Maharashtra State Fly ash Policy 2016
Initiatives by Maharashtra State Fly Ash Council

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EX DIRCTOR
MAHAGENCO ASH MANAGEMENT SERVICES LTD
(Wholly owned Subsidiary Company of Maharashtra State Power Generation Company Limited)
• India is world’s third-largest power consumer.
• India is 3rd largest Coal based power generator as 66% is derived from coal.
• India is the world’s second largest coal consumer. Huge quantities of Ash is generated as our coal contains over 40% Ash.
• By 2031 ash generation is expected to be 900 Million Tons
India has vast coal reserve of 211 billion tones making coal the most extensively used fossil fuel for generating power in the country. In order to achieve self-sufficiency in energy sector the Government of India has announced ambitious targets for domestic coal production of 1500 Million Ton coal per annum by 2020-21 out of which 900 Million Tons (60%) coal is expected to be used for thermal power generation.
Fly Ash disposal – a Challenge

With 35% to 50% ash content in Indian Coal about 900 Million Tons ash generation is expected annually by 2031. 20% ash is collected in combustion chamber as Bottom Ash and 80% ash is collected in Electrostatic Precipitators as **Fly Ash**. Bottom Ash and unutilised Fly Ash is mixed with water and pumped to Ash Pond through pipeline. Indian Fly Ash contains 26% Alumina, 59% Silica, 4% Magnetite, 3% Calcium & other minerals.
In Maharashtra about 25 Million Tonne Fly Ash is expected to be generated annually as the coal contains >40% ash.
About 22,000 Acres of land will be required for disposal of Ash as about one Acre of land is required per MW of installed capacity.
## Modes of Fly Ash Utilization During the Year 2019-20

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Mode of utilization</th>
<th>Quantity of Fly Ash utilized in the mode of utilization (Million-ton)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cement</td>
<td>57.8847</td>
<td>25.60</td>
</tr>
<tr>
<td>2</td>
<td>Mine filling</td>
<td>10.6152</td>
<td>4.69</td>
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<tr>
<td>3</td>
<td>Bricks &amp; Tiles</td>
<td>21.3888</td>
<td>9.46</td>
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<tr>
<td>4</td>
<td>Reclamation of low lying area</td>
<td>35.0600</td>
<td>15.50</td>
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<tr>
<td>5</td>
<td>Ash Dyke Raising</td>
<td>22.1688</td>
<td>9.80</td>
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<tr>
<td>6</td>
<td>Roads &amp; flyovers</td>
<td>20.9667</td>
<td>9.27</td>
</tr>
<tr>
<td>7</td>
<td>Agriculture</td>
<td>0.1415</td>
<td>0.06</td>
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<tr>
<td>8</td>
<td>Concrete</td>
<td>1.6660</td>
<td>0.74</td>
</tr>
<tr>
<td>9</td>
<td>Hydro Power Sector</td>
<td>0.0000</td>
<td>0.00</td>
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<tr>
<td>10</td>
<td>Others</td>
<td>17.9136</td>
<td>7.92</td>
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<tr>
<td>11</td>
<td>Unutilized Ash</td>
<td>38.3287</td>
<td>16.96</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>226.1339</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>
MoEF&CC  Notifications on Fly Ash Utilisation

• The cost of transportation of ash for road construction projects within a radius of hundred kilometers from a coal or lignite based thermal power plant shall be borne by such coal or lignite based thermal power plant and the cost of transportation beyond the radius of hundred kilometers and up to three hundred kilometers shall be shared equally between the user and the coal or lignite based thermal power plant.

• To ensure that the contractor of road construction utilizes the ash in the road, the Authority concerned for road construction shall link the payment of contractor with the certification of ash supply from the thermal power plants.
The coal or lignite based thermal power plants shall within a radius of three hundred kilometers bear the entire cost of transportation of ash to the site of road construction projects under Pradhan Mantri Gramin Sadak Yojna and asset creation programmes of the Government involving construction of buildings, road, dams and embankments.

