One-Day Conference on ‘Investment Bazaar for Energy Efficiency Financing’

Date: 26th August 2022 **Pune**

AGENDA

Time	**Topic**	**Speaker**
10:00 AM - 10:30 AM	**REGISTRATION**	
10:30 AM – 10:40 AM	Welcome address	Mrs. Suvarna Hundekari General Manager – EC Dept – MEDA
10:40 AM – 10:50 AM	Thematic address	Shri. Sunil K. Khandare Director, Bureau of Energy Efficiency (BEE)
10:50 AM – 11:00 AM	Inaugural address	Shri. Ravindra Jagtap (IAS) Director General, MEDA
11:00 AM – 11:05 AM	Vote of Thanks	Shri. Amit C. Chilwe Manager - EC Dept – MEDA
11:05 AM – 11:30 AM	***Tea Break and Networking (Visit to Stalls)***	
11:30 AM - 11:40 AM	MEDA Initiatives in Energy Conservation Sector	Mrs. Suvarna Hundekari General Manager - EC Dept – MEDA
11:40 AM – 11:55 AM	BEE Energy Efficiency Financing Schemes	Shri. Tejas Patankar Finance Expert- PAT Cell, MEDA
11:55 AM – 12:10 AM	Financing Schemes of PFC	Shri. Madan Mohan General Manager- PFC, Delhi
12:10 PM - 12:30 PM	Energy Efficiency Financing Schemes in MSME	Shri. Pranav Gunjan Divisional Manager, Canara Bank, MSME Sulabh
12:30 PM – 12:50 PM	Energy Conservation Bankable Projects – Case Study	Shri. Nilesh Jadhav Energy Manager- Bombay Dyeing Ltd
12:50 PM – 01:10 PM	Energy Conservation Projects – Case Study	Shri. Vijay Patil Energy Manager- TATA Steel BSL Ltd
01:10 PM – 01:30 PM	Energy Conservation Projects – Case Study	Shri. Ravi Patil Energy Manager-Adani Dahanu Thermal Power Plant
01:30 PM - 02:15 PM	***Lunch***	

02:15 PM – 02:35 PM	Energy Efficiency Monitoring Solutions	Shri. Ayaz Kamil Head-Energy Performance & Services OEM – M/s. Siemens Ltd
02:35 PM – 03:00 PM	Air Compressors – new opportunities & Investment potential	Shri. Sagar Mali OEM – Kaeser Compressors
03:00 PM – 03:30 PM	Energy Saving Opportunities in Compressed Air System	Shri. Prasad Shrirame OEM - M/s. Godrej & Boyce
03:30 PM – 03:50 PM	Thermoshield- Thermal Insulation Paint	Shri. Santosh Mestry M/s. Winone Technologies Pvt Ltd
03:50 PM – 04:10 PM	Energy Efficient Technologies in the Industries and Banks	Shri. Yogendra Talware M/s. Strom Energie Pvt Ltd
03:00 PM – 03:30 PM	Innovation in Lighting	Shri. Avinash Verma M/s. STARRBOAT Automations
04:10 PM – 04:30 PM	***High Tea***	

End of Session

The one-day conference on "Investment Bazaar for Energy Efficiency Financing" for the concerned stakeholders such as industries, banks and financial institutions, OEMs, energy auditors, etc. was organized by Maharashtra Energy Development Agency (MEDA), Govt. of Maharashtra on 26th August 2022 at Hotel Four Points by Sheraton, Pune.
The program was attended by the officials from BEE, PFC, SDA & by various industries, banks, energy auditors and ESCOs.

❖ First Session: Inaugural Session

The Inaugural Session of the conclave was graced by an august gathering of about 100+ delegates, with eminent panelists at the dais.

- Inaugural session started by lightning the lamp in the name of Goddess Saraswati followed by Welcome Address of Mrs. Suvarna Hundekari, GM EC, MEDA. In her address, she explained the agenda of the investment bazaar and welcome all the participants.

- **Sh. Sunil Khandare, Director, BEE-GOI**

He shared the details of the programme, briefed about the EEFP (Energy Efficiency Financing Platform) under NMEEE (National Mission for Enhanced Energy Efficiency) which is one of the eight National Missions under NAPCC (National Action Plan for Climate Change). Glasgow COP26, commitments of India for the fight against climate change i.e. "Panchamrit Goals" for the India's pathway to Net Zero by 2070.

- First- India will reach its non-fossil energy capacity to 500 GW by 2030.
- Second- India will meet 50 percent of its energy requirements from renewable energy by 2030.
- Third- India will reduce the total projected carbon emissions by one billion tons from now onwards till 2030.
- Fourth- By 2030, India will reduce the carbon intensity of its economy by less than 45 percent.
- And fifth- by the year 2070, India will achieve the target of Net Zero.

- **Sh. Ravindra Jagtap (IAS), Director General MEDA**

He delivered inaugural address. He highlighted the Glasgow commitments and MEDAs commitment towards the same and urged all the participants to be a part of the Net Zero mission of India, save energy for National cause and make India a greener economy.

- **Sh. Amit Chilwe, Manager- EC Dept., MEDA**

He thanked all the Special guests from BEE, PFC, Industries, Banks, OEMs, ESCOs and all the participants from DCs, MSMEs, Banks for being a part of this One Day Investment Bazaar on EE Financing.

❖ Second Session: Technical Session-01

Second session was started with the presentation of General Manager EC Dept., MEDA on the MEDA initiatives for Energy Conservation in the State of Maharashtra.

The brief details as follow:

- **Mrs. Suvarna Hundekari, GM-EC, MEDA**

General Manager EC Dept. MEDA initiated the technical session by giving a brief introduction of MEDA and its roles, objectives, achievements, and upcoming events being organized by MEDA. She focused on the various schemes of BEE as well as State Govt. being implemented by MEDA such as PAT (Perform, Achieve and Trade), ECBC (Energy Conservation Building Code) and State Level EC Awards, Save Energy Programs respectively.

- **Sh. Tejas Patankar, FE, PAT Cell MEDA**

Mr. Tejas Patankar has given detailed presentation on **FINANCING INITIATIVES OF BUREAU OF ENERGY EFFICIENCY (BEE) a**nd BEE's existing Initiatives for Financing

He recalled, the PANCHAMRIT MANTRA AT COP 26 climate summit held in Glasgow, five key commitments delivered by Hon'ble Prime Minister to tackle the climate change issues, the outcome which India will achieve net zero by 2070.

He mentioned about, the Huge Investment Potential in Energy Efficiency sector viz & moderate energy savings to be achieved by 2031 is 86.90 MTOE and in terms of Rs 1 Mio' Crores as per BEE's UNNATEE Report 2019.

He further mentioned about the background of BEE's Financing initiatives and how Energy Efficiency Financing Platform has been designed to achieve the *motto,* under financing energy efficiency program.

He has also explained and brought attention to -

- Designated consumers in Maharashtra Sector Viz
- Investment Bazaar Initiative & its framework
- Program on Grading of Energy Efficiency Projects & criteria for it like BEE shall reimburse grading cost of maximum Rs. 2.90 lakh per project for 100 EE projects that shall be graded by empaneled grading agencies and financed by empaneled FIs.
- EE Financing Cells & PFC has established a dedicated department "Energy Efficiency Cell"
- BEE's Facilitation Centre
- Willingness Forms
- Technical Forms
- List of EE Projects identified in Maharashtra
- Interest rate offered for EE Projects

He also explained the objective of this investment bazaar and framework of the same as well. He also talked about the facilitation centers being formed by BEE with consultation with M/s. DARASHAW and Company for bridging the gap between bankers and industries to overcome financial barriers for energy efficiency projects implementation.

- **Sh. Madan Mohan, General Manager, PFC**

He shared the details of the various financing schemes offered by PFC (Power Finance Corporation), benefits to consumers and the criteria for funding EE projects.

