Fly ash utilization in Prism Cement Limited
Content

- Prism Cement at Glance
- Cement Process Overview
- What is Fly ash & how it’s Benefit for Cement
- How to evaluate Fly ash for Cement
- Option of Fly Ash Integration
- PPC Cement Impact on Concrete
- Prism Cement Journey in Fly ash Utilization
- Best Practices Implemented for Increase FA Utilization
- Infrastructure for Fly ash Utilization
- Way Forward / Future Plan to improve Fly ash Usage
- Conclusion
U-I : 3 MTPA Cement
Commissioned : 1997

U-II : 3.5 MTPA Cement
Commissioned : Jan’2011
# Plant Capacity

<table>
<thead>
<tr>
<th>SECTION</th>
<th>UNIT-I</th>
<th>UNIT-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinkerization</td>
<td>6000 TPD (Guaranteed)</td>
<td>7200 TPD (Guaranteed)</td>
</tr>
<tr>
<td></td>
<td>7200 TPD (Operating)</td>
<td>8000 TPD (Operation)</td>
</tr>
<tr>
<td>Cement Grinding</td>
<td>3.0 MTPA (PPC)</td>
<td>3.6 MTPA (PPC)</td>
</tr>
</tbody>
</table>

# Core Equipment Capacity

<table>
<thead>
<tr>
<th>SECTION</th>
<th>UNIT-I</th>
<th>UNIT-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lime stone Crusher</td>
<td>1200 TPH</td>
<td>750 TPH x 2 nos</td>
</tr>
<tr>
<td>Raw Mills</td>
<td>275 TPH x 2 nos.</td>
<td>300 TPH x 2 nos</td>
</tr>
<tr>
<td>Kiln</td>
<td>6000 TPD / 7200 TPD</td>
<td>7200 TPD / 8000 TPD</td>
</tr>
<tr>
<td>Coal mill</td>
<td>70 TPH</td>
<td>80 TPH</td>
</tr>
<tr>
<td>Cement Mills</td>
<td>180 TPH x 2 nos.</td>
<td>275 TPH x 2 nos</td>
</tr>
<tr>
<td>Packers</td>
<td>120 TPH x 6 nos.</td>
<td>240 TPH x 5 nos</td>
</tr>
</tbody>
</table>
Company Profile

- M/S PRISM CEMENT LIMITED (PCL) IS A PUBLIC LIMITED COMPANY WITH ITS REGISTERED
  OFFICE AT “305, LAXMI NIVAS APARTMENT, AMEERPET, HYDERABAD - 500016“

- THE COMPANY PROMOTED BY RAJAN RAHEJA GROUP OF CO. MUMBAI


- M/s RAJAN RAHEJA GROUP OF COMPANIES HAVE DIVERSIFIED BUSINESS
  - FOOD RETAILING
  - LIFE INSURANCE
  - SOFTWARE DEVELOPMENT
  - HOSPITALITY
  - HEALTH & BEAUTY RETAILING
  - MUTUAL FUNDS
  - PETRO CHEMICALS
  - INFRASTRUCTURE
  - MEDIA
Major achievements / Awards

- Achieved Second Prize in National Energy Conservation Award 2015 in Cement Category, by BEE Government of India

- Achieved First Prize at National Level in Industrial Safety for the year 2010, given by Ministry of Labor & Employment, Govt. of India. This prize has been exclusively given to Allahabad Packing Plant of Prism Cement Ltd

- Achieved First Award for Energy Conservation for two successive years 2006 & 2007 and Second for year 2008 at National Level awarded by Govt. of India, Ministry of Power & presided by President of India

- Achieved State Level Environmental Award for the Year 2004-05 given by Govt. of Madhya Pradesh, Ministry of Environment & Housing given on 23.02.2008

- Achieved State Level Environmental Award for the Year 2008-09 given by Govt. of Madhya Pradesh, Ministry of Environment & Housing given on 10.01.2011.

