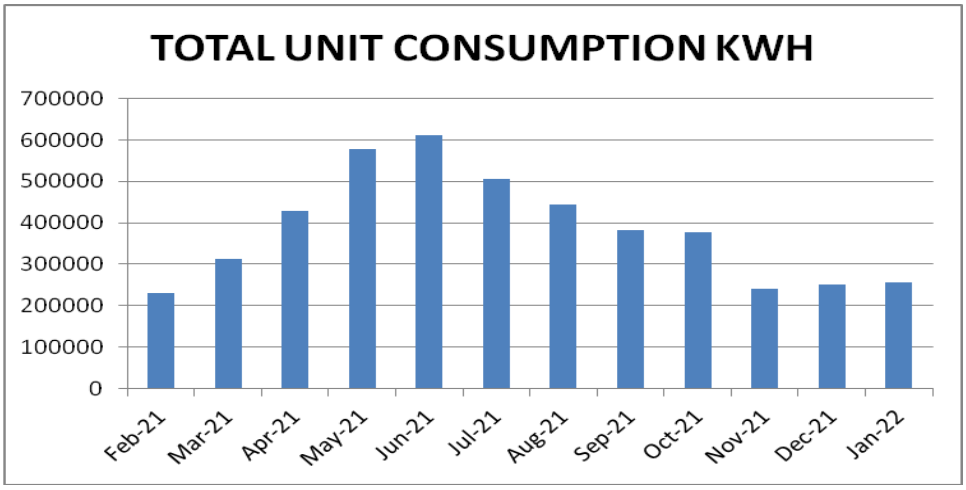
- Energy sources for the plant are Imported Electricity. These sources are consumed for the various running of utilities like Pump, Blower, Air compressor etc. Electricity is also used township, home utility, admin & substation applications, air conditioners and lighting system.
- Electricity and water have been used in the township.

- Average monthly grid unit consumption and billed demand registered are 385287.5 kWh and 844.63 kVA, respectively.
- After fixed department deducted Average unit cost of power is Rs 5.28/kWh. For review of payback period of energy saving measures report has considered electricity energy costs at Rs 5 /kWh.
- Overall bill Average unit cost of power is Rs. 5.28/kWh.
- Average Power factor is 0.999 and is maintained satisfactorily.

Table 3 : Monthly Electricity Consumption

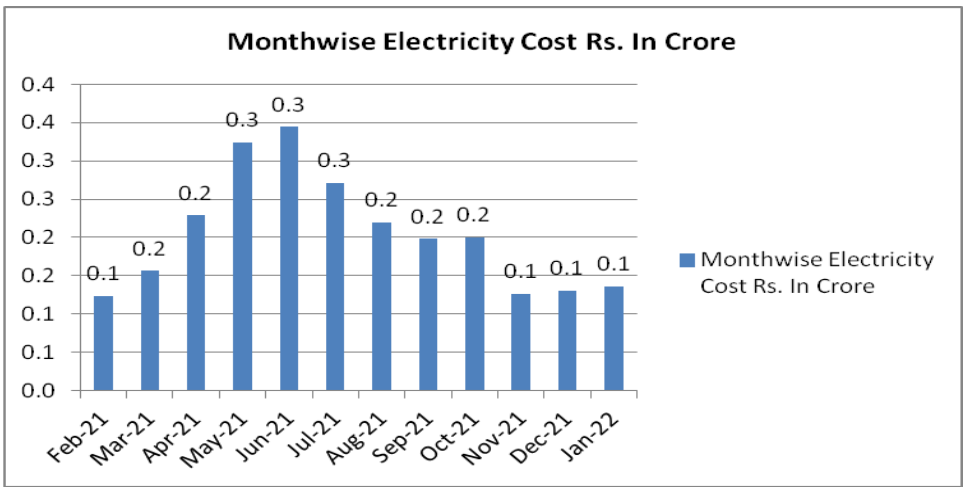
Sr. No	Months	Contract demand (kVA)	Actual demand (kVA)	Billing demand (kVA)	Total unit consumption (kWh)	Fixed charge (Rs.)	TOU unit consumption on (kWh)	Total bill of the month (Rs.)	P.F	P.F rebate (Rs.)	Overall rate (Rs/kWh)	Excess demand kVA	Excess kWh	Excess charges paid Rs.
1	Feb-21	900	972.5	765	231450	3785560	77100	1237234	1	-4860	5.35	0	0	0
2	Mar-21	900	970.5	765	312000	426870	104100	1561325	1	-6552	5.00	0	0	0
3	Apr-21	900	1056	900	427800	486000	142500	2286617	1	-8984	5.35	156	112320	140400
4	May-21	900	1410	900	579000	502200	193050	3242952	1	-12159	5.60	510	379440	474300
5	Jun-21	900	1534.5	900	610800	486000	203550	3443930	0.99	-11178	5.64	634.5	452271.6	565339.5
6	Jul-21	900	1300.5	900	506700	502200	168900	2706781	1	-10641	5.34	400.4	297972	372465
7	Aug-21	900	1020	900	445050	502200	148350	2199836	1	-9346	4.94	120	89280	111600
8	Sep-21	900	1029	900	383100	486000	127800	1978424	1	-8045	5.16	129	92880	116100
9	Oct-21	900	1089	900	378150	502200	126000	2005571	1	-7941	5.30	189	140616	175770
10	Nov-21	900	570	765	241800	413100	80550	1258944	1	-5078	5.21			0
11	Dec-21	900	702	765	250200	426870	83400	1302011	1	-5254	5.20	0	0	0
12	Jan-22	900	775.5	775.5	257400	432729	85800	1361692	1	-5405	5.29	0	0	0
TOTAL			**12429**	**10135.5**	**4623450**	**8951929**	**1541100**	**24585318**		**-95443**	**63.39**	**2138.9**	**1564779**	**1955974**
AVERAGE			**1035.7**	**844.63**	**385287.5**	**745994**	**128425.00**	**2048776.5**	**0.99**	**-7953.6**	**5.28**	**194.4**	**142252.6**	**162997.8**

Figure 2 : Month wise Energy Consumption at APSEZ (kWh)



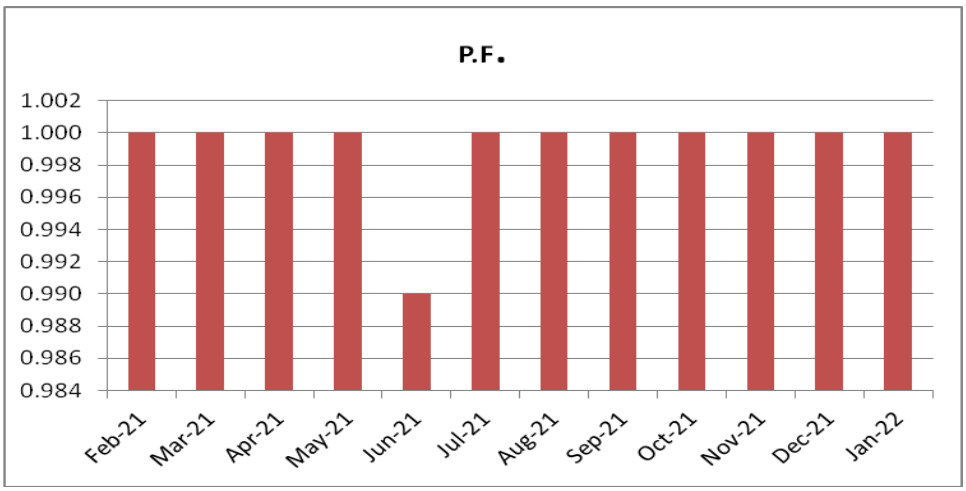
Total unit consumption higher found in month of Jun-21

Figure 3 : Month wise electricity cost at APSEZ



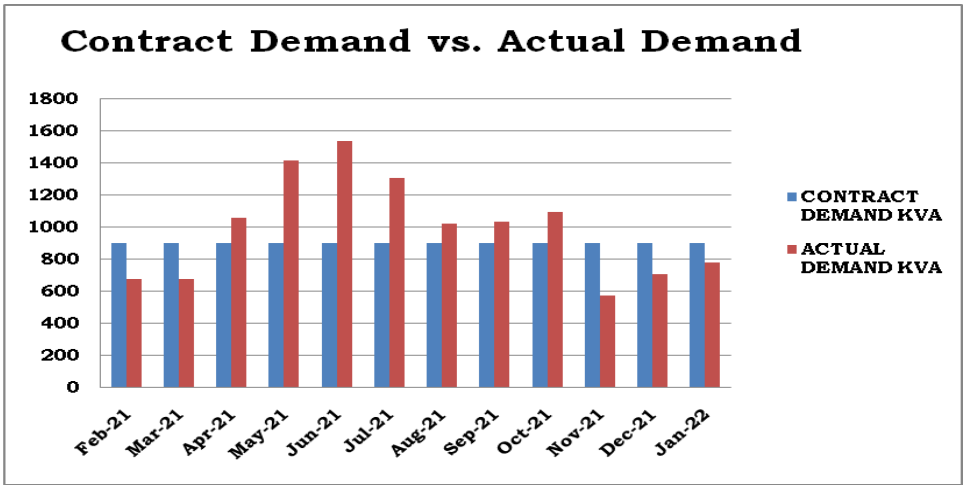
Total Bill Electricity cost higher found in month of Jun-21

Figure 4 : Month wise power factor at APSEZ



Lowest P.F Found in Month of Jun-21

Figure 5 : Month wise Maximum Demand (kVA) at APSEZ



During Bill analysis observe that Month of Apr-21 to Oct-21 is Actual Demand cross the Contract Demand, Actual Pick demand in the month of Apr-21 is 156 kVA, May-21 is 510 kVA. Jun-21 is 634.5 kVA, July-21 is 400.5 kVA Aug-21 is 120 kVA, Sep-21 is 129 kVA and Oct-21 is 189 kVA. Actual demand is more than contract demand in the months of May, June, July, August, September and October. This may be because of additional cooling requirement in summer season.

2.3 Install M.D Controller to Save Penalty Charges

Background

- It noted that during last one year M.D. has crossed contract demand of 900 kVA seven times in a year.
  Due to this Rs. 19.55 Lakh has been paid as penalty charges during last one year.

Table 4 : M.D Controller to Save Penalty Charges

SR NO.	MONTHS	Excess Demand kVA	Excess kWh	Excess charges paid Rs.
1	21-Apr	156	112320	140400
2	21-May	510	379440	474300
3	21-Jun	634.5	452271.6	565339.5
4	21-Jul	400.45	297972	372465
5	21-Aug	120	89280	111600
6	21-Sep	129	92880	116100
7	21-Oct	189	140616	175770
TOTAL		**2138.95**	**1564779.6**	**1955974.5**

Proposed Measure:

- It is proposed to co-ordinate production planning in a way that energy demands do not shoot all of a sudden. This happens particularly during shift change when all machines are started same time. Co-ordination between production and utility sections for staggered operation / production planning will help to avoid exceeding maximum demand.
- Installation of a maximum demand controller which will help to monitor demand and also give alarm in case of exceeding setpoint values of maximum demand.
- Looking into further expansion and to prevent Penalty in future, it is recommended to install a M.D. Controller.
- However if in future demand is going to increase, Contract demand may be increased to avoid penalty.

Savings Anticipated

- By doing as per above and considering maximum 7 times exceeding of M.D.,
- Savings anticipated will be Rs. 19.55 lakh for penalty (and reduction of 0.5% cable losses)

Investment Required

- Budgetary allocation of Rs. 2 lakh for maximum demand controller and a SCADA based integration of real time demand monitoring is considered.

Pay Back Period

Simple payback period is 1.22 months.

2.4 Energy Metering, Monitoring & Control System - Existing Status

Electricity

- Electrical energy consumption at the plant is measured on the main tri-vector meter provided at plant MCC & PCC on daily basis. Plant wise energy monitoring system is recorded in excel format for easy analysis.
- Adequate instrumentation was observed for voltage, current, power, power factor.
- Demand controller is not installed with alarm system.
- Adequate instrumentation observed for HVAC parameters monitoring and recording.
- Data management and analysis are appreciable of the working staff.

WATER

- Water supply mainly incoming source is Borewell. Analog flow meter installed in system.
- Water measurement is done by plant at various areas like Harvesting Pump, STP Pump, and Borewell Pumps.
- Water is available from Narmada canal through water supply authority of MUPL and it is utilised for two major purposes. 1. Residential purpose, 2. Horticulture.
- Proper metering and totalizers are installed at the pump line.
- Daily record of water consumption is maintained by Samudra Township.

2.5 Energy Metering, Monitoring & Control System - Existing Status

- Housekeeping is observed in line & maintenance is also observed in good condition.
- Using of natural lighting whenever possible during day time for office use was seen at some places.
- Air conditioners with inverters are not installed in Samudra township.
- Streetlight with LED fixtures has been fitted for reduction of lighting power.
- Based on geographical time zone, timers for turning on/off streetlights have been installed in street lighting.

Suggestions: -

- During Audit 11 KV HT Side Meters not working condition to repair, so daily HT to LT Side looses Find out.
- Open a scheme for obtaining suggestions for conserving energy.
- Display regularly the usage of energy, energy cost & consumption of all departments / Township Area.
- ESR System installs level measurements system to save power & water.

Chapter – 3
Performance Assessment of utilities (Observations, Field Trials, Analysis, Energy Savings)

3 Performance Assessment of Utilities

- The study of plant operations, data collection, observations, field trials and analysis of various areas was undertaken, keeping in view the energy scene at the unit, focus areas elaborated in the previous chapter and with a view to identity energy conservation opportunities in the same. The basis for this is the orientation visit, discussions with the plant personnel and the agreed plan for data collection and field trials. All these trials were undertaken at normal operating conditions.

3.1 Electrical Energy

- As explained earlier, the source of outside power for the plant is from MPSEZ grid at 11 KV. The power received is further stepped down to 11 KV through a transformer.
- As described earlier, the source of electric power for the township is from MPSEZ grid at incoming at 11 KV. The power received is further stepped down to 433V through an eight transformers at various locations and is further distributed in Samudra Township.
- During audit period performance is tested by measuring electrical parameters for each Transformer under operation.
- Installation and performance of transformers is as under.
- Performances of transformers are as under.

Table 5 : Transformer Installation Details

List of Township Transformers Location wise.

Location	Rated kVA	Voltage (HV/LV) V	Current Amp (HV/LV)	Make	Cooling	Frequency
CSS Transformer for A18 Samundra Colony		11000/433	157/4000	Voltamp	ONAN	50
CSS TR for S A32 Samundra Colony		11000/433	157/4001	Voltamp	ONAN	50
Samundra Township B15 TR	1000	11000/433		CSS	ONAN	50
Samundra Township B67 TR	1000	11000/433		CSS	ONAN	50
CSS TR for Solar B24		11000/433	157/4004	Voltamp	ONAN	50
TR for C1 Block		11000/433	157/4005	Voltamp	ONAN	50
CSS TR for C35		11000/433	157/4006	Voltamp	ONAN	50
Samundra Township TR for STP	315	11000/433	16.55/420	Universal	ONAN	50

- Power measurement of transformers was conducted which included monitoring of variation in voltage, load, power factor, Current, harmonics and other

incidental parameters. The detailed 1-minute interval data logging is available separately in chart and Load cycle as shown below.

- Efficiency test on nos. of transformer efficiency. Following table describe the details.

Table 6 : Transformer Loading & Efficiency

Rated Specifications	CSS Transformer for A18 Samudra Colony	CSS TR for S A32 Samudra Colony	Samudra Township B15 TR	Samudra Township B67 TR	CSS TR for Solar B24	TR for C1 Block	CSS TR for C35	Samudra Township TR for STP
Rated kVA			1000	1000				315
Voltage (HV/LV) V	11000/433	11000/433	11000/433	11000/433	11000/433	11000/433	11000/433	11000/433
Current Amp (HV/LV)	157/4000	157/4001			157/4004	157/4005	157/4006	16.55/420
Make	Voltamp	Voltamp	CSS	CSS	Voltamp	Voltamp	Voltamp	Universal
Cooling	ONAN	ONAN	ONAN	ONAN	ONAN	ONAN	ONAN	ONAN
Frequency	50	50	50	50	50	50	50	50
Location								
Serial No.								
Manufacturing Year								2007
Transformer Rating in KVA	2500	2500	1000	1000	2500	2500	2500	315
%Z								
Avg.Load in KVA	156.80	54.20	127.50	62.80	241.40	25.50	11.30	67.20
Present % Loading	6.27	2.17	12.75	6.28	9.66	1.02	0.45	21.33
Rated Full Load Losses of Transformer (kW)			13.30	13.30				
Total Losses of Transformer(kW)			1.80	1.80				
Operating Power Factor	1.000	1.000	1.000	0.900	0.900	1.000	1.000	0.800
No Load Loss (KVA)	2.34	2.34	1.80	2.00	2.60	2.34	2.34	2.93
Total Losses= Load Losses+N.L. Losses	3.33	2.68	3.00	2.59	4.13	2.50	2.41	6.30

Rated Specifications	CSS Transformer for A18 Samudra Colony	CSS TR for S A32 Samudra Colony	Samudra Township B15 TR	Samudra Township B67 TR	CSS TR for Solar B24	TR for C1 Block	CSS TR for C35	Samudra Township TR for STP
Transformer Efficiency, %			97.64	95.87				
Avg. Load in KW	155.10	53.20	124.90	59.20	236.70	25.00	11.00	52.70
Max load, kW	251.80	106.60	211.00	101.30	534.00	65.60	22.50	75.00
Min load, kW	59.80	14.00	81.40	32.50	-0.30	12.40	3.10	29.80
Voltage Unbalance %	0.95	2.54	1.45	1.42	0.20	0.40	0.70	0.30
Current Unbalance %					0.70	36.40		9.20
Voltage THD Avg.	2.30	2.30	2.40	2.30	1.60	1.40	1.60	2.20
Current THD Avg.	8.20	18.80	15.40	32.60	16.20	18.40	18.00	10.60

3.1.1 Main Incomer 66/11 kV 18th to 19th January 2022 Logging

- The 24 hr. power measurement at the 11 KVA Main Incomer was conducted. This included monitoring of variation in voltage, load, power factor, Current, harmonics and other incidental parameters. The detailed 1 minute interval data logging is available separately in chart and Load cycle in below.
- The brief summary charts for variation in voltage, Current, Demand & P.F. is presented below.
- Power quality data as recorded at Transformer incomer is presented in table below. Overall PF values are within satisfactory limits.

Table 7 : 66/11 kV Main Incomer Data Recordings, 18th to 19th January

Location - Samundra Township 11 KV Main Incomer			
Date -18/01/2022 to 19/01/2022		Time -03:05:00 PM to 03:03:00 PM	
Parameters	**Minimum**	**Average**	**Maximum**
Voltage (V)			
U12 rms	11180	11333.1	11480
U23 rms	11140	11282	11410
U31 rms	11170	11301	11440
Voltage (V)			
V1 rms	6370	6439.2	6570
V2 rms	6530	7555.3	7660
V3 rms	5660	5767.9	6570
Current			
L1 (A)	9.2	17.3	32.6
L2 (A)	13.5	26.5	57.2
L3 (A)	9.5	18.2	36.5
Active Power			
Total (KW)	206.8	409.3	831
Reactive Power			
Total (KVAR)	-57.4	2.5	87.5
Apparent Power			
Total (KVA)	217.8	418.1	847.7
Voltage Unbalance			
Total Uunb (IEEE 112)	0.2	14.7	15.5
Ampere Unbalance			
Total Aunb (IEEE 112)	17.9	27.8	38.3

Location - Samundra Township 11 KV Main Incomer			
Power Factor			
Total	0.9	1	1
Harmonics			
Voltage THD %	2.1	7.2	7.9
Current THD%	5.1	10.9	15.8

Remarks: Phase wise Load unbalance found. Suggest single phase load balance properly. Average 27.8 % load unbalance found.

Figure 6 : Voltage Profile of Samundra Township 11 KV Main Incomer (Logging on 18th & 19th Jan 2022)

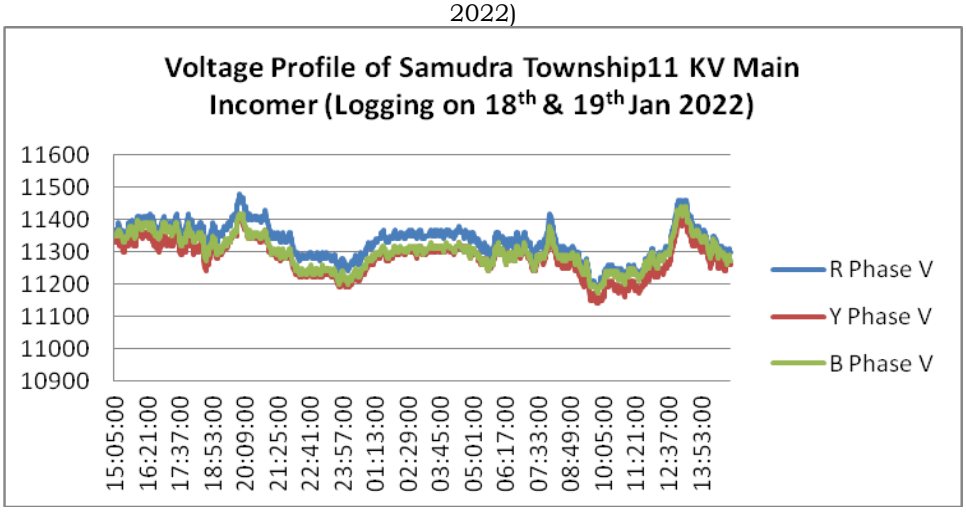


Figure 7 : %Voltage Harmonics Profile of Samundra Township 11 KV Main Incomer (Logging on 18th & 19th Jan 2022)

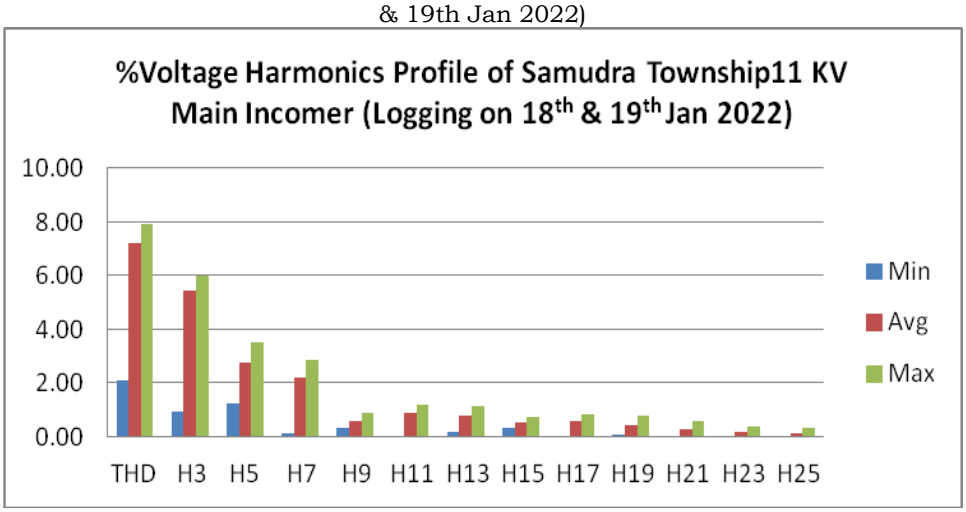


Figure 8 : Ampere Profile of Samundra Township 11 KV Main Incomer (Logging on 18th & 19th Jan 2022)

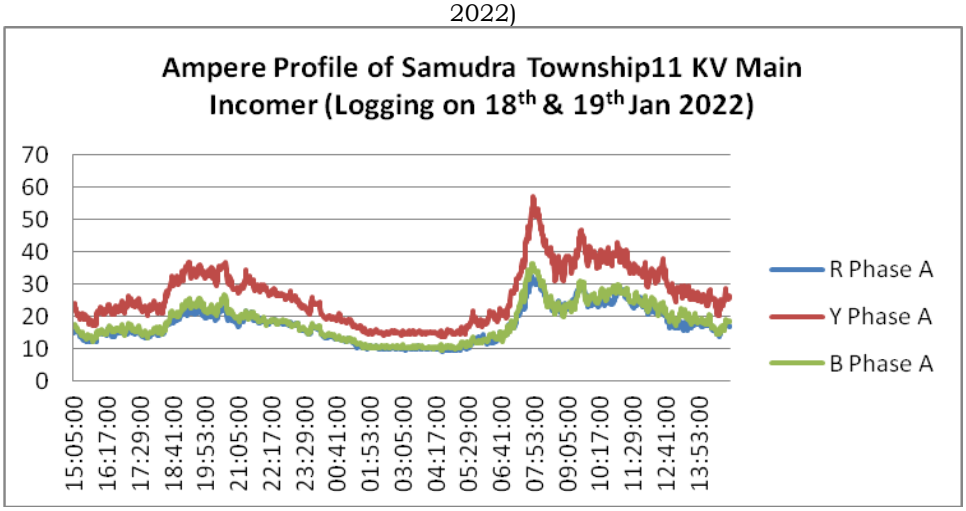


Figure 9 : %Ampere Harmonics Profile of Samundra Township 11 KV Main Incomer (Logging on 18th & 19th Jan 2022)

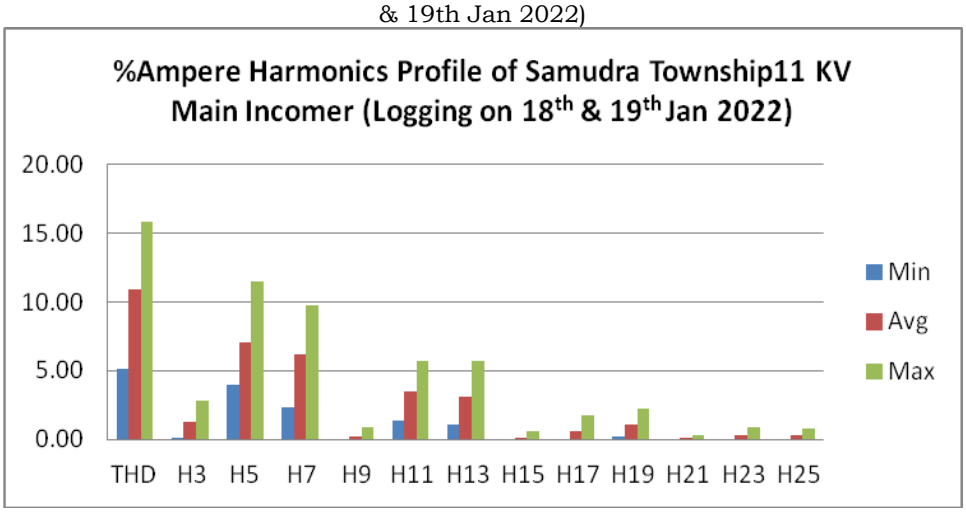


Figure 10 : kW Profile of Samundra Township 11 KV Main Incomer (Logging on 18th & 19th Jan 2022)

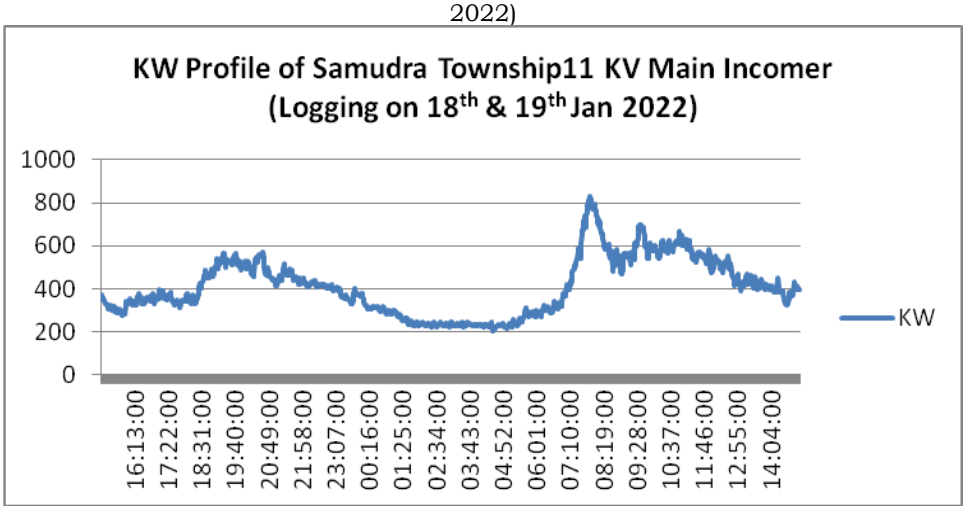


Figure 11 : PF Profile of Samudra Township 11 KV Main Incomer (Logging on 18th & 19th Jan 2022)

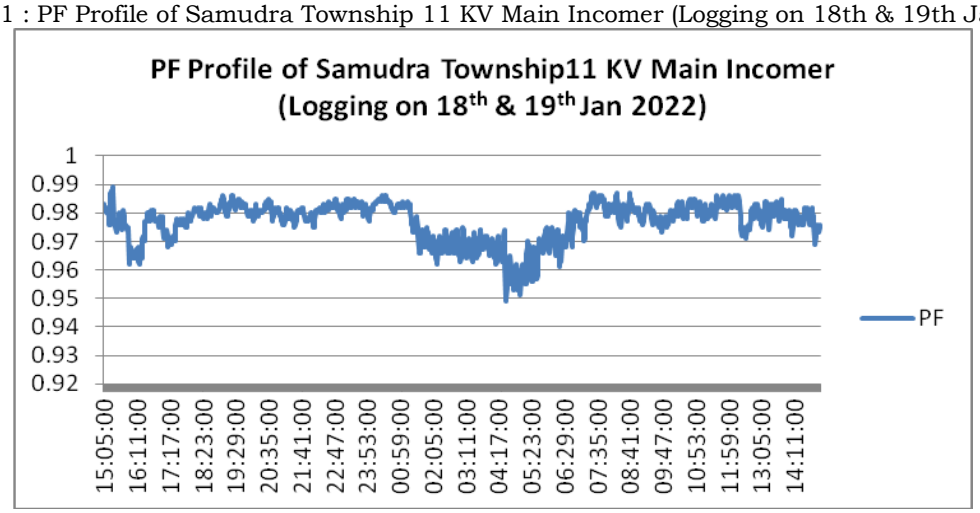
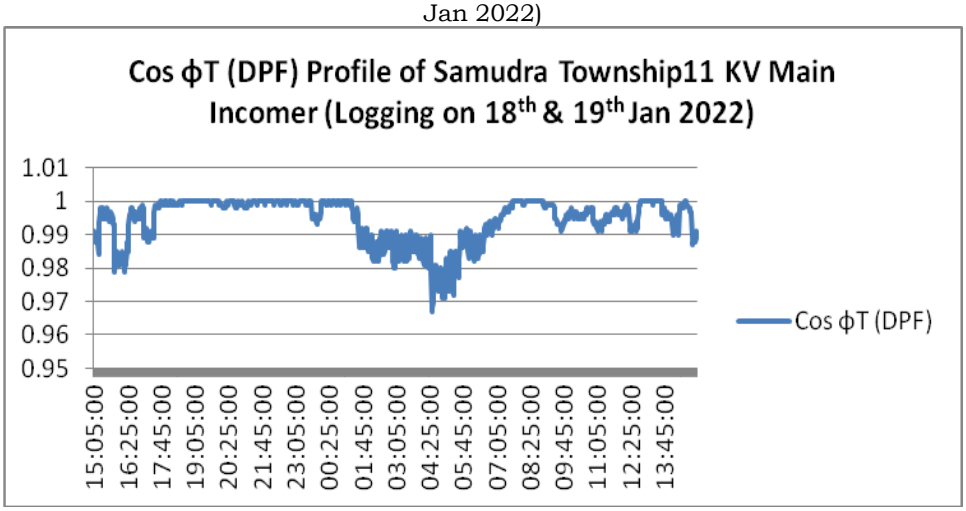


Figure 12 : Cos φT (DPF) Profile of Samudra Township 11 KV Main Incomer (Logging on 18th & 19th Jan 2022)



Location - Samudra Township CSS Transformer for Solar B24			
Date -19/01/2022		Time -02:55:00 PM to 06:36:00 PM	
Parameters	**Minimum**	**Average**	**Maximum**
Voltage (V)			
U12 rms	422.6	425.2	428.1
U23 rms	422.1	424.3	426.8
U31 rms	423.4	425.7	428.2
Voltage (V)			
V1 rms	244.3	245.7	247.3
V2 rms	244.1	245.4	247
V3 rms	243.7	245	246.3
Current			
L1 (A)	13.2	327.6	725.1

Location - Samudra Township CSS Transformer for Solar B24			
L2 (A)	12.5	329.1	729.9
L3 (A)	12	328	727.6
Active Power			
Total (KW)	-0.3	236.7	534
Reactive Power			
Total (KVAR)	8.6	20.9	23.6
Apparent Power			
Total (KVA)	9.3	241.4	534.9
Voltage Unbalance			
Total Uunb (IEEE 112)	0.1	0.2	0.3
Ampere Unbalance			
Total Aunb (IEEE 112)	0	0.7	5.7
Power Factor			
Total	0	0.9	1
Harmonics			
Voltage THD %	1.2	1.6	1.9
Current THD%	2.1	16.2	66.5

Remarks: % Ampere Harmonics Noted 16.2%.

