

# By relining its shell baking furnace, Rajkot investment castings unit saves over 50,000 rupees annually

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## 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.

**RF12** is one such investment castings unit, manufacturing steel castings. The total production during 2015 was about 67 tonnes; the total energy consumption was 54.6 tonnes of oil equivalent (toe).

## Investments, energy savings and other benefits

Unit RF12 adopted the ECM recommended by the study for its shell baking furnace. The benefits are summarized below.

**ECM:** Relining of existing shell baking furnace to reduce the surface heat losses

**Investment:** Rs 0.75 lakhs

**Energy savings:** 605 kg of LPG annually

**Monetary savings:** Rs 0.56 lakhs annually

**Simple payback period:** 1.4 years



Before



After