- Achieved Third Place at National Level Green Rating Ranking conducted by CSE, New Delhi for the Year 2005. First Place in M.P. & Chhattisgarh.
CEMENT MANUFACTURING PROCESS

LIMESTONE

CLINKER

CEMENT

CORRECTIVE MATERIAL
1. Laterite
2. Blue Dust

ADDITIVES
1. Gypsum
2. Fly Ash

OPC
Ordinary Portland Cement

PPC
Portland Pozzolana Cement
Advantages of fly ash use

- Economical benefit
  - Reduce clinker factor
  - Reduction in variable cost of Cement
- Differentiation of cement types
- Improvement of concrete performance
- Waste disposal & resource conservation
- Creation of new markets
- Reduction of CO$_2$ emissions
- Use as special binders
Quality and Quantity of Fly Ash Determined by

- Coal
  - Coal type
  - Ash content
  - Bed rock material

- Boiler
  - Boiler Type, Temperature

- Dedusting equipment
  - Electrostatic precipitator
  - Baghouse
  - Cyclones

- Environmental installation
  - High dust equipment for DeSOx and DeNOx
# Impact of Boiler type

<table>
<thead>
<tr>
<th>Temp. (°C)</th>
<th>Dry Bottom Furnace</th>
<th>Slag Tab furnace (Wet bottom furnace)</th>
<th>Fluidized Bed Combustion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pozzolanic Spheres</td>
<td>1300 - 1500</td>
<td>1500 - 1700</td>
<td>850 - 900</td>
</tr>
<tr>
<td>Workability</td>
<td>50 – 80%</td>
<td>70 – 100%</td>
<td>0%</td>
</tr>
<tr>
<td>Water demand</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
How does an optimum fly ash looks like?

Fly ash type

- Hard coal fly ash
- Subbituminous fly ash

Key performance indicators

- High reactive silica (glass content) (> 25 %)
- High total CaO content (> 5 %)
- Low SO$_3$ content (< 2%)
- Low CaO$_{\text{free}}$ content (< 1 % or highly reactive)
- Low LOI (India: < 5%, Europe: < 5%, US: < 2%)
- High fineness (> 2500 cm$^2$/g Blaine/residue on 45µm < 35 %)
## BIS Standards for Fly ash used in Cement Plant

### Chemical Properties

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Characteristic</th>
<th>Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>i)</td>
<td>Silicon dioxide ((\text{SiO}_2)) + Aluminium oxide ((\text{Al}_2\text{O}_3)) + Iron oxide ((\text{Fe}_2\text{O}_3)), in percent by mass, Min.</td>
<td>70</td>
<td>50</td>
</tr>
<tr>
<td>ii)</td>
<td>Silicon dioxide in percent by mass, Min.</td>
<td>35</td>
<td>25</td>
</tr>
<tr>
<td>(iii)</td>
<td>Reactive Silica in percent by mass, Min (Optional Test)</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>iv)</td>
<td>Magnesium Oxide ((\text{MgO})), in percent by mass, Max.</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>v)</td>
<td>Total sulphur as sulphur trioxide ((\text{SO}_3)), in percent by mass, Max.</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>vi)</td>
<td>Available alkalis as Sodium oxide ((\text{Na}_2\text{O})), percent by mass, Max.</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>vii)</td>
<td>Total Chlorides in percent by mass, Max.</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>viii)</td>
<td>Loss on Ignition, in percent by mass, Max.</td>
<td>5.0</td>
<td>5.0</td>
</tr>
</tbody>
</table>

### Physical Properties

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Characteristics</th>
<th>Requirements for Siliceous fly ash and Calcereous fly ash</th>
</tr>
</thead>
<tbody>
<tr>
<td>i)</td>
<td>Fineness - Specific surface in (\text{m}^2/\text{kg}) by Blaine's permeability method, Min.</td>
<td>320</td>
</tr>
<tr>
<td>ii)</td>
<td>Particles retained on 45 micron IS sieve (wet sieving) in percent, Max. (Optional Test)</td>
<td>34</td>
</tr>
<tr>
<td>iii)</td>
<td>Lime reactivity – Average compressive strength in N/mm(^2), Min.</td>
<td>4.5</td>
</tr>
<tr>
<td>iv)</td>
<td>Compressive strength at 28 days in N/mm(^2), Min.</td>
<td>Not less than 80 percent of the strength of corresponding plain cement mortar cubes</td>
</tr>
<tr>
<td>v)</td>
<td>Soundness by autoclave test - Expansion of specimen in percent, Max.</td>
<td>0.8</td>
</tr>
</tbody>
</table>
What do FA parameters tell about performance?

