45% reduction in Energy bill of a Sheet Metal MSME unit through Energy Efficiency Measures

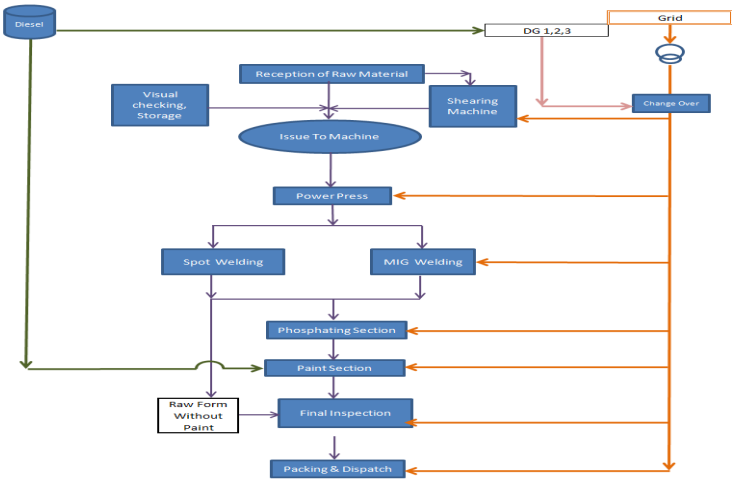
Background

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 sheet metal components for auto industries. Total Energy bill of the unit was Rs.136 lakh per annum. About 55% of the unit's energy bill was on account of Grid electricity, 28% accounted for Diesel-DG and remaining 17% accounted for Diesel-Paint shop as thermal energy.

Process description

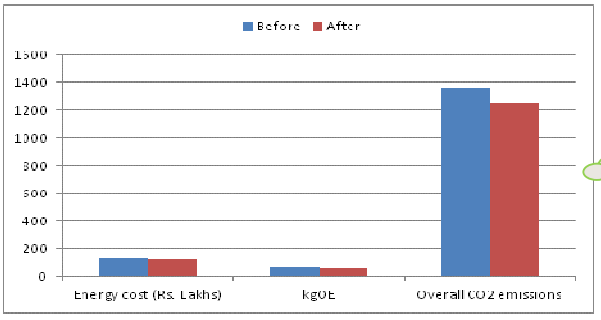


The manufacturing process involves the shearing of raw material procured from market followed by pressing operation. The shaped metal is then sent to welding section where required components are welded together to obtain the final product.

Miscellaneous operations like grinding or drilling are done and the product is ready for dispatch. The product is sent to the phosphating section as per the customer requirement where the product is painted. After the phosphating product goes to the power coating section where the pigment in the form of powder is sprayed on the work piece and forms a protective coating of the colour desired. After the coating the product is sent to paint drying oven where the work piece is heated by a diesel fired burner followed by dispatching of the product.

Diesel and Grid Electricity were used to operate major energy consuming equipments in the unit i.e. press machines, compressors, welding machines and other utilities i.e. pumps, motors, and lighting.

Overall Impact - Post implementation



Overall Impact

45% reduction in Total Energy bill (i.e. savings of INR 12.53 lakh p.a.) Simple payback of 19 months

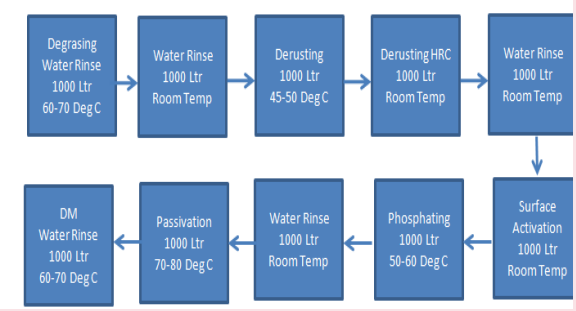
This case study has been prepared under WB GEF Project titled "Financing Energy Efficiency at MSMEs in India". The project aims to identify, design & implement Energy Efficiency (EE) solutions in 500 MSMEs in 5 clusters with potential of EE investment of more than Rs. 100 crore and reduction in GHG emissions 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 Solar Water Heating System for Phosphating Section

Baseline Scenario

Out of 10 tubs in the phosphating section, out of which 5 tubs required hot water. The water was heated by electrical heaters.



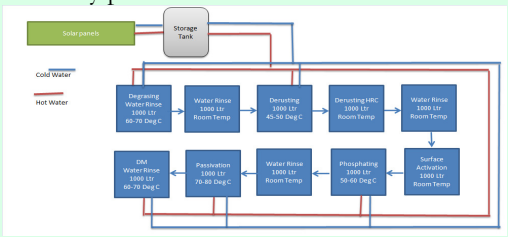
Recommendation

The unit was advised to install a solar water heating system of capacity 8000 LPD in phosphating section.

Implemented Scenario

Based on the project's recommendation, the unit installed Solar Water heating system to heat water in phosphating section.

Newly installed system saves 43164 kWh of electricity per annum.



The Investment of Rs.18 lakh made by the unit has resulted in monetary savings in energy cost of Rs.3.35 lakh per year with simple payback period of 63 months.

Compressed Air Leakage Arresting

The compressor remained at loading position during breaks, which was the indication of leakage. As suggested, the unit has repaired the compressed air line to reduce air leakage. This has helped the unit to reduce air quantity required in the plant.

Reduction in the operating pressure of Compressor

The unit was being operated at the air pressure much higher than the required pressure. With the suggested recommendation, the unit has reduced the operating pressure by a step of 0.5 kg/cm^2.This has resulted in an annual energy saving of 35969 kWh of electricity, equivalent to about Rs. 2.8 lakh per year with an immediate payback period.

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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