JAIPRAKASH
POWER VENTURES LIMITED

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GROUP

JAYPEE NIGRIE SUPER THERMAL POWER PLANT

(A Unit of Jaiprakash Power Ventures Limited)

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Water Optimization & Conservation

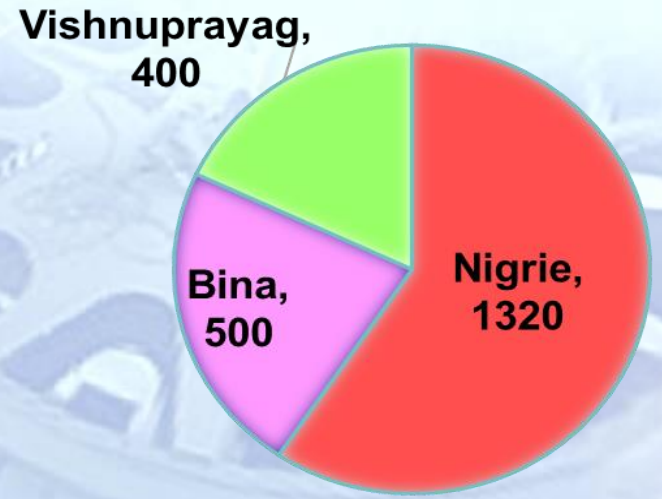
JPVL at A Glance - Generation Capacity– 2220MW

Vishnu Prayag
Hydro Power Plant
4X100 MW

Jaypee Bina
Thermal Power Plant
2X250 MW

Jaypee Nigrie
Super Thermal Power Plant
2X660 MW

Amelia (North) Coal Mines
3.36 MMTPA Mining Capacity



- Boiler Details: L&T MHI Make, 2322 TPH, Supercritical Twin Vortex, Coal Fired Boiler.
- Turbine Details: L&T MHI / MHI Reheat and Condensing, 3 casing, 4 exhaust flow type (TC4F-30).
- COD Unit # 1 - 03/09/2014
- COD Unit # 2 - 21/02/2015
- Dedicated Transmission Line (400 kV AC) 161 km Nigrie-Satna Line.

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SALIENT FEATURES

S.No.	Particulars	Details
1	Year of Commercial Operation Declaration (COD):	Unit # 1 – Sept. 2014. Unit # 2 – March 2015.
2	Source of Water	Gopad River
3	Initial Allotted Annual Quantity of Water by WRD (M.P)	58.32 Mcm/year (Agreement dated 28/09/2010)
4	Revised Allotted Annual Quantity of Water by WRD (M.P)	42 Mcm/year (Agreement dated 05/08/2016)
5	Allowable Specific Water Consumption limit to JNSTPP, Nigrie (as per MoEF&CC, Gazette S.O.3305(E) dated 07/12/2015)	3.5 m3 /MWh

SPECIFIC WATER CONSUMPTION

Financial Year	Raw Water (in cum)	Power Gen. (in MU)	Specific Water Consumption (in cum/MWh)
2017-18	1,89,75,000	7,688.93	2.47
2018-19	1,73,64,747	7,330.28	2.37
2019-20	1,42,05,176	6,312.59	2.25
2020-21	1,78,44,107	8,106.40	2.20
2021-22	1,60,44,765	8,381.90	1.91
2022-23	1,64,80,224	8,036.35	2.05
2023-24	1,99,76,272	9,840.56	2.03

