

REPORT ON ONE - DAY CONFERENCE & EXPO ON INVESTMENT BAZAAR FOR ENERGY EFFICIENCY

Hotel Minerva Grand, Vijayawada
16th December, 2022



Program By:
Andhra Pradesh State Energy Conservation Mission
In association with Bureau of Energy Efficiency



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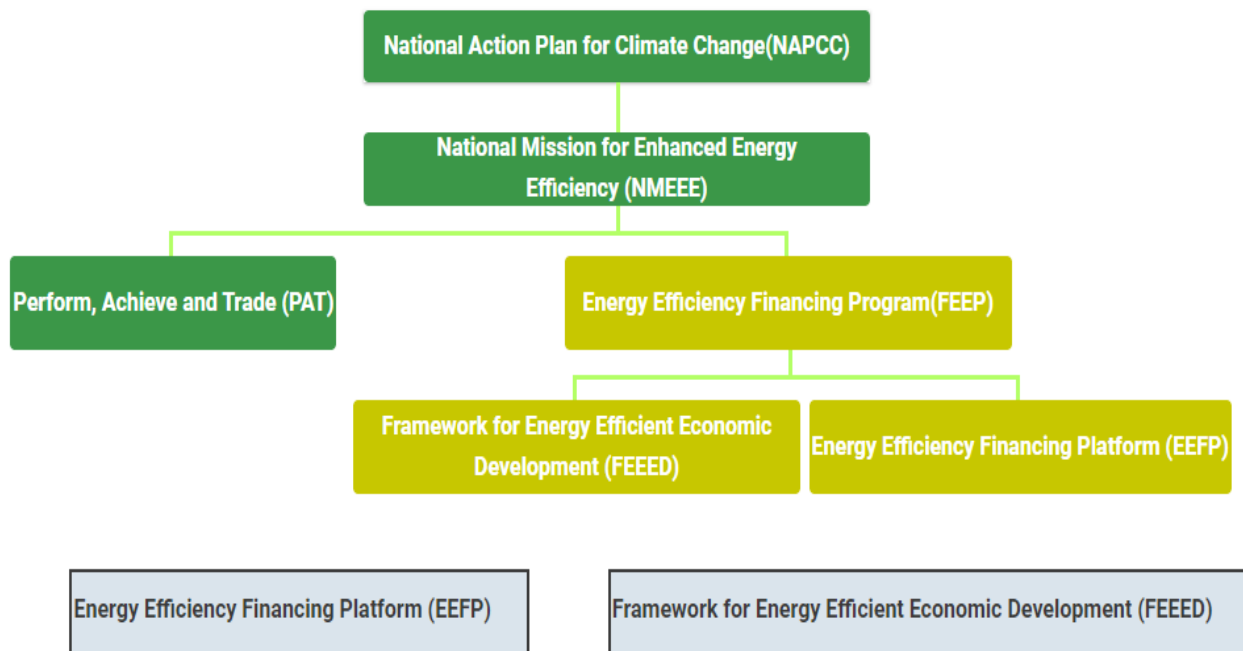


CHAPTER - 1 BACKGROUND

Energy efficiency is recognized as the most cost-effective solution to meet the rapid growth in energy demand. Energy Efficiency enhances energy security while moving towards reducing the energy supply/demand gap. Thus, energy efficiency paves the way for economic development without compromising on present needs.

Energy Efficiency Financing Platform (EEFP) was launched as one of the initiatives under National Mission for Enhanced Energy Efficiency to provide a platform to interact with Financial Institutions (FIs) and project developers for the implementation of energy efficiency projects. Under this program, Memorandum of Understandings (MoUs) have been signed by BEE with Financial Institutions to promote financing for energy efficiency projects.

The objective of Financing Energy Efficiency Program (FEFP) is to accelerate energy efficiency financing by creating fiscal instruments, capacity building of financial institutions and by organizing awareness/ outreach activities for industries, MSMEs, OEMs and ESCOs.



Financing Barrier in Energy efficiency Financing

1. Local financial institutions have difficulties in assessing the technical and economic soundness of Energy Efficiency projects.
2. Industries expressed reluctance to take loans for Energy Efficiency project.



3. The non-availability of sufficient credit facilities and the difficulties in obtaining required finances for energy saving projects are strong deterrents to investments in energy efficiency in India.
4. Lack of awareness: The main barrier to energy conservation is the lack of awareness among the industry managers of the potential gains from improved efficiency. Industries as well as government are yet to take into consideration factors such as tax credits, depreciation benefits, electricity price escalation, life cycle savings of the investment and the timely release of money.
5. Economic and market distortions: The response to conservation measures is irrational because of inappropriate pricing, other market distortions and socio-economic factors.
6. For high level private sector managers or investors, energy efficiency projects often rank low on the priority lists as compared to financing other core business investment projects.

Presently, BEE is working on conducting “Investment Bazaar for Energy Efficiency” in various states/UTs to accelerate and facilitate financing of EE projects/technologies through SDAs.

How to Overcome Financing Barrier in Energy efficiency Financing

1. Key Constraint should be identified, to increase investment and financing flows in energy efficiency projects.
2. Existing investment opportunities for energy efficiency and the level of investment in energy efficiency should be assessed.
3. Regulatory and institutional support should be provided for investments in EE.
4. Bringing international assistance in increasing the level of energy efficiency investments.
5. Create a Financing environment for energy efficiency investments.
6. Steps should be taken to increase energy efficiency project investment viability.
7. Investments should be made in industrial energy efficiency.

Following are the activities to encourage efficient use of energy in the Micro Small and Medium Enterprises (MSMEs):

1. Monitoring of Energy Usage and Technology Analysis.
2. Capacity building and Outreach Awareness.
3. Implementation of EE measures.
4. Development of Innovative Financing Mechanisms.



CHAPTER - 2 INTRODUCTION

Investment Bazaar: Bureau of Energy Efficiency (BEE), in association with State Designated Agencies (SDAs) organizes state level events by the name of “Investment Bazaar for Energy Efficiency” with the aim to provide the necessary platform in which bankable energy efficiency projects can be showcased in presence of Financial Institutions, OEMs, industries, ESCOs etc.

The objective of the conference was to provide a one-stop platform for all the stakeholders to interact with each other.

1. To provide the necessary platform in which bankable energy efficiency projects can be showcased in presence of Financial Institutions, OEMs, industries, ESCOs etc.
2. This event shall facilitate in creating the awareness among industry stakeholders on different financing schemes, EE product/services, ESCO mode of implementation of EE projects.

Target Beneficiaries are:

- Financial Institutions (Banks and NBFCs),
- MSMEs, Large Industries,
- Energy Service Companies (ESCOs),
- Buildings & Municipalities,
- Other Energy Consuming Sectors.

Andhra Pradesh State Energy Conservation Mission (APSECM), in association with Bureau of Energy Efficiency (BEE), Ministry of Power, Govt. of India organized a one-day Conference & Expo on 'Investment Bazaar for Energy Efficiency' on 16th December 2022 at **Hotel Minerva Grand, Vijayawada**. This is the Third Investment Bazaar that has been organized in Vizag in the state of Andhra Pradesh.

