PRAYAS: AN ENDEVOUR

Presented By: Team Shakti

CII- 25TH National Energy Award for Excellence in Energy Management

DAMODAR VALLEY CORPORATION

DURGAPUR STEEL THERMAL POWER STATION

Damodar Valley Corporation: Serving the Nation Since 1948

THERMAL

6540 MW

HYDEL

147.20 MW

SOLAR

13.92 MW

Water Supply & Irrigation

SUBSTATION

48

Transmission Line

8633.65 CKm

Soil conservation and Afforestation

DSTPS AT A GLANCE

AN ISO 9001:2015 CERTIFIED PROJECT

1	LOCATION :	P.O.- ANDAL, BESIDES NH-2, DIST. - BURDWAN, WEST BENGAL.
2	CAPACITY :	2 X 500 MW UNITS.
3	POWER EVACUATION :	I) 400 KV DSTPS-RTPS DOUBLE-CIRCUIT II) 400 KV DSTPS-JAMSHEDPUR DOUBLE-CIRCUIT III) 220 KV DSTPS-DTPS AND DSTPS-PARULIA (D/C)
4	LAND:	TOTAL LAND INCLUDING GREEN BELT DEVELOPMENT : 1146 ACRES (APPROX.)
5	COD DATE:	U#1: 15.05.2012 U#2: 05.03.2013

SAFETY-ACHIEVEMENTS & INTIATIVES

Achievements:

1. Zero fatal Accident in Last Three Years.
2. Safety Excellence Award (FY 23-24): Recognized for its commitment to safety practices.

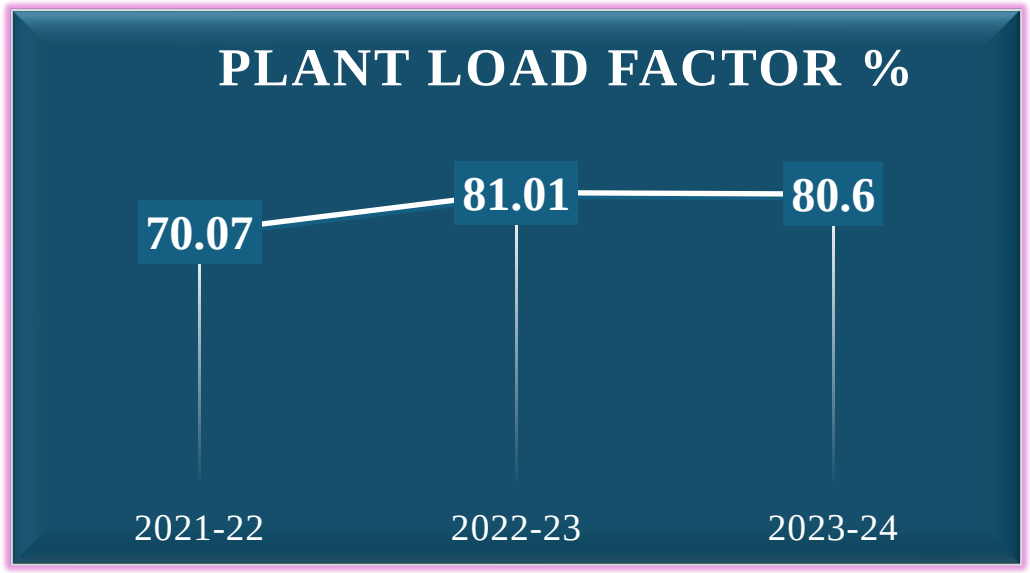
"Safety suggestion Box" placed at Technical Building , Administration Building, Canteen.

