

# MSME forging unit reduces energy bill by 63% through energy efficiency measures — and recovers cost in less than 8 months!

## 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 P2 is an MSME unit that manufactures forged components like brake levers, producing about 380 tonnes annually. The total annual energy bill of the unit was INR 55 lakhs, which was around 12% of turnover. The annual energy consumption was about 100 tonnes of oil equivalent (toe), of which furnace oil (FO) accounted for 92% (92 toe) and grid electricity 8% (8 toe).

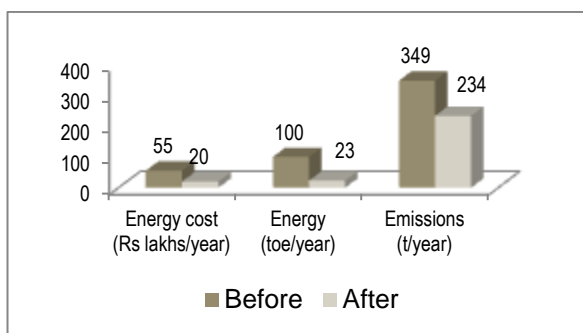
## Process description

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, subjected to heat treatment, trimming and grinding to give the final products.

The main energy consuming equipments used were an FO-fired forging furnace, and electrical motors associated with utilities like air compressor and pumps.



## Overall Impact: post- implementation



**Overall Impact**  
 63% reduction in total energy bill (i.e. annual savings of INR 35 lakhs) with a simple payback of just 0.6 year

*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 0.5 tonne hammer. Its efficiency was less than 6%.



#### Recommendation

The unit was advised to replace the existing FO-fired forging furnace with an induction billet heater of rating 45 kW (70 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 45 kW (70 kg per hour capacity). The new system consumes 172,500 kWh of electricity annually but saves nearly 93,000 litres of FO.



This investment of INR 22.2 lakhs is saving INR 35.1 lakhs annually. The simple payback period is 0.6 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.

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