

MSME pharma unit reduces energy bill by 23% through energy efficiency measures

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).

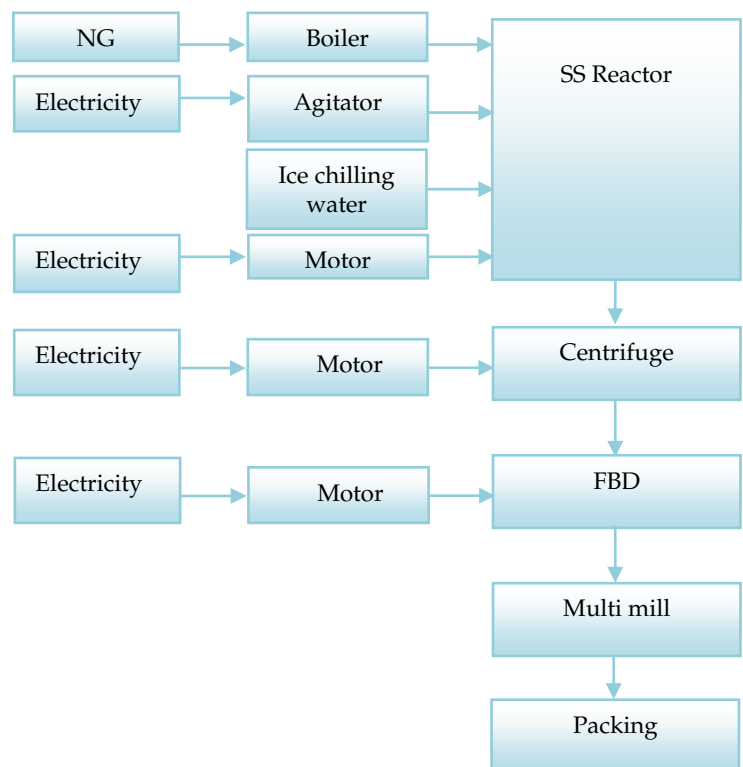
Unit profile

M/s A17 is an MSME unit manufacturing bulk drugs. The annual production is about 52 tonnes. The total annual energy bill of the unit was about INR 52 lakhs, which was around 3% of total turnover. The total annual energy consumption was about 92 tonnes of oil equivalent (toe), of which natural gas (NG) accounted for 74% (68 toe), grid electricity 24% (22 toe) and diesel 2% (2 toe).

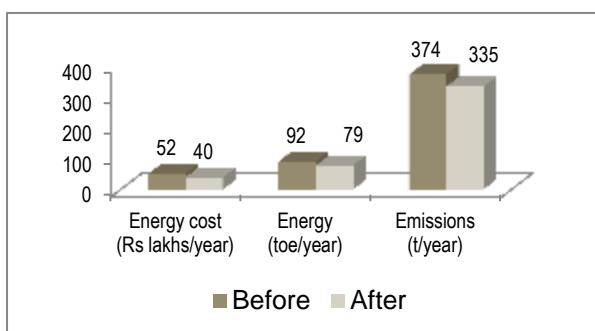
Process description

The raw materials are charged in a reaction vessel, which is indirectly heated or cooled as required, using steam from an NG-fired boiler or ice/chilled water from cooling tower/chiller. The mixture is continuously stirred to ensure uniform heat transfer. After reaction, the output of the reaction vessel is centrifuged, dried in a fluid bed dryer (FBD), and pulverized to give the final product.

The main energy consuming equipments used were a NG-fired boiler and electrical motors associated with agitator, cooling tower pumps, FBD and other utilities.



Overall Impact: post- implementation



Overall Impact
 23% reduction in total energy bill (i.e. annual savings of INR 12 lakhs) with a simple payback of 2 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 IBR boiler

Baseline Scenario

The unit was operating an NG-fired, non-IBR boiler of capacity 600 kg/hour. Its efficiency was about 72%, low for boilers of this category, due to poor combustion efficiency, old and insufficient insulation, and leakages in the main shell.

Recommendation

The unit was advised to replace the existing boiler with an IBR type NG-fired boiler of capacity 1000 kg/hour.

Implemented Scenario

As advised, the unit replaced the existing boiler with an IBR boiler of capacity 1000 kg/hour.



This investment of INR 15.9 lakhs is saving 14,028 SCM of NG annually, equivalent to INR 5.9 lakhs. The simple payback period is 2.7 years.

Installation of electrical chilling system

The unit was meeting its cooling/chilling requirements by circulation of ice water in the jackets/condensers, for which 5265 kg of ice were used daily along with a pump. The daily operation cost was about INR 5560. As advised, the unit replaced the existing system with an electrical chilling system, which reduces the daily operating cost to about INR 3818. This investment of INR 8.4 lakhs is saving INR 5.4 lakhs annually. The simple payback period is 1.6 years.

Installation of energy efficient process water circulation pump

The unit was using a pump of capacity of 5.5 kW to meet the cooling water circulation requirement. Its efficiency was very low, at about 32%. As advised, the unit replaced this pump with a new energy efficient pump of same capacity. This investment of INR 0.5 lakh is saving about 10,500 kWh of electricity annually, equivalent to INR 0.7 lakh. The simple payback period is 0.7 year.

Periodic maintenance of air compressor

Tests conducted on the unit's air compressor revealed that the air suction filter was completely choked. This reduced its energy efficiency. As advised, the unit is conducting regular maintenance on the suction filter. This investment of INR 4000 is saving INR 13,000 annually in electricity costs. The simple payback period is four months.

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.

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