# NTPC Ltd, Sipat- CII Power plant Summit 2023

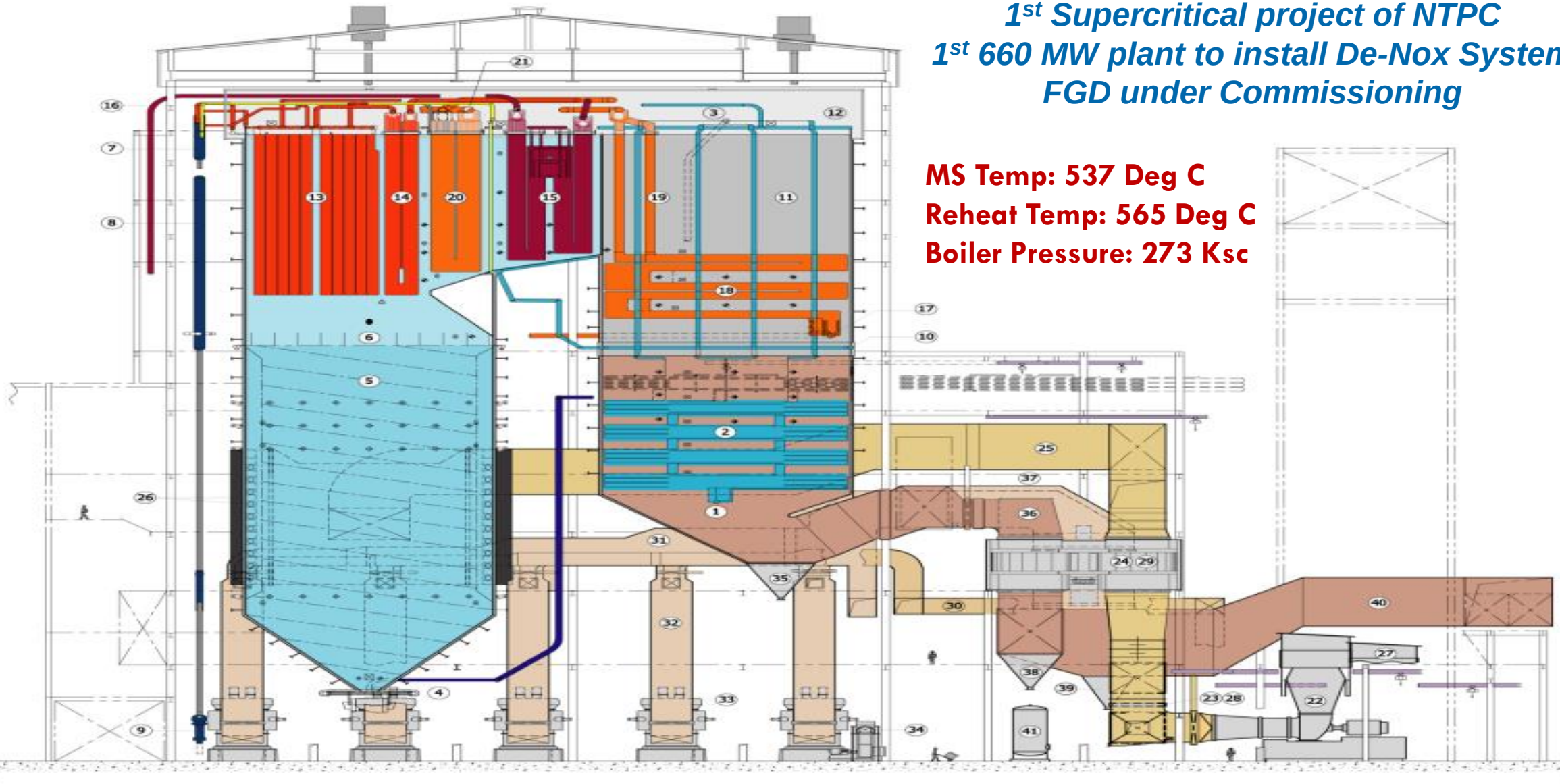
- Team Members
  - Mr Abhishek Saxena, DGM EEMG
  - Mr Arnav Kothiyal , Senior Manager EEMG

ISO 9001:2015,
ISO 14001:2015,
ISO 45001:2018,
ISO 50001:2018

# Sipat Super Critical Boiler (2980 MW, 660 MW X 3 + 500 X 2 MW)

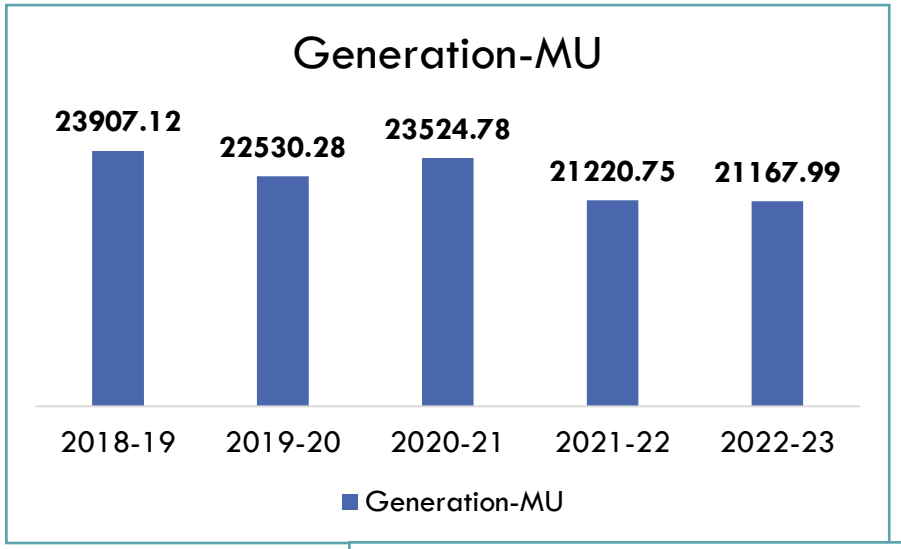
*1st Supercritical project of NTPC*
*1st 660 MW plant to install De-Nox System*
*FGD under Commissioning*

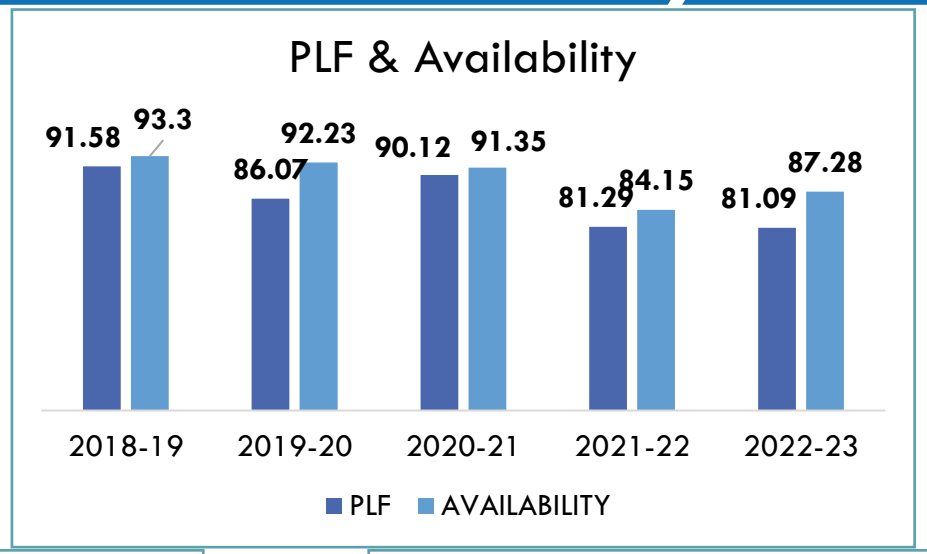
**MS Temp: 537 Deg C**
**Reheat Temp: 565 Deg C**
**Boiler Pressure: 273 Ksc**