It shall be the responsibility of all State Authorities approving various construction projects to ensure that Memorandum of Understanding or any other arrangement for using fly ash or fly ash based products is made between the thermal power plants and the construction agency or contractors.
Notifications and guidelines issued to ameliorate fly ash utilisation in the country:

• Design guidelines for use of fly ash in road embankments brought out by Indian Road Congress (“IRC”) - IRC SP 58 : 2001;
• Use of fly ash for construction of rural roads has been approved and guidelines issued by IRC (IRC: SP-20 : 2003);
• Revision of IS 3812 : 2003 – the code for specifications of Pulverised Fuel Ash for its use in cement/ mortar/ concrete (part 1) & as fine aggregate (part 2) - approved & under print;
• Specifications for other Fly Ash applications viz. (i) lime pozzolana mixture applications, (ii) sintered applications, (iii) geotechnical and (iv) agricultural application are under preparation.
• Updating of IS 456 (2000) - The Plain and Reinforced Concrete - Code of Practice has been updated with use of fly ash.
• Minimum and maximum percentages of fly ash in Portland Pozzolana cement (“PPC”) have been increased to 15% and 35% respectively etc.
Challenges before Maharashtra – A Resource Opportunity

• Energy is critical, directly or indirectly, in the entire process of evolution, growth and survival of all living beings and it plays a vital role in the socio-economic development and human welfare of a country.

• Energy has come to be known as a `strategic commodity’ and any uncertainty about its supply can threaten the functioning of the economy.
• Generation of fossil fuel based energy has initiated Climate change which is a major challenge for developing countries like India that face large scale climate variability and are exposed to enhanced risks from climate change.
• Rapid urbanization in the country will be one of the most dominant trends in the coming years.
• It is expected that about 40% of the population of India in 2030 would be urban as against 30% in 2008.
• However in Maharashtra 58% of population will be urban by 2030.
• The Fly Ash Utilization Policy addresses the above issue by
  1. Promoting utilization of Ash in dry form.
  2. Reduce cost of transportation of Ash by setting up Fly Ash based Industrial clusters within vicinity of all Power Plants.

By effectively implementing the State Fly Ash Policy over Rs 8,000 Crores can be saved which can reduce the cost of Power. It will also save 20 Million Cubic meters of water annually.
In view of above it has become necessary for the State to formulate a Policy
“To promote use of 100% Fly Ash without compromising the need for Generation of adequate power for Maharashtra on a sustainable basis at competitive rates in a socially responsible manner”
• To fully meet the future needs of the State housing sector for Fly Ash based building material.
• To achieve 100% Fly Ash Utilisation.
Maharashtra State Fly Ash Policy 2016

• To achieve 100% Ash Utilisation thereby minimising Health Hazards of Fly Ash.
• Promotion of Entrepreneurship and Innovation: To promote the establishment of Knowledge / Resource Centres and Incubation Centres/Fly Ash based Industry Clusters across the State where Fly Ash is available.
• Promotion of Policy through capacity building for eco-friendly management, value addition and utilization of fly ash.
Formation of Maharashtra Fly Ash Council

• The State Government to implement the policy through a FLY ASH Council.
• Hon’ble Chief Secretary is Chairman, members are Secretaries of various Departments, experts in the field of Fly Ash Utilization Technology, representative of power producers and representative of Fly Ash based Industries in Large, Medium and Small Industries sector.
• Fly Ash Council will be the nodal agency for monitoring management of ash by Power producers.
Ash utilization Infrastructure Development

• Power Producer will set up fly ash collection system at all its TPS and units. It will also make provision for loading of fly ash into bulkers, railway wagons and enclosed carriers from the fly ash silos.
• Power producer will offer (if available) land and all infrastructure facilities to the Joint Ventures who are willing to set up Fly Ash Based Industries.
• As far as possible dry Fly Ash will be made available through pneumatic system to Industries set up in close vicinity of Power Plant.
Ash utilization Infrastructure Development

• Power producer will provide 20% fly ash free of charge to units manufacturing fly ash based building materials.

• Before issue of 20% free Fly Ash to brick manufacturers, the Power producer will ensure that the product manufactured has at least 70% Fly Ash and use of river sand is totally avoided and instead stone crusher dust or construction waste is used.

