

MSME polyester yarn unit invests 17 lakhs for improving energy efficiency—and saves 13 lakhs every year!

Background

Ankleshwar is a chemical cluster in Gujarat. It has over 700 MSMEs manufacturing various kinds of chemicals (dyes and pigments—67%; pharma and pharma intermediates—27%; and pesticides and chlor-alkalis—6%). The production capacity of these units varies from 50 tonnes to over 10,000 tonnes per annum (tpa).

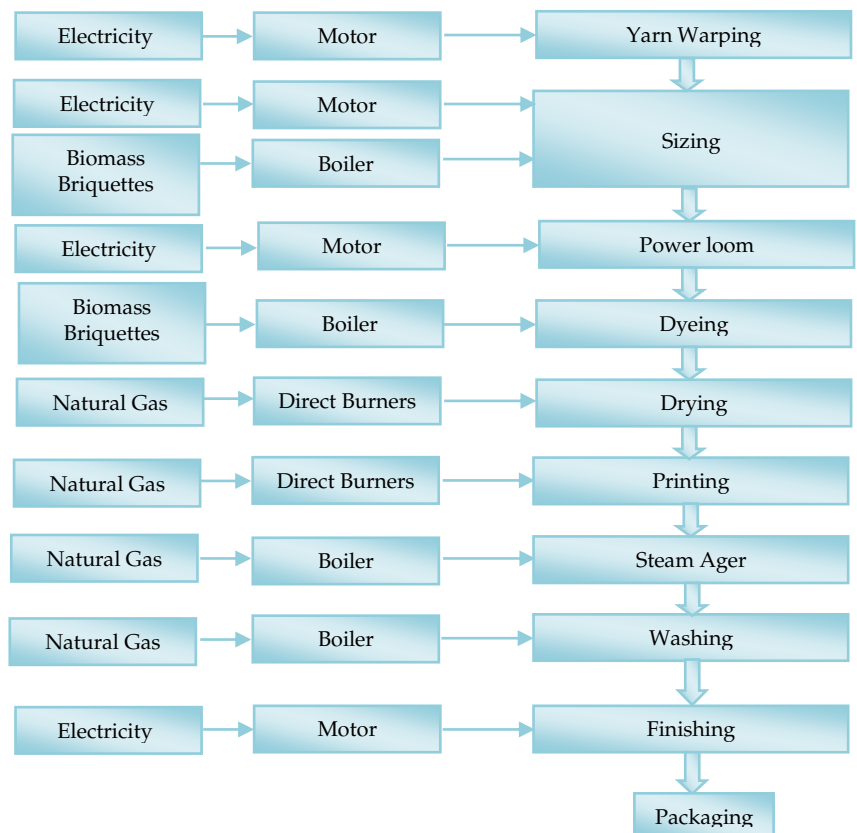
Unit profile

M/s A6 is an MSME unit engaged in the manufacture and dyeing of velvets and velveteens, producing about 2–3 lakh metres of material annually. The annual energy bill of the unit was INR 191 lakhs, which was around 21% of total turnover. The annual energy consumption was around 599 tonnes of oil equivalent (toe), of which biomass briquettes accounted for 297 toe (49%), natural gas (NG) 257 toe (43%), grid electricity 42 toe (7%) and diesel 3 toe (1%).

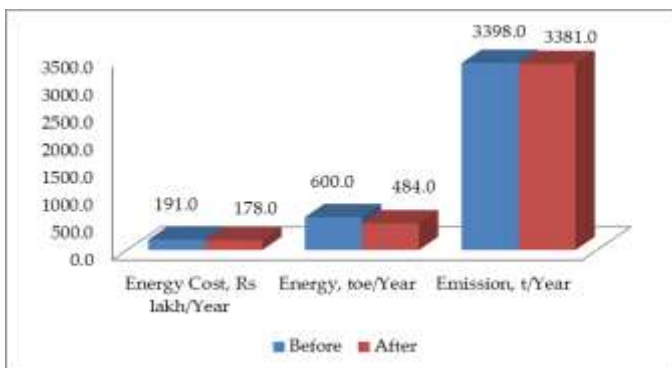
Process description

The manufacturing process is shown in the flowchart. Batch processing (also called exhaust dyeing) is used for dyeing of the velvet materials.

The major energy consuming equipments used were a biomass briquette-fired boiler of capacity 1 tonne/hour steam, NG-based stenter and heat treatment system, associated pumps and air compressor, and lighting.



Overall Impact: post-implementation



Overall Impact

7% reduction in total energy bill (i.e. annual savings of INR 13 lakhs) with a simple payback of 1.3 years

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

Replacement of existing boiler with energy efficient boiler

Baseline Scenario

The unit was operating a biomass briquette-fired boiler of capacity 1 tonne/hour steam. The boiler efficiency was relatively low, at 54%, due to factors such as high excess air level, poor insulation and poor operating practices. Discussions with plant personnel confirmed that the steam requirement of the unit is likely to go up and hence the unit would require boiler of higher steam generation capacity.

Recommendation

The unit was advised to replace the existing boiler with an energy efficient biomass briquette-fired boiler of 2 tonnes/hour

Implemented Scenario

Based on the project's recommendation, the unit replaced the existing boiler with a biomass briquette-fired boiler of 2 tonnes/hour capacity and efficiency of 75%.



This investment of INR 14.3 lakhs saves 238 tonnes of biomass briquettes annually, equivalent to INR 11.9 lakh. The simple payback period is 1.2 years.

Replacement of existing fluorescent tube lights (FTLs) with energy efficient FTLs

The unit was using 118 fluorescent tube lights (FTLs) of T-12/T-8 type in work floor, office and utility sections. As advised, it has replaced these FTLs with T-5 type FTLs. This investment of INR 0.8 lakhs saves INR 0.7 lakhs a year in electricity costs. The simple payback period is 1.2 years.

Installation of automatic power factor controller

Analysis of electricity bills showed that the average power factor at main incomer was only 0.745. As advised, the unit has installed an automatic power factor controller (APFC) to improve the existing power factor to about 0.950. This investment of INR 1.9 lakhs saves about INR 0.4 lakhs annually. The simple payback period is 4.4 years.

Support
provided under
the project

- Walk-through & Detailed energy audit
- Identification of energy efficiency interventions in the unit
- Finalization of specifications for the energy efficiency interventions
- Identification of technology providers/vendors
- Facilitation for interactions between unit and technology providers;
- Technical support during commissioning
- Monitoring & Verification

Disclaimer: This case study has been compiled by TERI on behalf of SIDBI under WB-GEF Project. While every effort has been made to avoid any mistakes or omissions, these agencies will not be in any way liable for any inadvertent mistakes/omissions in the publication.

For further information please contact:

Energy Efficiency Centre, Small Industries Development Bank of India (SIDBI), Ground Floor, E-1, Videocon Tower, Jhandewalan Extension, Rani Jhansi Road, New Delhi-110055, India, Ph. 011 23682473-77, www.sidbi.in