Figure 13 : Voltage Profile of CSS Transformer for Solar A32 Main Incomer (Logging on 19th Jan 2022)

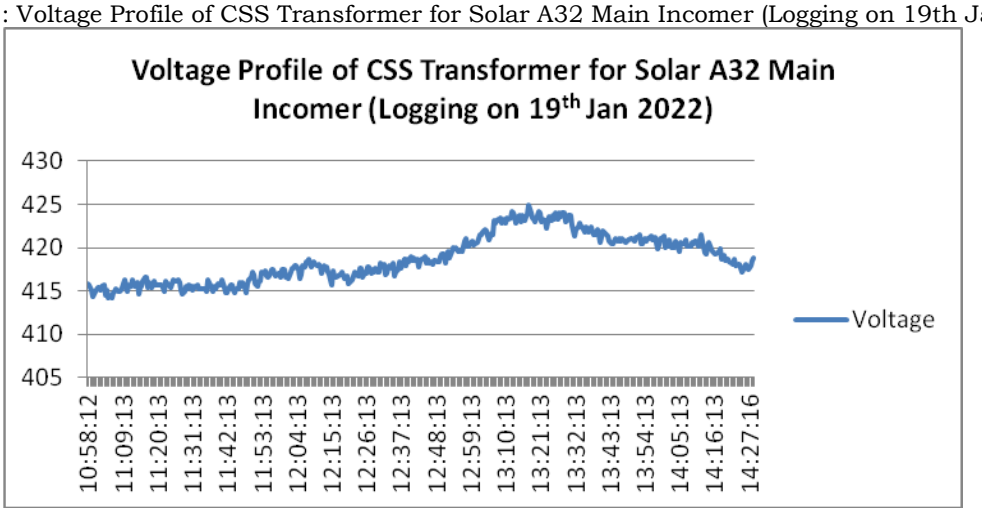


Figure 14 : %Voltage Harmonics Profile of CSS Transformer for Solar A32 Main Incomer (Logging on 19th Jan 2022)

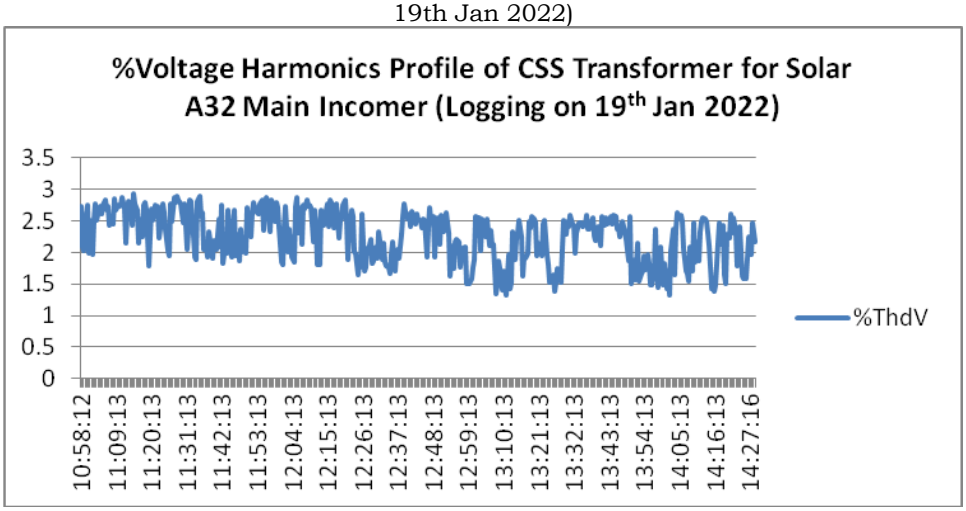


Figure 15 : Ampere Profile of CSS Transformer for Solar A32 Main Incomer (Logging on 19th Jan 2022)

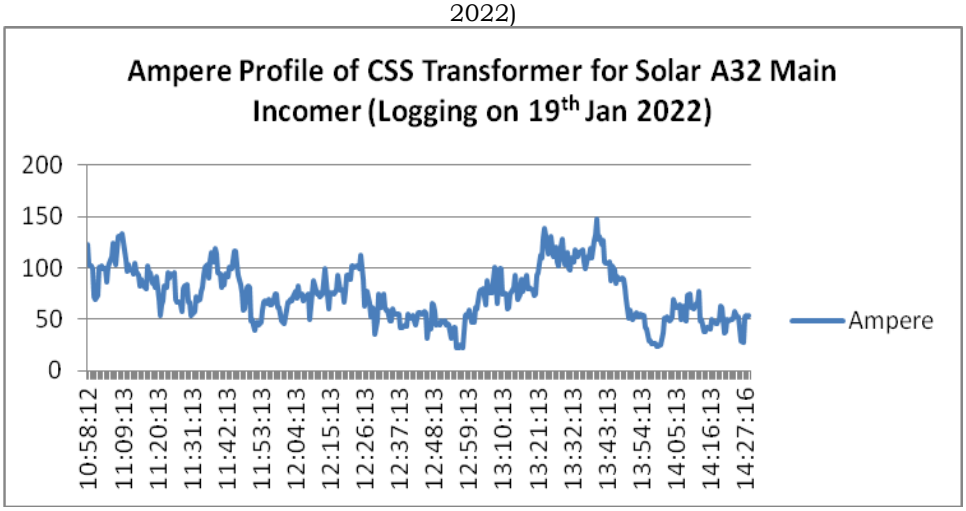


Figure 16 : %Ampere Harmonics Profile of CSS Transformer for Solar A32 Main Incomer (Logging on 19th Jan 2022)

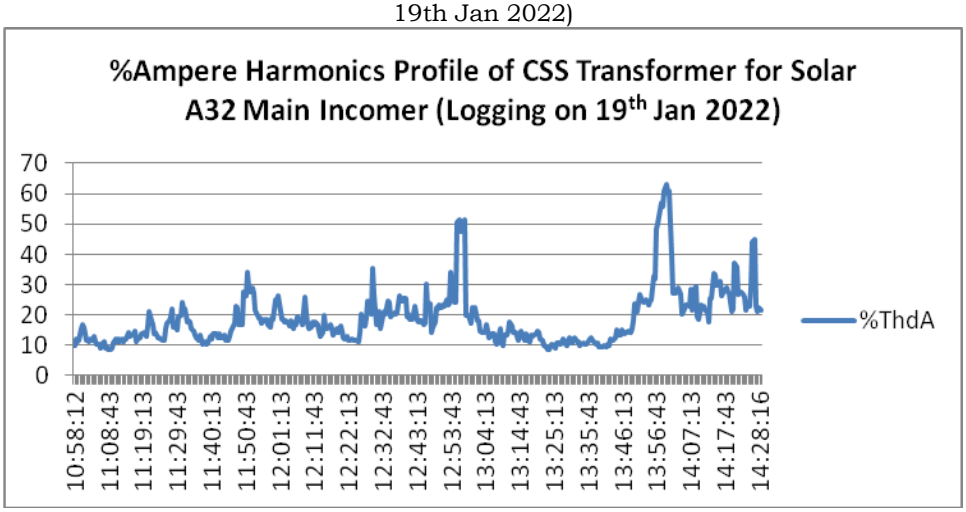


Figure 17 : kW Profile of CSS Transformer for Solar A32 Main Incomer (Logging on 19th Jan 2022)

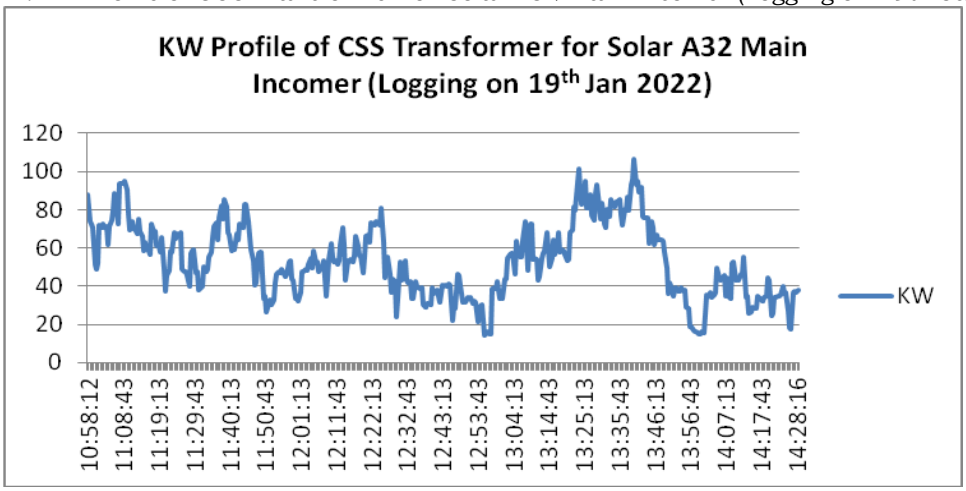
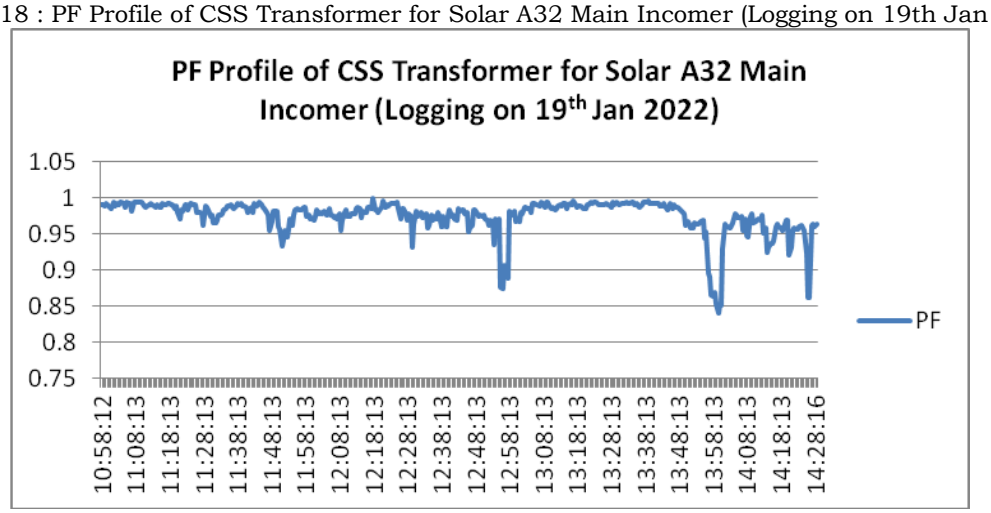


Figure 18 : PF Profile of CSS Transformer for Solar A32 Main Incomer (Logging on 19th Jan 2022)



Location - Samundra Township Transformer B15 (1000 KVA)			
Date -18/01/2022		Time -01:05:00 PM to 02:47:00 PM	
Parameters	**Minimum**	**Average**	**Maximum**
Voltage (V)			
U12 rms	440.1	443.3	446.6
Voltage (V)			
V1 rms	254.33	256.24	258.15
Current			
L1 (A)	109.9	166.1	276.7
Active Power			
Total (KW)	81.4	124.9	211
Reactive Power			
Total (KVAR)	12.4	24.7	31
Apparent Power			

Total (KVA)	84	127.5	212.5
Power Factor			
Total	0.9	1	1
Harmonics			
Voltage THD %	1.7	2.4	3.6
Current THD%	8.8	15.4	22.3

Remarks: This Transformer operate very low load condition during Audit.

Figure 19 : Voltage Profile of Transformer for Block B15 Main Incomer (Logging on 18th Jan 2022)

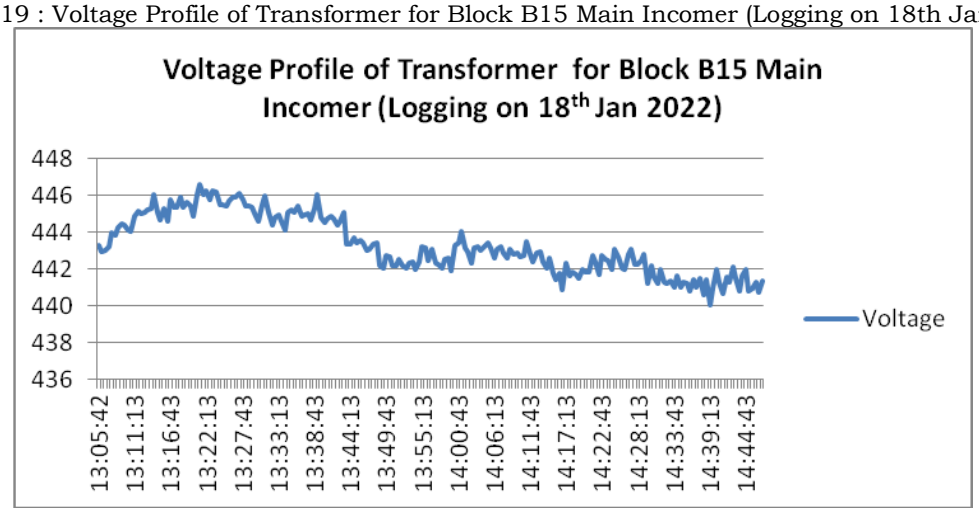


Figure 20 %Voltage Harmonics Profile of Transformer for Block B15 Main Incomer (Logging on 18th Jan 2022)

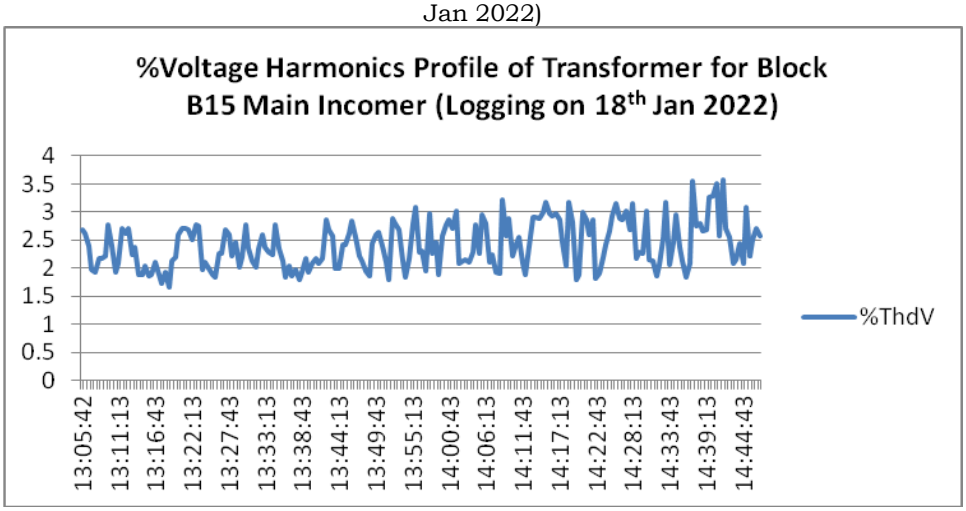


Figure 21 : Ampere Profile of Transformer for Block B15 Main Incomer (Logging on 18th Jan 2022)

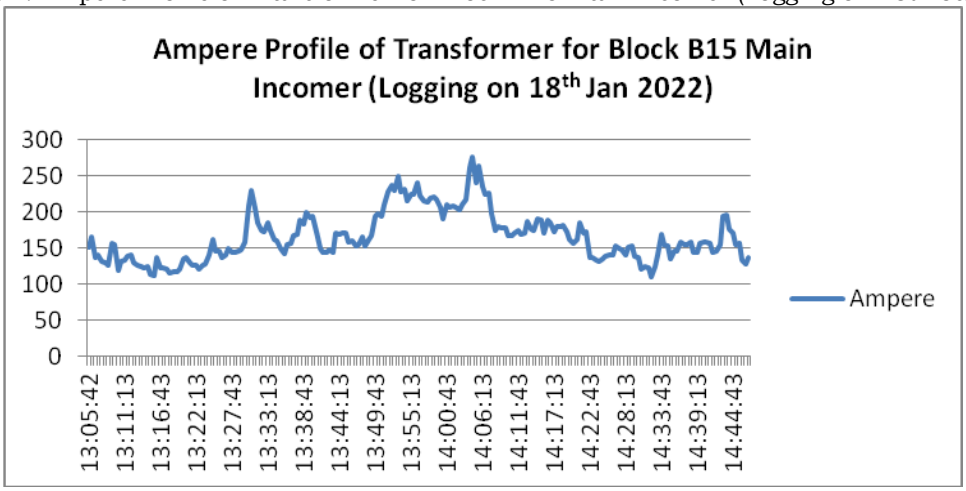


Figure 22 %Ampere Harmonics Profile of Transformer for Block B15 Main Incomer (Logging on 18th Jan 2022)

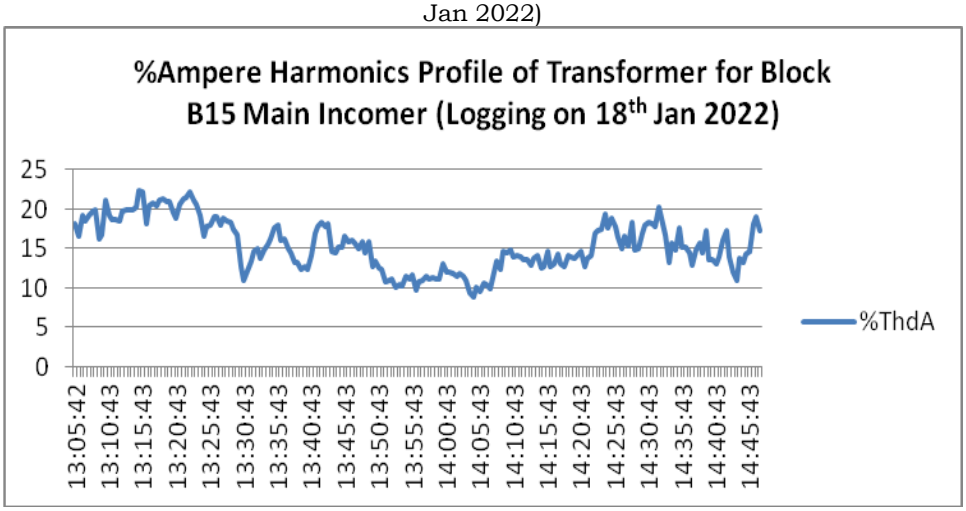


Figure 23 KW Profile of Transformer for Block B15 Main Incomer (Logging on 18th Jan 2022)

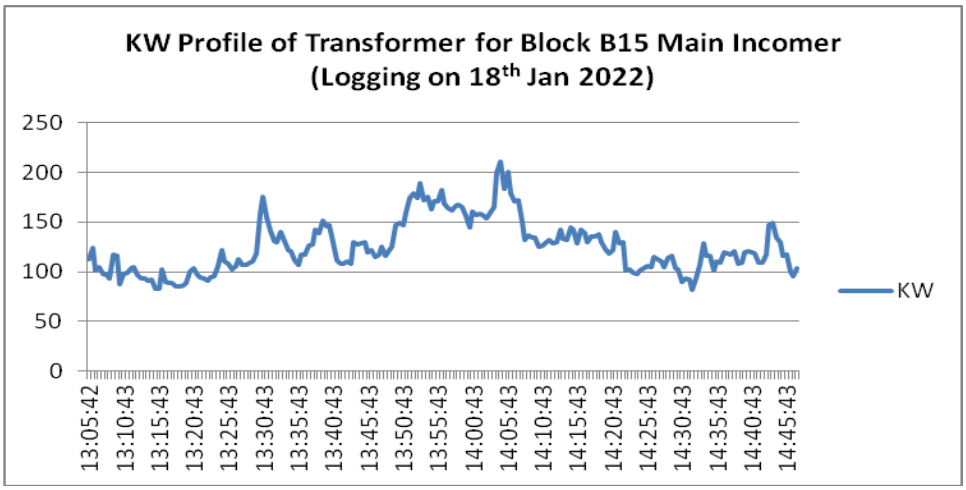
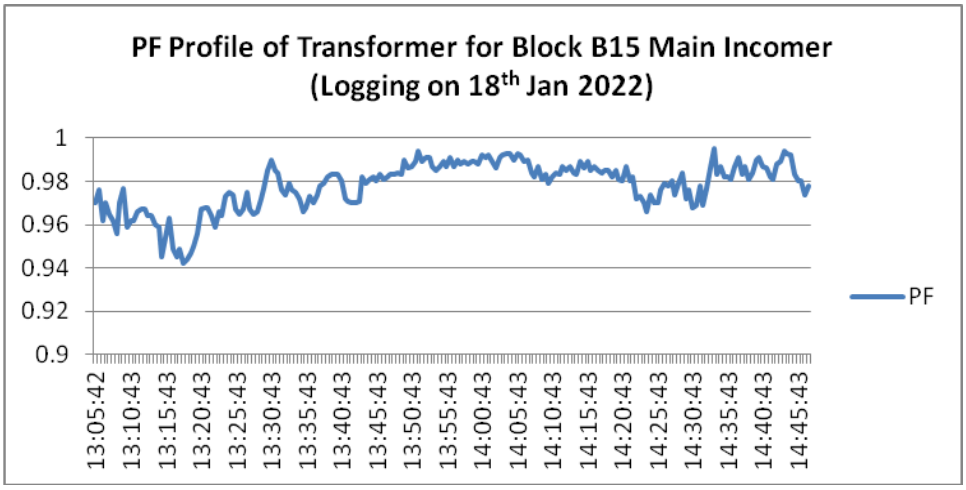


Figure 24 PF Profile of Transformer for Block B15 Main Incomer (Logging on 18th Jan 2022)



Location - Samundra Township Transformer B67 (1000 KVA)			
Date -18/01/2022		Time -05:06:00 PM to 07:04:00 PM	
Parameters	**Minimum**	**Average**	**Maximum**
Voltage (V)			
U12 rms	414	418	420
Voltage (V)			
V1 rms	239	241.6	242.7
Current			
L1 (A)	52.8	86.7	143.2
Active Power			
Total (KW)	32.5	59.2	101.3
Reactive Power			
Total (KVAR)	17.5	20.4	25
Apparent Power			
Total (KVA)	38.3	62.8	103.7
Power Factor			
Total	0.8	0.9	1
Harmonics			
Voltage THD %	1.7	2.3	3
Current THD%	18.5	32.6	51.7

Figure 25 Voltage Profile of Transformer for Block B67 Main Incomer (Logging on 18th Jan 2022)

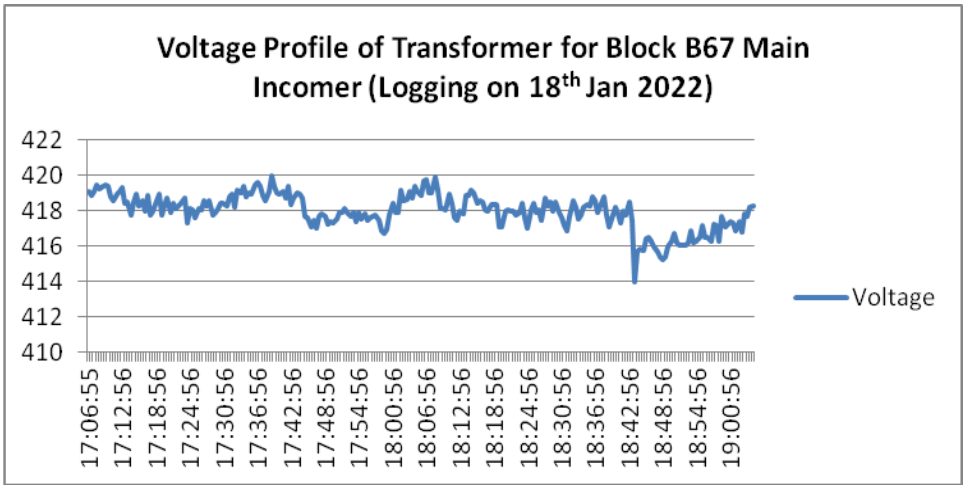


Figure 26 %Voltage Harmonics Profile of Transformer for Block B67 Main Incomer (Logging on 18th Jan 2022)

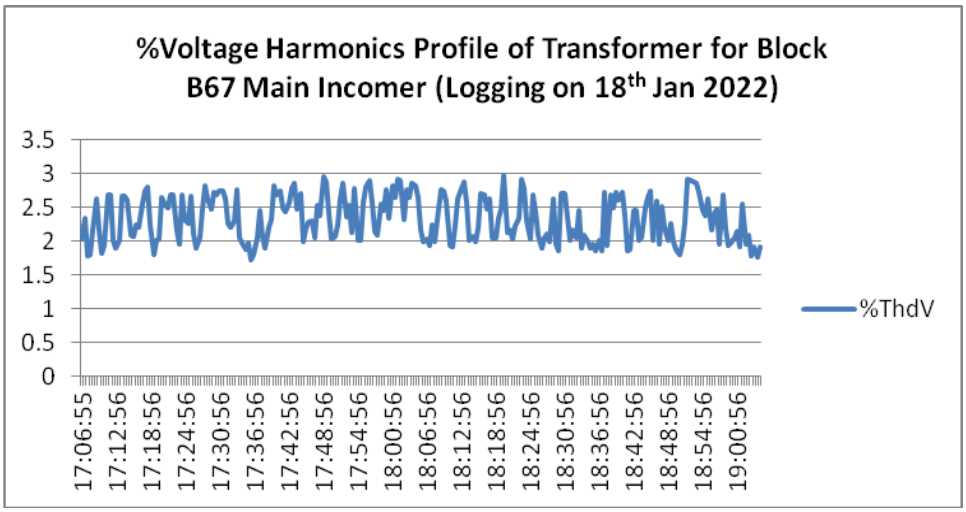


Figure 27 Ampere Profile of Transformer for Block B67 Main Incomer (Logging on 18th Jan 2022)

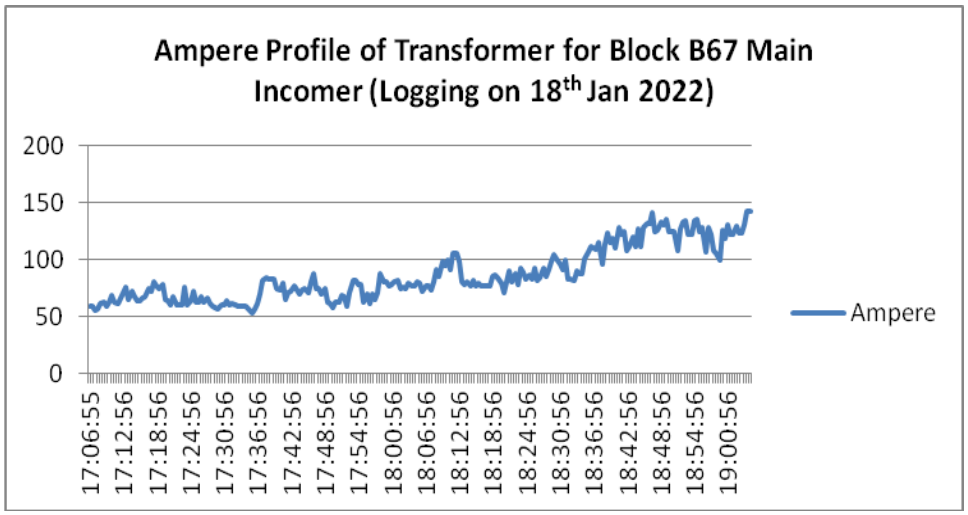


Figure 28 %Ampere Harmonics Profile of Transformer for Block B67 Main Incomer (Logging on 18th Jan 2022)

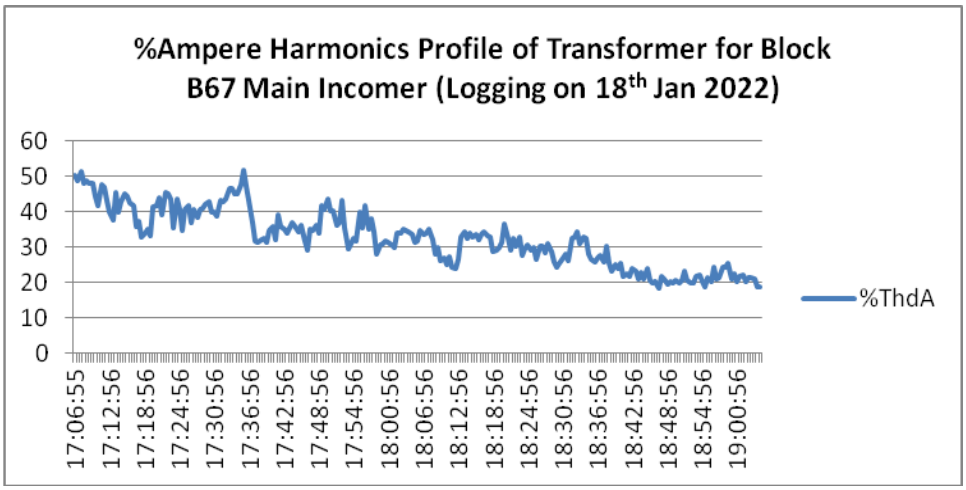


Figure 29 kW Profile of Transformer for Block B67 Main Incomer (Logging on 18th Jan 2022)

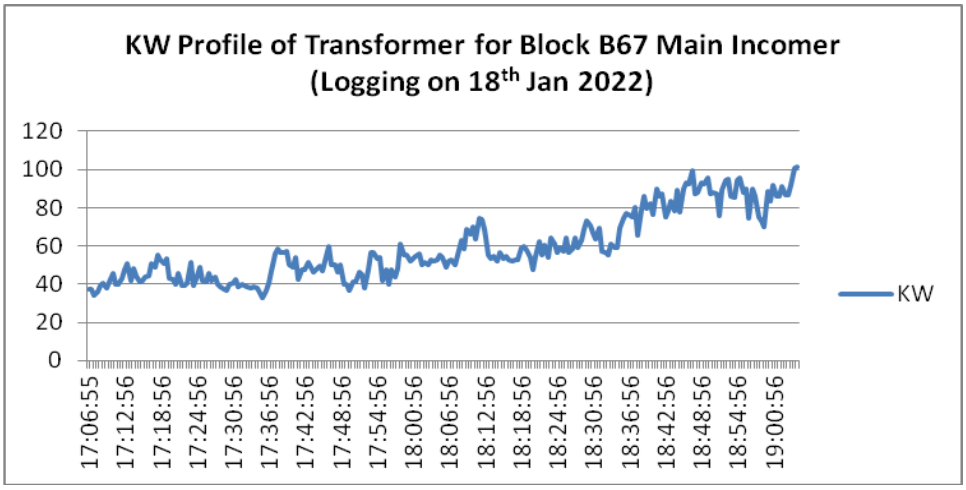
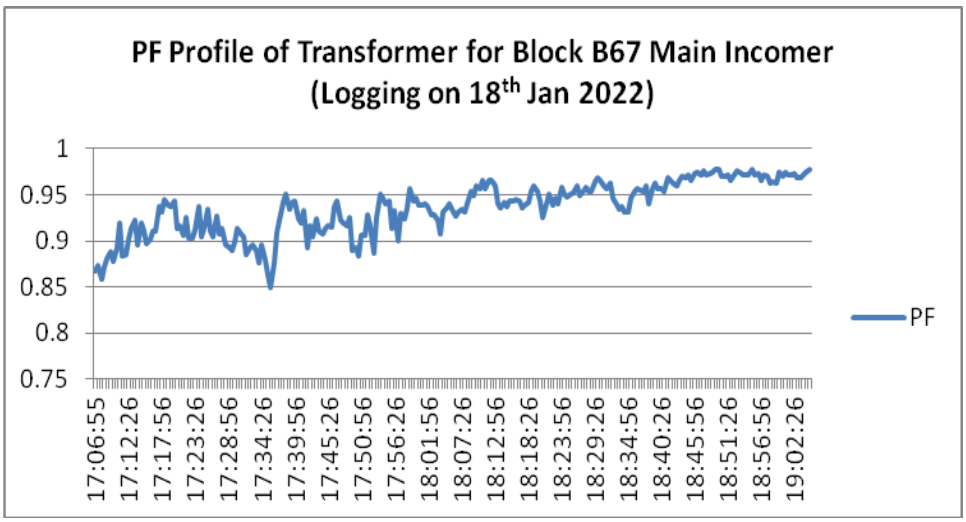


Figure 30 PF Profile of Transformer for Block B67 Main Incomer (Logging on 18th Jan 2022)



Location - CSS Transformer for A18 Samundra Colony			
Date -19/01/2022		Time -03:49:00 PM to 17:14:00 PM	
Parameters	**Minimum**	**Average**	**Maximum**
Voltage (V)			
U12 rms	434.9	437	439.1
Voltage (V)			
V1 rms	251.38	252.6	253.8
Current			
L1 (A)	83.5	207.2	334.5
Active Power			
Total (KW)	59.8	155.1	251.8
Reactive Power			
Total (KVAR)	14.7	21.1	27.3
Apparent Power			
Total (KVA)	63.3	156.8	252.5
Power Factor			
Total	0.9	1	1
Harmonics			
Voltage THD %	1.6	2.3	3.1
Current THD%	1.6	8.2	17.2

Remarks: Average current harmonic is 8.2 %.