• In order to improve the ash utilization, Power Producer will provide Dry Ash from ESP hoppers to units manufacturing fly ash based bricks, blocks, tiles and other building materials.
• Each TPS will consider setting up of Cement Manufacturing, Aggregate Manufacturing, Brick/Block Manufacturing, value added products manufacturing through SPV/JV Route in consultation with State Fly Ash Mission:
• Power producers will set up Fly Ash Utilisation Parks/clusters in close vicinity and encourage local entrepreneurs to set up small scale industries for manufacture of masonry cement, bricks, blocks tiles etc. based on technology identified by State Fly Ash mission.
• Entrepreneurs will be encouraged to set up units for valued added product like Cenospheres, Alumina extraction etc.
Power producers will set up units or form JV to manufacture Fly Ash sintered aggregates which will save large quantities of Crushed Stone and sand in ready mix concrete, RMC.
Mahagenco Ash Management Services Limited, Mahagams

• Mahagenco has set up a wholly owned subsidiary, Mahagenco Ash Management Services Limited, Mahagams, which will set up Fly Ash based Industrial Parks/Clusters in the vicinity of its Power Plants. Fly Ash will be directly provided to the units through pneumatic system so that transportation of Ash by road is avoided.
Initiatives & Incentives for Ash Products Industry

A) Incentives & provisions for setting up Fly Ash utilisation Parks, Clusters
B) Incentives & provisions for Fly Ash based Units
E) Incubation Facility
F) Promotion of green Technologies in Fly Ash Utilisation.
G) Initiatives related to Laws for ease of doing business
H) Human Resource Development
I) Administrative Measures.
Initiatives & Incentives for Ash Products Industry

- Package Scheme of Incentives by Government of Maharashtra Industries, Energy and Labour Department –
- Salient features of above policy are - Industrial Promotion Subsidy, Exemption from Electricity Duty, Waiver of Stamp Duty, Strengthening the Micro, Small and Medium Manufacturing Enterprises, Mega Projects etc.
Government of Maharashtra is committed to achieve the goal of 100% Ash Utilization through implementation of this Ash Policy. All Thermal Power Stations (coal based/waste to energy/biomass based), concerned government departments, Fly Ash based product manufacturers will endeavour to achieve this goal.
KORADI TPS FLY ASH UTILISATION IN NAGPUR BYE PASS ROAD PROJECT

- Out of 45, 30 km Road is on black cotton soil with a Free swell index more than 60%
- Original design – removal of 50 cms BC soil & filling with either sand or Murrum.
- Geotech Services designed the subgrade with Flyash stabilization
- It leads to the Saving of natural sand 3,20,000 m3
- Use of 48,000 m3 Fly Ash
- Problem of soil disposal of 3,20,000 m3 was solved
- Saved more than Rs. 20 crore for the client
Spreading of Fly Ash
Mixing of Fly Ash
Stabilized sub grade Soil
INNOVATIVE WORK DONE BY TUSKRETE – Precast drain with 40% Fly ash and Steel Fiber
NH-7, Nagpur Bypass – after 12 years of stabilization
Subgrade & 300 mm Murrum Stabilized forest road patch – 1000 -3 axle trucks passed in last 6 months
WBM constructed 10 years before
Four-Lanning Of Nagpur-Betul NH:69 Project- 14 m high embankment

BC Soil up to 16 m

Fly Ash from 6 to 2 m in depth
Site before Preparation
Site Preparation
Surface condition of subgrade stabilize layer after 2013 monsoon
Site Preparation
Road condition after 5 years
Delhi High Court  
National Highways Authority Of ... vs Hindustan Construction Co Ltd  
on 7 December, 2018  
• with regard to fixing of claim number of new / appropriate rate for varied works of construction of the embankment at Ramsnehighat Bypass with borrow earth obtained from the contractor's borrow areas, in place of flyash embankment as provide for in the contract  
• Engineer directed HCCL to use borrow earth instead of flyash which would result in a saving of additional cost of Rs. 6 crore by NHAI. It was for this reason that the majority concluded that this decision was for the commercial and economic benefit of NHAI. Indeed, the original scope of the work envisaged the embankment at the Ramsnehighat Bypass being constructed entirely of flyash  
• we are not inclined to interfere with the said conclusion against this claim.  
• we do not see any merit in the appeal. The same is dismissed. No costs.
To,
The Chief Secretaries of all the State Governments/UTs.