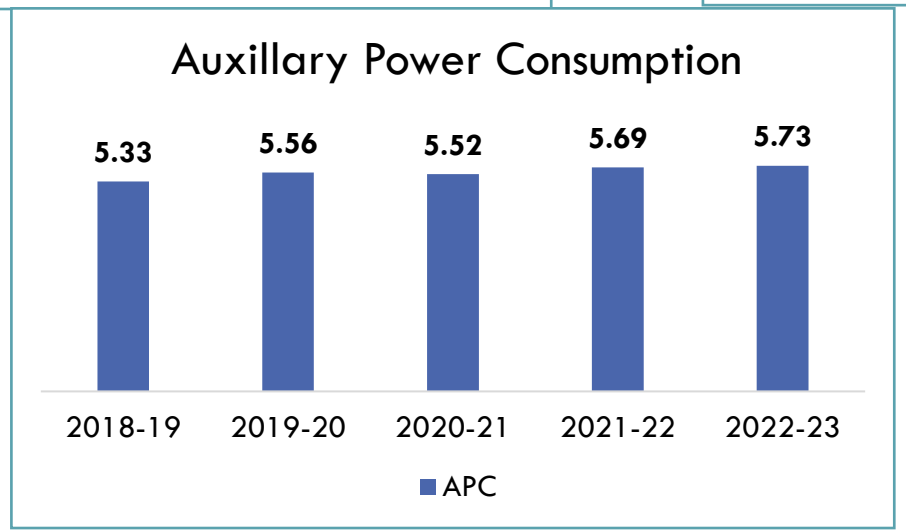


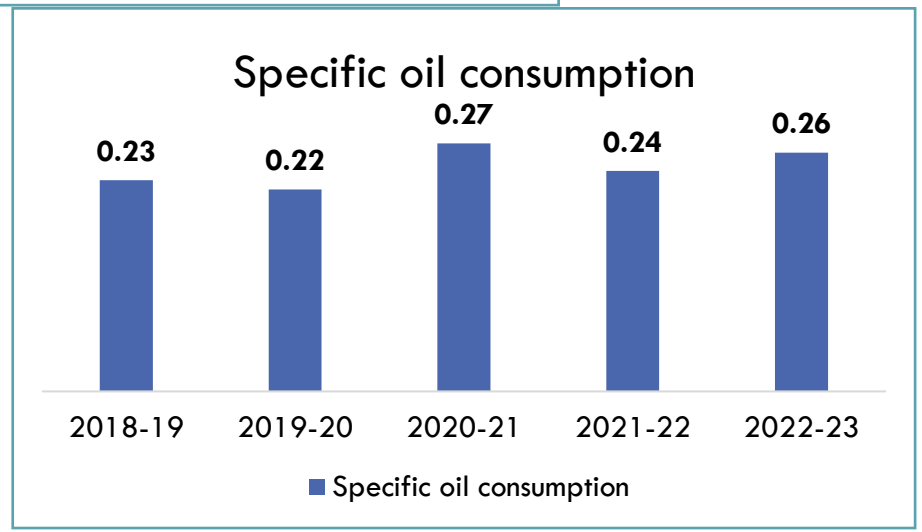
# Sustainability & Power

# SIPAT: Consistent performer over the years



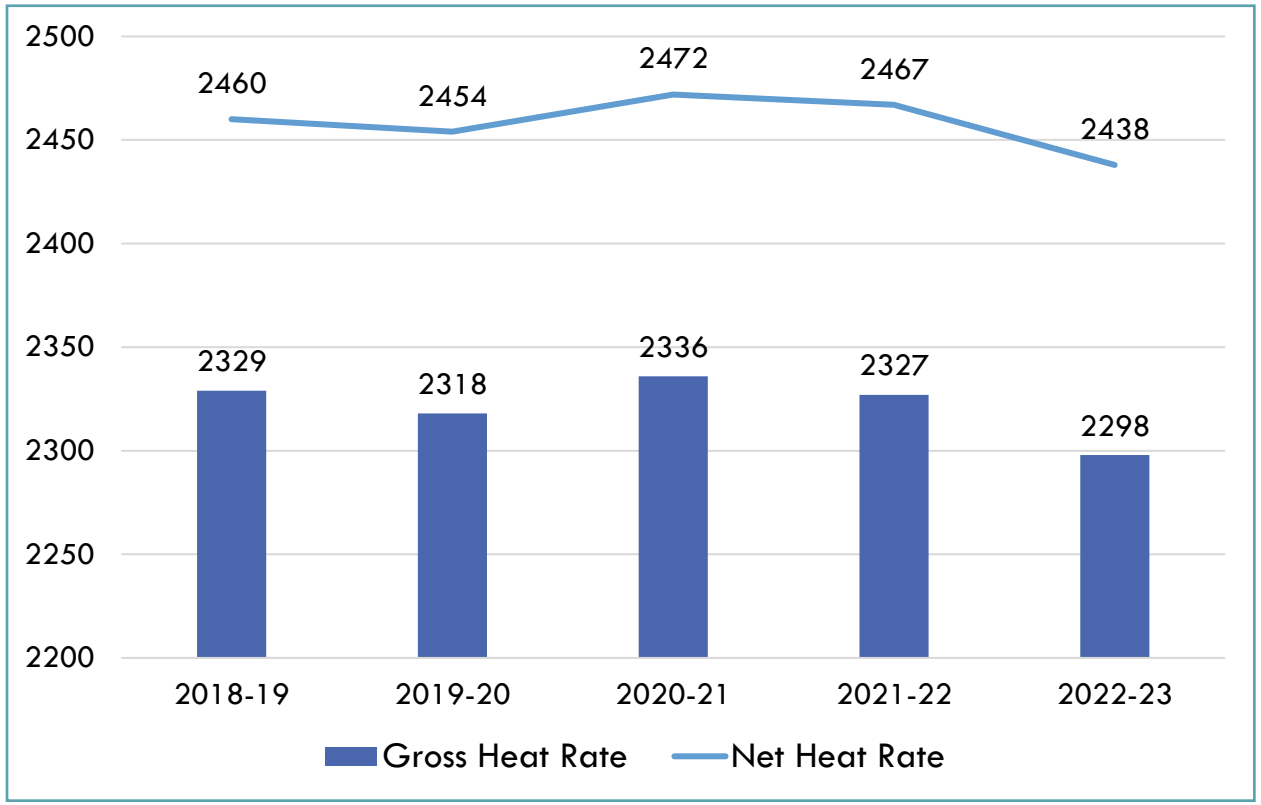



# Gross & Net Heat Rate Trends

- Central electricity regulatory commission (CERC) has fixed a normative Heat Rate for NTPC Sipat at 2338 kcal/kwhr based on the technology.
- NTPC Sipat has been able to maintain Gross Heat Rate below the Norms continuously for the past few years.
- Despite low PLF Heat Rate improved by 29 Kcal/kWh (CERC allows a degradation 1.25 %/29.35 kCal/kWh).
- **Net Heat-rate improved by 29 Kcal/kWh over previous Year.**



# Benchmarking

# Bench Marking

## Internal NTPC Performance Evaluation Matrix Ranking

- NTPC has a system of evaluating performance of its station based on a comprehensive matrix which covers all the aspects of performance like O&M Index, MOU Index, Thrust Area Index and Fuel index.
- Business Excellence(BE) department through BE position report.

| Year | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 |
|---|---|---|---|---|---|
| Position | 5th | 1st | 4th | 1st | 4th |

# APC Benchmarkng- With NTPC Mauda

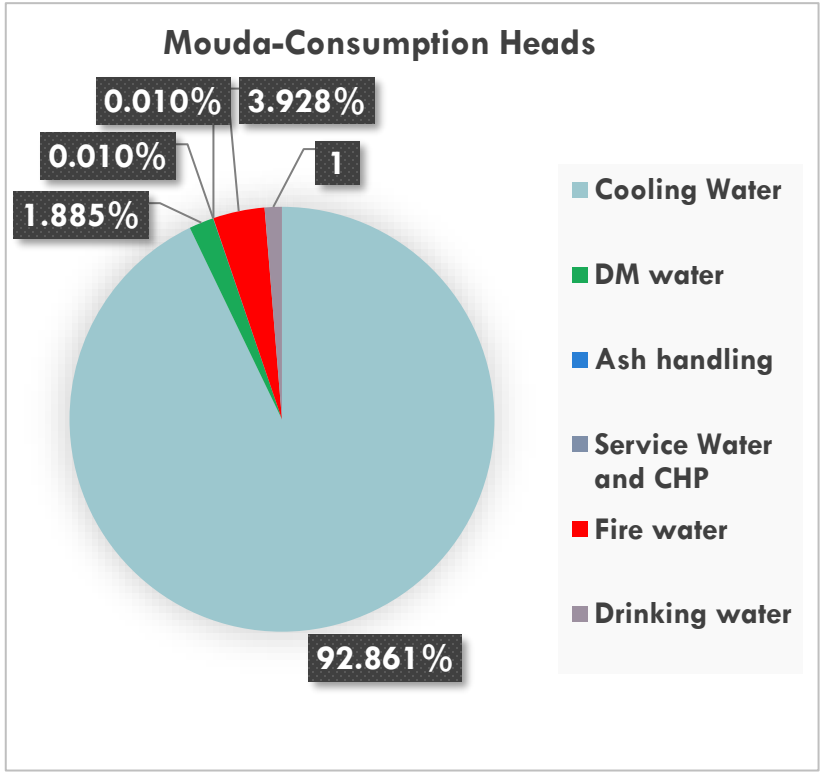
| SN | Description | Sipat- Stg I 660 MWX3 | Mouda- Stg II 660MWX2 | ECI-Sipat | ECI-Mouda (KW /MW) |
|---|---|---|---|---|---|
| | | KW | KW | KW / MW | KW / MW |
| 1 | Draft Power | 33501 | 18800 | **16.9** | **14.2** |
| 2 | Milling Power | 9986 | 7538 | **5.0** | **5.7** |
| 3 | Condensate System | 6772 | 5012 | **3.4** | **3.8** |
| 4 | CW System | 17404 | 10728 | **8.7** | **8.1** |
| 5 | ESP System | 5702 | 4510 | **3.0** | **3.4** |
| 6 | Ash Handling system | 5234 | 3380 | **1.75** | **1.60** |

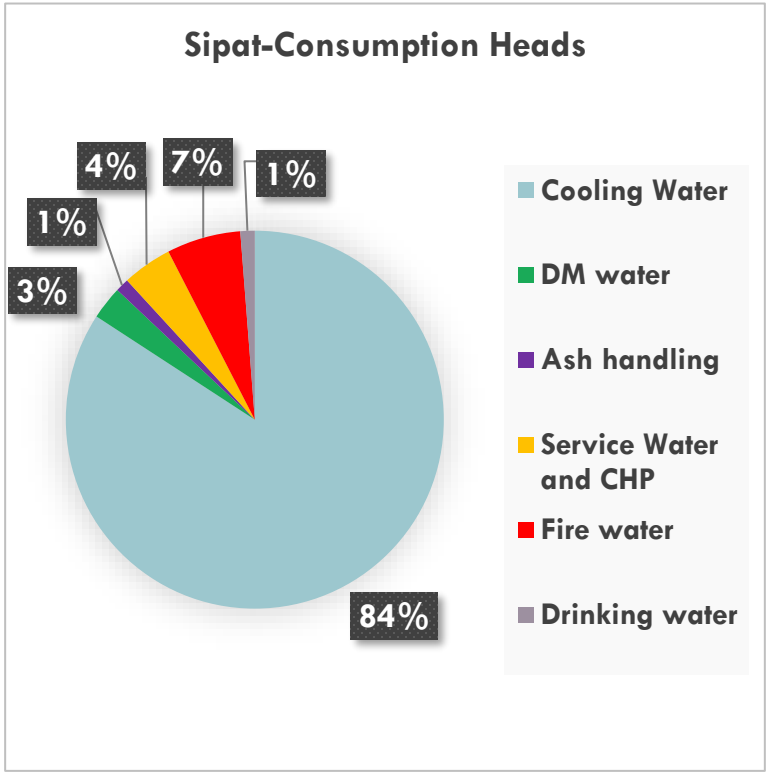
Action plan made for improving the Draft power & In Unit 1 after AOH Draft power ECI is 12.0 kW/Kwh. Unit 2 under AOH.