Figure 31 Voltage Profile of CSS Transformer for A18 Main Incomer (Logging on 19th Jan 2022)

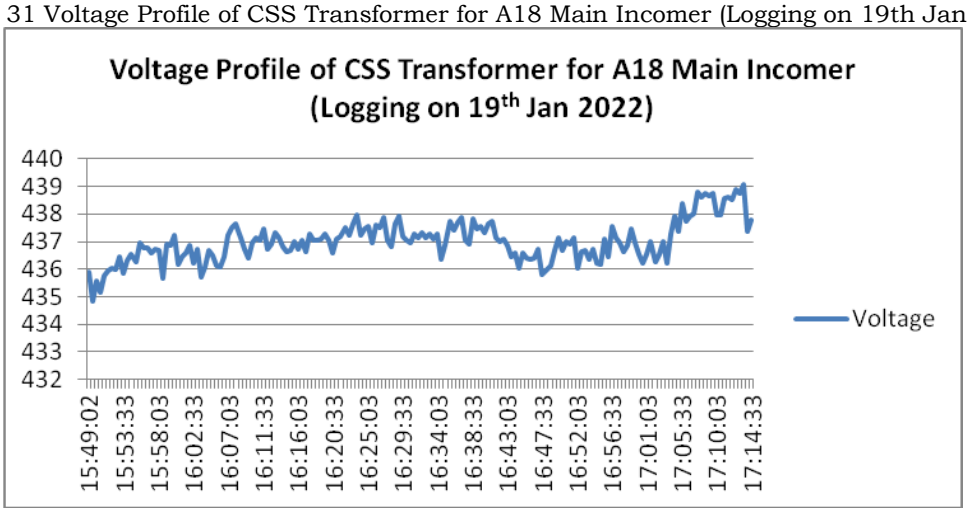


Figure 32 %Voltage Harmonics Profile of CSS Transformer for A18 Main Incomer (Logging on 19th Jan 2022)

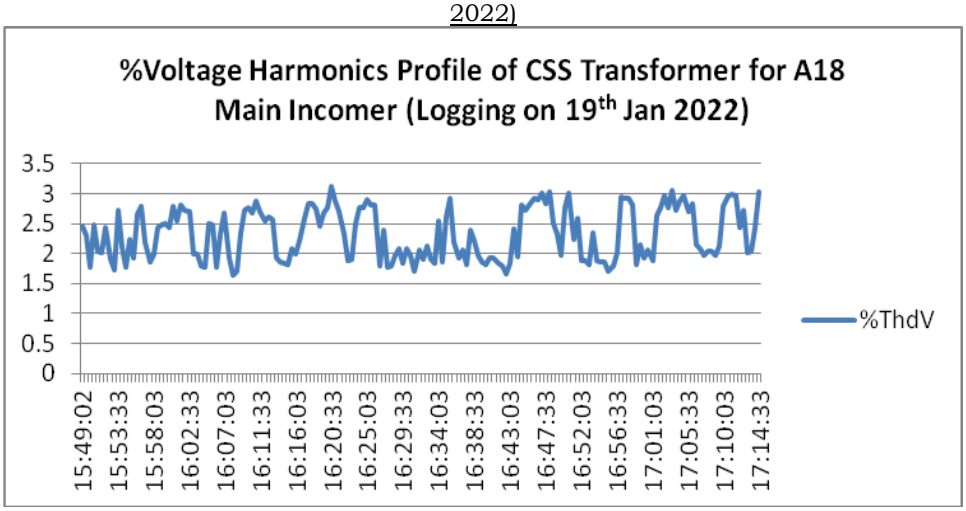


Figure 33 Ampere Profile of CSS Transformer for A18 Main Incomer (Logging on 19th Jan 2022)

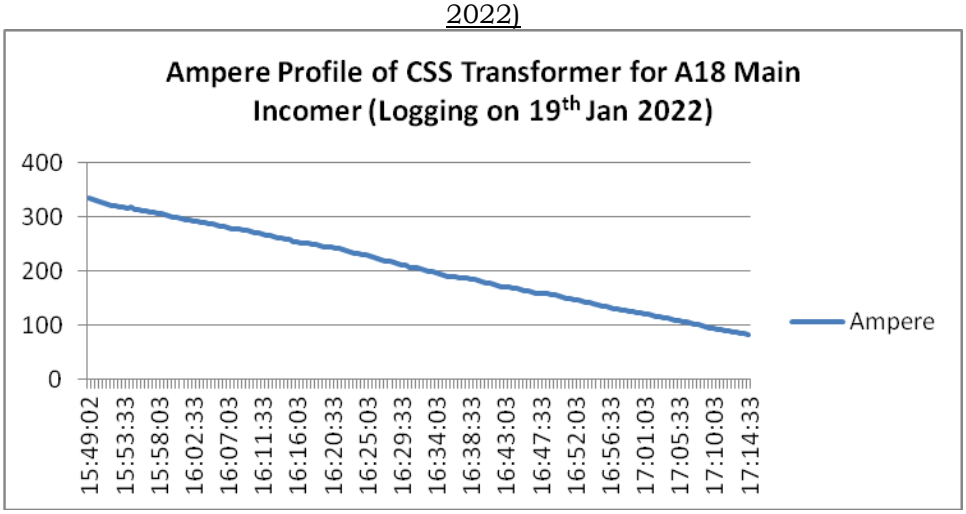
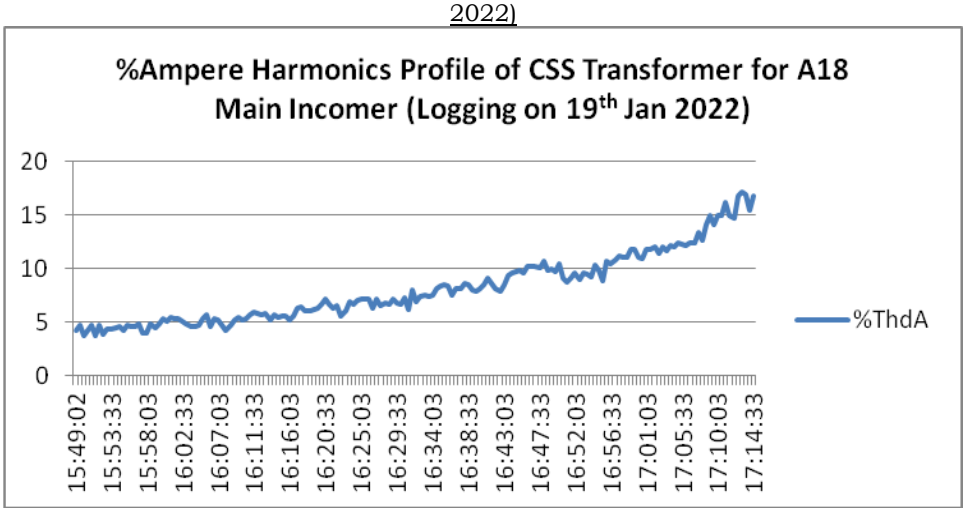


Figure 34 %Ampere Harmonics Profile of CSS Transformer for A18 Main Incomer (Logging on 19th Jan 2022)



Ampere Load decrease with respect % Ampere Harmonics Increase in systems.

Figure 35 kW Profile of CSS Transformer for A18 Main Incomer (Logging on 19th Jan 2022)

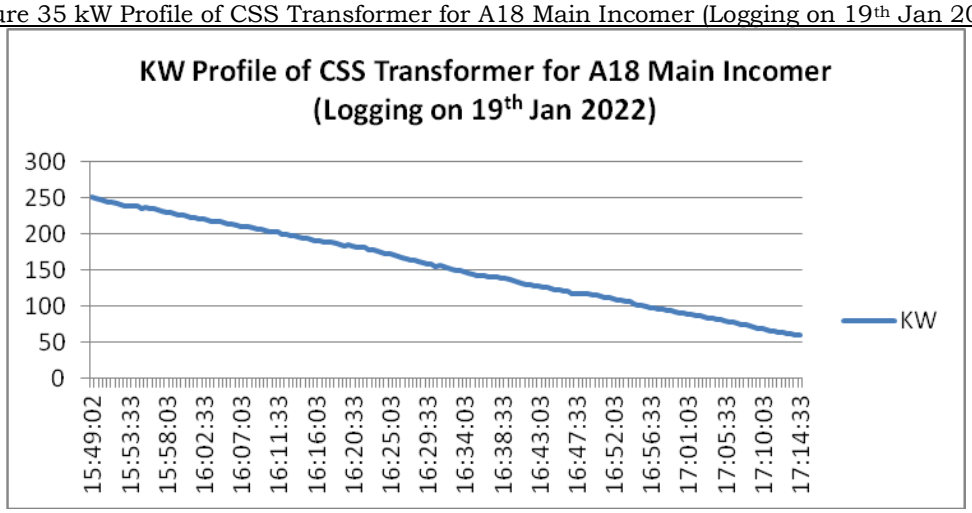
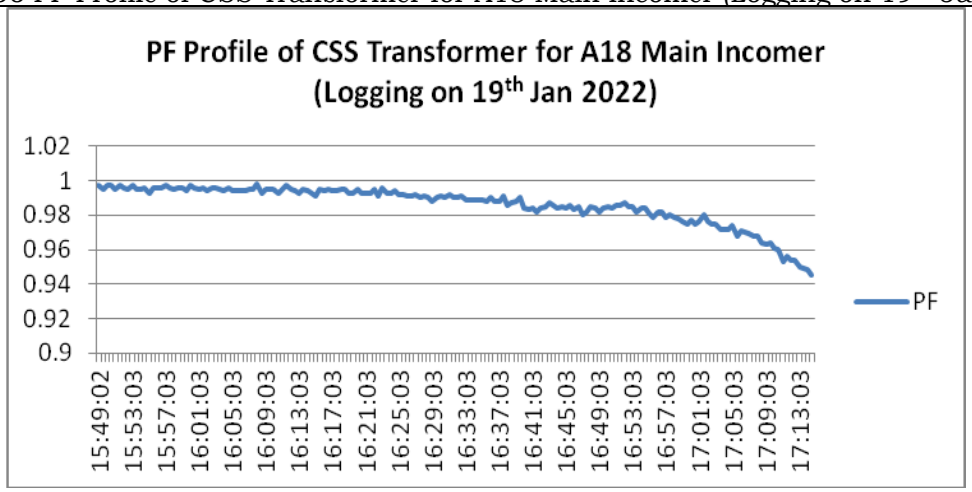


Figure 36 PF Profile of CSS Transformer for A18 Main Incomer (Logging on 19th Jan 2022)



Location - CSS Transformer for Solar A32 Samudra Colony			
Date -19/01/2022		Time -10:58:00 AM to 02:28:00 PM	
Parameters	**Minimum**	**Average**	**Maximum**
Voltage (V)			
U12 rms	414.2	418.7	425
Voltage (V)			
V1 rms	239.4	242	245.6
Current			
L1 (A)	22	74.8	147.3
Active Power			
Total (KW)	14	53.2	106.6
Reactive Power			

Location - CSS Transformer for Solar A32 Samudra Colony			
Total (KVAR)	0	9.7	13.9
Apparent Power			
Total (KVA)	16	54.2	107.3
Power Factor			
Total	0.8	1	1
Harmonics			
Voltage THD %	1.3	2.3	2.9
Current THD%	8.5	18.8	63.1

Remarks: Average % Ampere Harmonics is 18.8 %.

Figure 37 Voltage Profile of CSS Transformer for Solar A32 Main Incomer (Logging on 19th Jan 2022)

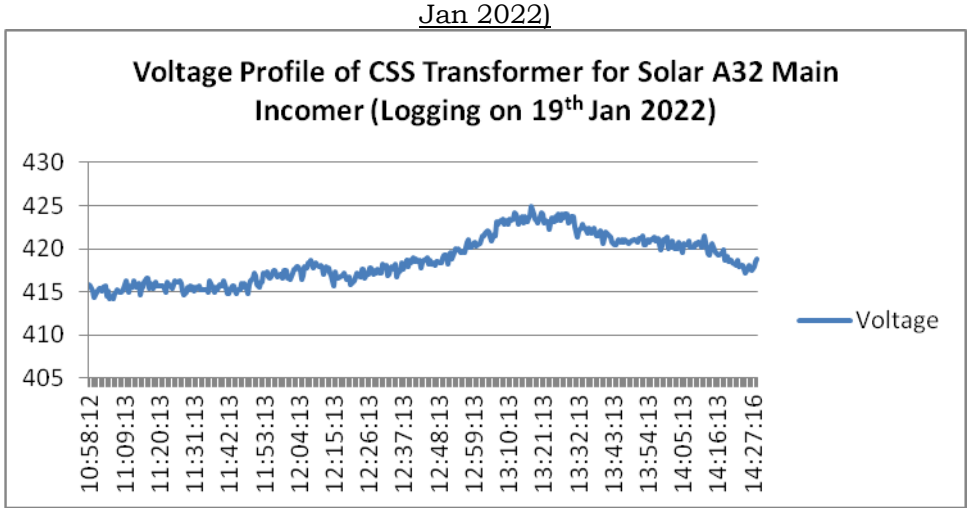


Figure 38 %Voltage Harmonics Profile of CSS Transformer for Solar A32 Main Incomer (Logging on 19th Jan 2022)

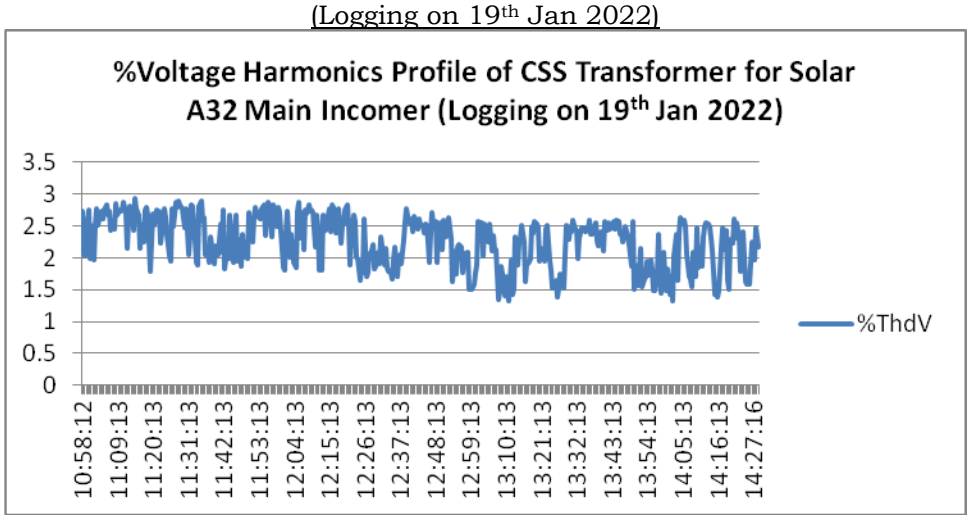


Figure 39 Ampere Profile of CSS Transformer for Solar A32 Main Incomer (Logging on 19th Jan 2022)

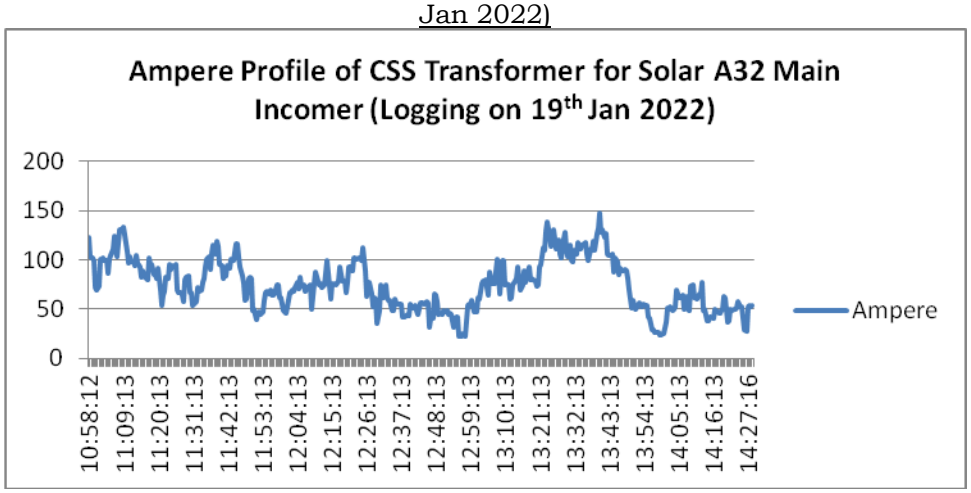


Figure 40 %Ampere Harmonics Profile of CSS Transformer for Solar A32 Main Incomer (Logging on 19th Jan 2022)

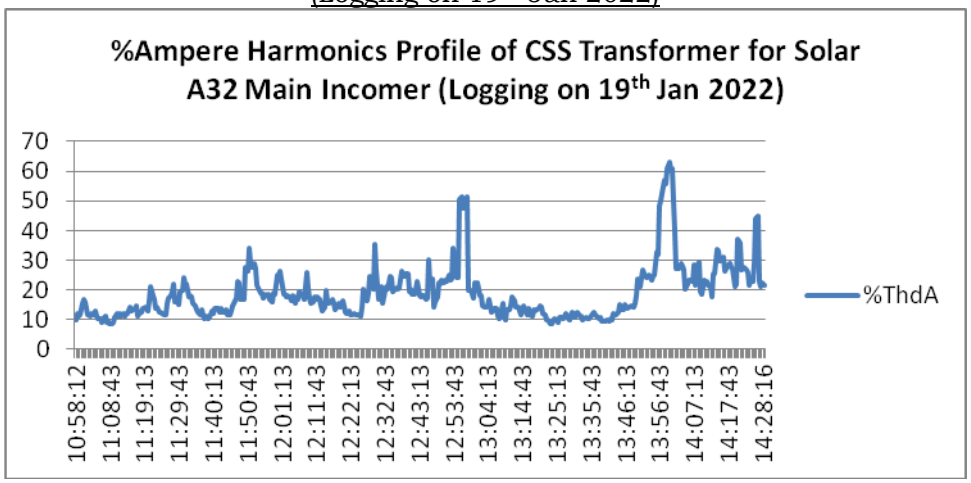


Figure 41 KW Profile of CSS Transformer for Solar A32 Main Incomer (Logging on 19th Jan 2022)

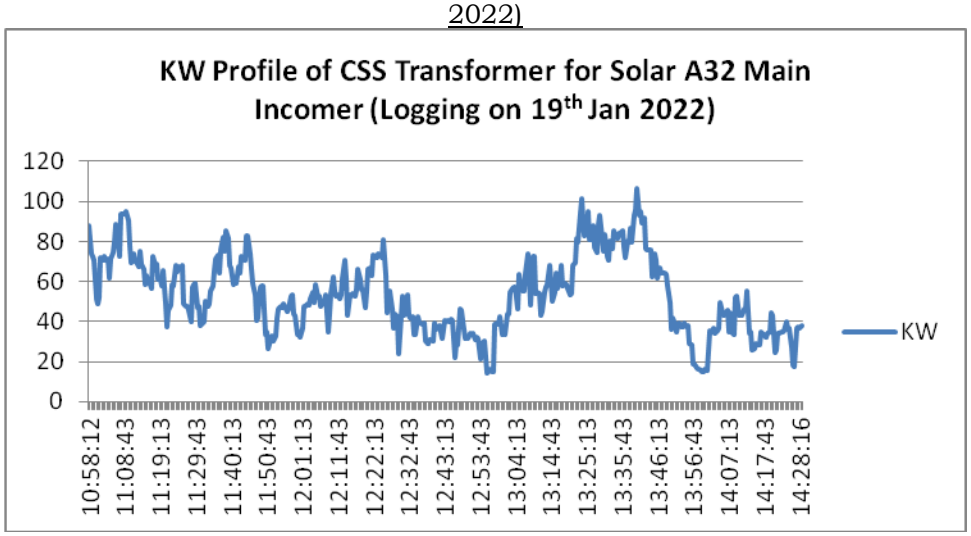
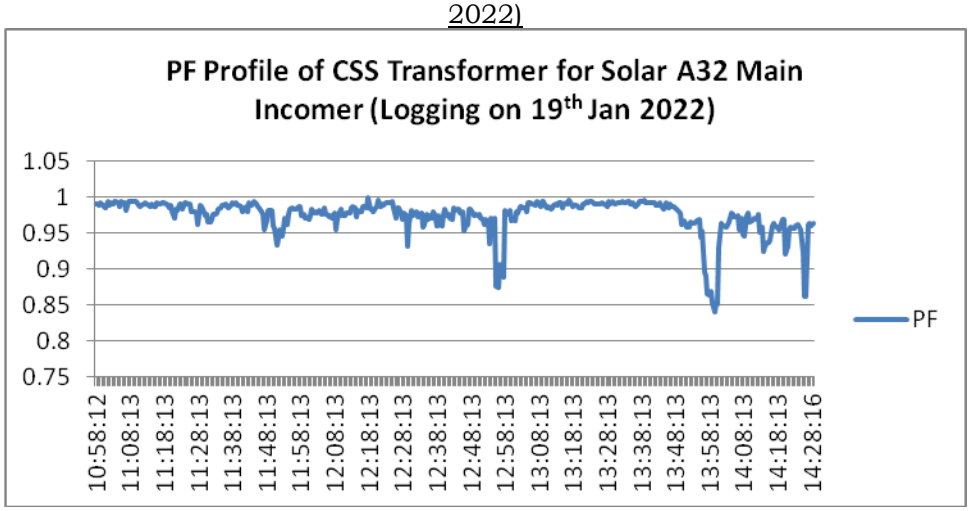


Figure 42 PF Profile of CSS Transformer for Solar A32 Main Incomer (Logging on 19th Jan 2022)



Location - Samundra Township CSS Transformer for Solar B24			
Date -19/01/2022		Time -02:55:00 PM to 06:36:00 PM	
Parameters	**Minimum**	**Average**	**Maximum**
Voltage (V)			
U12 rms	422.6	425.2	428.1
U23 rms	422.1	424.3	426.8
U31 rms	423.4	425.7	428.2
Voltage (V)			
V1 rms	244.3	245.7	247.3
V2 rms	244.1	245.4	247
V3 rms	243.7	245	246.3
Current			
L1 (A)	13.2	327.6	725.1
L2 (A)	12.5	329.1	729.9
L3 (A)	12	328	727.6
Active Power			
Total (KW)	-0.3	236.7	534
Reactive Power			
Total (KVAR)	8.6	20.9	23.6
Apparent Power			
Total (KVA)	9.3	241.4	534.9
Voltage Unbalance			
Total Uunb (IEEE 112)	0.1	0.2	0.3

Ampere Unbalance			
Total Aunb (IEEE 112)	0	0.7	5.7
Power Factor			
Total	0	0.9	1
Harmonics			
Voltage THD %	1.2	1.6	1.9
Current THD%	2.1	16.2	66.5

Remarks: Average % Ampere Harmonics is 16.2%. when solar generation decrease that time ampere harmonics increase

Figure 43 Voltage Profile of CSS Transformer for Solar B24 Main Incomer (Logging on 19th Jan 2022)

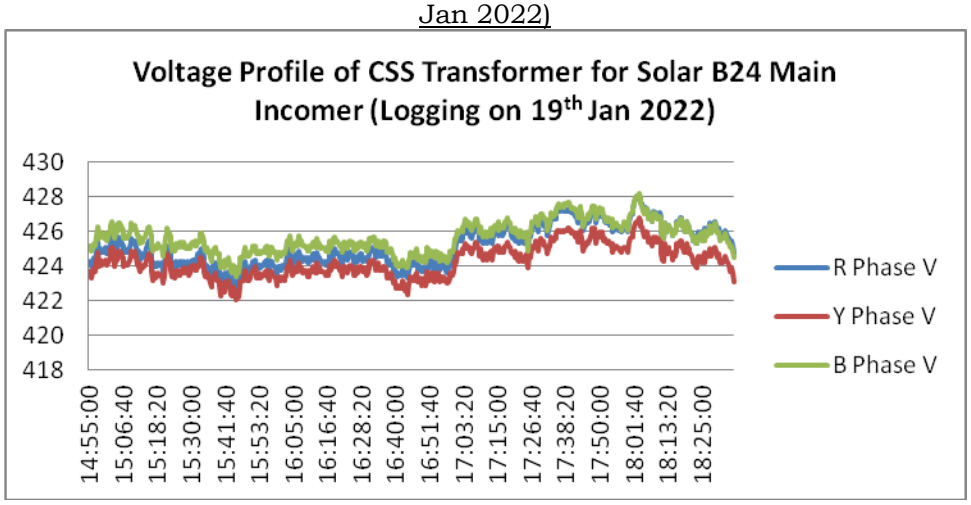


Figure 44 %Voltage Harmonics Profile of CSS Transformer for Solar B24 Main Incomer (Logging on 19th Jan 2022)

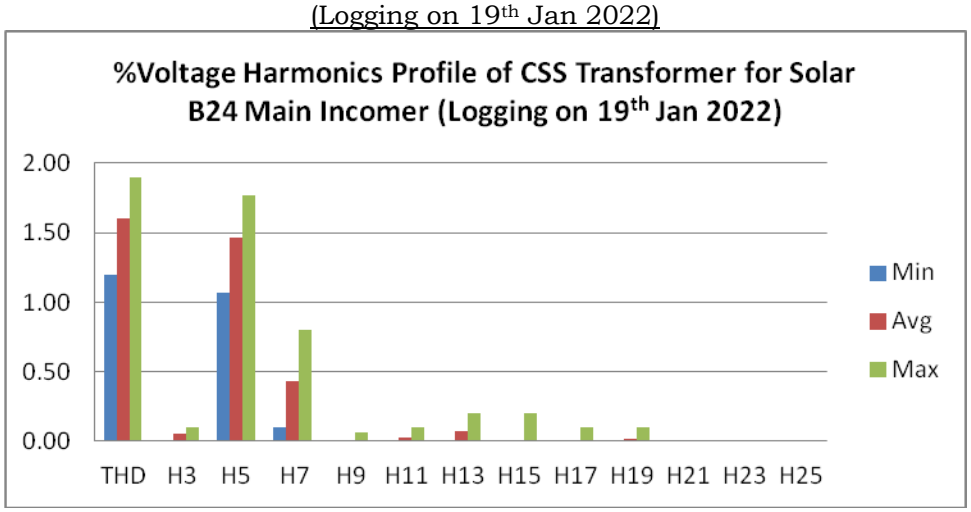


Figure 45 Ampere Profile of CSS Transformer for Solar B24 Main Incomer (Logging on 19th Jan 2022)

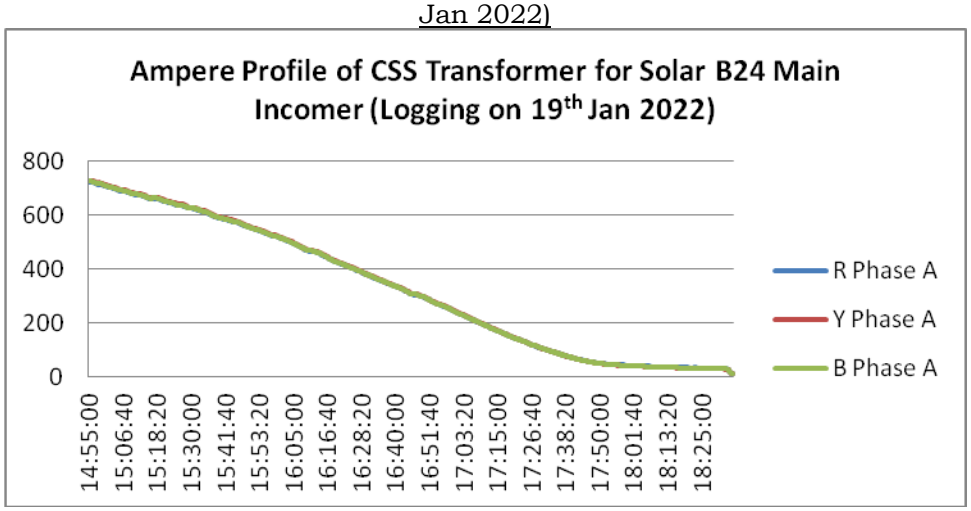


Figure 46 %Ampere Harmonics Profile of CSS Transformer for Solar B24 Main Incomer (Logging on 19th Jan 2022)

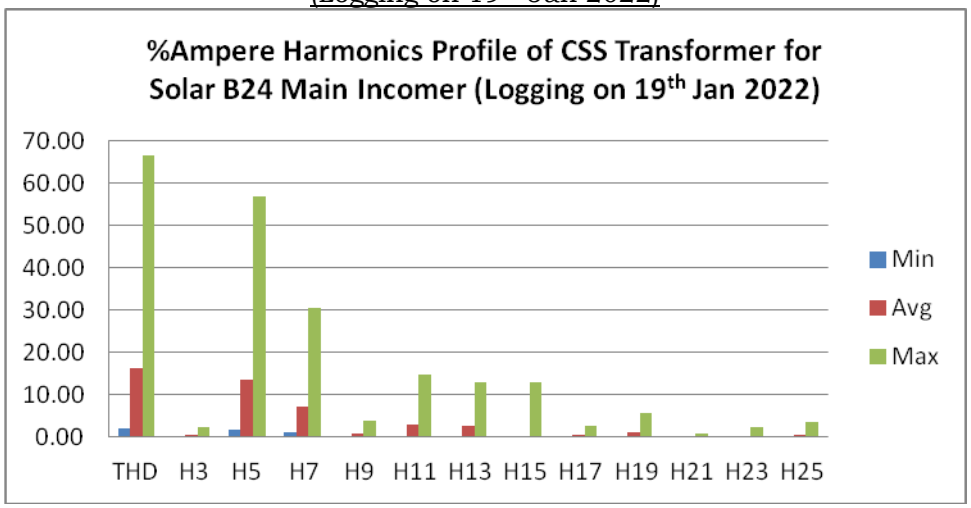


Figure 47 KW Profile of CSS Transformer for Solar B24 Main Incomer (Logging on 19th Jan 2022)

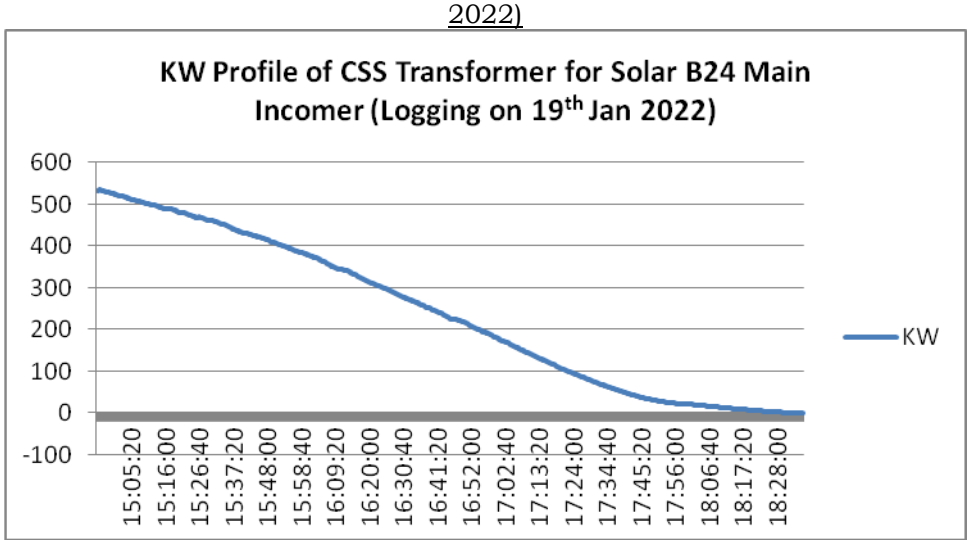


Figure 48 PF Profile of CSS Transformer for Solar B24 Main Incomer (Logging on 19th Jan 2022)

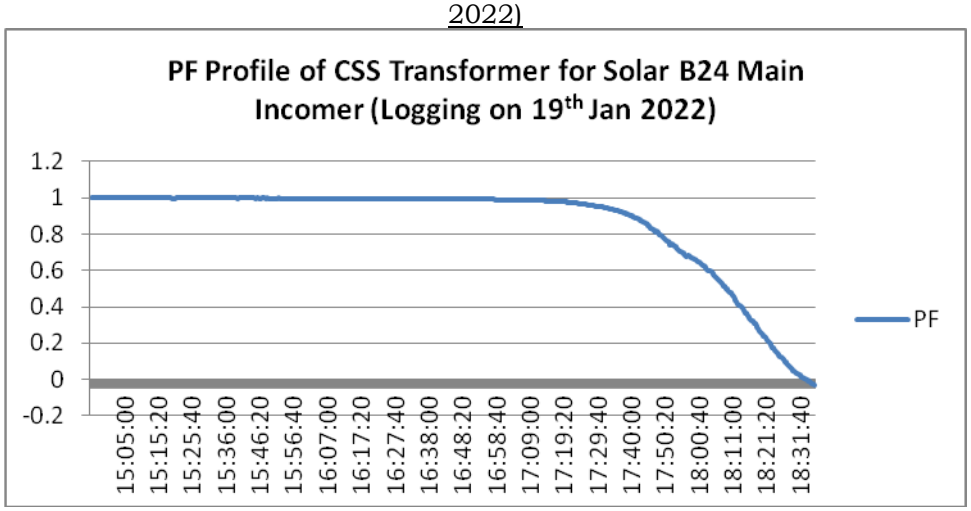
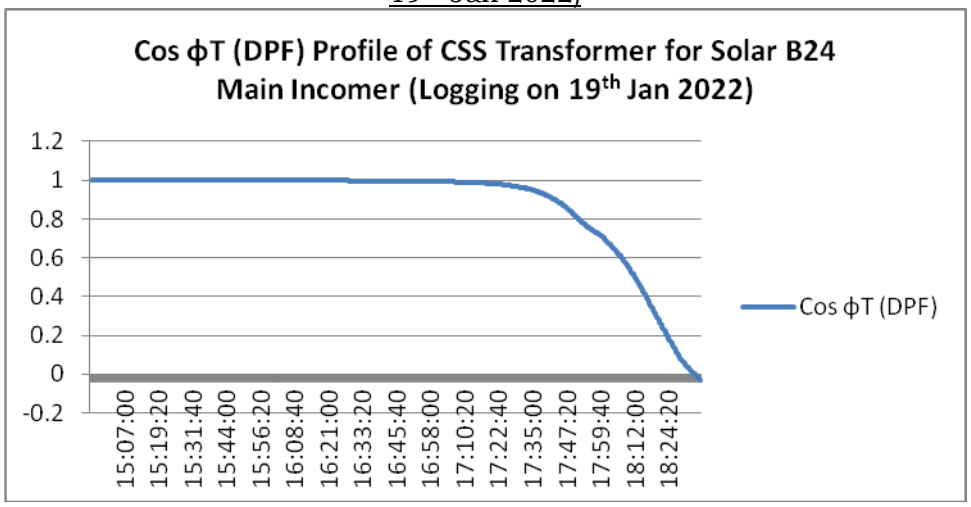


Figure 49 Cos φT (DPF) Profile of CSS Transformer for Solar B24 Main Incomer (Logging on 19th Jan 2022)



Location - Samudra Township Transformer for C1 Block			
Date -18/01/2022 to 19/01/2022		Time -07:42:00 PM to 10:10:00 AM	
Parameters	**Minimum**	**Average**	**Maximum**
Voltage (V)			
U12 rms	409.6	415.3	420.6
U23 rms	411.3	415.8	421
U31 rms	408.8	413.6	418.3
Voltage (V)			
V1 rms	235.7	238.8	241.6
V2 rms	237.3	240.5	243.6
V3 rms	236.9	239.3	242.1
Current			

Location - Samudra Township Transformer for C1 Block			
L1 (A)	23.1	42.7	160.6
L2 (A)	11	24.6	79.6
L3 (A)	17.5	39	97.2
Active Power			
Total (KW)	12.4	25	65.6
Reactive Power			
Total (KVAR)	-3.2	-0.9	5
Apparent Power			
Total (KVA)	13.2	25.5	65.9
Voltage Unbalance			
Total Uunb (IEEE 112)	0.3	0.4	0.5
Ampere Unbalance			
Total Aunb (IEEE 112)	1.1	36.4	90.8
Power Factor			
Total	0.9	1	1
Harmonics			
Voltage THD %	1.1	1.4	2.1
Current THD%	5.2	18.4	36.4

Remarks: Phase wise Load unbalance found. Suggest single phase load balance properly. Average 36.4 % load unbalance found.
Average % Ampere Harmonics is 18.4 %.

