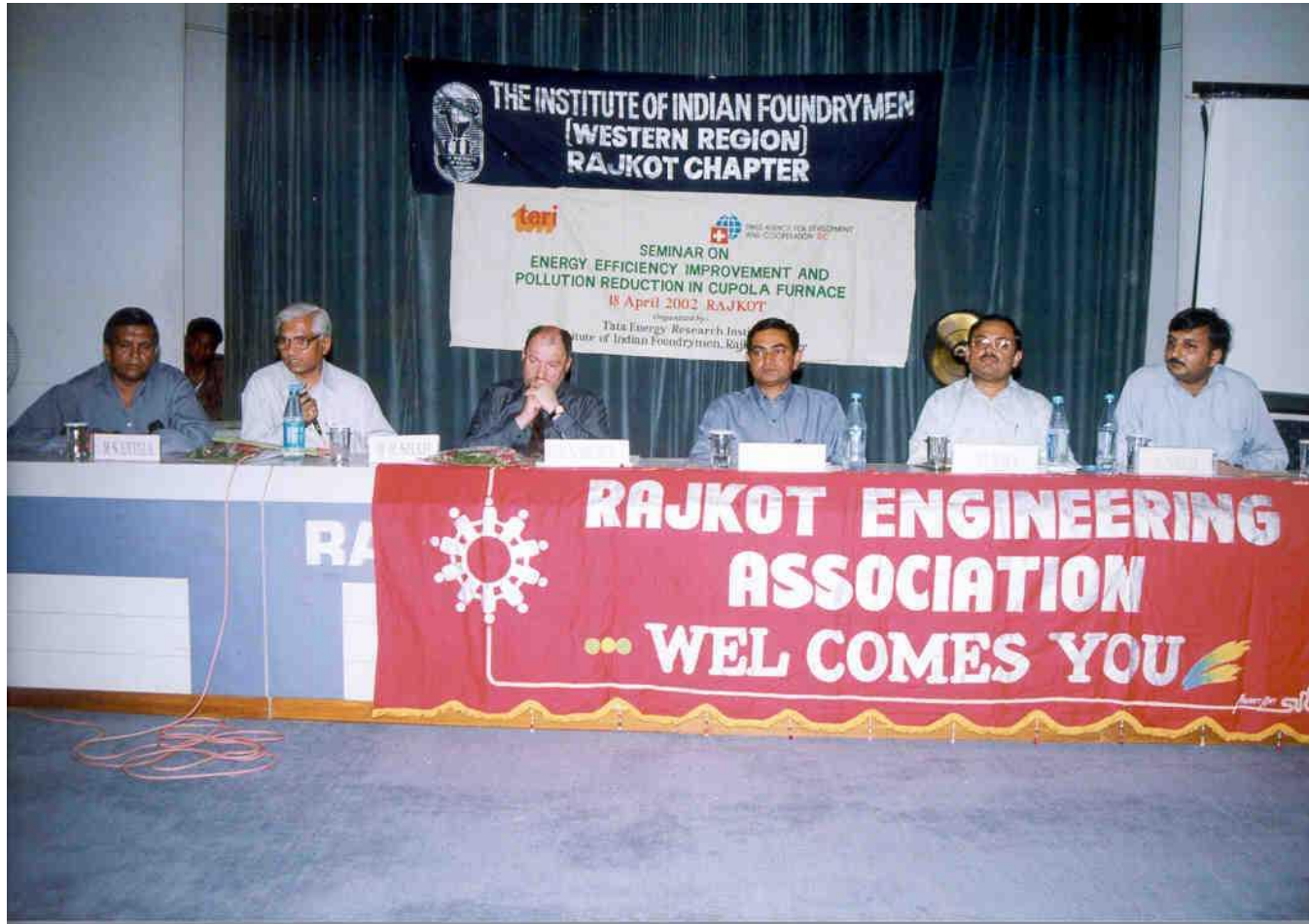


Accelerating switch to cleaner fuels (RE & Electrification) in industrial processes

