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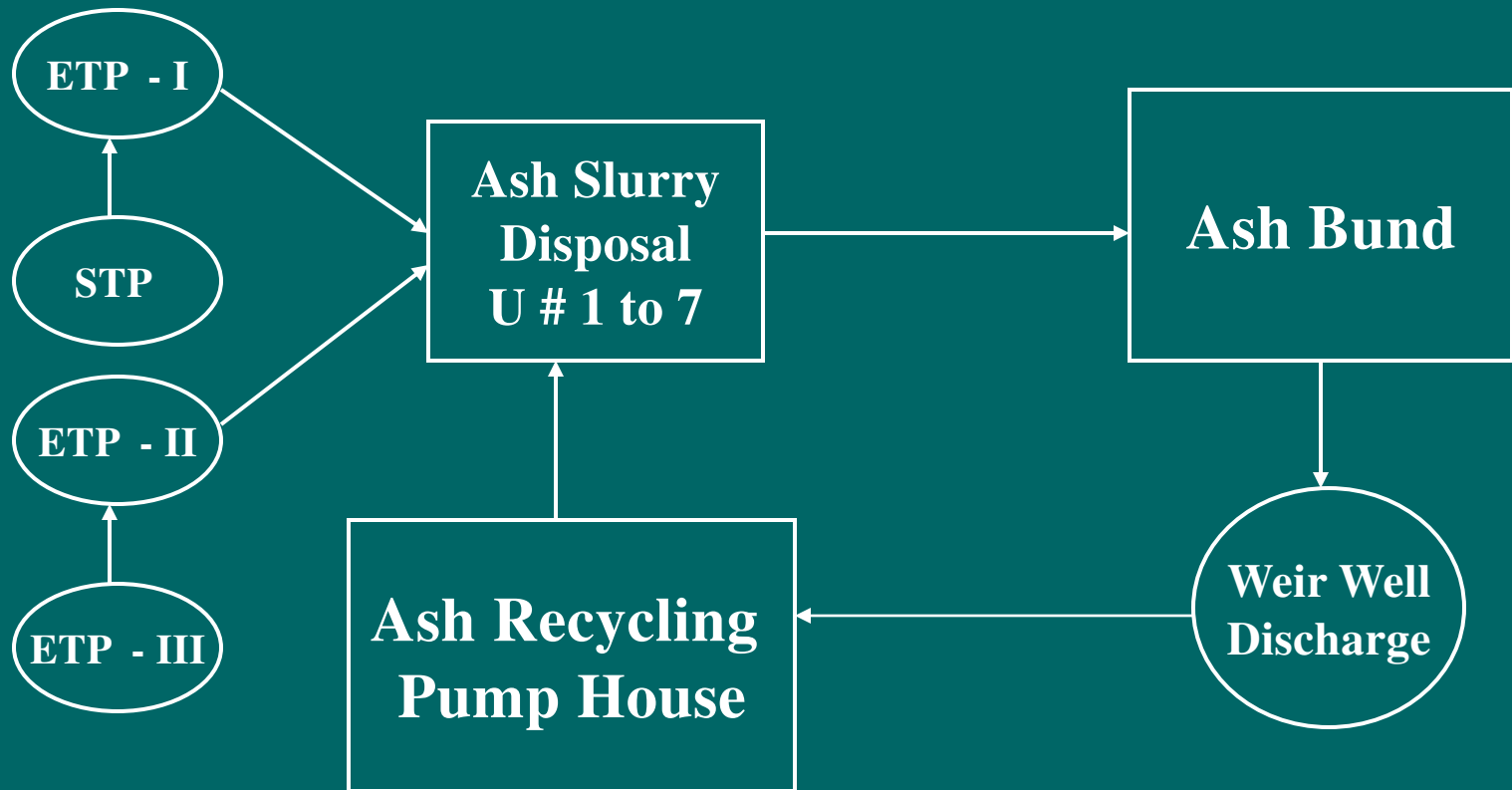
7. Theft of water by using pumps on water lines from dam to TPS.
8. Plant premise is not compact hence piping's are long.
9. Most of the pipes are underground, Hence identification and attending leakage takes time.
10. Temperature of Chandrapur city touches 46 °C in summer, therefore continuous water sprinkling at coal yard & nearby CHP area is required to reduce fugitive emission.
11. Both one day reservoirs are open to atmosphere for high rate of evaporation.

## 5. Technologies adopted to reduce water consumption

## Introduction

- Five units have already crossed 25 years of life.
- Power stations was designed with water systems having liberal considerations for various requirements and high design margins.
- However as the requirements became stringent new technologies were introduced to save water.
- TPS is now using Zero discharge concept and no water is let out.

