

“Quality is the only way to maintain past, present and get new customers.”

## Energy Conservation Tips on Cement Industry

### **Fuel:**

- Due to frequent variations in the quality of coal, inadequate supplies and transportation bottlenecks go for substitute fuels like, lignite, rice-husk, petroleum coke etc.
- Use alternate fuels such as natural gas and pet coke.
- Use industrial and agricultural combustible wastes as supplementary fuel.

### **Power Supply:**

- For uninterrupted power supply have your own captive power plant.

### **Operational Measures:**

- Use improved insulating bricks/blocks in kiln and preheaters.
- Rationalise compressed air utilization.
- Use energy efficient equipment
  - High efficiency fans
  - Improved Ball Mill internals
- Carry out Heat and gas balance
- Recover waste heat of preheater and use for cogeneration of power.
- Increase utilization of waste products generated by other industries(substitution like use of fly ash and petroleum coke, the by products of thermal power and refinery industry respectively)
- Install fly ash handling & feeding system.
- Reduce energy consumption in manufacturing at each stage & monitor energy performance of the plant.
- Prevent idle running of equipment by providing interlocking arrangement and operating with PLC system. Generate daily report on idle running of equipment, also in terms of monetary losses.
- Eliminate ingress of false air into the kiln, cooler, coal mill, cement mill and raw mill circuits by plugging leaks.
- Optimise raw mix
- Use low ash coal
- Adopt preventive maintenance approach
- Repair steam leaks

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- Reinforce heat insulation
- Establish efficient management information system for identifying various important parameters for efficient operation of the equipment and taking timely remedial measures.
- Regularly monitor and calibrate flow meters.
- Minimise waste by installing efficient dust collector equipment.
- Modify the equipment to recover heat from the preheater and cooler in the process of cement making and effective use of industrial waste.
- Use exhaust gas from kiln to dry raw material and coal etc.
- Carry out energy audits.
- Before improving a process, activities of good housekeeping and equipment improvement should be applied to promote energy conservation.
- Avoid extra fine grinding of product to prevent wastage of power since it does not enhance long term strength.

#### **Air Compressor:**

- Reduce compressed air pressure from 8 Kg/Cm<sup>2</sup> to 7.0 Kg/Cm<sup>2</sup> where ever possible to conserve energy, when required pressure at usage point is 6.0 Kg/Cm<sup>2</sup>
- Stop use of compressed air for floor cleaning.
- Check for compressed air leakage and arrest it.
- Switch off one compressor if requirement can be met by balance operating compressors.

#### **DG Sets Operation and Maintenance**

- Improve SFC of the DG sets
- DG sets flue gas temperature is more than 4500C install waste heat recovery boilers on DG sets to generate additional power & pre heat fuel oil
- Improve specific electricity generation by loading in excess of 60% and upto 80%

#### **Motors:**

- Replace underloaded / overloaded motors with proper size motors. Replace the motors with energy efficiency motors.
- Prevent idle operation of the motors

#### **Transformer**

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- If possible switch off one transformer running under loaded in parallel. Maintain all transformers at a loading of 70 to 80 % of rated capacity to minimize loss component (no load losses).
- Try to have separate transformer for lighting where voltage can be kept low.

**Power Factor :**

- Improve power factor by regular checking of current of all the capacitors and their timely replacement.
- Install Automatic power factor correction device to have power factor of 0.99 to 1.00

**Lighting :**

- Replace 40W Tube light by slim 28W Tube light and electromagnetic choke with electronic choke.
- Replace 400 Watt Mercury Vapour lamps with 250 Watt sodium vapour lamps or 250 W metal halide lamps.
- Replace 250 Watt Mercury Vapour lamps with 150 Watt sodium vapour lamps or 150 W metal halide lamps.
- Provide more transparent sheet instead of asbestos sheets to use natural light.
- Install energy saver for reducing the lighting load.
- Prevent unnecessary lighting of the electric lamps.
- Rationalize lighting in identified areas i.e remove excess lighting in identified areas. Also relocate lighting, if necessary.

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