Figure 50 Voltage Profile of C1 Block Transformer (Day Time) Main Incomer (Logging on 18th Jan 2022)

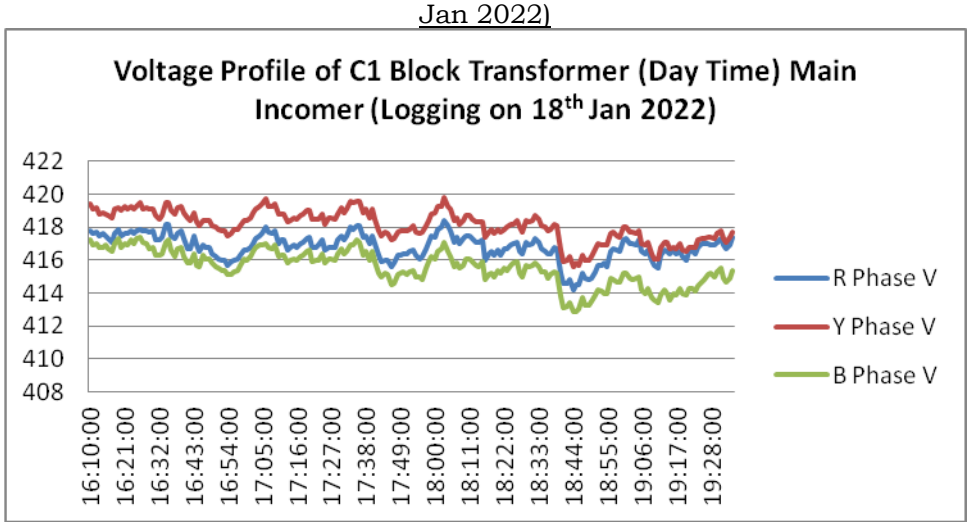


Figure 51 %Voltage Harmonics Profile of C1 Block Transformer (Day Time) Main Incomer (Logging on 18th Jan 2022)

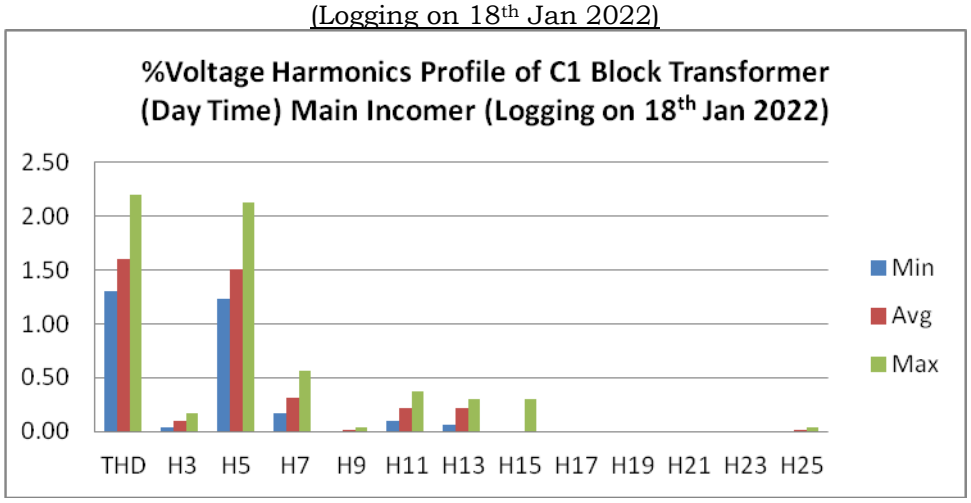


Figure 52 Ampere Profile of C1 Block Transformer (Day Time) Main Incomer (Logging on 18th Jan 2022)

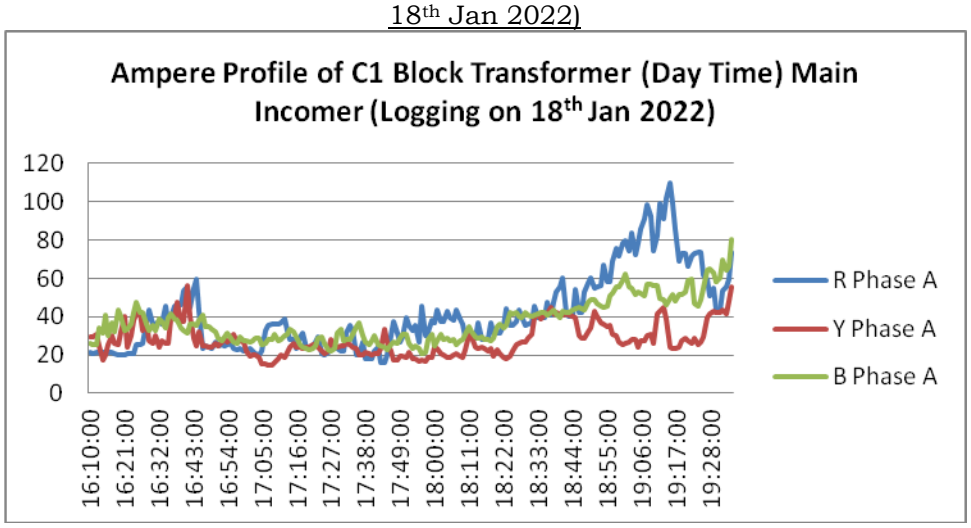


Figure 53 %Ampere Harmonics Profile of C1 Block Transformer (Day Time) Main Incomer (Logging on 18th Jan 2022)

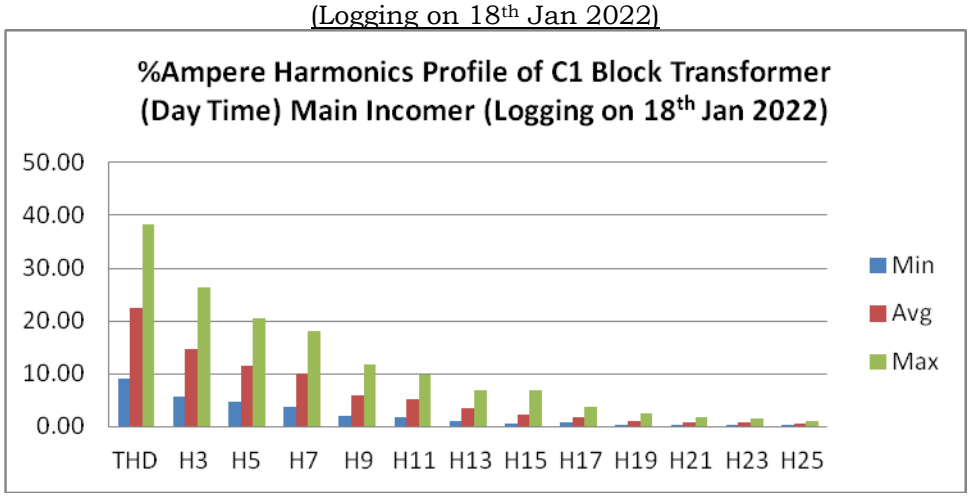


Figure 54 KW Profile of C1 Block Transformer (Day Time) Main Incomer (Logging on 18th Jan 2022)

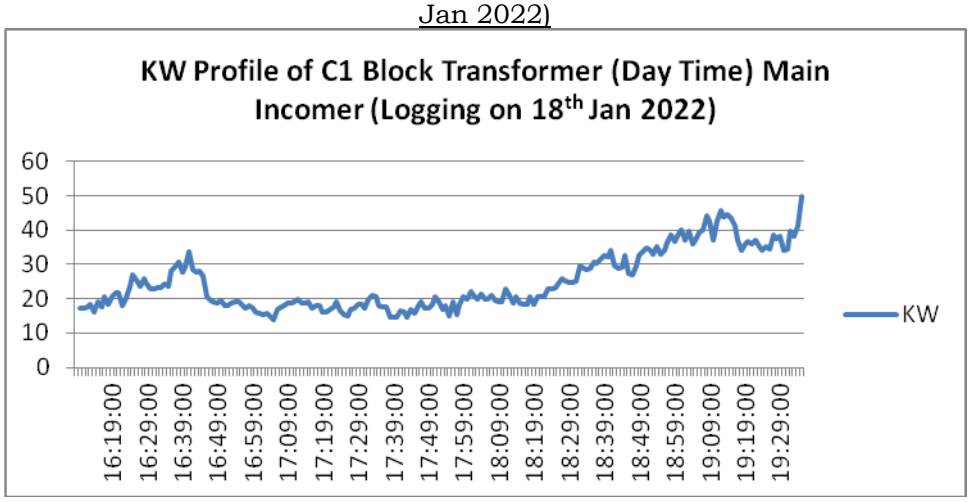


Figure 55 PF Profile of C1 Block Transformer (Day Time) Main Incomer (Logging on 18th Jan 2022)

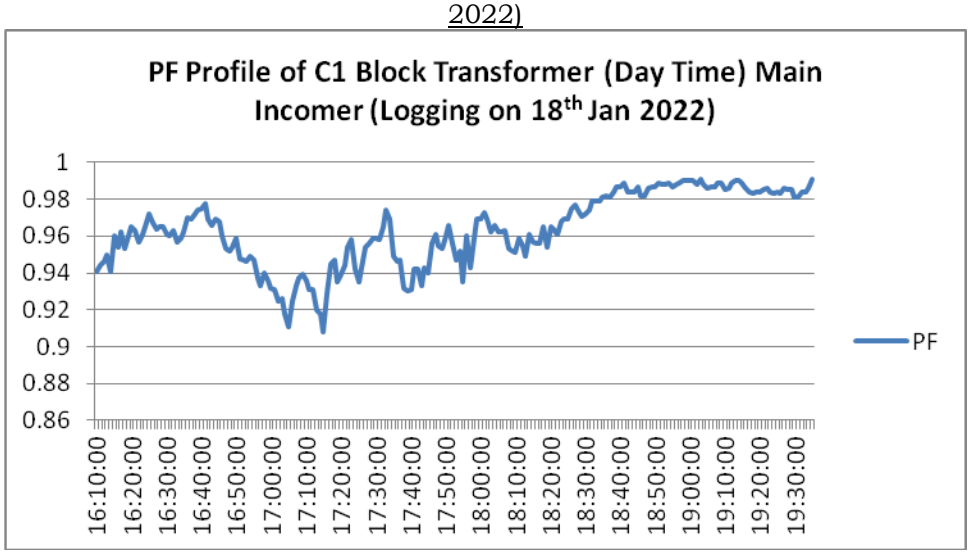


Figure 56 Cos φT (DPF) Profile of C1 Block Transformer (Day Time) Main Incomer (Logging on 18th Jan 2022)

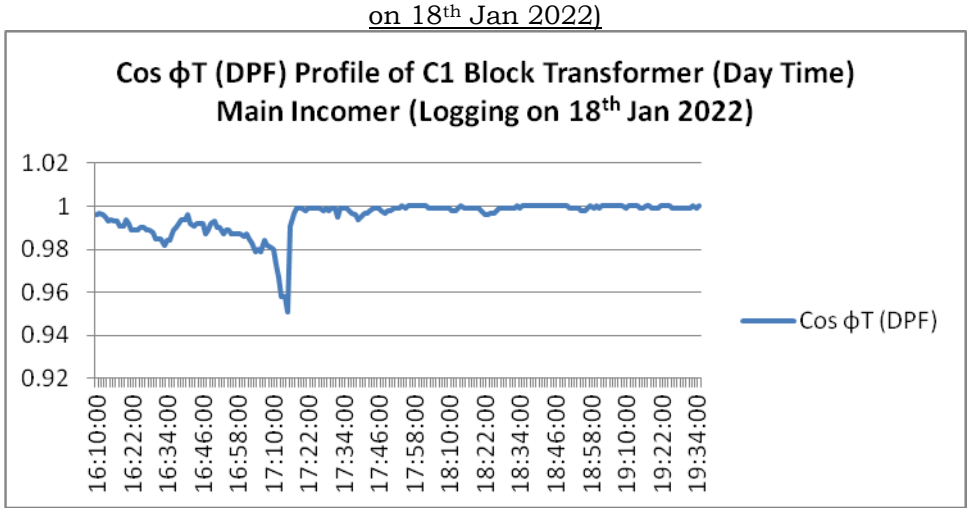


Figure 57 Voltage Profile of C1 Block Transformer (Night Time) Main Incomer (Logging on 18th & 19th Jan 2022)

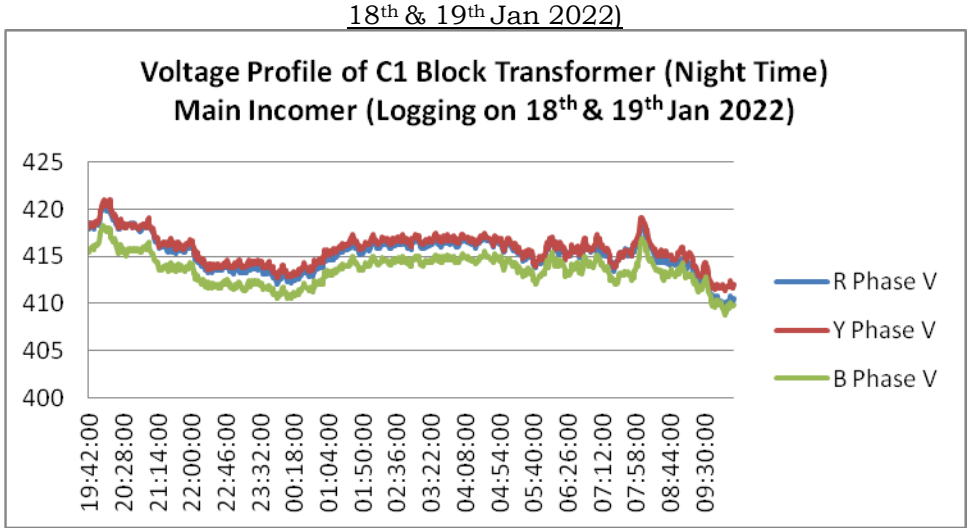


Figure 58 %Voltage Harmonics Profile of C1 Block Transformer (Night Time) Main Incomer (Logging on 18th & 19th Jan 2022)

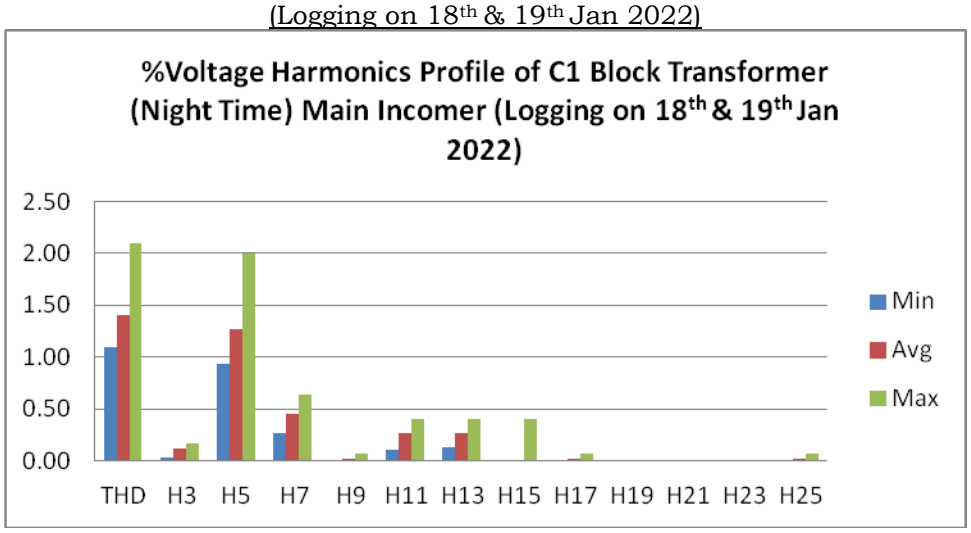


Figure 59 Ampere Profile of C1 Block Transformer (Night Time) Main Incomer (Logging on 18th & 19th Jan 2022)

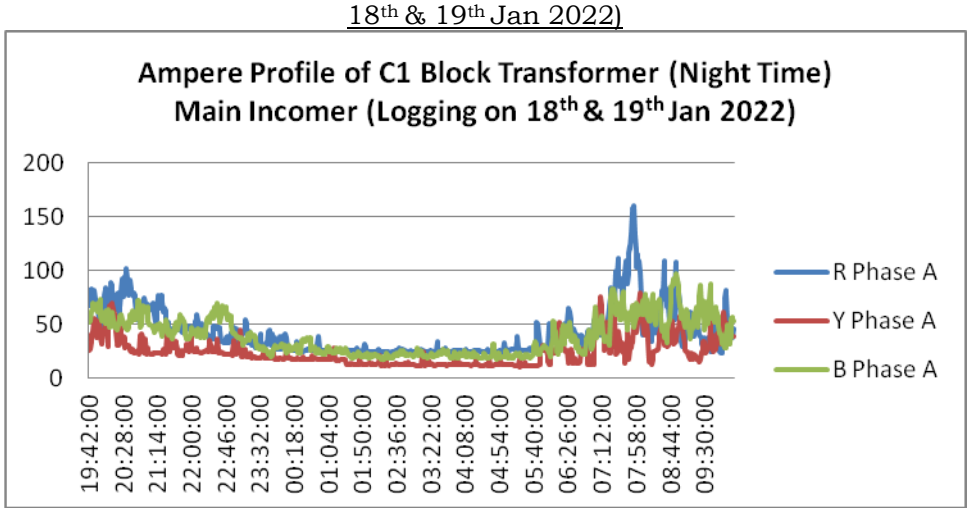


Figure 60 %Ampere Harmonics Profile of C1 Block Transformer (Night Time) Main Incomer (Logging on 18th & 19th Jan 2022)

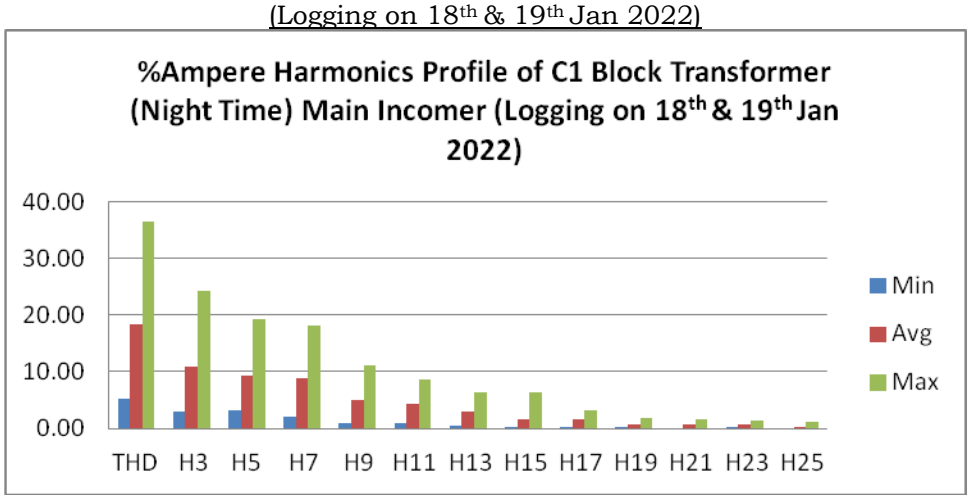


Figure 61 KW Profile of C1 Block Transformer (Night Time) Main Incomer (Logging on 18th & 19th Jan 2022)

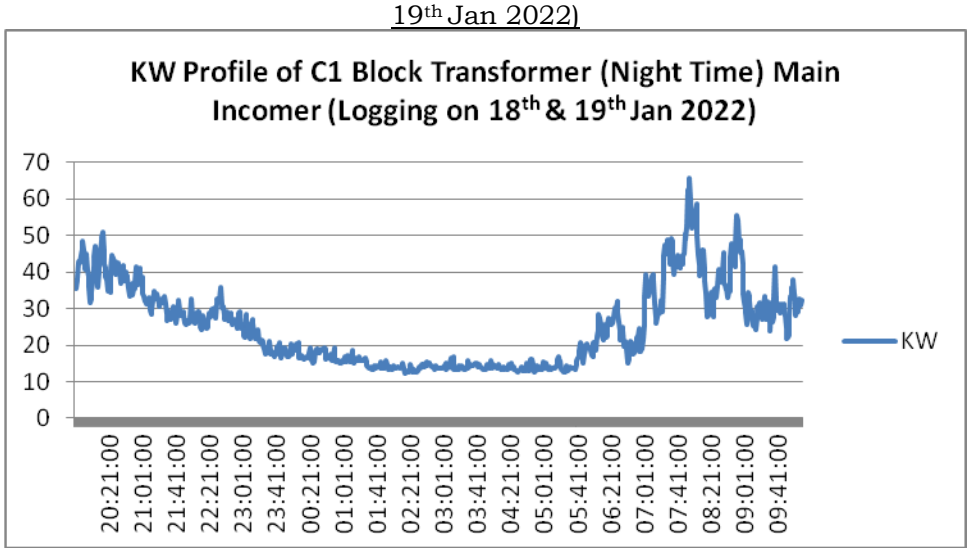


Figure 62 PF Profile of C1 Block Transformer (Night Time) Main Incomer (Logging on 18th & 19th Jan 2022)

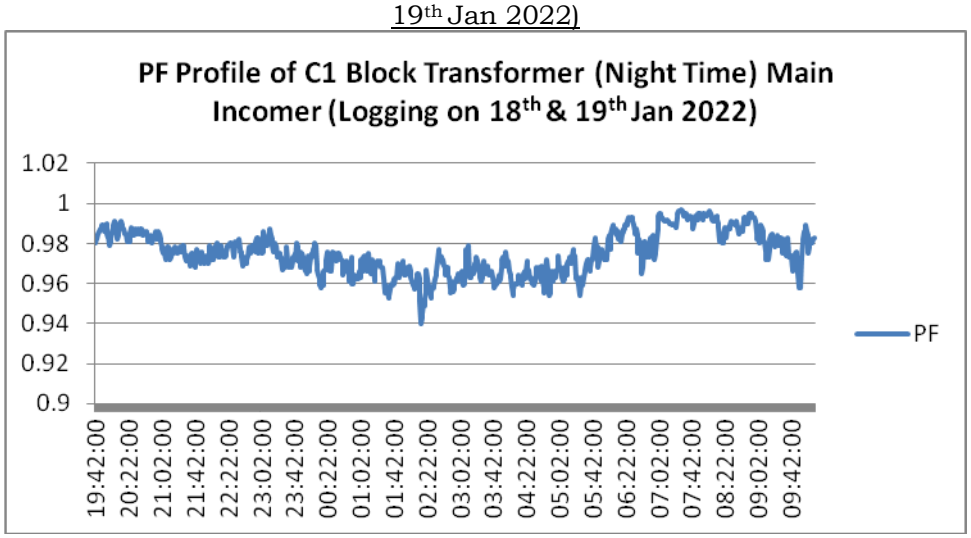
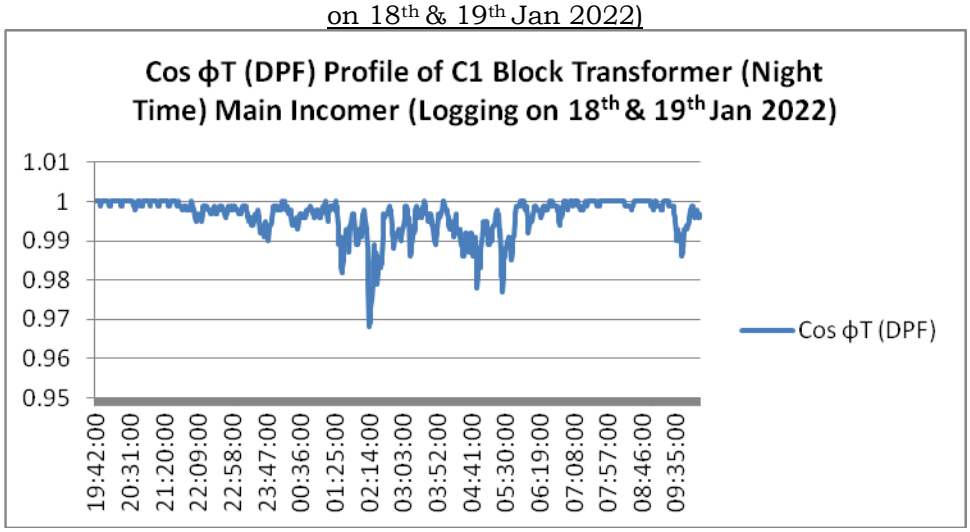


Figure 63 Cos φT (DPF) Profile of C1 Block Transformer (Night Time) Main Incomer (Logging on 18th & 19th Jan 2022)



Location - Samundra Township CSS TR for C35			
Date -19/01/2022		Time -11:20:00 AM to 01:31:00 PM	
Parameters	**Minimum**	**Average**	**Maximum**
Voltage (V)			
U12 rms	415.8	420.2	425.8
U23 rms	412.5	416.7	421.9
U31 rms	412.9	417.2	423
Voltage (V)			
V1 rms	238.7	241.2	244.5
V2 rms	240.4	242.9	246.1
V3 rms	237.3	239.8	243
Current			
L1 (A)	14.5	47.2	96.7
Active Power			
Total (KW)	3.1	11	22.5
Reactive Power			
Total (KVAR)	-0.5	1.4	4.9
Apparent Power			
Total (KVA)	3.5	11.3	23
Power Factor			
Total	0.9	1	1
Harmonics			

Voltage THD %	1.1	1.6	2
Current THD%	6.3	18	51.1

Remarks: Average % Ampere Harmonics is 18 %.

Figure 64 Voltage Profile of CSS Transformer for C35 Main Incomer (Logging on 19th Jan 2022)

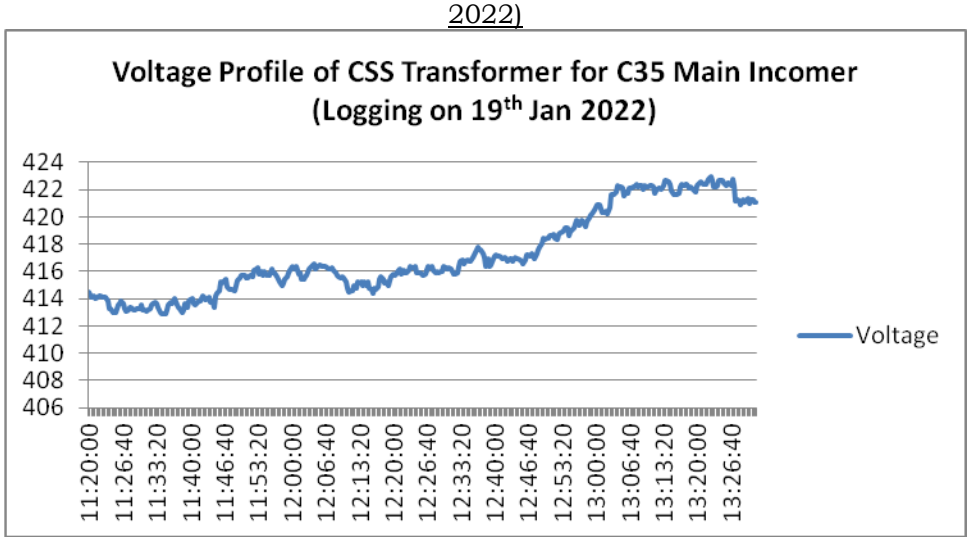


Figure 65 %Voltage Harmonics Profile of CSS Transformer for C35 Main Incomer (Logging on 19th Jan 2022)

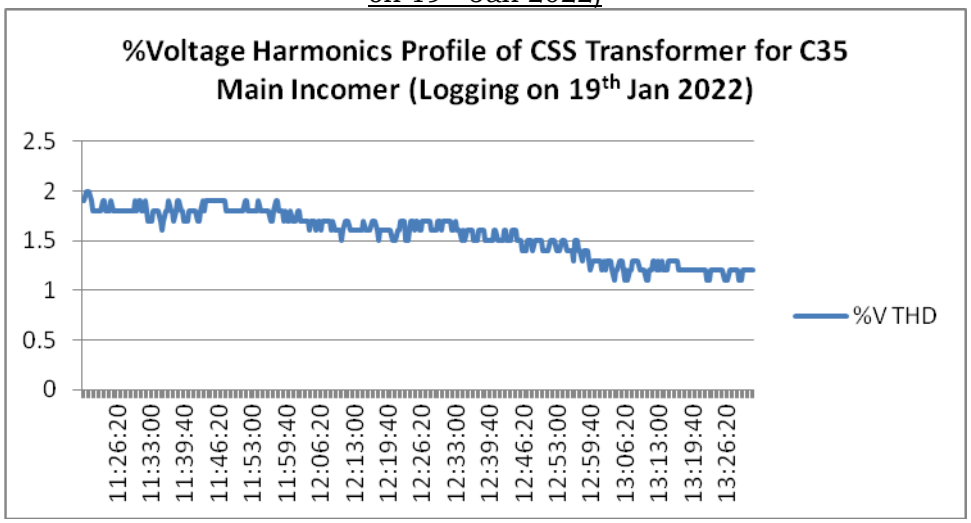


Figure 66 Ampere Profile of CSS Transformer for C35 Main Incomer (Logging on 19th Jan 2022)

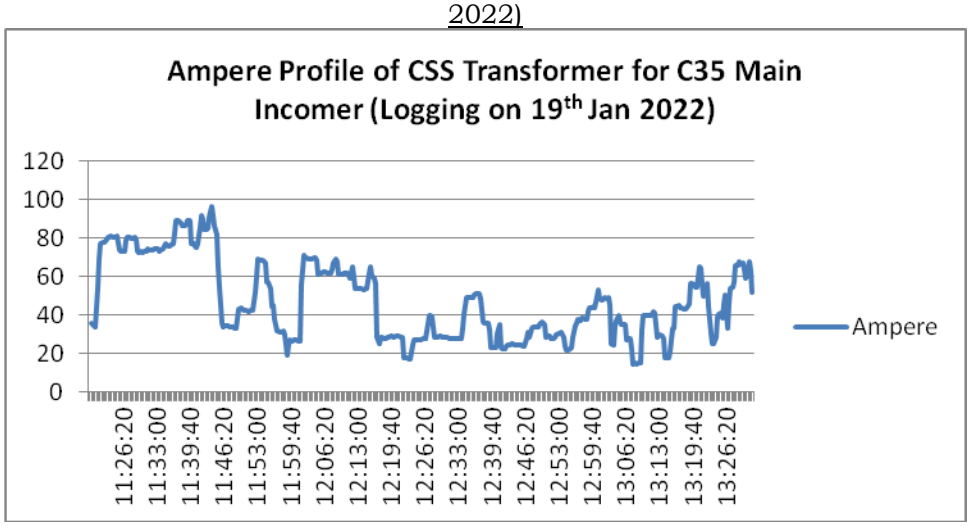


Figure 67 %Ampere Harmonics Profile of CSS Transformer for C35 Main Incomer (Logging on 19th Jan 2022)

