

# **ENERGY CONSERVATION OPPORTUNITIES IN RE- ROLLING MILL UNITS**

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# Fuel Options in Furnace



1. Coal, pulverized coal
2. F.O., Naptha, Pitch
3. Colloidal mix (Oil + Coal powder)
4. Producer gas, Natural gas, Coke Oven/
5. Combustion with enrich oxygen
6. Emulsified fuels (proprietary)

# Energy Saving Opportunities



- Mill Side
- Furnace
- Process Optimization

# Mill Side Opportunity



- Reduce idle running
- Antifriction roller bearing
- Energy efficient drives
- Computerize roll pass design
- Reactive power compensation
- Use of housing less stand
- Use of VFD, VSD, AC drives, Micro drives
- Thyristerization of drives (reduce idle condition current)

# Re-heating Furnace Opportunity

## A. Medium End Technology

- Highly efficient recuperator with furnace design
- Shifting from furnace oil based to coal/briquette based producer gas
- Technology for use of pulverized coal as a fuel (low quality coal, if available)

# Re-heating Furnace Opportunity

## B. High End Technology

- Regenerative burner system
- Hot charge of continuous cast bullet
- Top & bottom firing reheating furnace
- Oxy fuel combustion system (Oxyrich)
- Walking beam/hearth furnace

# Specific Energy Consumption

- Present consumption of FO is 40-45 lit/ton; which can be improved to less than 35 lit/ton
- Present consumption of coal is 100-120 Kg/ton; which can be improved to less than 80 Kg/ton
- Present consumption of Power is 90-100 KW/ton; which can be reduced to 65-70 KW/ton
- Other options available are Fuel mix, Gasification, Biomass, etc.

# Furnace



- Direct Hot Rolling option from continuous casting:
- Waste Heat Recovery
  1. Recuperator
  2. Regenerator
- Improved insulation
- Improved radiation within furnace
- Use of ceramic coating/fiber