

16% reduction in energy bill of an auto component manufacturing MSME unit through Energy Efficiency Measures

Background

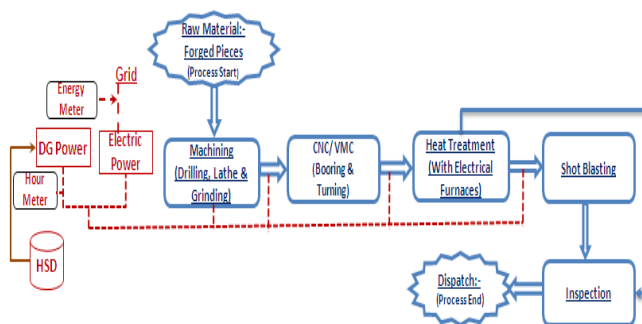
Faridabad is a mixed cluster in Haryana having over 12000 MSMEs majorly manufacturing various kinds of automobile parts, sheet metal components and fabrics. There are majorly 15 industrial segments in the cluster with a high range of products from soaps to tractors.

Unit Profile

M/s ABC is a MSME unit engaged in manufacturing of automobile components producing about 474 tpa. Total Energy bill of the unit was Rs.134 lakh per annum which was around 8% of total turnover. About 57.7% of the unit's energy bill was on account of Grid Electricity and remaining 42.3% accounted for HSD-DG

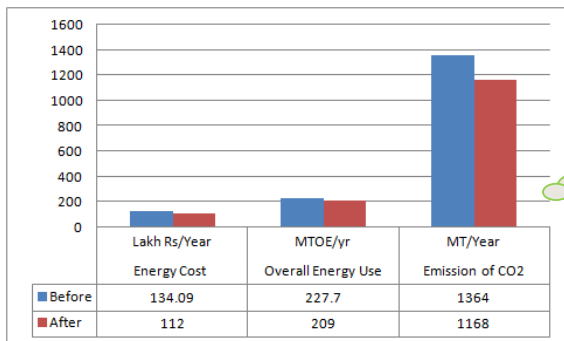
Process description

The manufacturing process involves the receiving of raw material as forged material followed by passing of material through different mechanical processes like machining, drilling and grinding. After passing through the above process these semi-finished product goes to CNC/VMC machine for final machining. After final machining by CNC/VMC machine product goes to different furnaces for heat treatment. The output of heat treatment section goes to shot blasting area before going for final quality inspection and dispatch. As shown in above process diagram some of material goes directly for quality inspection after heat treatment.



HSD and Grid Electricity were used to operate major energy consuming equipments in the unit i.e. plant machinery, air compressors and other utilities i.e. pumps, motors associated with equipments, and lighting.

Overall Impact - Post implementation



Overall Impact
16% reduction in Total Energy bill (i.e. savings of INR 21.6 lakh p.a.) Simple payback of 16 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

Reduction in Leakage of Compressed Air of Compressors

Baseline Scenario

Compressed air leakage observed about 23% and 33% in compressor 1 and 2 respectively. The SEC of the compressors was 0.28 and 0.39 kW/CFM respectively. The annual energy consumption for the compressors was 94230 kWh and 91314 kWh. Inadequate sealing of air lines of the compressor leading to large quantity air loss in addition to high electricity consumption.

Recommendation

The unit was advised to reduce compressed air leakage up to 5%.

Implemented Scenario

Based on the project's recommendation, the unit reduced compressed air leakage up to 5%.

The new system saves 44916 kWh of electricity per annum.

The Investment of Rs.2.3 lakh made by the unit has resulted in monetary savings in energy cost of Rs.3.6 lakh per year with simple payback period of eight months.

Installation of PF Controller to improve power factor

The average power factor of the unit was low, at 0.90. As suggested, the unit has installed a proper PF controller to improve the power factor to about 0.99. This has helped the unit to reduce distribution losses and voltage fluctuation besides avoiding penalty.

Regulation of Line to Neutral Voltage

The unit's average single phase voltage was around 233V. With the suggested recommendation, the unit has installed a servo stabilizer to maintain output voltage at 210V. This has resulted in an annual energy saving of 22036 kWh of electricity, equivalent to about Rs. 1.8 lakh per year with simple payback period of 24 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.

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