23rd National Award for Excellence in Energy Management 2022

NTPC Ramagundam

A Maharatna Company

NTPC Ramagundam *(an ISO 50001 Certified station)*

Our Mission:

'To Provide Reliable Power & related solutions in an Economical, Efficient & Environment friendly manners driven by Innovations & Agility"

EnMS Objectives:

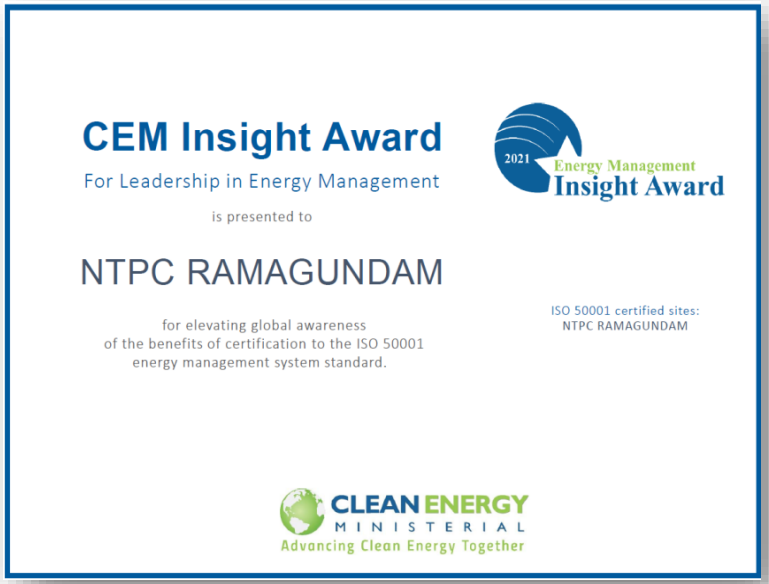
Providing the solutions for generating Efficient, Economical and Environment friendly Power with Operational Excellence through Systematic practices of Monitoring, Analysis and employing innovation Techniques

Presentation Team: Manoj Kr Jha, Energy Manager & Team leader, Mandeep Singh Lamba & M Vamsi Krishna;EnMS team

NTPC Ramagundam – Global footprint

*NTPC Ramagundam received the **Energy Management Insight Award for 2021** from the **international Clean Energy Ministerial (CEM)** forum under **Department of Energy, United Nation Industrial Development Organization.***

"This award recognizes organizations that have implemented energy management systems to achieve energy, economic, and sustainability benefits"



Times Power Magazine, USA

*NTPC Ramagundam **received POWER MAGAZINE Award, USA.** This award recognizes diverse state-of-the-art technologies to address both unique and global challenges towards climates and economic environments*

"For nearly four decades this plant has been essential power provider as it had added capacity over the years. Even as the plant ages, it has been setting new performance records thanks to technological & environmental upgrades "

Profile: NTPC Ramagundam

Installed Capacity Configuration		
Capacity	No of units	Total Capcity
200 MW	3	600 MW
500 MW	4	2000 MW
10 MW Solar PV	1	10 MW
100 MW Floating Solar PV	1	100 MW
Total Installed Capacity	**2610 MW**	

NTPC Ramagundam is firmly guided by its philosophy of

- Core business of power generation is intricately intertwined with social and environmental growth.
- Generating reliable energy at competitive prices in a sustained manner.
- Employing a mix of energy sources using innovative & eco-friendly technologies.

Upcoming Projects Capacity addition:

Capacity: 1600 MW (2x800 MW)

Commissioning by Oct' 22 & Mar' 23

Renewable Capacity addition and battery storage

Floating Solar : 100 MW Capacity

40MWh/10MW capacity Li-ion Battery Energy storage system (BESS).

COD by March 2024.

The Brighter Plan 2032

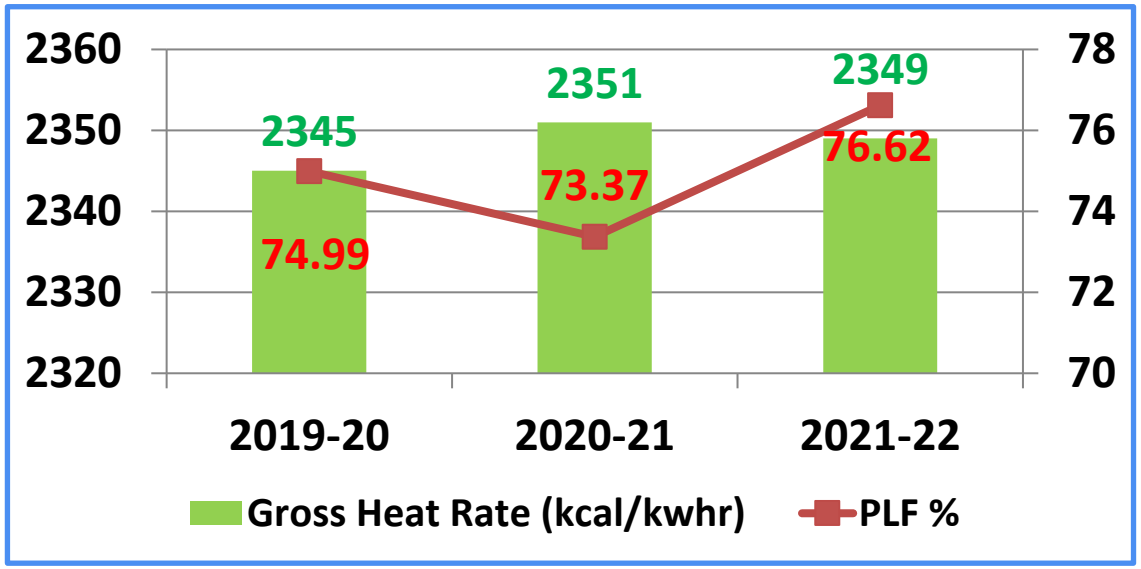
- Green Environment
- Enriched life
- Waste minimization
- Circular Economy
- Total Safety
- Diversity and Inclusion
- Operational Excellence

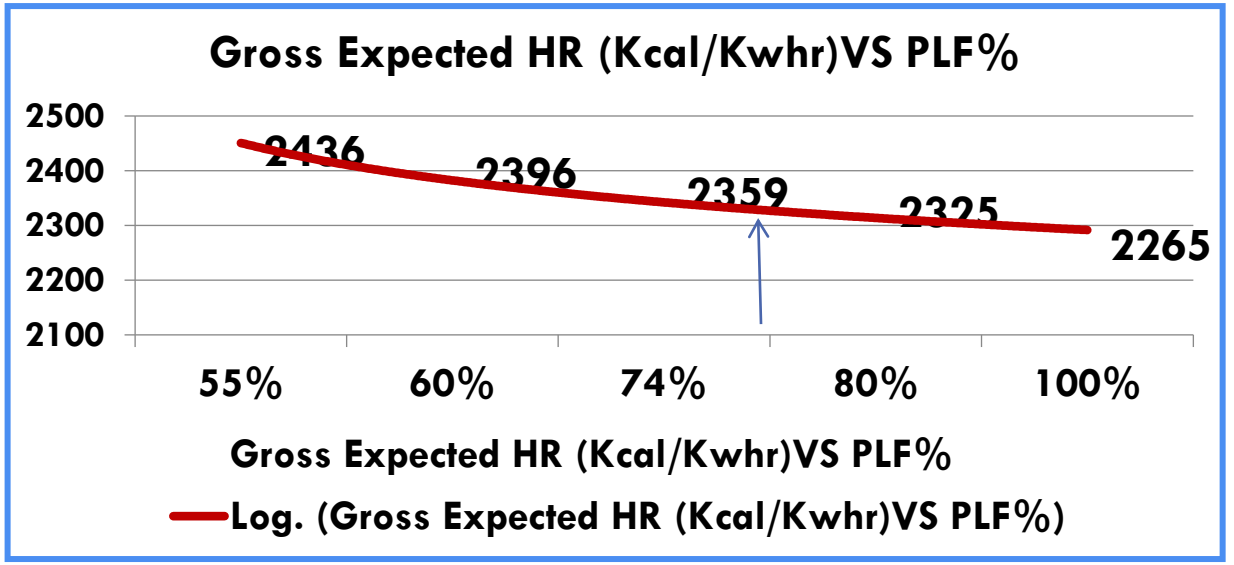
PERFORMANCE FY 21-22

S No	PARAMETER	UNIT	FY 2021-22	
			TARGET	ACHIEVED
1	Generation	MU	15444	17450
2	PLF	%	67.81	76.62
3	Declared Capacity	%	85.00	89.39
4	APC	%	6.88	6.81
5	Sp. Oil Cons.	ml/kwhr	0.50	0.262
6	Heat Rate	KCal/kWh	2399	2341
7	Boiler Efficiencies	%	86.6	86.86
8	Turbine Efficiencies	KCal/kWh	2077	2033
9	Raw Water Consumption	Ltr/kWh	3.5	3.21
10	DM Water Consumption	Ltr/kWh	0.07	0.067

