



**GO GREEN**

**Clean & Green  
is profitable**



# **Sustainable Manufacturing through Resource Innovation at Shree Cement Ltd.**

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**Chief Climate & Sustainability Officer**



# About Shree Cement

## A Snap Shot



- **Among the top five cement groups in India.**
- **Largest cement player of North India.**
- **Operations at six locations (Beawar Ras khuskhkhera, Roorkee, Jobner and Suratgarh) in North India.**
- **Selected by World Economic Forum as a New World Sustainability Champion (one of three Indian companies short-listed from 11 million companies / projects around the world)**

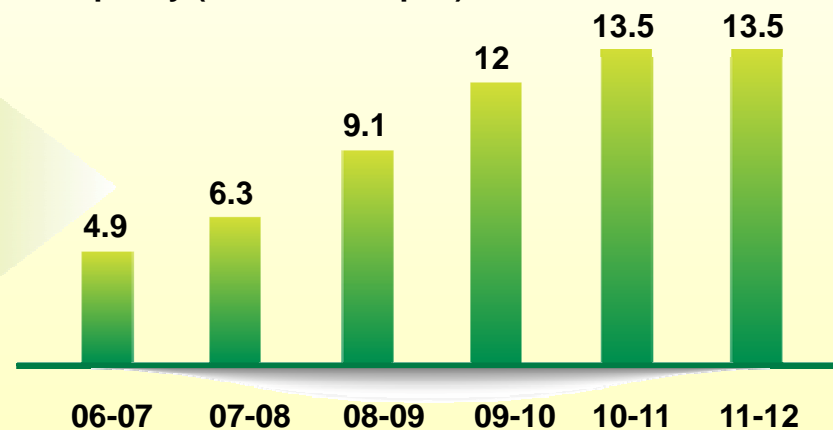


# About Shree Cement

## Shree- A Rapidly Growing Company

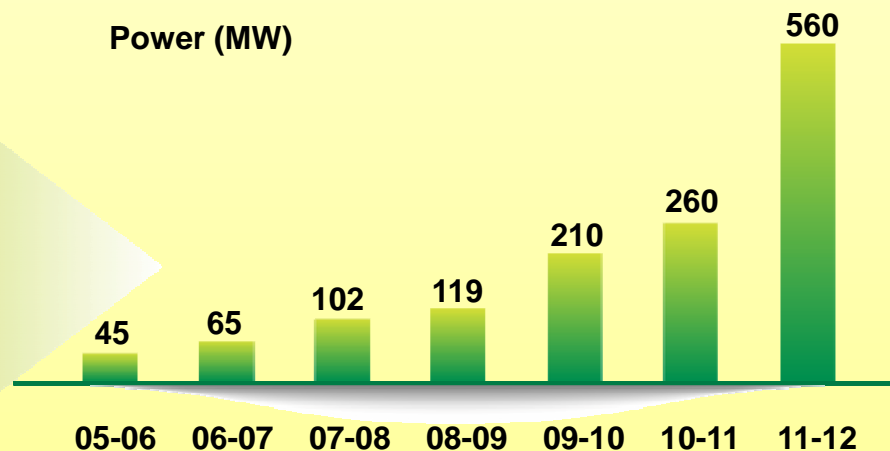
**Cement capacity  
trebled in five  
years**

Capacity (Million Tons p.a.)



**Power capacity  
growing rapidly**

Power (MW)





# Path towards Sustainability

**Shree Cement fosters Creativity & Innovation leading to newer products, processes & ways of doing things that :**

- **Use less natural resources**
- **Create less pollution**
- **Use internal and external wastes**
- **Energy efficiency**
- **CO<sub>2</sub> Disclosure**





