INTRODUCTION

Mahagenco hereinafter referred as Mahagenco has been incorporated under Indian Companies Act 1956 Pursuant to decision of Govt. of Maharashtra to reorgauize EIST while Maharashtra State Electricity Board (hereinafter referred as MSEB) Maharashtra Pursuant to Part XIII read with section 131 of the on 13/05/2055 with the registrar of companies, Maharashtra, Mumbai and has obtained certificate of commencement of Business on 15/09/2005. Mahagenco is engaged in the business of generation and supply of electricity and has been rested with generation assets, intrest in property, rights and liabilities of MSEB as per Gazette Notification dtd. 4th June 2005 issued by industry, Energy and labour dept. of Govt. of Maharashtra Pursuant to section 131 of Electricity Act. 2003. Mahagenco has seven thermal power stations in Maharashtra State. The installed capacity of these thermal power stations is as under

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Power Stations</th>
<th>Installed Capacity (MW)</th>
<th>Coal Consumption in 2011-12 (April to Feb.) in MT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chandrapur Super Thermal Power Station, Chandrapur</td>
<td>2340</td>
<td>10698428</td>
</tr>
<tr>
<td>2</td>
<td>Koradi Thermal Power Station, Koradi, Dist. Nagpur</td>
<td>620</td>
<td>2668015</td>
</tr>
<tr>
<td>3</td>
<td>Parli Thermal Power Station, Parli, Dist. Beed</td>
<td>1130</td>
<td>3814073</td>
</tr>
<tr>
<td>4</td>
<td>Nashik Thermal Power Station, Eklahare, Dist. Nashik</td>
<td>630</td>
<td>2804132</td>
</tr>
<tr>
<td>5</td>
<td>Khaperkheda Thermal Power Station, Khaperkheda, Dist. Nagpur</td>
<td>840</td>
<td>4358477</td>
</tr>
<tr>
<td>6</td>
<td>Bhusawal Thermal Power Station, Bhusawal</td>
<td>420</td>
<td>1949557</td>
</tr>
<tr>
<td>7</td>
<td>Paras Thermal Power Station, Paras, Dist. Akola</td>
<td>500</td>
<td>2033473</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>6840</td>
<td>28326155</td>
</tr>
</tbody>
</table>
**Coal handling process**

The process of the Coal Handling Plant involves coal receipt from various system and then unloads the coal at various unloading stations. Then the coal is processed as per requirement. After the processing it is to be transferred to bunker or stack yard. For controlling all these processes the processes are equipped with control system.

**About Wet Coal Management in Coal Handling Plant of Mahagenco**

Wet coal Management plays an important role in power industry. During rainy season the wet coal affects the generation of electricity. It also leads to more consumption of oil due to which the generation cost of electricity increases. The less production of electricity affects the public at large.

Proper wet coal management becomes one of the Major challenge for power Engineers and managers in power industry.

When frontiers of knowledge are widening and the theory is developing at fast rate the practice is lagging far behind. This is probably true about all branches of knowledge and specially true for wet coal management area.
Wet coal management in Mahagenco has a distinct importance as every thermal power plant of Mahagenco is committed to provide the consumers at his premises, the uninterrupted supply of electricity power adequately as and when required ensuring the quality, reliability and economy of supply at the same time with emphasis on overall economy. The entire power system is on line process and failure of any vital component in the process results into less efficiency, partial or total outage of the thermal power plant.

**Impact of wet coal in Coal Handling Plant on generation of electricity**

The one element that influences the handling of coal and impacts the operation and efficiency of the thermal power plant is water.

The amount of surface moisture determines the dustiness and flowability characteristics of a coal. Additional moisture added due to the rain and other climatic processes, not only lowers the heating value of the coal but creates an additional efficiency penalty. Changes in the moisture levels of coal supply can also create large swings in the measured plant heat rate.

The Coal gets wet and sticky during rainy season due to huge ash and mud content. The power generation can be maintained if the supply of coal to the units is regular. The wet and sticky coal hampers the power generation as may not be supplied consistently to the units. The existing system of Coal Handling Plant of Mahagenco can unload an entire rake of 16 wagons in less than eight hours. During monsoon unloading. Single wagon may take 8 hours. It result in to heavy demurrages of railways and less availability coal stock. The Wet Coal does not move properly through coal mills, thus reducing the generation of electricity. Many times coal chokes up the mill and shutting it down. The units also consume more oil when coal is not of required standard. It raises the generation cost is covered.

During rainy season the electricity generation of power plant reduces to 30 to 40% of their installed capacity.

Despite of all the problems possible measure should be taken to improve the unloading of coal. To clean the choke up in the system, additional manpower is to be deployed at transfer points,
chutes and crusher house round the clock. Manual unloading of wet coal from wagon also to be carried out by deploying extra manpower and machines like pay loaders.

**Wet Coal Handling**

Wet coal handling problem have at times caused problem for just about every one. It has noticed sledge hammer marks on coal chutes across the nation. In some cases coal yard practices were causing additional problems by allowing additional surface moisture on the coal. These could be practices such as: large flat piles that allow little if any runoff, pushing the coal through low areas that have standing water in them while reclaiming or ground water level that is actually higher than the pile. Practices used by the coal yard can have major impacts on coal moisture level. Try to control moisture by allowing good drainage of the pile.

Try to elevate the reclaim area to allow for good drainage.

When stuck with using water hard to handle coal, the use of high molecular weight polypropylene plastic chute the flowability of coal chutes.

The attachment method is important for both performance and durability. The use of ceramic tile can certainly extend the life of a high impact area, unfortunately it rarely improves flowability, stainless steel is usually superior to carbon steel, although both flow better when polished.

Air blasts and vibrators are best used intermittently as contained uses can further pack a pluggage chemicals can rarely be applied in enough anantity and mixed well enough to solve problem. The coal size impacts the flowability large chunks are important because they help break-up the initial stages of pluggages caused by fines wet coal problem in the plant, while the coal yard processed the coal through hammer mills as usual. When these crushers were by-passed the plants situation improved considerable. The purpose for crushing the coal in the first place was to assist the pulverizes in their job unfortunately, the mills never saw the coal because the feeder was plugged. Increased moisture also decreases pulverize performance by lowering the Btu value and causing additional coal recirculation to allow drying.
Effect of Wet coal Moisture on Heat rate-

Increased moisture lowers the plant efficiency by reusing the wet goss loss component of the boiler.

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\text{Plant Heat rate} = \frac{\text{Heating values of coal} \times \text{Tons of coal}}{\text{Kilowatts of Electricity}}
\]

Heat rate is usually expressed in Btus/kw

Moisture in the coal is converted to steam in the combustion zone using a considerable amount of energy. The stack temp. of most coal plants is typically 300o F +/- 50o F. This means that the energy used to convert the moisture to steam is never recovered. The actual boiler efficiency loss is approximately 0.1% for each 1% increase in moisture or about a nickel for every ton of coal.