

19% reduction in energy bill of a automobile component 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

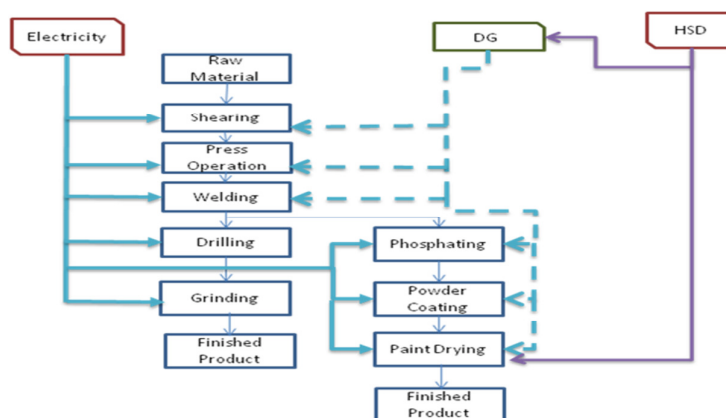
M/s ABC is a MSME unit engaged in manufacturing of automobile components producing about 2970 tpa. Total Energy bill of the unit was Rs.50.16 lakh per annum which was around 2% of total turnover. About 53% of the unit's energy bill was on account of Grid Electricity, 37% accounted for Diesel-Self Generation and remaining 10% accounted for Diesel-Other.

Process description

The manufacturing process involves the procurement of sheet metal of various thickness followed by their cutting to the required dimensions. The cut stock then goes to the press shop where, depending on the requirement of the job, the press machine shapes the metal as desired.

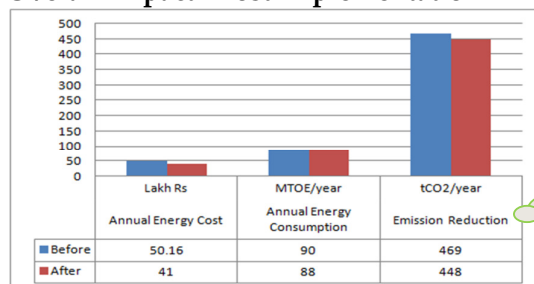
The shaped metal is then sent to the welding section where the required

components are welded together to obtain the final product. Miscellaneous operations like grinding or drilling are done and the product is ready for dispatch. If the customer requires the product to be painted then the work piece is sent to the Phosphating section before dispatching.



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

Overall Impact - Post implementation



Overall Impact

19% reduction in Total Energy bill (i.e. savings of INR 9.6 lakh p.a.) Simple payback of 8 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 in Compressed Air Line

Baseline Scenario

Compressor of capacity 4.53Nm³/min was used for operating pneumatic clutch press machines. The rated power of the compressor was 30 kW and the average operating power was 24 kW. As per the performance of the compressor the free air discharge was 157CFM. As per leakage test study in compressed air line it was found around 1.81Nm³/min air is going through leakages. Unwanted leakages reduces the system capacity which results in poor efficiency.

Recommendation

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

Implemented Scenario

Based on the project's recommendation, the unit replaced nozzles and repaired/replaced valves.

Newly installed system consumes 11687 kWh of electricity per annum.



The Investment of Rs.5000 made by the unit has resulted in monetary savings in energy cost of Rs. 94000 per year with simple payback period of one months.

Installation of capacitor bank to improve power factor

The average power factor of the unit was low. As suggested, the unit has installed a 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.

Replacement of T-12 Fixtures by T-5 Fixtures

The unit was lighting the production area through T-12 with electronic ballasts. With the suggested recommendation, the unit has replaced T-12 fixtures by T-5 fixtures. This has resulted in an annual energy saving of 8618 kWh of electricity, equivalent to about Rs. 69,000 per year with simple payback period of 16 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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