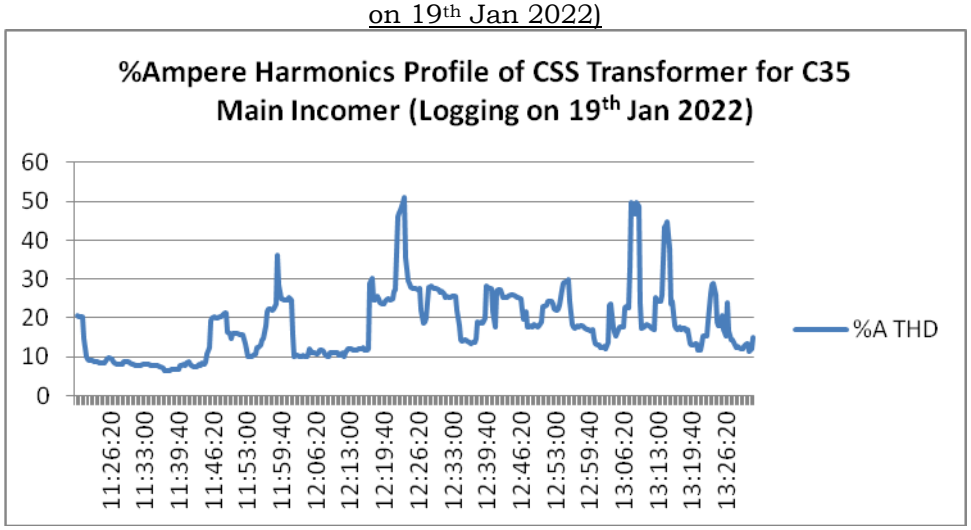


Figure 68 KW Profile of CSS Transformer for C35 Main Incomer (Logging on 19th Jan 2022)

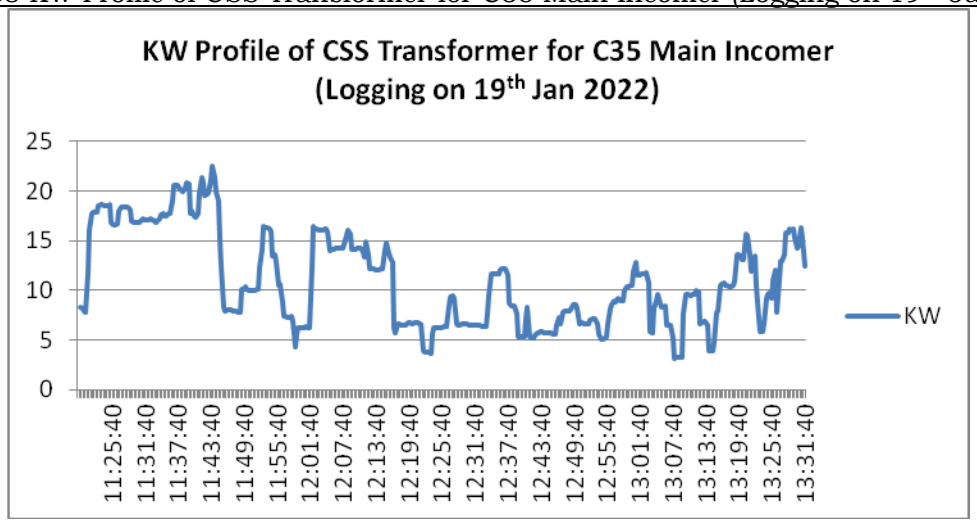


Figure 69 PF Profile of CSS Transformer for C35 Main Incomer (Logging on 19th Jan 2022)

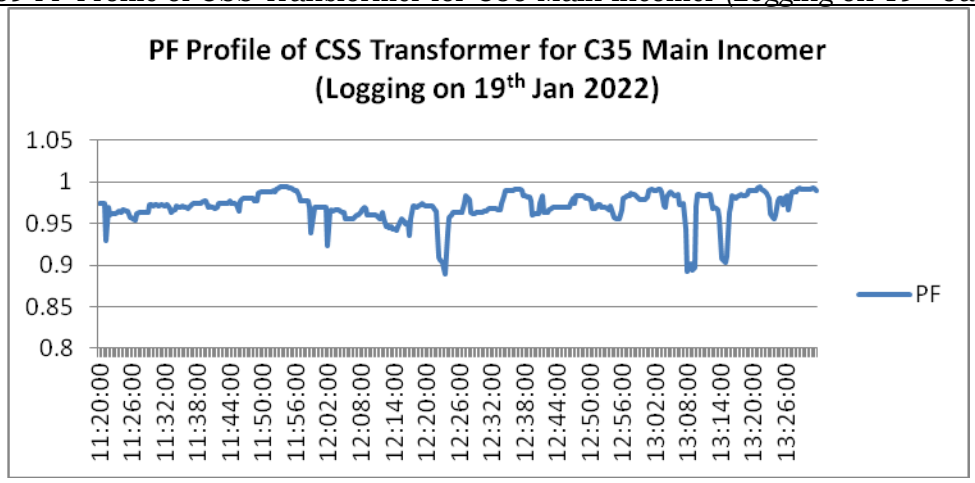
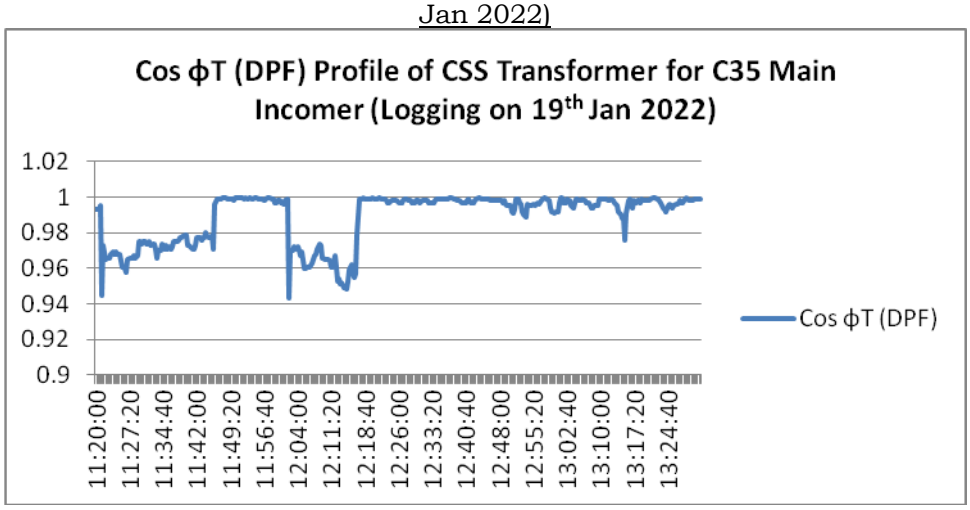


Figure 70 Cos φT (DPF) Profile of CSS Transformer for C35 Main Incomer (Logging on 19th Jan 2022)



Location - Samundra Township TR for STP			
Date -20/01/2022		Time -11:03:00 AM to 01:05:00 PM	
Parameters	**Minimum**	**Average**	**Maximum**
Voltage (V)			
U12 rms	415.8	418.5	425.6
U23 rms	417.4	420.3	427.5
U31 rms	415.5	418.3	425.6
Voltage (V)			
V1 rms	239.5	241.2	245.4
V2 rms	240	241.8	246
V3 rms	241.4	242.7	246.8
Current			
L1 (A)	54.3	87.6	123.8

Location - Samundra Township TR for STP			
L2 (A)	71.4	100.1	128.6
L3 (A)	55.4	90.2	127.3
Active Power			
Total (KW)	29.8	52.7	75
Reactive Power			
Total (KVAR)	31.4	39.6	48.9
Apparent Power			
Total (KVA)	44.2	67.2	90.9
Voltage Unbalance			
Total Uunb (IEEE 112)	0.3	0.3	0.4
Ampere Unbalance			
Total Aunb (IEEE 112)	1.4	9.2	18.5
Power Factor			
Total	0.7	0.8	0.8
Harmonics			
Voltage THD %	1.3	2.2	3
Current THD%	1.3	10.6	20.3

Remarks: Average % Ampere Harmonics is 10.6 %.

Figure 71 Voltage Profile of Samudra Township STP Transformer (315 KVA) Main Incomer (Logging on 20th Jan 2022)

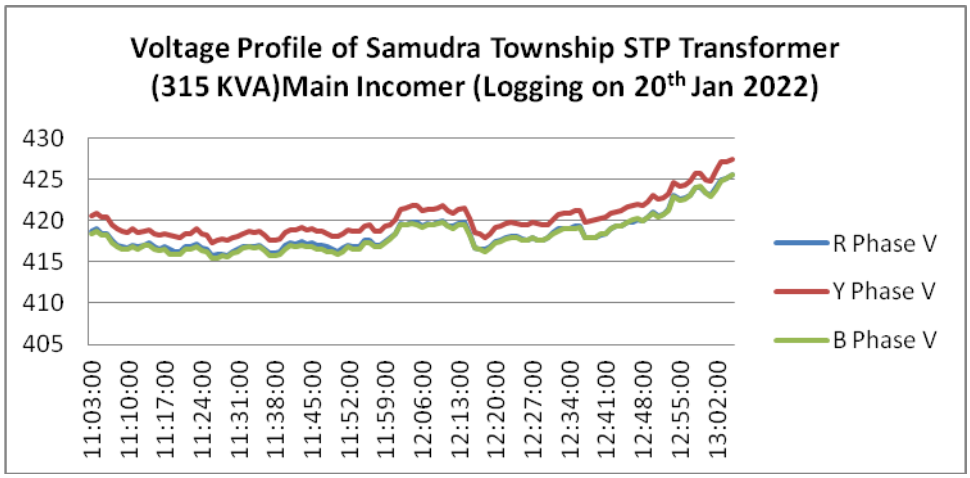


Figure 72 %Voltage Harmonics Profile of Samudra Township STP Transformer (315 KVA) Main Incomer (Logging on 20th Jan 2022)

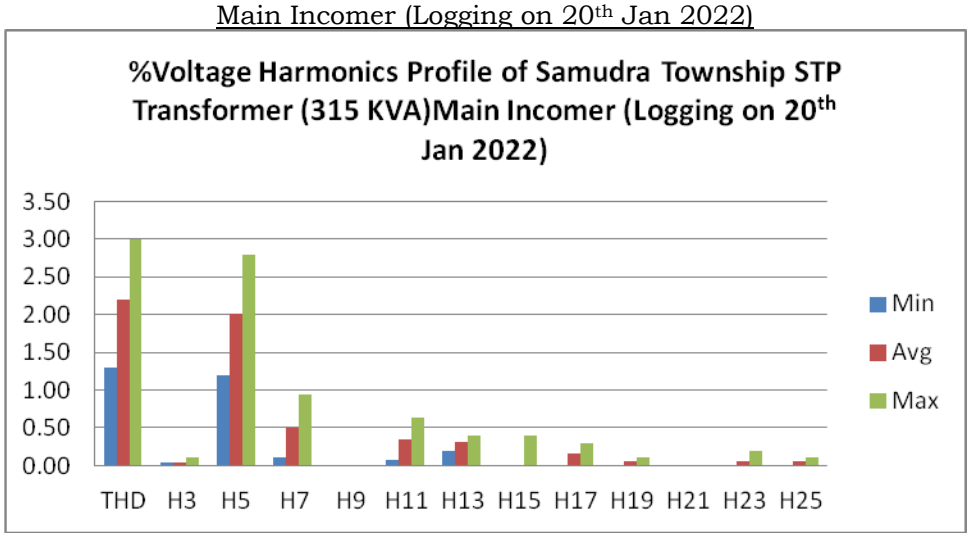


Figure 73 Ampere Profile of Samudra Township STP Transformer (315 KVA) Main Incomer (Logging on 20th Jan 2022)

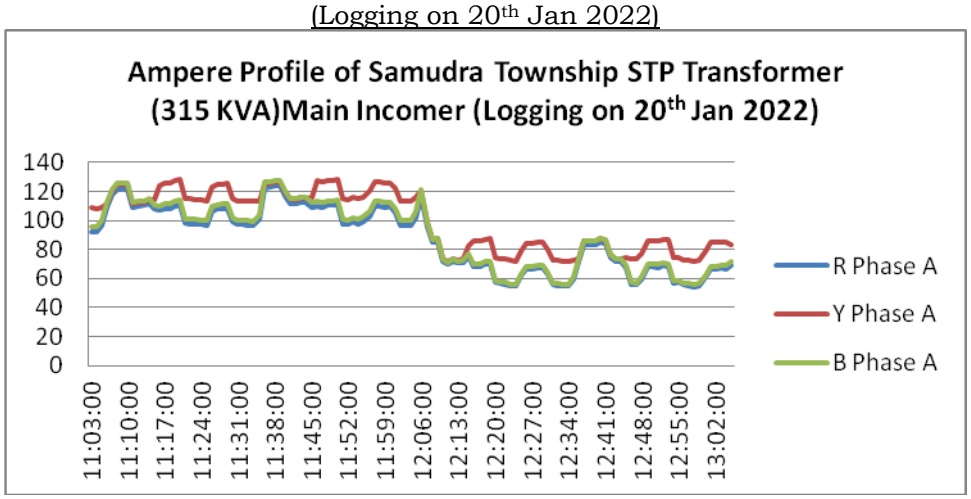


Figure 74 %Ampere Harmonics Profile of Samudra Township STP Transformer (315 KVA) Main Incomer (Logging on 20th Jan 2022)

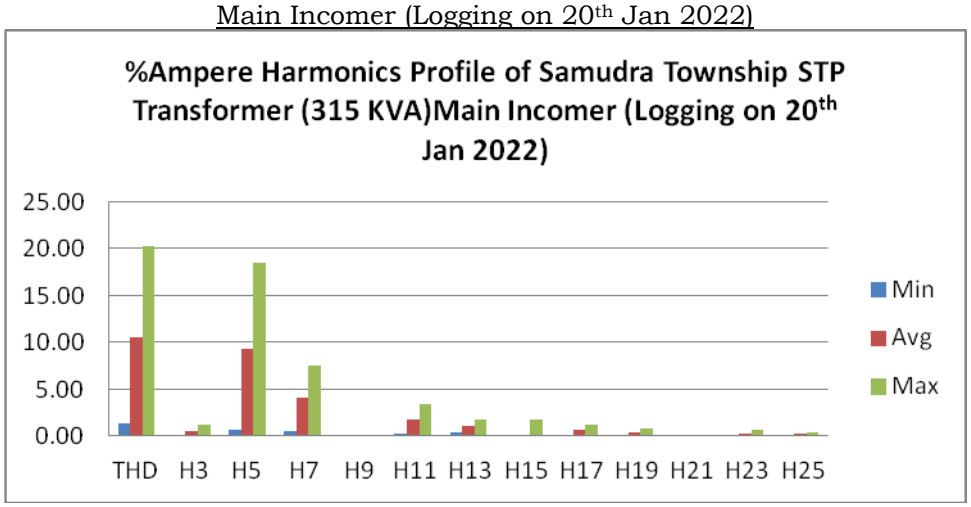


Figure 75 KW Profile of Samudra Township STP Transformer (315 KVA) Main Incomer (Logging on 20th Jan 2022)

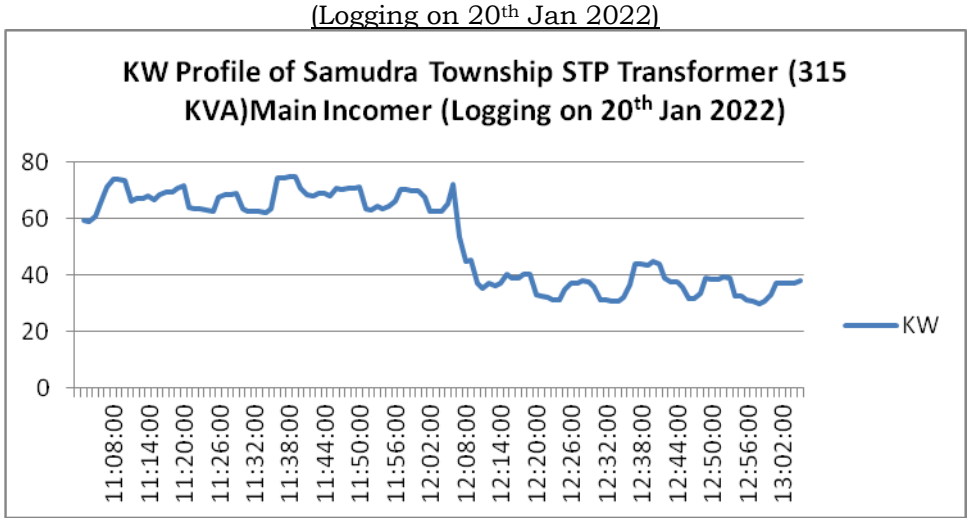


Figure 76 PF Profile of Samudra Township STP Transformer (315 KVA) Main Incomer (Logging on 20th Jan 2022)

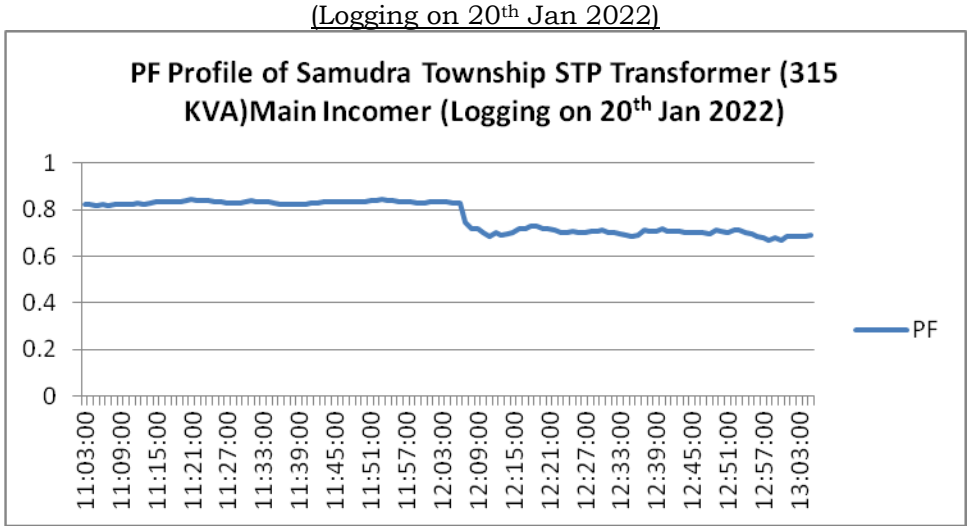
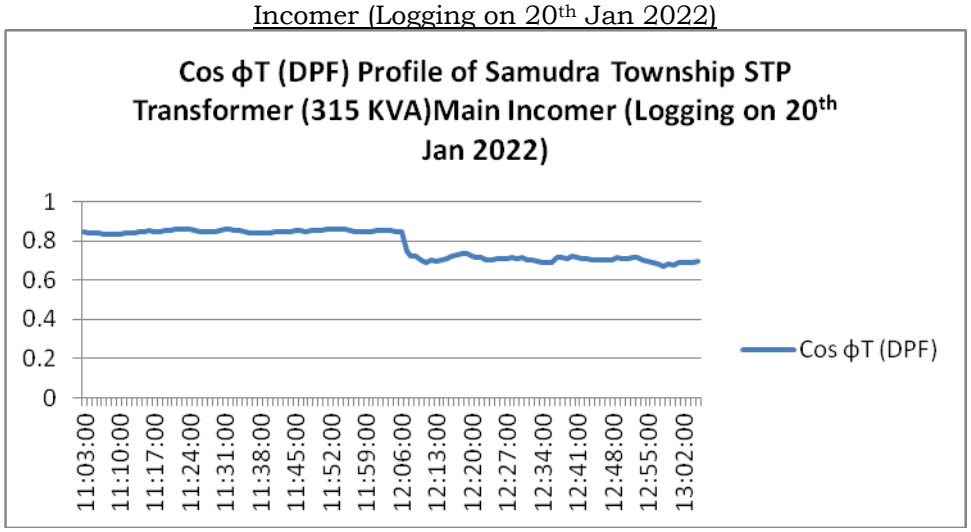


Figure 77 Cos φT (DPF) Profile of Samudra Township STP Transformer (315 KVA) Main Incomer (Logging on 20th Jan 2022)



3.2 Capacitor Banks Health Check

- No any HT & LT Capacitor installed at Samudra Township.

3.3 Pumping System

Installation and Operational Details

- Location pump House having 3 nos. of Raw water & Pressure boosting pump are installed in which 2 nos. of pump are running Continuously working. But during Audit period pump is not working conditions.
- The Pressure boosting system is Available but Presently not working, Water from the Pump House is used inside the port, following are the details.

Installation and Operational Details

Pump House

- There are more than 20 pumps of different capacities are installed at Samudra Township out of which 14 pumps that are above 1.5 kW motor rating have been included in the study.
- Most of the pumps are installed in Sewage treatment plant (STP) where water is collected from township's sewage system and is re circulated after filtration. Installation, operation and performance details of the pumps studied are described in below table.
- 700 to 800 KL of STP is filtered and re circulated into township for Gardening.
- Total installed filtration capacity is 2 MLD against the demand of 1 MLD.
- Pumps discharge flow has been measured using ultra sonic flow metering device. Power has been measured at motor feeder. Discharge and suction head has been noted from online gauges. Pump efficiency is estimated in table below.

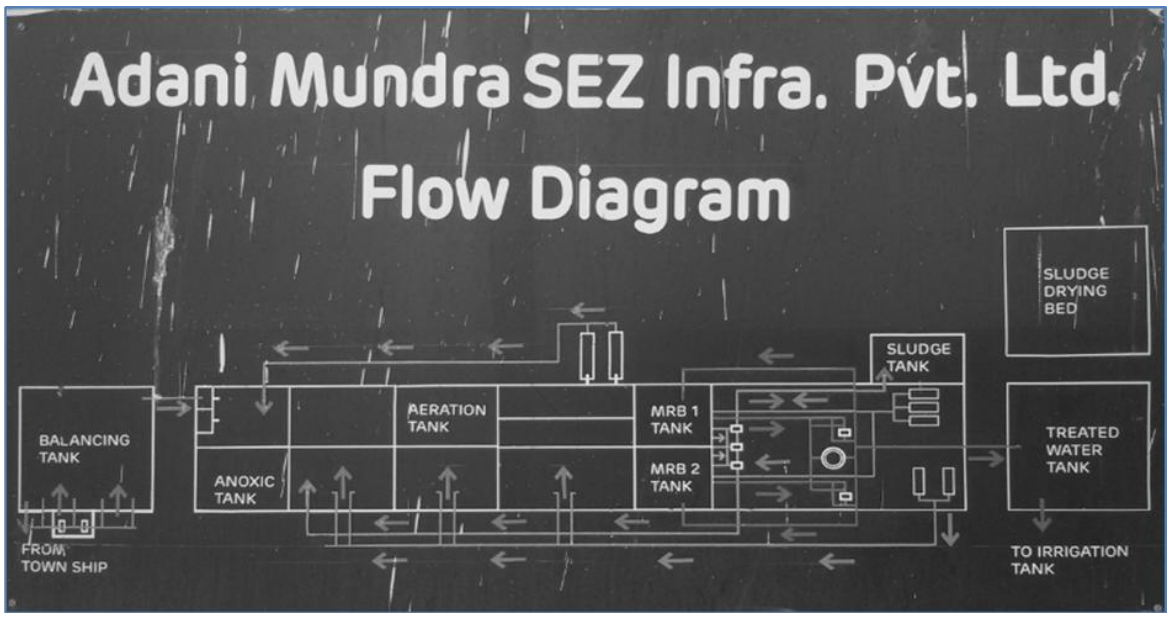


Table 8 : Pump Performance Assessment for Township and STP Pump

Particulars	Unit	Equalization tank Raw Water Transfer Pump	Process Pump-1	Process Pump-2	Horticulture Pump	RAS Pump-2
Design Data						
Head, m	m		15	15	30	18.5
Flow, m^3/hr	m^3/h		45	45	111.6	90
Speed, rpm	rpm					
Motor Rating, kW	kW	5.5	3	3		7.5
Voltage, kV	V	415	415	415	415	415
Site Measurements						
Suction pressure, kg/cm^2g	kg/cm^2g		-0.2	-0.2	0.1	0.2
Discharge pressure, kg/cm^2g	kg/cm^2g		0.5	0.5	3.5	0.4
Volume flow, m^3/h	m^3/h	85	32	32	98	86
Power input to motor, kW	kW	4	2.3	2.7	12.69	6.18
Motor efficiency, %	%	92%	83%	83%	88%	88%
Mechanical efficiency of coupling	%	100%	100%	100%	100%	100%
Calculations for estimation of pump efficiency						
Specific gravity at suction conditions		0.993	0.993	0.993	0.993	0.993
Specific gravity at discharge conditions		0.993	0.993	0.993	0.993	0.993
Discharge head, m	m	2.50	5.05	5.05	35.32	4.04
Suction head, m	m	0.00	-2.02	-2.02	1.01	2.02
Differential head, m	m	2.50	7.06	7.06	34.31	2.02
Total Volume flow , m3/hr	m^3/h	85	32	32	98	86
Hydraulic Power developed by pump, kW	kW	0.58	0.61	0.61	9.10	0.47
Pump shaft power, kW	kW	3.68	1.90	2.23	11.17	5.44
Overall pump set efficiency, %	%	14.38%	26.59%	22.65%	71.69%	7.60%
Pump efficiency, %	%	15.63%	32.23%	27.46%	81.47%	8.64%

Particulars	Unit	Equalization tank Raw Water Transfer Pump	Process Pump-1	Process Pump-2	Horticulture Pump	RAS Pump-2
Remark		Balancing tank to aeration tank (1W+1S/B)	MRB tank to treated water tank			(1W+2S/B)

Table 9 : Pump Performance Assessment for Samudra colony

Particulars	Unit	Main Irrigation Tank Submersible Pump	Sprinkler Pump (250kl Tank)	Adani Hospital & Mitap Submersible Pump	Hostel Area Sprinkler Horse Pipe Water Supply	Club House Tank Submersible Pump	Club House Tank Pump for Port and Garden
Design Data							
Head, m	m						
Flow, m^3/hr	m^3/h						
Speed, rpm	rpm						
Motor Rating, kW	kW	11			5.5	11	3.7
Voltage, KV	V	415	415	415	415	415	415
Site Measurements							
Suction pressure, kg/cm^2g	kg/cm^2g	-0.3	-0.3				
Discharge pressure, kg/cm^2g	kg/cm^2g	2.4	4.3				
Volume flow, m^3/h	m^3/h	63	48.5	25.85	11.12	50.76	14
Power input to motor, kW	kW	10.29	10.21	10.21		10.59	4.36

Particulars	Unit	Main Irrigation Tank Submersible Pump	Sprinkler Pump (250kl Tank)	Adani Hospital & Mitap Submersible Pump	Hostel Area Sprinkler Horse Pipe Water Supply	Club House Tank Submersible Pump	Club House Tank Pump for Port and Garden
Motor efficiency, %	%	92%	92%	92%	88%	92%	88%
Mechanical efficiency of coupling	%	100%	100%	100%	100%	100%	100%
Calculations for estimation of pump efficiency							
Specific gravity at suction conditions		0.993	0.993	0.993	0.993	0.993	0.993
Specific gravity at discharge conditions		0.993	0.993	0.993	0.993	0.993	0.993
Discharge head, m	m	24.22	43.39	0.00	0.00	0.00	0.00
Suction head, m	m	-3.03	-3.03	0.00	0.00	0.00	0.00
Differential head, m	m	27.24	46.42	0.00	0.00	0.00	0.00
Total Volume flow , m3/hr	m^3/h	63	48.5	25.85	11.12	50.76	14
Hydraulic Power developed by pump, kW	kW	4.64	6.09	0.00	0.00	0.00	0.00
Pump shaft power, kW	kW	9.47	9.39	9.39	0.00	9.74	3.84
Overall pump set efficiency, %	%	45.14%	59.66 %	0.00%	#DIV/0 !	0.00%	0.00 %
Pump efficiency, %	%	49.06%	64.85 %	0.00%	#DIV/0 !	0.00%	0.00 %

Particulars	Unit	Main Irrigation Tank Submersible Pump	Sprinkler Pump (250kl Tank)	Adani Hospital & Mitap Submersible Pump	Hostel Area Sprinkler Horse Pipe Water Supply	Club House Tank Submersible Pump	Club House Tank Pump for Port and Garden
Remark		Supply-Club House area tank and Sprinkler garden.	If Auto Valve Close 4.5 kg/cm 2 Bypass In tank (250kl Tank).				

❖ **Observation & Saving Potential**

- Main Irrigation Tank Submersible Pump flow found when running in individual is 63 m3/ hr as against rated of 5 & 90 m3/hr.
- The present total head of the Main Irrigation Tank Submersible Pump found 24 meter.
- The present power consumption of the Main Irrigation Tank Submersible Pump is 10.29 kW.
- Present operating efficiency of the Main Irrigation Tank Submersible Pump running is 48.7 %.

3.3.1 Savings Potential at Main Irrigation Tank Submersible Pump

Particulars	Unit	Main Irrigation Tank Submersible Pump
Make		
Rated Flow	m^3/hr	
Rated Head	mts.	
Connected Motor	kW	11
Estimated Operating Flow	m^3/hr	63
Fluid density	kgs/m^3	993
Discharge Pressure	kg/cm^2	2.4
Suction Pressure	kg/cm^2	-0.3
Operating Head	mts.	27.1
Hydraulic Power	kW	4.61

Particulars	Unit	Main Irrigation Tank Submersible Pump
Rated Motor Efficiency	%	92
Measured Pump Input Power	kW	10.29
Corrected Pump Input power	kW	9.5
Pump Efficiency	**%**	**48.7**
Overall Efficiency	**%**	**44.8**
New Proposed Pump Efficiency	%	70%
Similar Flow	m^3/hr	63
Similar head	mts.	27.1
Estimated Power for same flow & better efficiency	kW	7.2
Savings potential with New Energy efficient Pump	**kW**	**3.1**
Operating Hours	Hrs.	4000
Annual Saving	kWh	12514.14
Unit Rate	Rs./kWh	5.2
Annual Monetary Savings	**Rs.**	**65073.51**
Proposed Investment for new Pump	Rs.	60000
Simple Payback	Months	11.06

Table 10 : Performance Assessment for Township pumps

Particulars	Unit	C-12 irrigation tank Pump	Irrigation tank No-5 Pump(25kl Tank)	Samundra Township Temple Back side Pump	Main Gate Tank Pump	pump at customer care office
Design Data						
Head, m	m			34		
Flow, m^3/hr	m^3/h			35.28		
Speed, rpm	rpm					
Motor Rating, Kw	kW	3.7	3.7	5.5	3.7	37.5
Voltage, KV	V	415	415	415	415	415
Site Measurements						
Suction pressure, kg/cm^2g	kg/cm^2g			0.1		0.1

Particulars	Unit	C-12 irrigation tank Pump	Irrigation tank No-5 Pump(25kl Tank)	Samundra Township Temple Back side Pump	Main Gate Tank Pump	pump at customer care office
Discharge pressure, kg/cm²g	kg/cm²g					1.7
Volume flow, m³/h	m³/h	8	10	38	5.4	250
Power input to motor, kW	kW	2.77	3.11	5.29	4.15	36.76
Motor efficiency, %	%	88%	88%	88%	88%	86%
Mechanical efficiency of coupling	%	100%	100%	100%	100%	100%
Calculations for estimation of pump efficiency						
Specific gravity at suction conditions		0.993	0.993	0.993	0.993	0.993
Specific gravity at discharge conditions		0.993	0.993	0.993	0.993	0.993
Discharge head, m	m	-	-	0.00	-	17.15
Suction head, m	m	-	-	1.01	-	1.01
Differential head, m	m	-	-	-1.01	-	16.15
Total Volume flow , m3/hr	m³/h	8	10	38	5.4	250
Hydraulic Power developed by pump, kW	kW	-	-	-0.10	-	10.92
Pump shaft power, kW	kW	2.44	2.74	4.66	3.65	31.61
Overall pump set efficiency, %	%	%	%	-1.96%	%	29.71%
Pump efficiency, %	%	%	%	-2.23%	%	34.55%

Particulars	Unit	C-12 irrigation tank Pump	Irrigation tank No-5 Pump(25kl Tank)	Samundra Township Temple Back side Pump	Main Gate Tank Pump	pump at customer care office
Remark				Water Supply in Tree plant, Temple Cleaning.		Raw sewage water supply from township to STP

3.4 Compressed air Systems

STP Air Compressor

- The 1 nos. of 35 CFM Air Compressors are installed in STP Plant in which 1 nos. are Reciprocating type and 1 nos. are Reciprocating type Compressors, Reciprocating type ELGI 35 CFM Air compressors are used for Areation tank. Following are the details.

Table 11 : STP Air compressor Installation Details

Sr. No.	Description	Unit	Values
1	Make		Elgi
2	Model		TS 10LB
3	Pressure rating	Bar	12
4	Initial Pressure (P1)	Bar	0
5	Discharge Pressure (P2)	Bar	9
6	Rated Capacity	CFM	35.4
7	Motor rating	KW	7.5
8	Air Receiver capacity	m3/min	0.5

- Volumetric capacity test for all available air compressors is undertaken during the test study to assess capacity and volumetric efficiency.