Specific Energy Consumption – Last 3 years

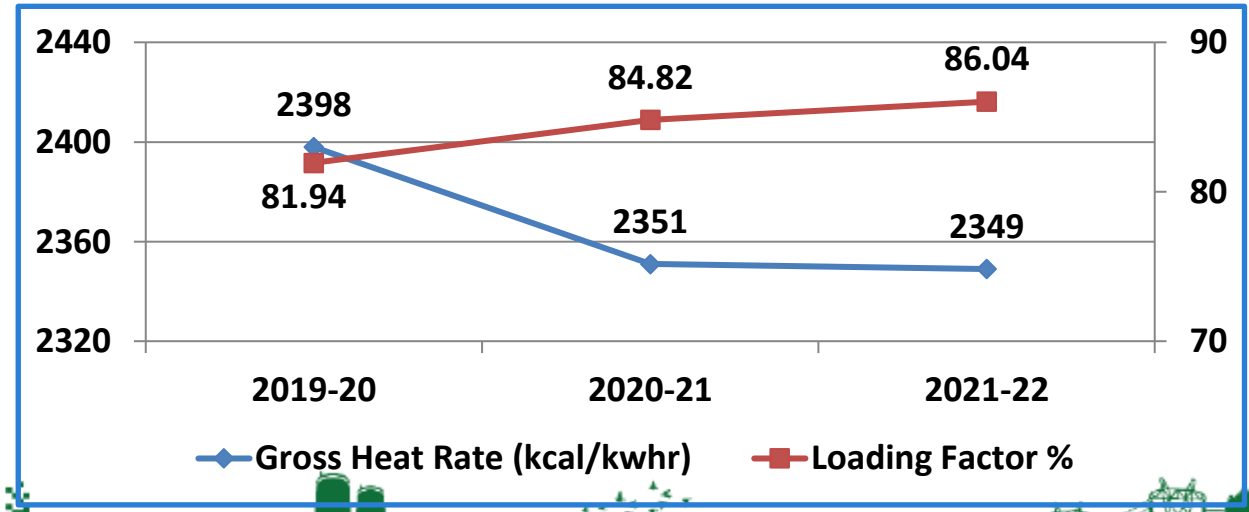
Gross Heat rate (GHR): CERC Norms for RSTPS: 2399 kCal/Kwhr





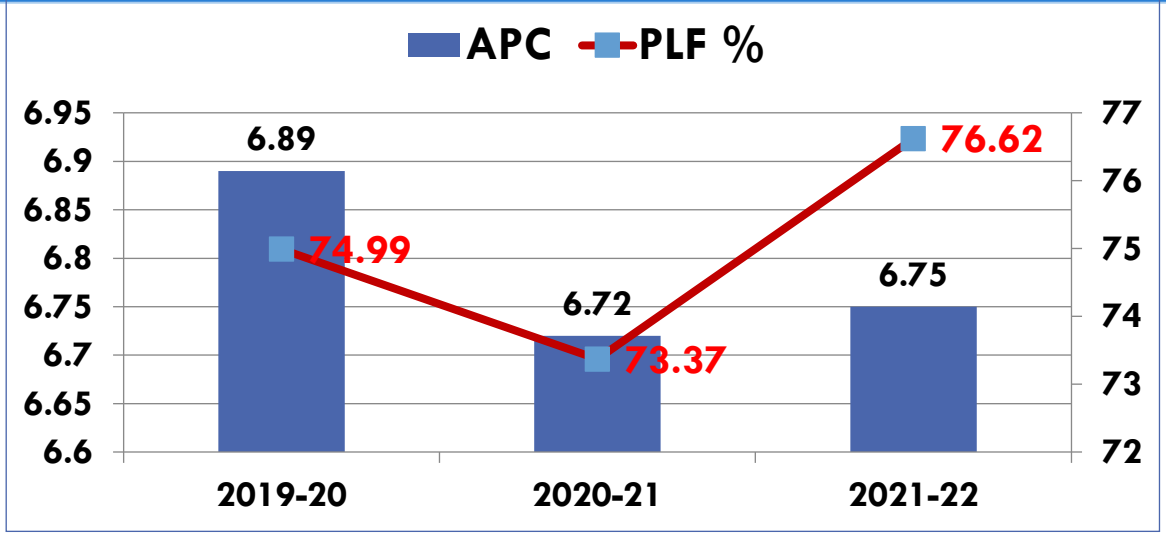
Remarks:

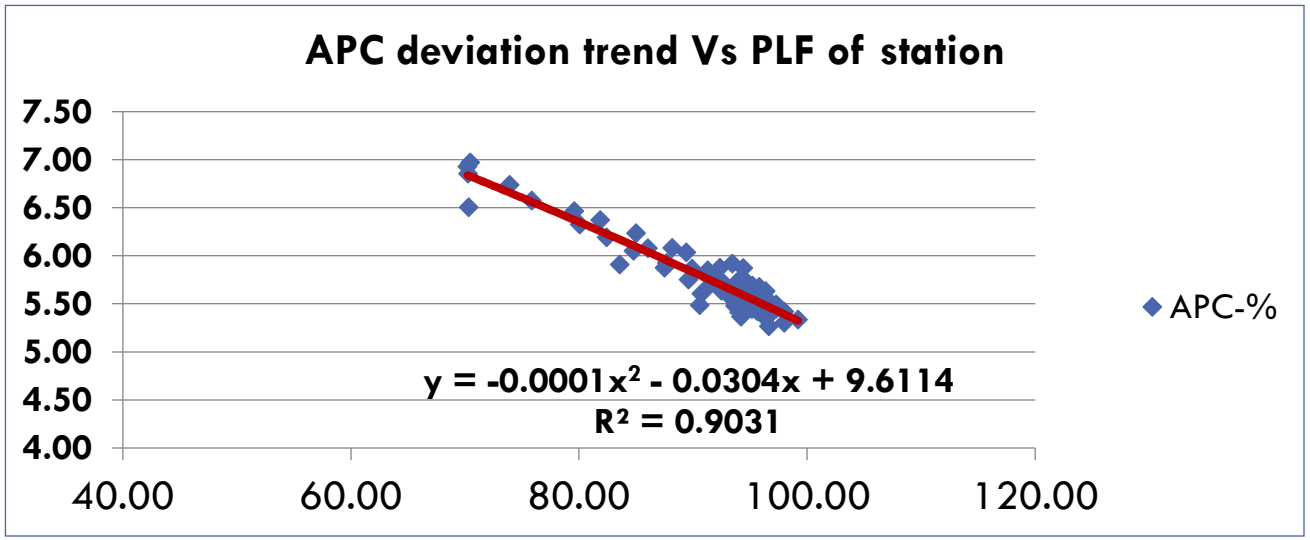
- Improvement in GHR is mainly due to Implementation of HR improvement action plan through R&M of Unit#3 turbine in Dec 2022
- Major impact shall come in FY 2022-23
- The gross HR at the given PLF is in line of Manufacturer curve



Specific Energy Consumption – Last 3 years

Auxiliary Power Consumption (APC) CERC Norms for RSTPS: APC of 6.88%





• APC of the station (6.75%) has marginally higher than PY (6.72%) because of limited works in OH of Unit 7 and U6 during covid thereby draft power increased by 2.2 MW

•However at PLF of 76.62% the APC is less than the norms of 6.88%

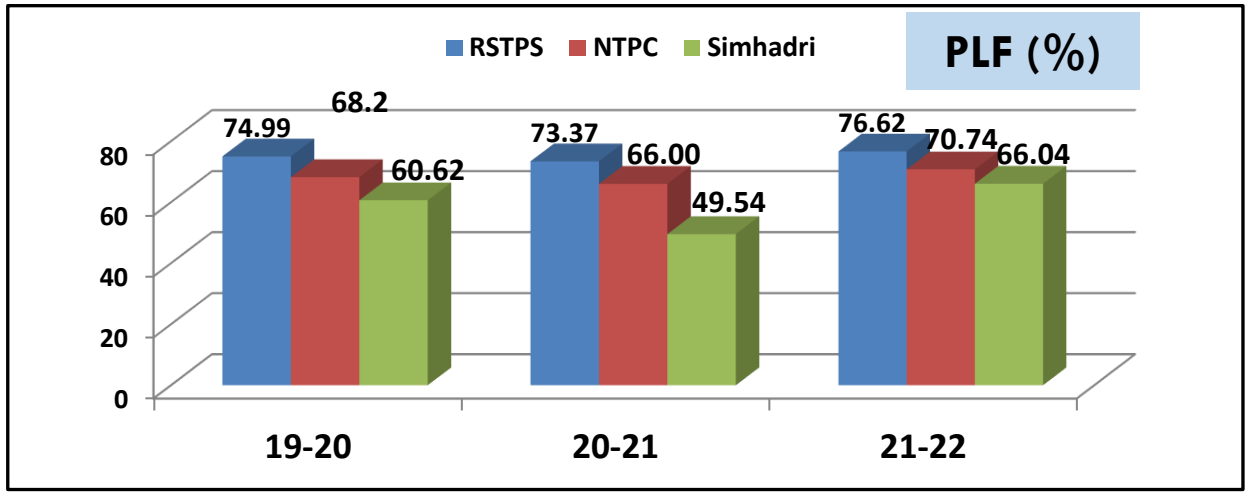
Actions taken for improvement:

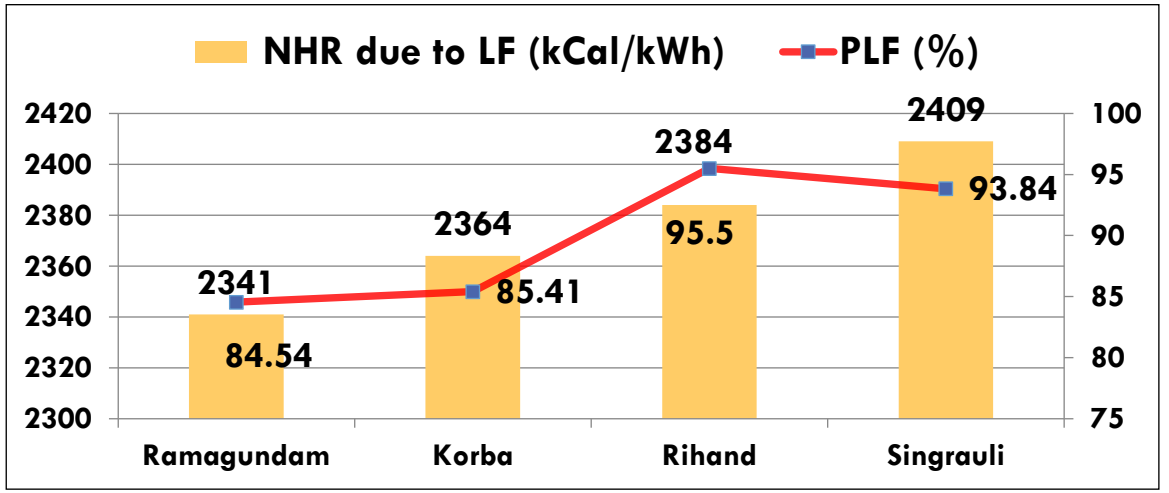
• Unit 7 major Duct works completed during OH in Aug 2022. Expected APC reduction of 3 MW

