JK WHITE CEMENT WORKS
BEST PRACTICES - ENERGY EFFICIENCY
It is felt necessary to adopt system approach – to lead the changes
Our journey towards international management systems started in 1993. Our proactive approach & commitment towards adoption of management systems has a never ending journey towards continual improvement of system w.r.t Quality, Energy, Environment, Health and Safety & Social accountability.

MANAGEMENT SYSTEMS - JOURNEY - JK WHITE
Final product quality initiates from the beginning of the process.
For consistence and reliable plant operation, the quality of input and in-process material is very important—this leads to less process deviation, low rejects, and energy-efficient plant operation.

**Raw material proportioning control through QC X-Ray Analyser—With XRF and XRD Features**
Operational Consistency

Reduce the stress on the operator – energy efficient operation
Use of efficient operating and automation systems – operator to act only when deviation is sudden and beyond systems control range

► FUZZY LOGIC for stable Kiln operation.
► PID loops
► Separation of inputs for operation, input for process safety and inputs for equipment safety
► Different automation treatment to reduce stress on the operator
Monitoring and Measurement

The principle of “measure to improve”

Energy measurement system incorporated both for thermal and electrical energy

Key features of state of the art

MONITORING AND MEASUREMENT system -

- Instantaneous reading
- Load sharing
- Section wise meters shows measurement errors
- Power management and Reporting
- Maximum Demand control
- Power factor management - Operating nearly one
- Power source management
- THD measurement and control
- Section wise energy losses (T&D)
- Daily Power Quality reports
- Shift wise Specific Power Consumption
Energy Audits
Concept started in the year 1991-92
During these years energy audits were conducted by various prestigious organization

Injecting the experience and innovation
Energy audit at regular interval involving different Auditing Agencies

Regular External Energy Audit
Equipment health / Maintenance management

Concept of Annual maintenance System

Reduction of down time, improved availability, Low energy waste due to less numbers of start/stop (Ex. Air Slide)

- Critical Equipment Health Audit by OEM
- Documented system
- Standard maintenance procedure
- Machine history
- Use of predictive maintenance tools
- Machine Condition Monitoring
JK White Cement is a committed organization to reduce energy consumption since its inception. The same is reflected in Our Policy statement.

ENERGY POLICY

We, at JK White Cement Works, Gotan are committed to demonstrate continual improvement in our Energy performance.

To achieve this, we commit ourselves for the following-

- Measure, Monitor, Control and analyse energy consumption and take appropriate action to reduce the energy consumption.
- Comply with the applicable legal and other requirements related to energy use, energy consumption & energy efficiency.
- Support the energy efficient products, services and design for energy performance improvement.
- Continual improvement in energy performance through setting and reviewing energy objectives and targets.
- The resources required for the implementation of this policy are made available on priority by Unit head.
- Ensure that policy is made available to all employees and interested parties.
- Ensure that Policy is regularly reviewed and updated as necessary.

Y.P.SINGHANIA
Managing Director
Steam recovery

Original kiln outlet system

Low steam recovery

Secondary air

Burner

Steam extraction

Water injection
Steam recovery

New kiln outlet system
Diaphragm system

Steam extraction
Secondary air
Burner
Water injection
Diaphragm

High steam recovery
Optimizing motor control system by installing or upgrading to VFDs to reduce energy consumption. Accordingly VFD installed at selected equipments where we found process variations.

<table>
<thead>
<tr>
<th>S.NO.</th>
<th>PLANT</th>
<th>NO. OF VFD’S</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>JK WHITE CEMENT WORKS</td>
<td>82</td>
</tr>
<tr>
<td>2</td>
<td>THERMAL POWER PLANT</td>
<td>16</td>
</tr>
</tbody>
</table>
LIGHTING SYSTEM

- Use of lighting Design software for Optimised used of Lumen
- Optimisation of lighting load through proper engineering
- Street lighting – day & night lighting circuit separation
- Continuously switching over to energy efficient lighting systems
- CFL and LED Lighting system for Factory Lighting
- Light the need concept followed
Process Machinery

- V-STAGE PRE-HEATER
- MULTI CHANNEL BURNER
- PRE-CRUSHING
- SINGLE CHAMBER RAW MILL / VRM
- HIGH EFFICIENCY IIIrd GENERATION AIR-SEPARATORS
- MECHANICAL TRANSPORTATION