Mr. Madan Mohan has given detailed presentation on Funding on Energy Efficiency Projects by Power Finance corporation. (PFC)

- He has mentioned about PFC, *Nodal agency for Govt of India Schemes - RDSS, IPDS, R-APDRP, UMPP, ITP, LPS* & its journey from 1986 to 2022 and its financial performance

Disbursements	–	51,242 Crores
Loan Assets	–	3,73,135 Crores
Net Worth	–	59,350 Crores

He mentioned that, *though power is the focus sector for PFC, PFC funds projects in cogeneration, tri-generation, combined heat & power, waste heat recovery systems, lift Irrigation, sewage treatment plant, smart city, electrification of railways, airports, etc.*

He shared the PFC portfolio & brought attention of audiences how financing has been done

- CAPEX Loans
- Non – CAPEX Loans
- Multilateral Loans

Scheme Type	Project Cost (Cr)	Sanction (Cr)
Renovation & Modernization (including uprating & FGD)	41,626	26,434
E-Mobility	685	274
Co-generation & Waste Heat Recovery	1,544	1,384
Total	**43,855**	**28,091**

Why PFC?

- Longer Repayment Tenure
- Higher Exposure limits

- IDC Funding
- Flexible reset options
- Easy Documentation
- No hidden charges
- Lower lifecycles costs
- Other benefits

He concluded with remarks wishing all stakeholders to put forward their requirements of Rs 25 crores and above to PFC and express his gratitude towards all.

- **Sh. Pranav Gunjan, Canara Bank MSME**

He shared the details of various financing schemes for MSMEs particularly for energy efficiency projects.

Mr. Pranav Gunjan has given detailed presentation on Financing for MSME **a**nd Canara Banks's products for EE Financing for MSMEs.
He has mentioned various schemes like -

- CANARA CAP,
- CANARA VYAPAR,
- CANARA MSME EXPO,
- MSE VIJETA,

He mentioned about, the Investment Potential in MSMEs & financing requirements from a smaller ticket size of Rs 25 lakhs to Rs 5 crores and how the parameters and process flow for particular loan proposal is checking its -

- Eligibility
- Interest Free Credit Period
- Quantum
- Collateral

He further mentioned about how CANARA Bank can execute the things in user-friendly manners for the proposals under consideration and how the bank can contribute to Energy Efficiency Financing.

- **Sh. Nilesh Jadhav, EM, M/s. Bombay Dyeing Ltd**

He gave a brief introduction of his manufacturing unit of M/s. Bombay Dyeing Ltd located at Patalganga, Dist. Raigad. He explained various energy conservation projects implemented and which are under implementation with the proposed investment and savings. Also described some new EE technologies being implemented at their plant as below:

Sr. No.	Description	Proposed Saving		Investment Required	Payback Period
		Energy	Rupees		
1	Installation of X-plate on FD fan of FBC (Fluidized Bed Combustion) Boiler to reduces coal consumption and CO, CO2, SOx, NOx emissions	Coal: 1034.8 MT	Rs. 144 Lakh	Rs. 54 Lakh	5 months
2	Installation of Energy Efficient Compressor to reduce specific energy consumption from 205 W/cfm to 160 W/cfm.	Electricity: 14.78 Lakh KWH	Rs. 133 Lakh	Rs. 150 Lakh	16 months
3	Installation of VAM (Vapour Absorption Machine) to reduce electrical energy consumption of the plant.	Electricity: 27.15 Lakh KWH	Rs. 244 Lakh	Rs. 550 Lakh	2.3 years
4	Add FO Additives to the fuel to reduce overall fuel consumption.	FO: 474 MT	Rs. 242 Lakh	Rs. 42.7 Lakh	

He ended the presentation with the Energy Saving Projects to be implemented with proposed investment of about Rs. 10 Cr and savings of Rs. 7.63 Cr annually.

- **Sh. Shiba Prasad Panda, EHS Manager, M/s. TATA Steel Ltd**

Mr. Shiba Panda, Manager-ESG, M/s. TATA Steel ltd shared the details of their manufacturing unit located at Khopoli, Dist. Raigad with the process flow and their product range. He also explained various energy conservation projects implemented, and which are under implementation with the proposed investment and savings. Also described some new EE technologies being implemented at their plant.

He explained about their energy consumption scenario as Thermal energy consumption of 19628 toe and electrical energy consumption of 13757 toe i.e. 59% and 41% respectively.

He also mentioned improvement in their thermal, electrical as well as overall SEC and five years' action plan to reduce SEC from 0.300 to 0.298 by the end of FY 2024

He mentioned yearly energy conservation projects implemented with investment and saving achieved in respective years.

He emphasized on their commitment towards environment sustainability following ethics and values of TATA group through various initiatives taken such as Energy Plantation by Miyawaki Method, environment and GHG improvements, employee involvement and energy awareness, tree plantation activities etc and he also highlighted their upcoming proposed pond and biodiversity park.

He also focused on the long-term goals of the group for energy conservation and environmental sustainability. Below are few of such new technologies implemented-

1. Regenerative Thermal Oxidizer (ROT): is an extremely efficient thermal oxidizer that uses number of ceramic beds, either loose saddles or honeycomb blocks, to absorb heat from its exhaust gases. It than uses this captured heat to pre-heat the process incoming process air stream and destroy air pollutants contained in this air stream, at temperature ranging up to 1000°C.
2. Biomass Green Fuel Briquette Boiler in place of Conventional Fuel Fired Boiler.
3. HHO mixed Combustion System
4. Energy Management System (ISO 50001)

- **Sh. Ravi Patil, EM, M/s. Adani Dahanu TPP**

Mr. Ravi Patil, Energy Manager-Adani Dahanu Thermal Power Plant shared the various achievement of their plant as follows:

-First Utility in India as Certified for ISO 50001
-Having team of 25 BEE Certified Energy Auditors
-Designated Energy Management Cell
-Pioneer in Coal Blending
-Performance Monitoring Cell for Heat Rate, APC and Energy Audit
-Monitoring facilities at Plant such as Online EMS, HMI, X-Force AIMS, D-log book, intranet website.

He also explained the energy saving measures implemented and verified savings in last four years as below:

-Coal Saving 66839 MT
-Electricity Savings 90.86 million KWH

With the investment of Rs. 81.88 Cr and monetary savings of Rs. 59.04 Cr

He emphasized on few energy saving projects implemented such as:

1. Hydraulic Coupling Power Transmission:

Before Hydraulic Power Transmission	6749 KWH
After Hydraulic Coupling Installation	5788 KWH
Total saving @1 MW	961 KWH

2. HP and IP Turbine Overhauling:

Before Heat Rate (TG)	2014 Kcal/KWH
After Heat Rate (TG)	1072 Kcal/KWH
Unit Heat Rate (Before)	2296 Kcal/KWH
Unit Heat Rate (After)	2255 Kcal/KWH

I.e. 2.08% reduction in TG Heat Rate and 1.08% reduction in Unit Heat Rate achieved.

❖ Third Session: Technical Session-02

- **Shri. Ayaz Kamil, Head Energy and Performance, Siemens Ltd**

He initiated the second technical session by giving a brief introduction of Siemens Energy Monitoring Solutions and its portfolio. He explained Siemens Energy & Performance Services and its Holistic Approach for
-Smart Energy Management, Supply side optimization
-Generation, storage, and distributed energy
-Demand side optimization, Building and asset performance.

He explained about the Energy Monitoring Scope of technologies and services offered for: Hydrogen, Battery energy storage system, Diesel, Solar PV, Building automation, Cooling system, Heating system, Air Handling system.

