MSME pharma unit invests 14 lakhs on energy efficiency measures, saves 12 lakhs annually!

Background

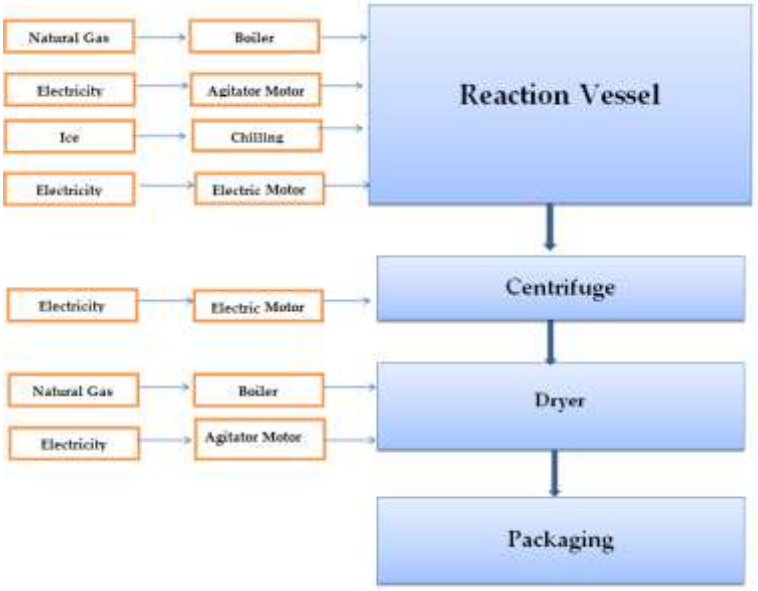
Ankleshwar is a chemical cluster in Gujarat. It has over 700 MSMEs manufacturing various kinds of chemicals (dyes and pigments—67%; pharma and pharma intermediates—27%; and pesticides and chlor-alkalis—6%). The production capacity of these units varies from 50 tonnes to over 10,000 tonnes per annum (tpa).

Unit profile

M/s **A2** is an MSME unit that manufactures intermediates of gabapentin, lamotrigine, tizadidine, paroxetine, bulk intermediates and pharmaceutical chemicals. The annual production is about 63 tonnes. The total annual energy bill of the unit was INR 83 lakhs, which was around 11% of total turnover. The total annual energy consumption was about 170 tonnes of oil equivalent (toe), of which natural gas (NG) accounted for 81% (137 toe), grid electricity 19% (33 toe).

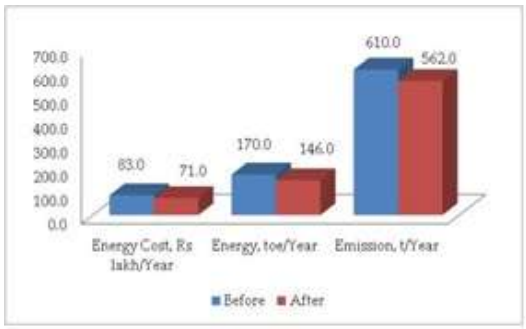
Process description

The pre-prepared batch materials are charged in a reaction vessel with suitable solvent, and made to react at a specific temperature. The batch is heated or cooled as required, using steam/hot oil for heating and ice/chilled water for cooling. The mixture is continuously stirred to ensure uniform heat transfer. After reaction, the output of the primary vessel is filtered, using filter press or centrifuge, and then dried using steam or direct fired hot air generators to give the final product.



The main energy consuming equipments were an NG-fired boiler of capacity 800 kg/hour steam, and electrical motors associated with process equipment such as reaction vessels and centrifuges.

Overall Impact: post- implementation



Overall Impact

14% reduction in total energy bill (i.e. annual savings of INR 12 lakhs) with a simple payback of 13 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

Replacement of existing non-IBR boiler with IBR boiler of larger capacity

Baseline Scenario

The unit was operating a non-IBR type NG-fired boiler with capacity of 800 kg/hour steam. Its efficiency was only about 70%. The low efficiency level was due to lack of waste heat recovery, use of incompatible locally-made burner, poor insulation, leakages in the main furnace shell, etc.

Recommendation

The unit was advised to replace the existing boiler with an energy efficient IBR boiler having steam generation capacity of 1000 kg/hour.

Implemented Scenario

Based on the project's recommendation, the unit replaced the existing boiler with an IBR boiler of capacity 1000 kg/hour steam, with a design efficiency of 88%. The higher capacity meets steam demands of the unit when process heating and drying are carried out together.

This investment of INR 13.5 lakhs is saving about 28,006 SCM of NG annually, equivalent to INR 12.0 lakhs. The simple payback period is 1.1 years.

Installation of power factor controller at main incomer to improve the billing power factor

Analysis of electricity bills showed that the power factor at main incomer varied in the range of 0.913–0.998, and the average power factor during the year was about 0.943. A power factor controller was installed at the main incomer to improve the overall power factor of the unit to about 0.99. This measure has helped the unit in avoiding penalties. This investment of INR 21,250 is bringing an annual saving of INR 17,012. The simple payback period is 1.2 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

For further information please contact:
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