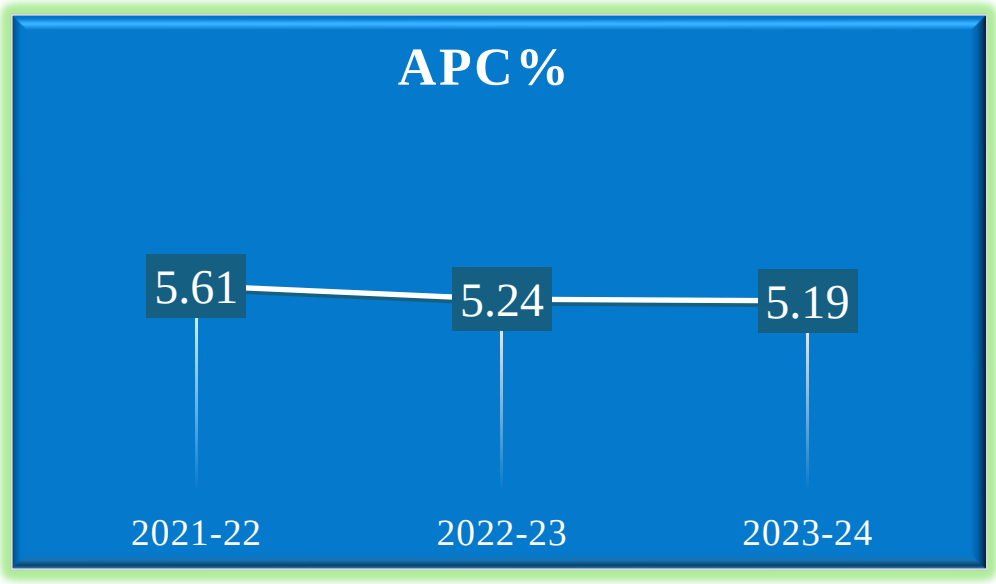
Safety Training of Workers & Mock Drill.

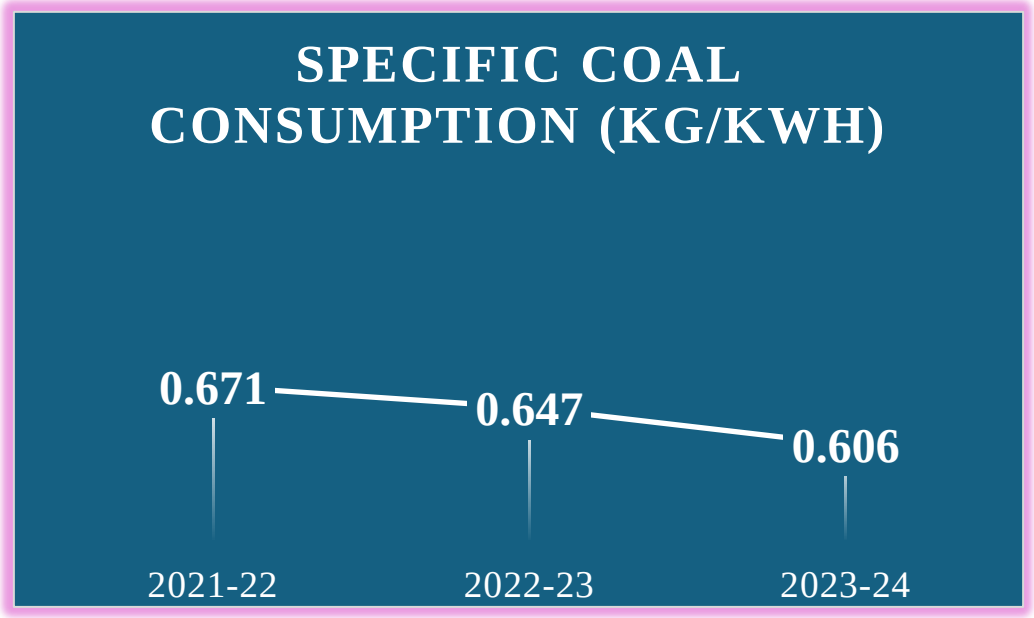
Arc Flash Suit for handling of HT Breakers.