CW system ECI higher due to Design

100 % Dry ash utilization.

# Water Consumption Benchmarking – NTPC Mauda




- Specific water consumption : Mouda- 2.16; Sipat 2.48Lt/unit
- Only one reservoir in Mouda, capacity leading to reduced seepage and evaporation losses.
- Dry ash utilisation 100% in Mouda due to high demand.
- Action plan enforced to reduce the water loss in fire system & Service water, around 11 KM water pipe line being replaced.

# Bench Marking

## External : PAT (perform Achieve and Trade)

NTPC Sipat is Notified by BEE under PAT cycle VII

Baseline : 2418 kCal/kWh @ 2018-19

Target : 2412 kCal/kWh Assessment Year 2024-25.

| PAT CYCLE | PERIOD | Aassessment Year | NHR TARGET | NHR ACHIEVED | ESCERTS |
|---|---|---|---|---|---|
| PAT CYCLE-I | 2012-15 | 2014-15 | 2484 | 2438 | +36443 |
| PAT CYCLE-II | 2016-19 | 2018-19 | 2430 | 2424 | +13499 |
| NTPC SIPAT TRADED CYCLE-1 ESCERTS ON IEX AND EARNED APPX 3 Cr. | | | | | |
| PAT CYCLE-II M&V AUDIT , AEA RECOMMENDED FOR 13499 ESCERTS | | | | | |

# New Initiatives, Technology Use & Process Improvement Projects

# In-house Application for Generation Monitoring

*Implemented in 24 NTPC Projects.
Won NTPC *National Professional Circle Championship for This application

ABT Version 6.1 (WR ER and NER) Dated: 14/2/2023

ABT / RAMP RATE MONITORING SYSTEM — Sipat, STAGE-1

Block : 86 | 21:15-21:30 | Time Left 13:20

| SG+AGC | AG |
|---|---|
| 1802 | 1853 |

| 10% Dev Limit | Dev (MW) | DEV (%) |
|---|---|---|
| 100 | 51.81 | 2.88 |

| INST FREQ | AVG FREQ | PRED FRQ |
|---|---|---|
| 50.00 | 50.011 | 50.00 |

UI within +/-10%

Original SG : 1856.3
90% SG : 1702
110% SG : 1902
Inst Gen : 1842.02
Avg AGC : -54.67
Isnt AGC : -64.16
Predicted Gen : 1843
Day Tot DSM (Rs) : 0.48 Lakh
DAM : Rs. 7.60
RTM : Rs. 12.00

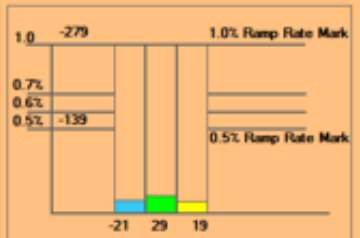
Asking Rates :
49.95 Hz : 49.94 Hz
50.03 Hz : 50.03 Hz
90% SG : 1908.03 MW
110% SG : 2133.03 MW

Asking Rate For SG: 1795

RTDA Rate (P/KWh): 40.34 ECR : 169
Normative SG(MW): 1856.25 SAVE

Block Net DSM : 0
DSM Charges: 21888
Fuel Cost: -21888
RTDA Charges: 0

RAMP RATE PREDICTION




Todays Total Ramps : 0
Ask Rate

| | SG | 0.5 % | 1 % |
|---|---|---|---|
| SET POINT | 1801.58 | | |
| ASKING | 1795 | | |
| Dev | 52 | | |

No Ramp

SYSTEM STATUS
OK Internet connection
OK PI Connection
OK Fetching SG
Counter : 819
Rev No 184
SG Fetching Time : 15/02/2023 09:13:33 PM
System Time : 15 Feb 2023, 09:16:43 PM
DAM : 15/02/2023 RTM : 15/02/2023

CONTROL SECTION
Start Application
Display Report | Export Report
Raw PI Data | Settings
Monochromatic | Voice Test | About

| Block | Orginal SG | SG+AGC | AG | UI (%) | Avg Fre |
|---|---|---|---|---|---|
| 84 | 1856.25 | 1797.03 | 1804.89 | 0.4 | 50.0 |
| 85 | 1856.25 | 1822.18 | 1824.66 | 0.1 | 49.9 |
| 86 | 1856.25 | 1801.58 | 1853.39 | 2.9 | 50.0 |
| 87 | 1856.25 | | | | |
| 88 | 1856.25 | | | | |
| 89 | 1856.25 | | | | |
| 90 | 1856.25 | | | | |
| 91 | 1856.25 | | | | |

Next Block Schedule

| Block No | Block SG | Ramp Rate |
|---|---|---|
| 87 | 1856 | No Ramp |

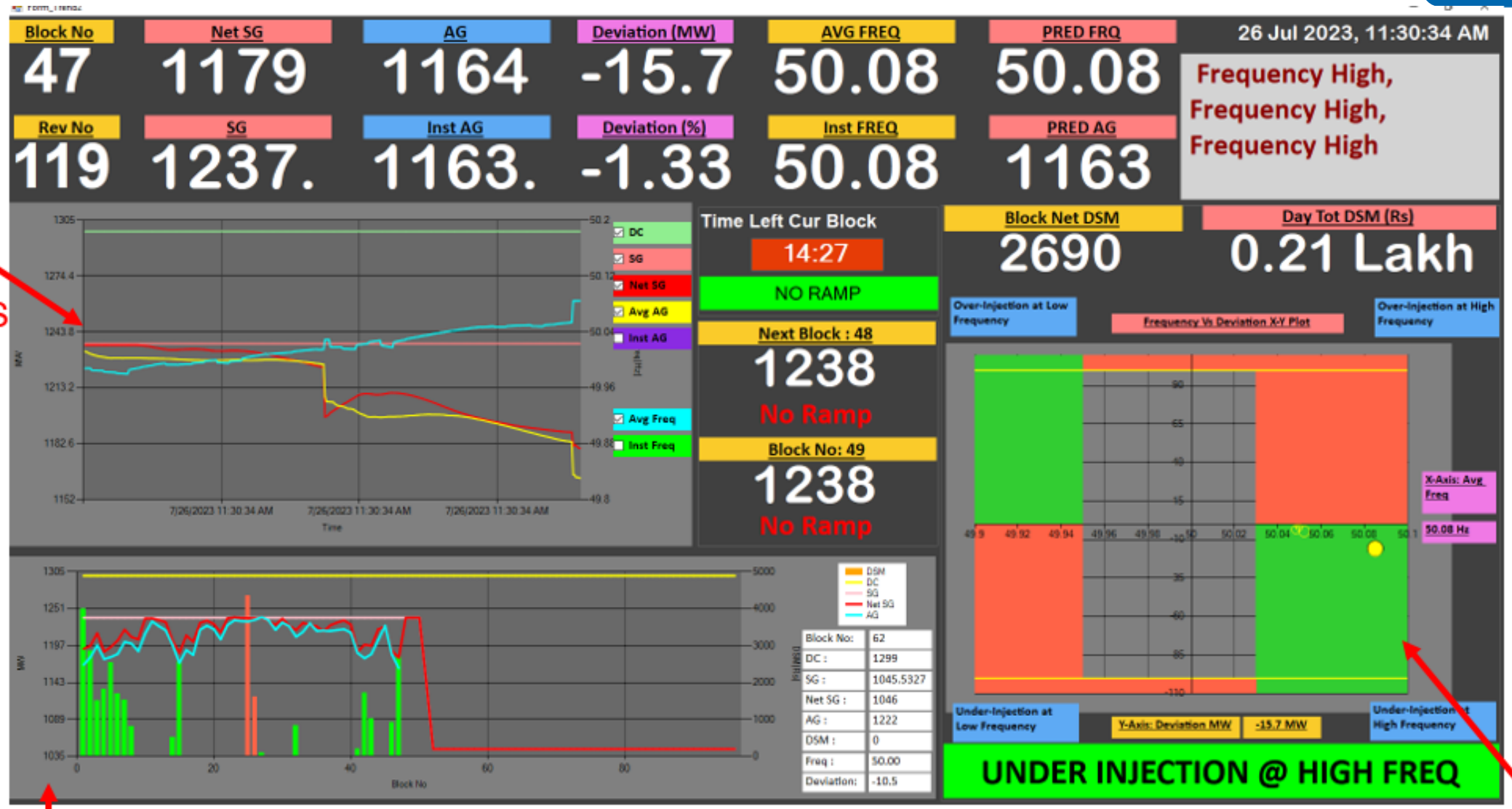
LOAD AND AGC

| Unit No | Unit1 | Unit2 | Unit3 | Tot(Nor) |
|---|---|---|---|---|
| Load | 643 | 646 | 646 | |
| Inst AGC | -23 | -23 | -23 | -68.4(-64.2) |
| Avg AGC | -20 | -19 | -19 | -58.3(-54.7) |

