

MSME forging unit invests Rs 0.5 lakh for improving energy efficiency – and recovers it in less than three 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 P6 is an MSME unit that manufactures forged auto components like levers, gears and flanges, producing about 858 tpa. The annual energy bill of the unit was INR 130 lakhs, which was around 11% of total turnover. The annual energy consumption was around 224 tonnes of oil equivalent (toe), of which furnace oil (FO) accounted for 85% (190 toe) and grid electricity 15% (34 toe).

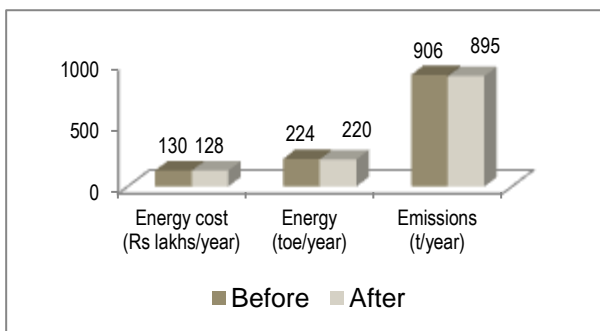
Process description

Steel rods are cut into billets, which are heated in an FO-fired furnace and forged with hammers and presses. The components are then subjected to various heat treatment processes like normalizing, hardening and annealing, and undergo shot blasting to give the final products.

The major energy consuming equipments used were four FO-fired forging and heat treatment (normalizing) furnaces, and electrical motors associated with process equipment such as air compressor, pumps, etc.



Overall Impact: post-implementation



Overall Impact
 2% reduction in total energy bill (i.e. annual savings of INR 2 lakhs) with a simple payback of 0.2 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 CO₂. This project is being co-implemented by Small Industries Development Bank of India (SIDBI) and Bureau of Energy Efficiency

INTERVENTIONS

Application of veneering module to 250 kg/hour heat treatment furnace

Baseline Scenario

The unit was operating a normalizing furnace of capacity 250 kg per batch. Because of poor insulation, the surface heat loss was high, at about 16,337 kCal/hour.



Recommendation

The unit was advised to apply veneering module inside the furnace to avoid surface heat losses.

Implemented

As recommended, the unit switched applied veneering modules inside its 250 kg/hour normalizing furnace. This measure improved the working atmosphere due to reduced heat losses and also saved residual heat stored during non-firing time.



This investment of INR 0.5 lakh is saving 3938 litres of FO annually, equivalent to INR 2 lakhs. The simple payback period is 0.2 year.

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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