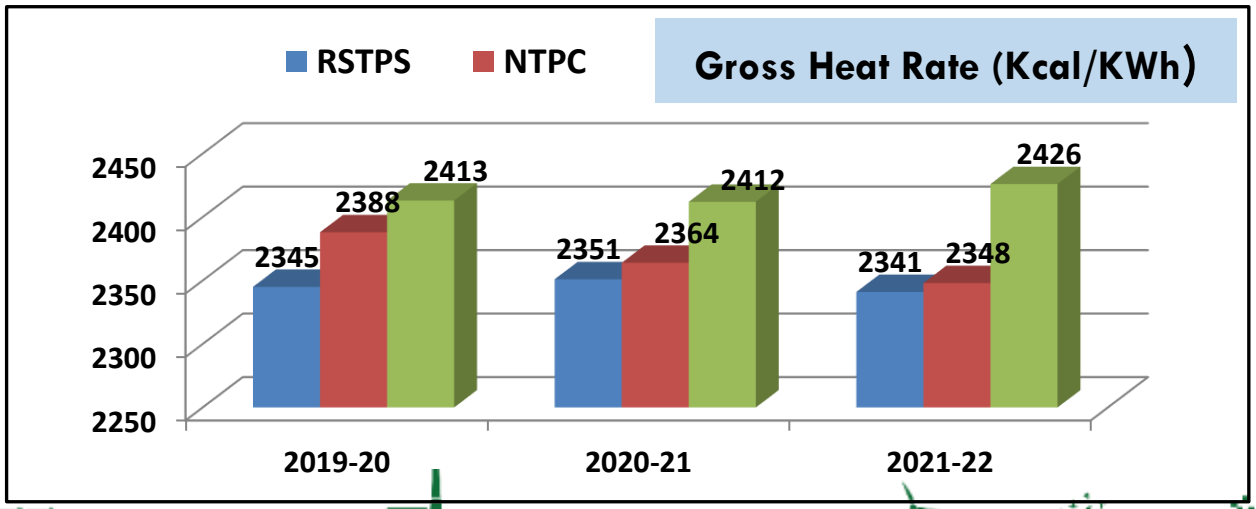
•U5/6 OH is planned in Nov-Dec 2022. Expected draft power reduction by 2 MW

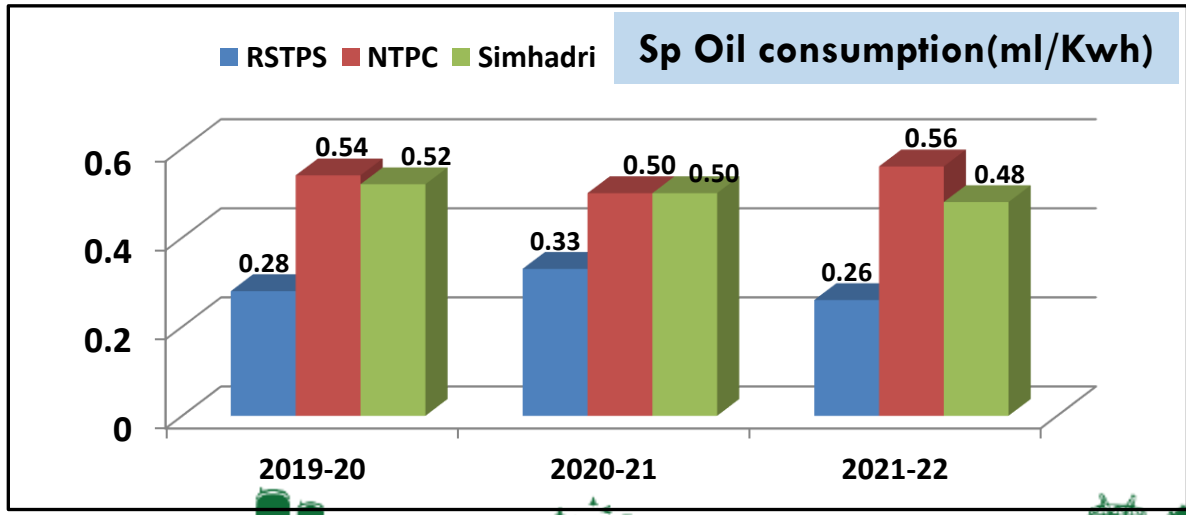
Information on Competitors, National & Global benchmark

NTPC Ramagundam (RSTPS) has been the best performing station amongst its internal peers over the years









Roadmap to achieve benchmark

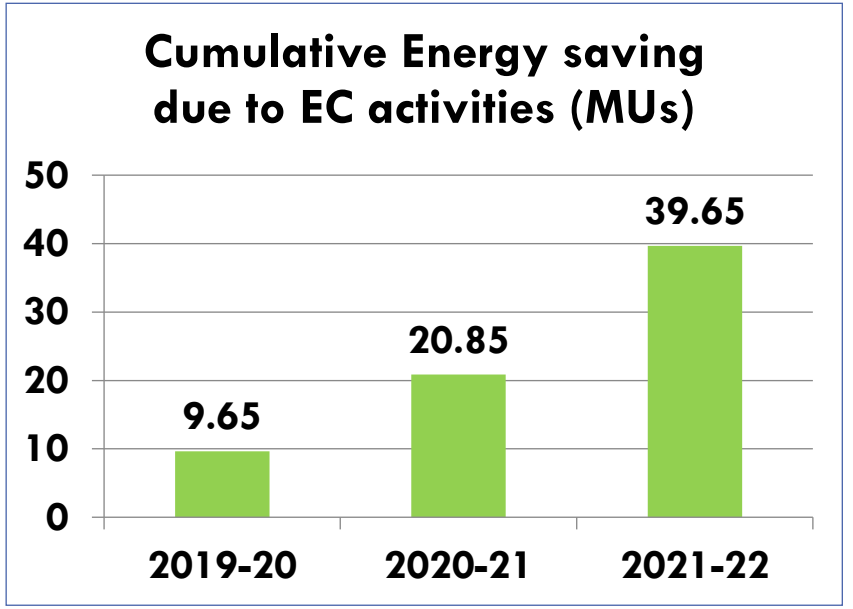
Action Plan Proposed	Expected UHR improvement (Kcal/Kwhr)	Station HR Improvement (Kcal/Kwhr)			Heat Rate Improvement Action plan Roadmap	
		2021-22	2022-23	2023-24	2022-23	2023-24
U#3 Mega R&M (Turbine upgradn)	189	14.54			**Completed in Dec 21.**	
U#2 Mega R&M (Turbine upgradn)	50		3.85		Turbine replacement with capacity of 210 MW **(Nov'22 to Jan'23)**	
U#1 Mega R&M, Blr OH & Chem cleaning	50		3.85		**Completed in May 2022**	
Augmentation of LP Economizer in one Stage-I unit. Expected Temp reduction by 15-20 deg C	15			1.15		Under SG R&M:package under approval. For one unit.
Unit 7 BLR annual OH with NOX modification works	8		1.54		Unit Under OH (w.e.f 13.06.22)	
Unit 5 Overhauling (Boiler, LP/IP Turbine)	25		4.81		Dec-22	
Unit 6 Overhauling (Boiler, HP/IP Turbine)	24		4.61		Jan-23	
Unit 4 Overhauling (Boiler, Generator)	24			4.61		Dec-23
Unit 3 Overhauling (Boiler)	12			0.92		Nov-23
Total HR Improvement	**397**	**14.54**	**18.86**	**6.68**		

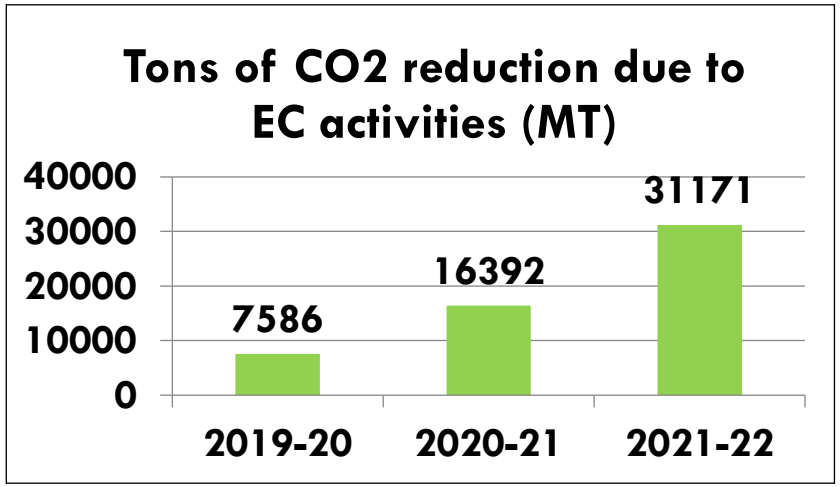
MAJOR ENCON PROJECT PLANNED IN 22-23

S.N	Particulars	Investment (Rs in Million)	Annual Electrical Savings (Million kWh)	Payback Prd (Yrs)	Target Date
1	Reduction in draft power consumption after overhauling of Unit-7	0	14.45	--	Completed . Aug-22
2	Replacement of Township conventional electrical fittings with energy efficient equipment	14.13	3.97	1.5	Oct-22
3	Installation of Soft starters for CT Fans in Stage II Units	3	1.3	0.9	Mar-23
4	Installation of Soft Starters for Stage-2 Bottom ash series pumps (8 PUMPS)	3.26	0.73	1.7	Feb-23
5	Installation of VFD in ID Fan motors of 2 units of 500 MW	57	7.6	2.5	Mar-23

Energy Saving projects implemented in last three years

FY	No. of Proposal	Investment (In Rs. Millions)	Electrical Savings (in MUs)	Savings (In Rs. Millions)	Payback Year
19-20	8	23.21	9.65	25.10	0.92
20-21	8	58.5	11.2	27.12	2.16
21-22	8	36.05	18.8	52.65	0.68





Innovative Project-1: Geo Polymer Aggregate from fly ash

Developed geo-polymer coarse aggregates using 90% fly ash content as a replacement to natural aggregates for use in building construction.