## Waste Water Recovery Cycle



# 1. Sewage Treatment Plant-I

- Commissioned in Apr 1987.
- **Installed capacity of 80 m<sup>3</sup>/Hr**
- Treats Colony sewage drains.
- **Clear water is fed to sludge disposal pump House.**



# Sewage Treatment Plant-I



## 2. Sewage Treatment Plant-II

- Commissioned in Aug 1992.
- **Installed capacity of 160 m<sup>3</sup>/Hr**
- Treats Colony sewage drains.
- **Clear water is fed to sludge disposal pump House.**



# Sewage Treatment Plant-II





### 3. Effluent Treatment Plant-1

- Commissioned in Jan 1997.
- **Installed capacity of 1600 m<sup>3</sup>/Hr**
- Treats power station drains.
- **Clear water is fed to sludge disposal pump House.**



## 4. Effluent Treatment Plant-II

- Commissioned in Sep 1997.
- **Installed capacity of 500 m<sup>3</sup>/Hr**
- Treats cooling tower drains.
- **Clear water is fed to ash slurry disposal.**



# Effluent Treatment Plant-II



## 5. Effluent Treatment Plant-III

- Commissioned in May 1999.
- **Installed capacity of 100 m<sup>3</sup>/Hr.**
- Treats CHP drains.
- **Clear water is fed to CHP Sprays.**



## 6. Use of ash bund recovery water

- Around 80% water is recovered and recycled.
- Water is again utilized for ash slurry handling.



## 7. Construction of Settling tank

- Built ahead of ETP-I, to contain the water.
- Provide sufficient time for effluents to control their speed & let them settle so that the effluent quality can be improved .



## 8. 'Jalyukt shivar Abhiyan

- Govt. of Maharashtra has launched 'Jalyukt Shivar Abhiyan' to make state drought free by 2019. Project involves deepening & widening of streams, construction of cement and earthen stop dams , work on nullahs & digging of farm ponds.
- **Budget provision has been already made by CSTPS and works will be started within three months.**



## 9. Dry fly ash utilisation

- Cement companies lift fly ash from plant itself.
- All major cement companies have built their infrastructure.





## 10. Cooling Water System



**CTPS has now installed NDCT for its new units to minimise water requirement.**

## 11. Other Activities

- 1. Paryavaran QC presented case study on Ash line modification to reduce water consumption at Singapore International QC competition.**
2. Scheduled Walk down surveys.
- 3. Water Conservation Committees**
4. Installation of Flow meters on water consumption, ETP & STP recovery lines.
- 5. Regular Water balancing and water audits**
6. Brainstorming and Awareness Programme/ arranging conferences.

# 1<sup>st</sup> International conf. on Thermal Power: Chemistry & Sustainable Environment



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## 6. Impact on tariff

# ROYALTY PAID BY CSTPS

	2011-12	2012-13	2013-14	2014-15	2015-16
Industrial water	8425974	8320155	7411465	8130384	7290853
Royalty paid	87537408	86199094	77233101	81540543	71971963
Domestic Water	936217	924494	822913	903370	810094
Royalty paid	411935	406777	362081	397482	356441
Total amount	87949344	86605872	77595183	81938026	72328405
ZP Royalty	17589868	17321174	15519036	16387605	14465681
Amount paid by CSTPS	105539213	103927046	93114220	98325631	86794086

# Impact of water charges on tariff



- **Rate of royalty charges:**

**Industrial Water – Rs. 10.03 / 10 m<sup>3</sup>**

**Domestic Water – Rs. 0.44 / 10m<sup>3</sup>**

- **Further cess on use water is also paid Rs. 80 Lakhs/month.**
- **Impact of water charges on tariffs is @ 0.0077 Rs/KWh.**

## 7. Way Forward



## 1. Use of sewage water:

**CSTPS is planning to use sewage water from Chandrapur city. To assess the feasibility, work order is placed on Consultant.**

**As per draft report, @45 MLD treated water is available from Chandrapur city which can cater the requirement of ash handling of TPS.**

**MAHAGenco is first power utility in India to try use sewage water for secondary uses in power station.**

## Use of Sewage water

- MAHAGENCO for its expansion of existing Koradi TPS, has signed MoU with Nagpur Municipal Corporation (NMC) to supply treated waste water to the extent of 40 mm<sup>3</sup>/Year (110 MLD) with 10% overloading capacity to meet the demand of condenser cooling water.
- The present source of raw water for the existing TPS; the Pench dam could not cater additional water requirement .

- The project is awarded at the cost of 195 Crores including Comprehensive AMC for 10 years.
- For this, NMC is availing the grant facility under "Jawaharlal Nehru National Urban Renewal Mission" (JnNURM) to the tune of 90 Crores which they will transfer to MAHAGENCO and the balance costs will be borne by MAHAGENCO.
- As per Agreement between MAHAGENCO & NMC, MAHAGENCO will pay 15 Crores per year to NMC.
- This project is the first of its kind where sewage water will be reused for Thermal Power Station

# Future plans

## 2. Installation of flow meters:

- on each line requiring measurement. Data compilation already completed.

## 3. Side screen filters:

- By installing side screen filters at Cooling Tower, blow down frequency will be minimised.

## 4. Rain water harvesting

- Already employed in new projects.

## 5. To increase plantation

- 43% plantation is done as against 33% norm.

**THANKS**