The Conclave witnessed a grand gathering of around 90 people representatives with distinguished panelists.

The event was inaugurated by officials Dr. K.S. Jawahar Reddy, IAS, Chief Secretary to Gov. of AP; Shri. K. Vijayanand, IAS, Special Chief Secretary, Energy, Government of Andhra Pradesh; Shri. Prudhvitej Immadi, IAS, Joint Managing Director, APTRANSCO; Shri. J. Padma Janardhana Reddy, CMD, APCPDCL; Shri. S.K. Khandare, Director, BEE; Shri. A Chandrasekhara Reddy, CEO, APSECM.



CHAPTER - 3 INAUGURAL SESSION

The Inaugural Session of the conclave took place at the **Hotel Minerva Grand, Vijayawada** and was graced by an august gathering of more than 90 delegates and distinguished guests at dais.

Shri. T.V.V Siva Rama Kumar, OSD to CEO, APSECM delivered the welcome address by extending a warm welcome to the dignitaries on the dais, industry leaders & senior representatives from industry.



The Inaugural Session began with invocation of Goddess Saraswati's grace in the form of a lamp lighting ceremony by the honorary guests of the conference.



Shri A Chandrasekhara Reddy, CEO, APSECM Welcomes people for 3rd Investment Bazaar conference at Vijayawada. He also welcomes speakers, investors, stakeholders and etc. for the event. He told its high time to provide financing to industries to improve energy efficiency. He focused on the importance of energy efficiency and need of the hour for implementation of new and innovative energy efficient technologies in industries and MSMEs in the state. He also stressed on saving energy

through new energy efficiency technologies for industry, transport, buildings and agriculture sectors, he mentioned various energy efficiency initiative taken by APSECM.

Shri. S.K. Khandare, Director, BEE began speech by congratulating APSECM for receiving National Energy Conservation Award-2022 under Group-II SDA category. He said the country had energy savings investment potential worth ₹10 lakh crore by 2031 in key sectors such as industrial, commercial, domestic, transport, municipal and agriculture segments. He revealed that Andhra Pradesh had energy efficiency investment potential of more than ₹412.30 crore.



He also emphasized on the finance that are limited up to large industries only. He discussed the initiatives taken by BEE to involve MSMEs. In this regard, he mentioned about grading of energy efficiency project by SEBI recognized grading agency to make the project more attractive to financial institutions and reimbursement of cost of grading by BEE. Sagar Cements has shown willingness of Rs 36 crore to implement WHR, he revealed.

Dr. K.S. Jawahar Reddy, IAS Chief Secretary to Gov. of AP Addressing the Investment Bazaar workshop, organized by the AP State Energy Conservation Mission (APSECM) as part of the National Energy Conservation Week celebrations from December 14 to 20, Shri. Jawahar Reddy, who is also Chairman of the APSECM, said the move would provide cost-effective solutions to enhance energy security, give a boost to the economy, reduce energy intensity on finances, create jobs and improve environment in future.



On conserve Energy & water he said “the demand for electricity was rising rapidly in the State due to economic development, industrial growth and urbanization, and appealed to the people to make it a habit to follow energy conservation and water conservation practices and protect the planet”.

He also informed that “To make the State a hub of green energy, the government is focused on green energy investments, and the State has signed MoUs related to green energy projects worth ₹81,000 crore”. which indicates that AP will become a pioneer to many States in the country in green energy sector, he explained.

He said the push for green energy had developed a significant interest among investors and had made the State one of the most attractive destinations for renewable energy in the country.

Shri. K. Vijayanand, IAS Special Chief Secretary, Energy said that “as a developing State, Andhra Pradesh’s energy efficiency potential was largely untapped. The State was given a target of 6.68 million tons of oil equivalent (Mtoe) energy savings by 2030 and the Investment Bazaar was



to attract investments into the State”. He informed “renewable energy export policy had been announced to promote investments in the sector”.

Smt. V. Padmaja Dy EE, APSECM delivered vote of thanks before begin of technical session. She thanked speakers, investors, stakeholders, etc. for attending the 3rd Investment Bazaar in Andhra Pradesh.

EE Poster & the Facilitation Center Brochure containing 92 technologies recognized by BEE was released during the inaugural session.





CHAPTER - 4 TECHNICAL SESSION

The session began with a presentation by **Shri Segu Sukumar, Asst General Manager, SIDBI** that SIDBI is the Principal Financial Institution engaged in promotion, financing & development of the MSME sector and coordination of the functions of the various institutions engaged in similar activities. During the technical session he discussed the following:

1. Green Financing Scheme (GFS)
2. End to End Energy Efficiency (4E)
3. Partial Risk Sharing Facility (PRSF)
4. TIFAC-SIDBI Technology Innovation Program (Srijan)



Green Financing Scheme (GFS) – This scheme was launched in March 2022 and available to MSME and service providers with a quantum of assistance of 20 crores and 50 crores respectively. A minimum of 10% of project cost should be contributed by promoter with a debt-equity ratio of 3:1 for company. The maximum repayment is 10 years with interest rates ranging from 7.60% - 9.40%.

End to End Energy Efficiency (4E) – This scheme was launched for MSMEs in manufacturing and service sector in June 2014 with a quantum of assistance of Rs 5 crores and repayment time of 5 years. The affiliated interest rates are in the range of 6.4% - 7.5%. The type of projects covered are EE and Solar PV for captive consumption. The promoter contribution should be minimum 10% of project cost.

Partial Risk Sharing Facility (PRSF) This scheme is to increase investment and transform EE market through energy service companies ("ESCOs"). MSMEs, Large Industries, Municipalities, Buildings, DISCOMs, EV Infrastructure are host entities. The minimum loan amount is Rs. 10 Lakh and maximum loan amount is Rs.15 Crores per project. The guarantee tenure is the lower of 5 years or loan tenure.

TIFAC-SIDBI Technology Innovation Programme (Srijan) - To promote innovation, up scaling, demonstration and commercialization of new and innovative technologies.



Shri. Sravan Kumar Patanala, AVP, Axis Bank He shared that there are 5 MSME centers in Andhra Pradesh. Axis bank provide term loans for installation and upgradation of solar power plant. He also highlights:

1. ESG principles by World Bank: Project assistances.
2. Up to 25 MW self-generating units, up to 85% energy through renewable sources.
3. Funding is equivalent to repo rates.
4. Project Finance Cell for project >10 crores.

Mr. S. Rama Murthy AGM, MSME Department, Indian Bank Shared Important Schemes of Indian bank:

1. Ind Surya City (Solar Power Plant Project) – For projects below about 3MW
2. For Big Project (Above 10 Cr.) - Formation of consortium with multiple bank

Shri. Kranth, Manager, SBI discussed willingness of SBI in financing EE products and technologies. He shared that SBI is funding for renewable energy to the small and large industries from 1kW to 590 MW solar plant. He also said that SBI also provide loan of up to 50 Cr. for Roof top/Ground based Solar. He also discusses the CAPEX and RESCO financial options.

Ms. Mounika, AGM, MSME Department, Union Bank discussed different schemes for the MSME that is provided by Union Bank.