**SAMEEEKSHA meeting
Rajkot, 14th Sept 2019**

Past activities of TERI in Rajkot – foundry, investment casting and pump industries

Awareness workshop on foundries - April 2002



Technology (DBC) demonstrations at Shining and other foundries in Rajkot



Detailed energy audits & implementation support to foundries

- ❑ Detailed energy audits & implementation support to 100 foundries
- ❑ Energy saving recommended: 2,464 toe (28,650 MWh of electricity)
- ❑ Energy savings achieved: 1,409 toe (CO₂ 12,700 tons)



Replacing reciprocating air compressor (L) with VFD-based screw air compressor (R)

Gas Heat Pump demonstration for Investment casting industries (Jagdish & Delta Technocast)



Engagement with pump industry

- ❑ Promotion of BEE star labelling
- ❑ Conceptualization of RETRC – Rajkot Engineering Testing & Research Centre



Feasibility studies on electrification

Background

- ❑ Climate change is a global challenge. Combustion of fossil fuels is major source of greenhouse gas (GHG) emissions
- ❑ India committed to reduce GHG emissions per unit of GDP by 33-35% by 2030 from 2005 levels
- ❑ CO₂ emissions can be reduced by:
 - Using renewable energy (RE) for electricity generation
 - Energy efficiency (EE)
 - Electrification of fossil based processes

Feasibility studies of selected industrial applications in different MSME sectors were undertaken by TERI with support from Shakti Sustainable Energy Foundation

Feasibility studies conducted

Sr. No.	Industry sector	Applications
1	Foundry industry	<ul style="list-style-type: none">• Melting furnace• Drives for fans• Core drying
2	Forging industry	Billet heating
3	Wire drawing/Galvanising industry	Lead bath
4	Magnesia carbide refractory industry	Oven
5	Brick industry	Drive for fans
6	Chemical/food industry	Boilers
7	General industry	Chiller
8	General industry	Fork-lift truck

Cupola to Induction furnace (foundry)

Disadvantage of cupola

- Poor temperature control
- Pollution
- Manpower intensive
- Difficulty to control

Barrier in switch to induction

- Higher initial investment towards electrification and auxiliaries
- High electricity tariffs



FO fired furnace to electric furnace (forging)

Disadvantage of FO furnace

- Heat /temperature loss
- Pollution
- High scale loss

Barriers in switch to induction

- Higher initial investment
- High electricity tariffs



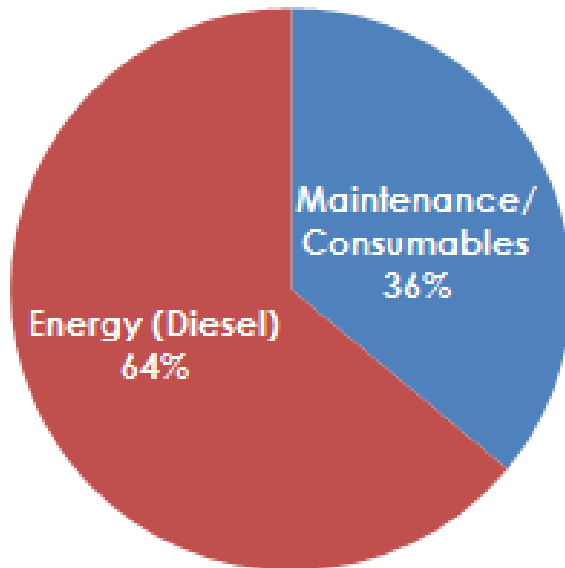
Diesel forklift to electric forklift (material handling)

Disadvantage of diesel forklift

- High operating cost
- High maintenance cost
- Pollution
- Limited life

Barriers in switch to electric FLTs

- Higher initial investment
- Low awareness



Way forward

- ❑ Conduct feasibility studies in other fossil fuel industrial applications
- ❑ Provide implementation support to MSMEs where feasibility studies were conducted
- ❑ Promote awareness among stakeholders

Thank you