

21% reduction in energy bill of a rubber MSME unit through Energy Efficiency Measures

Background

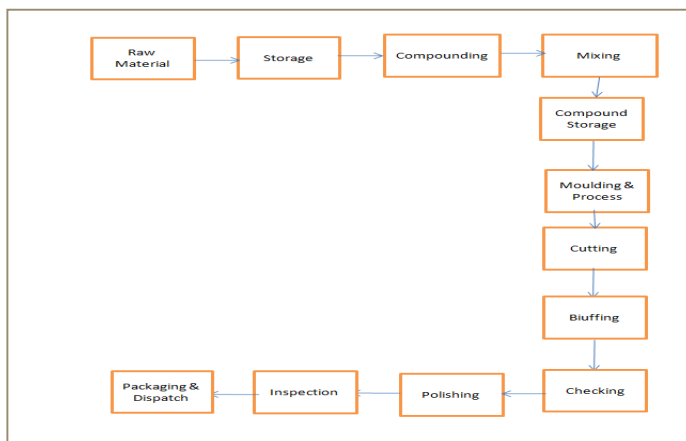
Faridabad is a mixed cluster in Haryana having over 12000 MSMEs majorly manufacturing various kinds of automobile parts, sheet metal components and fabrics. There are majorly 15 industrial segments in the cluster with a high range of products from soaps to tractors.

Unit Profile

M/s ABC is a MSME unit engaged in manufacturing of organic rubber components producing about **1000** tpa. Total Energy bill of the unit was Rs.73.78 lakh per annum which was around 4% of total turnover. About 83% of the unit's energy bill was on account of Grid electricity and remaining 17% accounted for Diesel-DG.

Process description

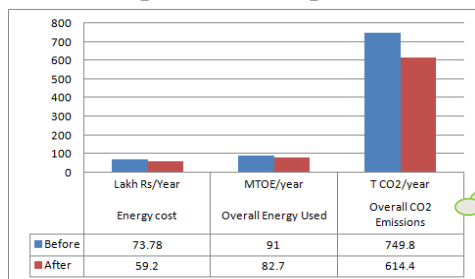
The manufacturing process involves a kneader machine with two blades for mixing material of different sizes and qualities into semi solid form followed by a mixing mill which has two water cooled rollers for processing wide range of raw material. The rollers are operating in opposite directions for shaping the semi liquid mixture into uniform rectangular sheets. Then compression moulding of thermo-set materials is done that transforms granular material into a moulded shape by placing material into an open mould cavity and then closing the mould. Thermo set materials are cured by an irreversible chemical reaction under heat and pressure. The result of this reaction is a highly cross-linked molecular structure. After curing the component is ready, it is inspected and finally dispatched



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Diesel and Grid Electricity were used to operate major energy consuming equipments in the unit i.e. kneader machine, compressors and other utilities i.e. pumps, motors associated with, and lighting.

Overall Impact - Post implementation



Overall Impact
 21% reduction in Total Energy bill (i.e. savings of INR 15 lakh p.a.)
 Simple payback of 15 months

This case study has been prepared under WB GEF Project titled "Financing Energy Efficiency at MSMEs in India". The project aims to identify, design & implement Energy Efficiency (EE) solutions in 500 MSMEs in 5 clusters with potential of EE investment of more than Rs. 100 crore and reduction in GHG emissions equivalent to 1.2 million tonne CO₂. This project is being co-implemented by Small Industries Development Bank of India (SIDBI) and Bureau of Energy Efficiency (BEE).

INTERVENTIONS

Leakage control of compressed air

Baseline Scenario

Leakage and performance test was conducted on the compressor. The leakage quantity was measured and comes out to be 0.92 Nm³/min. The average operating power was 15 kW. As per the performance test of the compressor the free air discharge is 1.94 Nm³/min and the leakage quantity was 0.92 Nm³/min.

Recommendation

The unit was advised to replace nozzles, replacement of valves and repair the pipe leakage.

Implemented Scenario

Based on the project's recommendation, the unit replaced nozzles, valves etc.

Newly installed system consumes 9635 kWh of electricity per annum.



The Investment of Rs.65,000 made by the unit has resulted in monetary savings in energy cost of Rs.1.82 lakh per year with simple payback period of 4 months.

Installation of capacitor bank to improve power factor

The average power factor of the unit was low, at 0.940. As suggested, the unit has installed a fixed capacitor bank to improve the power factor to about 0.99. This has helped the unit to reduce distribution losses and voltage fluctuation besides avoiding penalty.

Reduction in delivery pressure of compressor

The delivery pressure of the compressor was very high. With the suggested recommendation, the unit has reduced the delivery pressure of the compressor. This has resulted in an annual energy saving of 12,693 kWh of electricity, equivalent to about Rs. 1 lakh per year with simple payback period of 12 months.

Support provided under the Project

- Walk Through & Detailed Energy Audit
- Identification of Energy Efficiency Interventions in the unit
- Finalization of the specifications for the Energy Efficiency Interventions
- Identification of technology providers/vendors
- Facilitation for an interactions between the unit and technology providers;
- Technical support during commissioning
- Monitoring & Verification

Disclaimer: This case study has been compiled by DESL on behalf of SIDBI under WB GEF Project. While every effort has been made to avoid any mistakes or omissions, any agency would not be in any way liable to any person by reason of any mistake/ omission in the publication.

For Further Information please contact at

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