Union Solar - Term loan for purchase & installation of Union MSME Suvidha - Term loan for purchase/construction/ renovation of business premises/ purchase of plant & machinery etc

Union MSME Suvidha - Term loan for purchase/construction/ renovation of business premises/ purchase of plant & machinery etc

Union Nari Shakti - Term loan for purchase/construction/ renovation of business premises/ purchase of plant & machinery

Union Equipment Finance - Term loan for purchase of Equipment for captive use towards existing business (LC for import of capital goods can also be considered)

Union GST Gain - CC for Working Capital requirements

Union Ayushman Plus - Term loan for purchase/construction/renovation/expansion/modernization of premises, purchase of Equipment & ambulance.



CHAPTER - 5 BANKABLE PROJECTS

Shri. S. Sutheesan, Sr. Manager, Maa Mahamaya Ind. Ltd. Discussed the energy efficiency projects requiring financial support. The following is the summary of the three projects showcased by MMIL.

1. 40 nos. VFDs of 37 to 250 kW
2. Roof top solar PP (3.16 MW)

Axis Bank, Indian Bank, Union Bank, and SBI express their interest in those projects. Responding to the query of Axis Bank, MMIL said that DPR is ready and it's on the process of approval of Management. They will approach the financial institution soon with DPR.

Mr. NVS Pratap India Cements is located at Chilamkur, Kadapa District Andhra Pradesh showcased Four bankable projects during the event. The following is the summary of the Four projects showcased by MSIL.

1. AFR usage in process
2. Power generation from Waste Heat Recovery (10.2 MW)
3. MV drives
4. VFD for Process and Bag Filter Fans

The Outcomes of the Investment Bazaar -2, Vijayawada are as follows:

APSECM has received following Willingness Forms for Financing for Implement EE Measures/Projects.

IDENTIFIED BANKABLE PROJECTS Investment Bazaar -2 at Vijayawada (16 th December 2022)			
S.N	Company Name	Project name	Value, In Rs. (Cr.)
1	Maa Mahamaya Industries Ltd	40 nos. VFDs of 37 to 250 kW	2
2	Maa Mahamaya Industries Ltd	Roof top solar PP (3.16 MW)	20
3	India Cements Chilampur	AFR usage in process	5.44
4	India Cements Chilampur	Power generation from Waste Heat Recovery (10.2 MW)	75
5	India Cements Chilampur	MV drives	2.8
6	India Cements Chilampur	VFD for Process and Bag Filter Fans	0.57
Total EE projects			85.8
Total Renewable projects			20



CHAPTER - 6 PRODUCT DISPLAY OF OEMS DURING EVENTS

Shri. V. Govind Rao, Director, Triple I Engineers discuss on Waste heat recovery technology. He shared that they provide engineering and product solutions to the Cement industries. As their motto they use WHR system in the Cement Industry – A way forward to Net-Zero Carbon emission. He also shared that 110 cement plants in India produce 80,59,000 tons of CO₂ emission.

Shri Ramesh R, Associate Manager – South Region, Godrej & Boyce Mfg. Co. Ltd informed that out of 100% power input, only 10-15% is used and the rest goes as losses, most in the form of heat. Compressed air is the most inefficient source of energy and the costliest form of energy. Godrej Intelligent Flow Control (IFC) system can be used for demand side which reduces artificial demand by maintaining const pressure and energy saving tune of 4-25%. It works with all types of compressors. Godrej (Intelligent Compressor Control) is used for supply side where it controls multiple compressors.

Shri. Srivastha Ambale, Regional Manager, 75F He discusses dynamic airflow balancing, dynamic chilled water balancing technology, outside air optimization, smart VAV controller and indoor air quality management. The 75F was one automation company which includes the cooling and heating as per human comfort and provide human at affordable cost. They basically focus on human comfort and affordability and uses human friendly app so that it would be easy for everyone to use.

Shri Mr. A. Chandrashekar Reddy, CEO, Southern Global Energy He shared brief points on UPS batteries and highlight the Lithium-ion batteries. He also shared that their company Provides solar panels, Inverter for grid box and metering, Solar street lights, Solar fencing. He shared the advantages of on-grid solar power.

Shri. Lavan Bachwar, Area Manager, Danfoss Danfoss He shared Punjab govt department case story with customer pain point and solutions after drive installation. And case story of CMWSSB Saves more than 30% energy. He discussed following technologies:

1. 150% Overload for 60 sec.; Integrated condition-based monitoring;
2. Drive SYNC technology for load sharing application;
3. Bump fewer backup solutions for critical applications;
4. Integrated Smart Logic Controller;
5. Cascade control options to increase efficiency & control



Shri. Pranav Gosain, Chief Engineer, ITC, Welcome Hotel Guntur demonstrated "how they have successfully implemented EE measures in their hotels and benefited.

Shri. Sitharaman, Smart Jules, an ESCO who showcased the EE measures successfully implemented by his company by replacing chillers and other measures in various industries and commercial premises.

Financial Institutions & OEMs represented at Investment Bazaar with Stall

Financial Institution	Original Equipment Manufacturers (OEMs)
Small Industries Development Bank of India (SIDBI)	Godrej & Boyce Mfg. Co. Ltd
Axis Bank	Danfoss
SBI	TRIPLE – I Engineers
Indian Bank	75F

Exhibition Area – Visit By Dignitaries





ANNEXURE



One-Day Conference on Investment Bazaar for Energy Efficiency

Date: 16th December 2022

Venue: M convention, Minerva Grand, Vijayawada

PROGRAM SCHEDULE

Time	Topic	Speaker
09:30 AM - 10:00 AM	REGISTRATION	
10:00 AM - 11:45 AM	INAUGURAL SESSION	
10:00 AM - 10:10 AM	Prayer Song & Lamp Lighting	
10:10 AM - 10:20 AM	Welcome Address	Shri. T.V.V Siva Rama Kumar OSD to CEO, APSECM
10:20 AM - 10:30 AM	Inaugural Address	Shri. A Chandrasekhara Reddy CEO, APSECM
10:30 AM - 10:40 AM	Special Address	Shri. S.K. Khandare Director, BEE
10:40 AM - 10:50 AM	Special Address	Shri. J.Padma Janardhana Reddy CMD, APCPDCL
10:50 AM - 11:00 AM	Special Address	Shri. Prudhvitej Immadi, IAS Joint Managing Director, APTRANSCO
11:00 AM - 11:10 AM	Special Address	Shri. K. Vijayanand, IAS Spl. Chief Secretary Energy, Government of Andhra Pradesh
11:10 AM - 11:20 AM	Keynote Address	Dr. K.S. Jawahar Reddy, IAS Chief Secretary to Gov. of AP
11:20 AM - 11:25 AM	Thematic Address	Shri. Segu Sukumar Asst. General Manager, SIDBI
11:25 AM - 11:30 AM	Launching Brochure of Energy Efficient Technologies	
11:30 AM - 11:45 AM	Vote of Thanks	Smt. V. Padmaja Dy EE, APSECM
	Visit to stalls followed by Tea	
TECHNICAL SESSION: 1		
11:45 AM - 12 PM	Energy Efficiency Financing schemes for MSME & industries - SIDBI	Shri. Segu Sukumar, Asst General Manager, SIDBI
12:00 PM - 12:15 PM	Energy Efficiency Financing schemes for large industries - Axis Bank	Shri. Sravan Kumar Patanala AVP, Axis Bank
12:15 PM - 12:30 PM	Presentation from Sagar Cement Ltd - Bankable Project	Shri. N Satish Sagar Cements Ltd
	Discussion on Bankable Project	