# Path towards Sustainability

Zero Disposal on Land

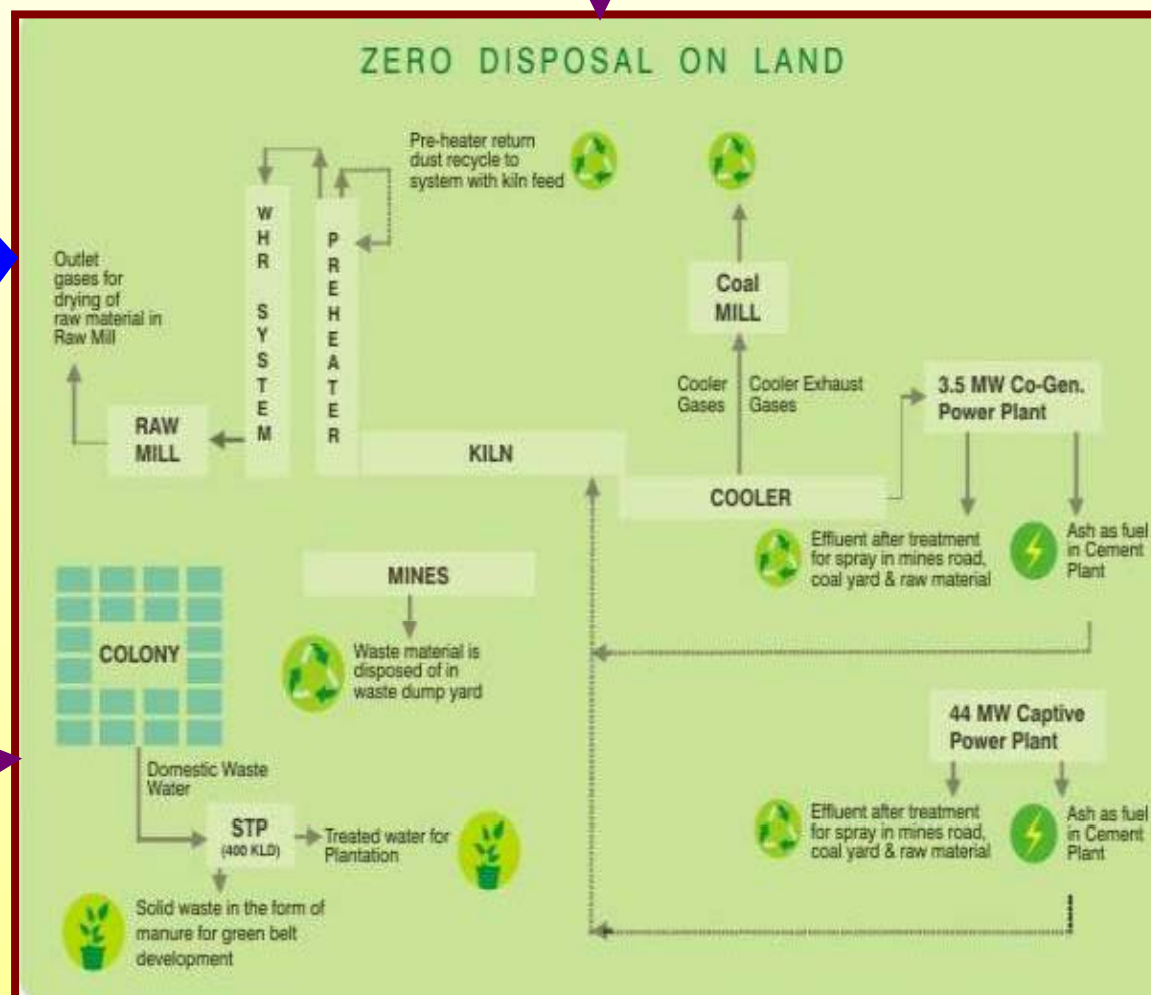
Flyash

More Waste

More Waste

Petcoke

Slag





## Use less natural resources

- **Pioneering use of petcoke as a replacement of Fossil Fuel.**
- **Developed Synthetic Gypsum a unique R&D Effort which is First in India.**
- **Utilization of about 8 lac tons of lead zinc slag a waste of smelter.**
- **Use of fly ash in cement makes a value added product thereby conserving limestone & fuels.**
- **Continual use of alternate fuels leads conservation of fossil fuels.**
- **Installed Air Cooled Condensers in all the Power Plants for water conservation.**







**Create less pollution**

## *Scenario without Waste Heat Recovery System*

- **Cement production requires thermal energy**
- **Fuel burnt to attain temperature of 1450<sup>0</sup>C.**
- **Only 55 % of heat generated is used**
- **Balance heat emitted from two sources :**
  - **Pre-Heater (PH) gases with temperature of 300-350<sup>0</sup>C**
  - **Air Quenched Cooler (AQC) with 250 – 300<sup>0</sup>C**





## Create less pollution

### *Scenario with Waste Heat Recovery System*

- Use of waste heat (from PH & AQC) for producing steam for converting into power.
- Range of potential for generating power :
  - 30kWh/t of clinker for 5/6 stage pre heater
  - 34 kWh/t of clinker for 4 stage pre heater~ 40% of power required by cement plant
- Power generation capacity depends upon:
  - Capacity of kiln
  - Number of preheater cyclone
  - Process mastery: heat consumption, temperature and flow rates of waste gas from PH/AQC