Application initialized and ready to use

LAST ALERT AND SYSTEM LOGS
15/02/2023 09:15:25 PM: Error in Fetching SG got resolved
15/02/2023 09:15:20 PM : SG Updating
15/02/2023 09:15:20 PM: PI connection ok
15/02/2023 09:15:15 PM : Voice Alert : Application initialized and ready to use
15/02/2023 09:15:07 PM: Connected to PI Server :
15/02/2023 09:15:03 PM: Internet connection Restored
15/02/2023 09:15:03 PM: Error in Fetching SG

# Tending & Prediction for Correct Operation




3. REAL TIME TRENDS

1. REAL TIME VISUAL SUMMARY FULL DAY DSM REPORT

2. X-Y PLOT

# Upgraded Energy Management System With Mobile Alerts

## Real time Dash Board

Home
Real Time
Equipments
Communication
Single Line
Electrical Health
KPI Report

Eco Struxure — Life Is On Schneider Electric

ENERGY MONITORING SYSTEM
NTPC LIMITED, SIPAT (STAGE-I&II)

Server Reports

UTILITY SYSTEM

NTPC Sipat Auxiliary Power (KW) Dashboard

| Description | Unit 1 | Unit 2 | Unit 3 | Stage-1 | Unit 4 | Unit 5 | Stage-2 | STN |
|---|---|---|---|---|---|---|---|---|
| UNIT APC | 27,294 | 0 | 30,324 | 57,618 | 20,044 | 22,444 | 42,488 | 100,107 |
| Draft Power | 9,019 | 0 | 12,026 | 21,044 | 7,517 | 7,979 | 15,496 | 36,540 |
| Mill Power | 3,066 | 0 | 3,117 | 6,183 | 2,228 | 2,346 | 4,574 | 10,757 |
| Condensate | 2,227 | 0 | 2,301 | 4,529 | 1,376 | 1,539 | 2,915 | 7,444 |
| CW SYSTEM | 5,774 | 0 | 5,796 | 11,569 | 4,188 | 4,280 | 8,468 | 20,037 |
| Cooling System | 1,341 | 0 | 1,218 | 2,559 | 764 | 765 | 1,528 | 4,088 |
| ESP System | 1,919 | 234 | 1,982 | 4,134 | 1,560 | -575 | 985 | 5,120 |
| CT System | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Feed Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Vacuum Pump | 208 | 0 | 206 | 414 | 99 | 98 | 197 | 610 |
| UST | 1,363 | 277 | 1,256 | 2,896 | 1,315 | 1,237 | 2,552 | 5,448 |
| FGD system | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other System | 12 | 0 | 179 | 191 | 530 | 504 | 1,034 | 1,224 |

| Common System | Stage-1 | Stage-2 |
|---|---|---|
| Ash Handling | 546 | 3,075 |
| Coal Handling | 1,701 | 483 |
| DM Plant | 375 | 326 |
| Compressed Air | 1,428 | 1,093 |
| Fire Water | 0 | |
| FOPH | 0 | |
| Workshop | 0 | |
| AWRS | 0 | |
| ADM Building | 0 | |
| Service Building | -63 | |
| Ash Silo | -3 | |
| RWPH | 315 | |
| Total | 9,273 | |
| Colony | 0 | |

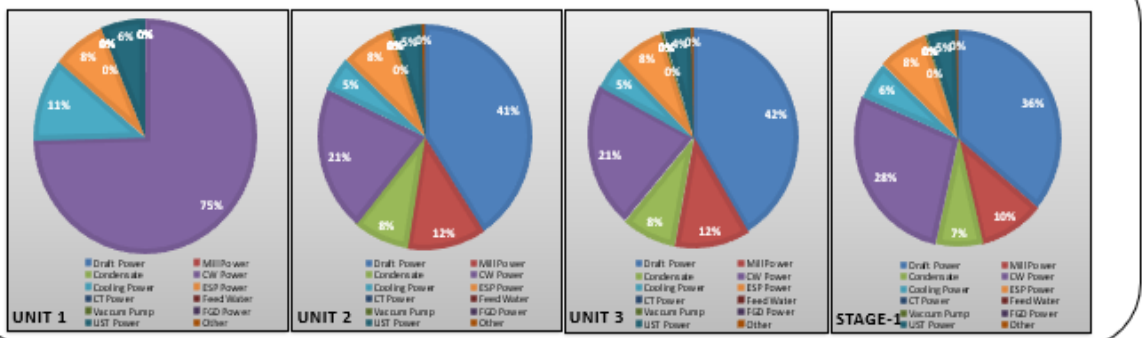
Energy Efficiency

Energy Management System – Developed By Schneider Electric

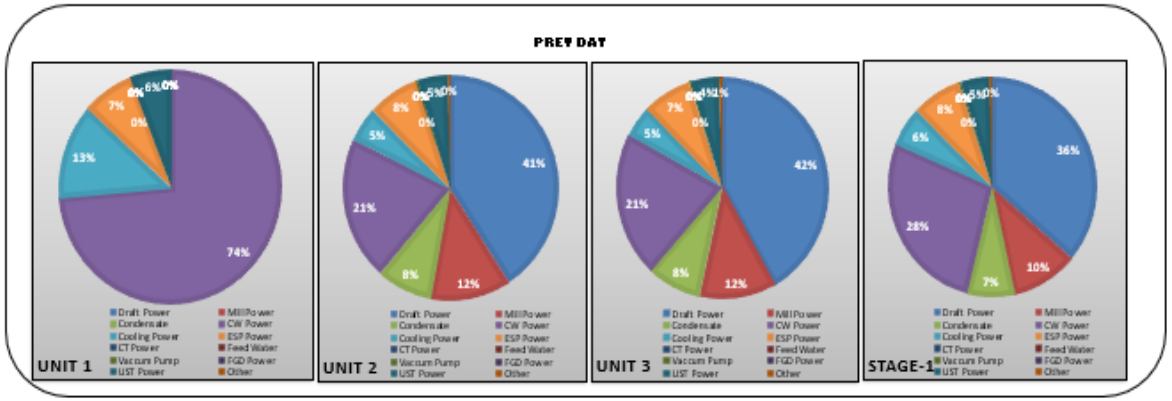
## Day Report System Wise

| | 24-Jul-2023 | Today | | | | Prev Day | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Description | UNIT 1 | UNIT 2 | UNIT 3 | Stage-1 | UNIT 1 | UNIT 2 | UNIT 3 | Stage-1 | Remark |
| 1 | APC% | 0.00 | 4.70 | 4.57 | 4.64 | 0.00 | 4.69 | 4.62 | 4.64 | |
| 2 | UNIT APC | 0 | 30538 | 29605 | 60144 | 0 | 30713 | 29893 | 60605 | |
| 3 | Draft Power | 0 | 11425 | 11260 | 22685 | 0 | 11486 | 11539 | 23025 | |
| 4 | Mill Power | 3 | 3281 | 3131 | 6415 | 0 | 3383 | 3190 | 6574 | |
| 5 | Condensate | 0 | 2359 | 2267 | 4626 | 0 | 2365 | 2282 | 4647 | |
| 6 | CW Power | 5797 | 5850 | 5807 | 17454 | 5797 | 5848 | 5803 | 17448 | |
| 7 | Cooling Power | 885 | 1405 | 1315 | 3605 | 1028 | 1405 | 1317 | 3750 | |
| 8 | ESP Power | 600 | 2208 | 2048 | 4856 | 596 | 2172 | 2036 | 4803 | |
| 9 | CT Power | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 10 | Feed Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 11 | Vaccum Pump | 0 | 102 | 104 | 206 | 0 | 102 | 104 | 206 | |
| 12 | FGD Power | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 13 | UST Power | 490 | 1249 | 1154 | 2894 | 450 | 1249 | 1156 | 2855 | |
| 14 | Other | 0 | 103 | 99 | 202 | 0 | 103 | 135 | 237 | |
| | | 7775 | 27982 | 27186 | 62943 | 7871 | 28112 | 27562 | 63544 | |