12:30 PM – 12:45 PM	Energy Efficiency Financing schemes for large industries - SBI	Shri. Kranth Manager, State Bank of India
12:45 PM – 01:00 PM	Presentation on Drives overview and Danfoss Value Addition Technologies (OEM)	Shri. Lavan Bachuwar Area Manager, Danfoss drives
01:00 PM – 01:15 PM	Energy Efficiency Financing schemes for MSME & industries- Indian Bank	Shri. S. Rama Murthy, AGM, MSME Department Indian Bank
1:15 PM – 02:00PM	Presenting mementos to the speakers	
	Lunch Break	
TECHNICAL SESSION: 2		
2:00 PM – 2:15 PM	Energy Efficiency Financing schemes available for MSME / Large industries – Union Bank	Shri. Sankara Rao Devara AGM, Union Bank
2:15 PM – 2:30 PM	Presentation from India Cements Ltd - Bankable Project	Shri. NVS Pratap India Cements Ltd
	Discussion on Bankable Project	
2:30 PM – 2:50 PM	Compressed Air Energy Saving system	Shri. Ramesh R Godrej & Boyce mfg. co. ltd
2:50 PM - 3:00 PM	Maa Mahamaya Ind Ltd - Bankable Project	Shri. S. Sutheesan, Sr. Manager, Maa Mahamaya Ind Ltd.
3:00 PM – 3:20 PM	WHR system in the Cement Industry – A way forward to Net-Zero Carbon emission (OEM)	Shri. V Govinda Rao Director, TRIPLE – I Engineers
3:20 PM – 3:35PM	Presentation from 75F (OEM)	Shri. Srivathsa Ambale Regional Manager, 75F
3:35 PM – 3: 50 PM	A Success story of ESCo Mode of Implementation - Smart Joules	Shri. Seetharaman, Lead- Strategic Customer Engagement, Smart Joules
03: 50 PM – 04:00 PM	Presentation from ITC on first LEED-Zero Hotel in AP	Shri. Pranav Gosain, Chief Engineer, ITC, Welcome Hotel Guntur
04:00 PM - 04:10 PM	Presentation from Southern Global Energy	A Chandrasekhara Reddy CEO, Southern Global Energy
4:10 PM – 4:20 PM	Concluding remarks	D20
04:30 PM	Presenting mementos to the speakers	
	End of the Program followed by Tea	



E flyer



INVESTMENT BAZAAR for "ENERGY EFFICIENCY"

Organized by
AP State Energy Conservation Mission
in association with
Bureau of Energy Efficiency (BEE)

An opportunity for Industries, Designated Consumers, Financial Institutes, MSMEs, OEMs & ESCOs



16th December 2022 (Fri)



09:30 AM to 04:00 PM



Hotel Minerva Grand, Vijayawada



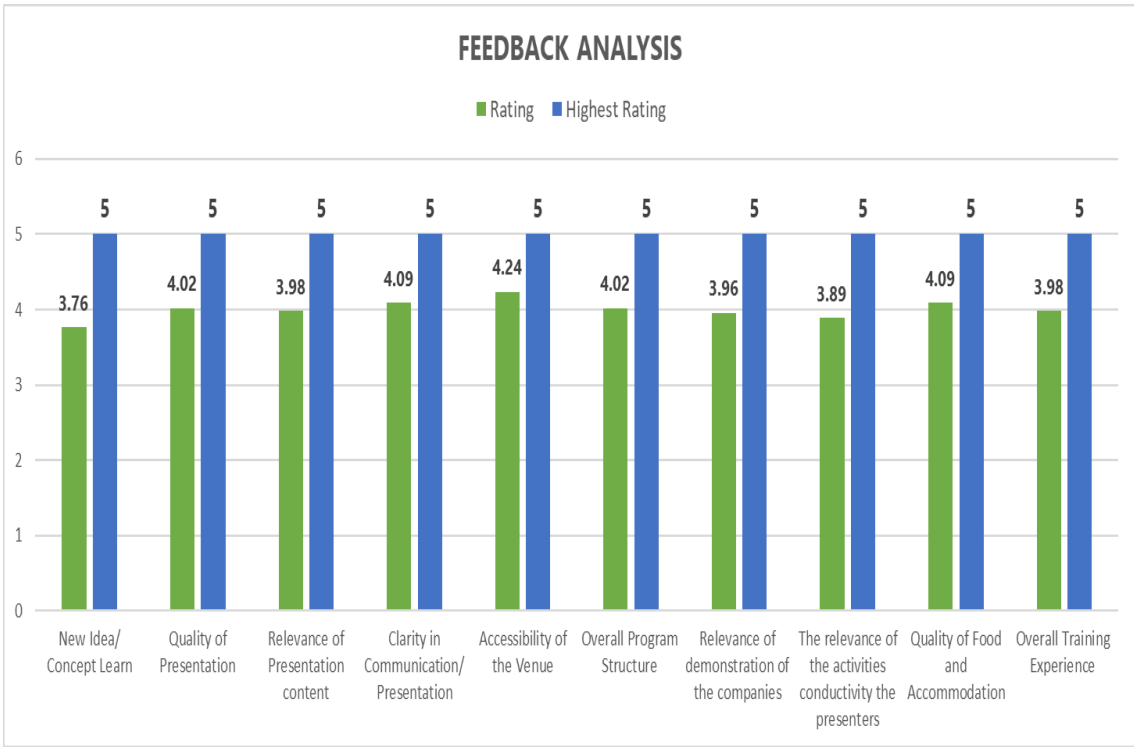
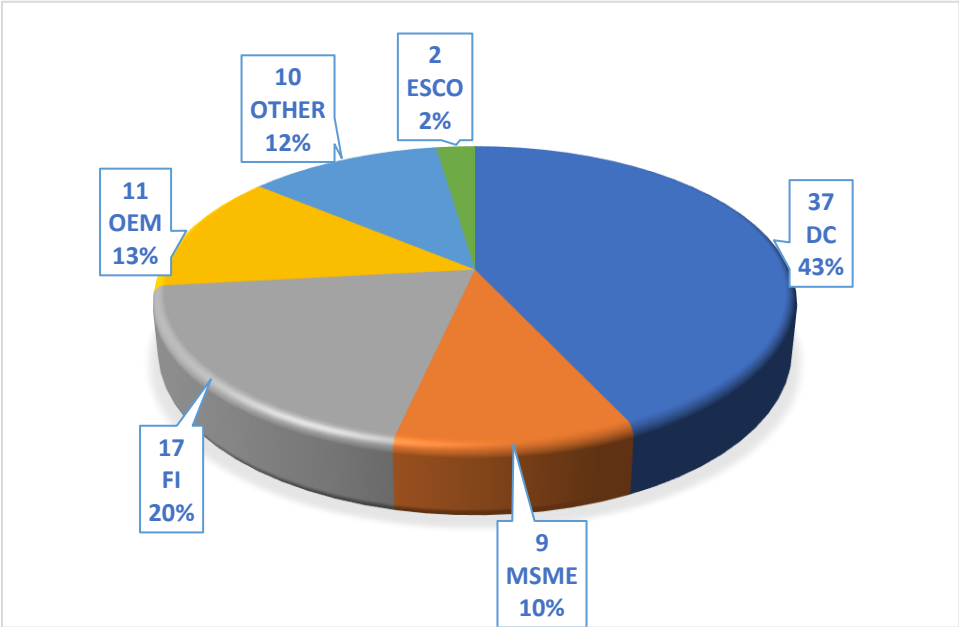
**REGISTER
NOW**

