

**CII-25th National Award for Excellence in
Energy Management Sept-2024**

**PRAYAGRAJ POWER GENERATION
COMPANY LIMITED**
(3 * 660 MW)

**Team
Members**

Baram Saha-Head Performance & MIS
Nipun Garg-Lead Engineer
Kunwar Hitesh-Lead Engineer
Istuti Verma-Lead Engineer

PPGCL Overview

Establishment: Originally developed by Jaiprakash Associates Limited (JAL)

Location: Bara, District Allahabad, Uttar Pradesh

Capacity: 1980 MW Thermal Power Plant with three 660 MW units

Ownership

Acquisition: Acquired by Renascent Power Ventures (RPV) on December 4, 2019, through a competitive bidding process by SBI

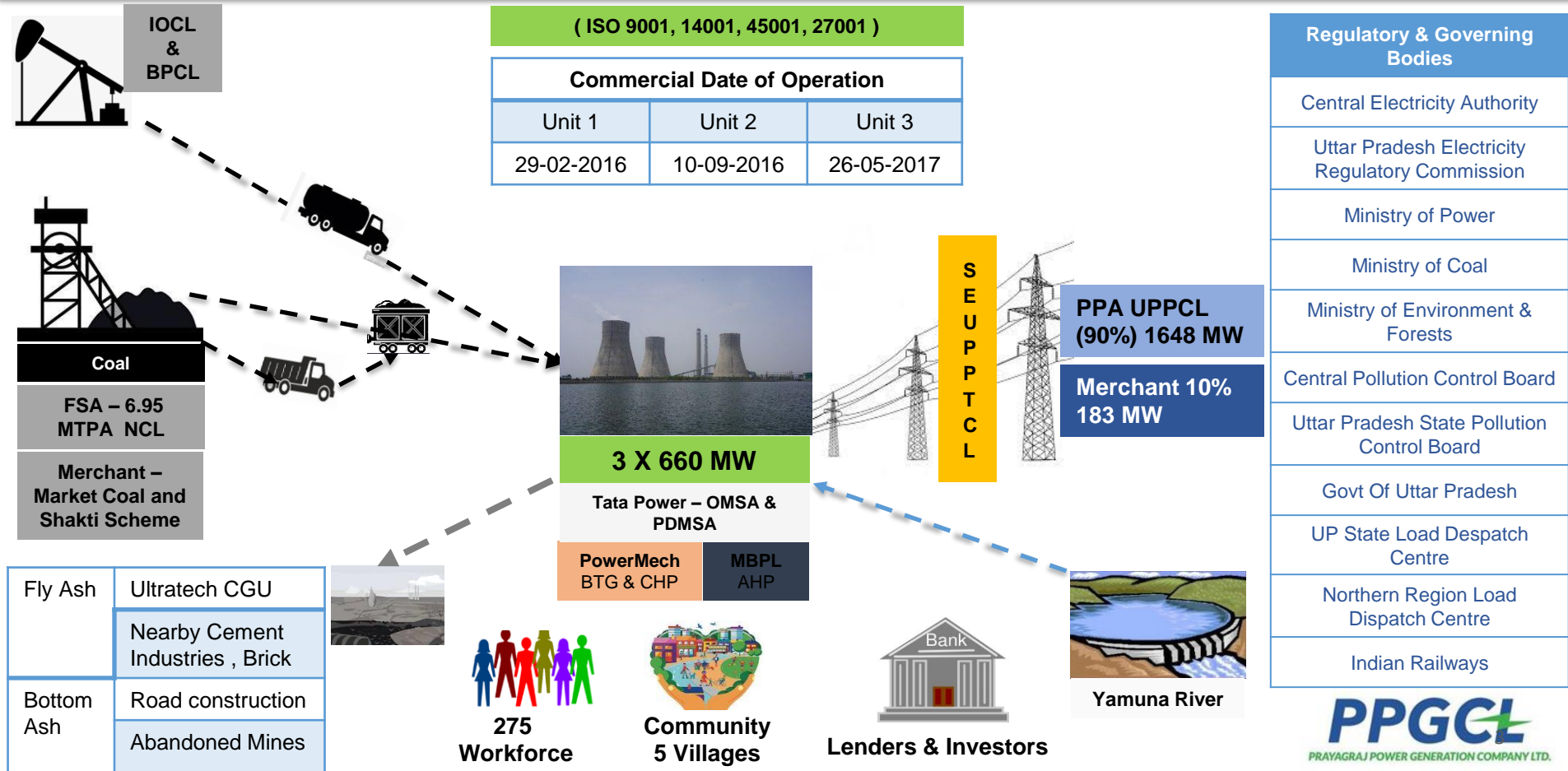
Current Ownership: 75.01% stake held by RPV

Parent Company: 100% subsidiary of Resurgent Power Ventures

Resurgent Power Ventures: A joint venture of Tata Power (via Tata Power International Pte. Ltd), ICICI Bank, and international investors



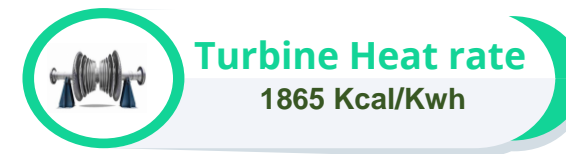
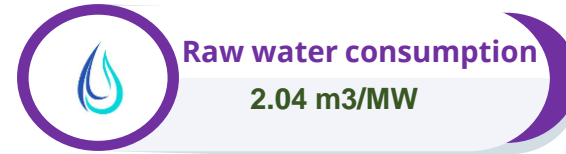
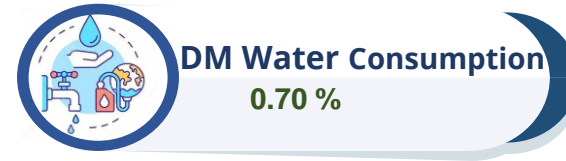
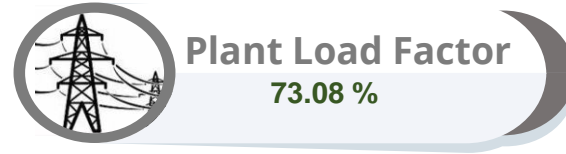
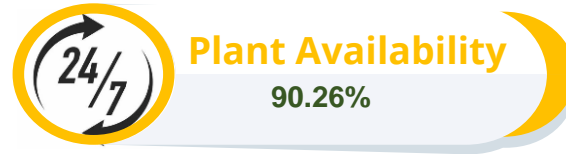
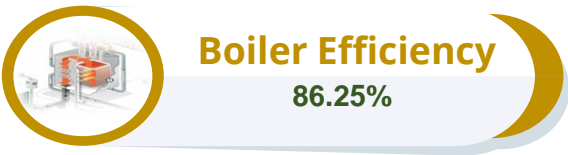
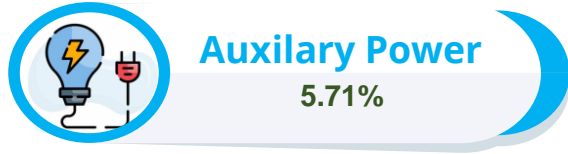
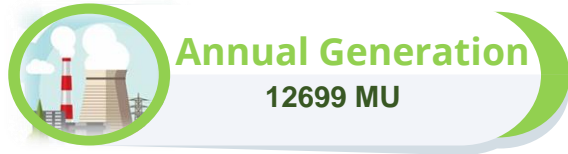
PPGCL – Overall Business Value Chain



Regulatory & Governing Bodies

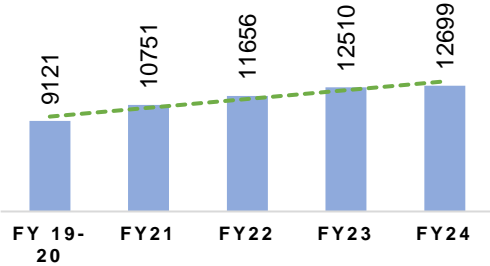
- Central Electricity Authority
- Uttar Pradesh Electricity Regulatory Commission
- Ministry of Power
- Ministry of Coal
- Ministry of Environment & Forests
- Central Pollution Control Board
- Uttar Pradesh State Pollution Control Board
- Govt Of Uttar Pradesh
- UP State Load Despatch Centre
- Northern Region Load Dispatch Centre
- Indian Railways

PPGCL PERFORMANCE FY23-24

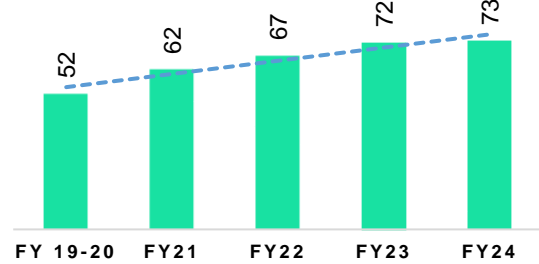


PERFORMANCE TREND (LAST 5 YEARS)..

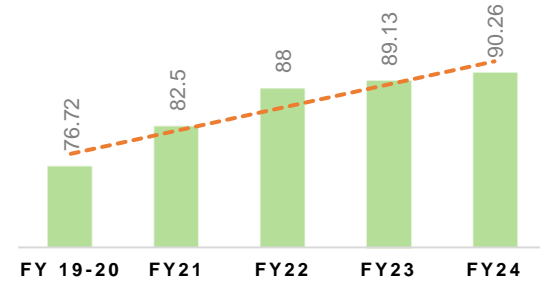
GEN. "MU"



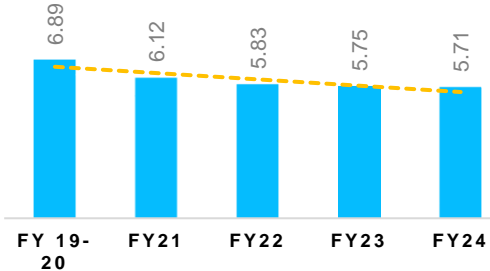
PLF "%"



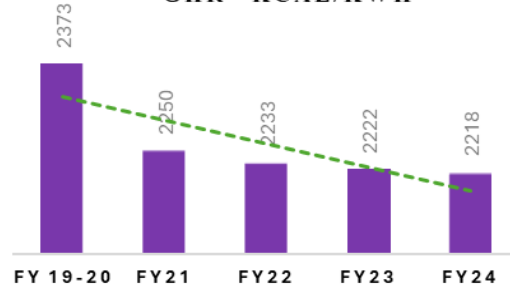
AVF "%"



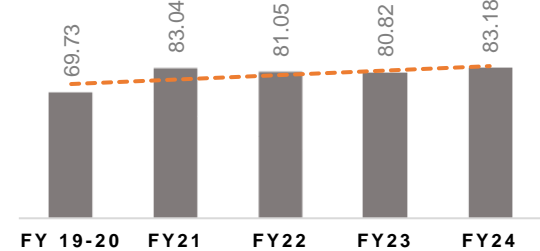
APC "%"



GHR "KCAL/KWH"



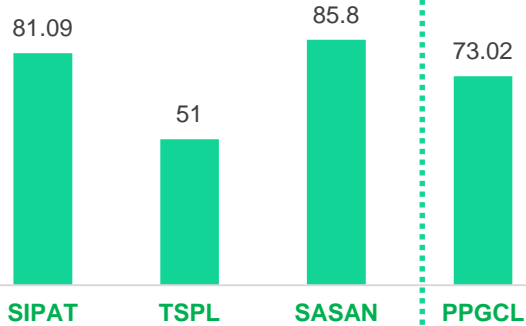
DC AVILABILITY "%"



- ✓ PPGCL become MOD -1 , from MOD -4 under UP IPP plants , The PLF are continually Improving.
- ✓ There is continuous improvement in APC & Gross Heat rate Y-O-Y , PPGCL achieved lowest Gross Heat of 2218 in FY 24.
- ✓ PPGCL availability improved to 91% due to reduction of Forced outage mainly BTL.