He emphasized on the AVATAR, Amalgamation of People, Technology & Process Creating the center of competency for by leveraging systems of Siemens Universe

- **At the first level:** Proposing & Supporting at the planning level to make them ready for next step
- **Steps Towards Digitalization:** Help to integrate into digital ecosystem creating scope for analysis
- **For data driven decisions:** Modelling & analyzing to create meaningful information
- **Traditional to Digital:** People driven operations to system drive operations
- **Enhance:** by moving from Reactive based to predictive & prescriptive based systems
- **Digital Twin of Real World:** Making it possible to replicate at different locations by defining process
- **Creating a Digital Ready Infrastructure in line with Industry 4.0:** Remote Monitoring & Control, Analysis and Decision Making, Maximizing Utilizing of Assets, Improvise Product/Solution

At the end he explained on the Managerical/Enetrprise, and Supervisory Dashboards.

- **Sh. Sagar Mali, Manager Sales, Kaeser Ltd**

He has shared the details about air demand analysis solutions and energy efficiency in air compressors. He briefly explained their products and measures for energy efficiency in Air Compressors and distribution.

Firstly, he started with the compressed air phenomena as Pressurized Atmospheric Air and the Fourth Utility after Electricity, Natural Gas and Water. Compressed air system such as generation, distribution, end use and new compressed air system demands optimum cost efficiency, reliability and maximum availability, optimum utilization, and safe operation.

He explained about the cost structure of the compressor installation and compressed air cost optimization strategy by Analysis, Planning and Management.

Different structure available for the different industries/companies as well as different air consumption and compressed air quality levels were also explained by him.

He explained about

1. KESS: which simulates and compares possible solutions to find the one that is the most efficient, Exact figures show the power consumption and energy efficiency of each simulated system, the specific power consumptions of each simulated system vis-à-vis existing system can be compared.
2. ADA (Air Demand Analysis): Generate precise consumption profiles of compressed air system, allowing us to determine estimated air demand throughout all operating sectors and at different loads, highlight weaknesses in the existing system, identify poorly dimensioned installations, lay the groundwork for the next step toward the optimal compressed air station by calculating the energy-saving potential.

He also explained the overall costs and potential savings with the new design such as waste heat recovery to reduce energy costs which account for up to 80 percent of life-cycle costs and reduce CO_2 footprint as heat recovery lowers the CO_2 emissions of the organization because the plant utilizes energy more efficiently.

- **Sh. Prasad Shrirame, Manager Sales, Godrej & Boyce**

He has shared the details of their various compressed air solutions and energy saving opportunities in the compressed air system. He explained the technical aspects in compressed air generation, distribution and end use.

He spoke on the Energy Saving Opportunities in Compressed Air System and at the very start gave a message that "We Do Not Inherit the Earth from Our Ancestors, We Borrow It from Our Children."

Initially he briefed about the Godrej Group and their portfolio in different industrial sectors such as its one of 14 businesses of Godrej & Boyce company, Godrej Electricals & Electronics is as old as the company. And their businesses strive to contribute to the vision of the group by delivering Sustainable Technology Solutions.

Compressed Air Solutions is one of the important business verticals of Godrej Electricals & Electronics.

He explained the Godrej Group commitment towards sustainability as a part of the global EP100 initiative, they aim to double their energy productivity and reduce carbon intensity by 60% by 2030.

Only 7 Indian companies have committed to this initiative and Godrej & Boyce is one of them. EP100 (Energy Productivity 100) is a campaign that brings together a growing group of energy-smart companies committed to doubling their energy productivity by 2030. EP100 is led by the Climate Group in partnership with the Alliance to Save Energy.

He explained the compressed air system processed involved in, such as generation, treatment, distribution, and end use. He mentioned the potential savings in these all stages of 20%, 5%, 10% and 15% respectively. Also emphasized on the energy saving approach as Cloud Based Monitoring System i.e. Generation Controller and Heat Recovery, System Monitoring and Timely Replacement, Design and Installation of Aluminium Piping Project, Own controllers and monitoring products.

He also briefed about the CAS-Sustainable Energy Saving Solutions by Godrej.

- **Sh. Santosh Mestry, Manager, Tejiroop Sustainable Solutions**

He explained the technology of high-performance thermal insulation coating, its benefits and technical feasibility and financial viability of the project. He represented Winone Product Technologies and explained their product of High-Performance Thermal Insulation Coating.

He explained the disadvantages of the conventional insulation such as corrosion under insulation, Non-recyclable insulation material, Difficult install on complex structures, Non visibility of leakages and structural defects, Health hazards for installation crew.
And the replacement for this conventional insulation is Thermoshield Product which is applied as paint on pipes and it acts like insulation having following characteristics:

- Replaces 60 mm glass wool insulation by 3 mm Paint
- From 120 Deg.C to 45 Deg.C in 2mm
- Anti-Corrosion Properties
- Water based coating

And having following salient features:

- Water based coating with nanoparticles
- Eliminates condensation and heat losses
- Higher speed of application as compared to conventional insulations
- Provides superior corrosion protection along with thermal insulation
- Active service life of 3 years+

- **Sh. Yogendra Talware, Director, M/s. Strom Energie Pvt Ltd**

He explained about the electric bill reading and saving potential in industries as well as banks and commercial buildings by controlling power factor using APFC Panels.
He briefed about the electrical bill and explained following parameters:

Connected Load (kW)	2) Contract Demand (kVA)
3) Maximum Demand (kW)	4) Maximum Demand (kVA)
5) Billed Demand (kVA)	6) Total kWh Consumption
7) Total kVAh Consumption	8) Average Power Factor
9) Billed Power Factor	10) Assessed Power Factor

He also mentioned few case studies, having a huge potential for saving as otherwise will cost penalty for not maintaining power factor.

Case Study-1: Sector- Industry

No. of Consumers	:	71
kWh	:	24,00,769
kVAh	:	30,34,748
rkVAh Lag	:	3,02,059
rkVAh Lead	:	12,58,855
Penalty (₹)	:	14,39,685

Case Study-2: Sector- Bank

No. of Branches	:	59
Penalty Paid (₹)	:	32,85,700
Incentive Lost (₹)	:	11,92,054
Total Loss (₹)	:	44,77,754
Cost of kVAh Billing	:	1,38,39,920
Investment (₹)	:	24,72,300

- **Sh. Avinash Verma, Manager, M/s. Starrbot**

He shared the details of innovation in lighting such as motion sensor-based lighting system and other related innovative lighting system.

- StarrBot deals with the end-to-end aspect of Motion Sensors, Motion Sensor lighting and home automation products, including designing, development, manufacturing and servicing. Our technology is built in-house, which allows us to customize our product to suit different characteristic needs and at the same time, is nearly 2X more cost effective than our competitors.
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Innovation in Lighting: -

1. Smart Tube Light 2. Smart Street Light 3. Smart surface panel light
4. Smart bulkhead light 5. Smart concealed panel light 6. Smart light-PIR

StarrBot Smart Surface LED Panel light features:

- Built in Sensor
- 2 Step Dimming Control
- Wider Detection area 8m Max
- Stable and Reliable
- Max Efficiency And Min Glare

StarrBot Smart Concealed LED Panel Light: -

- Built In Sensor with LED driver
- 2 Step Dimming Control
- Wider Detection area 10m Max
- Max Efficiency and Min Glare

❖ **Stalls at the Investment Bazaar:**

We invited OEMs of energy efficient technologies and Banks for putting stall at investment bazaar for showcasing their products and various financial schemes respectively.
Following are the details of the stalls and their products:

- **OEMs:**

1. M/s. Strom Energie Pvt Ltd
   Product: APFC Panels

2. M/s. Godrej & Boyce
   Product: Compressed Air Solutions

3. M/s. Kaeser Compressors
   Product: Air Compressors/Dryers

4. M/s. Halonix Lighting
   Product: Energy Efficient Lights

5. M/s. Starrboat Pvt Ltd
   Product: Innovative Lightings

6. M/s. Tejiroop Sustainable Solutions
   Product: EE Lighting/Insulation Paint, Solar Panels, etc.

7. M/s. Realpower Technologies, Pune
   Product: Electric Panels

- **Banks:**

8. M/s. HDFC Bank

9. M/s. Yes Bank

10. M/s. Canara Bank

11. M/s. Electronica Finance Limited

Bankable Project of Bombay Dyeing

PROPOSED ENERGY SAVING PROJECTS 2022-23

11

Sr. No.	Project description	Achievement of energy savings per year basis				Investment incurred on the project (Rs. Lakh)	Payback Period (Months)
		Electricity	Fuels		Total savings in (Rs. Lakh)		
		(Lakh kWh)	Coal (Tone)	FO (MT)			
A. With Investment & Payback Less Than 2 Years							
1	Hot water Spurger provision in DL - 1 & 2 to increase productivity	5.5			49.9	2	0.5
2	Corrocoating of Cooling Tower Pumps	1.1			10.3	1.7	2.0
3	FO Additives in Liquid Fuel			474.5	242.0	43	2.1
4	Installation of X-Plate on FD Fan of FBC		1034		144.8	60	5.0
5	Installation of Energy Efficient Compressor	14.8			133.0	150	13.5
6	Booster Compressor for Spinning Operation	4.3			38.9	50	15.4
7	Usage of Modified Diffusers to reduce air consumption.	0.8			7.4	12	19.4
8	Installation of Pyroliser system for Pack parts cleaning	2.4			21.2	40	22.7
Total A (With Investment & Payback Less Than 2 Years)		**29.0**	**1034**	**474.5**	**647.4**	**358.7**	**6.6**
B. With Investment & Payback Greater Than 2 Years							
5	Procurement of New Hardware to increase Productivity	4.0	212.4		67.5	150	26.7
6	Installation of Energy efficient Dewatering assembly in ETP	0.9			7.8	50	77.2
7	Vapour Absorption Machine (700 TR)	27.15			244.4	550	27
Total B (With Investment & Payback Greater Than 2 Years)		**31.97**	**212.4**		**319.63**	**750**	**46.1**
Total (A+B)		**60.93**	**1246.4**	**474.5**	**967.04**	**1108.7**	**13.8**

Bankable Project of Tata Steel BSL

Innovative Energy Saving projects

Project Title : - Revamping of Steam Distribution Network	Saving :- Rs. 17.34 Lakhs
Problem Statement :- Steam condensate going waste through steam trap system & difficulties in monitoring of operation of steam trap system.	
Action Taken :- Replaced 22 Thermodynamics steam traps, provided additional 5 TD traps at new location where required, 13 Sight glasses along with disc check valves provided after close loop steam trap & 10 valves replaced with glandless piston valves.	




TATA STEEL WeAlsoMakeTomorrow ENGINEERING PROJECTS

Innovative Energy Saving projects

Project Title :- Pre-Heating arrangement before Hardening Furnace in H&T line.	Saving :- Rs. 29.63 Lakhs
Problem Statement : - Heat in the furnace exhaust flue gas going waste & consuming the fuel to heat the sheet prior to enter into the furnace	
Action Taken :- Utilized waste heat of furnace exhaust flue gas by making pre -heater inhouse & provided at furnace entry for heating the metal sheet.	

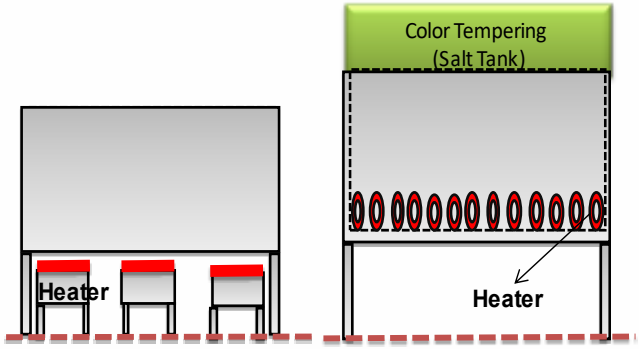
TATA STEEL WeAlsoMakeTomorrow ENGINEERING PROJECTS

Innovative Energy Saving projects

Project Title : - Construction/Heater mode modification at Colour Tempering Line (H&T)	Saving :- Rs. 0.30 Lakhs

Problem Statement :- 1. Heat loss due to air heating in between tank heating surface & Heaters (Radiative Heating).
2. Heat Loss due to openings present in each zone.
3. Frequent Breakdown due to heater failure by contact with humid air in presence of salt fumes.

Action Taken :- Provided Electrical heaters inside the tank by making provision of SS pipes & utilized radiative & convective heat for salt heating.



Before

After

TATA STEEL
WeAlsoMakeTomorrow
ENGINEERING PROJECTS

Long Term Vision on EE

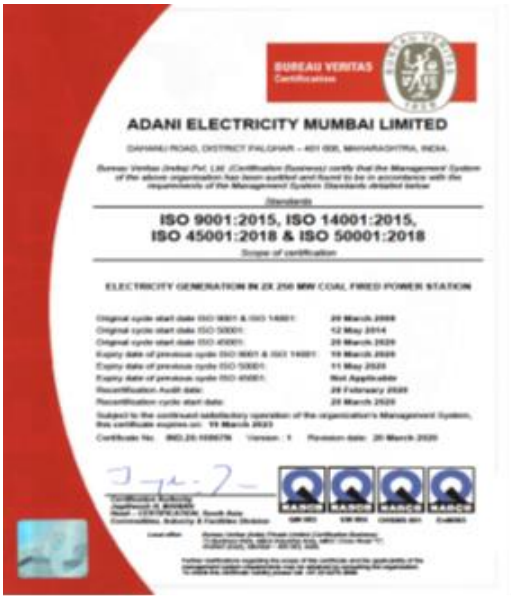
- Replacement of Old motors with Energy Efficicent motors under NMRP by ESCO.
- Installation Solar PV system of 1 MWp on Roof Top.
- Use of Solar street lights.
- Replacement of existing thermal oxidizer by energy efficient RTO (Regenerating Thermal Oxidizer).
- Use of Heat Pump in Hot water generation process.
- Biomass based Green Fuel Briquette Boiler in place of Conventional Fuel fired Boiler.

TATA STEEL
WeAlsoMakeTomorrow
ENGINEERING PROJECTS

Bankable Project of Adani Electricity

Schemes	Dept	Cost Rs Crs
IP Turbine - New casing procurement & rotor refurbishment	Mech	27
Refurbishment of BFP system	Mech	2.00
Procurement of APH baskets	Mech	2.30
Refurbishment of flue gas duct	Mech	0.75
Renovation of lighting system	ELM	0.70
Procurement of energy efficient HT/LT motors	ELM	0.40
Procurement of energy efficient sump pumps for Conveyor tunnels	CHP	0.30
Replacement of LT VFDs	ELM	0.30
Total Cost		**33.75**

Implementation of ISO 50001



- ✓ ADTPS is the first power plant in the world to implement Energy Management System (ISO 50001:2011).
- ✓ ADTPS has integrated all its business processes through Enterprise Resources Planning system SAP.
- ✓ The plant has established a comprehensive fuel management system. In view of logistic, economics, O&M challenges and environmental issues

Bankable Project of Lalit Hotel Mumbai

Sr No.	Project Description	Investment
1	BMS	1Cr
2	Heat Pump	60 Lakhs
3	VFD's for major 12 no.'s AHU	10 lakhs
	Total	1.7 Cr

Bankable Project of BPCL

Sr No.	Project Description	Investment (Lakhs Rs)
1	Scope of using temperature-based control in GT fin fan cooler for power saving during night & Wintertime	1
2	Send SCAPH drain (at 90 DEG. C) to Deaerator in place of DM plant to recover the heat & avoid energy loss in pumping	30
3	Dry Flue Gas loss in CO Boiler of CCU. The Exhaust temperature of the CCU Cp Boiler is 249.6 Degree C, there is insufficient heat transfer in the boiler.	10
4	Overhauling/ water washing/cleaning of HRSG3 to improve Economiser outlet temperature from 182 deg C to 210 deg C	10
5	Replacement of Pump with Lower Capacity utilization and high recirculation (CDU4-2, CDU-3-5, ARU-1 PH1-1)	151
6	Replacement of Pump with Lower head pump (LOBS-P-291B, CCR-141-AP-107A)	26
7	Installation of HPRT for utilization of high pumping pressure in power generation	600
8	Replacement of old chillers and package AC system with VRV system for power Saving	300
9	Temperature based control of cooling tower fans based on ambient weather. Auto control logic can b developed	1
10	Thermal insulation saving in BH/CPP area	500
11	Saving by condensate recovery in BH & other units	500
	Total	2129

