

CLEANTECH COMPONENT #1 ENERGY EFFICENCY IN MSMEs

4 June 2017



CLEANTECH COMPONENTS

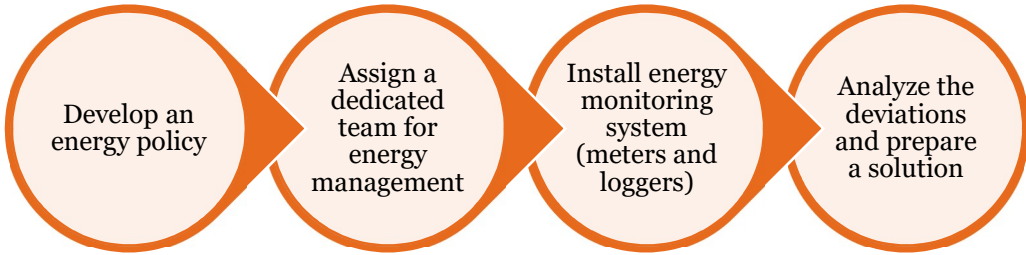
A technology that improves the environment while delivering improved economic benefits is termed as a clean technology. Under the ACMFN project, we have sub classified the clean technologies into four main components viz. (a) Energy Conservation, (b) Waste management (c) Water management and, (d) Renewable Energy.

As a part of this issue we are introducing component #1 i.e. energy conservation and energy efficiency in the MSMEs. This issue focusses on the need for energy conservation, the approach needed and the potential savings possible by implementing several technologies in the MSME sector.

WHY ENERGY CONSERVATION?

Energy will define 21st century and in order to stay ahead of the competition, companies will need to invest in energy efficiency activities. India being one of the fastest growing economies in the world, the demand for energy is on the rise. Implementing energy conservation initiatives will reduce the demand, thus helping the nation achieve energy security. Investing in energy efficiency will help reduce these investments and also reduce the supply and demand gap. Improved energy efficiency is thus the most economic and readily available means of improving energy security. The benefits of more efficient use of energy are well known and include reduced investments in energy infrastructure, lower fossil fuel dependency, reduction in greenhouse gas emission, increased competitiveness and improved consumer value.

For effective implementation of energy efficiency activities in any industry following action plan should be made:



Approach Towards Energy Efficiency

As mentioned before target setting is the first step and the plant team need to set the target on percentage basis and also chalk out the action plan to achieve the targets.

The target to be set is arrived through data collected and analyzed from internal benchmarking and third party energy audits conducted. This will help the unit in not only in putting a target figure but also organize the data collection procedure inside the plant. A tabular exhibit of target setting in the plant is below:

2015-16	2016-17	2017-18	2018-19
38 kWh/MT	5% YoY	5% YoY	5% YoY
0.04 kWh/sq.ft.	5% YoY	5% YoY	5% YoY
0.01 kg/sq.ft.	5% YoY	5% YoY	5% YoY

To accelerate the installation of clean technologies it is essential that the plant team is capacitated about the new technology not just in terms of operation of the newer technology but also the value addition that the clean technology brings to the plant and to the environment.

Energy Saving Technologies for MSMEs

Once the targets are fixed, we need to have an effective action plan in place to achieve these desired targets. The existing inefficient equipment should be replaced with a new technology which will result in energy savings. The benefits possible are not just in monetary terms but also in improved productivity and good working environment at the shop floor thus improving the employee productivity.

Some of the very common energy saving technologies/initiatives implemented by MSMEs are:

- ❖ Installation of Variable Frequency Drives (VFD) in under loaded machines to save energy
- ❖ Putting up transparent (polycarbonate) sheets at the roof to avoid artificial lighting during day time
- ❖ Installing transvector nozzles for compressed air application
- ❖ Installing Automatic Power Factor Controller (APFC) to reduce penalties due to low power factor
- ❖ Replacing old inefficient equipment with new and more efficient technology

Benefits and Impacts

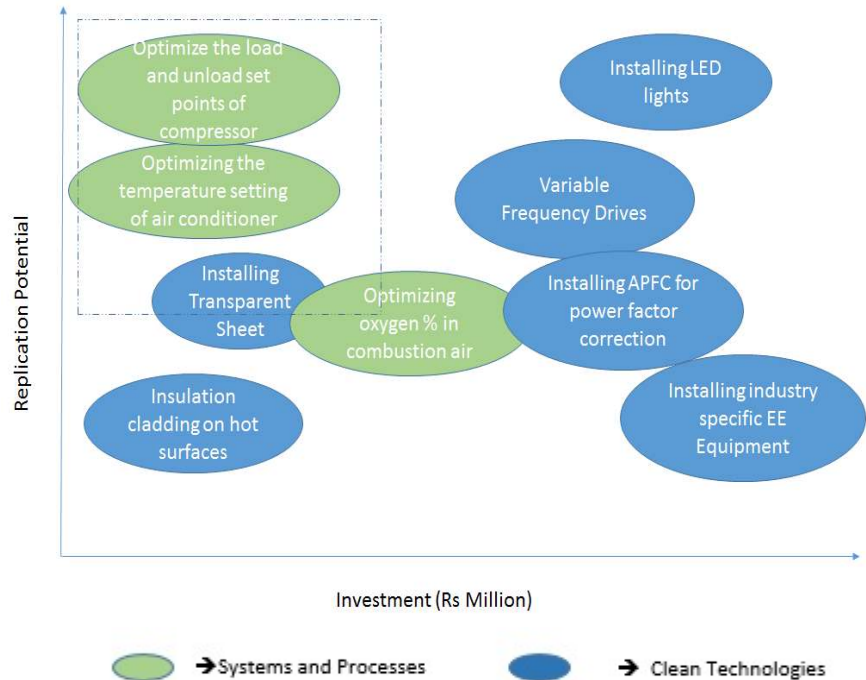
All the initiatives mentioned above have a significant positive impact not only through reduction in energy consumption but also on the environment. In general, the energy saving potential in the MSMEs mainly exists in retrofitting and changing the old inefficient with new and efficient technologies. The list of some highly acceptable energy saving proposal are tabulated below:

ESP No	Energy Saving Proposal	Typical Investment (Rs Lakhs)	Potential Savings (%)	Payback Period (months)	Remarks
1	Installation of new Energy efficiency Lighting	Rs 100/Watt	30 - 50	< 6 @ Rs 5/kWh <12 @ Rs 3/kWh	Replacing old CFL/GLS fixtures with new LEDs
2	Improvement of power factor	Rs 500/kvar	1 – 3	< 12 @ Rs 5/kWh < 24 Rs 3/kWh	Reducing the distribution loss
3	Installation of Energy efficiency motors	Rs 6000/kW	10 - 15	< 12 @ Rs 5/kWh < 24 Rs 3/kWh	Savings through improved operating efficiency
4	Installation of Energy efficient pumps	Rs 7000/kW	20 – 30	< 12 @ Rs 5/kWh < 24 Rs 3/kWh	Savings through improved operating efficiency
5	Installation of Variable Frequency Drive	Rs 8000/kW	20-30	< 12 @ Rs 5/kWh < 24 Rs 3/kWh	Savings through improved operating efficiency
6	Insulation on surface to reduce skin losses	Rs 5000/m ²	1 – 2	< 6 @Rs 3 - 5 kWh	Savings due to reduced radiation and convection loss
7	Installation of Energy efficient compressor with VFD	Rs 20000/kW	15 – 30	< 12 @ Rs 5/kWh < 24 Rs 3/kWh	Savings through improved operating efficiency
8	Installation of Energy efficient fans	Rs 7000/kW	10 – 15	< 12 @ Rs 5/kWh < 24 Rs 3/kWh	Savings through improved operating efficiency
9	Installation of Transparent sheet for natural day lighting	Rs 1000/m ²	30 – 40	< 12 @ Rs 5/kWh < 24 @Rs 3/kWh	All the lightings can be switched off during day time
10	Installation of Light pipes to harness day lighting	Rs 20000/m	30 – 40	< 36	New Technology. The pipe Dia to be 700 mm. All the lightings can be switched off during day time

Replication Potential

The relevance of these technologies is high as they are easy to implement. The investments required for these initiatives is also lower and has a good return on investment. All the energy saving ideas mentioned above have a greater acceptance from the industry hence the supplier market is also competitive to allow lower price of the product.

MSME should focus on the top left corner of the graph that signifies those technologies and process improvements that can be easily implemented and require lower to actually nil investment. Majority of these proposals are applicable in most of the MSMEs. The potential replicability of the most common proposals in some of these sectors as under:



Energy Saving Proposal	Applicable Sectors
ESP 1	Foundry, Forging, Metal, Engineering, Chemical & Pharma, Textiles
ESP 2	Foundry, Forging, Metal, Engineering, Chemical & Pharma, Textiles
ESP 3	Forging, Metal, Engineering, Chemical & Pharma, Textiles
ESP 3	Foundry, Forging, Metal, Engineering, Chemical & Pharma, Textiles
ESP 4	Engineering, Chemical & Pharma, Textiles
ESP 5	Foundry, Forging, Metal, Engineering, Textiles
ESP 6	Foundry, Forging, Engineering, Chemical & Pharma, Textiles
ESP 7	Foundry, Forging, Metal, Engineering, Chemical & Pharma, Textiles
ESP 8	Foundry, Engineering, Chemical & Pharma
ESP 9	Foundry, Forging, Engineering, Textiles
ESP 10	Forging, Metal, Engineering, Textiles

About the project: ACMFN – Promoting Cleantech Investments

Asian Cleantech MSME Financing network (ACMFN) is a 4-year project under the EU SWITCH Asia II facility, aimed at building and leveraging a cleantech financing

ecosystem to spark improved access to finance for Asian Cleantech MSMEs in order to enhance sustainable consumption and production patterns in Asia.

Under this project, the lead partner: ADFIAP with technical partner: adelphi with Confederation of Indian Industry (CII) in India, PUPUK in Indonesia and CEESTA in China as national focal points, will support the uptake of cleantech innovation, with the intent of improving access to finance for cleantech MSMEs across India.

For the Indian MSMEs, the project aims to:

- Increase the uptake of clean technologies
- Enhance access to cleantech financing
- Establish cleantech portfolio in financial institutions
- Enable peer learning opportunities

Want to Join the Cleantech Revolution?

If you are an MSME looking for:

- Reducing energy bill / Detailed energy audits
- Reducing water consumption
- **Require finance** for clean technology implementation
- Mapping waste and water in the premise

Click on the below link to register into the network:

<http://goo.gl/forms/iz4y1uC6tx>

Key Activities Implemented

- 3 Train the Trainer workshops – more than 30 members trained
- 5 capacity building workshops organized in Mohali, Pune, Nagpur, Hyderabad, and Vapi
- 150 + participation from MSMEs
- 10 technology service provider showcased their product
- SIDBI and SBH presented their financing schemes for MSMEs

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