CURRENT DAT

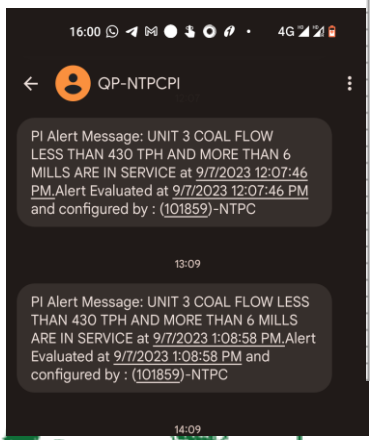



PREV DAT

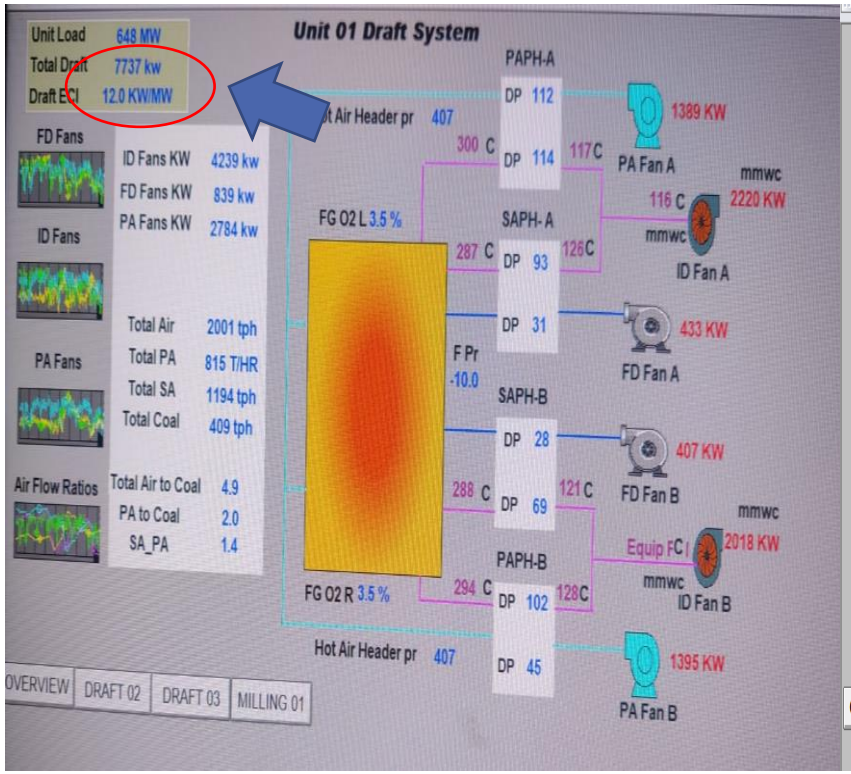


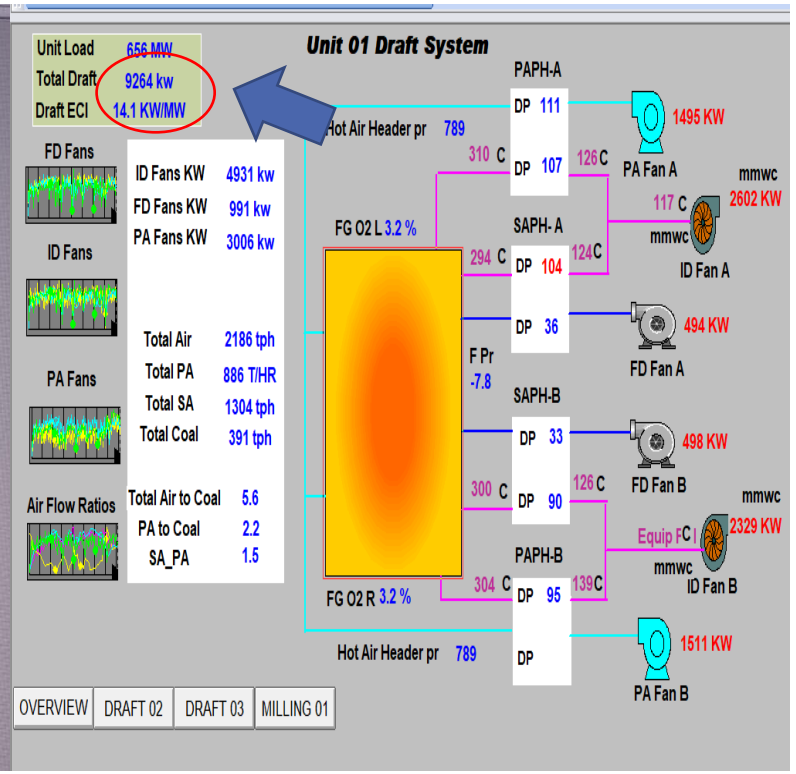

## Power trends


## Pi Alert sample message



# Draft Power Improvement




Draft power reduction by duct repair, thickness mapping, NMEJ repair,
**Refractory lining on flue gas guide vanes & area prone to erosion.**

# Condenser Performance Improvement

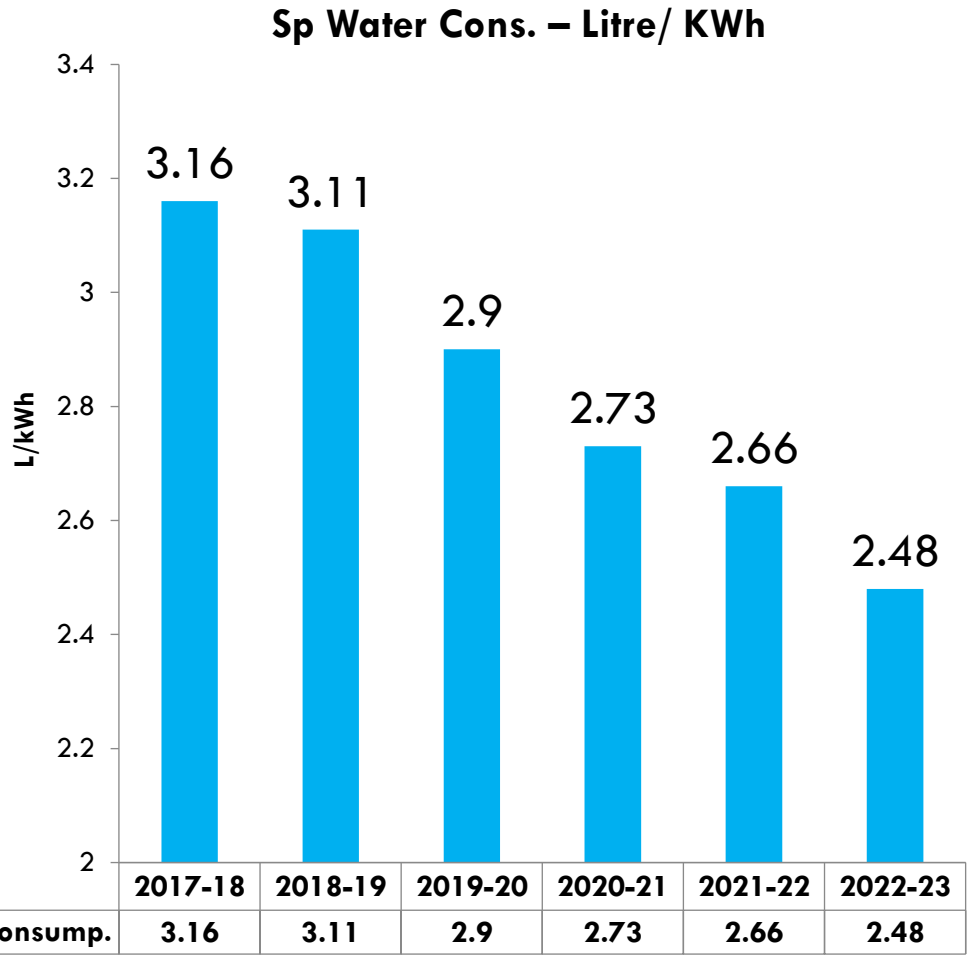
- High pressure Jet cleaning done at 700-800Kg/cm2 in Unit 1.
- Jet cleaning followed by bullet cleaning done in Unit 1.
- Continuous monitoring done by boroscopy to repeat jetting if dirty tube persists. New

The condenser vacuum in unit 1 improved more than design. Vacuum in U1, 73mmHg against a design of 77mmHg.

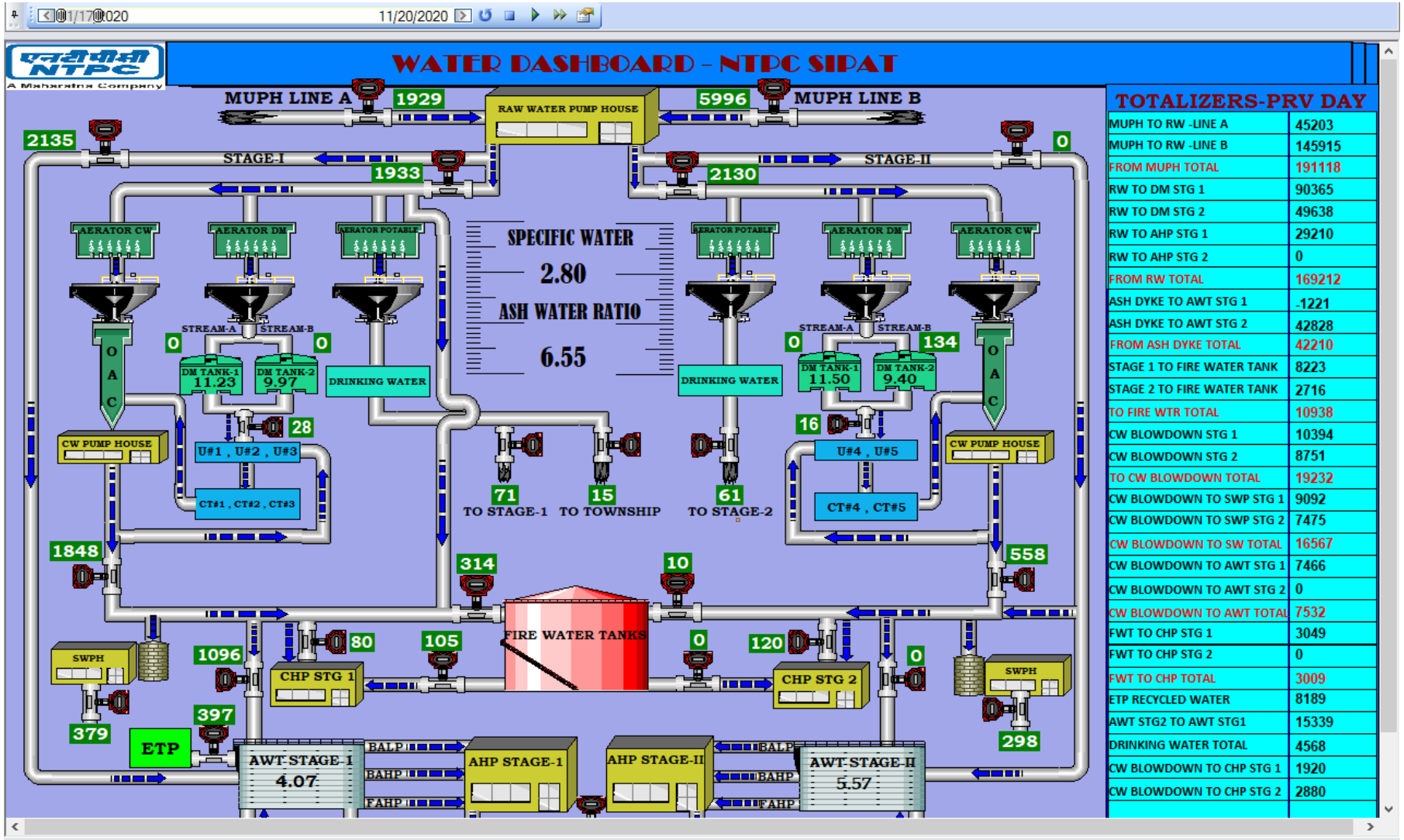
# Environment Management

# Water Management

- Capturing rainwater through ZLD setup. New
- Water Consumption Monitoring in Real time through Water dash board
- DAES implemented in Stage I units also. Station now has 100% DAES New
- Rail loading of railway rakes and dispatch of Ash to Cement Industries Started. New
- Arresting reservoir seepage by HDPE Liner replacement. New
- Wet System – Stringent monitoring of Ash to Water Ratio in Daily Planning meeting , FAHP running hour optimized. New
- CW Cycle of Concentration (COC) has been Improved from 4 to 7 with Lot of Modification and system improvement.



