

8% reduction in energy bill of a machinery manufacturing MSME unit through Energy Efficiency Measures

Background

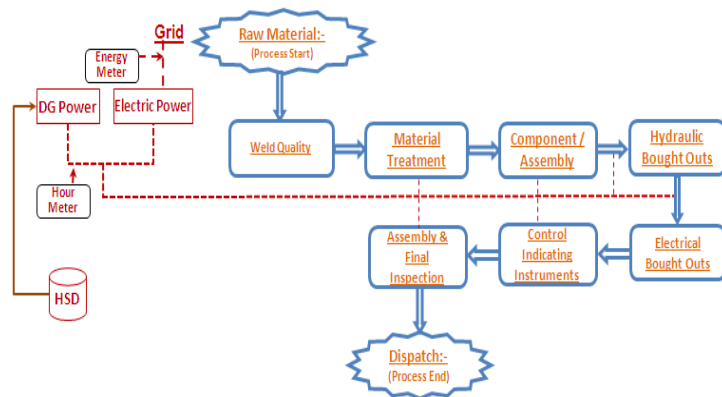
Faridabad is a mixed cluster in Haryana having over 12000 MSMEs majorly manufacturing various kinds of automobile parts, sheet metal components and fabrics. There are majorly 15 industrial segments in the cluster with a high range of products from soaps to tractors.

Unit Profile

M/s ABC is a MSME unit engaged in manufacturing of hydraulic machines, pneumatic machines, power press & special purpose machines producing about 107 pieces per annum. Total Energy bill of the unit was Rs.62.70 lakh per annum which was around 3% of total turnover. About 46.9% of the unit's energy bill was on account of Grid electricity, 29.6% accounted for HSD-Melting furnace and remaining 23.5% accounted for HSD-DG.

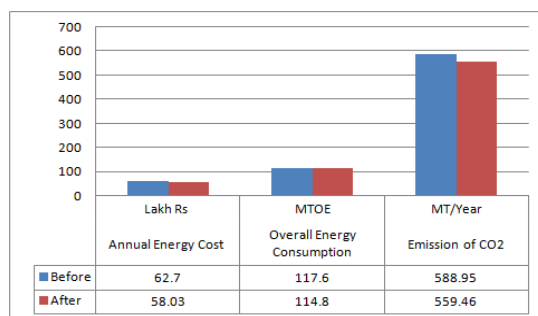
Process description

The manufacturing process involves the procurement of raw material from the vendors followed by quality tests, welding tests and visible quality checks. The production procedures/ Metal Forming include machining of the raw material as per requirement. There are single, double and triple action hydraulic presses cover a wide variety of metal forming processes. After the above operation when components are ready to assemble they are taken to assembly line and gone through the operations, depends on the type of machine they are manufacturing. After that all these sub-assemblies are fitted to the frame of the machine along with the electrical components, pneumatic or hydraulic components to take the shape of the machine. After assembly of the machine the machine is tested as per the objective for which it is manufactured. Then is taken to packaging followed by dispatch.



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

Overall Impact - Post implementation



Overall Impact

8% reduction in Total Energy bill (i.e. savings of INR 5 lakh p.a.) Simple payback of 22 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 CO₂. This project is being co-implemented by Small Industries Development Bank of India (SIDBI) and Bureau of Energy Efficiency (BEE).

INTERVENTIONS

Installation of Servo Stabilizer to optimize the single phase voltage

Baseline Scenario

Single phase Voltage measured during DEA was in higher range. During DEA single phase voltage observed was in the range of 209V to 252V and average voltage was about 232.0 V. The annual energy consumption for lighting was around 42888 kWh, for HVAC 17215 kWh, for single phase 70735 kWh and for other equipments it was around 10632 kWh which is very high resulting into poor performance of equipments.

Recommendation

The unit was advised to maintain the single phase voltage at 210 V.

Implemented Scenario

Based on the project's recommendation, the unit maintained the single phase voltage at 210V.

Newly installed servo stabilizer saves 12706 kWh of energy per annum.

The Investment of Rs.2 lakh made by the unit has resulted in monetary savings in energy cost of Rs.1 lakh per year with simple payback period of 24 months.

Installation of APFC panel to improve power factor

The average power factor of the unit was low, at 0.91. As suggested, the unit has installed a 100 KVAR 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.

Reduction in leakage of Compressed air line

The compressed air leakage was 35%. With the suggested recommendation, the unit has arrested the air leakage to 5%. This has resulted in an annual energy saving of 10393 kWh of electricity, equivalent to about Rs. 82,000 per year with simple payback period of three 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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