Technical parameters of the newly developed substance was tested & accepted by the **National Council for Cement and Building Materials (NCCBM).**

Geo Polymer coarse aggregates: With the aim of increasing utilization of Fly Ash & reducing stress in Ash Dyke, the concept of developing

Value added products (Aggregates) from fly ash at RSTPS)

Sh. Ramesh Babu V, Dir(O) Inaugurated GPC Model Bhavan: 12.12.2021

Advantages

1. ***Increases fly ash utilization and also saves the environment.***
2. ***Reduces requirement of land for ash pond.***
3. ***Reduces water consumption and Carbon Emission***
4. ***Helps in meeting the estimated demand of aggregates in a country to some extent.***

Replicable for all Thermal power plant .

Innovative Project-2 : 100 MW Floating Solar PV Plant

Capacity: 100 MW
Water surface Area :450 acres on water reservoir
Project cost: 423 Cr, Agency: M/s BHEL

Dedicated to the nation by Hon'ble PM Sh. Narendra Modi on 30.07.2022.

Replicable for all Thermal power plants having Water Bodies

COD: 80 MW till 24.03.2022, COD of Balance 20 MW: 01.07.2022

- 50 MW Power has been tied up through NVVN and currently the contract is up to 30th Oct'22. **(Rate of sale of power: Rs 3.99/kWh).**
- **50 MW is being sold in Green DAM**. Talks is also going on with Railways for PPA of the power.
- The cost of generation from Solar PV plant is **competitive** & also shall help in replacing thermal power under **GoI flexiblization scheme.**
- 100-MW Floating Solar project at Ramagundam, **Largest in the segment** in the country, is endowed with **advance technology** as well as environment friendly features.

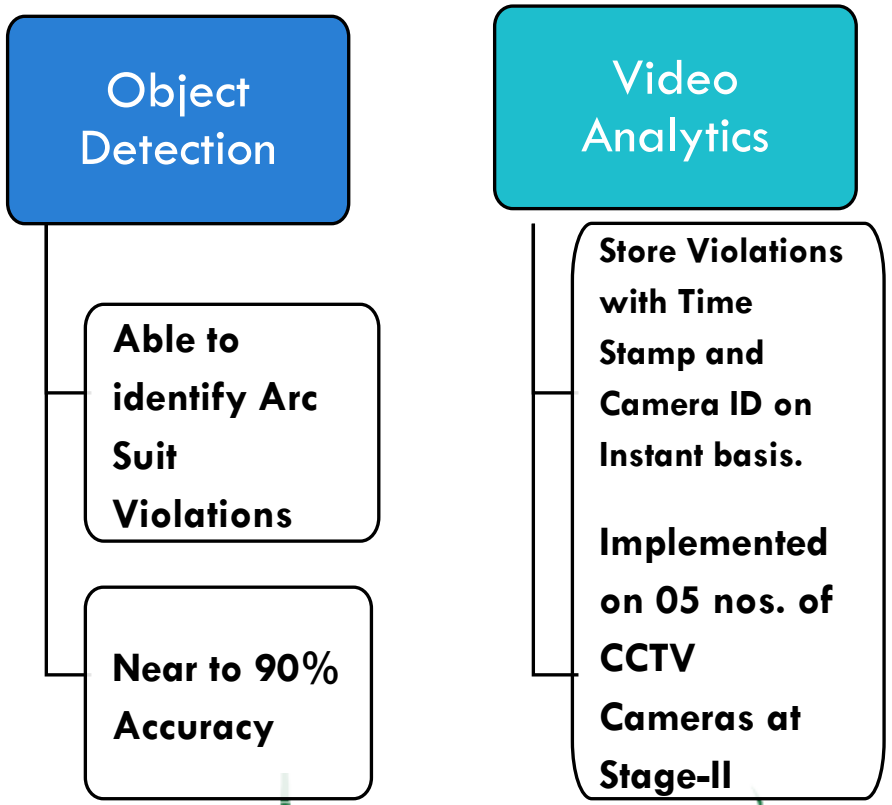
Benefits:

- ***Total Generation till 30June: 30.23 MUs (PLF: 17.3%), Revenue Earned: Rs 12.76 Cr***
- ***Water Evaporation reduction : 1.1 million m3 per year***
- ***2 LMT CO2 emission neutralization per year***

Innovative Project-3: Arc-Suit Violation Detection

How our Solution Worked

- Electrical Safety implementation: Violation in use of arc suit during electrical isolation.
- Recognized by use of artificial machine learning technique with alarm to Unit controller



Replicable for all Switchgear Breakers

- Switchgear Breakers are prone to flashovers and person working in these areas must wear arc-suit.
- **NTPC Ramagundam has developed in-house state of the art " Arc suit violation detection system.**
- This ensures the safety of the manpower and safe operation of switchgear.

Arc-Suit Violation Detection

- AI based object detection system YOLO is used to identify and classify the object into classes.
  1. Person not wearing arc suit.
  2. Person wearing arc suit but not helmet.
  3. Person wearing all PPE.

- ✓Darknet -neural network framework
- ✓YOLO – Object Detection Model
- ✓Pre-trained models trained on various datasets such as
  - COCO dataset,
  - the KITTI dataset,
  - and the Open Images Dataset.

Utilization of renewable energy sources

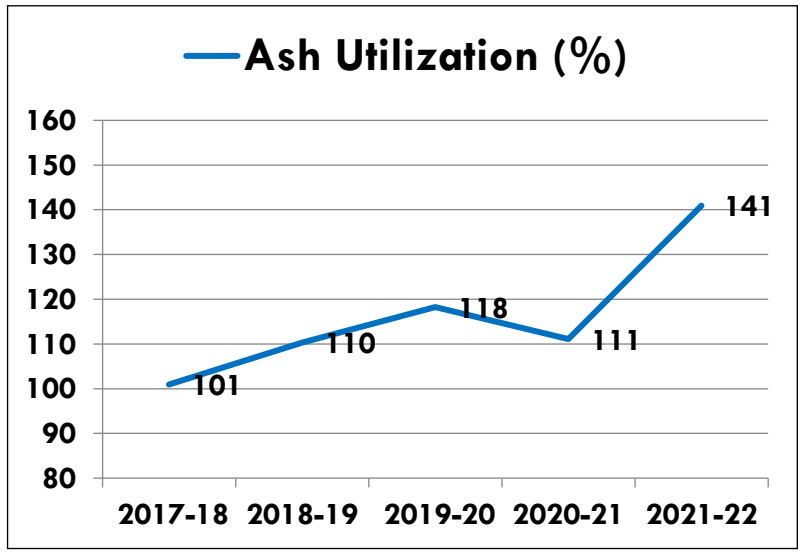
FY	Technology	Type of energy	Onsite/ offsite	IC (kw)	Gen. (MUs)	% of Electrical Energy used
19-20	PV Plates	Solar	Onsite	10135	14.06	**1.18**
20-21	PV Plates	Solar	Onsite	10135	14.3	**1.27**
21-22	PV Plates	Solar	Onsite	90135	34.89	**1.10**

Upcoming Renewable Energy Projects			
Name of Project & Location	**Project Capacity**	**Investment made (Rs Million)**	**Expected Power generation year**
Remaining 20MW Floating Solar PV plant on water reservoir	**20/100 MW**	**4830**	**2022-23. COD 01.07.22**
Additional 100MW Floating Solar PV plant on water reservoir	**100 MW**	**4800**	**2024-25**

Environmental Management- Ash Utilization

- Use of Fine Fly Ash for **Geo polymer concrete** for road & building construction
- Bottom ash as **replacement of sand** in Mine Stowing, Ash Dyke Raising, Ash Bricks Utilisation
- **National Highway** construction
- Ensuring Dry Ash system availability. Dry Ash Utilization has increased from 30% to 40%.
- **Customer meets & Industry visits** for increased customer base.