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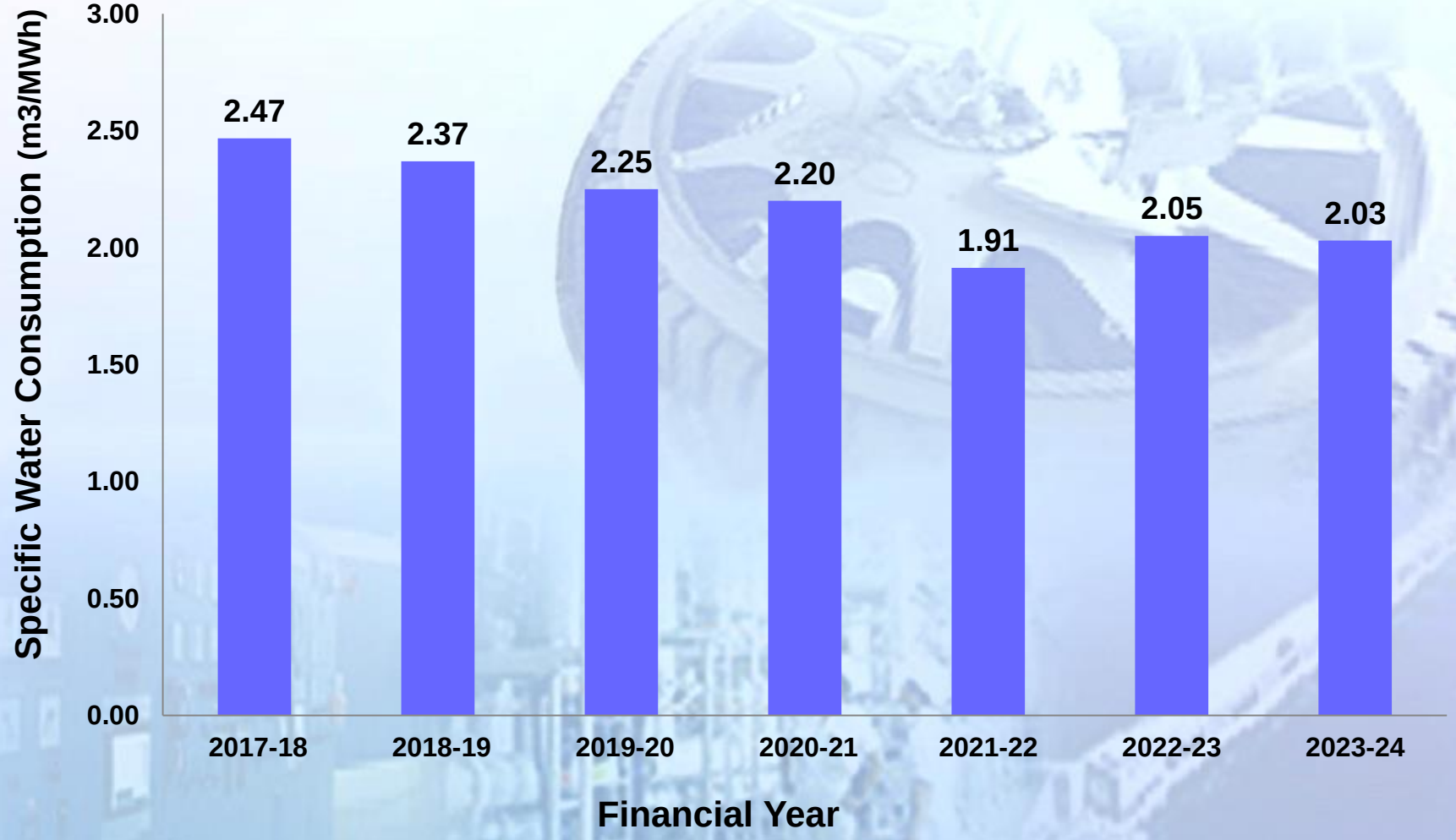
SPECIFIC WATER CONSUMPTION (FROM 2017-18 TO 2023-24)

Specific Water Consumption Details (cum/MWh)



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ACTION TAKEN TO OPTIMIZE WATER CONSUMPTION

AS PER DESIGN AND ENGINEERING

- Closed Cycle NDCT based Cooling water System.
- The concept of “Zero Liquid Discharge” implemented by ensuring 100% effluent treatment & re-usage it with in plant process.
- All the effluents are collected in Central Monitoring Basin (CMB) and treated adequately in the WWTP. Treated water is reused within the plant itself.
- Our both Ash Ponds are equipped with AWRS and 100% Ash water recirculation is carried out to prevent any ash mixed water discharge to outside.
- Plant is based on State of art technology and we are operating the plant in best eco-friendly manner like specific oil consumption, specific fuel consumption, Aux. Power Consumption and Specific Water Consumption.
- Best Operation & maintenance practice.

