

## 32% 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 a MSME unit engaged in manufacturing of casting components & components of ash handling plants producing about 320 tpa. Total Energy bill of the unit was Rs.64.3 lakh per annum which was around 2% of total turnover. About 49.5% of the unit's energy bill was on account of Diesel-DG, 28.82% accounted for Furnace oil and remaining 21.68% accounted for Grid electricity.

### Process description

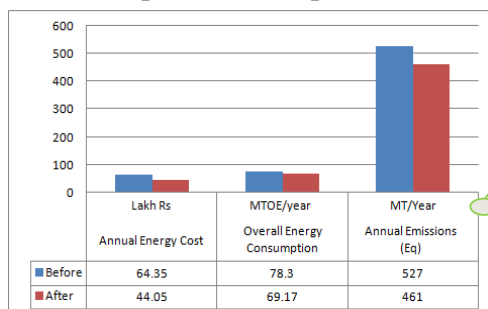
The manufacturing process involves the procurement of raw material from market. However, the scrap selection basically depends upon the final requirement of the customer. Usually, MS/ CI/ Pig Iron grade scrap is procured from the market for melting purpose. The scrap is first weighed and fed into the induction furnace for melting. The liquid metal is poured



into cast to obtain the desired shape. The cast undergo trimming to give a final shape and dimensions. If required, the final cast is also given heat treatment in Heat Treatment Furnace where the internal stresses of the product are removed by normalizing and iso-annealing as per client and product requirement

Furnace Oil, Diesel 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**

32% reduction in Total Energy bill (i.e. savings of INR 20 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 CO<sub>2</sub>. This project is being co-implemented by Small Industries Development Bank of India (SIDBI) and Bureau of Energy Efficiency (BEE).*

## INTERVENTIONS

### Performance monitoring & control induction furnace & rejects control

#### Baseline Scenario

Energy meter was provided on the furnace panel. But, power consumption was not being monitored. Without monitoring, the plant cannot perform the performance. Temperature of molten metal was excessive in certain cases. The specific energy consumption based upon the molten metal was 868 kWh/MT.

#### Recommendation

The unit was advised to procure optical pyrometer so that excess temperature of molten metal can be avoided.

#### Implemented Scenario

Based on the project's recommendation, the unit procured optical pyrometer

Newly installed system saves 45,989 kWh of electricity per annum.



The Investment of Rs.11 lakh made by the unit has resulted in monetary savings in energy cost of Rs.6 lakh per year with simple payback period of 21 months.

#### Operating hour controlling of 250kVA DG set

The loading on the 250 kVA DG was very low. As suggested, the unit stopped 250kVA DG set till the time 500kVA can feed power requirement. This has helped the unit to reduce the overall fuel consumption without affecting the requirement.

#### Monitoring of Heat Treatment Furnace

The unit had no energy meter provision for heat treatment furnace. With the suggested recommendation, the unit has installed an energy meter at H.T furnace. This has resulted in an annual energy saving of 7200 kWh of electricity, equivalent to about Rs. 77,000 per year with simple payback period of eight 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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