ENERGY BENCHMARKING

PLF



Benchmarking Performance

- PPGCL is the 1st Thermal stressed, which is turned around within 1.5 Years of Take over. This has been achieved through performance benchmarking among peers.

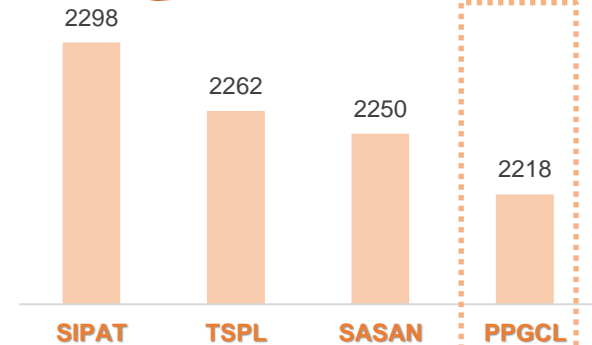
Our Short Term Plan:

- Improvement of reliability & efficiency through Digitalization & AI based projects.
- Real Time Energy Monitoring and immediate action.
- Implementation of ENCON Projects.
- Capability Development of New Engineers.

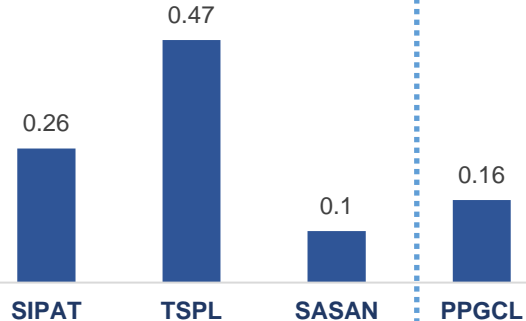
Our Long Term Plan:

- Implementation of Capex projects for energy efficiency improvement.
- Flexi Ready – Flexible Operation Readiness
- Capital Overhaul of units for major Heat rate gain.
- Implementation of Digital Twin with TCS-Adex.

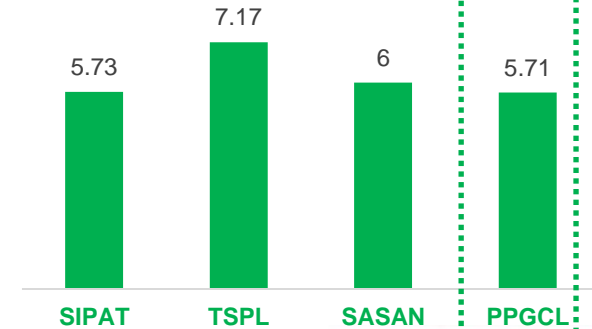
HEAT RATE



SOC



APC



Steps for Energy Efficiency Benchmarking :



STEP 01

HR/APC GAP ANALYSIS

1. Analysis of HR and APC gaps w.r.t. Design.

STEP 02

Plan to Mitigate the gaps

1. Parameters improvement by operational practice
2. Modified SOP as per requirement
3. Major Deviation in the measurement is corrected

STEP 03

Maintenance and AOH activities

1. Change of various valves with modified new valves
2. Adoption of ORI , OPI of OOI

STEP 04

Time bound improvement project for action points implementation

1. Sankalp Project
2. FMEA
3. SPS

STEP 05

Sustenance of performance

1. Daily Tracking of Performance parameters
2. Daily Discussion in CCR for further improvement
3. Time motion study and implementation of maintenance practices

Major Encon Projects Planned for FY 24-25

LED fittings at all major plant areas

Benefit: APC Improvement, Better illumination, Less Maintenance (0.391 Million KWH)

₹ 0.9775 Million/Yr



₹ 64.20 Million/Yr

Annual overhauling of Boiler, Duct, FAN System, APH & High drain valve of BTG.

Benefit: HR & APC Improvement (~ 60829.5 M Kcal/annum)

Implementation of VFD in CEP

Benefit: Saving in APC of 2.928 KWH

₹ 7.32 Million/Yr



₹ 1.31 Million/Yr

Implementation of Rooftop solar in colony

Benefit: Saving in APC of ~0.525 MU/Year

Optimization of CW running hours ACW Inter Connection

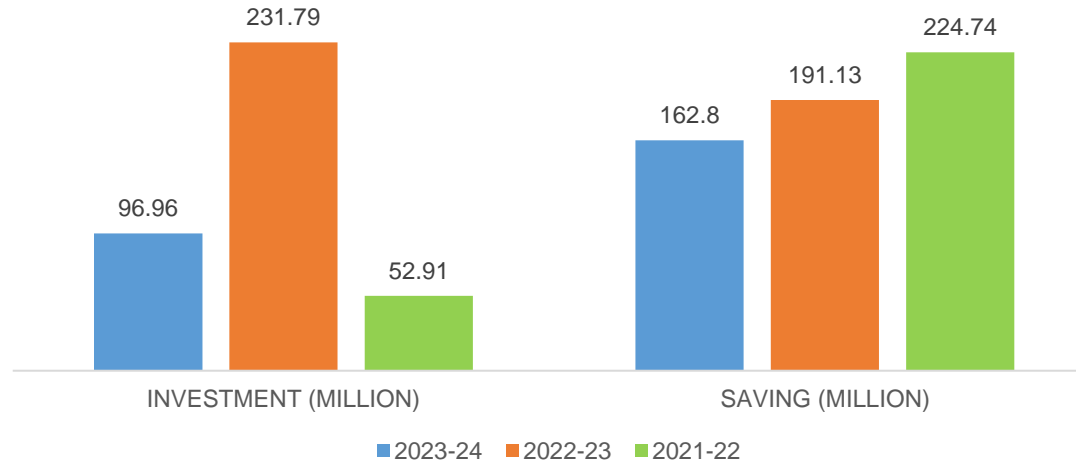
Benefit: Estimated Energy Saving ~37.96 MU/Year

₹ 94.9 Million/Yr



ENCON Projects Summary (Last 3 years):

Year	No. of Energy Saving Projects	Investments (INR Million)	Electrical Saving (Million kWh)	Saving (INR Million)
2023-24	7	96.96	63.80	162.81
2022-23	5	231.79	10.78	191.13
2021-22	5	52.92	0.79	224.75

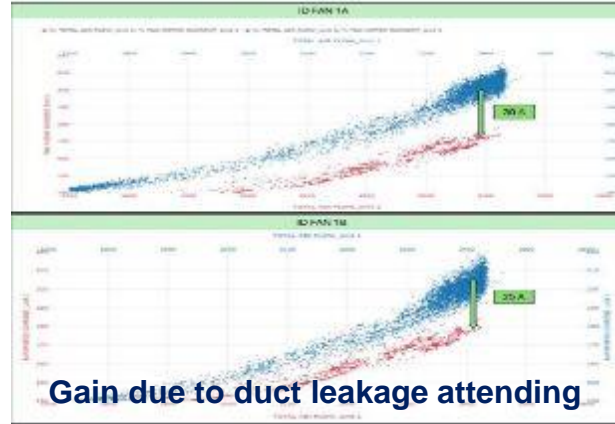


ENCON Project Details.. FY 23-24

S.No.	Title of the Project	Investment (in Million)	Electrical Savings (Million KWH)	Thermal Savings (Million Kcal)	Annual Savings (Rs. In millions)	Payback Period (Months)
1	U#2 TDBFP R/C Valve passing attending	6	7.88	17490	20.11	3.58
2	Stopping of 1CW pump for 16 Days across all three units	0	1.68	0	4.28	0
3	Implementation of Energy management system for Proper monitoring of APC Consumption of Major Drives and areas like CHP, AHP, DM plant etc.	0	0.3	0	0.7657	0
4	LED fittings inside plant area	0.3638	0.39	0	0.999	4.37



Condenser tube cleaning



Gain due to duct leakage attending



RH Bent Replacement

ENCON Project Details.. FY 23-24

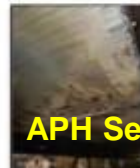
S.No.	Title of the Project	Investment (in Million)	Electrical Savings (Million KWH)	Thermal Savings (Million Kcal)	Annual Savings (Rs. In millions)	Payback Period (Months)
5	Heat Rate improvement after U#3 AOH	66.2	29.06	0	74.162	10.71
6	DM makeup improvement	4.4	23.56	0	60.11	0.88
7	Improvement in APC due to U#2 Short shutdown	20	4.26	0	10.65	22.53