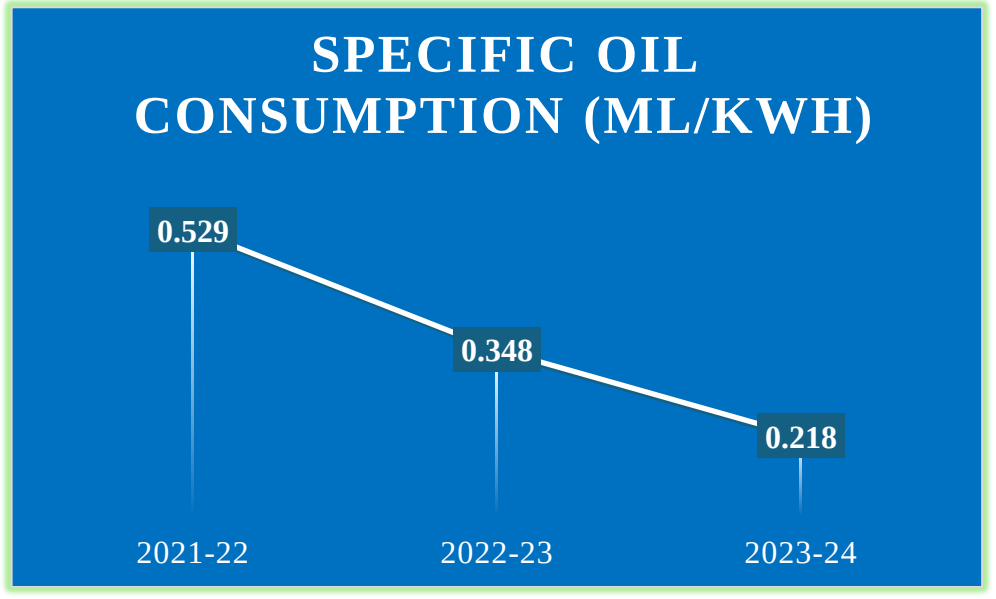
LOTO System for HT Breakers.

