

## 49% reduction in energy bill of a plastic MSME unit through Energy Efficiency Measures

### Background

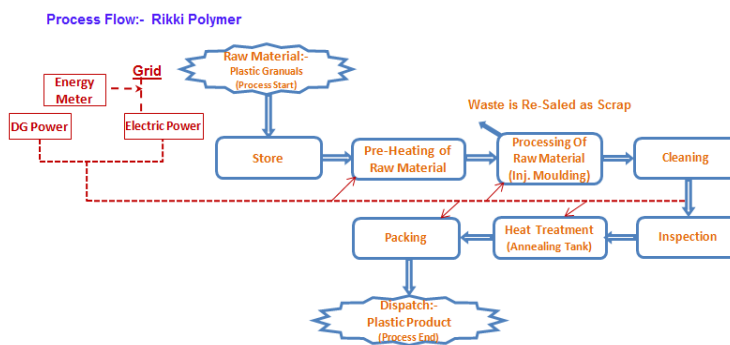
Faridabad is a mixed cluster in Haryana having over 12000 MSMEs majorly manufacturing various kinds of automobile parts, sheet metal components and fabrics. There are majorly 15 industrial segments in the cluster with a high range of products from soaps to tractors.

### Unit Profile

M/s ABC is a MSME unit engaged in manufacturing of plastic components such as motor vehicle parts. Total Energy bill of the unit was Rs.34.67 lakh per annum which was around 11% of total turnover. About 53.6% of the unit's energy bill was on account of Grid electricity and remaining 46.4% accounted for Diesel-DG.

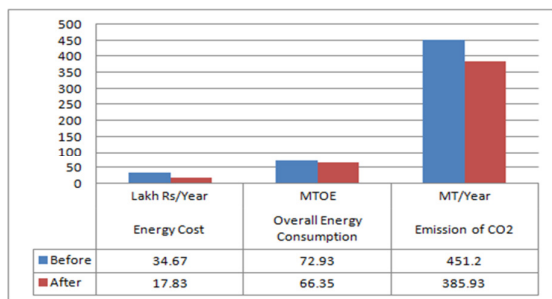
### Process description

The manufacturing process involves the procurement of raw material as polymers like PVC, PP, NYLON, ABC etc. Raw material is preheated before moulding process. Preheated raw material feeds to high precision moulding machines to mould auto components. Once the moulding process completed, exceeding parts of components are removed (i.e. cleaning & finishing process) and finished components are inspected and only quality products ready for annealing process. After annealing finished goods are ready to dispatch.



Diesel and Grid Electricity were used to operate major energy consuming equipments in the unit i.e. all the machine loads, cooling tower and other utilities i.e. pumps, motors associated with equipments, and lighting.

### Overall Impact - Post implementation



**Overall Impact**

49% reduction in Total Energy bill (i.e. savings of INR 16.5 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

### Insulation of Injection Moulding Machines

#### Baseline Scenario

At the time of field study 6 moulding machine were in operation out of nine. It was observed that the skin temperature of moulding machine was in the range of 135 deg C to 180 deg C. The average heat loss was around 2433 kcal per hour and the annual heat loss was around 17.52 M kcal. High skin loss leading to high energy consumption and poor performance of the machines.

#### Recommendation

The unit was advised to insulate the injection moulding machine and bring the skin temperature to 45 deg C.

#### Implemented Scenario

Based on the project's recommendation, the unit insulated the moulding machine.

Newly insulated machine saves 17657 kWh of energy per annum as a result of 15.18 M kcal heat loss saving.

The Investment of Rs.1 lakh made by the unit has resulted in monetary savings in energy cost of Rs.1.5 lakh per year with simple payback period of ten months.

#### Installation of capacitor bank to improve power factor

The average power factor of the unit was low, at 0.650. As suggested, the unit has installed a fixed capacitor bank of 70 kVAR 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 low efficacy fixtures by high efficacy fixtures

The unit was lighting the production area through FTL 40W, 36W and 20W fixtures. With the suggested recommendation, the unit has replaced the existing fixtures with T5 fixtures. This has resulted in an annual energy saving of 10872 kWh of electricity, equivalent to about Rs. 87,000 per year with simple payback period of seven 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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