Figure 33 - PA FAN Overhauling



APH Basket Cleaning



APH Seal Replacement

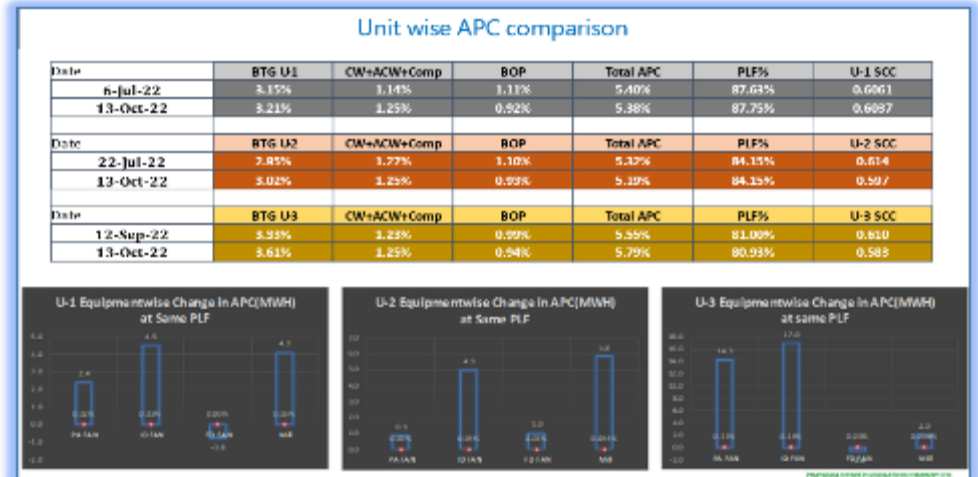
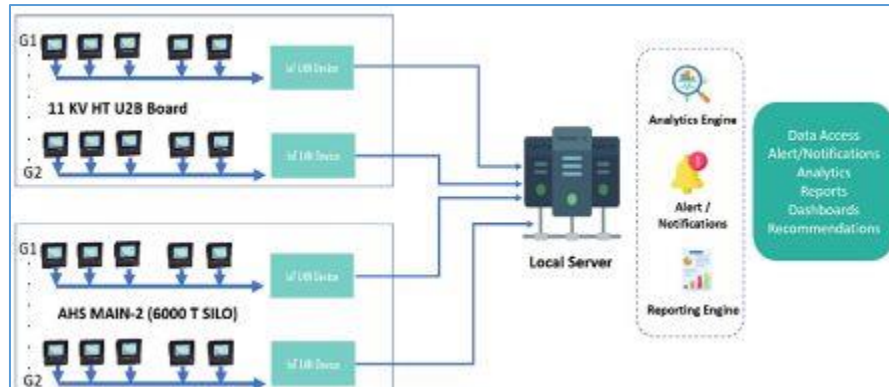


Fans Overhauling



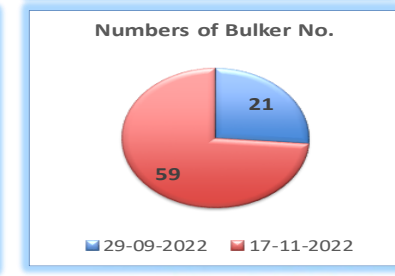
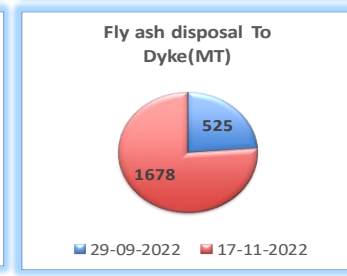
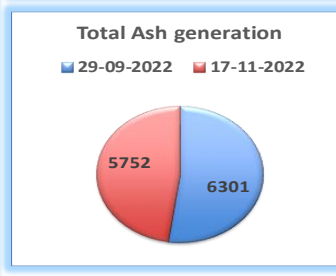
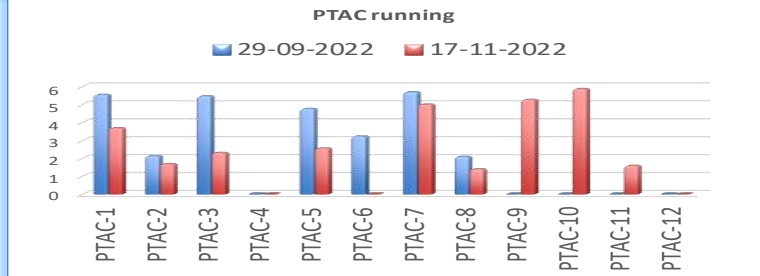
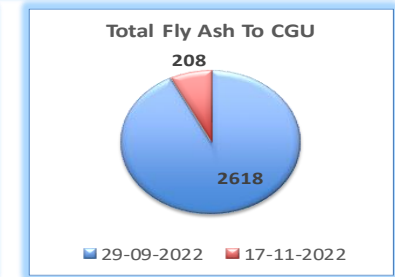
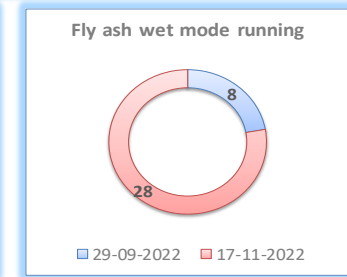
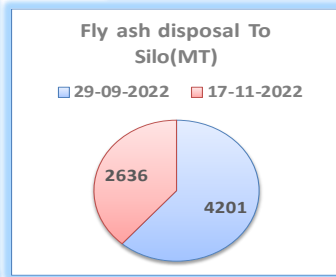
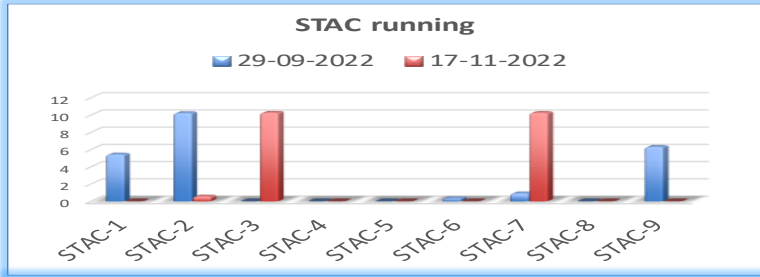
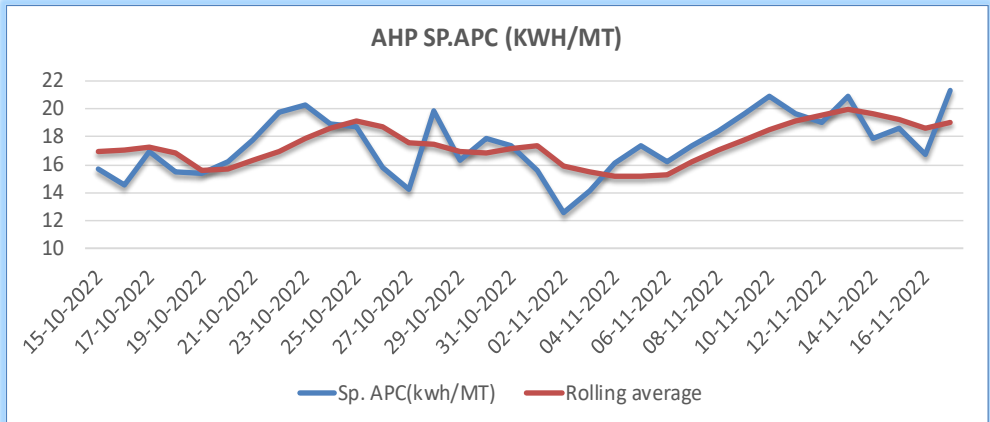
Implementation of ENMS system for APC tracking:

- ❖ PPGCL team jointly with Tata Power Trading Co. Ltd. has developed Smart Energy Management System. This IoT application of energy management system helped to track individual equipment level energy consumption on Real-Time basis & gives the operator a Dashboard with comparison of energy consumption data among other unit & equipment's.
- ❖ It connects a total of 314 energy meters with 32 IoT gateways. The system monitors 34 parameters and creates energy management analytics to improve APC management
- ❖ This has helped the Engineers to optimize the equipment running , take overhauling decisions by seeing specific energy consumption of individual equipment



AHP APC Dashboard:

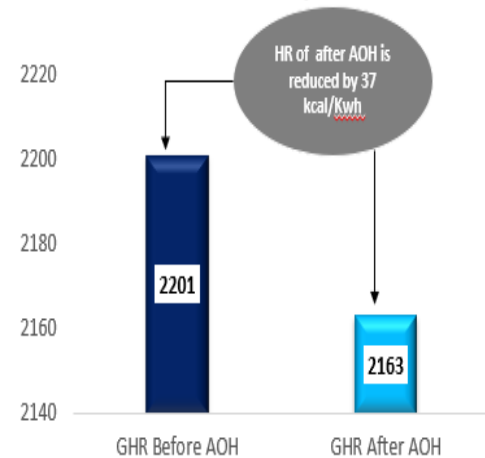
AHP (APC)				
Equipment	UOM	Consumption 29-09-2022	Consumption 17-11-2022	Difference
50K Ton Silo	MWh	14.97	9.23	-5.73
Total AHP BAHP APC	MWh	6.78	6.19	-0.59
Total AHP HT Panel PMCC APC	MWh	47.75	56.36	8.61
Total AHP PTAC APC	MWh	29.01	29.47	0.46
Total AHP STAC APC	MWh	23.26	21.10	-2.16
Total	MWh	121.77	122.35	0.58



Innovation Project-2 (Improvement in Overhauling)

		Load 620MW			
		Design	Before	After	Gain
THR calculation	Kcal/kwh	1849.57	1880.82	1865.75	-15.07
Boiler efficiency	%	87.56	85.47	86.25	0.78
GHR	Kcal/kwh	2112	2201	2163	-37.37

Heat Rate - Kwh /Kcal



*Above calculation is of 2 hrs PG test Data at 620MW

Initiatives	Savings
U-1 SOFA/Tilt/SADC mechanism checking/rectification - HRH temperature improvement	2.5 kcal/kwh
U-1 HPBP passing arresting	8 kcal/kwh saved
U-1 TDBFP A R/C valve passing	3 kcal/kwh.
U-1 LPBP 2 passing to be arrest	4 kcal/kwh
U-1 Reduction in Spray	1 kcal/kwh
U-1 Reduction in DFG loss	10 kcal/kwh
U-1 Attending High energy Drain valve passing	4 kcal/kwh

1b

Improvement After AOH : APC_{Net} Unit-1

Date	Station APC %	Stn PLF	Stn SCC
24-Jan-24	5.16%	88.95%	0.585
14-Mar-24	5.05%	90.74%	0.570

Date	BTG U-1	PLF%	U-1 SCC
24-Jan-24	3.14%	91.16%	0.5872
14-Mar-24	2.88%	91.41%	0.5819

0.26% Improvement in APC After AOH

Category	Savings
U-2 PA duct leakage arrested; each PA fan Current reduced by 20 amps	0.10%
ATT Arresting air ingress points in Boiler arrested, ID fan Current reduced by 50 amps	0.12%
Miscellaneous Improvements	0.04%

Total 0.26% APC saving in BTG

Total Station APC saving is 0.68%

PPGCL
PRAYAGRAJ POWER GENERATION COMPANY LTD.