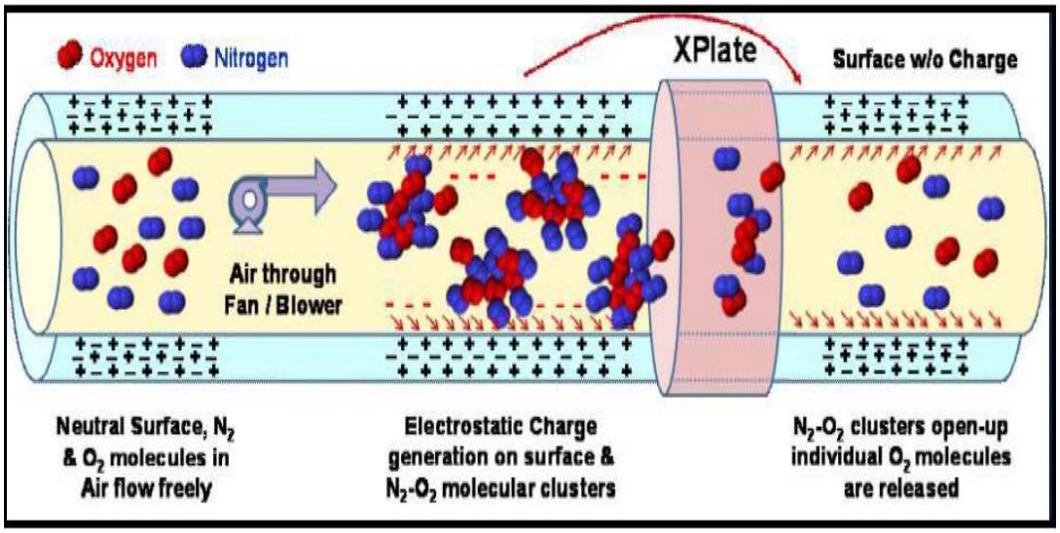
Output of Investment Bazar

Investment V/s Savings

Sr No.	Name of Dc's	Investment (In Lakhs Rs)	Savings (In Lakhs Rs/Annum)
1	Bombay Dyeing	1108	967
2	Tata Steel BSL	120	47.27
3	Adani Electricity	3375	
4	Lalit Hotel Mumbai	170	50
5	BPCL	2129	3273

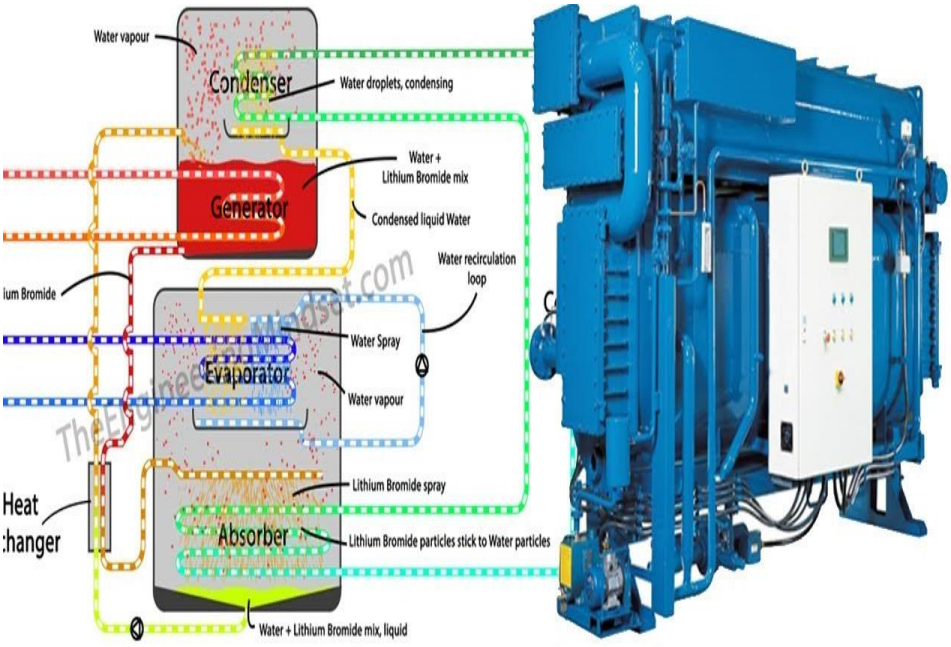
Energy Efficient Technologies Discussed:

1. **X-Plate for FD fan of FBC Boiler to reduce coal consumption and CO2 emissions.**

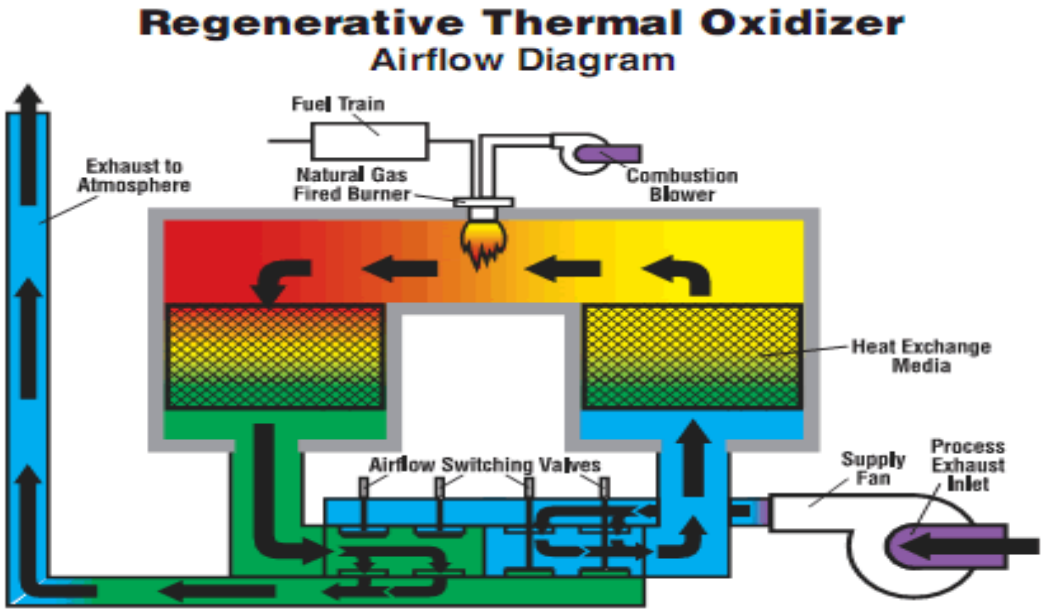


2. **Energy Efficient Compressor for Chiller to reduce the specific energy consumption of Chiller.**

