

## 45% reduction in Energy bill of a Foundry MSME unit through Energy Efficiency Measures

### Background

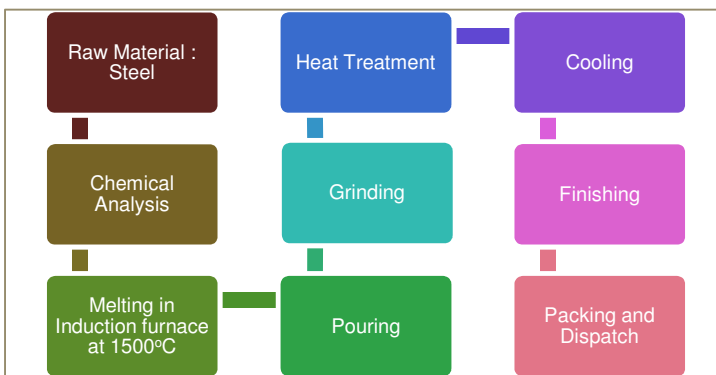
Faridabad is a mixed cluster in Haryana having over 12000 MSMEs majorly manufacturing various kinds of automobile parts, sheet metal components and fabrics. There are majorly 15 industrial segments in the cluster with a high range of products from soaps to tractors.

### Unit Profile

M/s ABC is a MSME unit engaged in casting of steel alloys. Total Energy bill of the unit was Rs.76.52 lakh per annum which was around 30% of total turnover. About 81% of the unit's energy bill was on account of Grid electricity and remaining 19% accounted for Diesel-DG.

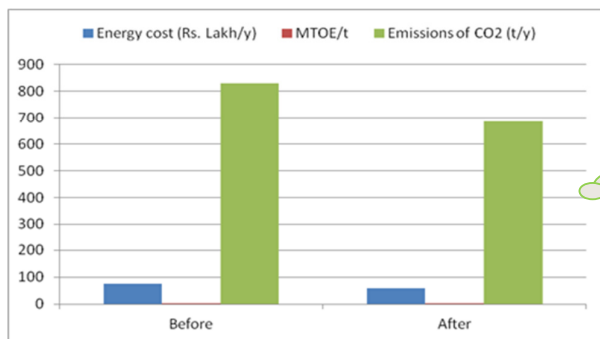
### Process description

The manufacturing process involves the melting of scrap material in the induction furnace at a temperature of 1500°C. The liquid metal is then poured into a cast to make a desired shape. After cooling, the cast is trimmed and machined to obtain a desired component of definite dimensions. Depending on the end user requirement, the cast is also given heat treatment in Heat Treatment Furnace at a temperature ranging up to 1070°C. The final product after passing quality test is packed and dispatched to their respective customer (see flow chart).



Diesel and Grid Electricity were used to operate major energy consuming equipments in the unit i.e. induction furnace, grinding, heat treatment, chemical analysis etc

### Overall Impact - Post implementation



Overall Impact

22% reduction in Total Energy bill (i.e. savings of INR 17 lakh p.a.) Simple payback of 7 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 for Induction Furnace

### Baseline Scenario

It is observed that there is no Energy Meter provided on the Furnace Panel. As such, there is no monitoring of SEC of the Induction Furnace, which consumes more than 70% of Power Consumption. Without monitoring, the plant can not improve the performance. Temperature of molten metal is very excessive in certain cases

#### Recommendation

The unit was advised to install digital energy meter on the furnace panel to measure electricity consumption in KWH and actual production in kg.

### Implemented Scenario

Based on the project's recommendation, the unit installed a energy meter on Induction Furnace Panel..

Newly installed energy meter saves 54838 kWh per annum



The Investment of Rs.0.79lakh made by the unit has resulted in monetary savings in energy cost of Rs.4.18lakh per year with simple payback period of two months.

### Installation of capacitor bank to improve power factor

The average power factor of the unit was low, at 0.912. As suggested, the unit has installed a capacitor bank of 200KVAR along with APFC Panel 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 existing lighting fixtures with efficient fixtures

The unit had maximum number of inefficient lighting fixtures. With the suggested recommendation, the unit has replaced old and inefficient 40W FTL with copper choke by 28W FTL T-5 fitting. This has resulted in an annual energy saving of 3600 kWh of electricity, equivalent to about Rs. 28,000 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.

#### For Further Information please contact at

Energy Efficiency Centre, Small Industries Development Bank of India (SIDBI), Ground Floor, E-1, Videocon Tower, Jhandewalan Extension, Rani Jhansi Road, New Delhi-110055, India, Ph. 011 23682473-77, [www.sidbi.in](http://www.sidbi.in)

