How to calculate energy efficiency potentials and other benefits in SME subsectors. The case of foundry and steel rolling SMEs in India

Energy efficiency in SMEs
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Barriers and Motivation in Promoting Energy Efficiency

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<th>Barriers</th>
<th>Drivers</th>
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<td>Conflict of investment priorities</td>
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<td>Lack of benchmarking and potential assessment</td>
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<td>Absence of off-the-shelf technologies</td>
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<td>Regulatory pressures/Judicial intervention</td>
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<td>Proliferation of Profit hunters</td>
<td>Improved workplace environment</td>
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Energy Efficiency - Direct & Co-benefits

Energy efficient technologies

- Energy and material savings
  - Increased profitability and growth
    - Welfare of the workforce
- Improved product quality
  - Access to better markets
    - Overcome business threats
- Improved workplace environment
  - Safety in workplace
    - Reduced negative health impacts
- Better environmental conformance
  - Sustenance of the industry
    - Stable employment

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## Sector overview

### Steel Re-Rolling Sector
- Approximately 2600 units of which 1167 are registered
- Main fuel source: Pulverised coal
- Outmoded design of reheating furnaces
- Mostly located in clusters
- Significant scope for energy efficiency improvement
- Significant scope for reduction in scale/oxidation losses

### Foundry Sector
- Around 4500 units
- Main Fuel source: Coke
- Located in clusters
- Existing furnace design - Conventional Cupola
- High energy and material savings potential
- Environmental Compliance is marginal
CO2 Mitigation Potential Calculation in Steel re-rolling Mills

- Capacity of the unit: 4 tpd
- Average daily production: 40t
- Specific coal consumption (old): 110kg/t of product
- Specific coal consumption (new): 80kg/t of product
- Reduction of oxidation losses: 3%
- CO2 saving/t of product (on coal savings): 0.060t
- CO2 saving/t of product (on material saving): 0.081t
- Total CO2 savings per tonne of product: 0.141t

80% rolling mills are small (2 to 10 tph)
20% are medium to large (11 to 30 tph)
Present production capacity: 24.5 MMT
Growth rate 8.5% per annum
CO2 Mitigation Potential Calculation in Cast Iron Foundry

- Annual production: 4000t
- Specific coke consumption (old): 136kg/t
- Specific coke consumption (new): 80kg/t
- Reduction of melting losses: 5%
- Coal savings per t of product: 56 kg
- CO2 savings/t of product (coal savings): 0.101t
- CO2 savings/t of product (material Savings): 0.135t
- Total CO2 savings on account of improved furnace: 0.236t/t

Present production capacity: 9.5 MMT
Assumed to be 100% from cupola furnace
Changeover from Conventional to Divided Blast
Thank You