1. Fly-ash is causing environmental pollution, creating health hazards and requires large areas of precious land for disposal. Due to increasing concern for environmental protection and growing awareness of the ill effects of pollution, disposal of ash generated at thermal power plants has become an urgent and challenging task.

2. As per MORTH 'Specifications for Road and Bridge Works' and IRe 'Manual of Specifications and Standards' (two, four and six laning of Highways etc.), use of fly-ash shall conform to the MoEFCC guidelines. As per the Ministry's Specifications for Road and Bridge Works use of fly ash is allowed under Section 305 for "Embankment Construction". The physical and chemical properties of fly-ash and the design methodology to be adopted for embankment construction has been specified in IRC: SP: 58-2001 "Guidelines for use of fly-ash in Road Embankments".

3. In view of the above, it is hereby once again requested to use fly-ash in the road construction, in line with the guidelines of MoEFCC, MORT&H and IRe.

Assistant Executive Engineer (S&R) for Director General (Road Development)&SS
No. 24028/1412018-H
Government of India, Ministry of Road Transport & Highways
New Delhi
Dated: August 27, 2018
To
The Chairman, National Highways Authority of India, New Delhi-110 075
1. The notification dated 25.01.2016 of the MoEFCC further stipulates that an MoU or any other agreement for using fly ash is to be made between the Thermal Power Station and construction agency/Contractor. A sample MoU finalized between the NTPC and officials of NHAI is enclosed as Annexure-B.

2. It is, therefore, requested to assess the quantity of fly ash that can be utilized in each on-going project within a radius of 300 km from the thermal power plant. The details of the assessed quantities of fly ash may be provided in the following proforma to the Ministry urgently.
To
The Chairman, National Highway Authority of India
Plot G-S:f:t 6, Sector-to, Dwarka, New Delhi-11 0075
Dated: January 07, 2019

Subject: MoU for off-take of Fly Ash from Private Power Stations.


2. As per the notification of MoEF, it is mandatory to use fly-ash in construction of roads or flyover embankments within a radius of 300 km of thermal power plants. The NHAI has signed an MoU with some NTPC stations for off-take of fly-ash in this regard. However, several of APP members are reportedly facing challenges in off-take of fly-ash as no MoU has been entered into with the NHAI/PWD in line with NTPC.

3. Further, it is to mention that the Association of Power Producers has reported vide above mentioned letter that all Power stations are willing to enter the pro-forma MoU with NHAI as per the terms and conditions specified by the MoEF. Accordingly, it is requested that the NHAI and all other project executing agencies of MoRTH are mandated to use flyash generated from private thermal stations/plants for construction of embankments as per the provisions of MoEF guidelines and, accordingly, a MoU may be signed with the Private Power Generating Stations as well and fly-ash used from these stations for the said purposes.

Assistant Executive Engineer
For Director General (RD)
Fly ash used now in India is for the dilution of cement with no value addition.

Early strength of concrete is the key factor in cement marketing.

Increase in early strength of concrete by the use of better quality of fly ash is possible.

Technology of making superior quality fly ash by Mechanical activation of Fly Ash is available in India.

Enhancement in surface area of fly-ash Improvement in hydration reactions.

Finer fly ash (<10 microns) improve particle packing effect.

Bigger size particles are ground to improve reactivity 2/3 fold.

Particles below 20 microns remain spherical to improve flow.
The expressway will be 701 km long, directly connecting ten districts, twenty-six talukas and around 392 villages. It will have a speed limit of 150 km which will bring Nagpur and Mumbai within 8 hours reach. Thus, travel time from Mumbai to Aurangabad will be 4 hours and from Aurangabad to Nagpur, another 4 hours.

- Dry Fly ash requirement for concrete road :- 6 lakh MT
- Pond ash requirement for road embankment :- 300 lakh MT
Thank You

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