Figure 78 Voltage Profile of Samudra Township STP Air Compressor Main Incomer (Logging on 20th Jan 2022)

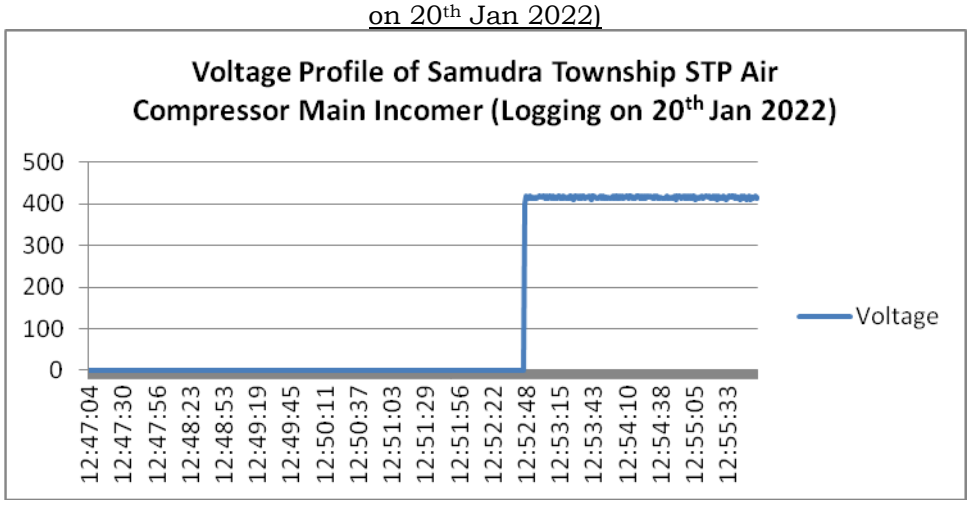


Figure 79 %Voltage Harmonics Profile of Samudra Township STP Air Compressor Main Incomer (Logging on 20th Jan 2022)

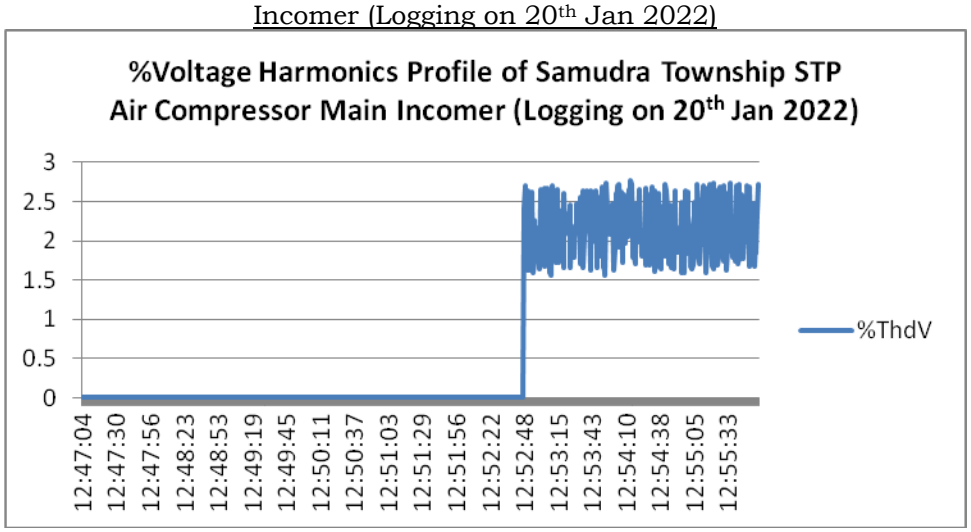


Figure 80 Ampere Profile of Samudra Township STP Air Compressor Main Incomer (Logging on 20th Jan 2022)

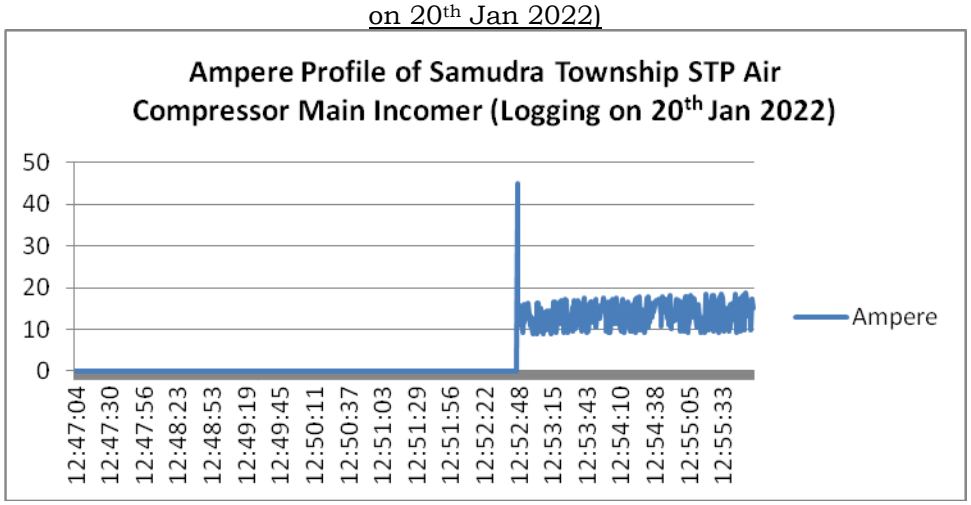


Figure 81 %Ampere Harmonics Profile of Samudra Township STP Air Compressor Main Incomer (Logging on 20th Jan 2022)

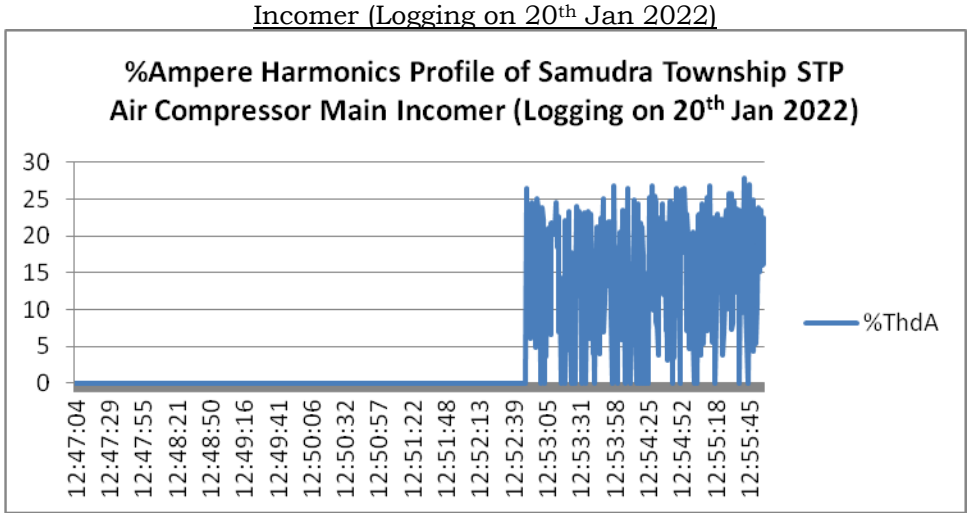


Figure 82 KW Profile of Samudra Township STP Air Compressor Main Incomer (Logging on 20th Jan 2022)

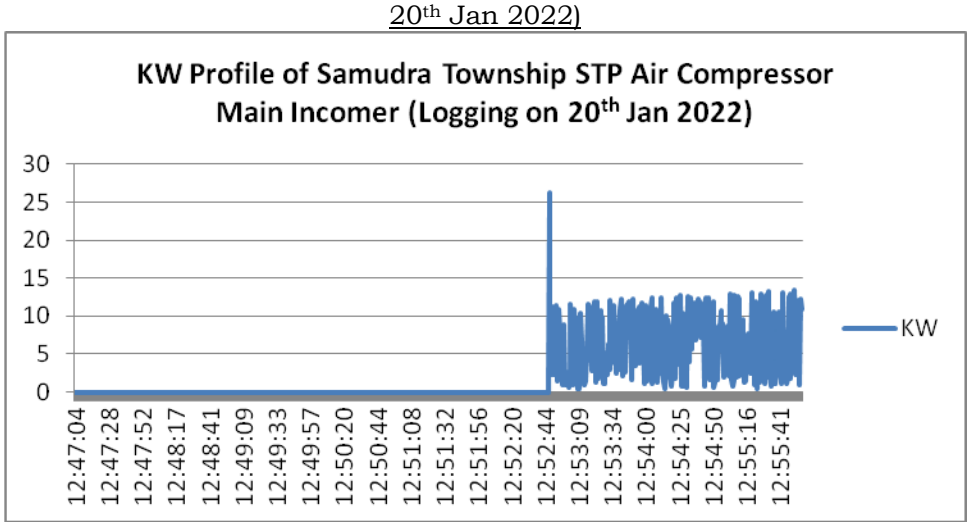


Figure 83 PF Profile of Samudra Township STP Air Compressor Main Incomer (Logging on 20th Jan 2022)

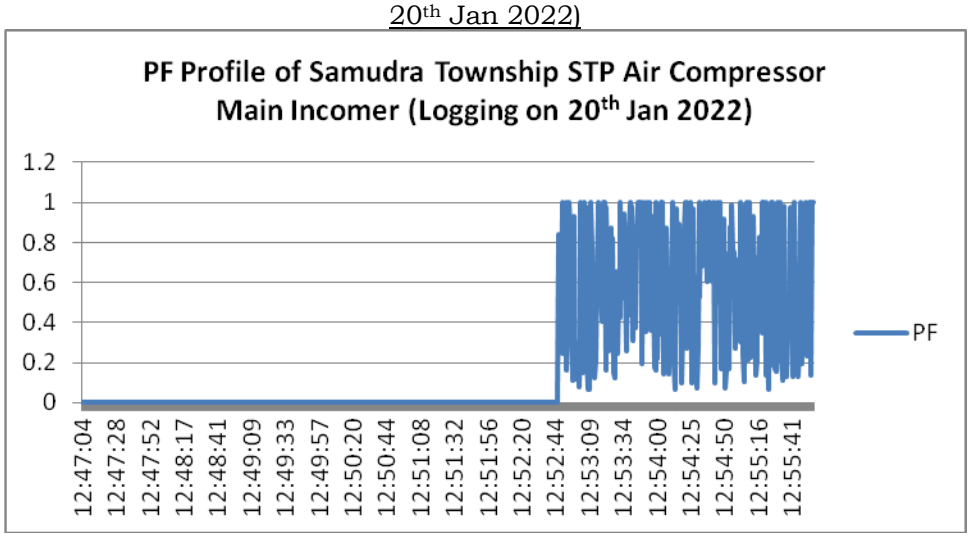
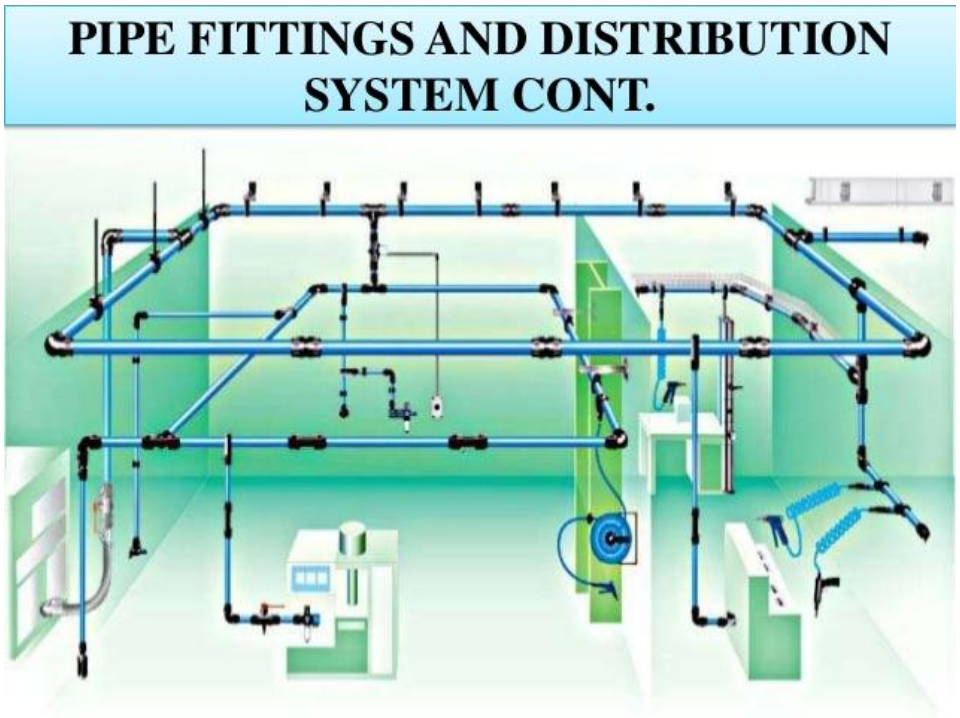


Table 12 : Recommended Pipe Line System to APSEZ Pipe Fittings & Distribution System



- Pipe line distribution system to improve and reduced pressure drop in system. Presently due to pressure drop Air compressor generation pressure is 8 to 7 kg/cm2.
- 2 to 1 kg/cm² Reduction Pressure.

3.4.1 Savings Potential at To Optimized Pressure

- STP Pneumatics valve required Maximum 5 Kg/cm² required.

Air Compressor (Present Load/Unload Pressure: 5/9 Kg/cm²)				
Savings due to reduction of 2 kg/cm² during normal loading conditions.				
Sr. No	Parameter	Unit	Air Compressor	Air Compressor
1	Savings by reduction of 1 kg/cm²	%	8	8
2	Motor Installed capacity	KW	7.5	7.5
3	Observed Power	KW	9	9
4	Remarks		Normal Load	Unload Condition
5	Savings anticipated by reduction of 2 kg/cm²		1.8	0
6	Annual Savings in KWH (Calculation used 180 Days* 12 hrs/day)		3888	0
7	Annual Savings in Rs. (Rate- Rs. 5.28/kWh)		20528.64	0

Annual Savings in KWH	3888
Annual Savings in Rs.	20528.64
Investment	Nil
Payback Period	Immediate

3.4.2 Good House Keeping of Air Compressor House

Monitoring and Arresting Leakages

- The major opportunity to save energy is in the prevention of compressed air leaks in the distribution system. Leaks frequently occur at air receivers, relief valves, pipes and hose joints, shut off valves, quick release couplings, tools & equipment. In most cases, they are due to poor maintenance and sometimes, improper installations etc. If ideally no leakage is there & compressed air is not being used then compressor should remain in the unload condition. But leakages cause artificial load demand on the compressor.
- There will always be some leakages in the plant and the maintenance personnel have to continuously identify leaks jointly with production staff and arrest the same.

Good House Keeping

- Regular draining of water collected in the receiver
- In an ideal system, all cooling and condensing of air should be carried out before the air leaves the receiver. The amount of condensation, which takes place in the lines, depends on the efficiency of moisture extraction before the air leaves the receiver and the temperature in the mains itself.

Installing additional receivers near use points

- To reduce or minimise artificial peak demand, the plant should install additional receiver's near point of use. This will reduce artificial peak demands on the compressor and minimise load – unload frequency. Providing an air receiver near the load end, where there is sudden high demand lasting for a short period, would avoid the need to provide extra air compressor capacity.
- The additional air receiver near use point provides following advantageous
  - dampens pulsations entering the discharge line from the compressor;
  - serves as a reservoir for sudden or unusually heavy demands in excess of compressor capacity;
  - prevents too frequent loading and unloading (short cycling) of the compressor; and
  - separates moisture and oil vapour, allowing the moisture carried over from the after coolers to precipitate.

Cleaning of suction filters

- The suction filters of all compressed air systems should be regularly checked and cleaned. Air compressors are like breathing machines. The cleaner the air the better is the specific energy consumption. Also, the lesser resistance

to suction air flow the better is the compressor performance. The same is being satisfactorily taken up at the plant.

- Regular cleaning of intercoolers and after coolers. Checking temperatures across heat exchangers will assist in maintaining these equipment's and system efficiency.
- Avoid the improper, yet common practice of cracking drains in an effort to insure moisture free performance at a particular point-of-use.
- Sizing of distribution network. The pipe size selected should be such that velocity of compressed air is less than 18 m/sec in the mains. The pipe should be selected a size higher to allow for future expansion provisions. Pipe should have a natural slope and drain points at lowest points to facilitate installation of moisture removal drain traps.
- The air receiver should be generously sized to give a large cooling surface and even out the pulsation in delivered air pressure from air compressor. Simple formula often quoted for air receiver size is to take a value equal to one minute's continuous output of the compressor. However, this should be considered indicative of the minimum size of receiver. Another approximation can be to size the receiver volume to be 5% of the rated hourly free air output.

3.5 Harmonics /Logging study

- Harmonics are one of the most well-known power quality phenomena and are the result of the distortion of sinusoidal signal of the voltage and / or current. Distorted waveforms can be broken down into sum of components at the fundamental frequency and at the frequencies multiple of the fundamental one. Harmonics are signal components with frequencies that are integer multiples of the fundamental operating frequency of the system.
- The distortion of the sinusoidal waveform and the presence of harmonics are originated by the nonlinear characteristics typical of several devices like UPS and other electronic equipment etc. It is common to use general indexes of harmonics distortion such as Total Harmonic Distortion (THD), a parameter that briefly quantifies the harmonic distortion of a signal.
- The presence of harmonics in a network with capacitors causes a current overload on the capacitor itself and results in increase in temperature and reduces the life of capacitors. Further, the problems that may originate from the presence of harmonics are overload in the PF correction capacitor banks, overload of the neutral conductor, additional losses in transformers and in rotating electrical machines, measurement errors in the counters and untimely triggering of safety relays, disturbance and faults in electronic equipment and computers.

❖ **Effect of Harmonics:** The presence of harmonics in a network would result in:

- Current overload on the capacitor and increase in temperature which reduces the life of capacitors.
- Overload in the PF correction capacitor banks.

- Increased resistance of conductors thereby increased losses and thermal failures.
- Additional losses in transformers and in rotating electrical machines.
- Measurement errors in the counters and untimely triggering of safety relays.
- Disturbance and faults in electronic equipment and computers.
- Study of harmonics was carried out for approximately for pick hours at an interval of 1 minutes and the summary of observations are presented below.

Table 13 : Harmonics study summary

Sr No.	Area/ Location	%Voltage Harmonics			%Ampere Harmonics			Remarks
		Min	Avg	Max	Min	Avg	Max	
1	11 KV Main Incomer	2.1	7.2	7.9	5.1	10.9	15.8	
2	CSS Transformer for Solar B24	1.2	1.6	1.9	2.1	16.2	66.5	
3	Transformer B15 (1000 KVA)	1.7	2.4	3.6	8.8	15.4	22.3	
4	Transformer B67 (1000 KVA)	1.7	2.3	3	18.5	32.6	51.7	
5	CSS Transformer for A18	1.6	2.3	3.1	1.6	8.2	17.2	
6	CSS Transformer for Solar A32	1.3	2.3	2.9	8.5	18.8	63.1	
7	CSS Transformer for Solar B24	1.2	1.6	1.9	2.1	16.2	66.5	
8	Transformer for C1 Block	1.1	1.4	2.1	5.2	18.4	36.4	
9	CSS TR for C35	1.1	1.6	2	6.3	18	51.1	
10	Transformer for STP (315kva)	1.3	2.2	3	1.3	10.6	20.3	

Note:

- Voltage harmonics (% total harmonic distortion) recorded at the transformer side is within the limits specified by ANSI Standard IEEE 519 - 1992 which is 3% of Voltage Harmonics and 5% whereas current harmonics. It is suggested to carry out a detailed harmonics study over a period of time such that THD is maintained within safe limits. A typical study would record **3rd, 5th, and 7th and higher currents Harmonics** to detect the source and suggest suitable **Active or Passive filters** to suppress it.

- Following charts shows current & voltage harmonics present in the system at the Crain.

3.6 Air Blowers

3.6.1 Installation & Performance Details

- Air blowers are installed at STP for water aeration. Installation and operating details are as mentioned in below table:

Table 14 : Blower Performance Evaluation

Sr. No.	Particulars	Unit	STP Samundra town ship				
1	Make/Model		Everest / twin lobe	Everest/ twin lobe	Everest / twin lobe	Everest / twin lobe	Everest / twin lobe
2			MBR BLOWER 1	MBR BLOWER 2	MBR BLOWER 3	Equalization Blower	Main Aeration Blower 2
3	Sr. No		EB0902 2034	EB0902 20312	EB0902 2033		PD2103 0416
4	Rated Flow	m3/ hr	400	400	400	324	2200
5	Rated Pressure	kg/cm2	0.4	0.4	0.4	0.6	0.6
6	Suction Filter area	m^2	0.079	0.079	0.079	0.058	0.27
7	Measured Suction air velocity	m/sec	1	0.7	0.9	1.3	1.1
8	Actual Discharge Pressure	kg/cm2	0.4	0.4	0.4	0.4	0.6
9	Operating Flow	m^3/ hr	284.4	199.08	255.96	271	1069
10	Actual Measured Power	KW	7.94	7.19	7.45	5.97	31.3
11	**Operating Efficiency**	**%**	**41**	**32**	**39**	**52**	**58**
12	Application (Used for)		**MBR TANK**	**MBR TANK**	**MBR TANK**	**feeding to Equalization tank**	**feeding to aeration tank**
13	Running Hr.		8 -12 Hours/day, (2W+1SB)			8 -12 Hours/ day, (1W+1S/B)	8 -12 Hours/ day, (1W+1S/B)

Sr. No.	Particulars	Unit	STP Samundra town ship		
14	Observations		Flow Distribution uneven & Suction filters need to clean		Running with 27.81 Hz VFD, Non Uniform air distribution found

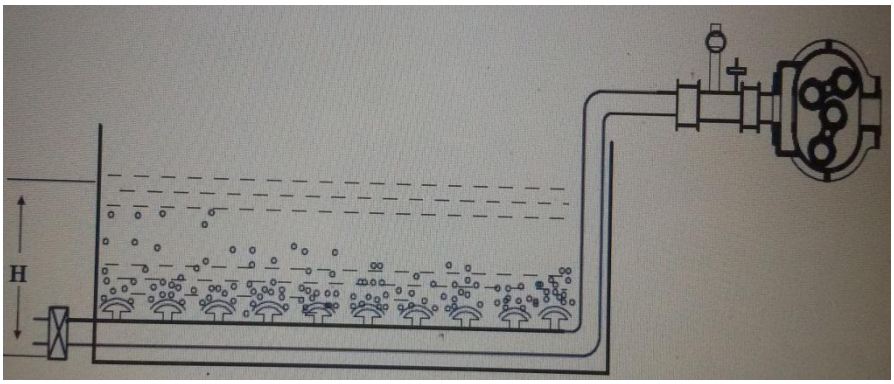
The operating efficiency of five Township blowers observed to be low. Blower-1 to 5 is respectively 41 %, 32%, 39%, 52% and 58%.

In Existing blower is suggested to clean the filter, maintenance of the motor, check bearing, vibration which would improve the operating efficiency and result in power savings as follows:

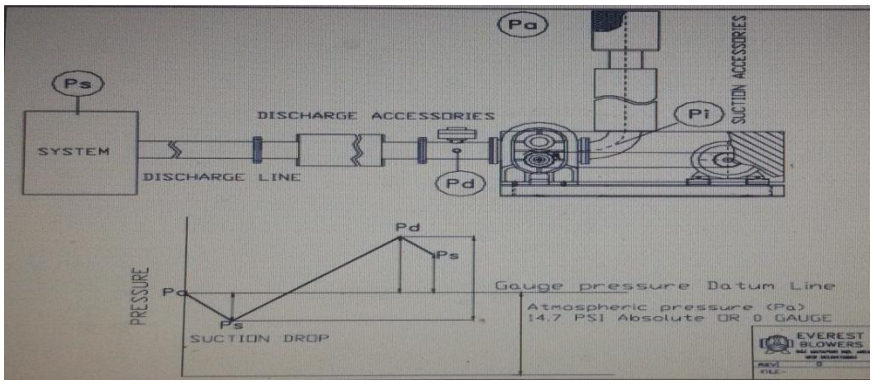
Table 15 : Savings potential to improve Efficiency of STP Samundra town ship Blowers

Particulars	Unit	STP Samundra town ship				
Make/Model		Everest/ twin lobe	Everest/ twin lobe	Everest/ twin lobe	Everest/ twin lobe	Everest/ twin lobe
Type of Blower		MBR BLOWER 1	MBR BLOWER 2	MBR BLOWER 3	Equalization Blower	Main Aeration Blower 2
Sr. No		EB09022034	EB09022 0312	EB09022033		PD21030416
Rated Flow	m^3/hr	400	400	400	324	2200
Rated Pressure	kg/cm2	0.4	0.4	0.4	0.6	0.6
Suction Filter area	m^2	0.079	0.079	0.079	0.058	0.27
Measured Suction air velocity	m/sec	1	0.7	0.9	1.3	1.1
Actual Discharge Pressure	kg/cm^2	0.4	0.4	0.4	0.4	0.6
Operating Flow	m^3/hr	284.4	199.08	255.96	271.44	1069.2
Actual Measured Power	KW	7.94	7.19	7.45	5.97	31.3
Operating Efficiency	**%**	**41**	**32**	**39**	**52**	**58**

Particulars	Unit	STP Samundra town ship				
Savings potential after filter cleaning (10%)	**kW**	**0.794**	**0.719**	**0.745**	**0.597**	**3.13**
Operating Hours	Hrs.	3600	3600	3600	3600	3600
Annual Saving	kWh	2858.4	2588.4	2682	2149.2	11268
Unit Rate	Rs./kWh	5.2	5.2	5.2	5.2	5.2
Annual Monetary Savings	**Rs.**	**14864**	**13460**	**13946**	**11176**	**58594**
Proposed Investment for new Pump	Rs.	6000	6000	6000	6000	6000
Simple Payback	Months	4.8	5.3	5.2	6.4	1.2
Application (Used for)		**MBR TANK**	**MBR TANK**	**MBR TANK**	**feeding to Equalization tank**	**feeding to aeration tank**
Running Hr.		8 -12 Hrs/day, (2W+1SB)			8 -12 Hrs/day, (1W+1S/B)	8 -12 Hrs/day, (1W+1S/B)
Observations		Flow Distribution uneven & Suction filters need to clean				Running with 27.81 Hz VFD, Non Uniform air distribution found
Total. Annual Saving (five blower)			kWh		21546	
Total. Annual Monetary Savings			**Lakh Rs.**		**1.12**	
Total. Proposed Investment for new Pump			Rs.		0.30	
Simple Payback			Months		3.2	



There is no compression or change in volume within the machine but the blower works under system back pressure conditions. Let us consider a case when the discharge of a blower is connected to the bottom of a tank, having water to a depth of H mm the air discharged accumulates in the discharge line until sufficient pressure is built (slightly over H mm of WG) when it starts to escape out. The system resistance or the static load on the blower is thus H mm WG the power consumed by the blower depends upon the flow rate and the total pressure head on the blower.



The total pressure across the blower is taken as the pressure across the inlet and the discharge port of the blower the pressure drop through inlet accessories and discharge accessories are a part of system drop the figure above indicates Pa as the ambient pressure. Ps is the pressure at the suction pressure Pd is the pressure at the discharge port of the blower and Ps is the actual system back pressure.

As seen from the curve the total work done by the blower is to raise the pressure of inlet volume form Ps to Pd ideally the blower is capable of resisting high pressures but the mechanical limitations increased pressure head to about 7000mm WG for air cooled blowers and 10000mm WG for water cooled blower in single stage operation

It is therefore important to insure that the drop between Pa and Ps and Pd and Ps should be as low as possible. This can be achieved by using adequate size piping and large radius bends wherever possible.

The blowers are generally selected for the maximum system pressure, which they may encounter during operation and the prime mover is selected accordingly when in operation the blower offers a considerable power saving since the power consumed by it depends upon the actual working pressure under which it operates and not the rated pressure.

Observations:

- Non-uniform air distribution in the tanks is observed for all air blowers.

- Main blower 1 and 2 has VFD installed at the motor. The VFD is operated at 27.5 Hz set frequency.
- Main blower 1 Suction Air velocity observed low with low efficiency 28%, Hence it is recommended for Overhauling as well as Discharge cleaning at the bottom of tank.

3.7 Air Conditioner's

3.7.1 Installation, operation and performance details of AC conditioners

There are 1659 nos. of air conditioners out which 4 units with high running hours are assessed for energy efficiency performance. Installation details, operating performance and energy performance of these air conditioner units are mentioned in below table.

Different numbers of AC connection are given according to the type of residential scheme. It is observed that all most of all AC were BEE 2 star label.

Block Type	No. of Flats	Qty. of AC	Total TR
1 BHK	316	316	474
2 BHK	660	660	990
3 BHK	192	384	576
Bachelor	294	294	441
Offices		5	15
Total	1462	1659	2496

Table 16 : AC'S Performance assessment

Description	Unit	1	2	3
		Indoor Game Gym	Indoor Game Gym	Customer Care Office
				Spilt
Rated Capacity				
Capacity	TR	3	3	1.5
Room Set Temp.	^{o}C	21	24	22
Room Dimension	Ft^2	350	350	150
Return air				
Return air DBT	^{o}C	29	28	29
Return air WBT	^{o}C	27	26.5	27
Return air RH	%	85.74	89	85.74
Return air enthalpy	kJ/kg/^{o}C	84.91	82.68	84.91
Return air density	kg/m^3	1.17	1.17	1.17
Supply air				
Supply air DBT	^{o}C	22.5	21.0	22.8

Description	Unit	1	2	3
Supply air WBT	^{O}C	19.0	16.0	19.3
Supply air RH	%	72.2	60.0	72.5
Supply air enthalpy	kJ/kg/^{O}C	53.95	44.71	54.01
Δ Enthalpy	kJ/kg/^{O}C	30.96	37.97	30.90
Air velocity	m/s	2.6	1.9	0.8
Area	m^2	0.10	0.10	0.20
Actual air flow	m^3/s	0.26	0.19	0.16
	m^3/hr	921	673	576
	kg/hr	1076	789	673
	CFM	542	396	339
Input motor power	kW	4.60	5.20	1.50
Heat load	TR	2.6	2.4	1.6
KW/TR		1.75	2.19	0.91
Remarks				Outdoor need to Cleaning, Printer inside the room

Table 17 : Savings potential to improve Efficiency of Samundra town ship AC's

Particulars		for 1.5 ton
EER	2 star	5 star heavy duty
	2.9	3.6
kWh	1.7	0.75
TR Reduction	0.95	
Nos of AC	250	
Working Hr./Annum	2500	
Unit rate Rs.	5.2	

Particulars	for 1.5 ton
Saving in kWh	**593750**
Saving in Rs./Annum	3087500
Investment in Rs.	10500000
Payback period in month	40.8

Check your filters

Check the air filter once per month and replace it as needed. This is especially important during the summer when dust and allergens circulate. If the filter becomes clogged, your system will have to work harder to supply the same amount of cool air.

Replacing filters is one of the easiest and most effective methods of conserving energy and saving money on your HVAC usage. And much like changing the oil in your car, it's a critical step in maintaining your system's long-term health.

Keep your A/C in the shade

Air conditioners with proper shading can run more efficiently. Air in a shaded space is cooler than the surrounding air, meaning the A/C will have an easier time cooling the air.

Install window film to save energy

A great home improvement idea is to install office window film or tint to the insides of your windows. Not only can it help keep your house cooler in the summer, but also warmer in the winter.

3.8 Lighting Survey

- Lux meter is used in order to measure the illuminance at various plant sections. Plant has implemented several energy saving projects in lighting systems. Plant has installed LED lighting system at most locations and Port areas.
- Following measurements were recorded. Illuminance level at the Street light is satisfactory.
- Different variety of lighting schemes have been installed in Samudra Township. Brief description on total lighting is described in below table. Samudra Township has installed geographical timers in streetlight which automatically switch lights as per light conditions. 11 hrs in a day for annual average working hours is taken for calculations.

Table 18 : Installation Load Lighting

Sr. No.	Description	Connected Load in kW	Luminary	Totals Qty	Total Load in kW
1	Sports Courts lighting	0.065	LED	24	1.56
2	Street Lights SON	0.065	LED	122	7.93
3	Street Lights SON	0.065	LED	110	7.15
4	Common Area Passage	0.018	LED	912	16.42
5	Parking Lights & Garden	0.02	LED	160	3.20
6	Parking Lights	0.02	LED	200	4.00
Total Connected Load in kW					**40.26**

Lux measurement and observation of street lighting

- Streetlights and parking lights at Samudra Township were anonymous during the time of audit. Energy audit team has marked tags on the light poles for the reference.

- Explanation of the marked tags is explained in the figure below. Some restricted and non-permissible areas have not been included in the part of lighting study.
- 9 point method was adopted for measuring pole to pole lighting intensity. Below Figure depicts the methodology. Two equations are primarily used for pole to pole and single pole respectively. They are:
  1. Pole to Pole measurement

$$Average\ Lux = \frac{(A_1 + A_2 + B_1 + B_2)}{16} + \frac{(C_1 + C_2 + C_3 + C_4)}{8} + \frac{D_4}{4}$$

  2. Single Pole measurement

$$Average\ Lux = \frac{A_1 + A_2 + B_1 + B_2 + C_1 + C_2 + C_3 + C_4 + D_4}{9}$$

- Parking lights have relatively less span compared to streetlights and so lux is measured at 6 points from pole to pole.