For more details;

Mr. Praveen Kumar | Mob: 9666726575 | investmentbazaar.secm@gmail.com



PARTICIPATION LIST





IMPORTANT FEEDBACK THAT RECEIVED DURING THE VISAKHAPATNAM CONFERENCE

- I am requesting the organizers the seminars on what are the latest technologies, and practices to utilize in industries regarding energy saving methods. – **Mr. C. H. V. S. Narayana, APGENCO**
- The Program organized by APSECM is very useful to many for energy efficiency – **Mr. K. Suresh Babu, APGENCO**
- It is very much effective for industries – **Mr. R. Leela Harikrishna, Axis Bank Ltd.**
- There should be more project presentations – **Mr. Monika M., Axis Bank**
- Good initiative and regular programs are good support like us OEMs, inform all related programs in the future we are interested to participate. – **Mr. Ramesh Kumar R., Godrej & Boyce**
- Quality of the event is Good – **Mr. Naga Raju M, KEC International**
- Thanks for the opportunity it is very useful and knowledgeable – **Mr. D. Manikandan, KIA Motors**
- Should more ESCO participants – **Mr. M Bujji Babu, NSL Textiles.**
- We are thankful for trainers of the program – **Mr. P Ankamarao, NSL Textile Ltd.**
- This meeting is very useful to get new ideas to implement energy efficiency - **Mr. SK. Mastan, NSL textiles Ltd**
- Arrangements and presentations, all are good and useful for us. – **Mr. T. Ravichandra, APCPPCL**
- This program is absolutely essential in the present scenario to reach consumers attention regarding energy conservation – **Mr. K John Thomas, APCPPC**



PHOTO GALLERY









One-Day Conference on Investment Bazaar for Energy Efficiency



BACKGROUND NOTE

Energy Efficiency Financing Platform (EEFP) was launched as one of the initiatives under the National Mission for Enhanced Energy Efficiency (NMEEE) to provide a platform to interact with Financial Institutions (FIs) and project developers for the implementation of energy efficiency projects.

To accelerate and facilitate the financing of Energy Efficiency projects/technologies, BEE is focusing on conducting “Investment Bazaar for Energy Efficiency” in various states/UTs through State Designated Agencies (SDAs).

Investment Bazaar: A conference which will bring together all the stakeholders viz., ESCOs, Financial Institutes, OEMs, Industry and Government officials under one platform to deliberate and share best practices in Energy Efficiency and financing options for Energy Efficiency Projects.

- The objective of this event is to provide the necessary platform in which bankable energy efficiency projects can be showcased in presence of Financial Institutions, OEMs, industries, ESCOs etc.
- This event shall facilitate in creating awareness among industry stakeholders on different financing schemes, Energy Efficiency products/services, and ESCO mode of implementation of Energy Efficiency projects.

In addition, the Investment Bazaar for Energy Efficiency serves the following objectives:

1. To disseminate knowledge on the latest available technologies, best practices, and advancements in the field of Energy Efficiency pertaining to various industries.
2. To demonstrate the Energy Efficiency Financing schemes as applicable to Industries.
3. Discussion with Financial Institutions on financing options for various energy efficiency projects in Industries.
4. Showcase Energy Efficiency Products and Services.
5. Discussion with ESCOs regarding the implementation of Energy Efficiency Projects in ESCO mode.



One-Day Conference on Investment Bazaar for Energy Efficiency



BEE's Initiatives on Energy Efficiency Financing

1. Energy Efficiency Financing Platform (EEFP)

The objective of EEFP is to upscale energy efficiency financing in India by providing a platform where Financial Institutions (FIs) can interact with industries for financing and implementation of energy efficiency projects, technologies, and appliances.

1.1 Investment Bazaar

Till date, Seven Investment Bazaar events have been organized by SDAs i.e., in Andhra Pradesh (2Nos.), Punjab, Maharashtra, Telangana, Arunachal Pradesh, and Karnataka in which more than Rs. 300 Crore investment potential has been identified. The first Investment Bazaar event was held in March 2021 by APSECM in Visakhapatnam.

These 'Investment Bazaars' showcase Viable Energy Efficiency (EE) projects/technologies in presence of representatives of FIs and industries, with the aim of bringing in good deals to finance those EE projects. EE technologies will also be showcased by manufacturers during these conferences.

1.2 Training Program for Financial Institutes (FIs) on Energy Efficiency Financing

BEE has recently engaged NPTI for conducting six training workshops across India for FIs on EE financing. These six training workshops shall be organized by NPTI till March 2023. These training workshops shall help banking officials in financial & technical evaluation of Energy Efficiency projects and shall also make them aware about BEE financing schemes

S. No	Venue	Tentative Date
1.	NPTI Faridabad (Haryana)	17-18/11/2022
2.	NPTI Durgapur (West Bengal)	15-16/12/2022
3.	NPTI, PSTI, Bengaluru (Karnataka)	05-06/01/2023
4.	NPTI Alappuzha (Kerala)	19-20/01/2023
5.	NPTI Nagpur (Maharashtra)	16-17/02/2023
6.	NPTI Guwahati (Assam)	16-17/03/2023



One-Day Conference on Investment Bazaar for Energy Efficiency



1.3 Programme for Grading of Energy Efficiency Projects

Programme for Grading of Energy Efficiency Projects was launched in July 2021. The project will reimburse grading fee of graded as well as financed Energy Efficient project.

BEE has empanelled two grading agencies - CRISIL Ltd; and SMERA. These agencies shall undertake the grading of the EE projects according to the well-defined evaluation criteria. The graded projects by these agencies can be financed from the registered financial institutions with BEE BEE will reimburse the grading fee max of Rs. 2.90 Lakh per project/loan to these banks. The bank will further adjust the amount in the loan account of the borrower within the 12 months' instalments.

Grade	Score	Repayment capability of Project debt
Grade1	90 -100	Excellent
Grade2	80- 89	Very Good
Grade3	70- 79	Good
Grade4	60- 69	Above Average
Grade5	50- 59	Average
Grade6	30 - 49	Weak
Grade7	0 -29	Weakest

1.4 Committee of financial institutions at the state level

SDAs have constituted committees of financial institutions at state level for facilitating the financing of EE projects at a local level. Till date following states have constituted these committees:

Sl. No	States
1.	Andhra Pradesh
2.	Arunachal Pradesh
3.	Himachal Pradesh
4.	Madhya Pradesh
5.	Uttar Pradesh
6.	Maharashtra
7.	Rajasthan



One-Day Conference on Investment Bazaar for Energy Efficiency



2. Energy Efficiency Financing Facility (EEFF)

In June 2021, PFC has been identified by MoP as Nodal Agency for energy efficiency financing. PFC shall be the champion organization for Energy Efficiency financing. In this regard, it was proposed to create Energy Efficiency Financing Department (EEFD) and appraisal unit for Energy Efficiency project in PFC. In July 2022, PFC established Energy Efficiency Financing Department under the name of “Energy Efficiency Cell” with six members who have expertise in technical and financial matters.