<table>
<thead>
<tr>
<th>Chem. Parameter</th>
<th>Constituent</th>
<th>M.-%</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO₂</td>
<td>Quartz (inert)</td>
<td>&gt; 50%</td>
<td>low reactivity</td>
</tr>
<tr>
<td>Al₂O₃</td>
<td>Glass</td>
<td></td>
<td>Reaction Partner</td>
</tr>
<tr>
<td>Fe₂O₃</td>
<td>Fe-Oxides, Glass</td>
<td></td>
<td>low reactivity</td>
</tr>
<tr>
<td>CaOₗ</td>
<td>Glass constituent</td>
<td>&gt; 10%</td>
<td>high reactivity</td>
</tr>
<tr>
<td>CaOₙ</td>
<td>Burnt lime</td>
<td>&gt; 1%</td>
<td>durability (expansion)</td>
</tr>
<tr>
<td>MgO</td>
<td>Periclase</td>
<td>&gt; 1%</td>
<td>durability (expansion)</td>
</tr>
<tr>
<td>Na₂Oequ.</td>
<td>Alkali salts</td>
<td>&gt; 1%</td>
<td>accelerator, ASR sensitive</td>
</tr>
<tr>
<td>SO₃</td>
<td>Gypsum`</td>
<td>&gt; 3%</td>
<td>set retarder, cement stand. limit</td>
</tr>
<tr>
<td>SiO₂ reactive</td>
<td>Glass</td>
<td>&gt; 30%</td>
<td>high reactivity</td>
</tr>
<tr>
<td>LOI</td>
<td>Unburnt carbon</td>
<td>&gt; 5%</td>
<td>water demand/standard</td>
</tr>
<tr>
<td>Fineness</td>
<td>Residue on 45µm, %</td>
<td>&gt; 30%</td>
<td>high water demand/low reactivity</td>
</tr>
<tr>
<td></td>
<td>Blaine, cm²/g</td>
<td></td>
<td>No proper measure for fly ash</td>
</tr>
<tr>
<td></td>
<td>Bulk density, g/cm³</td>
<td>&lt; 1</td>
<td>reduced transport capacity</td>
</tr>
</tbody>
</table>
What are impacts of KPIs on performance?

Unburnt carbon
- Admixture interaction (>2%)
- Water demand (>7%)
- Black pop-ups (mainly with coke!)

Fineness, morphology
- Water demand, reactivity

Free lime, SO$_3$ (only lignite)
- Soundness, retarding

Ammonia (from DeNOx)
- Smell, working hazard

Direct desulphurization products
Spray Dry SDA-, Dry sorbent DSI, Fluidised bed FBC
- Generally unsuitable material
Key Performance Parameters of Fly Ash

**Fineness**

- Activity index 28-d, %
- Residue 10 μm, %

**Unburnt carbon**

- Loss of ignition, %
- Water demand, %
# Key performance indicators

<table>
<thead>
<tr>
<th>Component in weight %</th>
<th>Lignite fly ash</th>
<th>Hard coal fly ash</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO₂</td>
<td>43</td>
<td>52</td>
</tr>
<tr>
<td>Al₂O₃</td>
<td>23</td>
<td>26</td>
</tr>
<tr>
<td>Fe₂O₃</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>CaO</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>CaO_{free}</td>
<td>0.5</td>
<td>0.1</td>
</tr>
<tr>
<td>MgO</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Na₂Oequ.</td>
<td>2.6</td>
<td>0.4</td>
</tr>
<tr>
<td>SO₃</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>SiO₂_reactive</td>
<td>20</td>
<td>45</td>
</tr>
<tr>
<td>LOI</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Fineness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residue on 45μm, %</td>
<td>45</td>
<td>29</td>
</tr>
<tr>
<td>Blaine, cm²/g</td>
<td>2200</td>
<td>3300</td>
</tr>
<tr>
<td>Bulk density, g/cm³</td>
<td>1.05</td>
<td>0.97</td>
</tr>
</tbody>
</table>