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OPERATION AND MAINTENANCE PRACTICES

- Pre-treatment plant & Waste water treatment Plant are based on High Rate Solid Contact Clarifier (HRSCC) technology.
- Ion Exchange Resin based DM Plant along with UF Skid.
- WWTP is based on state of art technology having Effluent Treatment with HRSCC, DMF & RO based Technology (2 W+1S).
- RO reject water is utilized for dust suppression purposes at CHP stack yard area, internal roads etc & helps to lower down the fugitive emission.
- Drains of Boiler area is channelize to Oil water separation system and then this separated water is used for Ash water slurry.
- Every intake point has Digital Water Metering system for quantity of water discharge.
- Reading taken from all water discharge points and also cross-checked meter readings w.r.t pump running hours & design flow on daily basis.

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OPERATION AND MAINTENANCE PRACTICES

- Close monitoring of Raw water intake.
- Close monitoring of Daily Raw water, Clarified water & DM water consumption.
- Voluntarily Water balancing exercise w.r.t water consumption on daily basis.
- Regular effort to keep Plant water & Steam line Leakage free.
- Regular monitoring of Boiler drains & vents.
- Auxiliary equipment cooling system are in closed cycle.
- Recycling of Ash Pond Toe Drain Water in a closed cycle.
- Adoption of proper Boiler House keeping practices.
- Treated Sewage water is used in Horticulture and Vegetable farming within the plant, Township area.

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SIGNIFICANT ACHIEVEMENTS

- 41.11% net reduction in allotted water quantity (voluntarily) in last 7 years.
- For FY 2023-24,Specific Water consumption achieved to 2.03 cum/MWh against specific Water Consumption prescribed limit of 3.5 cum/MWh .
- 17.80% less water consumption from FY 2017-18.
- 1 % less water consumption (per MWh) from previous FY 2022-23.
- IMS Certified Plant
  - ISO 9001:2015
  - ISO 14001:2015
  - ISO 45001:2018
  - ISO 27001:2013
  - ISO 50001:2018