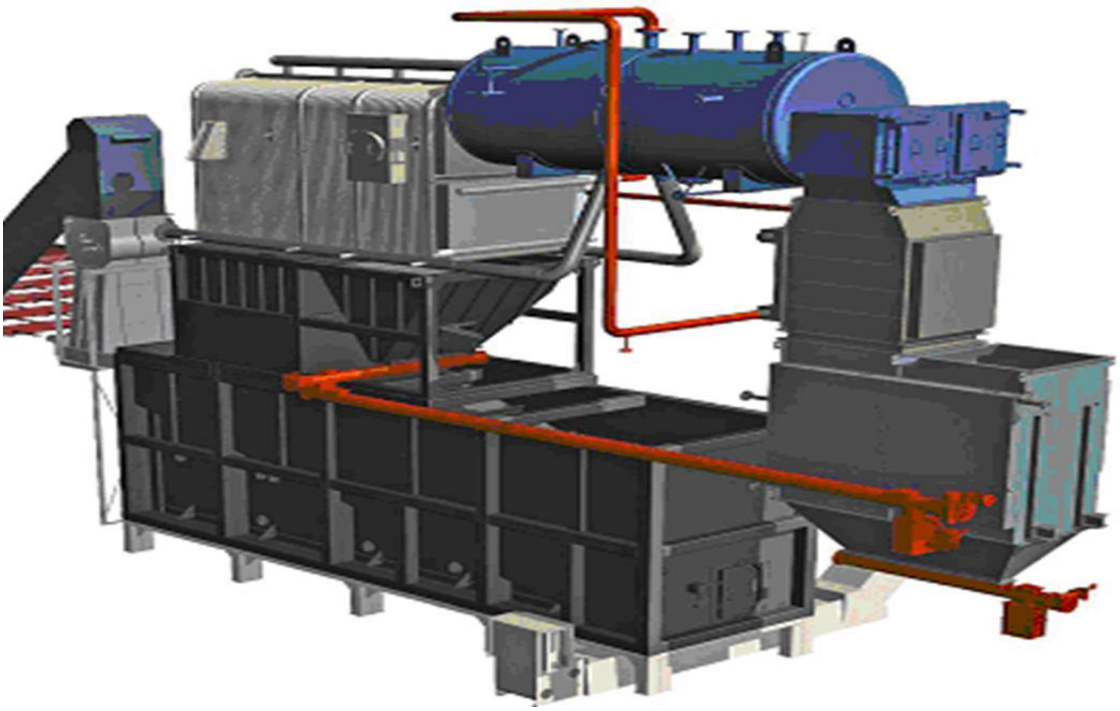
3. **Vapor Absorption Machine (VAM) working VAR cycle to reduce electrical energy consumption of VCR chiller.**



4. **Regenerative Thermal Oxidiser:** ROT is an extremely efficient thermal oxidizer that uses number of ceramic beds, either loose saddles or honeycomb blocks, to absorb heat from its exhaust gases. It than uses this captured heat to pre-heat the process incoming process air stream and destroy air pollutants contained in this air stream, at temperature ranging up to 1000°C.



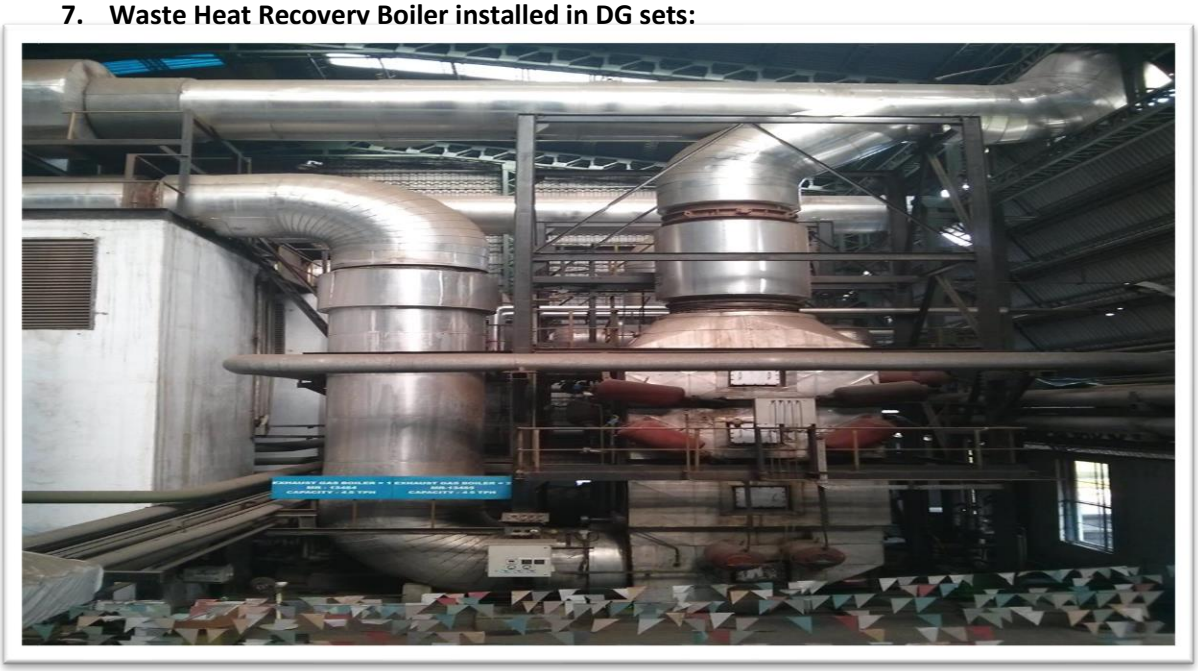
5. **Biomass based Green Fuel Briquette Boiler in place of Conventional Fuel fired Boiler to reduce emissions and carbon footprint of the company.**



6. **HHO mixed Combustion System:**

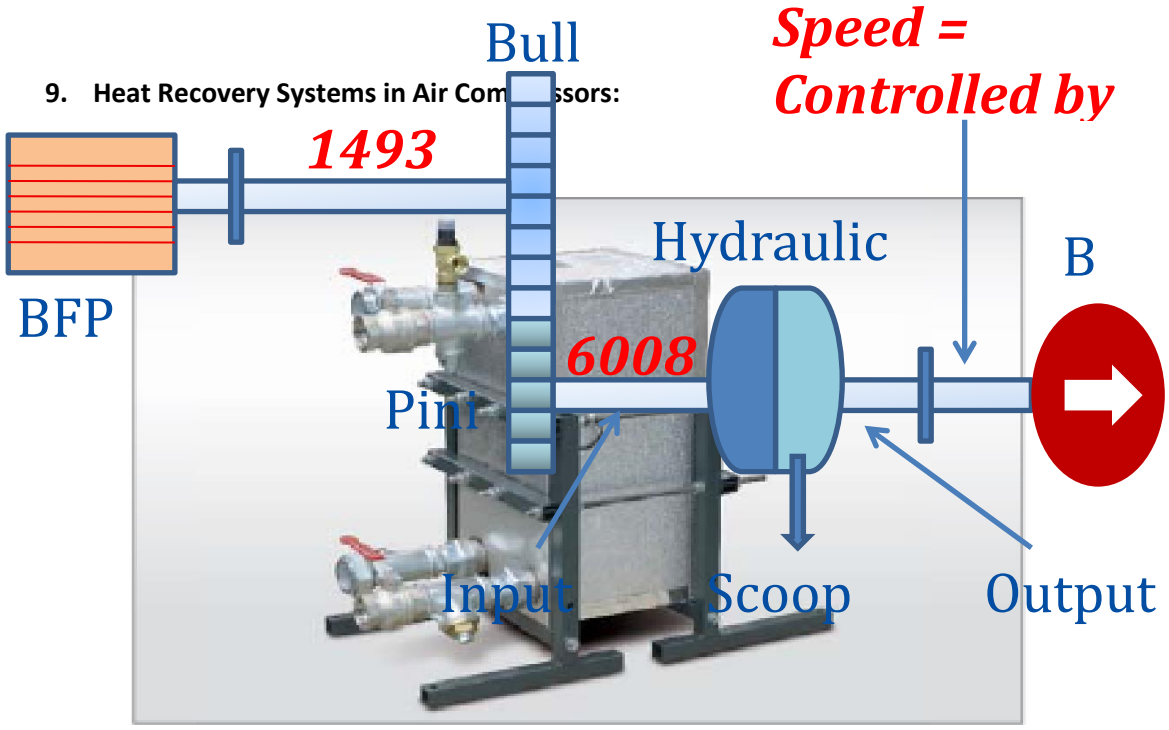
- HHO mixed combustion system gives fuel savings are in the range of 20% to 50%.
- Emission of soot, smoke and toxic pollutants which are reduced better than 90%.

