

## 28% reduction in fuel bill of a machine component MSME unit through Energy Efficiency Measures

### Background

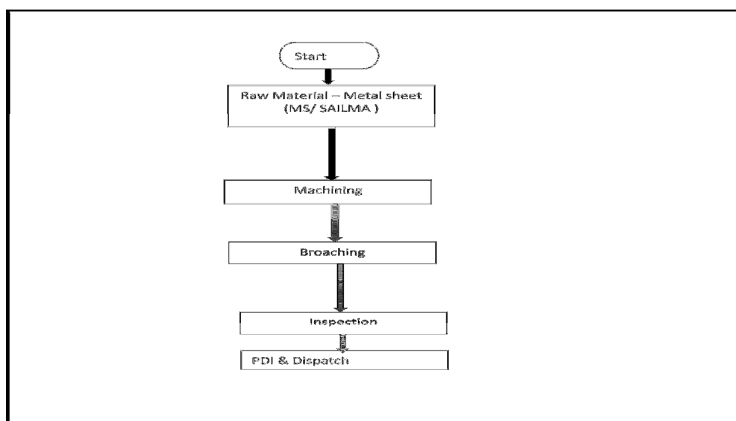
Faridabad is a mixed cluster in Haryana having over 12000 MSMEs majorly manufacturing various kinds of automobile parts, sheet metal components and fabrics. There are majorly 15 industrial segments in the cluster with a high range of products from soaps to tractors.

### Unit Profile

M/s ABC is an MSME unit engaged in manufacturing of machine and auto components. Total Energy bill of the unit was Rs.51.0 lakh per annum which was around 17% of total turnover. About 52% of the unit's energy bill was on account of Grid electricity and remaining 48% accounted for Diesel-DG.

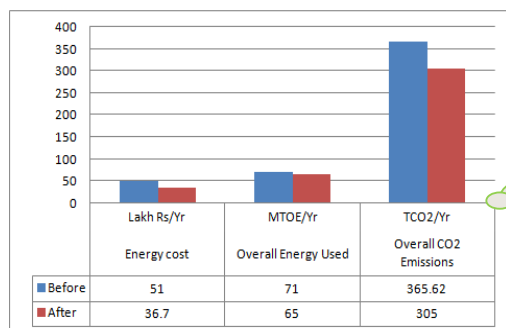
### Process description

The manufacturing process involves the procurement of raw material as steel followed by their processing in the CNC machines as per the requirement. After the CNC machine, the processed material is sent to vertical machining centers. Subsequently broaching is done and material is dispatched after final inspection.



Diesel-DG and Grid Electricity were used to operate major energy consuming equipments in the unit i.e. CNC, Vertical Maching Center(VMC), broach machines, compressors and other utilities i.e. pumps, motors associated with equipments, and lighting.

### Overall Impact - Post implementation



#### Overall Impact

28% reduction in Total Energy bill (i.e. savings of INR 14 lakh p.a.) Simple payback of 6 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

### Replacement of Nozzles to reduce air loss in Compressor system

#### Baseline Scenario

Major leakages were found at 10 locations in the machines area with an orifice size of 2mm. The air leakage quantity was around 5.19 m<sup>3</sup>/min and the total air leakage was around 183 CFM. The loss in power due to leakage was 0.8 kW and the annual energy loss was 52800 kWh leading to poor performance of the compressor.

#### Recommendation

The unit was advised to replace the existing nozzles so that the air leakages can be arrested.

#### Implemented Scenario

Based on the project's recommendation, the unit replaced the nozzles in air compressors

Newly installed nozzles saves 52800 kWh of energy per annum.



The Investment of Rs.1.2 lakh made by the unit has resulted in monetary savings in energy cost of Rs.6.5 lakh per year with simple payback period of two months.

#### Optimization of DG frequency

The average frequency of DG was 53.47 Hz. As suggested, the unit has reduced the frequency to about 49.5Hz. This has helped the unit to improve operational efficiency and reduce overall fuel consumption.

#### Replacement of T-12 lamps with LED lamps

The unit was lighting the production area through 40 W T-12 lamps. With the suggested recommendation, the unit has replaced T-12 by 20W T-8 lamps. This has resulted in an annual energy saving of 13,594 kWh of electricity, equivalent to about Rs. 1.68 lakh per year with simple payback period of 31 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

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