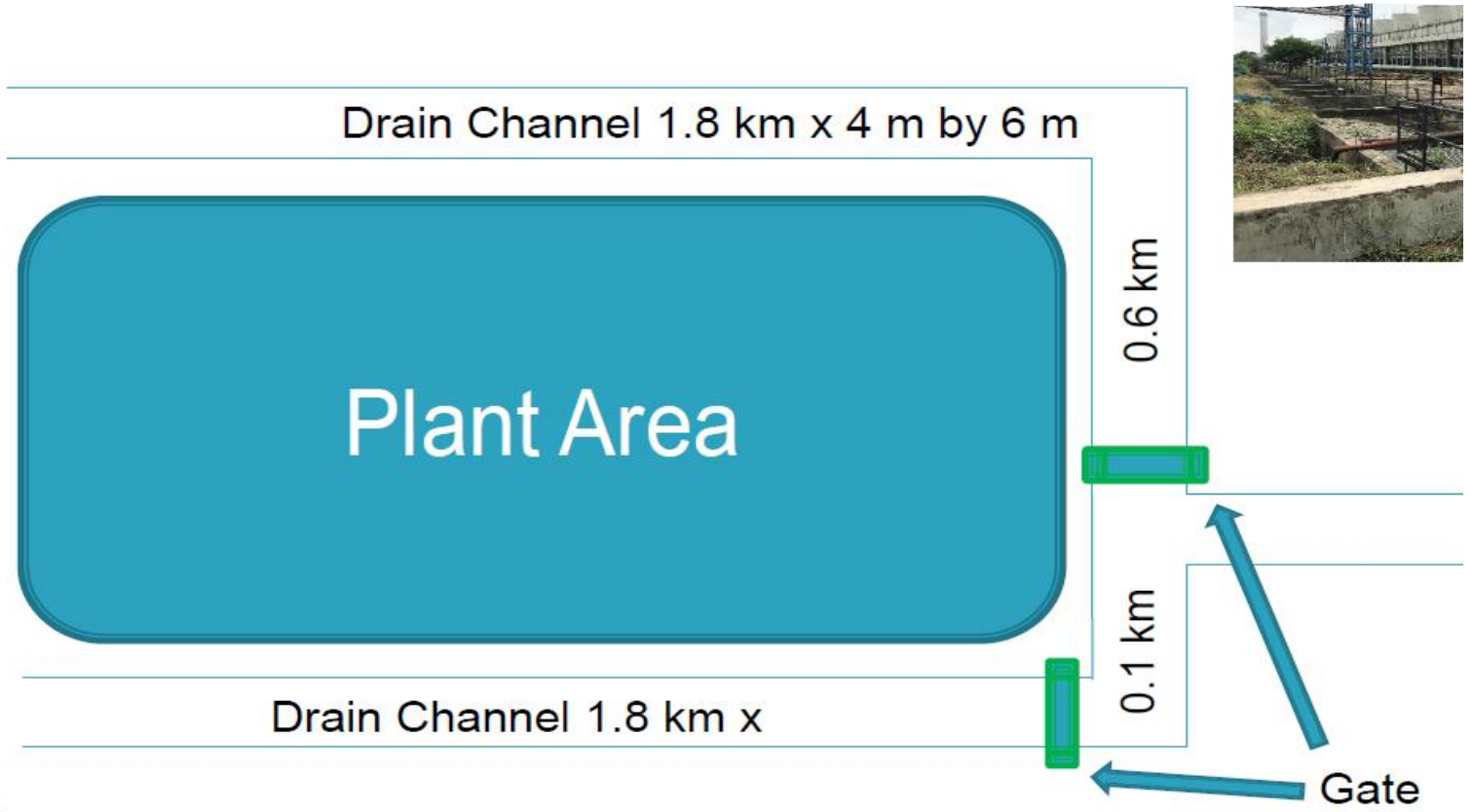
# Environment Management: Water




| TOTALIZERS-PRV DAY | |
|---|---|
| MUPH TO RW -LINE A | 45203 |
| MUPH TO RW -LINE B | 145915 |
| FROM MUPH TOTAL | 191118 |
| RW TO DM STG 1 | 90365 |
| RW TO DM STG 2 | 49638 |
| RW TO AHP STG 1 | 29210 |
| RW TO AHP STG 2 | 0 |
| FROM RW TOTAL | 169212 |
| ASH DYKE TO AWT STG 1 | -1221 |
| ASH DYKE TO AWT STG 2 | 42828 |
| FROM ASH DYKE TOTAL | 42210 |
| STAGE 1 TO FIRE WATER TANK | 8223 |
| STAGE 2 TO FIRE WATER TANK | 2716 |
| TO FIRE WTR TOTAL | 10938 |
| CW BLOWDOWN STG 1 | 10394 |
| CW BLOWDOWN STG 2 | 8751 |
| TO CW BLOWDOWN TOTAL | 19232 |
| CW BLOWDOWN TO SWP STG 1 | 9092 |
| CW BLOWDOWN TO SWP STG 2 | 7475 |
| CW BLOWDOWN TO SW TOTAL | 16567 |
| CW BLOWDOWN TO AWT STG 1 | 7466 |
| CW BLOWDOWN TO AWT STG 2 | 0 |
| CW BLOWDOWN TO AWT TOTAL | 7532 |
| FWT TO CHP STG 1 | 3049 |
| FWT TO CHP STG 2 | 0 |
| FWT TO CHP TOTAL | 3009 |
| ETP RECYCLED WATER | 8189 |
| AWT STG2 TO AWT STG1 | 15339 |
| DRINKING WATER TOTAL | 4568 |
| CW BLOWDOWN TO CHP STG 1 | 1920 |
| CW BLOWDOWN TO CHP STG 2 | 2880 |

**Water Dashboard:**
***Real time monitoring of water consumption.***
***This dashboard is selected for PAN NTPC implementation***