Dry bottom furnace (1050-1300°C)
## Supplementary performance indicators

<table>
<thead>
<tr>
<th>Component in weight %</th>
<th>Lignite fly ash</th>
<th>Hard coal fly ash</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dry bottom furnace (1050-1300°C)</td>
<td></td>
</tr>
<tr>
<td>SiO$_2$</td>
<td>43</td>
<td>52</td>
</tr>
<tr>
<td>Al$_2$O$_3$</td>
<td>23</td>
<td>26</td>
</tr>
<tr>
<td>Fe$_2$O$_3$</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>CaO</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>CaO$_{\text{free}}$</td>
<td>0.5</td>
<td>0.1</td>
</tr>
<tr>
<td>MgO</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Na$_2$Oequ.</td>
<td>2.6</td>
<td>0.4</td>
</tr>
<tr>
<td>SO$_3$</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>SiO$_2$ reactive</td>
<td>20</td>
<td>45</td>
</tr>
<tr>
<td>LOI</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td><strong>Fineness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residue on 45µm, %</td>
<td>45</td>
<td>29</td>
</tr>
<tr>
<td>Blaine, cm$^2$/g</td>
<td>2200</td>
<td>3300</td>
</tr>
<tr>
<td>Bulk density, g/cm$^3$</td>
<td>1.05</td>
<td>0.97</td>
</tr>
</tbody>
</table>
Evaluation

• Accordance to national/common standards

• **Key** quality parameters
  – Fineness; sieving residue not Blaine (Filler effect)
  – LOI (colour, water demand sensitive)
  – SiO₂ reactive (measure for reactivity and activation potential by grinding) > 35%
  – SiO₂ + Al₂O₃ + Fe₂O₃ > 70%

• **Supplementary** quality parameters
  – Free CaO/MgO (higher contents soundness sensitive)
  – SO₃ (standards conformity)
  – Alkalies (higher reactivity but ASR sensitive)
  – Bulk density (handling, dosage, transport capacities)

• **Its oblige to test performance in cement and concrete**
  – Water demand
  – Compressive strength (1-7-28d)
How can we improve quality of Fly Ash?

- **Power plant operation**
  - Reduce LOI/ Increase fineness
  - Coal grinding
  - Burn out ($O_2$ staging)
  - ESP stage separation

- **Beneficiation**
  - Reduce LOI/ Increase fineness
  - Air classification/Screening
  - LOI reduction
  - Optimum fineness

- **Chemical activation**
  - Improve Reactivity
  - Alkalies (ASR sensitive), acceleration

- **Cement plant measures**
  - Increase Fineness/reactivity
  - Intergrinding
  - Clinker mineralization
  - Separator & Grinding circuit optimization
Options of fly ash integration

<table>
<thead>
<tr>
<th>Concrete</th>
<th>Cement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RMC plant</strong></td>
<td><strong>Flyash</strong></td>
</tr>
<tr>
<td>OPC</td>
<td>OPC</td>
</tr>
<tr>
<td>FLY ASH</td>
<td>FLY ASH</td>
</tr>
</tbody>
</table>

1) Mill inlet feed

- $R_{45\mu m} < 40\%$
- $R_{45\mu m} < 15\%$

2) Separator feed

- $R_{45\mu m} > 30\%$
- $R_{45\mu m} < 30\%$

$R_{45\mu m}$ standard compliance
PPC Cements – Decision Tree

1. Clinker reactivity
   - composition, process
   - Optimisation loops

2. Gypsum addition
   - adjust for best 1 / 28 days

3. Fly ash components
   - grinding, beneficiation
   - influence PPC production

4. Cement fineness
   - grinding process
   - total fineness

5. Cement admixtures
   - to achieve properties

6. Definition of requirements

Market
Effects of PPC cements on concrete

- Improved fresh concrete properties
- Lower heat of hydration
- Dense structure, low permeability
- High long term strength
- Improved pumpability, compactability
- Low effective alkali content
- High chemical resistance (sea water, chloride diffusion, sulphate attack, etc.)
- Lower early strength
# Fly ash Usage in Prism Cement