Best Practice of NTPC Ramagundam



Fly Ash Geo polymer road construction at RSTPS

Dry Ash supply Rake Loading System

Value added products (Aggregates) from fly ash at RSTPS)

Environmental Management- Ash Utilization

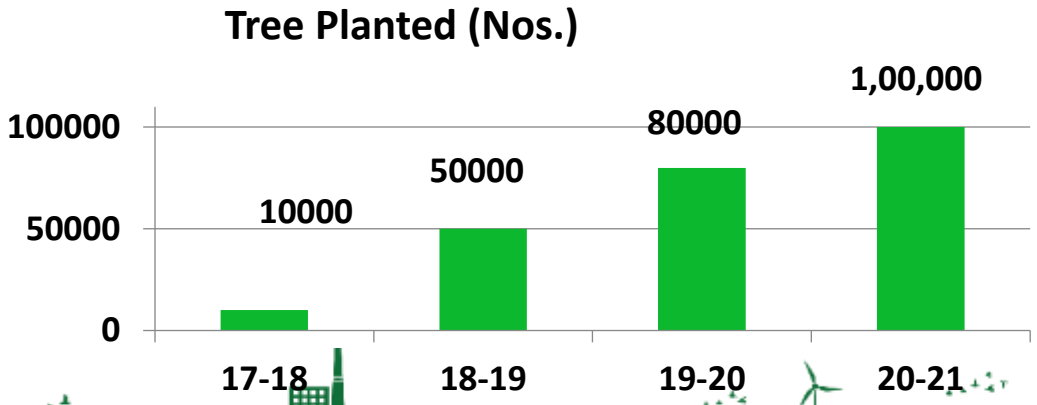
Particulars	UOM	19-20	20-21	21-22
Ash Generated	Tons	3816293	3857530	3938331
Ash Utilization	%	118.23	111.08	140.92
Ash Utilized in manufacturing of cement/concrete – other similar products	%	22.8	19.6	14.87
Ash Utilized in Fly Ash Bricks	%	45.1	59.4	27.40
Ash Utilized in Mine filling	%	21	15	7.95
Ash Utilized for Roads pavements	%	6.9	6	37.92
Ash Utilization in Other Areas – Please mention below	%			
(1) Agriculture Use		9.31	4.67	0
(2) Clay ash brick units		28.04	19.53	10.01
(3) Ash dyke raising/construction		1.62	0	1.60
Expenditure on Ash Utilization (annual)	**INR**	**0**	**0**	**0**

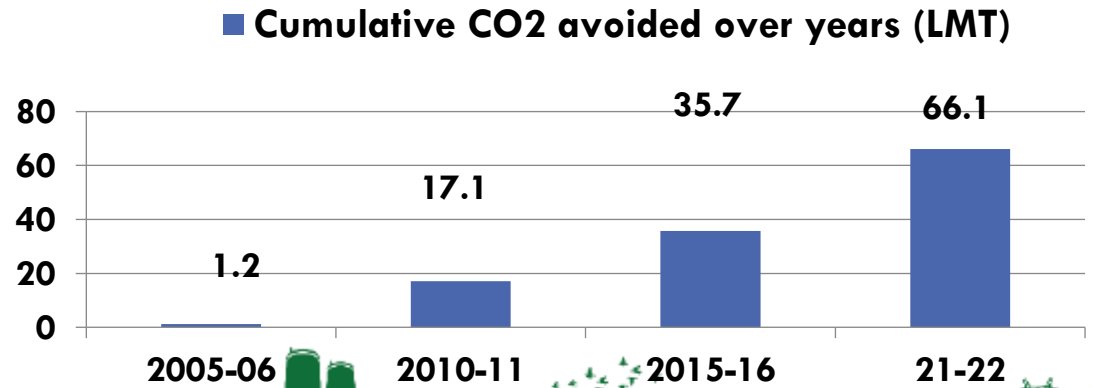
Ash Handling done through various methods	
Ash Handled (Wet Method) %	20
Ash Handled (Dry Method) %	80
Ash Handled (semi wet) %	NA

Environmental Management-Emission

- FGD implementation in All units is under process by M/s BHEL/M/s EPIL.

  Target date is December-23
- NOX Modifications in Stage-iii (U7 500 MW unit) is awarded to M/s BHEL. Completion target Date is March-2024.
- ESP R&M for Stage-I Units awarded to M/s BHEL. U1& U3 ESP R&M completed. ESP R&M of unit 2 is scheduled in Sept-Dec 2022.
- Mass Tree Plantation :1 Lakh nos plantation done in FY 20-21and FY21-22.
- Solid Waste Mgt: Bio Methanation Plant and Vermi composting unit.
- Geo Tagging of all trees in plant and township. Mini forest development using Miyawaki method





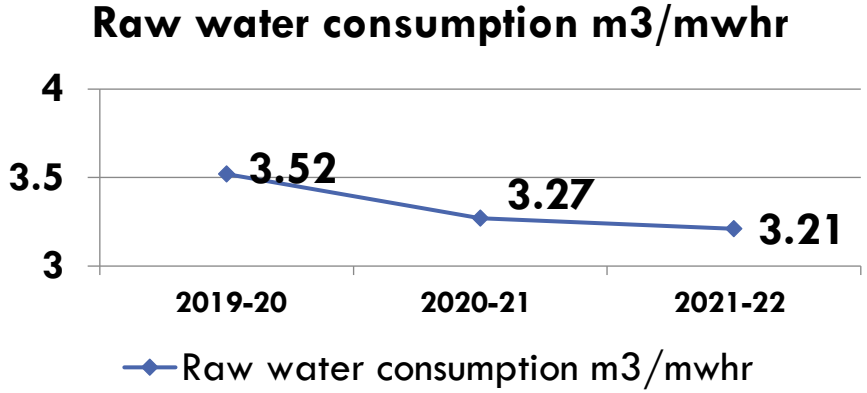
Environmental Management-Emission

Absolute Emissions and Emission Intensities				
Particulars	**UOM**	**19-20**	**20-21**	**21-22**
Total CO2 Emissions Per kW of Generation	Ton/kW	0.00077	0.000766	0.000773
Current SOx Emissions at Full Load*	mg/Nm3	1625	1393	1350.65
Current NOx Emissions at Full Load*	mg/Nm3	394	440	409.13
Particulate Matter *	mg/Nm3	87	73	71
Mercury*	Mg/Nm3	0	0	0

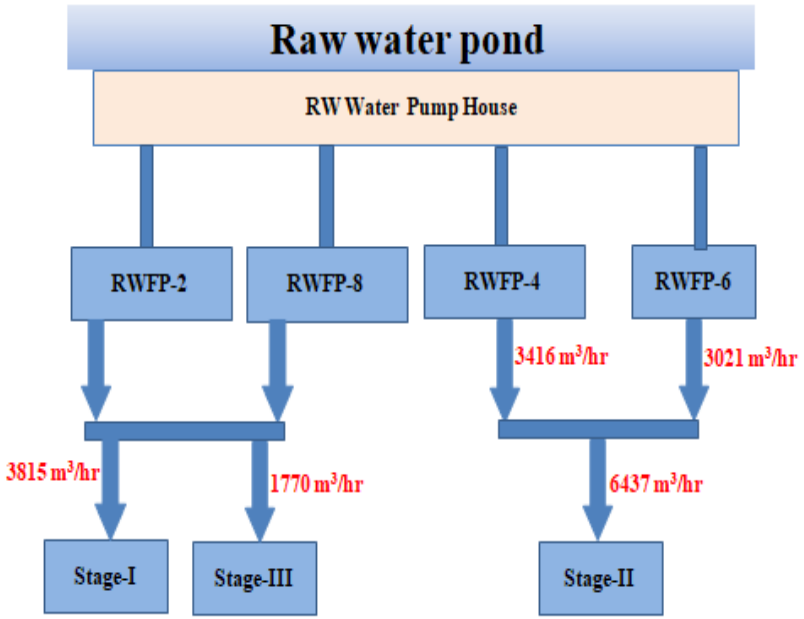
Current Emission Details							
Parameters	**Unit 1**	**Unit 2**	**Unit 3**	**Unit 4**	**Unit 5**	**Unit 6**	**Unit 7**
SOX (mg/Nm3)	1604	1554	1597	1542	1611	1571	S/D
NOX (mg/Nm3)	688	635	657	669	637	681	S/D
Opacity (mg/Nm3)	70	81	82	70	75	76	S/D

Environmental Management- Water

DM water consumption (%)			Raw water consumption m3/mwhr		
19-20	20-21	21-22	19-20	20-21	21-22
0.72	0.82	0.87	3.52	3.27	3.21



Plant has implemented Zero Liquid Discharge



Raw Water System

Best Practices in Water Management

i. Third Party Water Balance Audit of plant Every 3rd Year.
ii. Target Sp water consumption for FY 2022-23 is 2.9 l/kwhr against Regulatory norms of 3.5 l/kwhr.
iii. Water dashboard for monitoring of raw water intake to plants.
iv. Use of Municipal sewage water through STP.
v. Township rain water harvesting (In use).
vi. Bottom ash timing optimization based on monitoring leading to ash water ration improvement.
vii. Ash Water Recirculation system recovers 1500 m3/Hr water from Ash Pond.

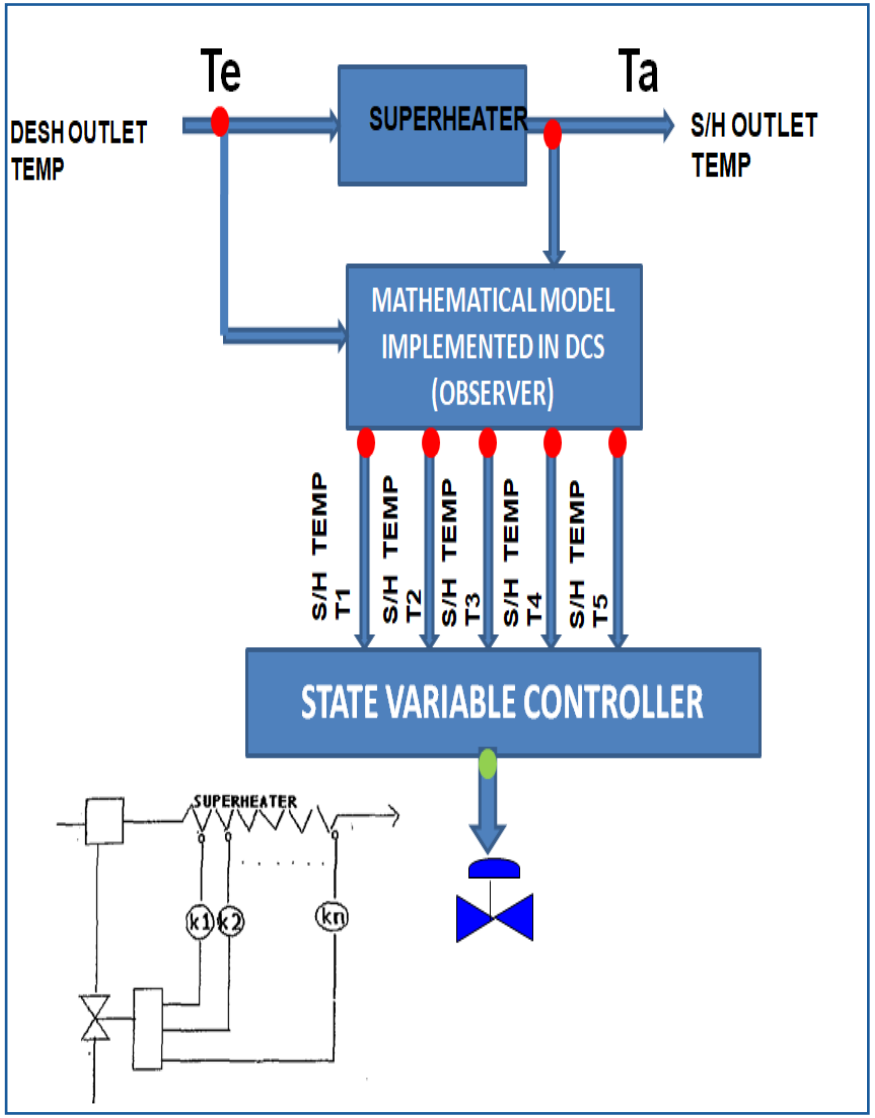
Flexibilisation, Maintenance & Reliability, Digitization