2.1 Facilitation Centre for BEE’s financing schemes:

Bureau of Energy Efficiency has set-up a Facilitation Centre for encouraging and up scaling Energy Efficiency Financing in the country. The objective of the Facilitation Centre is as follows:

- (i) To develop an online platform for connecting FIs with potential borrowers to mobilize energy efficiency financing;
- (ii) To collect the willingness forms and spread awareness of BEE’s financing schemes among various beneficiaries like large industries /DCs under the Perform, Achieve and Trade Scheme of BEE, MSMEs, commercial and institutional buildings, Municipalities, Corporations, and commercial establishments; and,
- (iii) To prepare the list of energy efficiency technologies that will be uploaded on new IT platform and BEE’s website.

Till date this Facilitation Centre has identified more than 73 EE Projects with investment potential of over 2500 Crore. BEE has released a list of 92 EE technologies for financing. Till date 22 FIs are registered with the Facilitation Centre for accelerating energy efficiency financing in India.

3. Memorandum of Agreement with Central Bank of India

In its feat to work along with the major financial institutions of India, BEE has signed a MoU with the Central Bank of India on 14th Oct 2022 to set up EE Financing Cell within its central office, Mumbai. The bank has deputed one technical expert and one financial expert for the Cell to execute the tasks to accelerate EE financing.



One-Day Conference on Investment Bazaar for Energy Efficiency



4. Memorandum of Understanding with SIDBI

BEE has signed MoU with SIDBI on 3rd Nov 2022 to create a conducive policy environment that stimulates market transformation in favour of EE products, services and technologies for MSMEs. The MoU focuses upon promotion of energy efficiency in MSMEs and exploring IoT based solutions, greening MSMEs, capacity building of various stakeholders, among other things.

SIDBI acts as a principal financial institution for all aspects of MSME financing, besides direct financing it is also a project executing agency for Partial Risk Sharing Facility (PRSF) that guarantees EE projects.

Andhra Pradesh State Initiatives on Energy Efficiency Financing

- To encourage the implementation of energy efficiency projects in the state of Andhra Pradesh by eliminating barriers in Energy Efficient financing, APSECM (SDA of AP) constituted a financial committee with members of financial institutions (Banks, NBFCs) within the state as per the guidelines of BEE, Government of India.
- The members of the committee are Union Bank of India, SBI, Central Bank of India, Bank of India, Punjab National Bank, HDFC Bank, YES bank, Indian Overseas Bank, NABARD, Power Finance Corporation, IIFL Home Loans.
- APSECM has identified 14 energy efficiency projects and is ready to extend all assistance to implement them at the earliest. There is a possibility of investment of more than 400 crores in Andhra Pradesh.
- APSECM in association with BEE, GoI has organized capacity-building programs for industry on Energy Efficiency and encouraged them to bring in and focus on EE technology.
- APSECM successfully organized two numbers of Investment Bazaar conferences on 18th March 2021 and 23rd November 2022 in Vizag with the support of BEE, GoI to encourage energy efficiency investments in the industrial sector.



One-Day Conference on Investment Bazaar for Energy Efficiency



- In these conferences numerous new EE technologies and interventions such as E-Pumps, Screw Vacuum Pumps, True 12 Pulse, Drive Sync, Active Front End Solution, etc, were exhibited to the audience. It was also identified investment requirements for EE projects in various industries that can be funded by Financial Institutions.



Glimpses of Investment Bazaar conference, Visakhapatnam, 18-03-2021



Glimpses of Investment Bazaar conference, Visakhapatnam, 23-11-2022



BEE's Facilitation Centre

Brochure for Energy Efficient Technologies

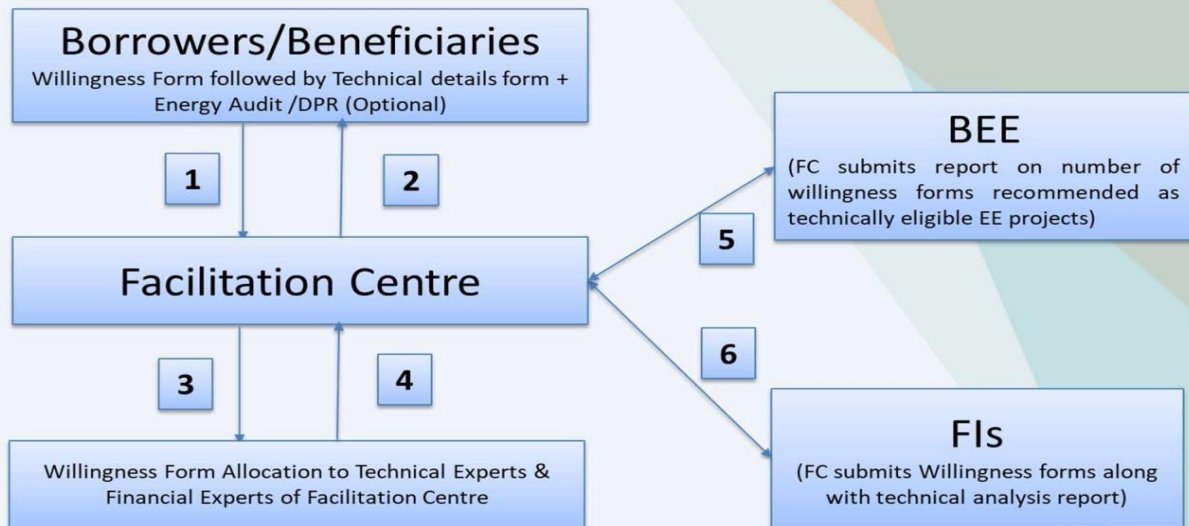
Bureau of Energy Efficiency (BEE), has initiated a number of **Energy Efficiency (EE)** initiatives in the areas of household lighting, commercial buildings, standards and labelling of appliances, demand sidemanagement in agriculture/ municipalities, SME's and large industries including the initiation of the process for the development of energy consumption norms for industrial sub-sectors, capacity building of State Designated Agencies (SDA), etc.

BEE has set up a **Facilitation Centre** for encouraging and up-scaling Energy Efficiency Financing in the country. The **objective of the Facilitation Centre** is to collect the willingness forms and spread awareness of BEE's financing schemes among **various beneficiaries** like large industries /DCs under the PAT Scheme of BEE, MSMEs, Commercial and Institutional buildings, Municipalities, Corporations, and Commercial establishments, **prepare the list of Energy Efficient (EE) Technologies;** and **develop an Online Platform** for mobilizing EE financing in the country. BEE has on boarded **M/s Darashaw and Company Private Limited** as consultant for setting up this Facilitation Centre.