Post U1 AOH improvement in Net Heat Rate = 42 Kcal/Kwh
 Total Coal saved = 45,843 Tones
 Total Co2 emission saved = 1,10,942 Tones



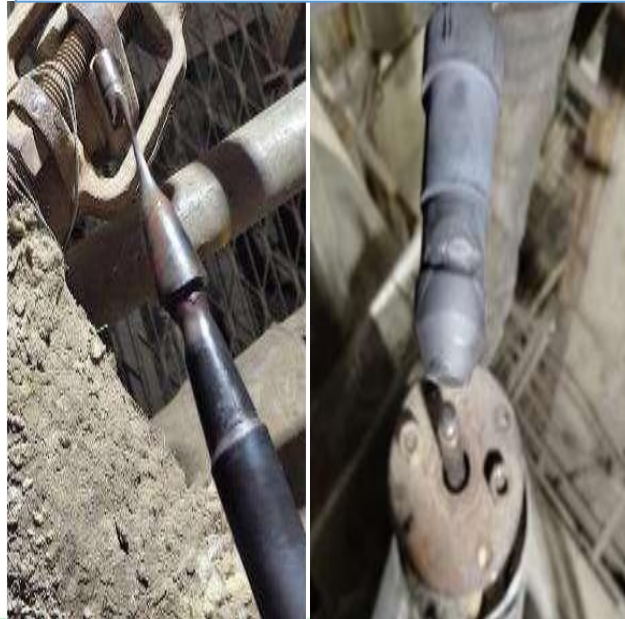
Innovation: Project-3 (Reduction of Make Up & APC)

1. U#2 stem plug & seat RC valve replaced by CCI make.
2. High energy drain angular valves replaced by ball valves.
3. Optimized running of CW pump from 5 pumps to 4 pumps to reduce Auxiliary power consumption.

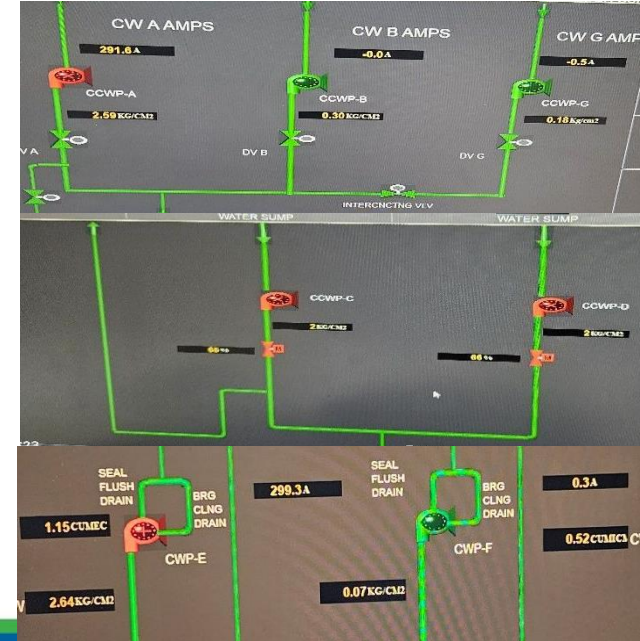
TDBFP R/C valve overhauling and upgradation



High Energy Drain valves upgradation by ball valves



4 CW pumps being used in place of 5.

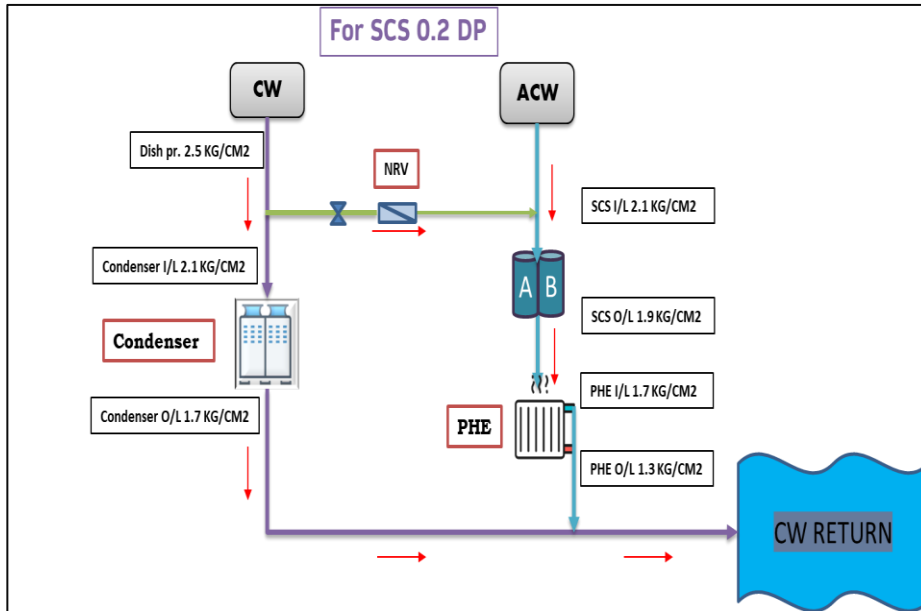


Pilot Technologies – CW & ACW Interconnection

For ACW water for TG/SG PHE tapping will be taken from condenser cooling water I/L line one MOV one NRV will be installed .

Benefit-

For All three No units in summer there is 01 no's ACW is running if the least pump also tripped by some reason units reliability increase. As CW to ACW interconnecting valve open in auto.



POWER SAVING (in winters All 04 ACW stop condition)

	UNITS(KWH)	MWH	SAVING IN RUPEES
PER DAY	26640	26.640	1,81152 /-
PER MONTH	810921	810.920	55,14266 /-
For Half year	9730260	9730.260	3.31 Cr

POWER SAVING (in summers one ACW Running condition)

	UNITS(KWH)	MWH	SAVING IN RUPEES
PER DAY	26640	26.640	90576 /-
PER MONTH	810921	810.920	27,57133 /-
For Half year	9730260	9730.260	1.65 Cr

Total yearly savings= 4.96 Cr

PPGCL Improvement Convention

Implemented Intervention



APC Optimization

- ✓ Five mill operation
- ✓ Startup with TDBFP.
- ✓ Single CEP operation at minimum load
- ✓ O2 optimization



Startup Oil optimization

- ✓ HPH charged before synchronization
- ✓ Mill introduced at 40 kg/cm2 MS pressure ,
- ✓ Oil gun replaced by 16J in place of 24J.



Relativity Improvement-

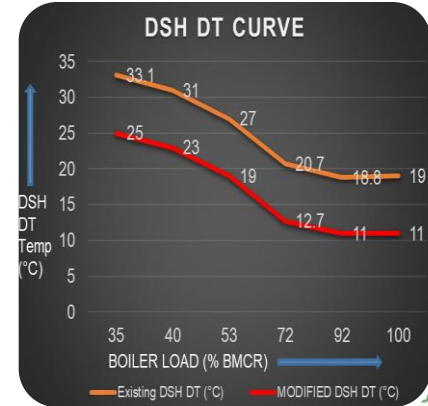
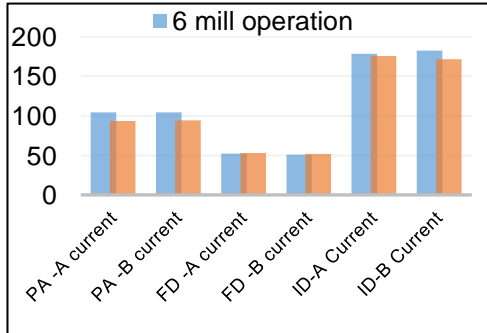
BTL reduction

- ✓ Extra shield plate provided in damaged porn area
- ✓ Extra SH MTM for complete evaporation monitoring during startup.



Inhouse autoloop commissioning

- ✓ DSH DT Curve modified to control Super Heater spray.
- ✓ Modified Sliding pressure curve incorporated in CMC to achieve fast ramp up.



Saving of ₹ 66 Million/Year

Performance and Evaluation Test Schedule



- ✓ Turbine efficiency evaluation test
- ✓ Turbine Heat Rate Evaluation test
- ✓ Turbine pressure and temperature Survey
- ✓ Feedwater Heater performance test



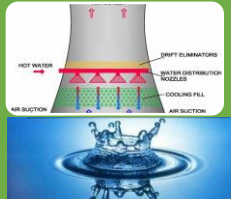
- ✓ Monthly
- ✓ Monthly
- ✓ Monthly
- ✓ Monthly



- ✓ Boiler performance at high load and low load
- ✓ LOI /combustible
- ✓ Boiler Heat gain in coils and MTM Profile study
- ✓ Air preheater efficiency
- ✓ Fineness of coal through isokinetic sampling



- ✓ Monthly
- ✓ Monthly
- ✓ Twice in Month
- ✓ Monthly
- ✓ Monthly

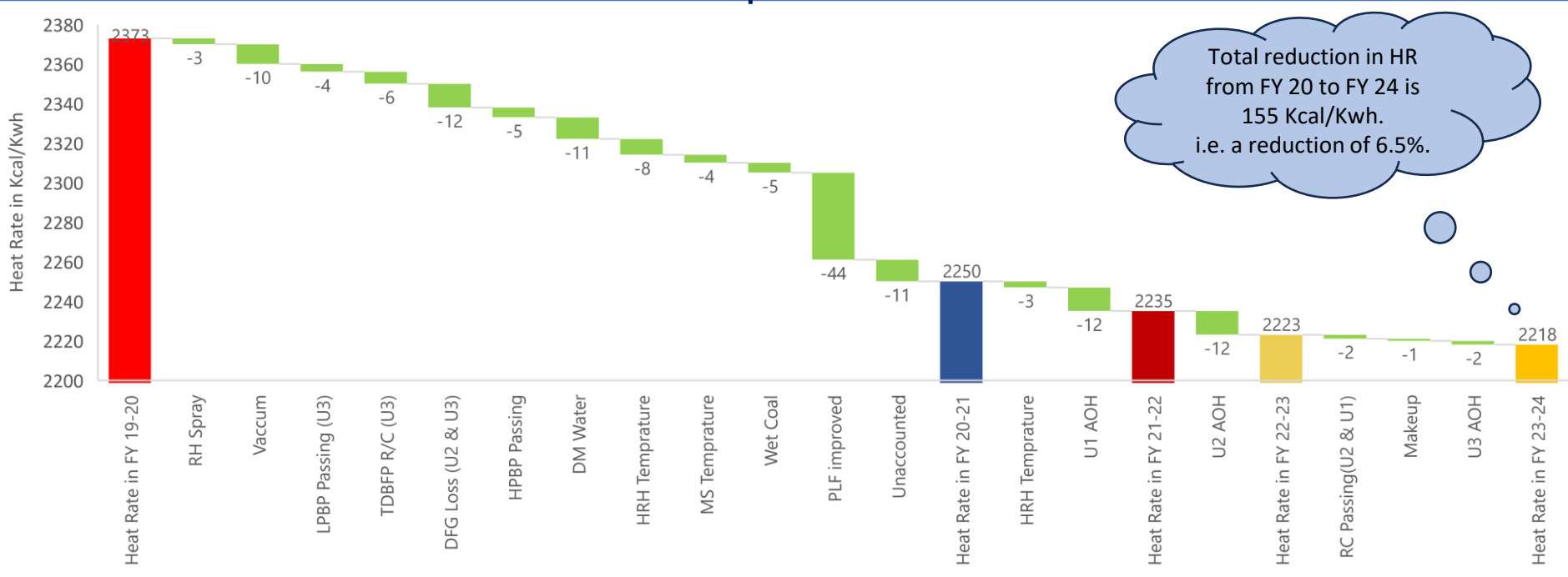


- ✓ Cooling Tower performance evaluation
- ✓ Condenser Performance evaluation
- ✓ DM water loss Mapping
- ✓ High energy valve passing checking

