35% reduction in energy bill of a casting MSME unit through Energy Efficiency Measures

Background

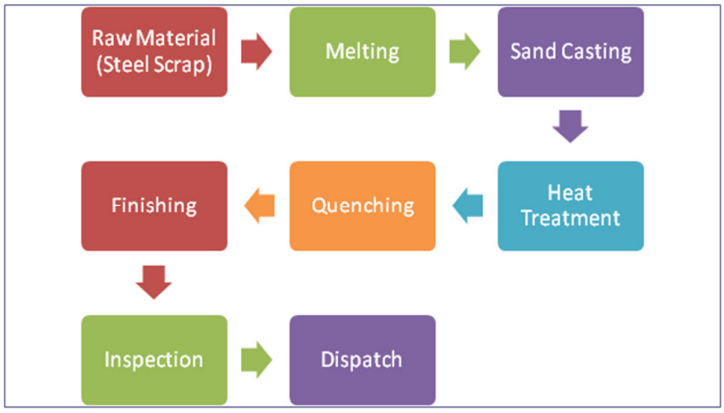
Faridabad is a mixed cluster in Haryana having over 12000 MSMEs majorly manufacturing various kinds of automobile parts, sheet metal components and fabrics. There are majorly 15 industrial segments in the cluster with a high range of products from soaps to tractors.

Unit Profile

M/s ABC is an MSME unit engaged in manufacturing of steel castings for automobile components producing about 727 tpa. Total Energy bill of the unit was Rs.122.5 lakh per annum which was around 26% of total turnover. About 49.5% of the unit's energy bill was on account of Diesel-DG, 28.8% accounted for Furnace oil and remaining 21.7% accounted for Grid electricity.

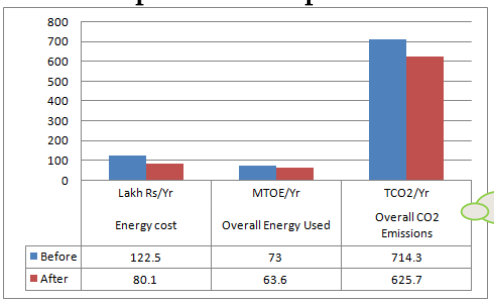
Process description

The manufacturing process involves the procurement of raw material from open market followed by their inspection of qulaity and pattern. The moulding sand is prepared and inspected, followed by preparation and inspection of mold. Then the metal is poured into the mould and allowed to solidify. It is followed by Heat treatment of the job. Finally, the product is dispatched after inspection



Diesel, Furnace Oil and Grid Electricity were used to operate major energy consuming equipments in the unit i.e. induction furnace, heat treatment furnace and other utilities i.e. pumps, motors associated with equipments, and lighting.

Overall Impact - Post implementation



Overall Impact

35% reduction in Total Energy bill (i.e. savings of INR 42 lakh p.a.) Simple payback of 24 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 CO_2. This project is being co-implemented by Small Industries Development Bank of India (SIDBI) and Bureau of Energy Efficiency (BEE).

INTERVENTIONS

Installation of Quality Test Lab Spectrometer for molten metal

Baseline Scenario

Rejection of the material due to the lack of testing equipment in the unit was in the range of 5-7% . The quantity of material rejected due to poor quality was 101.8 MT per year. The energy consumed to reprocess the rejection was around 55390 kWh/year.

Recommendation

The unit was advised to install an in house lab testing facility to test composition of molten metal.

Implemented Scenario

Based on the project's recommendation, the unit installed a spectrometer to test the material composition

Newly installed system consumes 3950 kWh of electricty per annum to reprocess rejection.

The Investment of Rs.20 lakh made by the unit has resulted in monetary savings in energy cost of Rs.6 lakh per year with simple payback period of 40 months.

Installation of conveyor system for Mould Movement

The material loss of 5% was there due to improper platform for moulds. As suggested, the unit has installed a conveyor system for the movement of the moulds. This has helped the unit to reduce the material loss and overall energy consumption

Installation of Sand Moulding Machine

The sand moulds were manufactured manually in the unit. With the suggested recommendation, the unit has installed a sand moulding machine. This has resulted in an increase in annual production of 727 MT equivalent to about Rs. 22 lakh per year with simple payback period of 20 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

For Further Information please contact at

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