Upgrade is key to survival
Efficiency is key to survival
Process Machinery

- HIGH EFFICIENCY FANS
- HIGH EFFICIENCY MOTORS
- LOW PRESSURE DROP BAG FILTERS
- TOTAL COATING SOLUTION
- NO FLOW CONTROL DAMPERS
- HIGH EFFICIENCY AIR PRE HEATER

Upgrade is key to survival
Efficiency is key to survival
Technology Adoption

Process Improvement

Upgrade is key to survival
Efficiency is key to survival

- PRE-CRUSHING
- GRINDING OPTIMIZATION-RESIDUE
- CLINKER COOLING – STEAM EXTRACTION
- TOTAL COATING SOLUTION
- MINERALIZER
- PET COKE FIRING – SOLUBLE SULFATE
**Innovation is the way of life at JK White Cement works. We are committed to reduce the energy consumption by adopting technological advancements, team efforts & Process modifications.**

<table>
<thead>
<tr>
<th>S.NO.</th>
<th>IMPROVEMENT INITIATIVE</th>
<th>ANNUAL SAVINGS (KWH)</th>
<th>GHG Reduction (tCO2e)</th>
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<tbody>
<tr>
<td><strong>2011-12</strong></td>
<td></td>
<td></td>
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<tr>
<td>1</td>
<td>VFD installation for PC mill Baghouse Fan</td>
<td>37280</td>
<td>34</td>
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<td>2</td>
<td>Replacement of CFL lighting by LED in Street Lighting</td>
<td>6174.88</td>
<td>6</td>
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<tr>
<td><strong>TOTAL (KWH)</strong></td>
<td></td>
<td>43454.88</td>
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<tr>
<td><strong>2012-13</strong></td>
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<tr>
<td>1</td>
<td>Replacement of SG Fan with High Efficiency Fan and DC Motor with High efficiency AC Motor</td>
<td>658672</td>
<td>606</td>
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<tr>
<td>2</td>
<td>Replacement of CFL lighting by LED in Factory Lighting</td>
<td>4288.11</td>
<td>4</td>
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<tr>
<td>3</td>
<td>Reduction in power consumption of External cooling fans of kiln Main Motors due to replacement of DC main motors with AC main Motors</td>
<td>16297</td>
<td>15</td>
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<tr>
<td><strong>TOTAL (KWH)</strong></td>
<td></td>
<td>679257.11</td>
<td>625</td>
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Innovation is the way of life at JK White Cement works. We are committed to reduce the energy consumption by adopting technological advancements, team efforts & Process modifications.

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</thead>
<tbody>
<tr>
<td>1</td>
<td>VFD installation at Thermal Power Plant FD FAN</td>
<td>51960</td>
<td>48</td>
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<tr>
<td>2</td>
<td>VFD installation at Thermal Power Plant Boiler Feed Pump</td>
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<td>56</td>
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<tr>
<td>3</td>
<td>RAW MILL-2 Process (Circuit) Modification</td>
<td>98865</td>
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<td>4</td>
<td>New ESP- Pulse Optimization</td>
<td>58118</td>
<td>53</td>
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<td>5</td>
<td>Solar Power Panels for Office Lighting</td>
<td>25828</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL ENERGY SAVINGS (KWH) &amp; REDUCTION IN GHG (tCO2e)</strong></td>
<td><strong>295273</strong></td>
<td><strong>272</strong></td>
</tr>
</tbody>
</table>
Energy saved through Energy Saving Initiatives (kWh)

Achievements

Energy saved through Energy Saving Initiatives (kWh)
GHG REDUCTION THROUGH ENERGY SAVING INITIATIVES (tCO2e)

YEAR

GHG REDUCTION IN tCO2e

Achievements

2011-12

2012-13

2013-14
ENERGY CONSERVATION

Energy Conservation at each stage of manufacturing resulted us in segment leader

WHITE CEMENT ELECTRICAL ENERGY - U/TON OF CEMENT
ENERGY CONSERVATION

Being the segment leader for lowest energy consumption, we understand the responsibility.
COMMITTED TOWARDS IMPROVEMENTS IN EVERY SEGMENT

For further information ---
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