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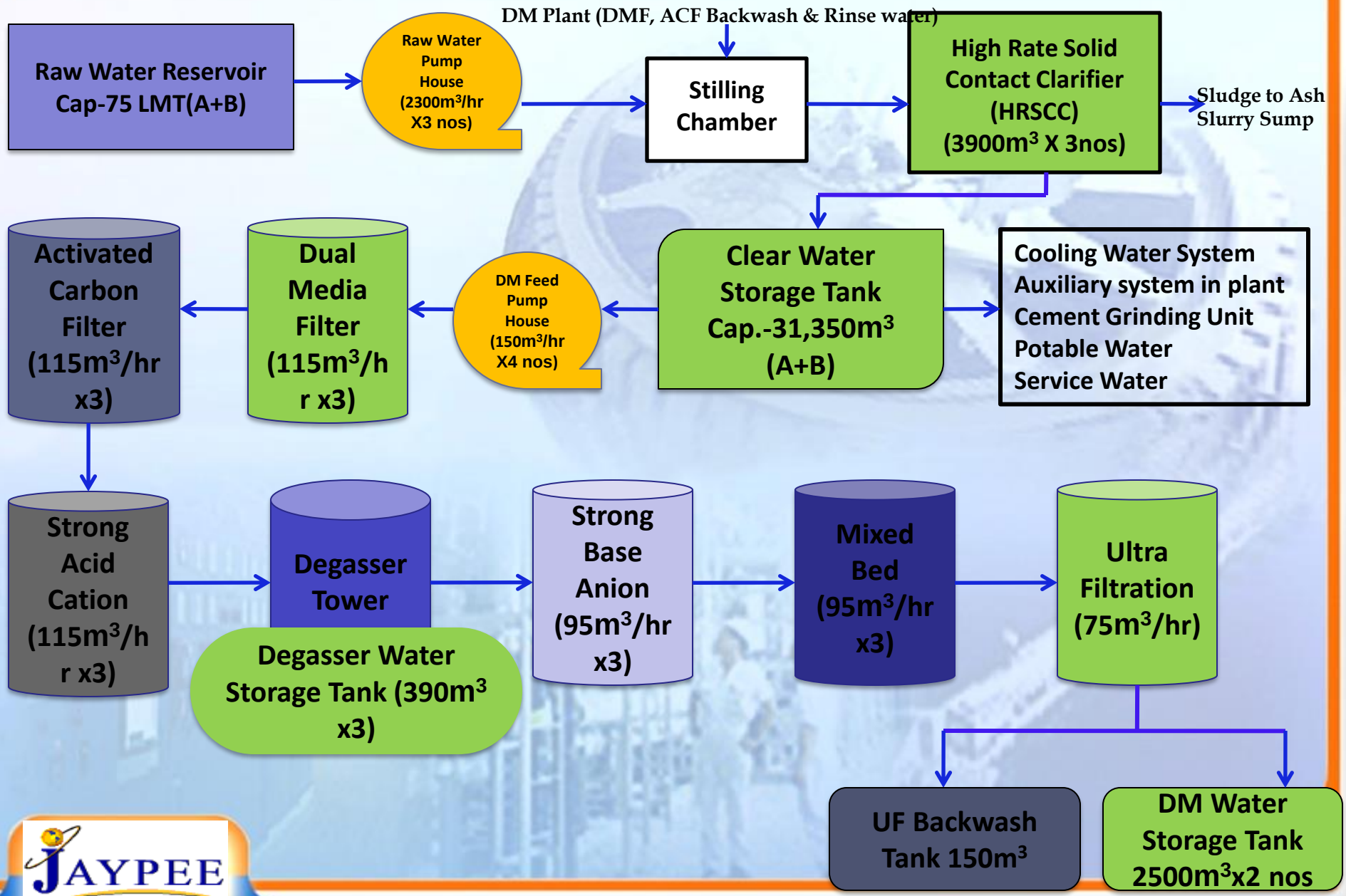
COLLECTION OF WASTE WATER FROM ALL POSSIBLE SOURCES

- CT Blow Down
- AVGF Backwash(Side stream filters)
- DM Plant Neutralization Pit
- CPU Neutralization Pit
- Boiler Flash Tank
- TG Flash Tank

Central Monitoring Basin (CMB)

TO WASTE WATER TREATMENT PLANT (WWTP)

WATER TREATMENT PLANT (RAW WATER TO DM WATER)