UNIT PERFORMANCE- FY 2021-22 TO 2023-24









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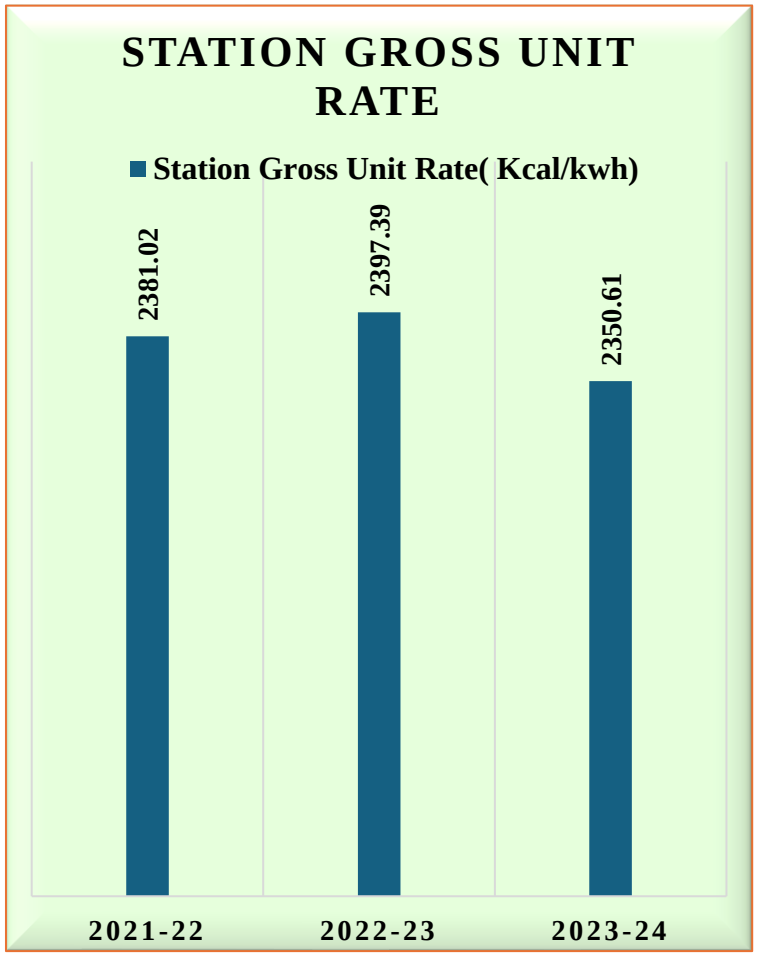
