

# MSME chemical unit invests 13 lakhs for improving energy efficiency—and saves 14 lakhs every year!

## Background

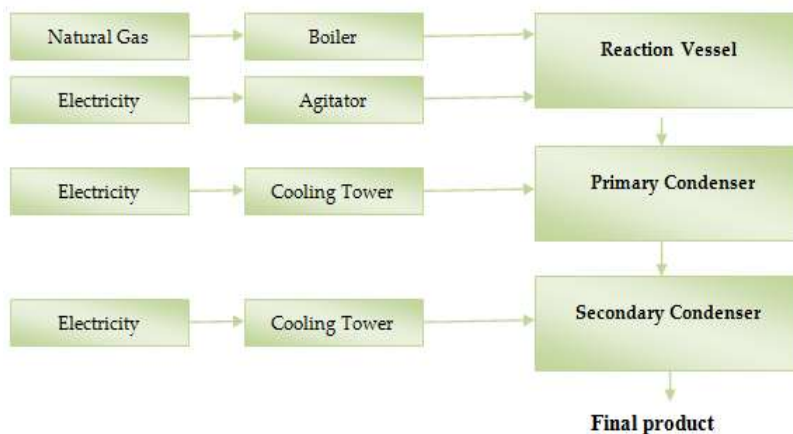
Ankleshwar is a chemical cluster in Gujarat. It has over 700 MSMEs manufacturing various kinds of chemicals (dyes and pigments—67%; pharma and pharma intermediates—27%; and pesticides and chlor-alkalis—6%). The production capacity of these units varies from 50 tonnes to over 10,000 tonnes per annum (tpa).

## Unit profile

M/s A10 is an MSME unit that manufactures industrial solvents and chemicals, producing about 317 tpa. The annual energy bill of the unit was INR 60 lakhs, which was around 21% of total turnover. The annual energy consumption was around 115 tonnes of oil equivalent (toe), of which natural gas (NG) accounted for 110 toe (96%) and grid electricity 5 toe (4%).

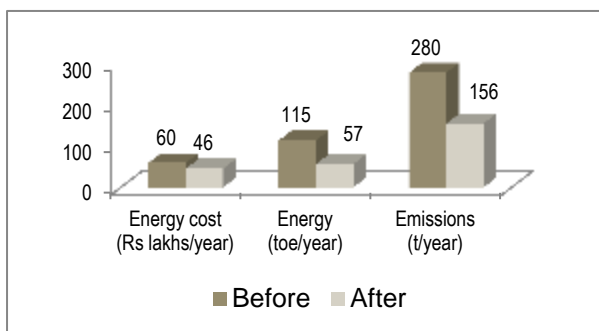
## Process description

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 from a cooling tower. 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**  
 24% reduction in total energy bill (i.e. annual savings of INR 14 lakhs) with a simple payback of 11 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 NG- fired boiler with solid fuel IBR boiler of larger capacity

#### Baseline Scenario

The unit was operating an NG-fired, non-IBR boiler having capacity of 600 kg/hour steam generation. Its efficiency was low (about 82%), and the specific steam generation cost was very high at Rs 3.7 per kg steam.



#### Recommendation

The unit was advised to replace the NG-fired boiler with a white coal/wood-fired boiler of 1 tonne/hour steam generation capacity.

#### Implemented Scenario

Based on the project's recommendation, the unit has replaced the existing NG-fired boiler with a white coal/wood-fired boiler of 1 tonne/hour capacity. The new system consumes about 35,808 kWh of electricity and 215 tonnes of biomass briquettes, but saves 67,788 SCM of NG annually.



This investment of INR 12.7 lakhs saves INR 14.3 lakhs annually. The simple payback period is 0.9 years.

### Replacement of inefficient lighting with energy efficient lighting

The unit was meeting its lighting requirements with a mixture of energy efficient lamps like LED lamps and CFLs, and inefficient lamps including ten 160-W mercury vapour lamps (MVLs) and a T-12 type fluorescent tube light (FTL). As advised, the unit has replaced its MVLs with 26-W LED lamps and the existing FTL with a T-5 type FTL. This investment of INR 0.89 lakh is saving 5,884 kWh of electricity annually, equivalent to INR 38,927. The simple payback period is 2.3 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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