# Rain-water harvesting





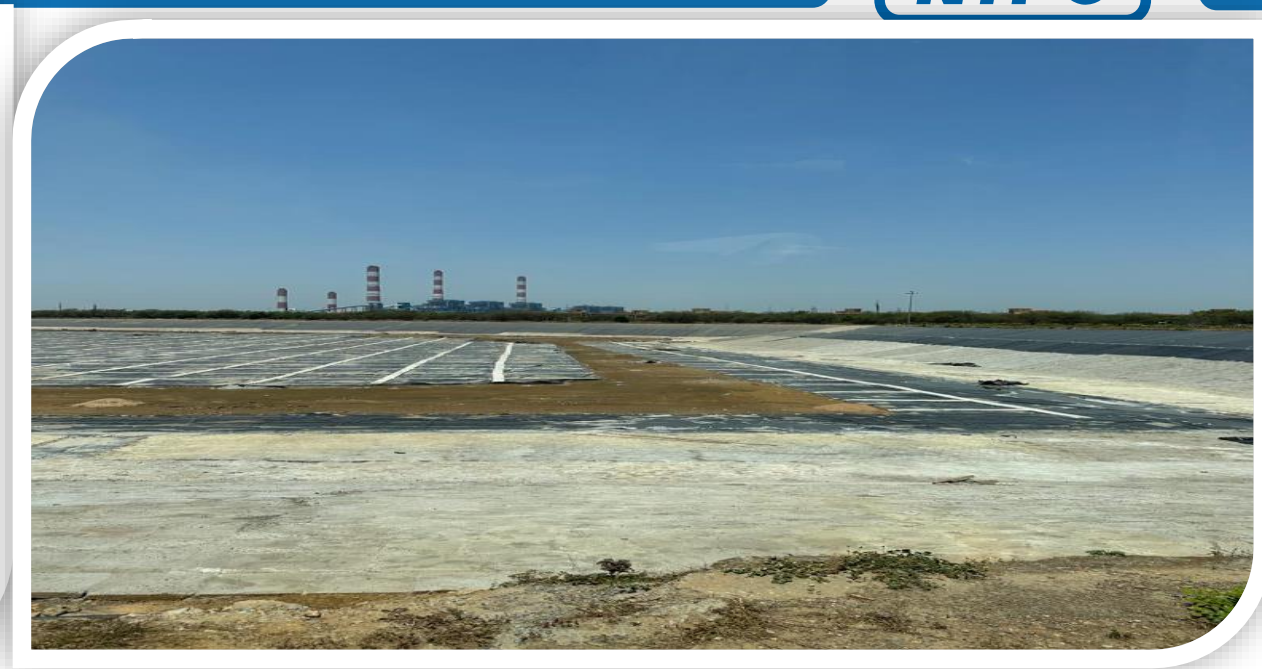

# RAINWATER HARVESTING

| Water Harvested | Cost saving |
|---|---|
| 1196056 $m^3$ | 146.51 Lakhs |



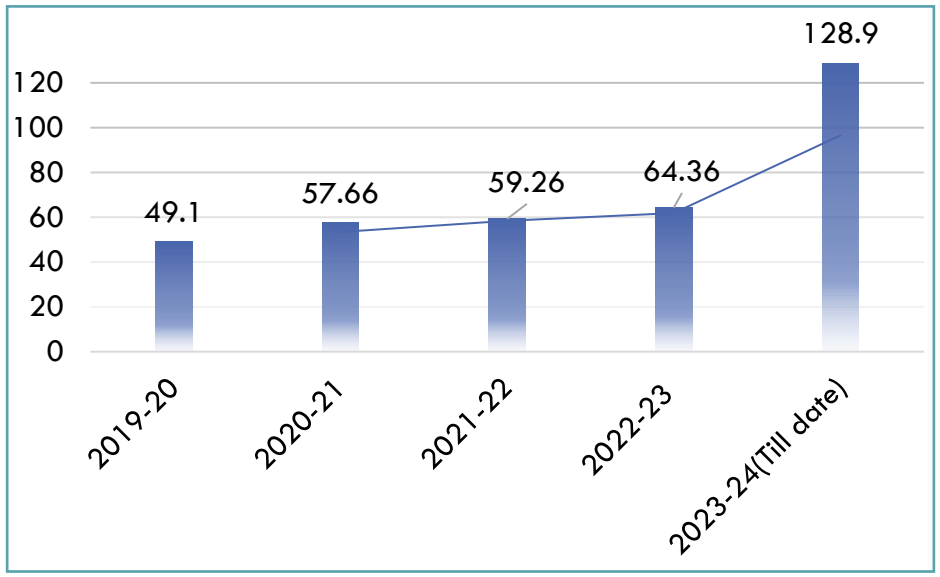
| Area | Remarks | PR Details |
|---|---|---|
| Plant | Facility created | ➢ RWH implemented on 28.8.22, near CT 2B<br>➢ RWH implemented on 08.10.22, near CT 1B<br>➢ RWH implemented on 24.12.22 near CT 3B<br>➢ RWH implemented on 05.06.23 near OAC 1 |
| Hospital | Facility completed. | |
| Township | PO awarded | Work in progress |
| All area | RWH potential study by third party. | Study completed, Under Award for work |

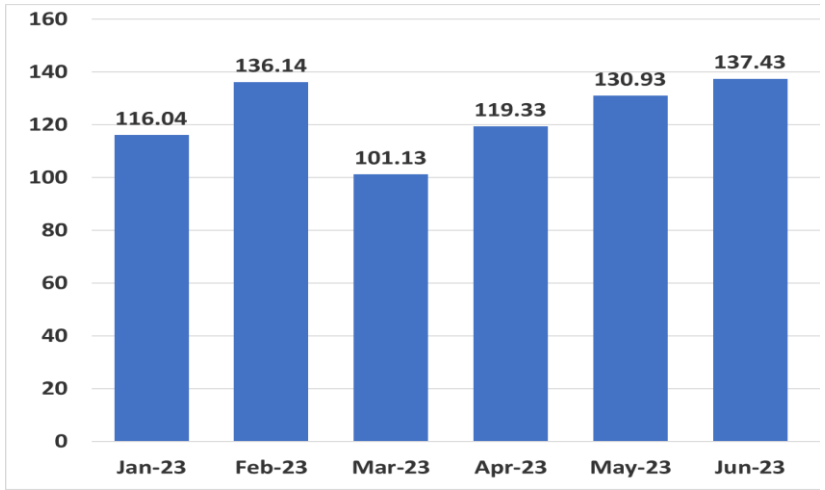
# RESERVOIR 1B SEEPAGE REPAIR WORK



| | |
|---|---|
| Total Reservoir Capacity | : 4.8 MCM. |
| Saving potential | : 4 MCM year |
| Water Cost saving | : Rs 4.6 Cr |
| Pumping power Saving | : 2.27 MU's / Rs 45 Lac per year |
| Total Cost of works | : Rs 27 Cr |
| Completion date | : 31.10.2023. |

# Environment Management: Ash Utilization

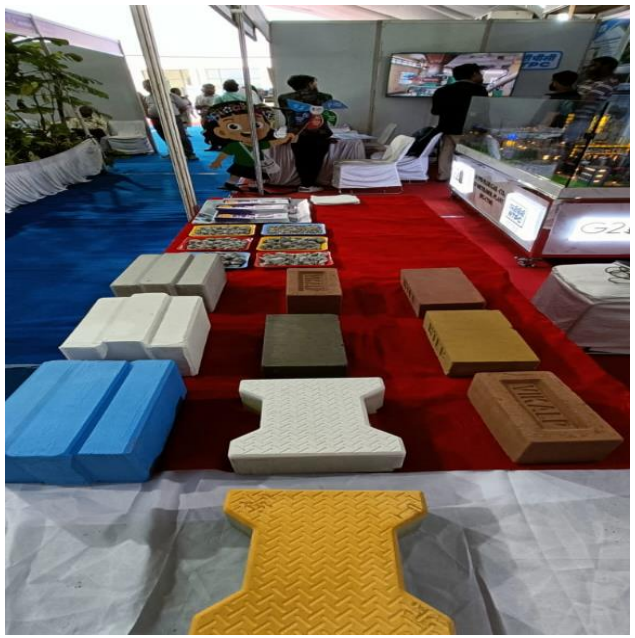



- **Modes of Ash utilization**
  - Dry Ash: All units DAES commissioned
  - Wet Ash
- **Distribution of areas of Ash utilization**
  - Roads and Highways
  - Low lying area development
  - Cement Manufacturers / Bricks & Blocks
  - Total Ash brick plant capacity increase to 2.5 Lac/per day with addition of 2 LPD ash brick plant. New
  - Rail loading facility also developed and dispatch started. New
  - Mine filling Started New
  - Brick Dealership given to one agency. New
  - BIS certification awarded for ash brick New
  - Local Builder's Customer meet done to encourage use of Ash products New

# Dry Ash Dispatch to Ultratech Cement, Aditya Nagar, Karnataka

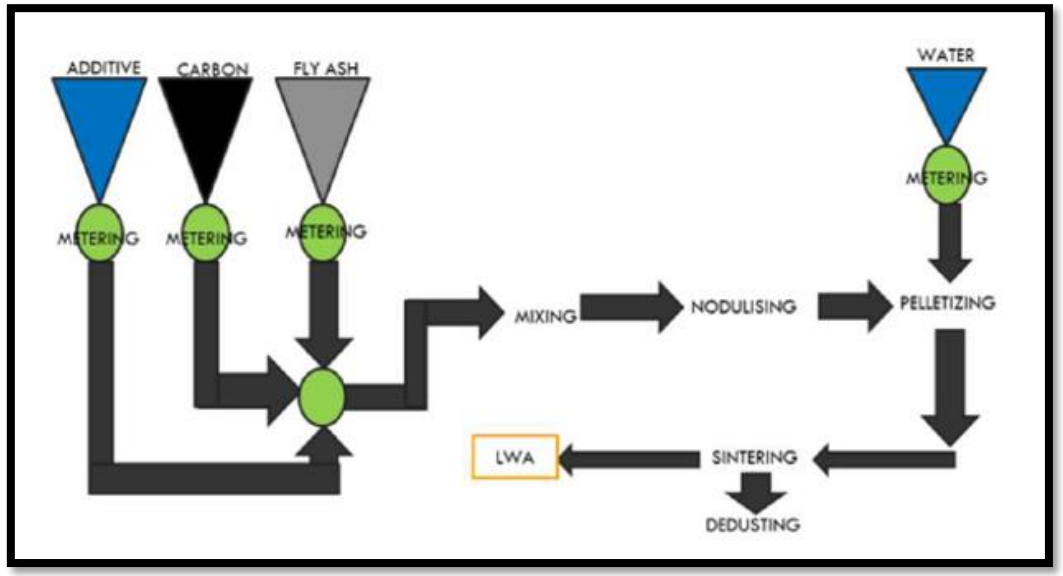
# Ash products- Displayed in exhibition

# NTPC SIPAT LWA PROJECT

Fly ash based LWA Facility

Trial run started by Director – Projects



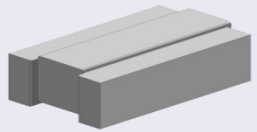

Light Weight Aggregate (LWA) plant Sipat

- Fly ash based Light weight aggregate as an alternate for natural stone concrete
- 50000 Ton capacity/year plant under commissioning, first lot to be produced by 30.09.23
- Cost of LWA Rs.1700/Ton
- Cost of Natural Stone aggregate: Rs. 2000 / Ton
- Trial run started