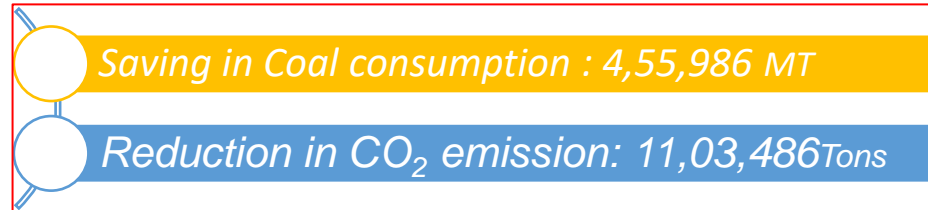


- ✓ Monthly
- ✓ Monthly
- ✓ Twice in Month
- ✓ Monthly

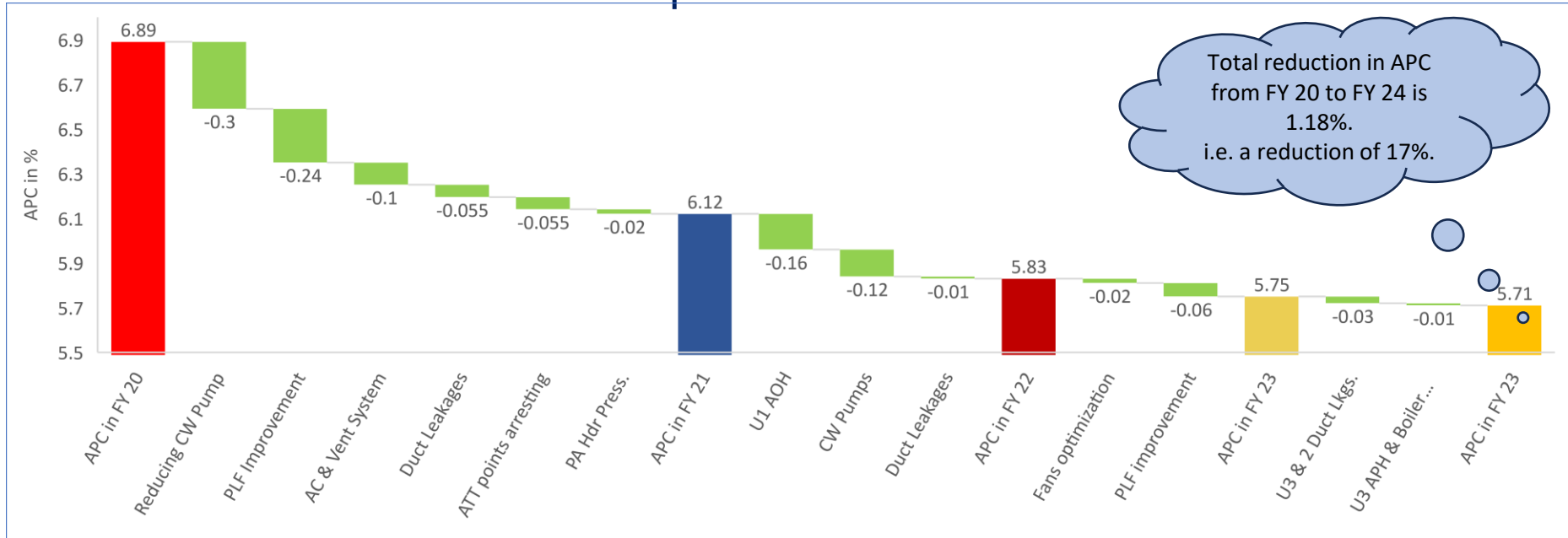
Heat Rate Improvement Y-O-Y



Total Savings on account of Heat Rate is 180 Cr +



APC Improvement Y-O-Y



**** Under PAT Cycle IV , M&V Audit PPGCL has recommended for 23000 + Ecerts**



Total Savings on account of Heat Rate is 30 Cr +

Saving in Coal consumption : 79,265 MT

Reduction in CO₂ emission: 1,91,821 Tons

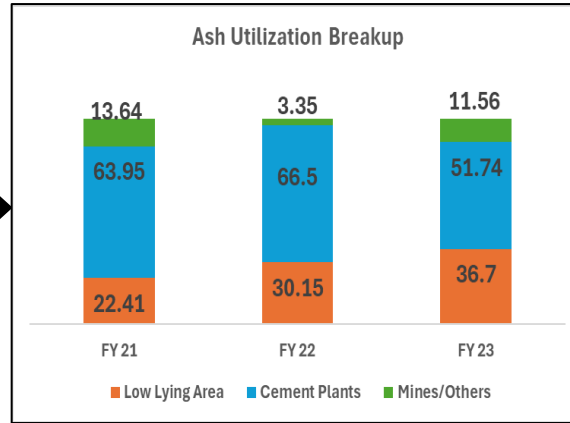
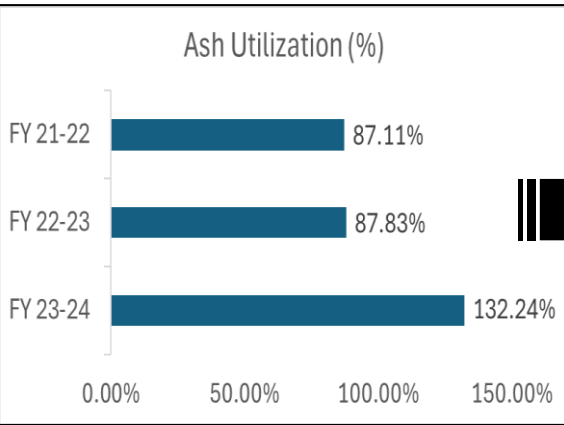
Renewable Energy

Year	Source (Solar, wind, etc.,)	Installed capacity (in KW)	Capacity addition (MW) after FY 2021	Total Generation (million kWh)
FY 2023-24	Solar	204	-	0.234



- **PPGCL Green Initiatives:**
- Roof top solar of 204 KW has been installed on the roof of school building.
- Also, we have installed 50 Nos of solar streetlights in surrounding community of capacity 20 W.
- The ECO park is equipped with solar lights. 15 solar lights of 20 W and 24 solar garden lights of 7W installed in township
- ❖ **Our Long-Term Plan:**
- In future all the rooftops of office area and open area will be covered with solar panels with a capacity of around 3MW.

Environment Management: Ash Utilization



UOM	FY 21	FY 23	FY 24
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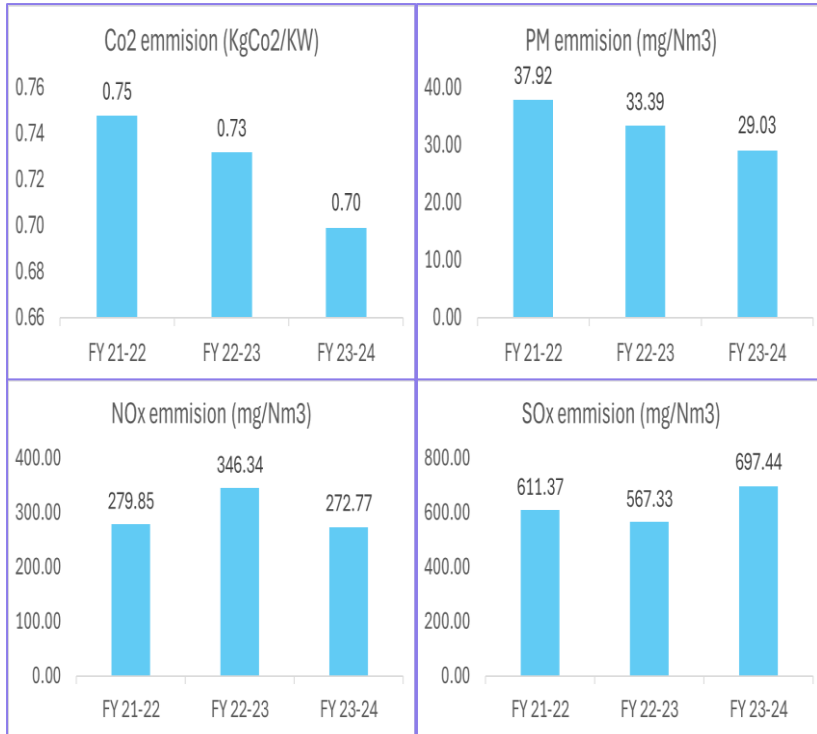
Ash Stock in Plant (Yard + Pond)	LMT	22.7	11.7	4.7
Ash Generated	LMT	20.0	24.2	26.1
Ash Utilization %		87.1	87.8	132.4

Best Practices in Ash Utilization

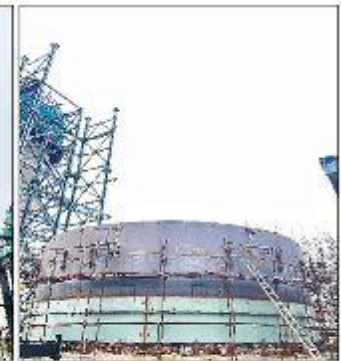
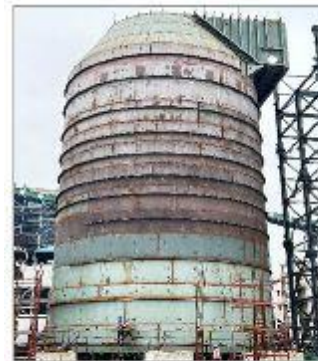
- We have a tie up with Ultratech CGU for supplying fly ash for cement production.
- We also supply fly ash to other cement units with bulkers. Previous FY we utilized 51.74% of total ash generated in cement units.
- We have tied up with Zaak Technologies to convert ash into cement.
- Fly ash bricks are being used for construction activities.
- Bottom Ash is being utilized in low lying land filling and mines filling.