Flexibilization

1. Pilot study in under progress in association with Denmark Energy Agency Team for flexibilization of one of 500 MW units up to 30% of MCR without oil support.
2. Units are being operated with Flexibilization with 1% Ramp Rate and study is going on for achieving 3% Ramp rate.
3. AI based State variable control is incorporated in place of conventional PID. For preventing excursion
4. 40MWh/10MW BESS and 100 MW floating solar power will be used for bundling of thermal power.

Maintenance & Reliability

1. Advanced tools like PM, PdM, REAP, regular vibration measurement of critical equipment & RCM
2. Condition monitoring tools & Techniques, WDA of identified critical equipment, Infra-red thermograph and dissolved gas analysis periodically
3. 100% Overhauling Performance Index Score before start of OH



Flexibilisation, Maintenance & Reliability, Digitization

Monitory saving due to PdM activities:

Equipment	Description of activity	Benefits	Saving (₹Lakh)
FA pumps and series	Fly ash series motor and pump foundation strengthened along with the motor base frame	Improved reliability of pump & fly ash series	155.0
RW p/p-8 & St-2 CWP-1&2	Condition monitoring tools & Techniques.	Motor unbalance problem detected before enhancement. Improved reliability.	168.6

Risk plots and risk grids to decide maintenance priorities

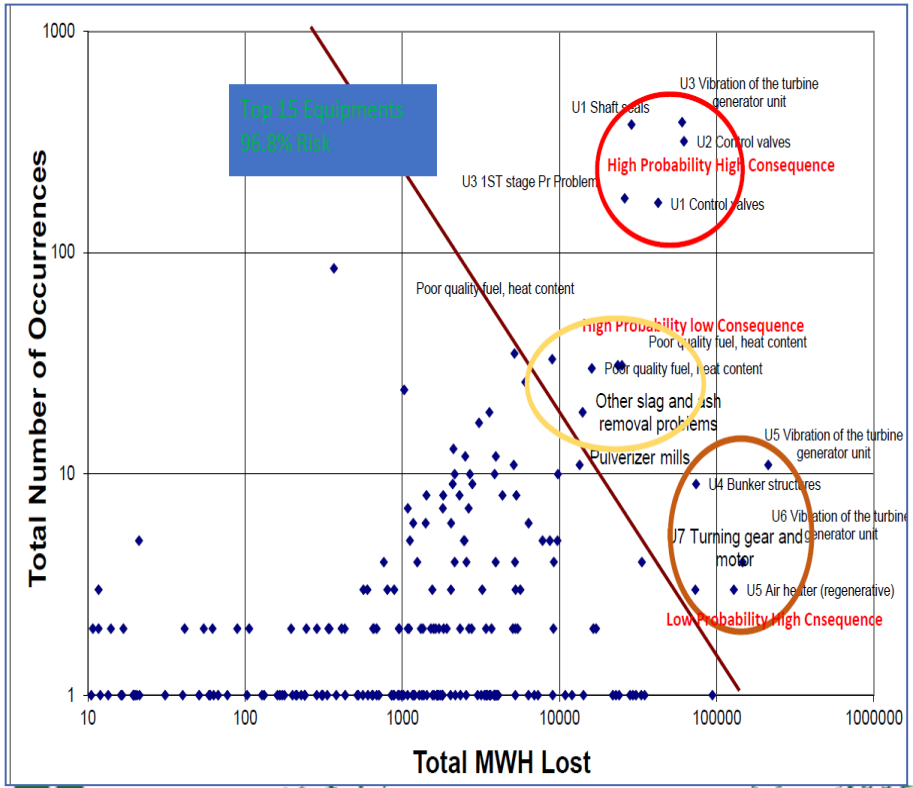
i. Risk plot which is a quantitative assessment of risk is a plot of probability Vs loss.

ii. It is plotted on actual partial loss & FO event of equipment/unit etc.

iii. Top critical components/equipments are segregated using risk plot of 5 years of notifications data from SAP historian.

iv. Risk Grid is a qualitative tool to capture likelihood of failure of an equipment and potential loss of generation .

v. Data for risk grid are captured through interaction with maintenance and operation teams.



Best Practices in Plant

Activities	Status of Implementation	Benefits achieved
Safety	Implemented. Suraksha app developed for NTPC Ramagundam	Started 100% Reporting of UA/UC / Near Miss Through App Only
Circular Economy	Installation of 3TPD capacity waste to energy based on Torre faction technology for charcoal production	Waste minimization and Circular Economy
Daily Monitoring system	Energy Efficiency Performance Monitoring Tools	Online Performance Monitoring using PI tools/TLA/SEED. Regular performance testing using Off-line instruments and gap analysis. Optimized and Efficient Light up plan and HR deviation analysis.
Research	Demonstration building construction using geo Polymer aggregates and tiles in shopping complex	Model building using the same is construct in township shopping complex

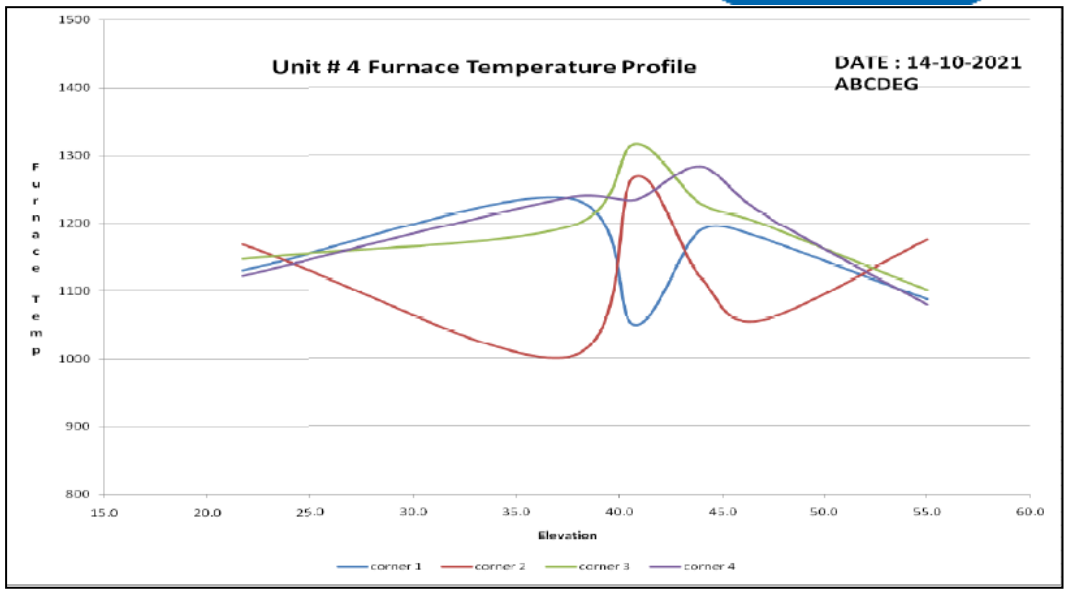
KNOWLEDGE SHARING PLATFORM: JYOTHI VANI

i. JYOTHI VANI learning platform launched on 01.02.2022 by NTPC Ramagundam.
ii. Participation being received from all NTPC Plants and also many industry experts.
iii. 60 no. presentations on various topics including Commercial aspects, upcoming regulations latest developments of technology, Lifestyle Diseases & cures and many more.
iv. All presentations are shared on intranet for future reference.