<table>
<thead>
<tr>
<th></th>
<th>2015-16</th>
<th>2016-17</th>
<th>Up to Dec 2017 LE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fly ash usage (MTPA)</td>
<td>1.38</td>
<td>1.41</td>
<td>1.43</td>
</tr>
<tr>
<td>Total FA % in PPC</td>
<td>28.82</td>
<td>29.92</td>
<td>31.44</td>
</tr>
<tr>
<td>Cement Residue 45µ</td>
<td>20.38</td>
<td>14.52</td>
<td>12.25</td>
</tr>
<tr>
<td>One day strength PPC</td>
<td>12.4</td>
<td>15.45</td>
<td>15.62</td>
</tr>
<tr>
<td>Clinker Factor</td>
<td>0.7026</td>
<td>0.7087</td>
<td>0.6687</td>
</tr>
</tbody>
</table>

## Clinker Factor

![Clinker Factor Chart]

- **2015-16**: 0.7026
- **2016-17**: 0.7087
- **2017-18**: 0.6687
Initiative taken for Ramp-up fly ash consumption

- Installed & commissioning of Fly ash tippler for fly ash unloading
- Cleaning of Fly ash silo & replacement air slide cloths for improving dosing efficiency
- Replacement of air pad in fly ash check bin for smooth flow-ability of FA
- Spare F K Pump installed in-house as alternative arrangement for Fly ash feeding during bucket elevator maintenance
- Fly ash with > 2500 gm/cm² blain feeding at Mill outlet for power saving & PSD improvement
- Spare weigh feeder activate as arrangement for wet fly ash feeding
- Extra point installed for fly ash bulker unloading
- Hot air arrangement from Cooler ESP for Fly ash bulker during monsoon
Initiative taken for Ramp-up fly ash consumption

- Air dryer installation at various location for improve fly ash flow-ability during monsoon

- Installation of box heater separately for blower to heat air slide.

- Provision of new feeding circuit directly to check bin in case there is extraction problem from silo
# Best practices implemented for high fly ash consumption

<table>
<thead>
<tr>
<th>Checks</th>
<th>Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular checking &amp; optimize separator</td>
<td>SOP with checks prepared &amp; regular weekly checking</td>
</tr>
<tr>
<td>Optimization of grinding media filling level by make-up charges</td>
<td>Monthly mill empty height measurement carried out &amp; maintain 28% media filling level</td>
</tr>
<tr>
<td>Refurbishment of liner profile</td>
<td>Step wise Replacement of liner under progress</td>
</tr>
<tr>
<td>Design change of water spray nozzle &amp; Optimize consumption with PID</td>
<td>In house nozzle prepared &amp; run water spray in close PID loop</td>
</tr>
<tr>
<td>Improve quality of Clinker</td>
<td>Action plan to be prepared &amp; strictly follow the same</td>
</tr>
<tr>
<td>Increase Fly ash dosing by review lime % in cement &amp; one day strength &amp; with grinding aid</td>
<td>SOP Prepared for cement quality Vs Fly ash utilization Grinding aid usage system developed &amp; design our own grinding aid material</td>
</tr>
<tr>
<td>Modifications to be done in SEPAX fan Duct as per CFD study</td>
<td>Reduce pressure drop &amp; power saving</td>
</tr>
</tbody>
</table>
Other best practices Implement

• Clinker Storage in Silo only & Quality to be monitored on daily basis strictly
• Selection of flyash sources having low LOI, Identify sources with the latest burning technology/ modern boilers
• Fly ash received from different sources to be blended for desired quality
• Monitoring of source wise residue and LOI on daily basis
• Multiple point extraction from silo bottom
• Grinding media top up done periodically every month & Regrading of grinding media on yearly basis
• Crash stoppage done every 3 months for sampler & circuit sampling
• Checking of separator every fortnight (static vanes, rotor blades, chute inspection) Seal gap maintained minimum, Maintain bypass at <10% Separator efficiency to be checked on weekly basis
• Fly ash dozing system checked every fortnight
• SOP for unloading fly ash from different sources
• Back filter material Blaine monitored and then decide the point of discharge
• Grinding aid system operated totally DCS controlled
• Auto-samplers installed for sample collection at all required location
Best quality Clinker required for higher FA Absorption in Cement