# ASH TECHNOLOGY- PROJECTS

| SN | Project | Salient features | Status |
|---|---|---|---|
| 1. | **Geopolymer Lab Set up**<br>• 20 TPD equipment<br>• Testing facilities<br>  | • In-House Production & Testing of Ash based products<br>• Development of Design Mix for new products and on going projects | • Infrastructure set-up completed<br>• 20 TPD machine installed and commissioned<br>• GPCA produced<br>• Testing of GPCA under progress<br>Water absorption - <18%, Impact /Abrasion value-<40%, etc |
| 2. | GPCA<br>  | • In house development of GPCA (Geo Polymer Coarse Aggregate)<br>• Substitute for Natural resources<br>• Huge potential for bulk ash utilization (80%) | The Projects are done to establish the techno commercial viabilities of the technology.<br>The alternate use of Ash in making aggerate and sand will make save natural resources and will result in resolving ash disposal issue. |
| 3. | NACA<br>  | • In house development of NACA (NANO Concrete Aggregate)<br>• Substitute for Natural resources<br>• Potential for bulk ash utilization (70%) | |

# Ash Technology: NI projects

| SN | Project | Project/Benefit | Status |
|---|---|---|---|
| 4. | Ash to Sand | • Bulk ash utilization<br>• Conservation of natural resources<br>• Revenue Generation | • Under implementation<br>• Commissioning :March' 24 |
| 5. | Interlocking Wall Blocks  | • No need of plastering and mortar<br>• Geopolymer/high volume fly ash based cement blocks possible | |

12000 Interlocking paver blocks used in Sipat

Ash to Sand Facility at NTPC Sipat

# NEW ASH PROJECTS – RECENT DEVELOPMENTS

ASH TO CASH


NACA


PAVER BLOCKS


TETRA POD


SOLAR MMS PILES


LWA

GPC ROAD -ASH DYKE

HUME PIPE


BOTTOM ASH


Ash Dyke Block Mould


SOLAR MMS

# Biomass Cofiring

- NTPC Sipat Started Biomass (pellet) Cofiring in FY 2022-23.
- Total Biomass cofired till date : 3444 MT
- Green Power Generated : 4.67 MU's
- CO2 generation averted : 4767 MT
- Helping Beneficiaries to meet RPO Obligations

# Pellet making machine

**Pelletization of Biomass generated in plant premises – to cofire with coal (200 kg/hr)**

# TREE PLANTATION

Tree Plantation Since Inception : 1170801

Plant Growth in 4 Months

## Miyawaki Technique

✓ **Growing dense forest in limited space**

## Mission 1 Lakh Trees in FY 2023-24

Miyawaki plantation at DM Plant

Miyawaki plantation at DM Plant

| Tree plantation Plan in FY 2023-24 | | |
|---|---|---|
| 1. | MGR Track (completed) | 25,000 |
| 2. | DM Plant (Miyawaki) Completed | 23,000 |
| 3. | Bhilmi Village (Miyawaki) In progress | 32,000 |
| 4 | Uchbhati village (Miyawaki) PO placed | 32,000 |
| | **Total** | **1,12,000** |

# 800 KW ROOF TOP SOLAR PV AT NTPC SIPAT

| Type | Location | Installed Capacity |
|---|---|---|
| Rooftop Solar PV | NTPC Sipat Hospital | 50 KW |
| Rooftop Solar PV | Administrative Building | 100 KW |
| Rooftop Solar PV | Solar PV at various building inside the plant | 650 KW |

**Upcoming Solar PV in Sipat:**

- **200 KW Solar for Township power consumption awarded.**
- **25 MW Floating solar in reservoir area**
- **2MW ground mounted solar in switchyard area planned.**

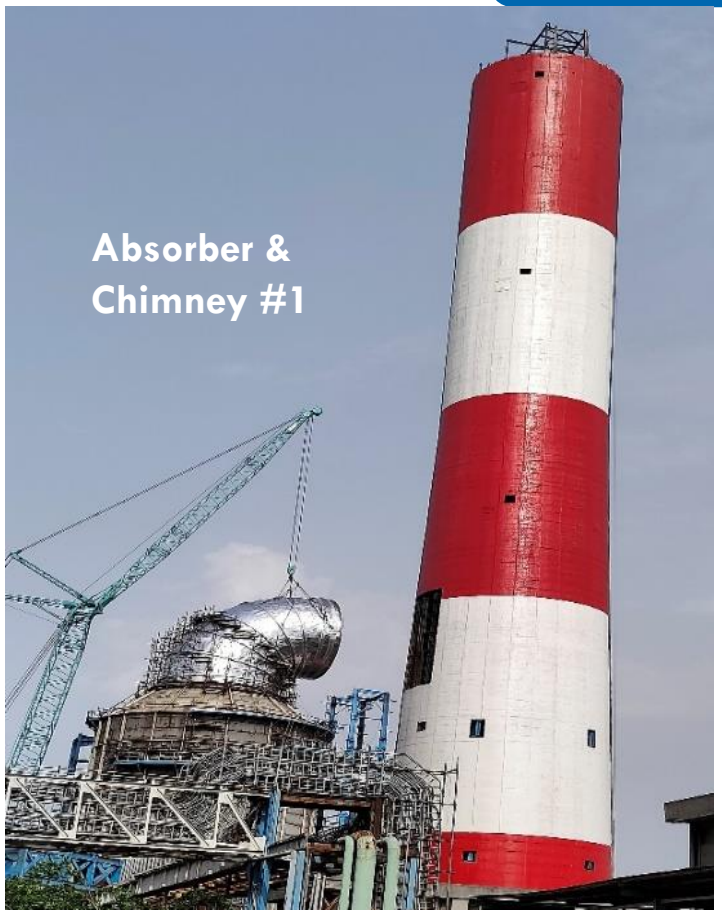
- Energy savings of approximately ~1.4 MU's annually.
- Environment protection by reduction carbon footprints. (12 Lakh kg CO2 avoided)

# Environment Management: Emission

| Particulars | UOM | 2020-21 | 2021-22 | 2022-23 |
|---|---|---|---|---|
| Total CO2 emissions | Ton/MWh | 0.85 | 0.85 | 0.85 |
| Current Sox emission at Full Load | Mg/Nm3 | 1029 | 1018 | 1018 |
| Current NOx emission at Full Load | Mg/Nm3 | 210 | 140 | 138 |
| Particulate matter | Mg/Nm3 | 35 | 35 | 32 |
| Mercury | Mg/Nm3 | 0.0010 | 0.0010 | 0.0010 |

# Environment Management

- ZLD compliant Station (both plant & Ash Dyke)
- FGD implementation:
  **Commissioning - Stage 1: FY23-24**
  **Stage 2: FY24-25**
- De NOX through combustion optimization: 100%
- Wagon Covering: All wagons are being covered with tarpaulin.
- Waste Management: Hazardous, Biodegradable, e-waste and mill Reject all are 100% disposed.
- Water Spray system strengthen in all dykes to avoid any fugitive dust emission specially during summer.



# Energy Management System and SEC monitoring tools

- NTPC Sipat certified with ISO 50001:2018 certification for conformance to energy management system standards in all aspects.


CERTIFICATE

This is to Certify that the Management System of

**NTPC LIMITED, SIPAT**

SIPAT SUPER THERMAL POWER PROJECT, P.O. UJJWAL NAGAR - 495555, SIPAT, DIST. BILASPUR, CHHATTISGARH, INDIA

has been found to conform to the Energy Management System Standard:

**ISO 50001:2018**

This certificate is valid for the following scope of operations:

GENERATION OF ELECTRICITY BY COAL BASED THERMAL POWER PLANT (2 x 500 MW + 3 x 660 MW)

*Certificate No.: IN54252G*

| Date of initial registration | Date of this Certificate | Surv. audit on or before/ Certificate expiry | Recertification Due |
|---|---|---|---|
| 24 December 2021 | 24 December 2021 | 23 December 2022 | 23 December 2024 |

This Certificate remains valid subject to satisfactory surveillance audits.

Director

This Certificate is the property of Staunchly Management & System Services Limited and shall be returned immediately when demanded

STAUNCHLY MANAGEMENT AND SYSTEM SERVICES LIMITED
Labrynth Business Centre, 43 Middle Hill Gate, Stockport, Great Manchester, England-SK1 3DG
Company Registered in England with Company Number 11488683

# Energy Savings projects implemented in last 3 years

| S. No | Year | Nos of Energy Saving Projects | Investment (INR Millions) | Electrical Saving (Million kWh) | Thermal Saving (Million Kcal) | Total Saving (INR Million) |
|---|---|---|---|---|---|---|
| 1 | 2020-21 | 11 | 46.5 | 25.3 | 80850 | 82.13 |
| 2 | 2021-22 | 7 | 114.78 | 13.64 | 158400 | 109.17 |
| 3 | 2022-23 | 5 | 63.0 | 15.94 | 167556 | 134.1 |

Highlight of FY 2022-23

- Repair/ Overhauling of identified mills with higher specific energy consumption
- Air ingress in duct and boiler attended during Unit overhaul
- Optimising FAHP Pump running hours.
- Stage-1& 2 CT Fill replacement.
- Condenser water box cleaning

# Teamwork Employee involvement & Monitoring

## Daily Monitoring System :

- Daily Planning Meeting(DPM) is conducted to discuss the critical issues and previous day performance.

## Review meeting :

- Head of Plant(HOP): Safety / Environment/ Performance/ Commercial
- Operation Review Team (ORT): Head of Region review
- Regional Operation Performance Review (ROPR): Director Operation level review
- Management Committee Meeting (MCM) : Chairman Level Review

## Training :

- Executive MBA (PGDBM Energy- NSB/IIM-A), Samarth Program, Executive Trainee(ET) Training- 9months
- All executives given 7 day mandatory training
- Learning from NTPC trips recommendations.
- Participants for BEE energy auditor / BOE / Business excellence exam.

## Audit :

- Safety audit
- 3 Energy audit every year.
- LMI audit (Internal/External/ Third Party)
- Technical Audit

# Learning from the CII event

- Training to O&M staff on Flexibilization by EPRI-CII expert, Knowledge shared was helpful in efficient adherence to flexible scheduling.


thank you