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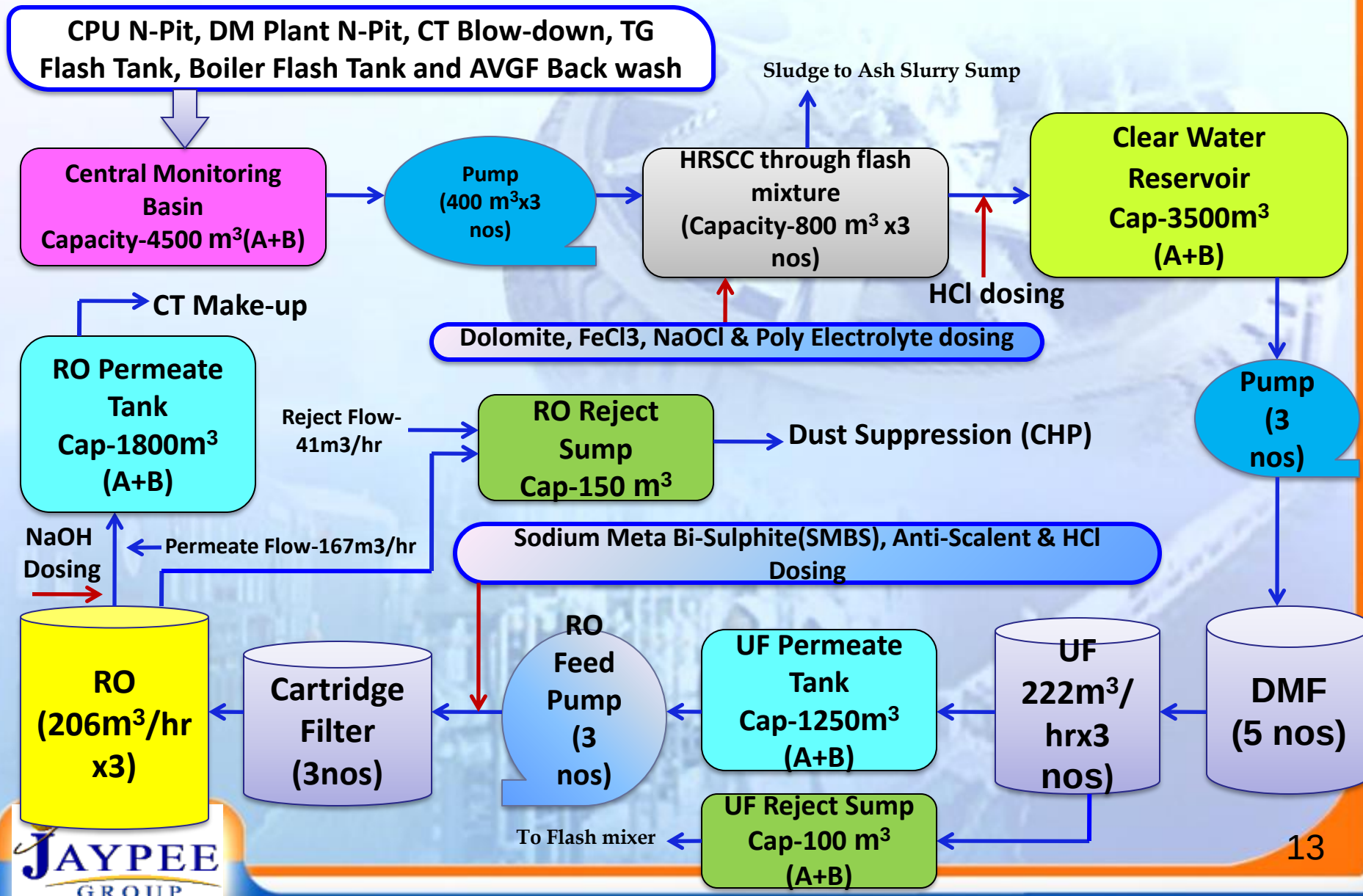