Environment Management: Emissions



Retrofitting of FGD System



Absorber- 01

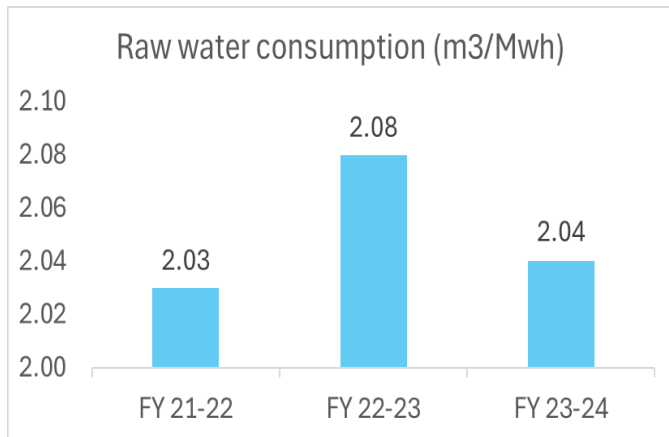
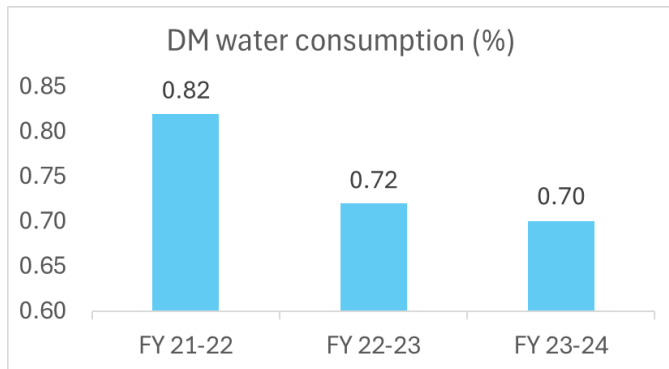
Absorber- 02

Absorber- 03

Public Disclosure :

1. GHG data is submitted to Central Electrical Authority (CEA) **(Scope-1)**.
2. The data is displayed in front of plant gate and on company website for public interest.

Environment Management: Water



Site visit to learn about other best practices.



Best Practices : Digitization

Digitization



OSI Soft PI

Historian & Real Time Monitoring system



Real Time DCS dashboard



DSM Software (In House)

Real Time Export, Sch, ACP & Deviation Monitoring



ENMS System

Energy Management System for HT Drives Cons tracking



Online High Energy Drain Temp & Coal Pipe temp Monitoring

PPGCL

PRAYAGRAJ POWER GENERATION COMPANY LIMITED

ONLINE CONDENSER PERFORMANCE FOR 3X660 MW

Sl.No.	PARAMETER	UOM	DESIGN	U#1		U#2		U#3	
				PASS-A	PASS-B	PASS-A	PASS-B	PASS-A	PASS-B
1	Load	MW	860.00	867.06	599.97	554.51			
2	Condenser back pressure	bar	0.1095	0.0925	0.0873	0.0992			
3	Optimum back pressure	mbar	302.46	267.68	263.00	235.43			
4	Corresponding Saturation Steam Temperature	°C	47.59	44.30	43.17	45.65			
5	CW Inlet Temperature	°C	33.00	29.74	29.74	29.71	29.88	30.02	29.78
6	CW outlet Temperature	°C	42.28	40.91	40.94	40.42	40.35	40.32	40.28
7	Optimum CW rise	°C	9.28	9.28	9.28	9.28	9.28	9.28	9.28
8	Actual CW Rise	°C	9.28	11.15	10.29	10.71	10.47	10.29	10.50
9	Optimum TTD	°C	5.31	5.31	5.31	5.31	5.31	5.31	5.31
10	Actual TTD	°C	5.31	3.39	4.26	2.75	2.82	5.34	5.37
11	Maximum possible cooling water temp rise = (Tsat - Tcw)	°C	14.59	14.55	14.55	13.46	13.29	15.63	15.87
12	Condenser effectiveness = (Tcw - Tcw1) / (Tsat - Tcw1)	%	63.59	76.69	70.73	79.97	78.79	65.86	66.16

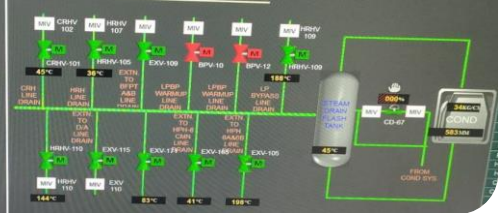
HEAT GAIN PATTERN IN BOILER UNIT#2

	DESIGN	ACTUAL
TEMP GAIN IN ECO	52.71	82.15
TEMP GAIN IN WATER WALL	66.82	53.09
TEMP GAIN IN WATER ROOF TUBES	15.71	20.64
TEMP GAIN IN FSH	100.2	79.95
TEMP DROP DUE TO SH SPRAY	-28.0	-23.0
TEMP GAIN IN FSH	100.2	82.74
TEMP GAIN IN LTHH	142.3	163.1
TEMP GAIN IN FSH	121.7	93.69

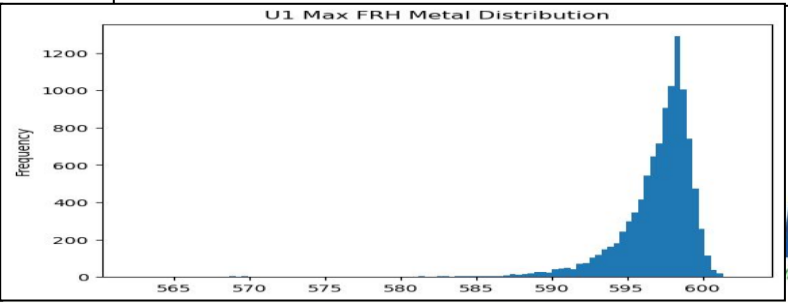
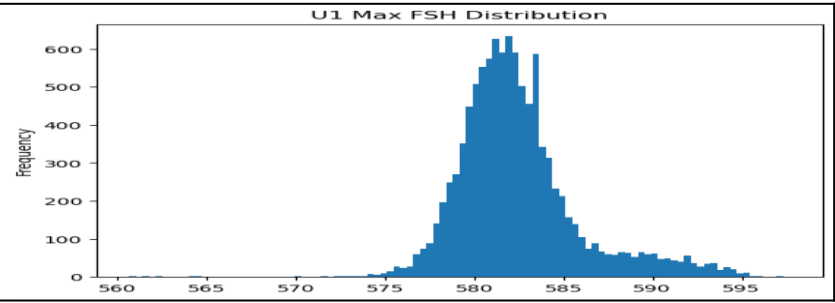
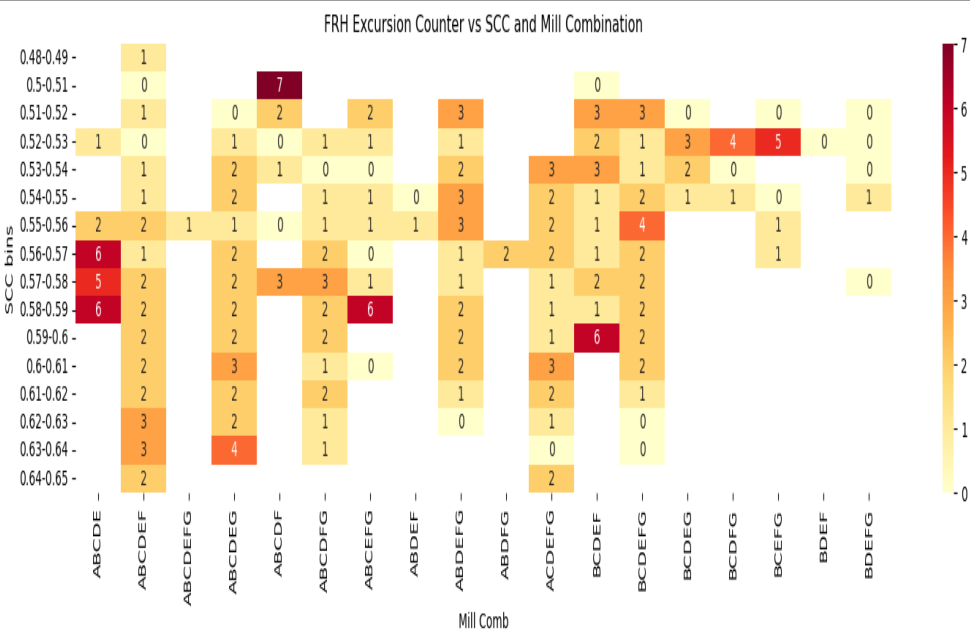
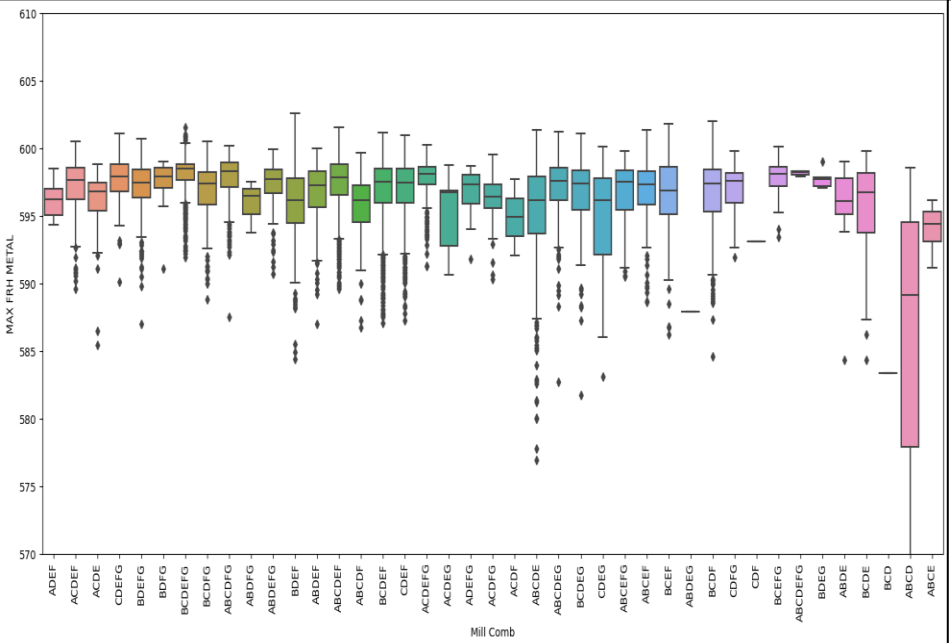
DRAINS TO UFT



DRAINS TO SDFT



Digital Intervention for Metal Temperature Excursion control



Best Practices : New Technology Initiatives

Implementation of Uptime AI for predictive reliability & performance monitoring :

New Technology



Real time heat rate and performance monitoring

Monitoring of heat rate & other major equipment performance based on real time dashboards to take smart and data-based decisions.