In order to achieve the objective, the Facilitation Centre is closely working with SDAs, Municipalities, DISCOMs, and other nodal agencies to organize a series of webinars/ workshops to reach out to hosts, beneficiaries, and borrowers for their willingness to invest in EE projects.

Potential beneficiaries can fill in project-related information in the Willingness Form. These forms will be evaluated by the Facilitation Centre for Energy Efficiency loan/project. The Facilitation Centre may approach the potential borrower /applicant for any shortfall or additional information needed to prepare the recommendation report. The Willingness Form along with the recommendation report shall be submitted to BEE before being forwarded to the Financial Institutions (FIs) for further processing. FIs may coordinate with the potential borrowers for EE financing. The Facilitation center will track the status of loan financing with support from concerned FIs for each energy efficiency project.



The Facilitation Centre has developed a dedicated Web-portal (<https://www.adeetie.beeindia.gov.in/>) which will be vital in up scaling the efforts and ensuring maximum outreach across all industrial segments in the country. A dashboard would be provided to track the status of EE project financing. Login access is provided to FIs, beneficiaries and SDA.

BEE'S FACILITATION DASHBOARD



A comprehensive list of EE Technology has been prepared by Facilitation Centre in consultation with BEE and experts of the technical committee formed by BEE. This technical committee is headed by Deputy Director General, BEE and the members of this technical committee are from prestigious organizations such as AEEE, EESL, SIDBI, TATA Power, Foundation of MSME Cluster, Energy Audit Services, and Independent senior experts. The technical committee members meet every month at the BEE office to discuss and update the technology list.

The list of EE technologies includes the basic parameters which FIs take into consideration, such as proposed Energy Savings in percentage as well as in Monetary Terms, Average cost of Investment, and Payback Period. This will also help potential borrowers to take decisions regarding the implementation of EE projects. This list shall be continuously reviewed and updated by the Expert Committee formed by BEE on a regular basis.

BEE's List of Energy-Efficient Technologies

Sl. No.	Name of Technology	Potential Savings(%)	Average Investment (Rs. Lakhs)	Annual Monetary Saving (Rs. Lakhs)	Estimated Payback Period (Months)
Electrical					
1	Automation and Control System	5-15 %	20-25	25-30	8-10
2	Electrical Servo Drives	20-30%	10-15	10-20	10-12
3	Energy Efficient Pumps - 5 Star Rating Pumps	15-30%	0.7-4.5	0.25 - 5	20-25
4	Energy Efficient Screw Compressor	25-40%	2.5-6.5	1.5 - 7.5	20-25
5	Energy Efficient Turbo Blower	30-45%	30-40	20-25	18-24
6	Gasifier for Electrical Application	15-25%	20-25	9-12	20-24
7	Hanger Shot blast Machine	30-40%	18-20	8-10	24-30
8	Harmonic filter	3-8%	8-10	5-7	15-18
9	IGBT based Induction furnace	20-30%	20-25	15-20	15-18
10	IGBT based temperature control	10-15%	18-20	5-6	38-40
11	Infrared (IR) Heaters	10-20%	3.5-10	1.8-2.0	18-24
12	Light emitting diode (LED) Lighting	35-50%	13-15	30-35	3-5
13	Micro Turbine	15-30%	40-45	25-40	14-20
14	Motors (IE3 or IE4 or IE5)	25-40%	5-7	2-3	20-25
15	Screw Compressor with Permanent Magnet (PM) moto	15-20%	6-7	3.5-4	18-24
16	Static Reactive Power Generator with Harmonics Filter	4-5%	5	6	11-12

Sl. No.	Name of Technology	Potential Savings(%)	Average Investment (Rs. Lakhs)	Annual Monetary Saving (Rs. Lakhs)	Estimated Payback Period (Months)
17	Temperature controller for cooling tower fan	10-25%	0.2-0.3	0.2-0.3	12-15
18	Tri-generation	20-25%	2500-3000	700-1000	36-40
19	Variable Frequency Drives (VFD)	30-40%	2.5-3	3.5-4	8-10
20	Variable Refrigerant flow (VRF) in HVAC	15-20%	45-50	15-20	36-48
21	Vertical Roller Mill (VRM)	6-10 KWH per MT raw material	20-24	5-6	36-48
Thermal					
22	Cogeneration	30-50%	1000-1200	200-250	50-60
23	Condensate recovery system in boiler/jet dyeing machine	10-15%	12-15	7-8	18-20
24	Energy Efficient Boilers	10-15%	25-30	5-6	55-60
25	Energy efficient Refrigeration Compressor	10-15%	3.5-5	2-3	18-24
26	Gas fired Annealing furnace	20-30%	14-15	5-6	30-36
27	Heat Pump	30-40%	30-35	20-25	15-18
28	Hot Air Generator from Briquette	20-30%	50-55	35-40	18-20
29	Hot Water Generator	20-25%	2.5-3.5	1.68 - 1.85	19-23
30	PUF insulation	20-30%	3.5 - 4.0	0.6-0.7	60-72
Thermal - Waste Heat Recovery (Low Temperature)					
31	Heat Exchanger	10-15%	4-4.5	8-8.5	6-12
32	Hot water generation from cement kiln	20-25%	100-125	30-40	30-36

Sl. No.	Name of Technology	Potential Savings(%)	Average Investment (Rs. Lakhs)	Annual Monetary Saving (Rs. Lakhs)	Estimated Payback Period (Months)
33	Low-Grade Waste Heat Recovery System (LGWHR)	10-15%	10-15	5-7	30-36
34	Thermo Compression	20-25%	150-200	70-80	24-30
Thermal - Waste Heat Recovery (Medium Temperature)					
35	Air Pre Heater & Drying Bed in furnace	18-20%	5-5.5	5.5-6	12-14
36	Economiser in boiler/Thermic Fluid Heater	10-15%	3-3.5	4-4.25	6-8
37	Gas-fired Reheating Furnace with WHR System	15-45%	19-21	16 - 28	9-14
38	Waste Heat Recovery Boiler	10-15%	3.5-4	3-3.5	12-15
39	Waste Heat Recovery System for Coke Drying Quenching (CDQ)	20-25%	300-350	200-250	18-24
40	Waste Heat Recovery for power generation	10-15%	900-1100	230	54-60
Thermal - Waste Heat Recovery (High Temperature)					
41	Recuperators	20-25%	4.5-5	3.5-4	12-14
42	Recuperative burner for heat recovery for high medium temperature furnaces	25-30%	200-225	200-225	12-15
43	Regenerative burners for high temperature furnaces	15-20%	20-30	20-30	12-15
Sectoral					
44	Alternative Fuels & Raw Material (AFR) Utilization	Thermal Substitution rate of 5-10%	8000-10000	1600-2000	60-72
45	Adiabatic Pre-reformer	4-10%	1500-1600	600-900	20-30
46	BEE 5 Star Rated AC	20-45%	0.40-0.50	0.18-0.20	24-30
47	Bleached Chemi Thermo Mechanical Pulp (BCTMP)	15-20%	40000-45000	10000-12000	48-50

