

# MSME forging unit invests Rs 67 lakhs to improve energy efficiency — and saves Rs 42 lakhs every year!

## Background

Pune, in Maharashtra, is a forging industry cluster. Large-scale units account for about 65–70% of the cluster’s forging production, while MSMEs account for the remaining 30–35%. There are over 50 MSMEs producing forged components, with 20 heat treatment MSMEs functioning as their vendors. The production capacity of these units varies from 500 tonnes to over 3500 tonnes per annum (tpa).

## Unit profile

M/s P1 is an MSME unit that manufactures forged components like gears and spacers, producing about 930 tonnes annually. The total annual energy bill of the unit was INR 125 lakhs, which was around 7% of turnover. The annual energy consumption was about 222 tonnes of oil equivalent (toe), of which furnace oil (FO) accounted for 84% (186 toe), grid electricity 15% (33 toe), and diesel 1% (3 toe).

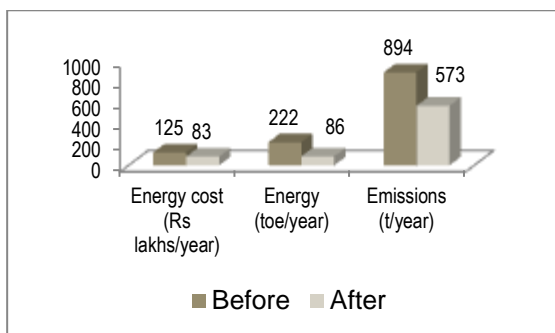
## Process description

The manufacturing process involves the cutting of steel rods in the form of billets. The billets are heated in the furnace, forged with hammers and presses, trimmed, and subjected to heat treatment to give the final products.

The main energy consuming equipments used were four FO-based forging furnaces, and electrical motors associated with utilities like air compressor and pumps.



## Overall Impact: post- implementation



**Overall Impact**

34% reduction in total energy bill (i.e. annual savings of INR 42 lakhs) with a simple payback of 1.6 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 CO<sub>2</sub>. This project is being co-implemented by Small Industries Development Bank of India (SIDBI) and Bureau of Energy Efficiency

## INTERVENTIONS

### Replacement of existing FO-fired forging furnace with induction billet heater

#### Baseline Scenario

The unit was operating an FO-fired box type forging furnace of capacity 400 kg per hour, associated with a 1.25- tonne hammer. Its efficiency was less than 10%.



#### Recommendation

The unit was advised to replace the existing FO-fired forging furnace with an induction billet heater of rating 200 kW (500 kg per hour capacity).

#### Implemented Scenario

As recommended, the unit replaced its existing FO-fired forging furnace with an energy efficient induction billet heater of rating 200 kW (500 kg per hour capacity). The new system consumes 419,400 kWh of electricity annually but saves nearly 138,000 litres of FO.



This investment of INR 67.1 lakhs is saving INR 42.1 lakhs annually. The simple payback period is 1.6 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](http://www.sidbi.in)