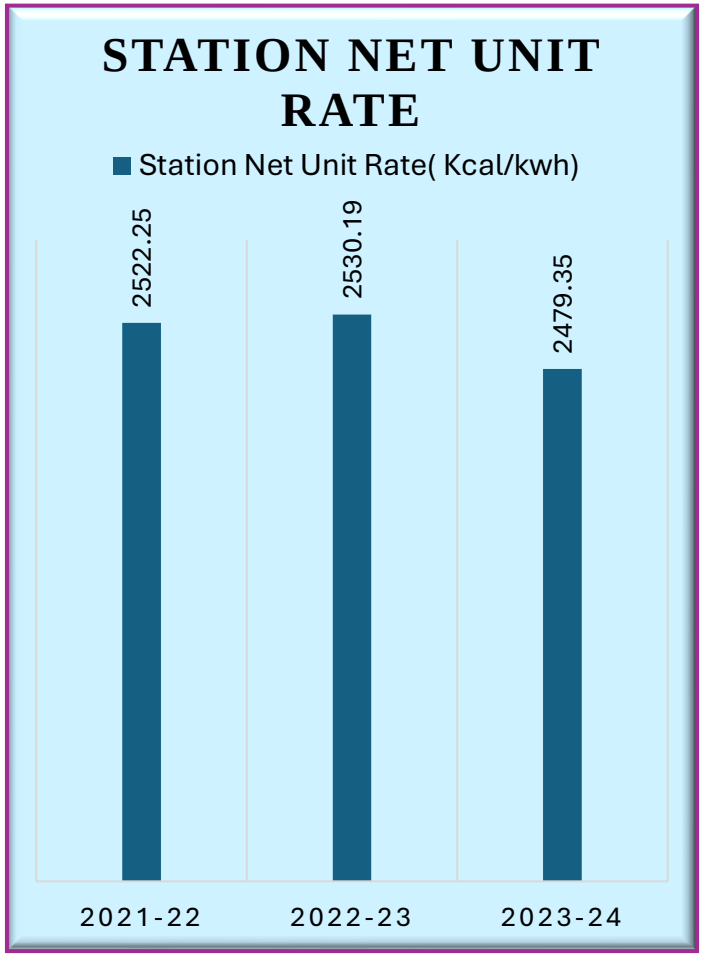
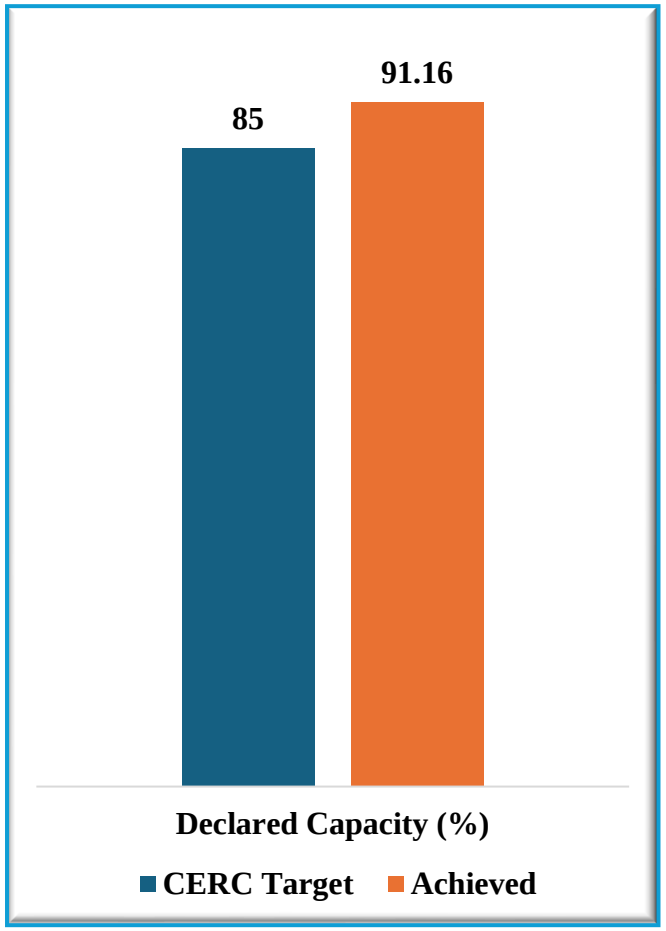
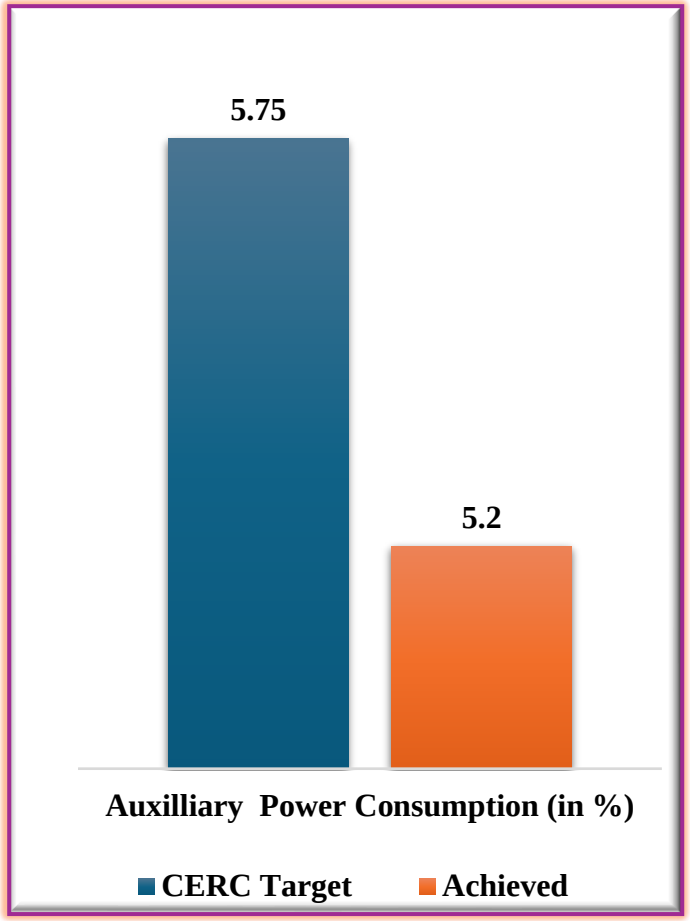
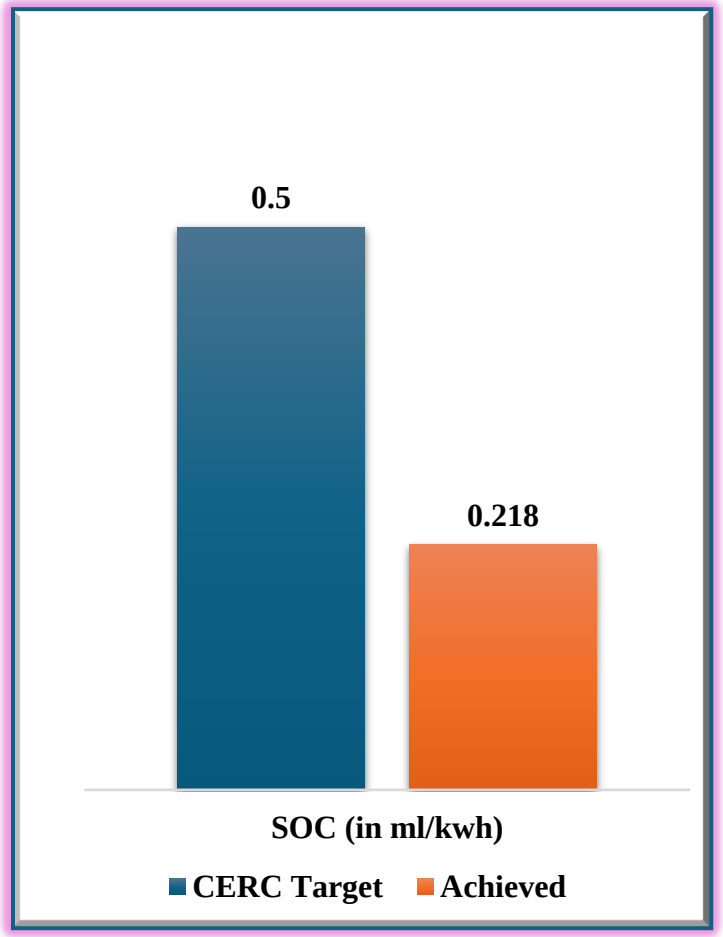