Sl. No.	Name of Technology	Potential Savings(%)	Average Investment (Rs. Lakhs)	Annual Monetary Saving (Rs. Lakhs)	Estimated Payback Period (Months)
48	CNC Machine (Special Purpose Machine)	30-35%	35-40	25-30	17-20
49	Divided blast cupola	20-25%	6-8	3-4.5	20-24
50	Electrical Annealing Bogie Furnaces	25-30%	8-10	4-5	22-24
51	Energy Efficient Brushless Direct Current (BLDC) Fan	35-50%	4-6	1-2	24-36
52	Energy efficient cyclone	1.03 KWH & 7000 KCal/MT of Clinker	600-650	200-220	36-40
53	Energy efficient gas fired pot furnace	30-35%	10-15	10-15	10-12
54	Energy efficient impeller	1.08 KWH/MT Clinker	100-120	42-45	24-30
55	Energy Efficient Modulating Burner	10-15 %	5-7	8-10	9-12
56	Energy Efficient Tank furnace	15-20%	400-450	200-300	24-30
57	Energy Efficient technology for ECBC/Eco-niwas Samhita	15-25%	220-240	230-250	10-12
58	Energy Efficient Tray Dryer	15-20%	10-12	6-8	15-20
59	Exhaust humidity measurement & control system	5-15%	2-2.5	1-1.25	24-30
60	Fiberglass Reinforced Plastic (FRP) Fan in Withering Units	10 - 15 %	8-10	12-15	6-8
61	Fluidised Bed dryer system	10-15%	15-20	7-10	24-30
62	Forging Furnace	15-20%	20-25	20-25	10-12
63	Gas Engine based co-generation technology	30-40%	800-1000	320-350	30-35
64	Gas fired hot air generator system	20-25%	4-5	3.5-5	10-12
65	Gasifier For Kilns	30-35%	55-65	24-30	28-32
66	Gasifier for Melting And Reheating Process	20-25%	40-45	25-30	18-24
67	Induction Billet Heater	20-25%	38-42	37-42	10-12

Sl. No.	Name of Technology	Potential Savings(%)	Average Investment (Rs. Lakhs)	Annual Monetary Saving (Rs. Lakhs)	Estimated Payback Period (Months)
68	Latest Generation High Efficiency Clinker Cooler	15-20%	1800-2000	400-500	48-60
69	Liquid Ring Compressor	10-15%	500-600	800-900	6-8
70	Louisiana State University (LSU) Port Dryer	25-40%	30-35	16-20	22-25
71	Low Thermal Mass cars in Tunnel Kiln	10-13%	0.55 per car	2.5-3	2-3
72	Medium frequency Induction Furnace	10-15%	30-35	13-15	24-30
73	Membrane Filter Press	30-40%	40-45	15-20	30-35
74	Nutsche Filtration and Drying Process	10-20%	25-30	20-25	15-18
75	Palletisation plant - Sponge Iron	10-15%	4000-5000	800-1000	48-60
76	Rapier or Auto Loom	15-20%	50-52	25-30	24-30
77	Recovery of BOF gas and sensible heat in Basic Oxygen Furnace	3-5%	3753.3	1003.8	45
78	Replacement of steam turbine drive with high speed motor drive	15000 Ton of NG per year	22500-25000	7500-8000	48-50
79	Screw washer	10-15%	45-50	18-20	24-30
80	Tube ice plant	10-15%	17-20	8-10	30-35
81	Ultra-High Power Electric Arc Furnace	10-15%	723.7	714	12
82	Veneering for Industrial furnaces	20-25%	6-7	6-7	11-12
83	Vertical Agitator System for Reaction Vessel	20-25%	2-2.5	1-1.5	20-24
84	Vertical shaft brick kilns	15-20%	10-15	5-7	24-30
85	Zig-Zag Firing	20-25%	30-50	15-20	24-36

Sl. No.	Name of Technology	Potential Savings(%)	Average Investment (Rs. Lakhs)	Annual Monetary Saving (Rs. Lakhs)	Estimated Payback Period (Months)
Innovative decarburization technologies					
86	Aluminium pipe for distribution of compressed air system	10-20%	300-350	120-150	24-36
87	Electric Vehicles and Charging Infrastructure	1 Litre Diesel per 15 km	12-15	3-4	48-60
88	Fuel efficient industrial furnace burners specially for rotary kiln	5-7%	30-35	15-20	20-24
89	Nano composite surface treatment for condenser in power plant	13000 tons of coal/Yr.	250-300	250-300	12-15
90	Plasma Technology in steel melting shop	15-20%	8000-10000	3200-4000	30-36
91	Torrefaction Technology	Not applicable	15-20	15-20	12-15
92	XPLATE on FD Fan to improve boiler combustion efficiency	3-5%	50-60	20-25	36-40

Note: The complete list of EE technology with technology description, equipment capacity, sectorsetc. can be downloaded from website <https://beeindia.gov.in/>

Investment Bazaar:

BEE has launched one day conferences named as “**Investment Bazaar for Energy Efficiency**” to accelerate and facilitate financing of energy efficiency (EE) projects/ technologies through State designated Agencies (SDAs). It is one of the BEE’s initiatives under Energy Efficiency Financing Platform (EEFP). The objective of this event is to provide the common platform to Original OEMs, ESCOs, Financial Institutions, and Industries to interact and discuss the investment as well as financial potential.

Till date, Seven Investment Bazaar events have been organized. i.e. Vizag (APSECM) in March 2021 and November 2022, Chandigarh (PEDA), Pune (MEDA), Telangana (TSREDCO), Arunachal Pradesh (APEDA) and Karnataka (KREDL) in which more than Rs. 300 crore of energy efficiency investment had been identified. BEE in association with APSECM (Andhra Pradesh’s SDA) is organizing the eighth (third in AP) Investment Bazaar in Vijayawada on 16th December 2022 in which the list of energy efficiency technologies is going to be launched in presence of Financial Institutions, OEMs, ESCOs and Large Industries.

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Disclaimer: The present list of EE technologies is based on secondary data published by credible organizations. We have tried to ensure that information provided here is accurate. However, information provided here may vary with capacity of technology, choice of vendor, change in baseline scenario and operating scenario etc and we make no representation and give no warranty of any kind in respect of the information. We don't accept liability for any loss which may arise from reliance on information contained here or in respect of any error or omission. We encourage decision makers to conduct detailed study to ascertain savings from potential EE technologies before taking investment decision.



One-day conference on "Investment Bazaar" for Energy Efficiency

Registration Sheet

Date: 16th December 2022

Venue: Hotel Minerva Grand, Vijayawada

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One-day conference on "Investment Bazaar" for Energy Efficiency

Registration Sheet

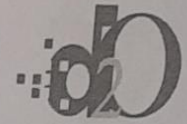
Date: 16th December 2022

Venue: Hotel Minerva Grand, Vijayawada

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76.	Sudhu Balakrishnan	Manager	Union Bank of India	7416073955	
77.	SUMIT DEWANI	Asst Manager.	Union Bank of India	9024860648	
78.	Ch. Mounika	ASST. Manager	Union Bank of India	8074319676	
79.	Govinda Rao	Director	TRIPLE I ENGINEER	9840357577	
80.					