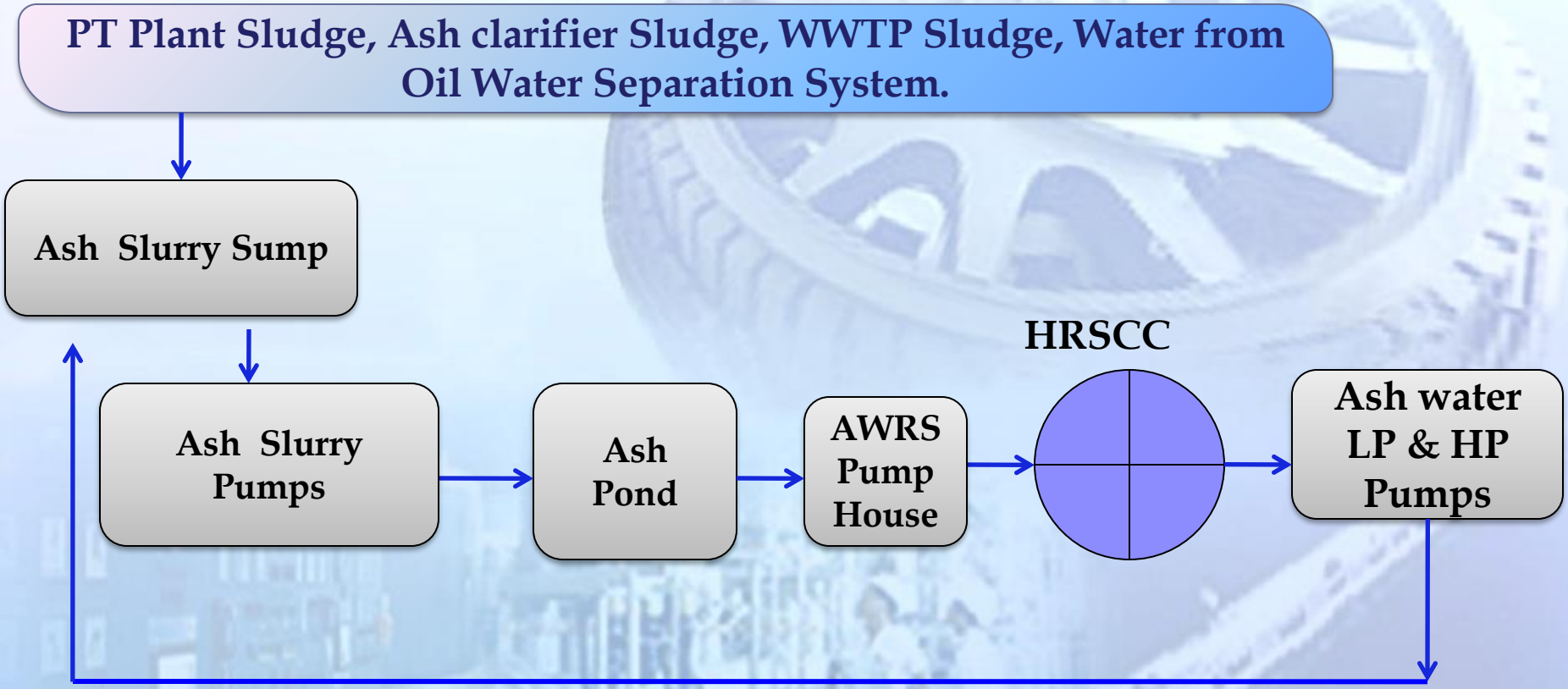
WASTE WATER TREATMENT PLANT