7. **Waste Heat Recovery Boiler installed in DG sets:**



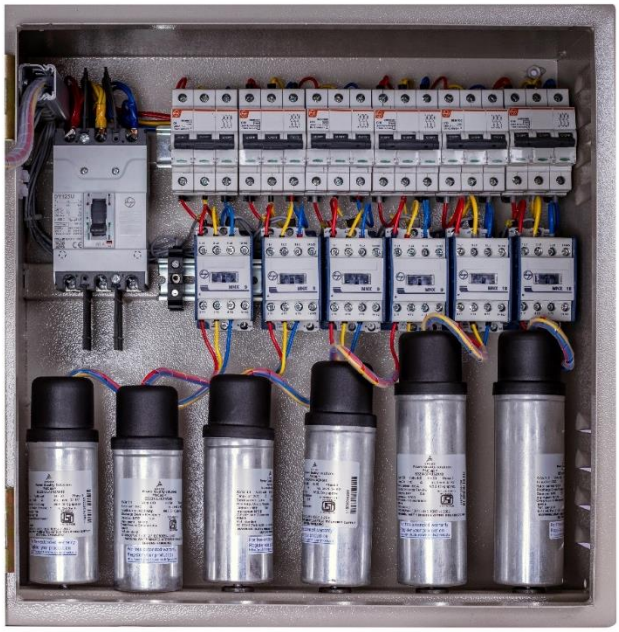
8. **Hydraulic coupling power transmission to reduce slip losses in Turbine.**

9. **Heat Recovery Systems in Air Com ssors:**



PTG plate heat exchanger

10. **APFC Panel to maintain power factor to reduce the penalty.**



MEDA's Future Initiative in Energy Intensive Sectors: -

Sr No.	Name of Sectors	Investment Potential
1	Forging Sector	20 Cr
2	Brick Sector	10 Cr
3	Glass Sector	20 Cr
4	Foundry Sector	10 Cr

Glimpses of the Event:


One-Day Conference
On
Bureau of


HALONIX


STARRBOT


HALONIX

Mr. Prasad Shrirame, Godrej

Mr. Avinash Verma, StarrBot

"Way Forward"

Investment Bazaar Planned: -

1. Nashik – (November 2022)
2. Nagpur – (January 2023)
3. Aurangabad- (March 2023)

Sr No	Name	Organization	Designation	Mobile Number	Email
1	Abhinav Khese	Kaeser Compressors (India) Pvt.Ltd.	Territory Manager – Sales	8308979099	abhinav.khese@kaeser.com
2	Achyut Mehendale	Energy Auditor	Auditor	9890444795	engress123@gmail.com
3	Ajay Ananda Talap	Kirloskar Chillers Pvt. Ltd.	Senior Engineer Sales	7972363329	ajay.talap@kirloskar.com
4	Ambatkar Ravindra Murlidhar	MSPGCL	Executive Engineer	7875833672	rmambatkar@rediffmail.com
5	Amol Anil Chiplunkar	AAC Energy Consultants	Energy Consultant	9420081764	aacecpune@gmail.com
6	Anant Govind Bam	Engrace Services	Partner	9822845478	bamanant@yahoo.co.in
7	Ankit Galundia	Electronica Finance Limited	Product Manager	9607800754	Ankit.galundia@efl.co.in
8	Anuj Gupta	D2O	Deputy Manager	9509314499	anuj.energy14@gmail.com
9	Anukalp Jain	Bharat Petroleum Corporation Limited, Mumbai Refinery	Manager (Energy)	8454998075	anukalpjain@bharatpetroleum.in
10	Anup Samant	Saur Engineers And Consultants Pvt Ltd	Director	9168402909	anup.samant@gmail.com
11	Arun Vishvambhr Ghugari	Trinity Engineers Pvt. Ltd.	Director	9960500306	av_ghugari@trinityengineers.com
12	Arvind Bhalerao	BEES Association	Director	9822281396	arvbhalerao@gmail.com
13	Ashish V Vawhare	Orbit Energy & Engineering Services	Director	7972453783	ashishvyawhare@GMAIL.COM
14	Ashok Bhat	MIRC Electronics Ltd	Sr Manager – Projects And Maintenance	9823964870	ashok.bhat@onida.com
15	Ashok Kumar	FICCI	Energy Manager	9711843437	em.bihar@ficci.com
16	Ashutosh Kumar	Canara Bank	Senior Manager	8450979640	call4ashutosh@gmail.com
17	Asmita Marathe	ASEEM	Proprietor	9922041099	asmitamayureshmarathe@gmail.com
18	Chandra Kumar	Power Engineering	Consultant	9443369720	uckumar2@gmail.com
19	Deepak Maraskolhe	Real Power Technologies	Associate	8888011087	pqs.realpower@gmail.com
20	Devendra Madhukar Ware	Synerpro Solutions LLP	Energy Manager	9270181489	waredevendra@gmail.com
21	Dhanashree Pund	HDFC Bank	Manager	9561143339	dhanashree.pund@hdfcbank.com
22	Dhanendra Gadale	Vilas Sahkari Sakhar Karkhana Ltd, Nivali, Latur, 413511	Project Manager	8806697000	dhanendragadale.usdpcl@gmail.com
23	Dhavalkumar Kamani	Hdfc Bank Ltd	Area Head	8888876169	dhavalkumar.kamani@hdfcbank.con
24	Dhiraj Nandanwar	HDFC Bank	Sales Manager	9823577347	dhiraj.nandanwar@hdfcbank.com
25	Diksha Shetty	Farm To Fork Solutions	Head-Pune Branch	9607602203	project@farmtoforkindia.com

26	Dinesh Barhate	Prayank Electricals And Consultants	Owner	08170040530	dbarhate@yahoo.com
27	Dinkar Salunkhe	Deck India Engineering Pvt Ltd	MD	9822402717	salunkhe.deck@gmail.com
28	Yakub Sayyad	Shifa Clinic	Health Care And Hospital	9822537867	dryakub@yahoo.com
29	Ganesh Deepak Sathe	Savitribai Phule Pune University	Research Fellow	8600663151	ganeshdsathe21@gmail.com
30	Harikrishnan S	The Federalbank Ltd	Associate Vice President	9605793669	harikrishnans@federalbank.co.in
31	Harshil Modi	JSW Steel	Deputy Manager	7391059306	harshil.modi@jsw.in
32	Jaikumar Dakhane	ERO Power LLP Pune	Head-Business Development	9310314902	jaikumar.dakhane@eropower.in
33	Jasmine Mahinder Kohli	MGM University, Dept Of Architecture	Assistant Professor	9850167411	jasmine.kohli84@gmail.com
34	Kanchana Pawar	CANARA BANK	Clerk	7620418158	pawarkanchana1@gmail.com
35	Keshav Rajegore	Grasim Industries Limited Century Rayon	Energy Manager	8879414836	keshav.r.rajegore@adityabirla.com
36	Kumar Jadhav	Godrej & Boyce Mfg. Co. Ltd.	Associate Manager	7710005230	kumarj@godrej.com
37	Laxman Bagal	E-Transit Systems	Partner	8788791206	18laxmanbagal@gmail.com
38	Mahadev Siddharam Kote	Sukbhir Agero Energy Limited	Sr Engineer	9730743034	mkote1993@gmail.com
39	Manish Kumar Dabkara	EKI Energy Services Limited (Enking International)	Managing Director	8109374991	manish@enkingint.org
40	Manish Kumar Patidar	Halonix Technologies Private Limited	Area Sales Manager	9860096603	manish.patidar@halonix.co.in
41	Md Raza Quadri	Punjab National Bank	Branch Manager	7063957157	bo123920@pnb.co.in
42	Milindthakur	Sunandan Gas Agency	Partner	9821116443	thakur.milind@yahoo.co.in
43	Mohammad Javed Shaikh	Sofitel Hotel	Associate Director Of Engineering	9167391173	adoo747@gmail.com
44	Mohammed Shahnavaz Khan	Self Employed	Energy Auditor	9011044480	mskhan310@gmail.com
45	Mohan Godbole	Prism Analytical	Consultant	9422907982	goprismanalytical@gmail.com
46	Monika Shekade	HDFC Bank	RM	8208760622	monikashekade189@gmail.com
47	Chandrakant Nanvare	M/S.Chandrakant Electricals Company Sangli	Propritor	9423272440	chandrakant.electricals23666@gmail.com
48	Neil Joglekar	APN'J Consultants	Financial Consultant	9175859470	ndj222@gmail.com
49	Nikhil Manglori	Shunya Solar	Director	07758811194	nikhilmanglori@gmail.com
50	Nilesh Jadhav	The Bombay Dyeing & Mfg. Co. Ltd	Sr. Manager	9890934936	nilesh.jadhav@bombaydyeing.com
51	Pankaj Shah	Just Accura	Proprietor	9820094795	justaccura@gmail.com
52	Pranav Gunjan	Canara Bank	Chief Manager	7678202508	pranavgunjan@gmail.com