U4 frequent clinkering issue / bottom ash build up

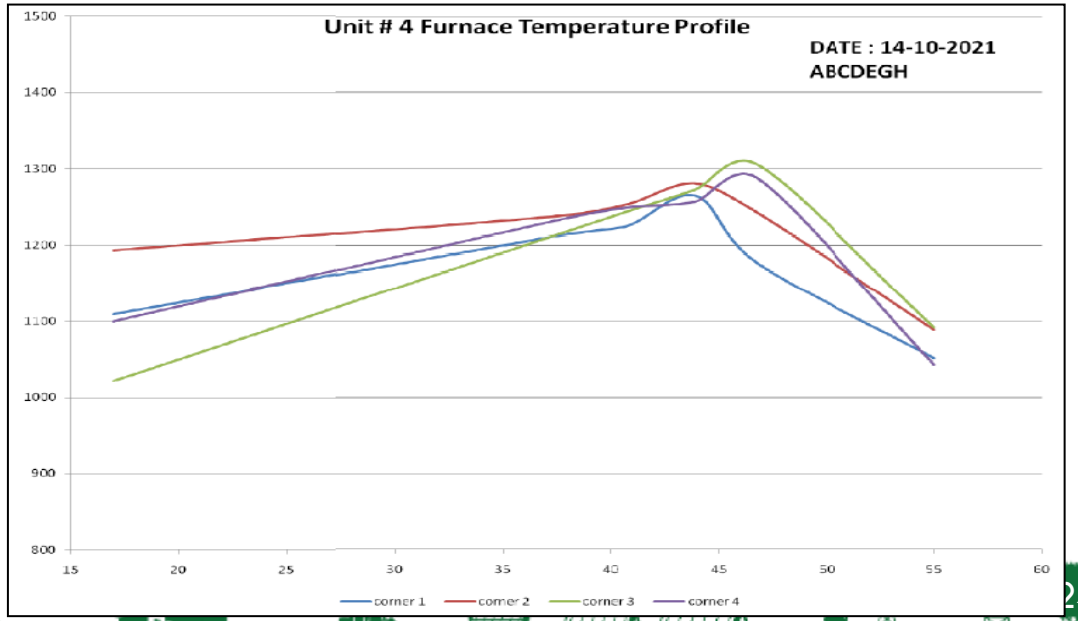
Problem identification and measurements

i. Furnace Temperature profiling was done to access the fire ball position inside the furnace.
ii. From trends it indicated the uneven distribution of Fireball in furnace.
iii. It is observed that there is insufficient air flow at corner-2 37.5m and at corner-1 at 40.7m
iv. Clinkering Tendency & Bottom ash build up was also observed.



Suggested measures

i. Wind Box DP set point increased to 85 mmwcl
ii. 7th mill kept in service, coal flow in each mill limited to 53 TPH
iii. Mill outlet temperature maintained at 75-77 deg C
iv. Over fire dampers(lower & Upper) position kept at 70% from 100%.
v. Burner tilt position was changed to to 80/80/90/90.



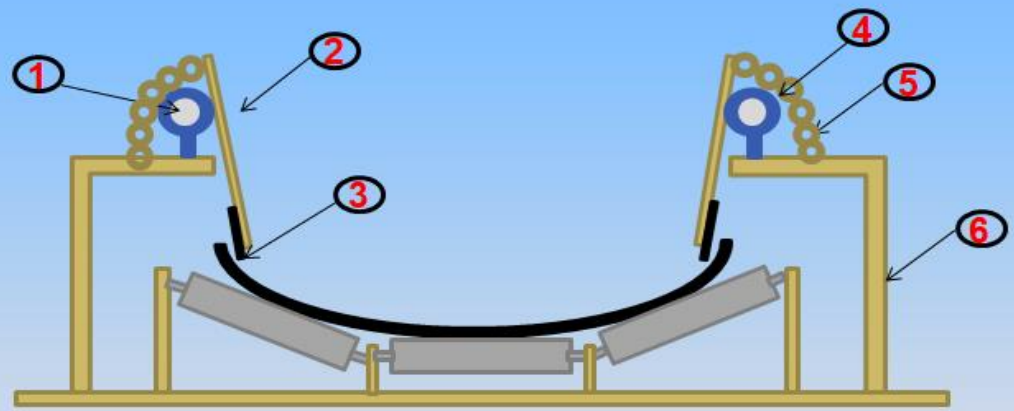
No clinkering observed after optimizing the parameters.
Fireball position improved in all four corners

Major Kaizen Projects during 2021-22

Addressing the issue of SR1&2 coal spillage near boom conveyor D/C using retractable skirt board.

NET BENEFIT: RS 20 LAKH PER ANNUM

- Reduced availability of equipment.
- Leads to increase in time of BOBR causes demurrage.
- Slow Bunkering leading to Generation loss.
- Increased Housekeeping problem.
- High risk of fire due to rubbing of belt.



1.Supporting shaft 2 no's
2.Skirt board 600x2500x12mm
3.Skirt rubber
4.Plummer blocks 4 nos
5.Locking chain
6.Supporting channel

Water chemistry management

- Organo-chloro compounds at high temperature dissociates and form chlorides.
- Due to this CBD opening hours increases resulting operation cost increases
- Chloride ions causes stress corrosion cracking, which leads to Boiler Tube Failure (BTL).
- These organic compounds adsorption on strong base anion resin is not completely reversible process. So, not removed completely at DM Plant.

➢ An alkaline brine cleaning solution is employed to remove organics and other foulants from anion exchange resins.

- Demineralization plant streams Output between regeneration is increased from 1404 m3 to 1612 m3
- Brine treatment was done in May 2021.After that CBD opening due to high Boiler drum Chlorides is decreased.
- On opening CBD for 1 hour approximately 40 tons of steam is lost.

Month	CBD Opening Hrs
Jan-2021	48
Feb-2021	47
Mar-2021	50
Apr-2021	49
May-2021	42
June-2021	40
July-2021	38
Aug-2021	36
Sep-2021	38
Oct-2021	34

Avoided loss of about Rs 2 Cr

Teamwork & Employee Involvement

Energy Efficiency through Team Work:

a. Energy Efficiency/Awareness Training Programs

1. Commercial impacts of Efficiency improvement was organized by NTPC Ramagundam in 2017, 2019 & 2021.
2. Handhold onsite training workshop for 50 executives from other NTPC stations in Dec 2021.
3. In addition, participants from Telangana State Gencos & IPPs viz. Vendata, Jharsuguda were allowed to participate.

b. IOT Systems Installed

1. Implementation of face recognition punching system.
2. Smart Lighting system with occupancy sensor in offices
3. Development of mobile app for monitoring O&M performance
3. Smart wireless water consumption mapping for optimizing the water use
4. Implementation of Contract Labor Integrated Management System (CLIMS)
5. Artificial Intelligence for finding violation in use of arc suit violation

c. The projects implemented through Kaizen

1. Installation of Air receiver tank for removal of moisture in STG-1 Units as Control valves/ Dampers are not maintaining accurately as per command
2. Addressing the issue of SR1&2 coal spillage near boom conveyor D/C using retractable skirt board.

Teamwork & Employee Involvement

Monitoring and reporting system to review SEC on (online/daily/monthly/annual) basis

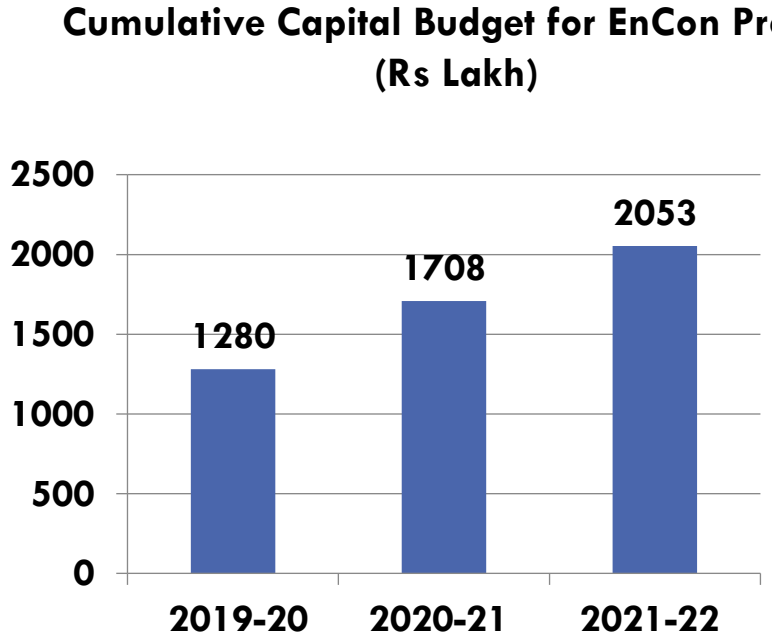
I. Performance optimization groups (POG) are the cross functional groups constituted for the purpose of ECR reduction, Water use optimization, APC optimization

II. Online Heat Rate (HR) Monitoring through PI, TLA, and real time DDCMIS data. By EEMG dept in assocciation with C&I and Operation dept

III. Auxiliary Power Consumption (APC) monitoring through OLEMS (Online Energy Energy Management System). Electrical Maintenance Dept

IV. Equipment wise Specific Energy Consumption monitoring through SEED (System Energy Efficiency Display), developed In-house. IT dept

V. In addition to above online/realtime monitoring system OFFLINE testing using Wireless instruments are being done as per Efficiency Management guidelines
   i. Boiler Efficiency testing & Air pre Heater Performance testing
   ii. Turbine Heat rate Testing & Heater performance testing
   iii. Condenser Performance testing & Cooling Tower capability testing



Energy Efficiency Performance Monitoring System			
Meetings	**When**	**Headed By**	**Corrective actions generated from monitoring & review meetings implemented in Operational and Maintenance Practices**
Planning Meeting	Daily	O&M Head	
Operational Review Team Meeting	Monthly	Plant Head	
Regional Management Committee	Quarterly	Regional executive Director	
Regional Operational Performance Review	Half Yearly	Director Operations	

ISO Certifications

I. Assessment and review to mitigate the challenges ahead and Involvement of employees & interested parties
II. Formulation of Baseline performance data of Energy performance indicators (EnPI) like Heat Rate, Auxiliary Power, Oil consumption.
III. Comply with all applicable legal and other requirements related to energy management.
IV. Energy use/carbon emissions reduction in systematic way.
V. Demonstrate to stakeholders the corporate commitment to comply with their best practice to protect the environment.