Reliability Monitoring through alerts

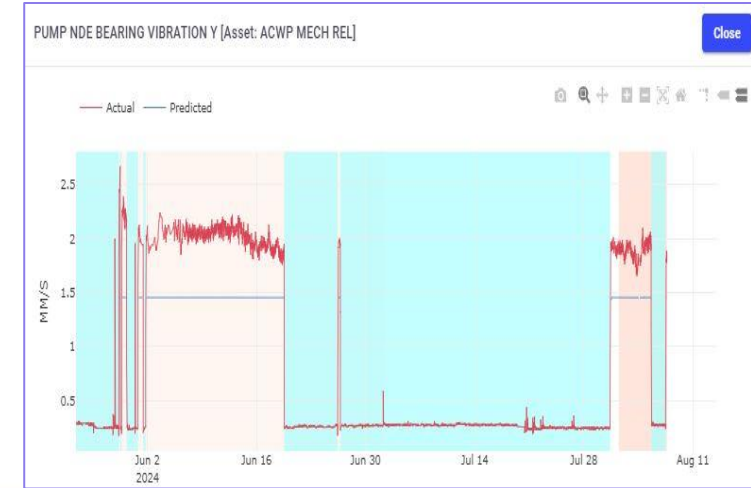
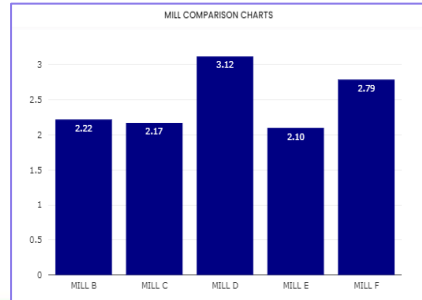
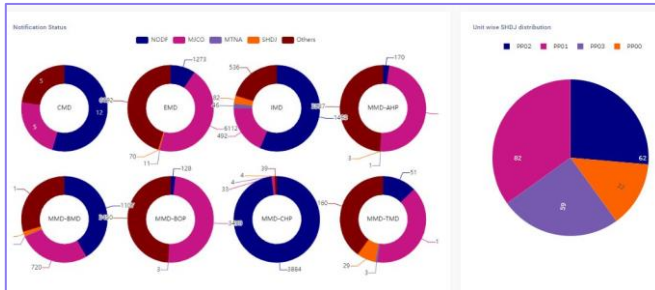
Reliability of major equipment and their health monitoring through alerts and various models.



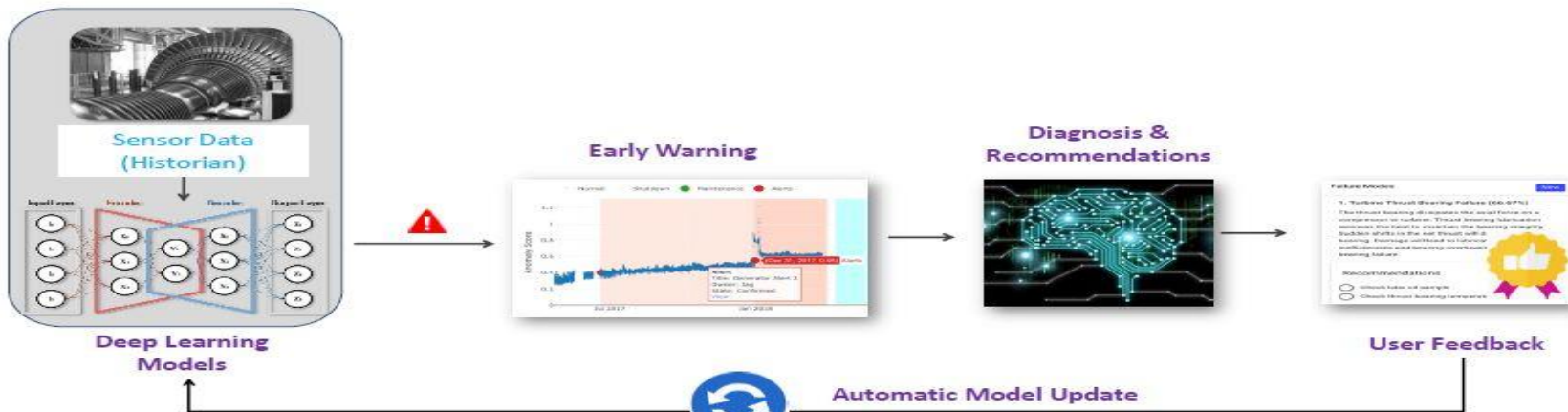
AI Integration with SAP

Integration of reliability model with SAP for both alert and defect tracking . Also, many maintenance dashboards being used to identify area of focus.

SL NO.	ALERT ID	DATE	STATE	STATUS	SEVERITY
1.	PPGCLP-U3-20240807-3000 DMCW PMP B - Unit 3 - Prayagraj	Aug 7, 2024	Active	Unacknowledged	Low
2.	PPGCLP-U1-20240807-YBD3 MILL D - Unit 1 - Prayagraj	Aug 7, 2024	Active	Unacknowledged	Low
3.	PPGCLP-U1-20240806-GCST BOILER FUEL & FIRING SYSTEM - Unit 1 - Prayagraj	Aug 7, 2024	Active	Unacknowledged	High
4.	PPGCLP-U3-20240806-OMNN FD Fan B - Unit 3 - Prayagraj	Aug 6, 2024	Active	Unacknowledged	Low
5.	PPGCLP-U1-20240806-THGF DMCW PMP A - Unit 1 - Prayagraj	Aug 6, 2024	Active	Unacknowledged	Low
6.	PPGCLP-U1-20240805-OCPI CEP A - Unit 1 - Prayagraj	Aug 5, 2024	Active	Unacknowledged	Low
7.	PPGCLP-U1-20240805-6SG4 STEAM TURBINE LO & CO MODELS - Unit 1 - Prayagraj	Aug 5, 2024	Active	Unacknowledged	Medium



Combine Domain Expertise & AI



Unit 2 CEP A

Alert Date: 11th June 2023

Early indication by 15 days

Issue:

CEP Motor and pump vibrations are running on the higher side. Spike observed in vibrations signals since 13th June

Potential Impact:

- Bearing Damage
- Equipment tripping



CEP MECH RELIA

Failure Modes

*1. Pump De Bearing Vibration High (0.497)

Approve Relearn

Jun 11, 2023 - Ongoing

Recommendations

- Carry out detailed vibration spectrum readings on bearings and casing and review for peak frequencies for specific failure mechanisms.
- Take lubricant sample and measure NAS value. Based upon the results inspect for contaminants including metal particles, water, process fluid or other contaminant. If NAS value is high hook up the online filtration system for reduction of NAS value.
- Clean lube oil filter. Inspect filter for evidence of clogging (coke particles), bearing deterioration (metal flakes) or additional contaminants.

*3. Motor Nde Bearing Vibration High (0.1206)

Approve Relearn

Jun 11, 2023 - Jun 14, 2023 Jun 11, 2023 - Ongoing

Recommendations

- Take detailed vibration spectrum readings on bearings and casing and review for peak frequencies for specific failure mechanisms. Review setup data on alignment and balance checks from last overhaul for any abnormal tolerances, identify repairs or missed quality checks that might indicate the cause of any issues.
- Inspect bearing and shaft for abnormal or uneven signs of wear.
- If after signature analysis, misalignment is identified then based on severity shut down the equipment and conduct alignment checks on shaft, bearings, coupling, piping and re-align the system.
- Take physical round of the equipment and if anything found correct, it can be a sensor issue which needs calibration.
- In order to identify the source of vibrations, de couple the motor and run the same for...

Uptime AI Performance Dashboard

BOILER EFFICIENCY

86.47%
Hourly Average

AIR TO FUEL RATIO

7.83
Hourly Average

TURBINE HEAT RATE

1,830 kcal/kWh
Hourly Average

SPECIFIC STEAM CONSUMPTION

2.76 t/mWh
Hourly Average

TOTAL AIR : EXCESS AIR : FLUE GAS EXIT TEMPERATURE

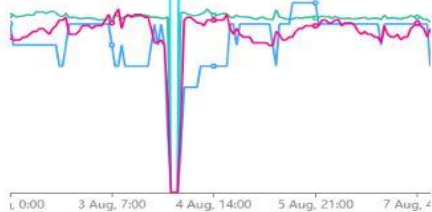
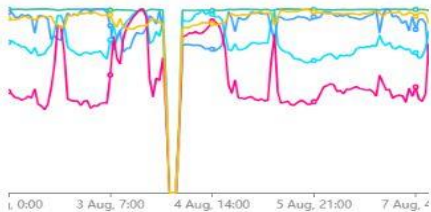
1,685 Ton/hr : **56.15%** : **130 °C**
Hourly Average