Figure 84 Nine point method for streetlight measurement

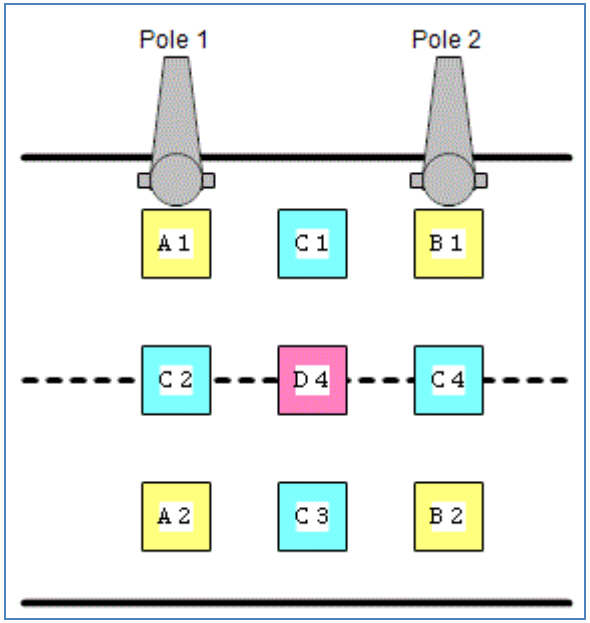


Table 19 : Summary of Lux measurements lighting Fixture Install in Township (APSEZ PLANT)

Area	Install Light	L1	L2	L3	Remark
Electrical Store Room	LED	58	55	26	
		58	30	32	
Solar Panel Side	LED	23	57	75	
		14	14	35	
B-13 & 14 Between Pole Parking	LED	1	1	1	Fixture Reflector Week & Arms Setting not Properly Installed.
		1	1	1	
Block No-B/13	LED	14	8	4	Tree Shadow.
		12	8	7	
Block No-B/14	LED	14	6	10	
		10	5	9	
STPH-6 Street Light	LED	6	23	4	
		4	10	2	
STPH-7 Street Light	LED	4	21	6	
		2	6	4	
Block B-7 to B-12 Parking	LED	8	5	2	
		6	4	2	
		5	3	2	
Block B-1 to B-6 Parking Pole	LED	8	5	3	
		5	4	3	
		7	4	2	

Area	Install Light	L1	L2	L3	Remark
B-19 Outside Block	LED	4	3	2	
		3	2	1	
		4	2	1	
B-24 Outside Block	LED	3	2	1	
		4	2	1	
		4	3	2	
C-01 to C-06 Parking Road	LED	21	15	7	Light Broken due to one side lux higher.
		13	5	2	
		10	7	4	
Block C-11 & C-12 Road Side	LED	1	0	1	Street Light off.
Block C-03 Street Light	LED	1	0	1	Angle Based Bulb Install.
Block C-04 Street Light	LED	3	5	2	C-4 Side Street Light Pole Need to Tree Branches Cut Tree.
C-11 & C-12 Street Light	LED	22	16	14	
		27	30	14	
		14	9	6	
C-11 & C-12 Parking Light	LED	7	5	3	
		5	4	4	
		5	4	2	
Club House STCH-	LED	13	12	7	

Area	Install Light	L1	L2	L3	Remark
7 & 8		19	23	11	
		18	15	8	
C-29 Block	LED	25	14	13	C-28 & 29 Flood Light Fitting Install on Top side.
Way to Parking Side	LED	21	21	20	1 Fitting off to save energy because during night no any operation in this.
Flood Light Event Garden	LED	20	126	30	
		31	112	34	
A-43 Pole Parking	LED	9	11	6	
		11	8	7	
A-39 Pole Parking	LED	11	10	6	
		8	7	5	
A-45 Parking Pole	LED	12	8	4	
		11	9	4	
H.M Security	LED, HM	100	27	64	
		91	121	88	
		32	60	85	

: - Lux measurement of Shopping Centers Street light, Temple, Block, and Playground, etc.

Sr. No.	Location	Pole tag	Height (m)	Span (m)	Luminary	Average Lux	A1	A2	B1	B2	C1	C2	C3	C4	D4	Remarks
1	Near Vodafone Tower Street Light Pole	S.L	9	24	LED	14	12	11	12	6	32	15	8	13	13	Tree branches obstacle create
2	2nd Pole Customer Care B-19 Road	S.L	9	24	LED	14	27	8	19	8	18	16	7	10	13	Need to cut Tree Branches
3	Customer Care Opposite Side b-19 Road Area	S.L	9	24	LED	20	24	31	16	23	23	21	5	16	5	Need to cut Tree Branches
4	STP R-2 Outside Road	S.L	9	24	LED	22	17	23	19	13	23	24	22	22	27	sufficient
5	Service Road Shopping Centre Complex Line	S.L 28-29	9	24	LED Double arm	22	48	15	31	8	21	40	7	12	15	sufficient
6	Service Road STM-30	S.L 29-30	9	24	LED Double arm	15	34	10	31	8	5	17	6	12	11	sufficient
7	Service Road Shopping Centre	S.L 13-14	9	24	LED	11	24	10	17	8	4	6	14	6	4	sufficient

Sr. No.	Location	Pole tag	Height (m)	Span (m)	Luminary	Average Lux	A1	A2	B1	B2	C1	C2	C3	C4	D4	Remarks
	Complex Line															
8	Service Road Shopping Centre Complex Line	S.L 15-14	9	24	LED	13	16	4	13	9	25	9	7	12	14	sufficient
9	Road and Parking Light B-13 to B-18	P.L	3	12	LED	7	14	2	13	3	7	5	6	2	4	Insufficient
10	B-16 Block	P.L	3	12	LED 18w conical shape	7	13	4	10	2	7	5	7	7	8	Light Yellow & Dusting noted in Fixture Glass.
11	B-14 & B-15 Block	P.L	3		LED-Round Type	4	7	2	7	3	5	3	4	2	2	Compare conical light Round type fitting lux level is low.
12	APMVL Hostel Pole No-3 & 2	S.L	9		LED	25	28	10	25	16	10	21	6	10	9	sufficient
13	STMRR-28 & 29 Street Light	S.L	9		LED	14	24	8	18	12	6	25	4	14	7	sufficient
14	STMRR-12 & 13 Street Light	S.L	9		LED	14	22	12	16	14	8	23	6	16	9	sufficient

Sr. No.	Location	Pole tag	Height (m)	Span (m)	Luminary	Average Lux	A1	A2	B1	B2	C1	C2	C3	C4	D4	Remarks
15	STMRR-26 & 27 Street Light	S.L	9		LED	11	11	8	7	4	18	7	17	5	20	sufficient
16	Block No.A-36 to A-43	P.L	3		LED	12	7	9	6	8	10	10	11	23	21	sufficient
17	Cricket Ground P1 & P2	FL	16		LED	105	125	91	150	98	13	205	128	90	44	Tree branches obstacle create
18	Cricket Ground P3 & P4	FL	16		LED	122	84	208	114	101	20	260	60	185	58	sufficient
19	Club House	TL	4		LED	57	50	37	46	64	61	45	85	41	80	sufficient
20	OPR-17		12		LED	53	16	36	20	40	74	22	88	54	124	sufficient
21	OPR-16		12		LED	28	42	17	35	13	56	31	11	27	20	sufficient
22	OPR-15		12		LED	36	40	55	42	13	52	40	15	27	35	sufficient
23	Event Ground	S.L	9		LED	33	43	15	40	13	75	29	11	31	34	All Lights Not Running Condition During measurements
24	Temple	S.L	6		LED	11	10	5	12	7	28	8	4	10	11	sufficient

:-Lux measurement Block wise

Sr. No.	Location	Pole tag	Height (m)	Span (m)	Luminary	Average Lux	A1	A2	B1	B2	C1	C2	C3	C4	D4	Remarks
1	Entrance Main gate	P3	11.5	20	LED	14.67	21	7	11	40	15	11	6	12	9	
2	Entrance gate	P5	11.5	24	LED	13.56	23	3	17	34	7	8	7	11	12	
3	Entrance gate	P4	11.5	24	LED	15.44	17	9	16	38	1	6	10	25	17	
4	Entrance gate	P6	11.5	24	LED	15.33	22	3	7	39	12	7	11	21	16	
5	Entrance gate	P8	11.5	24	LED	16.67	15	6	13	32	12	10	15	32	15	
6	Entrance gate	P9	11.5	24	LED	17	22	5	11	41	13	11	8	25	17	
7	Main Road	P19	11.5	24	LED	14	13	17	14	41	10	11	13	14	8	
8	Main Road	P20	11.5	24	LED	17	13	7	4	37	11	10	12	23	21	
9	Main Road	P14	11.5	24	LED	15	16	6	8	38	10	6	8	24	17	
10	Block B53-B58	H1	3	14	CFL	2	2	3	4	3	0	2	0	1	0	Insufficient
11	Block B53-B58	H2	3	14	CFL	2	5	3	1	0	2	4				Insufficient
12	Block B53-B58	H3	3	14	CFL	2	7	6	5	3	2	3				Insufficient
13	Block B53-B58	H5	3	14	CFL	2	2	4	2	4	3	2				Insufficient
14	Block B53-B58	H7	3	Single	CFL	3	4	2	3	1	0	4				Insufficient
15	Block B53-B58	H8	3	14	CFL	2	4	3	4	6	3	4				Insufficient
16	Block B53-B58	H9	3	14	CFL	2	4	1	3	4	3	6				Insufficient
17	Block B71-B75	H11	3	12	CFL	2	4	5	4	4	3	4				Insufficient

Sr. No.	Location	Pole tag	Height (m)	Span (m)	Luminary	Average Lux	A1	A2	B1	B2	C1	C2	C3	C4	D4	Remarks
18	Block B71-B75	H13	3	12	CFL	1	2	0	1	4	0	3				Insufficient
19	Block B71-B75	H15	3	12	CFL	1	1	3	3	4	0	2				Insufficient
20	Block B71-B75	H16	3	12	CFL	2	4	3	4	0	1	3				Insufficient
21	Block B71-B75	H17	3	12	CFL	2	2	3	4	2	0	4				Insufficient
22	Block B71-B75	H18	3	12	CFL	2	4	5	3	1	0	2				Insufficient
23	Block B71-B75	H19	3	12	CFL	2	3	3	4	4	1	3				Insufficient
24	Block B71-B75	H20	3	12	CFL	2	6	2	4	5	0	4				Insufficient
25	Block B71-B75	H22	3	12	CFL	2	4	2	6	2	2	0				Insufficient
26	Block B19-B24	H23	9	23	LED	14	31	20	8	6	8	5	28	21	7	
27	Block B19-B24	H24	9	23	LED	13	21	12	3	10	8	4	28	22	7	
28	Block B19-B24	H25	9	23	LED	14	24	26	28	13	7	3	26	18	6	
29	Block B19-B24	H26	9	23	LED	17	28	24	15	11	9	31	10	21	12	
30	Block B19-B24	H27	9	23	LED	17	21	25	16	19	8	28	19	24	8	
31	Block B19-B24	H28	9	23	LED	17	14	31	14	15	12	29	10	18	13	
32	Block B25-B30	H32	3	14	CFL	3	6	2	4	3	5	4				Insufficient
33	Block B25-B30	H34	3	14	CFL	5	4	3	4	5	3	5				Insufficient
34	Block B25-B30	H35	3	14	CFL	4	4	2	6	3	0	14				Insufficient
35	Block B25-B30	H37	3	Single	CFL	5	4	4	6	5	2	4				Insufficient

Sr. No.	Location	Pole tag	Height (m)	Span (m)	Luminary	Average Lux	A1	A2	B1	B2	C1	C2	C3	C4	D4	Remarks
36	Block B25-B30	H38	3	14	CFL	4	5	3	4	3	3	4				Insufficient
37	Block B25-B30	H42	3	14	CFL	5	6	4	4	7	5	6				Insufficient
38	Block B25-B30	H43	3	14	CFL	4	5	4	5	3	2	4				Insufficient
39	Block A25 Main Road		9	24	LED	28	28	17	8	4	8	5	8	25	15	
40	Block A25 Main Road		9	24	LED		55	29	10	22	13	7	36	16	9	
41	Block A25 Main Road		9	24	LED		58	28	10	19	18	10	64	32	13	
42	Block A25 Main Road		9	24	LED		26	16	8	12	9	8	27	18	7	
43	Block C1-C6	H45	3	15	CFL	5	4	5	3	2	1	4				Insufficient
44	Block C1-C6	H46	3	15	CFL	5	6	3	2	2	1	2				Insufficient
45	Block C1-C6	H47	3	15	CFL	4	5	1	3	2	3	2				Insufficient
46	Block C1-C6	H48	3	15	CFL	3	3	5	2	2	3	2				Insufficient
47	Block C1-C6	H49	3	15	CFL	3	4	2	5	1	1	4				Insufficient
48	Block C1-C6	H51	3	15	CFL	5	4	5	3	4	2	1				Insufficient
49	Block C1-C6	H52	3	15	CFL	4	4	5	3	6	5	4				Insufficient

Sr. No.	Location	Pole tag	Height (m)	Span (m)	Luminary	Average Lux	A1	A2	B1	B2	C1	C2	C3	C4	D4	Remarks
50	4 BHK Bunglow Side Street Light		9	20		26	26	19	12	18	15	12	25	20	13	
51	STMR	STMR8	9	24			29	21	6	15	10	5	28	23	7	
52	STMR	STMR7	9	24			27	18	8	13	6	7	24	19	8	
53	STMR	STMR9	9	24			22	20	9	4	6	5	24	20	7	
54	STMR	STMR10	9	24			23	21	16	18	15	8	16	18	10	
55	STMR	STMR11	9	24			25	18	14	16	8	6	19	17	9	
56	Block A28-A35	H57	3	14	CFL	4	3	5	4	3	1	3				Insufficient
57	Block A28-A35	H58	3	14	CFL	7	4	3	4	3	0	1				Insufficient
58	Block A28-A35	H59	3	14	CFL	7	3	3	2	1	0	2				Insufficient
59	Block A28-A35	H60	3	14	CFL	1	4	6	4	3	2	2				Insufficient
60	Block A28-A35	H61	3	14	CFL	3	6	4	3	2	1	2				Insufficient
61	Block A28-A35	H62	3	14	CFL	4	5	4	3	2	1	3				Insufficient
62	Block A28-A35	H63	3	14	CFL	6	4	5	7	5	3	5				Insufficient
63	Block A28-A35	H64	3	14	CFL	4	3	5	2	6	4	1				Insufficient
64	Block A28-A35	H65	3	14	CFL	8	5	3	4	4	1	0				Insufficient
65	Block A28-A35	H66	3	14	CFL	4	3	2	5	4	2	1				Insufficient

Lux measurement sheet refer in Annexure.

3.9 Ceiling Fans & Water Geysers

Installation details

- Two major connected loads in Samundra Township are ceiling fan and water geyser.
- Installation details of these household utilities is mentioned in below table.
- Ceiling fan rated power is 65 W whereas, 1.5 kW geysers are installed.

Table 20 : Ceiling Fan and water geyser installation details

Block Type	No. of Flats	Ceiling Fan Qty.	Water geyser Qty (1.5 kW)
1 BHK	316	632	316
2 BHK	660	1980	660
3 BHK	192	768	384
Bachelor	294	588	294
Total	1462	3968	1654
Total Power in kW		257.92	2481

- Ceiling fans Installed at Samundra Township are AC 1-phase and commercially available that deliver equal or higher air flow rate at nearly 50% of power consumed by conventional 60 W fan.

Particulars	Gorrila ceiling fan	
	Existing Wh	Proposed Wh
Rated (w)	60	28
Wattage Reduction	32	
Nos of Fan	2000	
Working Hr./Annum	3240	
Unit rate Rs.	5.2	
Saving in kWh	207360	
Saving in Rs./Annum	1078272	
Investment in Rs.	4800000	
Payback period in month	53	

Parameter	Detail (Gorilla Energy Efficient Fan)
Span(mm/inch)	1200/48
Service Value/Air Delivery	>7
Input Voltage(V)	140-285
Power Consumption(W)	28
Frequency(Hz)	48-52

Air Delivery(CMM)	220
Power Factor	0.95
No. of Blades	3
Bearing	Deep Groove Double Sided Steel Shielding
Remote Control (10 Keys)	Speed Control, Timer and Sleep Mode
Guarantee	3 Years

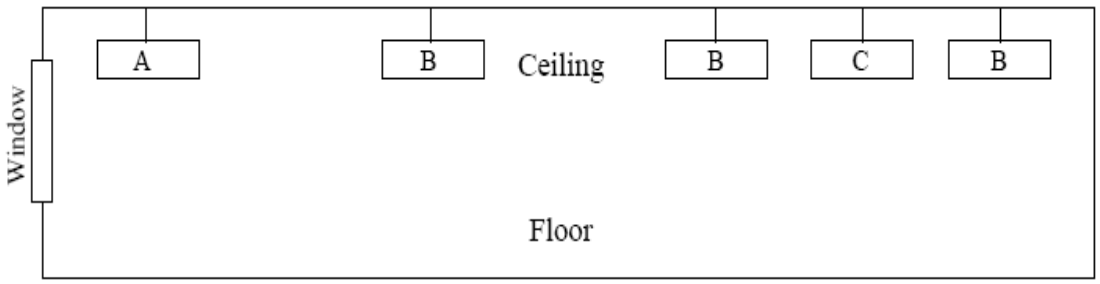
- Present new installation fan, plant head choose BLDC Type fan. 5 Star rating. Rated power consumption is 32 watts.

❖ Intangible Areas of Energy conservation Opportunity at Samudra Township :

Lighting placement and control.

- An example of energy efficient lighting control is illustrated by Figure, which depicts five rows of overhead lights in a workspace. During the brightest part of the day, ample daylight is provided by the window and thus only row C would need to be turned on. At times when daylight levels drop, all B rows would be turned on and row C would be turned off. Only at night or on very dark days would it be necessary to have both rows A and B turned on.

Lighting Placement & Control



- Retrofit by adapting the luminaries already present. (For example, turning on the lighting in the rows away from the windows during the brightest parts of the day and turning on supplemental rows as needed later.)

➢ **Daylighting.**

- Daylighting involves the efficient use of natural light in order to minimize the need for artificial lighting in buildings. Increasing levels of daylight within rooms can reduce electrical lighting loads by up to 70% Unlike conventional skylights, an efficient daylighting system may provide evenly dispersed light without creating heat gains. The reduced heat gains will reduce the need for cooling compared to skylights. Daylighting differs from other energy efficiency measures because its features are integral to the architecture of a building; therefore, it is applied primarily to new buildings and incorporated at the design stage. However, existing buildings can often be costeffectively refitted with daylighting systems. Various daylighting systems are available on the market, some of which can be supplied as kits to retrofit an existing building.

- **High-efficiency Motors, Pumps and Drives.**

- High-efficiency motors reduce energy losses through improved design, better materials, tighter tolerances, and improved manufacturing techniques.
- With proper installation, high-efficiency motors can run cooler than standard motors and can consequently have higher service factors, longer bearing life, longer insulation life, and less vibration.
- Replacing a motor with a high-efficiency motor is often a better choice than rewinding a motor. The practice of rewinding motors currently has no quality or efficiency standards. The efficiency of a motor decreases after rewinding; typically by anywhere from 2-25%. Recent case study data show that new motors are not only more energy efficient, but also reduce overall operation costs. When considering whether to rewind a motor or to replace it with a higher-efficiency model,

- **Turning off lights in unoccupied areas.**

- An easy and effective measure is to encourage personnel to turn off lights in unoccupied building spaces. An energy management program that aims to improve the awareness of personnel with regard to energy use can help staff get in the habit of switching off lights and other equipment when not in use.

- **Replacement of Existing ACs with "7-Star" Natural Refrigerant Rated ACs (R290 Based)**

- **Replacement with Inverter ACs**
  Digital Inverter technology maintains precise control of room temperature and creates a comfortable environment. In conventional split Air Conditioners, the compressor switches off once the set temperature is reached, and switches on again after temperature drops. The time it takes for the Split Air Conditioner to switch on and off causes the room temperature to greatly fluctuate. With Digital Inverter, the inverter control reduces the compressor power once the desired temperature has been reached, but continues operating at a reduced state to maintain a stable room temperature with minimal fluctuations. By putting an end to on/off compressor operation, the inverter technology also allows Digital Inverter to significantly reduce noise levels; Superior reliability has been achieved, due to the reduction of the compressor ON/OFF cycles. Digital DC Inverter Air Conditioners provide this benefit to consumers, helping them to achieve various benefits such as saving of at least 25% of their energy costs. These air conditioners are much quieter and offer higher levels of efficiency as their noisier counterparts. The average AC power consumption as recorded during winter (present time) is about 54.71 KW. This is likely to be 30 to 35% higher during hot season. The average consumption could be put at 60 KW/month over year. The power savings with digital inverter type AC units would at 20% would be 12 KW/month. The annual energy conservation potential of this intervention is: 94,000 kWh/year.
- **Overhaul of Refrigerant Piping Insulation & Filter Maintenance**
  The Gas pipe insulation was found to be damaged at various points on the AC units. Mending / replacement of insulation would improve the performance of AC units. Cleaning of filters of all indoor units and cleaning

of condenser fins by jet pumps. Average life of typical Split Units is considered to be 10 years in dry climates without corrosive pollutants.

- **Optimal AC Temperature Setting**

  Using all Units at Specific Set Points can greatly reduce HVAC energy consumption. It was observed that the set-point for ACs was generally at 19˚ C. All AC units may be set at 23/24 ^{0}C for optimum power consumption. The annual energy conservation potential of this intervention is: 28,500 kWh/year.

- **Enhanced Use of Natural Lighting**

- Natural lighting available at the premises through the existing glass facades needs to be exploited to reduce the lighting load exerted. Currently, most of the glass facades are shielded using vertical-blinds and artificial lighting is used even in areas in the vicinity of glass panes. This intervention has the twin beneficial impact of reducing manufacturing related LCA impacts of lighting fixtures as well as reduced energy consumption. Some green architecture guidelines specify design lighting loads in the vicinity of 7.5 W/sq.m. For building occupancy of 10 hours/day, the average annual electricity conservation and GHG emissions mitigation per sq. m of naturally lit space relative to conventionally lit space is estimated to be 27 kWh/sq.m and 24 kgCO2e/sq. m.

- **Building-Envelope & Air-Conditioned Space Insulation**

- Weather-Stripping of All Doors, especially the main entrance doors into all building cavities.
- Use of Air curtain on Ground Floor Entrance to curtail infiltration losses: Frequenting clients on Ground Floor through main entrance incurs losses due to infiltration. These could be curtailed using Air Curtains. The advantage would be more prominent during summer.

- **Heat Gain Reducing Paint**

- The Heat Gain Reducing Paint technology has the ability to reflect heat causing infrared rays from solar radiation. This intervention was designed to help reduce the internal temperature of the building i.e. reduce heat gain. Certification conducted by the Centre for Energy Studies and Research (CESR, India) indicates that Weather Shield Paints (i.e. solar reflective paints) can reduce the temperatures of walls by upto 50Cand that reflectivity rate for solar radiation through these paints is 0.40 relative to ordinary.
- Currently, the MAIN DOOR of the entrance to the Branch has a significant air-gap between the frame and the door while all back-office doors meant to separate Air Conditioned Spaces from non-conditioned spaces are either missing or kept ajar at all times.
- Exterior wall paint which exhibit a reflectivity rate of 0.21. i.e. these paints are approximately twice as effective in curbing building wall temperature rise due to solar radiation.

❖ Renewable Power Feasibility at Adani House :

- Plant first can install LED lights and then can install solar PV system so that requirement of project kW will be reduce.

Figure 85 Solar Panel Installation on Parking Shed

- Plant can use the parking space or another non utilize space with feasibility study of solar PV panel installation.

❖ Advantages of Water Percolation and Water Harvesting:

- Rainwater harvesting is collecting the run-off from a structure or other impervious surface in order to store it for later use. Traditionally, this involves harvesting the rain from a roof. The rain will collect in gutters that channel the water into downspouts and then into some sort of storage vessel. Rainwater collection systems can be as simple as collecting rain in a rain barrel or as elaborate as harvesting rainwater into large cisterns to supply your entire household demand.
- The idea of rainwater harvesting usually conjures up images of an old farm cistern or thoughts of developing countries. The reality is that rainwater harvesting is becoming a viable alternative for supplying our households and businesses with water. It's not just for the farm anymore! There are many countries such as Germany and Australia where rainwater harvesting is a norm. Due to the green building movement, you will be seeing rainwater harvesting systems become more popular here in America.
- The collection of rainwater is known by many names throughout the world. It ranges from rainwater collection to rainwater harvesting to rainwater catchment. In addition, terms such as roof water collection or rooftop water collection is also used in other countries.
- We believe that rainwater harvesting is a viable technology in an urban setting. All that is necessary to take advantage of this resource is to capture the free water falling on your roof and direct it to a rainwater storage tank. By doing this, you can take control of your water supply and replace all or at least a substantial portion of your water needs. Rainwater harvesting systems can be configured to supply your whole house and/or your landscape needs.

  What are the benefits of rainwater collection?

- Rainwater is a relatively clean and absolutely free source of water
- You have total control over your water supply (ideal for cities with water restrictions)
- It is socially acceptable and environmentally responsible
- It promotes self-sufficiency and helps conserve water
- Rainwater is better for landscape plants and gardens because it is not chlorinated
- It reduces storm water runoff from homes and businesses
- It can solve the drainage problems on your property while providing you with free water
- It uses simple technologies that are inexpensive and easy to maintain
- It can be used as a main source of water or as a backup source to wells and municipal water
- The system can be easily retrofitted to an existing structure or built during new home construction
- System are very flexible and can be modular in nature, allowing expansion, reconfiguration, or relocation, if necessary
- It can provide an excellent back-up source of water for emergencies

What Are the Uses of Collected Rainwater

- You can essentially use rainwater anywhere you use tap water. The idea of using drinking water to flush our toilets and water our lawns is wasteful and irresponsible, especially in light of population growth and water shortages across the country. Rainwater collection is a technique to green your home and to lessen your environmental footprint.

There are basically three areas where rainwater can be used:

- Irrigation use
- Indoor, non-potable use
- Whole house, potable use

Here are some ideas for specific uses of rainwater:

- Hand water your lawn and garden
- Connect rainwater collection system to irrigation/sprinkler system
- Wash your vehicles
- Wash your pets
- Refill your fountains and fish ponds
- Refill your swimming pool
- Replace the use of tap water with rainwater to wash your driveways and sidewalks (if you don't use a broom)
- Use it for all indoor non-potable fixtures (toilets and clothes washer)
- Use it for all potable needs when properly filtered and disinfected
- Use it for industrial processes instead of municipally treated water

How Much Rain Can be Collected?

The amount of rainfall that you can collect is governed by the following formula:

1" of rain x 1 sq. ft. = 0.623 gallons

Or put in an easy form to remember:

1" of rain from 1,000 sq. ft. will provide 623 gallons

To calculate the amount of rainwater you can collect, you need to know your annual average precipitation for your area.

Water Percolation:

In this method rain water collected from the roof of the building is diverted to a storage tank. The storage tank has to be designed according to the water requirements, rainfall and catchment availability. Each drainpipe should have mesh filter at mouth and first flush device followed by filtration system before connecting to the storage tank. It is advisable that each tank should have excess water over flow system.

In this method rain water collected from the roof of the building is diverted to a storage tank. The storage tank has to be designed according to the water requirements, rainfall and catchment availability. Each drainpipe should have mesh filter at mouth and first flush device followed by filtration system before connecting to the storage tank. It is advisable that each tank should have excess water over flow system.

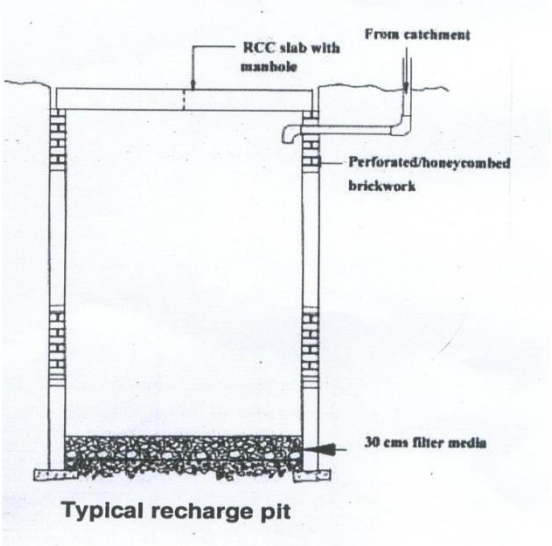
Ground water aquifers can be recharged by various kinds of structures to ensure percolation of rainwater in the ground instead of draining away from the surface. Commonly used recharging methods are:-

a) Recharging of bore wells
b) Recharging of dug wells.
c) Recharge pits
d) Recharge Trenches
e) Soak ways or Recharge Shafts
f) Percolation Tanks

Recharging of bore wells

Rainwater collected from rooftop of the building is diverted through drainpipes to settlement or filtration tank. After settlement filtered water is diverted to bore wells to recharge deep aquifers. Abandoned bore wells can also be used for recharge.

Optimum capacity of settlement tank/filtration tank can be designed on the basis of area of catchment, intensity of rainfall and recharge rate as discussed in design parameters. While recharging, entry of floating matter and silt should be restricted because it may clog the recharge structure. "first one or two shower should be flushed out through rain separator to avoid contamination. This is very important, and all care should be taken to ensure that this has been done."



Typical recharge pit

- Roof or terraces uses for harvesting should be clean, free from dust, algal plants etc.
- Roof should not be painted since most paints contain toxic substances and may peel off.
- Do not store chemicals, rusting iron, manure or detergent on the roof.
- Nesting of birds on the roof should be prevented.
- Terraces should not be used for toilets either by human beings or by pets.
- Provide gratings at mouth of each drainpipe on terraces to trap leaves debris and floating materials.
- Provision of first rain separator should be made to flush off first rains.
- Do not use polluted water to recharge ground water.
- Ground water should only be recharged by rainwater.
- Before recharging, suitable arrangements of filtering should be provided.
- Filter media should be cleaned before every monsoon season.
- During rainy season, the whole system (roof catchment, pipes, screens, first flush, filters, and tanks) should be checked before and after each rain and preferably cleaned after every dry period exceeding a month.
- At the end of the dry season and just before the first shower of rain is anticipated, the storage tank should be scrubbed and flushed off all sediments and debris

3.10 Energy Savings Tips in Residential area

1. **Change your light bulbs** to LEDs.
2. **Wash your clothes in cold water** if possible.
3. **Air seal your home.** Sealing cracks, gaps and leaks and adding insulation can save up to 10% on home heating and cooling costs.
4. **Clean or replace all filters** in your home regularly. Dirty filters make your system work harder and run longer than necessary.
5. **Use your microwave** instead of your stove when cooking.
6. **Defrost your refrigerator and freezer** before ice buildup becomes 1/4-inch thick to ensure your appliances are running efficiently.
7. **During warmer months, close blinds, shades and drapes** on the sunny side of your home to help keep your home's temperature cooler and reduce the work for you AC. Open shades during cooler months to let the sun warm your home.
8. **Don't peek in the oven** while baking! Every time you peek, the temperature can drop 25 F, making your oven use more energy to bring the temperature back up.
9. **Use natural light** when possible.
10. **Control your fixtures** with a photocell or a timer to assure dusk-to-dawn only operation of your outdoor lights.
11. **Don't leave your electronics on** all day long. Only turn on your computer, monitor, printer and fax machine when you need them.
12. **Set your thermostat** to 78F in the summer and 68F in the winter - every degree of extra heating or cooling will increase energy usage 6% to 8%. Setting your thermostat to a lower temperature than normal will not cool your home faster.
13. **Using your ceiling fan** will allow you to raise the thermostat setting about 4°F with no reduction in comfort.
14. **Refrigerators and freezers** actually operate most efficiently when full, so keep your refrigerator and freezer as full as possible (using water bottles if nothing else). Be careful about overfilling them as this will reduce airflow and cause the appliance to work harder.
15. **Using dishwashers and clothes washers/dryers at night** will keep the house cooler, reduce strain on the power grid during the peak usage hours of 4 PM and 6 PM and reduce the chance of an emergency!

16. **Turn off heated dry on your dishwasher** and air dry instead.
17. **Set your refrigerator temperature** to the manufacturer's recommendation to avoid excessive cooling and wasting energy.
18. **Don't leave bathroom or kitchen ventilation fans running** longer than necessary. They replace inside air with outside.
19. **Replace your windows.** If your home has single-pane windows, consider replacing them with more energy efficient windows, or adding solar shades or tinting film.
20. **Install a programmable thermostat** that will automatically adjust the temperature according to your schedule.
21. **Turn off the lights** when they're not in use. Lighting accounts for about 12% of a typical residential utility bill.
22. **Don't leave your mobile phone plugged in** overnight. It only takes a couple of hours to charge.
23. **Turn off the oven** a few minutes before cooking time runs out. Your food will continue to cook without using the extra electricity.
24. **Watch your appliance placement.** Avoid placing appliances that give off heat, such as lamps or TVs, near a thermostat.
25. **Dress for the weather.** When you're at home, dress in warm clothing in the winter and cooler clothing in the summer to stay comfortable without making your heater and AC work harder.

