By optimizing compressed air generation pressure at zero cost, Rajkot foundry saves 32,000 rupees annually

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 techno-economically 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.

RF17 is one such unit, manufacturing steel castings. The total production during 2015 was about 683 tonnes; the total energy consumption was 64.8 tonnes of oil equivalent (toe).

Investments, energy savings and other benefits

Unit RF17 adopted the ECM recommended by the study for its compressed air system. The benefits are summarized below.

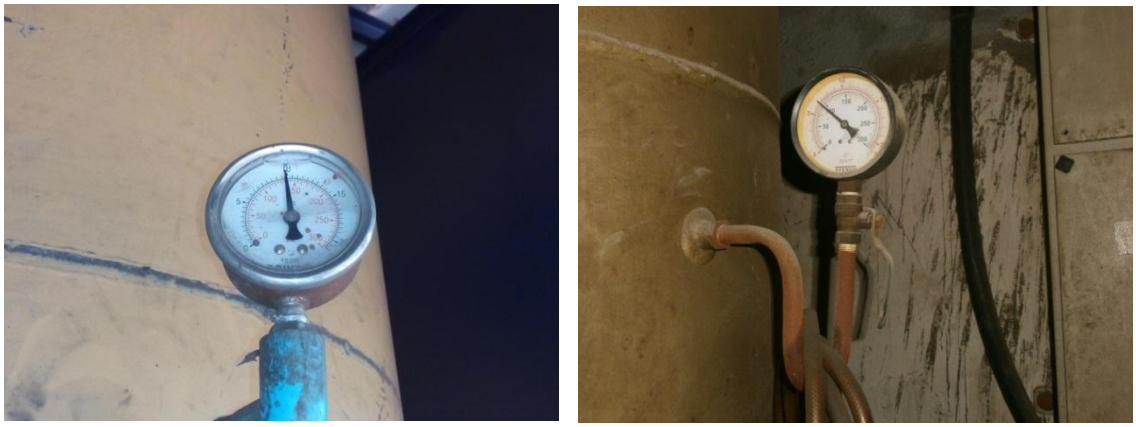
ECM: Optimization of compressed air generation pressure for air compressor with modification of air piping

Investment: Nil

Energy savings: 4379 kWh annually

Monetary savings: Rs 0.32 lakhs annually

Simple payback period: Immediate



Pressure setting (L) before – 7.8 bar (R) after – 6.5 bar