

# A foundry unit in Rajkot revamps its compressed air system, slashes energy consumption by 60%

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## Tags

**Type:** Unit case study

**Sub-sector :** Foundry

**Location :** Rajkot

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

**Year :** 2016

## 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.

**RF42** is one such unit, manufacturing steel castings. The total production during 2016 was about 645 tonnes; the total energy consumption was 308.8 tonnes of oil equivalent (toe). Electricity and natural gas are the main sources of energy.

## Investments, energy savings and other benefits

Unit RF42 adopted the ECM recommended by the study for its air compressor systems. The benefits are summarized below.

**ECM:** Replacement of existing screw air compressor with new EE screw air compressor with VFD and Permanent Magnet Synchronous (PMSN) motor

**Investment:** Rs 3.5 lakhs

**Energy savings:** 38,965 kWh annually (reduced from 648 kWh to 255 kWh daily)

**Monetary savings:** Rs 2.5 lakhs annually

**Simple payback period:** 1.4 years



Before



After