

## MSME pharma unit invests 30 lakhs for improving energy efficiency—and saves 48 lakhs every year!

### Background

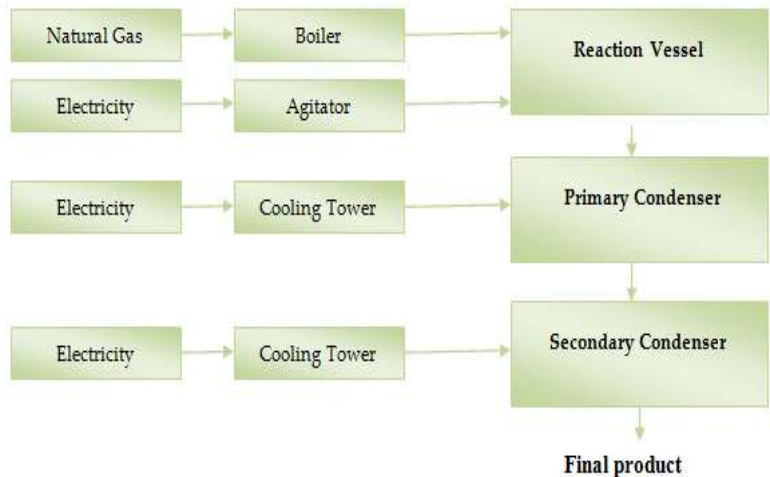
Ankleshwar is a chemical cluster in Gujarat. It has over 700 MSMEs manufacturing various kinds of chemicals (dyes and pigments—67%; pharma and pharma intermediates—27%; and pesticides and chlor-alkalis—6%). The production capacity of these units varies from 50 tonnes to over 10,000 tonnes per annum (tpa).

### Unit profile

M/s A9 is an MSME unit that manufactures pharma intermediates, producing about 840 tpa. The annual energy bill of the unit was INR 85 lakhs, which was around 9% of total turnover. The annual energy consumption was around 160 tonnes of oil equivalent (toe), of which natural gas (NG) accounted for 146 toe (91%) and grid electricity 14 toe (9%).

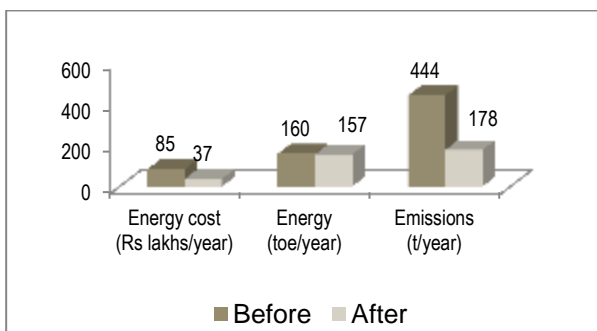
### Process description

The manufacturing process involves reaction of the raw materials at a particular temperature, which is maintained by utilization of steam from an NG-fired boiler, or chilled/ cold water. The vapours generated in the reaction are condensed using cold water to give the final product.



The major energy consuming equipments used were the NG-fired boiler and electrical motors associated with process equipment such as reaction vessels, pumps, etc.

### Overall Impact: post-implementation



#### Overall Impact

56% reduction in total energy bill (i.e. annual savings of INR 48 lakhs) with a simple payback of 8 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<sub>2</sub>. This project is being co-implemented by Small Industries Development Bank of India (SIDBI) and Bureau of Energy Efficiency (BEE).*

## INTERVENTIONS

### Replacement of existing inefficient NG-fired boiler with energy efficient solid fuel-fired IBR boiler

#### Baseline Scenario

The unit operated an NG fired, IBR boiler having capacity of 1000 kg/hour steam generation. The operational efficiency of the boiler was rather low, at 76.2% under normal plant operation.



#### Recommendation

The unit was advised to replace the existing NG-fired boiler with a white briquette-fired boiler of 1000 kg/hour steam generation capacity.

#### Implemented Scenario

Based on the project's recommendation, the unit replaced the NG-fired boiler with a white briquette-fired boiler of same capacity. The new system consumes about 35,000 kWh of electricity for auxiliaries like ID fan, but saves 168,000 SCM of NG annually.



This investment of INR 29.5 lakhs saves INR 47.8 lakhs each year. The simple payback period is 8 months.

#### Installation of thermostatic controller on cooling tower fan

The unit operated an induced draft cooling tower of capacity 400 TR with a fan of 5.5 kW capacity. As advised, the unit installed a thermostatic control to switch on the fan as per the prevailing cooling water outlet temperature. This investment of INR 31,250 is saving 3 555 kWh of electricity annually, equivalent to INR 23, 657. The simple payback period is 1.3 years.

#### Installation of fixed type capacitors for power factor correction

Analysis of electricity bills showed that the average power factor at main incomer was 0.774. As advised, the unit installed load end capacitor banks of capacity of 50 kVAR to improve the power factor. This investment of INR 21, 368 saves INR 10, 447 annually. The simple payback period is 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

**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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