

4% reduction in energy bill of a dyeing & printing 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.

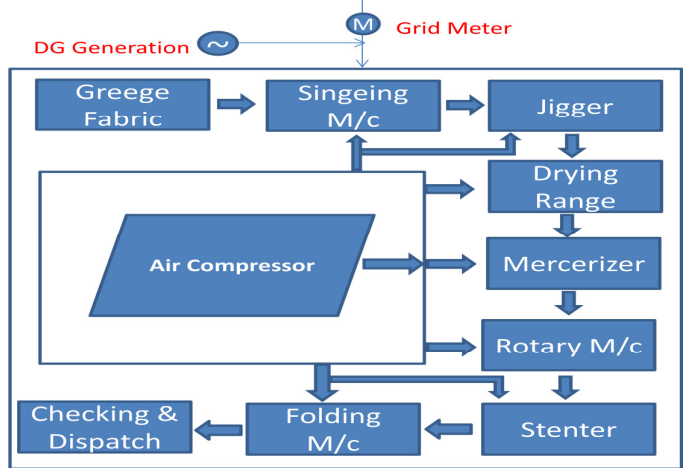
Unit Profile

M/s ABC is an MSME unit engaged in manufacturing of dyeing and printing products producing about 18000000 meters per annum. Total Energy bill of the unit was Rs.569 lakh per annum which was around 18% of total turnover. About 54% of the unit's energy bill was on account of Petcoke, 26 % accounted for Grid electricity and remaining 20% accounted for Diesel-DG.

Process description

The manufacturing process is as follows:

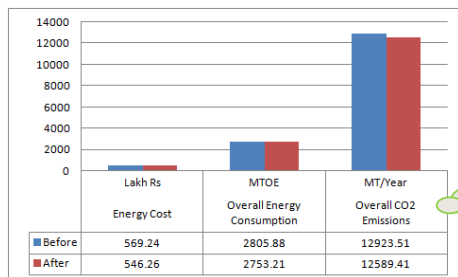
Singeing is a process in which the protruding fibers and loose threads on both faces of the fabric are removed. This is achieved by passing the fabric close to gas flames or electrically heated hot plate. The fabric is given an enzyme treatment so that the impurities such as starch, gum etc., are degraded into water-soluble products. Bleaching is a process where the natural color of Grey fabric is removed and rendered white by treating it with sodium hydrochloride or hydrogen peroxide. The purpose of mercerizing is to impart luster and strength to the fabric. The process consists of treating the fabric with concentrated caustic soda solution. During dyeing, a single shade is applied to the material, which can be a batch or continuous process. Heat setting is normally carried out in a Stenter to impart dimensional stability to synthetic fabric. Finishing process is done to improve the attractiveness of the fabric.



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

Overall Impact - Post implementation



Overall Impact
 4% reduction in Total Energy bill (i.e. savings of INR 23 lakh p.a.) Simple payback of 9 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

Performance improvement of Utility Air Compressor

Baseline Scenario

The utility compressor was running round the clock and the specific power consumption of this compressor is very high which was around 0.279 kW/CFM. The average power consumption of the compressor was 28.83 kW. The pressure setting of this air compressor is 5.3-6.3 Kg/cm². The annual energy consumption of the compressor was around 207576 kWh which is very high leading to poor performance of the machine.

Recommendation

The unit was advised to improve the compressor performance by major overhauling.

Implemented Scenario

Based on the project's recommendation, the unit overhauled the compressor to improve its performance.

Newly modified system consumes 133853 kWh of energy per annum.



The Investment of Rs.65000 made by the unit has resulted in monetary savings in energy cost of Rs.7 lakh per year with simple payback period of one months.

Recovery of the Condensate for Boiler

The average condensate temperature was around 90°C. As suggested, the unit has installed a condensate recovery line to use it as feed water to boiler. This has helped the unit to reduce overall fuel consumption and improve performance of boiler.

Replacement of T-8 lamps with T-5 lamps

The unit was lighting the production area through 270 no. of 36W T-8 lamps. With the suggested recommendation, the unit has replaced T-8 lamps with T-5 lamps. This has resulted in an annual energy saving of 31104 kWh of electricity, equivalent to about Rs. 2.9 lakh per year with simple payback period of nine 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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