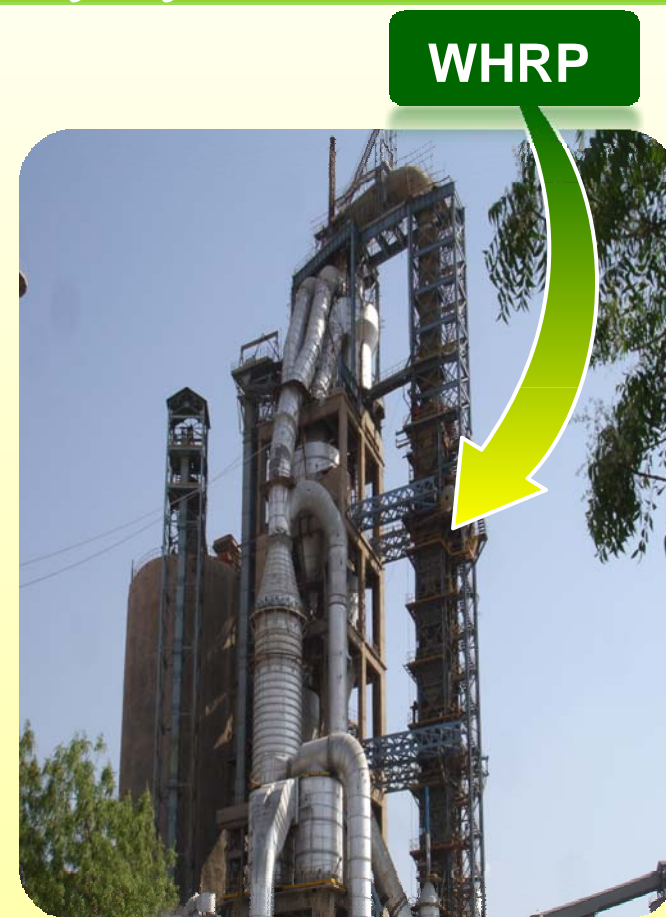




Create less pollution

## *Benefits of Waste Heat Recovery System*

- **Conserves Fossil Fuels-** Uses waste gases from industrial process
- **Saves Water-** Avoids water needed for cooling gases
- **Avoids Emission of Green House Gases (GHG)** – In absence of WHRP, Thermal Power is generated which emits GHG
- **Reduces Global Warming-** Temperature of exit gases reduced
- **Controls Fugitive Emissions-** Particulate Matter reduced





## Create less pollution

### *Cleaning the air*

- **First in Indian Cement Industry to install Limestone Slurry based Desulphurization plant**
- **Project reduced the sulphur concentration of flue gases of power plant**
- **Project generates gypsum which is further used in cement plants**

#### **Flue Gas Desulfurization Unit**





## Energy efficiency

- **Increase the stack height of Cooler ESP**
- **Installation of 3<sup>rd</sup> Cyclone in parallel to the existing twin cyclone at the top stage (1st Stage) preheater**
- **Installation of Turbo Blower for Jet Air application**
- **Power saving by stopping idle running, optimized Start – Stop**
- **Replacement of old less efficient motor by high efficient motors**
- **Installation of SPRS & VFD in Fans**



# CO<sub>2</sub> Disclosure

- **First Indian Cement Company issuing 8<sup>th</sup> consecutive Corporate Sustainability Report.**
- **Disclose CO<sub>2</sub> emissions in the Annual Report .**
- **Reporting through Carbon Disclosure Project**
- **Reporting to Cement Sustainability Initiative**





# Sustainability at Shree Cement

## Resource Optimization

### Alternatives

### Percentage

46 MW Green Power Plant (WHR based)

35 % of total power used

Fly ash

30 – 32 % replacement of clinker

Petcoke

100 % replacement of coal

Slag from Smelter

2.4 % of Raw Material

Designed a pilot synthetic gypsum plant where gypsum is being prepared from a fine powder of limestone and sulphuric acid.

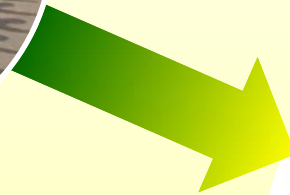




# Thanks !



**You Green**



**Company Green**



**Globe Green**

[www.shreecementltd.com](http://www.shreecementltd.com)