We also improve our clinker quality by taking step in raw mix design as well as process optimizing So that our Clinker absorbed more fly ash quantity without declining our Cement quality

<table>
<thead>
<tr>
<th></th>
<th>2015-16</th>
<th>2016-17</th>
<th>2017-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinker C3S</td>
<td>44.21</td>
<td>49.91</td>
<td>50.63</td>
</tr>
<tr>
<td>Heat Consumption (Kcal /Kg Clinker)</td>
<td>743</td>
<td>731</td>
<td>727</td>
</tr>
<tr>
<td>Clinker Production TPD</td>
<td>6356</td>
<td>6477</td>
<td>6562</td>
</tr>
<tr>
<td>Power for Clinkerization</td>
<td>21.53</td>
<td>21.06</td>
<td>20.96</td>
</tr>
</tbody>
</table>

Clinker C3S
Prism Cement Infrastructure for FA Handling

In PCL we handing > 1.4 million tons of Fly ash per annum, for that we have following infrastructure in place

- Two storage Silo with combine capacity of – 9000 MT
- Three truck tippler for unloading (Exclusively for FA) – 3000 MT/day capacity
- 10 Pneumatic unloading station for Bulker – 6000 MT/day capacity
- DCS Control feeding circuit for Silo
- Accurate dozing system for mill feeding 80 TPH & 120 TPH with flow control gate and solid flow meter in all Four Mills
- 4 pre-bin with load cells enables an elegant option for calibration
- Two way feeding flexibility as per Fly ash quality (i.e. Mill Inlet & Mill Outlet)
- Standby by arrangement with FK Pump of 240 TPH
- 18 No. of Electric heater for monsoon
Fly ash feeding & it’s accuracy

EXAMPLE:

- Fly ash represents ~ 32% of fresh feed
- Fly ash dosing suffers from erratic flow
- Fluctuations in fly ash dosing result in fluctuations in fresh feed due to automatic recipe control
- Fresh feed fluctuations are responsible for reduced mill output
Expectation towards fly ash dosing Systems

Expectations:

• Accurate dosing close to set point
• Reliable dosing without feed interruptions
• Fast reaction when changing the feed rate
• Low wear and operating costs of the system

Standard system in cement industry:
• Flow Control Gate + Solid Flow Meter (SFM)
Working principle: Dosing with Flow control gate and SFM
Truck Tippler for Mechanize Fly ash unloading
FK Pump – 225 TPH as Stand By arrangement for CM Feeding
Heaters & dryers for smooth fly ash conveying during monsoon
Modification of Fly Ash Control and Mechanism to Achieve Better Accuracy as the system is absolute and old.
New Fly Ash Feeding point For Bulker unloading direct to check bin

Modification of Fly Ash Discharge Air Slide chute

In House Developed of Central Discharge Check Bin In Place of Side Discharge
Pneumatic Unloading Stations for Bulker
Flyash Silo Cleaning & Open Air Slides reconditioning & cloth replacement

Before Replacement

After Replacement
Higher wear rate required regular maintenance
Way Forward – Prism Cement

- For increasing our mechanical unloading capacity one more Fly ash truck tippler under project with cost of 50 million INR
- For Increasing Storage capacity 5000 MT Silo under construction with CAPEX of 100 million INR
- Bogie Covered Fly Ash/Cement type Wagons (BCFC) in Railway under study (Pneumatic arrangement required at site for unloading)
- Separate Fly ash grinding & Mixing with OPC project under evaluation
- Fly ash rotary dryer with Cooler ESP air under study
- 100 % Fly ash feeding at mill outlet under execution after source qualification
Conclusions

- Sampling program required before contracting to ensure consistency
- Small operational changes at power station can have big impact
- Proper quality control essential for high fly ash consistency
- Robust & accurate system required for fly ash feeding
- Enough storage & unloading facilities required at site
- Special precaution to be taken during monsoon
- Regular maintenance & process audit for grinding circuit must
- Competent quality team with testing infrastructure key point for high utilization of fly ash
Thank You