53	Prasad Shrirame	Godrej & Boyce Mfg. Co. Ltd.	Sr. Manager - Product Development And Overseas Business	9833033648	shrirame@godrej.com
54	Prasanna Amberkar	GODREJ & BOYCE MFG.CO.LTD	Assistant Manager	9821869204	amberkar@godrej.com
55	Pratik Pawar	Kotak Mahindra Bank Limited	Manager	9890614139	pawarpratik131313@gmail.com
56	Rajendra Kumar Gupta	Centre For Cellular And Molecular Biology, Hyderabad	Sr Superintendent Engineer (Retired)	9866100859	rkghyd@gmail.com
57	Rakesh Desai	Energetic Consulting Pvt Ltd	Executive Director	9930033268	rakesh.d@ecpl.co.in
58	Rasika Sonale	Farm To Fark Solution	Food Consultant	7767944848	pune@farmtoforkindia.com
59	Ravi Patil	Adani Dahanu Thermal Power Station	General Manager	9325119794	ravi.patil@adani.com
60	Riyaz Mujawar	Kotak Mahindra Bank	Branch Manager	7391078864	riyaz.mujawar@kotak.com
61	Sachin Barshikar	Sudarshan Engineering	Founder	8007193330	sachin@sudarshanpune.in
62	Sachin Dange	Infinity Renewables	Head Operations	7387578901	sachin@infinityrenewables.in
63	Sachin Wakhare	Nova Power Quality	Energy Manager	9326049370	novapowerquality@gmail.com
64	Sagar Sureshrao Mali	Kaeser Compressors India Pvt. Ltd.	Dy. Manager	7722015540	sagar.mali@kaeser.com
65	Sanjay Kumar Jain	EKI Energy Services Ltd.,Indore,India	Vice President-Business Development	9052057622	sanjay.jain@enkingint.org
66	Sanjaykumar Suryakant Bhagwat	Maharashta State Power Generation Co Ltd	Superintending Engineer	8407923007	segenpune@magagenco.in
67	Sanket Dhore	Yes Bank Ltd	Ssm	9890475850	sanket.dhore@yesbank.in
68	Shamkant Mirashi	Consultant	Consultant	9823081757	sham.mirashi@gmail.com
69	Shantanu Nadpurohit	Kirloskar Chillers	Business Head	9890200563	shantanu.nadpurohit@kirloskar.com
70	Shantanu Pathak	Honeywell Automation India Ltd	Technical Sales-Energy & Sustainability	9850725128	shantanu.pathak@honeywell.com
71	Sharad Kale	Retired From Croda Chemicals, Thane.	Em0769	7678028445	elan.nrg@gmail.com
72	Shivam Tiwari	Kirloskar Chillers Pvt. Ltd.	Sales Engineer	9699245954	shivam.tiwari@kirloskar.com
73	Sunil Kerappa Bansude	MSEDCL	Additional Executive Engineer	982 242 7254	sunilbansude19774@gmail.com
74	Suraj Tatyasaheb Kalbhor	Maxway Engineers	Manager	9822984738	surajkalbhor38@gmail.com
75	Talware Yogendra Vasant	STROM ENERGIE PVT LTD	Director	9822653104	talware.yogendra@gmail.com
76	Taru Veera Venkata Maruthisuman	EPIC Sustainability Services Private Limited	Auditor	8074803147	tarusuman80@gmail.com
77	Tatyasaheb Ramchandra Kalbhor	Maxway Engineers	Proprietor	9822025738	maxwayengineers@hotmail.com

78	Tejiroop Sustainable Soluhions Pvt. Ltd	Tejiroop	Director	9325119771	santoshmestry123@gmail.com
79	Tushar P Mane	Proprietary	Director	9881334432	adityapower72@gmail.com
80	Ujwala Kapade	HDFC Bank Ltd	EEG RM	9850000403	ujwala.kapade@hdfcbank.com
81	Vijay Patil	Tata Steel	Lead Engineer	9503113041	vijay.patil50@tatasteel.com
82	Vikas Apte	Infrastats LLP	Accredited Energy Auditor	9830336218	info@infrastats.in
83	Vishal K Balghare	Banquet Hall	Owner	09850498549	v_k_balghare@yahoo.co.in
84	Vishwas Naware	Le Energyca ES Pvt Ltd	Director	9820162008	info@energyca.in
85	Vrajalal Kanetkar	Refrecon Magic Systems Pvt. Ltd.	Director, Consultant	9422306717	kvrajlal@hotmail.com
86	Yamini Thote	Samudra Electronic System Pvt Ltd	Director	9422007924	yaminit@samudraled.com
87	Pravin Narsale	Trinity Engineers Pvt Ltd Chinchwad	Assistant Manager	9623686469	mr.pravinnarsale@gmail.com
88	Siddheshwar Maske	YES BANK	Dy Manager	9822965453	siddheshwar.maske@yesbnk.co.in
89	Shashank Tiwari	HDFC BANK	Sr Manager	8087319357	shashank.tiwari@hdfcbank.com
90	Ravi Manidi	YES BANK	Sales Manager	9049331311	ravi.manidi@yesbank.com
91	Santosh Mestry	Apurva Energy	Sr Manager	9996786163	smmestry74@yahoo.com
92	Gayatri Phase	MSPGCL	Dy EE	9422270087	gayatrijoshi26@gmail.com
93	Smita Kudarikar	MSPGCL	AE	7875757179	smita.kudarikar@gmail.com
94	Sarang Nerkar	Electronica Finance Ltd	S M	9762366584	sarang.nerkar@efl.co.in
95	Joy Suryawanshi	HDFC Bank	Se In Charge	7249732164	joysuryawanshi745@gmail.com
96	Najmeen Bhilwade	The Federal Bank	Sr Manager	8390124304	najmeen@federalbank.co.in
97	Shankar Shivale	RCF Mumbai	Manager	9076447076	shankar.shivale@refltd.com
98	Swapnil S Joshi	RCF Ltd	Sr Manager	9870272230	ssjoshi@rcfltd.com
99	Dinesh Raskar	Trinity Engineers	Asst Manager	9762012012	d_raskar@trinityengineers.com
100	Sandeep Belsare	PCSIA	President	9850893589	pcsia1980@gmail.com
101	Jayant Kad	PCSIA	Secretary	9822437827	pcsia1980@gmail.com
102	Avinash Verma	STARBOT Automation	MD	8329415737	sales@starbot.com
103	Shailesh Gaikwad	YES BANK Ltd	Regional Manager	9860014445	shailesh.gaikwad@yesbank.com

(At beginning there were 60 no of participants and during the event the number was reached to 100+.)

End of the Report

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