DEDICATED ASH WATER RECIRCULATION SYSTEM

100% Recirculation of Ash Pond over flow Water through Ash Water Recirculation System (Closed Cycle).



WASTE WATER TREATMENT PLANT (RO BASED) AND RO REJECT WATER FOR DUST SUPRESSION

WWWTP

UF and RO Skids

Water fogging system at Track hopper

Water fogging system at Wagon Tippler during Unloading

ASH POND AND POND ASH OVER FLOW WATER CHANNEL

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ASH WATER CLARIFIER

Holding capacity – 4275 cum , working - 1425cum/hr

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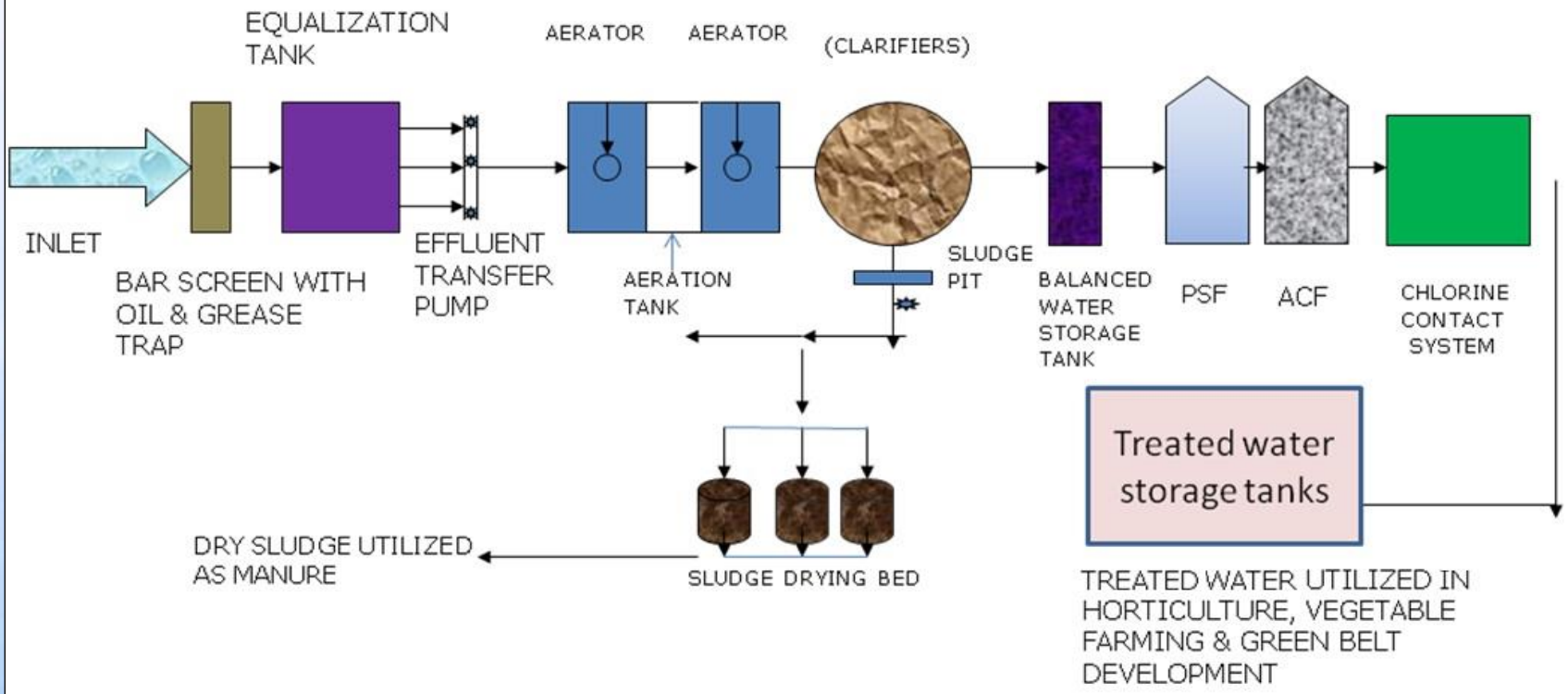
SEWAGE TREATMENT PLANT(1000 &100 KLD)

FLOW DIGRAM OF SEWAGE TREATMENT PLANT (2 NOS) CAPACITY – 1000 & 100 KLD



SEWAGE TREATMENT PLANT, 1000 KLD

STP 1000 KLD Capacity

Pressure Sand and Activated Carbon Filters

Air Blowers

Clarifiers

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JNSTPP NIGRIE, WE ARE COMMITTED TO :

- To be the most efficient Power company of the country with optimum utilization of resources, to provide power to all.
- Minimize Specific Water Consumption.
- Maintain COC 5.1.
- Maintain Zero Liquid Discharge &
- Run Plant in Eco-Friendly manner.

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Thanks

Jaypee Nigrie Super Thermal Power Plant, Nigrie

(A Division of Jaiprakash Power Ventures Ltd.)

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