Annexure 1: Motor Load Survey

Equipment Name	Rated kW	Rated Eff %	Voltage	Ampere	kW	P.F	%V^{thd}	%A^{thd}	Loading
Main Irrigation Tank Submersible Pump	11	92	429	16.3	10.29	0.85			86.10
Sprinkler Pump (250kl Tank)	11	92	428	16.2	10.21	0.85			85.37
Adani Hospital & Mitap Submersible Pump	11	92	428	16.2	10.21	0.85			85.37
Club House Tank Submersible Pump	11	92	428	17.0	10.59	0.84			88.54
Club House Tank Pump for Port and Garden	3.7	88	428	7.0	4.36	0.84			103.67
C-12 irrigation tank Pump	3.7	88	428	4.4	2.77	0.85			65.94
Irrigation tank No-5 Pump(25kl Tank)	3.7	88	428	5.0	3.11	0.84			74.05
Samundra Township Temple Back side Pump	5.5	88	428	8.4	5.29	0.85			84.69
Main Gate Tank Pump	3.7	88	428	7.0	4.15	0.80			98.73
pump at customer care office	37.5	86	428	57.0	36.76	0.87			84.30
Aeration Blower (Hz-28.2)	55	93.5	414	49.6	31.30	0.88	3.57	40.88	53.21
Equalization Blower	15	90	421	12.4	5.97	0.66	1.78	2.02	35.81
MBR Blower-1	11	88	426	16.3	7.94	0.66			63.50
MBR Blower-2	11	88	426	15.0	7.19	0.65	2.02	1.16	57.55
RAS V.T Pump No-2	7.5	78.6	425	10.9	6.28	0.78	2.07	2.73	65.83
Horticulture Pump			424	19.2	12.69	0.90	2.32	3.25	

Annexure 2: Feeder wise load

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
1.	Solar Main Incomer	11300	42.92	0.938	787.93	291.18	840.01			
2.	Solar Outgoing B-24	11060	25.39	0.99	481.51	68.61	486.37			
3.	Solar Outgoing A-18	11050	18.23	0.99	345.41	49.22	348.90			
4.	Main Panel FP-08	433	5.6	0.93	3.91	1.54	4.20		5.6	34.1
		434	7.4	0.94	5.23	1.90	5.56			
		433	21	0.96	15.12	4.41	15.75			
5.	B14 Main Incomer	434	0	0	0.00	0	0	No load		
		434	4.71	0.98	3.47	0.70	3.54		2.55	9.61
		433	0	0	0.00	0	0	No load		
6.	B15 Main Incomer	436	2.37	0.96	1.72	0.50	1.79			
		437	5.7	0.99	4.27	0.61	4.31			
		437	15.12	0.99	11.33	1.61	11.44		2.87	3.94
7.	B13 Main Incomer	435	1.57	0.97	1.15	0.29	1.18			
		436	0.57	0.97	0.42	0.10	0.43			
		437	15.8	0.98	11.72	2.38	11.96		2.66	4.94
8.	Main Incomer FP-07	433	12.5	0.97	9.09	2.28	9.37		2.6	7.9
		434	2.6	0.95	1.86	0.61	1.95			
		433	0	0	0.00	0	0	No load		
9.	B 16 Main Incomer	433	0	0	0.00	0	0	No load		
		434	1.53	0.98	1.13	0.23	1.15			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
		434	0.79	0.98	0.58	0.12	0.59			
10.	B 17 Main Incomer	434	2.13	0.98	1.57	0.32	1.60			
		434	1.57	0.98	1.16	0.23	1.18			
		432	0.87	0.96	0.62	0.18	0.65			
11.	B 18 Main Incomer	432	8.85	0.91	6.03	2.75	6.62		2.08	19.69
		434	0	0	0.00	0	0			
		433	0	0	0.00	0	0			
12.	Street Light	434	0	0	0.00	0	0			
		434	0.94	0.98	0.69	0.14	0.71			
		436	1.03	0.99	0.77	0.11	0.78			
13.	Customer Care Panel	438	60.06	0.76	34.63	29.61	45.56			
		438	55.79	0.74	31.32	28.47	42.32			
		437	57.76	0.78	34.10	27.36	43.72			
14.	B-09 F Main Incomer	438	3.75	0.96	2.73	0.80	2.84			
		437	31.5	0.98	23.37	4.74	23.84			
		438	7.29	0.96	5.31	1.55	5.53			
15.	B 16F Main Incomer	434	21.22	0.97	15.47	3.88	15.95		2.72	17.28
		434	22.37	0.96	16.14	4.71	16.82			
		434	4.37	0.96	3.15	0.92	3.28			
16.	Feeder Panel 09 Main Incomer	440	2.89	0.72	1.59	1.53	2.20			
		439	4.6	0.76	2.66	2.27	3.50			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
		439	0	0	0.00	0	0	No load		
17.	B 10 Main Incomer	434	0	0	0.00	0	0	No load		
		434	0	0	0.00	0	0	No load		
		434	0	0	0.00	0	0	No load		
18.	B11 Main Incomer	437	0.76	0.94	0.54	0.20	0.58			
		438	4.5	0.95	3.24	1.07	3.41			
		438	0	0	0.00	0	0	No load		
19.	B12 Main Incomer	438	0	0	0.00	0	0	No load		
		437	0	0	0.00	0	0	No load		
		437	0	0	0.00	0	0	No load		
20.	Feeder Panel 10 Main Incomer	440	2.01	0.75	1.15	1.01	1.53			
		438	4.18	0.78	2.47	1.98	3.17			
		439	4.34	0.8	2.64	1.98	3.30			
21.	B-08 Main Incomer	438	0	0	0.00	0	0	No load		
		439	0	0	0.00	0	0	No load		
		439	0	0	0.00	0	0	No load		
22.	B-07 Main Incomer	437	2.72	0.92	1.89	0.81	2.06			
		438	0	0	0.00	0	0	No load		
		439	0	0	0.00	0	0	No load		
23.	B-09 Main Incomer	439	0	0	0.00	0	0	No load		
		438	0	0	0.00	0	0	No load		

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
		438	0	0	0.00	0	0	No load		
24.	B4 Main Incomer	441	21	0.99	15.88	2.26	16.04			
		440	22.5	0.98	16.80	3.41	17.15			
		440	13.7	0.95	9.92	3.26	10.44			
25.	Feeder Panel-11	441	16.2	0.94	11.63	4.22	12.37			
		440	0.9	0.79	0.54	0.42	0.69			
		441	2.29	0.68	1.19	1.28	1.75			
26.	B-04 Main Incomer	441	14.77	0.95	10.72	3.52	11.28			
		440	0.87	0.94	0.62	0.23	0.66			
		441	0.65	0.93	0.46	0.18	0.50			
27.	B-06 Main Incomer	440	0.6	0.78	0.36	0.29	0.46			
		439	0.7	0.76	0.40	0.35	0.53			
		438	0.9	0.76	0.52	0.44	0.68			
28.	B-01 Main Incomer	438	1.32	0.81	0.81	0.59	1.00		2.1	34.55
		439	0.7	0.8	0.43	0.32	0.53			
		436	0.55	0.74	0.31	0.28	0.42			
29.	B-02 Main Incomer	438	2.11	0.88	1.41	0.76	1.60			
		438	1.98	0.89	1.34	0.68	1.50			
		439	2.62	0.88	1.75	0.95	1.99			
30.	B-03 Main Incomer	438	1.71	0.95	1.23	0.41	1.30			
		439	1.16	0.96	0.85	0.25	0.88			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
		438	0.75	0.94	0.53	0.19	0.57			
31.	APL Hostel Main Incomer	440	26.6	0.99	20.07	2.86	20.27			
		439	24.88	0.98	18.54	3.76	18.92			
		439	14.6	0.96	10.66	3.11	11.10			
32.	APL Hostel Main Incomer 1F4	440	14.45	0.95	10.46	3.44	11.01			
		438	0	0	0.00	0	0			
		439	2.75	0.95	1.99	0.65	2.09			
33.	Street Light Hostel APL 2F2	440	4.6	0.78	2.73	2.19	3.51			
		438	1.6	0.82	1.00	0.69	1.21			
		439	0.48	0.81	0.30	0.21	0.36			
34.	Street Light Hostel APL 2F3	439	11.6	0.94	8.29	3.01	8.82			
		438	4.57	0.95	3.29	1.08	3.47			
		439	17.1	0.97	12.61	3.16	13.00			
35.	Street Light Hostel APL 2F4	438	1.8	0.96	1.31	0.38	1.37			
		439	5.9	0.97	4.35	1.09	4.49			
		438	3	0.96	2.18	0.64	2.28			
36.	Street Light Hostel APL 2F5	437	0.1	0.74	0.06	0.05	0.08			
		439	0.6	0.76	0.35	0.30	0.46			
		437	0.8	0.76	0.46	0.39	0.61			
37.	Feeder Panel 01 Main Incomer	425	7.6	0.93	5.20	2.06	5.59			
		426	4.5	0.94	3.12	1.13	3.32			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
		429	6.54	0.96	4.67	1.36	4.86			
38.	A-04 Main Incomer	434	0.98	0.68	0.50	0.54	0.74			
		436	0.55	0.72	0.30	0.29	0.42			
		436	1.1	0.74	0.61	0.56	0.83			
39.	A-05 Main Incomer	434	1	0.82	0.62	0.43	0.75			
		436	0.58	0.84	0.37	0.24	0.44			
		437	0.98	0.85	0.63	0.39	0.74			
40.	A-06 Main Incomer	438	2.47	0.86	1.61	0.96	1.87			
		439	0.83	0.86	0.54	0.32	0.63			
		439	0.81	0.84	0.52	0.33	0.62			
41.	A-02 to A 03 Main Incomer	435	4.25	0.94	3.01	1.09	3.20			
		438	2.35	0.93	1.66	0.66	1.78			
		439	12.6	0.98	9.39	1.91	9.58			
42.	Feeder Panel 02 Main Incomer	438	19.5	0.97	14.35	3.60	14.79			
		439	3.8	0.94	2.72	0.99	2.89			
		438	4.5	0.96	3.28	0.96	3.41			
43.	A07 Main Incomer	438	0.3	0.94	0.21	0.08	0.23			
		439	0.4	0.95	0.29	0.09	0.30			
		438	1.2	0.96	0.87	0.25	0.91			
44.	A 09 Main incomer	439	15.2	0.94	10.86	3.94	11.56			
		438	0.9	0.85	0.58	0.36	0.68			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
		439	0.4	0.86	0.26	0.16	0.30			
45.	A 10 Main Incomer	438	0.9	0.92	0.63	0.27	0.68			
		439	1.1	0.91	0.76	0.35	0.84			
		438	1	0.92	0.70	0.30	0.76			
46.	Feeder Panel 03 Main Incomer	436	27.4	0.99	20.48	2.92	20.69			
		436	9.66	0.98	7.15	1.45	7.29			
		434	34.88	0.98	25.69	5.22	26.22			
47.	A 16 to A 17 Main Incomer	437	0.9	0.85	0.58	0.36	0.68			
		438	1	0.87	0.66	0.37	0.76			
		438	14.2	0.95	10.23	3.36	10.77			
48.	A 15 Main Incomer	438	0.8	0.92	0.56	0.24	0.61			
		439	1.1	0.92	0.77	0.33	0.84			
		438	0.5	0.94	0.36	0.13	0.38			
49.	A-14 Main Incomer	437	0.6	0.95	0.43	0.14	0.45			
		437	0.8	0.94	0.57	0.21	0.61			
		439	0.8	0.95	0.58	0.19	0.61			
50.	A-13 Main Incomer	438	2.1	0.95	1.51	0.50	1.59			
		439	0.8	0.94	0.57	0.21	0.61			
		438	13.6	0.95	9.80	3.22	10.32			
51.	Feeder Panel 04 Main Incomer	436	4.92	0.97	3.60	0.90	3.72		2	15.2
		437	4.97	0.98	3.69	0.75	3.76			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
		438	6.12	0.96	4.46	1.30	4.64			
52.	A 21 Main Incomer	436	12.6	0.97	9.23	2.31	9.51			
		437	1.55	0.94	1.10	0.40	1.17			
		438	0.55	0.93	0.39	0.15	0.42			
53.	A 20 Main Incomer	438	0.78	0.95	0.56	0.18	0.59			
		437	1.66	0.94	1.18	0.43	1.26			
		439	0.7	0.95	0.51	0.17	0.53			
54.	A 19 Main Incomer	438	0.87	0.91	0.60	0.27	0.66			
		439	1.12	0.94	0.80	0.29	0.85			
		439	1.15	0.95	0.83	0.27	0.87			
55.	Feeder Panel 05 Main Incomer	437	9.1	0.99	6.82	0.97	6.89			
		438	8.82	0.95	6.36	2.09	6.69			
		439	3.22	0.94	2.30	0.84	2.45			
56.	A22 Main Incomer	438	14.2	0.96	10.34	3.02	10.77			
		439	1.25	0.94	0.89	0.32	0.95			
		437	1.19	0.96	0.86	0.25	0.90			
57.	A 23 Main Incomer	439	1.78	0.96	1.30	0.38	1.35			
		436	1.26	0.95	0.90	0.30	0.95			
		439	0.85	0.93	0.60	0.24	0.65			
58.	A 24 Main Incomer	437	1.65	0.95	1.19	0.39	1.25			
		438	1.4	0.94	1.00	0.36	1.06			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
		436	0.6	0.94	0.43	0.15	0.45			
59.	Feeder Panel 06 Main Incomer	436	5.1	0.96	3.70	1.08	3.85			
		437	24.2	0.94	17.22	6.25	18.32			
		438	2.33	0.95	1.68	0.55	1.77			
60.	A27 Main Incomer	434	0	0	0.00	0	0			
		436	0	0	0.00	0	0			
		435	0	0	0.00	0	0			
61.	A26 Main Incomer	436	0	0	0.00	0	0			
		437	1.22	0.96	0.89	0.26	0.92			
		436	0.69	0.94	0.49	0.18	0.52			
62.	A 25 Main Incomer	438	1	0.78	0.59	0.47	0.76			
		436	5.1	0.81	3.12	2.26	3.85			
		434	1.22	0.82	0.75	0.52	0.92			
63.	Feeder Panel 13 Main Incomer	414	25.7	0.99	18.24	2.60	18.43		0.6	4.6
		415	3.13	0.98	2.20	0.45	2.25			
		414	4.5	0.98	3.16	0.64	3.23			
64.	C -3 Main Incomer	415	12.2	0.98	8.59	1.75	8.77			
		413	3.13	0.97	2.17	0.54	2.24			
		414	1.37	0.98	0.96	0.20	0.98			
65.	C-1 Main Incomer	414	12.89	0.97	8.97	2.25	9.24			
		413	0.49	0.98	0.34	0.07	0.35			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
		414	0.87	0.98	0.61	0.12	0.62			
66.	C-2 Main Incomer	415	0.44	0.96	0.30	0.09	0.32			
		413	0.51	0.97	0.35	0.09	0.36			
		415	2.16	0.98	1.52	0.31	1.55			
67.	Feeder Panel -14 Main Incomer	414	3.81	0.83	2.27	1.52	2.73		1.93	38.24
		413	15.85	0.92	10.43	4.44	11.34			
		416	18.61	0.93	12.47	4.93	13.41			
68.	C5 Main Incomer	414	1.03	0.91	0.67	0.31	0.74			
		413	1.68	0.92	1.11	0.47	1.20			
		414	3.11	0.93	2.07	0.82	2.23			
69.	C4 Main Incomer	415	2	0.93	1.34	0.53	1.44			
		414	2.55	0.91	1.66	0.76	1.83			
		413	15.5	0.94	10.42	3.78	11.09			
70.	Feeder Panel 15 Main Incomer	415	19.7	0.96	13.59	3.96	14.16		1.7	13.79
		416	18.4	0.96	12.73	3.71	13.26			
		415	21.7	0.96	14.97	4.37	15.60			
71.	C11 Main Incomer	414	7.45	0.94	5.02	1.82	5.34			
		416	13.21	0.96	9.14	2.67	9.52			
		414	10.4	0.96	7.16	2.09	7.46			
72.	Market Shopping Center	415	6.45	0.94	4.36	1.58	4.64			
		416	9.7	0.95	6.64	2.18	6.99			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
		415	7.5	0.93	5.01	1.98	5.39			
73.	4 BHK Bungalows	414	0.18	0.84	0.11	0.07	0.13			
		415	0.27	0.86	0.17	0.10	0.19			
		416	0.15	0.88	0.10	0.05	0.11			
74.	Feeder Panel -16 Main Incomer	408	16.2	0.98	11.22	2.28	11.45		1.8	6.5
		410	14.03	0.96	9.56	2.79	9.96			
		411	10.92	0.96	7.46	2.18	7.77			
75.	C10 Main Incomer	411	3.56	0.98	2.48	0.50	2.53			
		410	9.97	0.98	6.94	1.41	7.08			
		411	5.14	0.96	3.51	1.02	3.66			
76.	Irrigation Pump	410	6.02	0.91	3.89	1.77	4.27			
		412	6.23	0.92	4.09	1.74	4.45			
		413	4.36	0.92	2.87	1.22	3.12			
77.	Feeder Panel -17 Main Incomer	416	12.6	0.98	8.90	1.81	9.08		1.7	14.67
		414	16.9	0.97	11.75	2.95	12.12			
		414	14.82	0.98	10.41	2.11	10.63			
78.	C13 Main Incomer	413	14.5	0.97	10.06	2.52	10.37			
		415	5.3	0.96	3.66	1.07	3.81			
		415	0.8	0.96	0.55	0.16	0.58			
79.	C12 Main Incomer	414	10	0.82	5.88	4.10	7.17			
		413	0.75	0.84	0.45	0.29	0.54			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
		414	1.6	0.86	0.99	0.59	1.15			
80.	Feeder Panel 18 Main Incomer	416	2.32	0.78	1.30	1.05	1.67		1.8	41.5
		415	2.59	0.82	1.53	1.07	1.86			
		416	8.17	0.81	4.77	3.45	5.89			
81.	C34 Main Incomer	417	0.78	0.89	0.50	0.26	0.56			
		416	1.2	0.88	0.76	0.41	0.86			
		417	5.35	0.89	3.44	1.76	3.86			
82.	C 35 Main Incomer	416	0.85	0.78	0.48	0.38	0.61			
		418	0.96	0.79	0.55	0.43	0.70			
		417	2.8	0.82	1.66	1.16	2.02			
83.	Temple Light	416	0.33	0.92	0.22	0.09	0.24			
		417	0.6	0.91	0.39	0.18	0.43			
		416	0.37	0.92	0.25	0.10	0.27			
84.	Feeder Panel -19 Main Incomer	420	4.17	0.84	2.55	1.65	3.03			
		419	2.02	0.86	1.26	0.75	1.47			
		418	1.28	0.88	0.82	0.44	0.93			
85.	C-32 Main Incomer	418	0.95	0.84	0.58	0.37	0.69			
		419	0.82	0.84	0.50	0.32	0.60			
		417	1.73	0.83	1.04	0.70	1.25			
86.	C33 Main Incomer	418	1.5	0.86	0.93	0.55	1.09			
		416	0.78	0.86	0.48	0.29	0.56			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
		417	1.02	0.86	0.63	0.38	0.74			
87.	C 29 Main Incomer	418	2.9	0.92	1.93	0.82	2.10			
		417	2.7	0.92	1.79	0.76	1.95			
		416	1.02	0.92	0.68	0.29	0.73			
88.	Feeder Panel 20 Main Incomer	420	2.22	0.98	1.58	0.32	1.61			
		417	4.2	0.98	2.97	0.60	3.03			
		419	3.9	0.98	2.77	0.56	2.83			
89.	C28 Main Incomer	418	2.08	0.94	1.42	0.51	1.51			
		417	0.58	0.94	0.39	0.14	0.42			
		417	1.61	0.95	1.10	0.36	1.16			
90.	Feeder Panel -39 Main Incomer	420	3.36	0.99	2.42	0.34	2.44			
		417	12.6	0.99	9.01	1.28	9.10			
		416	12.9	0.99	9.20	1.31	9.29			
91.	Terrace Light	416	2.45	0.94	1.66	0.60	1.77			
		414	0.2	0.93	0.13	0.05	0.14			
		416	0.95	0.93	0.64	0.25	0.68			
92.	Road Light	417	1.45	0.91	0.95	0.43	1.05			
		415	2.45	0.93	1.64	0.65	1.76			
		416	3.01	0.94	2.04	0.74	2.17			
93.	Cricket Ground Panel	417	13.4	0.99	9.58	1.37	9.68		1.4	0
		416	12.2	0.98	8.61	1.75	8.79			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
		417	12.7	0.99	9.08	1.29	9.17			
94.	Feeder Panel 38 Main Incomer	419	2.87	0.98	2.04	0.41	2.08		1.3	0
		418	0	0	0.00	0	0			
		419	2.55	0.98	1.81	0.37	1.85			
95.	A32 Main Incomer	418	13.4	0.99	9.60	1.37	9.70		1.4	0.5
		418	1.56	0.98	1.11	0.22	1.13			
		419	0.84	0.9	0.55	0.27	0.61			
96.	A-44 Main Incomer	418	13.08	0.98	9.28	1.88	9.47			
		419	1.11	0.97	0.78	0.20	0.81			
		418	0.43	0.97	0.30	0.08	0.31			
97.	A 45 Main Incomer	414	0.27	0.97	0.19	0.05	0.19			
		417	0.65	0.96	0.45	0.13	0.47			
		415	0.41	0.97	0.29	0.07	0.29			
98.	Feeder Panel 36 Main Incomer	418	2.91	0.77	1.62	1.34	2.11		1.46	6.42
		417	11.9	0.99	8.51	1.21	8.59		1.6	5.4
		419	2.75	0.75	1.50	1.32	2.00		1.54	6.4
99.	A 40 Main Incomer	418	0.31	0.91	0.20	0.09	0.22			
		419	0.14	0.92	0.09	0.04	0.10			
		418	0.81	0.9	0.53	0.26	0.59			
100.	A41 Main Incomer	418	0.32	0.97	0.22	0.06	0.23			
		419	2.75	0.96	1.92	0.56	2.00			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
		418	1.41	0.98	1.00	0.20	1.02			
101.	A 42 Main Incomer	418	0.31	0.98	0.22	0.04	0.22			
		419	7.22	0.98	5.13	1.04	5.24			
		418	0.35	0.97	0.25	0.06	0.25			
102.	A 43 Main Incomer	418	1.12	0.98	0.79	0.16	0.81			
		417	0.61	0.97	0.43	0.11	0.44			
		419	0.43	0.99	0.31	0.04	0.31			
103.	Feeder Panel-35 Main Incomer	419	5.09	0.73	2.70	2.52	3.69		1.4	61.55
		418	3.34	0.63	1.52	1.88	2.42		1.61	64.43
		418	2.1	0.61	0.93	1.20	1.52		1.5	59.6
104.	A 36 Main Incomer	418	0.93	0.8	0.54	0.40	0.67			
		417	0.45	0.9	0.29	0.14	0.33			
		418	0.61	0.83	0.37	0.25	0.44			
105.	A37 Main Incomer	417	0.85	0.97	0.60	0.15	0.61			
		418	0.45	0.96	0.31	0.09	0.33			
		419	0.35	0.9	0.23	0.11	0.25			
106.	A 38 Main Incomer	418	1.8	0.97	1.26	0.32	1.30			
		419	1.14	0.94	0.78	0.28	0.83			
107.	A 39 Main Incomer	418	0.78	0.96	0.54	0.16	0.56			
		417	0.64	0.96	0.44	0.13	0.46			
		418	0.2	0.96	0.14	0.04	0.14			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
108.	Feeder Panel 34 Main Incomer	421	15.8	0.98	11.29	2.29	11.52		1.4	13.6
		420	3.32	0.98	2.37	0.48	2.42			
		419	0	0	0.00	0	0			
109.	A 32 Main Incomer	420	0.45	0.96	0.31	0.09	0.33			
		419	0.63	0.94	0.43	0.16	0.46			
		418	0.97	0.94	0.66	0.24	0.70			
110.	A 33 Main Incomer	418	0.33	0.95	0.23	0.07	0.24			
		419	1.8	0.95	1.24	0.41	1.31			
		418	0.45	0.94	0.31	0.11	0.33			
111.	A 34 Main Incomer	418	0.62	0.93	0.42	0.16	0.45			
		418	1.14	0.93	0.77	0.30	0.83			
		419	1.27	0.94	0.87	0.31	0.92			
112.	A 35 Main Incomer	417	0.36	0.97	0.25	0.06	0.26			
		418	13.1	0.96	9.10	2.66	9.48			
		418	0.41	0.97	0.29	0.07	0.30			
113.	Street Light Sector - 7 Panel	418	2.18	0.96	1.52	0.44	1.58			
		419	2.29	0.97	1.61	0.40	1.66			
		417	2.29	0.96	1.59	0.46	1.65			
114.	Feeder Panel 33 Main Incomer	420	3.76	0.97	2.65	0.66	2.74		1.5	49.5
		421	3.55	0.96	2.49	0.72	2.59			
		419	2.96	0.97	2.08	0.52	2.15			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
115.	A 28 Main Incomer	417	0.95	0.96	0.66	0.19	0.69			
		418	0.56	0.97	0.39	0.10	0.41			
		418	1.5	0.96	1.04	0.30	1.09			
116.	A 29 Main Incomer	418	0.8	0.97	0.56	0.14	0.58			
		418	1.2	0.97	0.84	0.21	0.87			
		417	0.36	0.96	0.25	0.07	0.26			
117.	A 30 Main Incomer	417	1.74	0.98	1.23	0.25	1.26			
		418	1.41	0.97	0.99	0.25	1.02			
		419	1.1	0.98	0.78	0.16	0.80			
118.	A 31 Main Incomer	417	0.5	0.94	0.34	0.12	0.36			
		419	0.15	0.95	0.10	0.03	0.11			
		417	0.32	0.95	0.22	0.07	0.23			
119.	Feeder Panel 40 Main Incomer	420	6.03	0.99	4.34	0.62	4.39		1.65	
		417	3.39	0.98	2.40	0.49	2.45			
		417	3.74	0.99	2.67	0.38	2.70			
120.	Samudra Office	418	0.95	0.98	0.67	0.14	0.69			
		417	0.1	0.98	0.07	0.01	0.07			
		418	0.96	0.96	0.67	0.19	0.70			
121.	Gate HM Tower	418	4.97	0.97	3.49	0.87	3.60			
		419	3.22	0.96	2.24	0.65	2.34			
		418	1.64	0.97	1.15	0.29	1.19			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
122.	Feeder Panel 41 Main Incomer	420	19.5	0.99	14.04	2.00	14.19			
123.	B 54 Main Incomer	418	1.8	0.97	1.26	0.32	1.30			
		419	1.25	0.98	0.89	0.18	0.91			
		418	0.55	0.98	0.39	0.08	0.40			
124.	B 53 Main Incomer	417	1.41	0.97	0.99	0.25	1.02			
		418	1.54	0.98	1.09	0.22	1.11			
		419	0.82	0.98	0.58	0.12	0.60			
125.	B 51 Main Incomer	417	0.74	0.94	0.50	0.18	0.53			
		418	0.75	0.95	0.52	0.17	0.54			
		417	1.17	0.95	0.80	0.26	0.85			
126.	B 52 Main Incomer	418	0.88	0.97	0.62	0.15	0.64			
		417	1.82	0.95	1.25	0.41	1.31			
		416	0	0	0.00	0	0			
127.	B 55 Main Incomer	417	1.56	0.96	1.08	0.32	1.13			
		418	1.3	0.96	0.90	0.26	0.94			
		419	1.85	0.95	1.28	0.42	1.34			
128.	B 58 Main Incomer	418	2.02	0.99	1.45	0.21	1.46			
		419	1.37	0.97	0.96	0.24	0.99			
		418	0.94	0.97	0.66	0.17	0.68			
129.	Ports Hostel Panel	417	13	0.98	9.20	1.87	9.39			
		419	0.88	0.97	0.62	0.16	0.64			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
		418	0.8	0.98	0.57	0.12	0.58			
130.	Voda phone Office	417	0.22	0.96	0.15	0.04	0.16			
		418	0.54	0.97	0.38	0.10	0.39			
		418	10.2	0.98	7.24	1.47	7.38			
131.	Street Light	417	3.5	0.95	2.40	0.79	2.53			
		418	3.45	0.97	2.42	0.61	2.50			
132.	A 15F Main Incomer	418	0.5	0.98	0.35	0.07	0.36			
		417	3.42	0.98	2.42	0.49	2.47			
		419	4.44	0.99	3.19	0.45	3.22			
133.	A 04F Main Incomer	417	7.22	0.97	5.06	1.27	5.21			
		419	3.44	0.96	2.40	0.70	2.50			
		418	4.45	0.98	3.16	0.64	3.22			
134.	A 20F Main Incomer	418	3.42	0.96	2.38	0.69	2.48			
		419	3.51	0.97	2.47	0.62	2.55			
		418	3.58	0.96	2.49	0.73	2.59			
135.	A 23F Main Incomer	417	2.54	0.98	1.80	0.37	1.83			
		418	2.26	0.97	1.59	0.40	1.64			
		419	2.18	0.96	1.52	0.44	1.58			
136.	A 09 Main incomer	418	17.2	0.96	11.95	3.49	12.45			
		417	2.8	0.98	1.98	0.40	2.02			
		417	1.9	0.98	1.34	0.27	1.37			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
137.	Feeder Panel 25 Main Incomer	416	8.41	0.93	5.64	2.23	6.06		2.1	23.5
		417	6.8	0.92	4.52	1.92	4.91			
		416	7.8	0.94	5.28	1.92	5.62			
138.	B-75 Main Incomer	417	0.78	0.93	0.52	0.21	0.56			
		416	1.49	0.96	1.03	0.30	1.07			
		417	1.31	0.96	0.91	0.26	0.95			
139.	B 74 Main Incomer	416	1.74	0.97	1.22	0.30	1.25			
		417	1.75	0.96	1.21	0.35	1.26			
		418	0	0	0.00	0	0			
140.	B 76 Main Incomer	417	0.91	0.91	0.60	0.27	0.66			
		416	2.06	0.92	1.37	0.58	1.48			
		417	0	0	0.00	0	0			
141.	Main Road Street Light	418	5.12	0.94	3.48	1.26	3.71			
		417	3.38	0.95	2.32	0.76	2.44			
		418	3.94	0.94	2.68	0.97	2.85			
142.	Feeder Panel 26 Main Incomer	417	14.8	0.98	10.48	2.13	10.69		1.9	9.88
		418	16.19	0.97	11.37	2.85	11.72			
		417	6.34	0.98	4.49	0.91	4.58			
143.	B-73 Main Incomer	418	0	0	0.00	0	0			
		417	16.3	0.98	11.54	2.34	11.77			
		419	2.55	0.97	1.80	0.45	1.85			

Sr. No	Name	Volts	Amps	P.F	kW	kVAR	KVA	Remarks	VHD	ITHD
144.	B72 Main Incomer	417	1.51	0.98	1.07	0.22	1.09			
		418	1.22	0.97	0.86	0.21	0.88			
		419	2.55	0.98	1.81	0.37	1.85			
145.	B 71 Main Incomer	418	0.61	0.93	0.41	0.16	0.44			
		419	0.61	0.94	0.42	0.15	0.44			
		419	1.27	0.95	0.88	0.29	0.92			
146.	Feeder Panel 27 Main Incomer	417	16.5	0.99	11.80	1.68	11.92		1.2	10.8
		418	14.44	0.98	10.25	2.08	10.45			
		419	13.97	0.97	9.83	2.46	10.14			
147.	B-68 Main Incomer	417	1.51	0.94	1.03	0.37	1.09			
		419	0.78	0.95	0.54	0.18	0.57			
		417	2.35	0.94	1.60	0.58	1.70			
148.	B-69 Main Incomer	417	1.26	0.93	0.85	0.33	0.91			
		419	0.5	0.94	0.34	0.12	0.36			
		417	5.71	0.96	3.96	1.15	4.12			
149.	B-70 Main Incomer	418	0.79	0.96	0.55	0.16	0.57			
		416	14.4	0.97	10.06	2.52	10.38			
		419	2.56	0.96	1.78	0.52	1.86			
150.	Market Shopping Center	419	7.29	0.97	5.13	1.29	5.29			
		418	3.65	0.96	2.54	0.74	2.64			
		416	8.98	0.96	6.21	1.81	6.47			

Annexure-IV Lighting Section Energy Saving Opportunities

Sr. No.	Description	Action from Adani Side/Auditor comment
1	Replacement with LED	Already taken care by plant, However good quality purchase will important like driver, dimming factor, harmonics etc.
2	Supply Voltage Reduction	Not Feasible due to LED installations
3	Illumination Reduction by switching OFF or Dimming fixtures	Feasible as per requirement of GMP and actual lux
4	Day Light Areas Fixture OFF, In some rooms few lights are close to window and rest lights are away from window	Individual switches are required for any zigzag switching, timer ckt., day light side
5	Motion Sensors	Plant to review same in low movement areas where lights are continuous ON
6	Light Pipe	Can be Installed
7	Street Light- GPS based control, timer control	major savings in Port type plant due to good awareness
8	Conventional and other type of fixture	Not in place, so no comment
9	ECBC, design related points	Essential to conduct dedicated audit
10	Wall to Window Ratio	Not to increase as cost of HVAC is high than Illumination

Intangible savings on air conditioners:

"Each degree increase in the AC temperature can save about 3-5% electricity,". Increasing your AC temperature from 18 to 27 degrees can help you save around ₹ 6,240 in a year. Not only that, you also end up conserving 960kWh energy in a year (assuming your AC functions for eight months).

Annexure – 7

Cost of Environmental Protection Measures

Sr. No.	Activity	Cost incurred (INR in Lacs)			Budgeted Cost (INR in Lacs)
		2019 – 20	2020 – 21	2021 – 22	2021 – 22
1.	Environmental Study / Audit and Consultancy	0.33	6.2	6.82	7.0
2.	Legal & Statutory Expenses	0.84	10.58	10.52	12.0
3.	Environmental Monitoring Services	21.74	19.17	14.31	20.0
4.	Hazardous / Non-Hazardous Waste Management & Disposal	108.43	83.55	107.09	114.10
5.	Environment Days Celebration and Advertisement / Business development	1.5	5.3	4.04	7.0
6.	Treatment and Disposal of Bio-Medical Waste	1.62	2.09	2.14	2.04
7.	Mangrove Plantation, Monitoring & Conservation	Nil	32.59	53.6	53.6
8.	Other Horticulture Expenses	734.18	689	921	921
9.	O&M of Sewage Treatment Plant and Effluent Treatment Plant (including STP, ETP of Port & SEZ & Common Effluent Treatment Plant)	110.18	148.49	252.27	299.5
10.	Expenditure of Environment Dept. (Apart from above head)	105.13	89.11	149.8	85.35
	Total	**1083.95**	**1086.08**	**1371.79**	**1521.59**