CONDENSER VACUUM

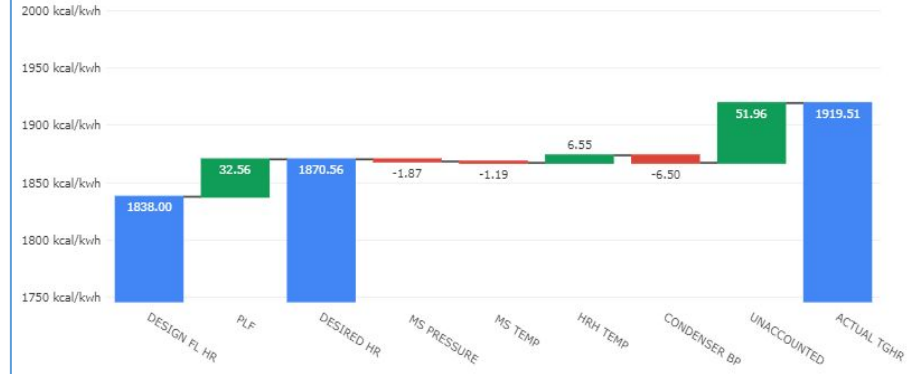
0.06 Bar
Hourly Average

SPECIFIC FUEL CONSUMPTION

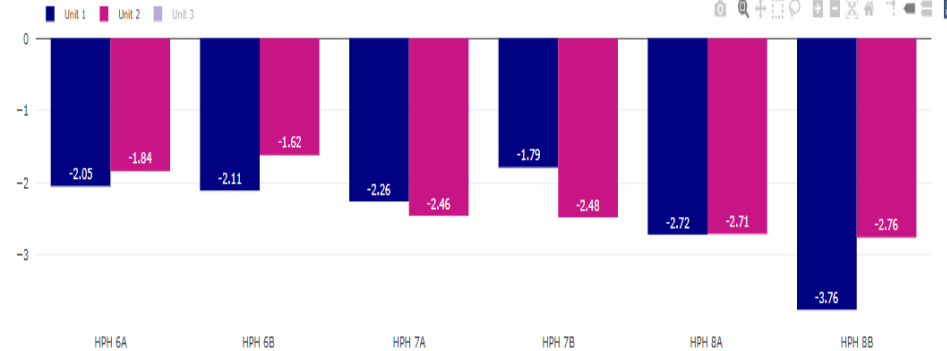
0.5838 t/mWh
Hourly Average



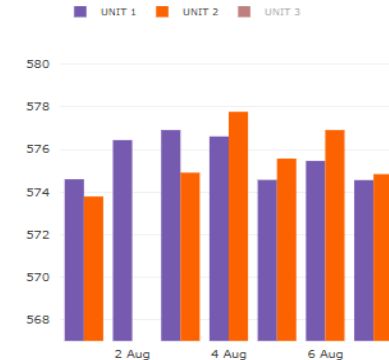
UNIT 1 HR WATERFALL CHART



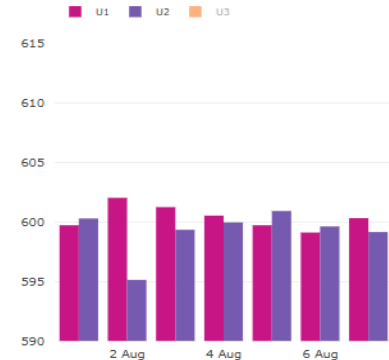
HEATER TTD COMPARISON



HRH TEMP



FRH MAX TEMP



SMILE : Smart Monitoring & Integrating Logic Expert (Operational Excellence Next Level)

Integrated Solution for Market

Dynamic Correction

1st Time Implementation @ PPGCL



SMILE : 1st Time implemented after Ideation workshops at PPGCL



Realtime Data collected at various load & all curve fine tuned



All Auto Loops are dynamically corrected based on Load -60%,80% & 100% live operation data



SMILE Project is very successful at PPGCL & Plant is running very smooth with these changes



It is a Real Time Performance Management Solution with dynamic correction of variables changing with boundary operating conditions.



Pro –SMILE is an Integrated operational excellence with flexibilization & Equipment fingerprint enhancing Reliability Improvement solutions.

This will be offered other Power Plants & Heavy industry like chemical, Steel etc as a Performance improvement service.



PPGCL is under discussion to tie up with AI-MI solution company for making Pro-SMILE more intelligent and data driven solution.



Pro-SMILE is unique ,as it Gives solution based on Real Time data with Variable Load Condition. This intergraded service solution package will be ready for product offering in market. **We are in discussion with UPTIME-AI & TCS for collaboration for preparing a integrated AI based next level solution –Pro SMILE.**



This type of Digital system offered by many OEM's SIEMENS, GE & THOSIBA as a standalone software & does not integrate with Real Time Operating decision making. Also SMILE tool comes with Real O&M experience integrating equipment Health/Reliability in consideration

Best Practices: Afforestation

- The Green belt covers Aprox. 30 % & we have planted about 3.49 lakh saplings.
- We have done during FY 23-24, 14,288 saplings and FY 24-25 .
- PPGCL has developed over 396.9 acres of green belt .
- Strategically chosen species like Neem, Pipal, Jamun, arjun, Sesam, Kadamb, Karanja Mango, Guava, Amaltash, Kachnar, Mahua, etc. for plantation.
- PPGCL also distributes ~500+ hybrid Mango, Guava, Kadamb, saplings per year for developing afforestation in the community.



GREEN TOWNSHIP



IMPLEMENTATION OF ISO

IMS

Establishment of Integrated Management System
(ISO 9001, ISO 14001 & ISO 45001)

2022

Implementation of Quality Management System (QMS)

EMS
(ISO 14001:2015)
OHSAS
(ISO 45001:2018)

2022

Implementation of Business Continuity Management System (BCMS)

ISMS
(ISO 27001:2022)

2024

Implementation of Energy Management System (EMS) **is under progress** : **Pre-Audit Scheduled**

QMS
(ISO 9001:2015)

2022

Implementation of Environment Management System (EMS) & Occupational Health & Safety Management System (OHSAS)

BCMS
(ISO 22301:2019)

2024

Implementation of Information Security Management System (ISMS)

EMS
(ISO 50001:2018)

JOURNEY OF ISO IN PPGCL

KSS:- Energy Savings



Energy Conservation Week



Awards & Accolades



Energy Efficiency Award from Mission Energy



Environment Excellence Award – 2022



Water Optimization Award 2022



Best Energy Efficient Unit above 500 MW from CEE



Quality Innovation Award 2022

Turn Around of Operational Performance



Heat Rate saving

182 Cr



APC Saving

32 Cr



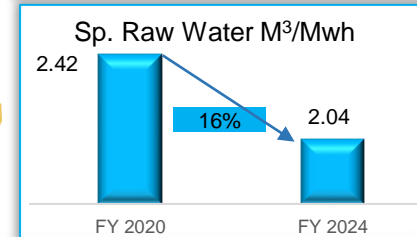
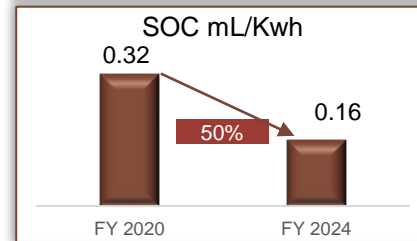
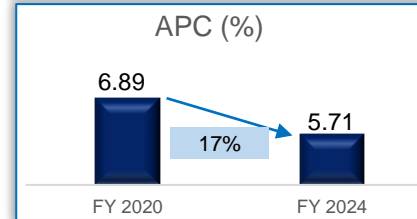
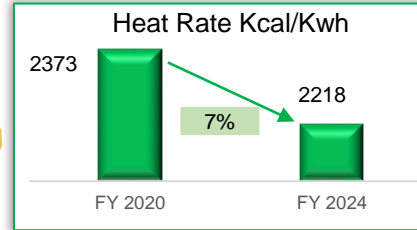
LDO Saving

20 Cr



SPC Water saving

1.4 Cr



At PPGCL saving of Heat rate of About 1 Kcal/Kwh, gives monetary saving of 1.2 Cr in a Year.

By taking these initiatives of Real Time Heat rate monitoring, Auto Loop Tuning by team PPGCL able to reduce more than 155 Kcal/Kwh.

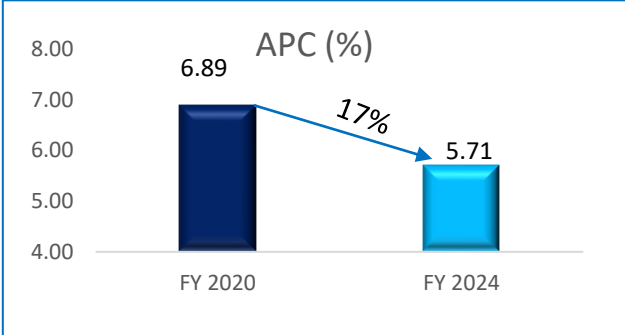
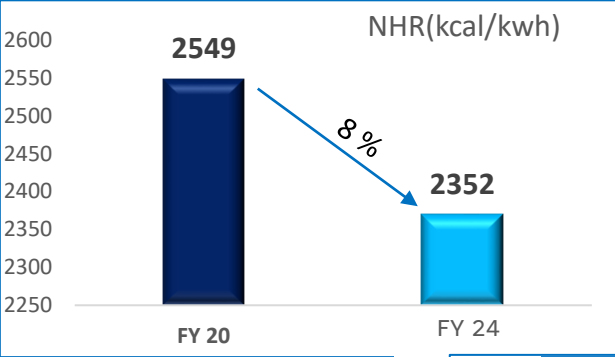
So, improving the operational efficiency by improving the operational parameter, PPGCL Improved the Heat rate & reduce the Energy cost by approx. 20 Paise/Kwh.


PPGCL adopted Industry 4.0 practices for sustainable practice.

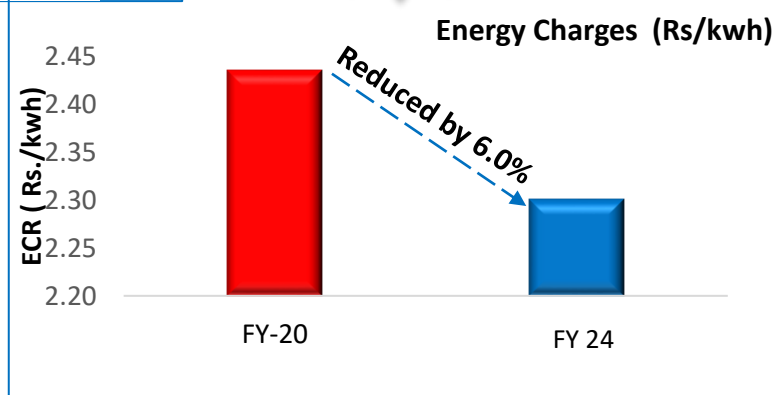
A Stressed assets become turnaround within 1.5 Years of Operation !!

Benefit To Customer :

- ✓ PPGCL Supplying 90% of Its Power to UPPCL & For the 1st Time UPPCL getting most Reliable & cheap power from PPGCL.
- ✓ PPGCL become MOD rank 2nd from its 4th Position in IPP (1st non pit head).



 **UPPCL Reduced their Power Purchase Cost by 150+ Cr / Year**



Thank you !!



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