EnCon Project budget allocation(FY 2021-22)

Total turnover of the company/plant : 60020.5 (Rs. Million)

Amount invested in EnCon Projects : 3.24 (Rs. Million)

Investment: 0.056 %

IRCLASS
SYSTEMS AND SOLUTIONS PRIVATE LIMITED

CERTIFICATE OF APPROVAL

Issued by Indian Register Quality Systems
(A Division of IRCLASS Systems and Solutions Private Limited)

This is to certify that the Energy Management Systems of

Organisation: NTPC Ramagundam

Address: PO Jyothinagar, District Peddapalli, Telangana State - 505215

has been assessed and found conforming to the following requirement

Standard: ISO 50001:2018

Scope: Electricity Generation

Certificate No.: IRQS/201000633

Original Certification Date: 19/10/2020

Current Date of Granting: 19/10/2020

Expiry Date: 18/10/2023

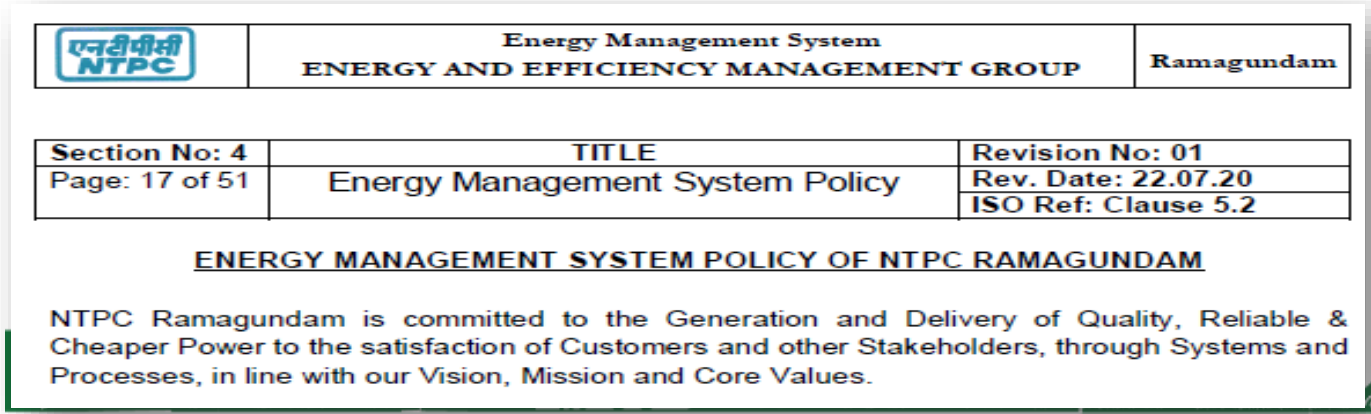
Shashi Nath Mishra
Head IRQS

Indian Register Quality Systems NABCB EnM 001

This approval is subject to continued satisfactory maintenance of the Energy Management Systems of the organization to the above standard which will be monitored by IRQS. The use of the Accreditation Mark indicates accreditation with respect to activities covered by the certificate with accreditation no. EnM 001. Condition Overleaf COA/IRQS/NABCB/EnMS/Rev 00

Head Office: 52A, Adi Shankaracharya Marg, Opp.Powai Lake, Powai, Mumbai - 400 072, India.

NTPC Ramagundam is ISO 50001 station since Oct'20



एनटीपीसी NTPC	Energy Management System ENERGY AND EFFICIENCY MANAGEMENT GROUP	Ramagundam

Section No: 4 Page: 17 of 51	TITLE Energy Management System Policy	Revision No: 01 Rev. Date: 22.07.20 ISO Ref: Clause 5.2

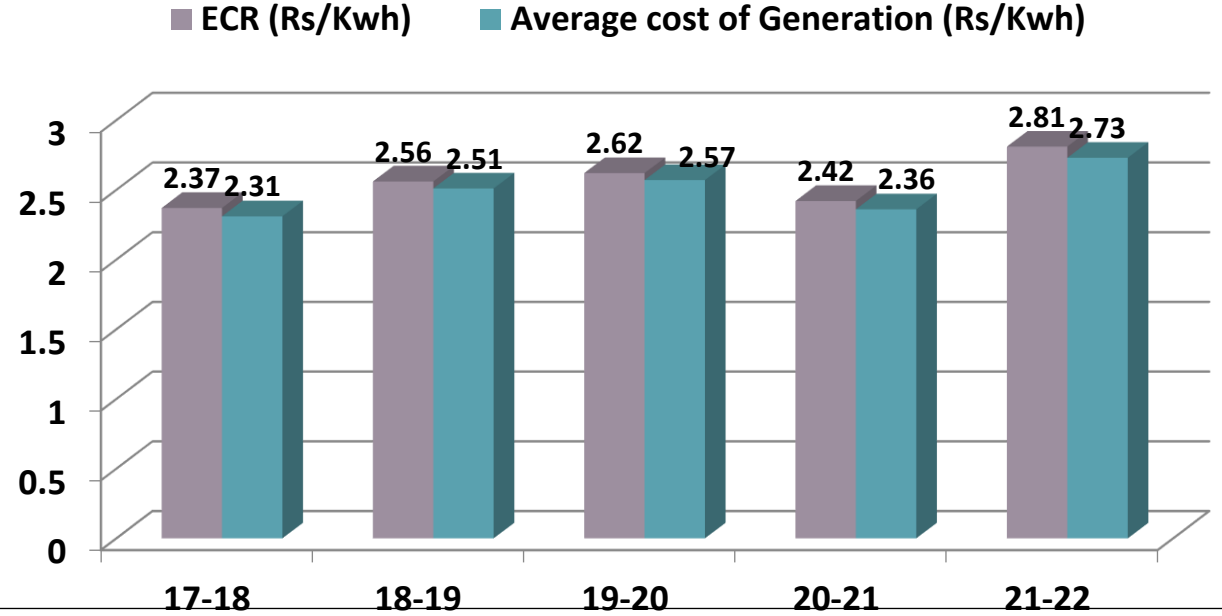
ENERGY MANAGEMENT SYSTEM POLICY OF NTPC RAMAGUNDAM

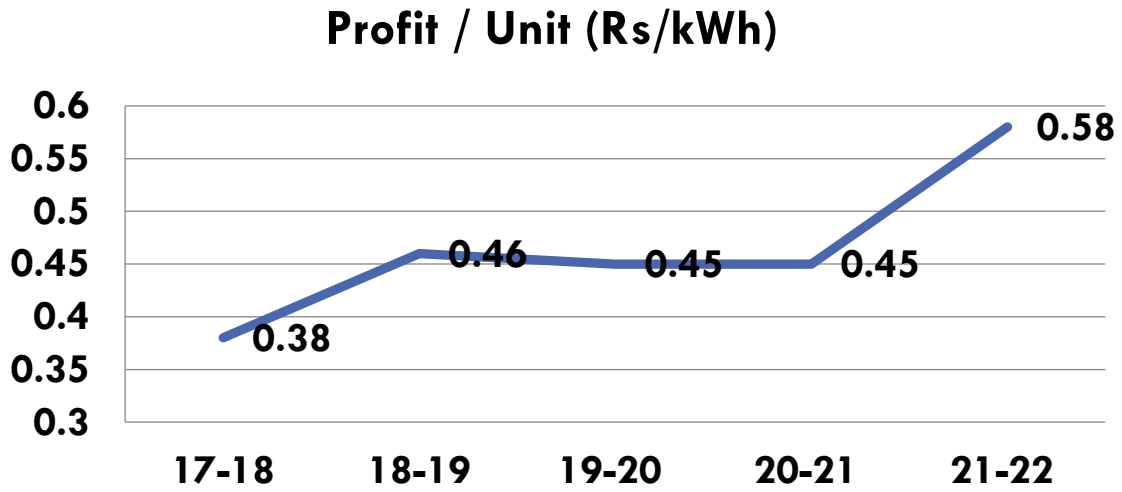
NTPC Ramagundam is committed to the Generation and Delivery of Quality, Reliable & Cheaper Power to the satisfaction of Customers and other Stakeholders, through Systems and Processes, in line with our Vision, Mission and Core Values.

Learning from CII Energy Award 2021

S.N	Particulars	Area of benefits	Implementation Status	Savings/ annum
1	Converting the admin Building at RSTPS as the “Net Zero Building”	a. Offsetting Energy Conservation and Emmissions. b. Onsite Energy generation thru Renewable Energy c. Rain water harvesting	Proposal under consideration	5.2 Millions Metric tons of CO2 /year
2	Use of Solar Light pipe Roof top Solar with BEES System	a. Electricity generation b. Reduces carbon footprint. c. No additional space required for installation.	140 KW installed. Another 900 KW under proposal	7.8 Millions Metric tons of CO2/year
3	Use of Soft starter in motors	a. Frequent start /stop of CT Fans and ash slurry pumps as per optimization for energy conservation	60 Nos CT Fans under implementation	0.5 MUs of saving

FINANCIAL PERFORMANCE





₹ Crore

S.N	OPERATION PROFITABILITY	FY 20-21	FY 21-22
1	Marginal Contribution aftr sharing	47.92	63.42
2	Gains due to sharing of SCED	11.85	5.93
3	Net DSM Gain	3.70	3.78
4	SG Incentive	0.86	6.62
5	RRAS Mark Up	2.35	0.99
6	Retaining 25% of ECR for RRAS Down	7.62	6.82
7	PTX & RTM Gains	1.03	1.24
8	O&M Cost	46.52	50.24
9	**TOTAL**	**121.86**	**139.04**

TOTAL PROFIT OF NTPC RAMAGUNDAM IN FY 21-22: **Rs 692.35 Cr**

Awards & Accolades

BEE PUBLISHED THE VIDEO ON THE ENERGY MANAGEMENT SYSTEM PRACTICES OF NTPC RAMAGUNDAM AND SAME CAN BE SEEN USING THE LINK

HTTPS://BEEINDIA.GOV.IN/SITES/DEFAULT/FILES/VIDEO_UPLOAD/THERMAL%20POWER.MP4

23rd National Award for 2022
Excellence in Energy Management
23 – 26 August 2022

BEYOND INDIA@75
COMPETITIVENESS, GROWTH, SUSTAINABILITY, INTERNATIONALISATION

CII Theme for 2022-23

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