

Foundry in Rajkot saves over 9 lakh rupees annually, through performance optimization of its melting furnace at zero cost

Tags

Type: Unit case study

Sub-sector : Foundry

Location : Rajkot

Partners : SDC, TERI, Rajkot Engineering Association (REA)

Year : 2015

Background

Rajkot, in Gujarat, is one of the largest engineering MSME clusters in the country comprising a range of energy-intensive sub-sectors such as aluminium, bearings, foundry, forging, investment casting, kitchenware, machine tool, pump sets, and plastics. There are close to 700 foundry units in the Rajkot cluster. Most of the units manufacture ferrous (iron) castings, mainly spheroidal graphite (SG) iron, cast iron (CI) and steel. The annual production of the cluster is estimated to be 460,000 tonnes. The foundry units cater to diverse engineering sectors such as agricultural machines, air compressors, automotive components, electric motors, electrical transmission, machine tools, pump sets, and others.

Intervention

Under the TERI–SDC Partnership project (2015–17), TERI shortlisted about 110 foundry units in Rajkot for detailed energy audits (DEAs), in consultation with the cluster-level associations. These selected units varied widely in terms of production levels, castings produced, and moulding processes. DEAs were conducted in each of the identified foundries, and a comprehensive DEA report prepared for each unit, listing technoeconomically feasible energy conservation measures (ECMs). Details such as specifications of the EE equipment/machinery, along with vendor quotations, estimates of the energy and cost savings, investment requirements and payback period were worked out for most of the ECMs involving retrofits or revamps of the existing technology.

RF11 is one such unit, manufacturing CI castings. The total production during 2015 was about 5332 tonnes; the total energy consumption was 374.6 tonnes of oil equivalent (toe).

Investments, energy savings and other benefits

Unit RF11 adopted the ECM recommended by the study for its melting furnace. The benefits are summarized below.

ECM: Performance optimization of Electrotherm melting furnace of rating 450 kW (changing the former size to actual designed specifications)

Investment: Nil

Energy savings: 133,953 kWh annually

Monetary savings: 9.1 lakhs annually

Simple payback period: Immediate



L-Melting furnace; R – existing former and optimally sized former