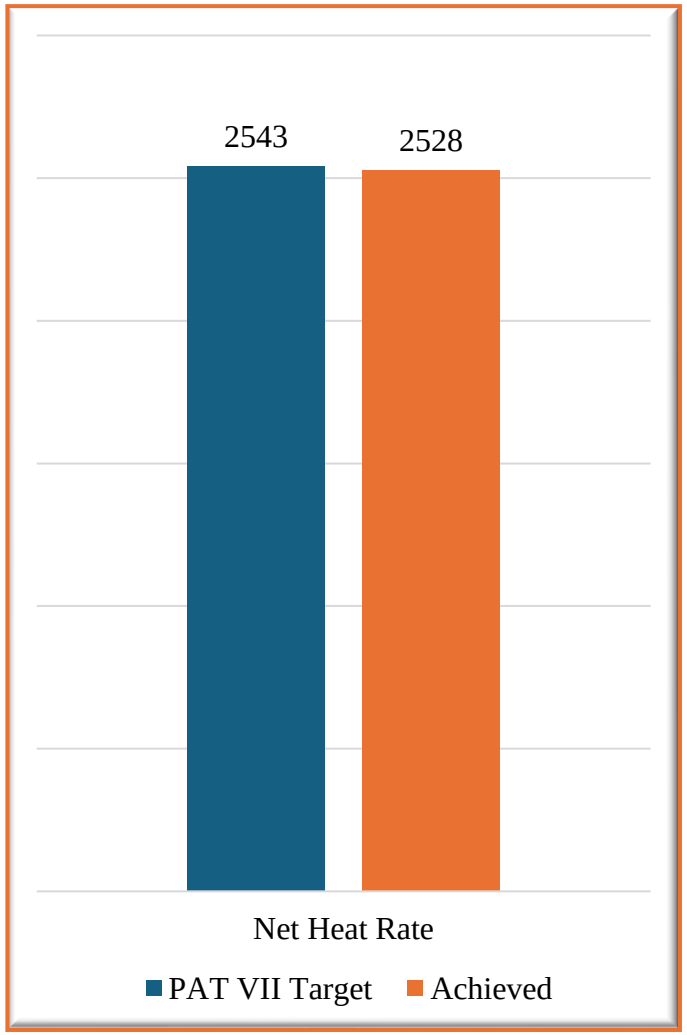
BENCHMARKING-FY 2023-24

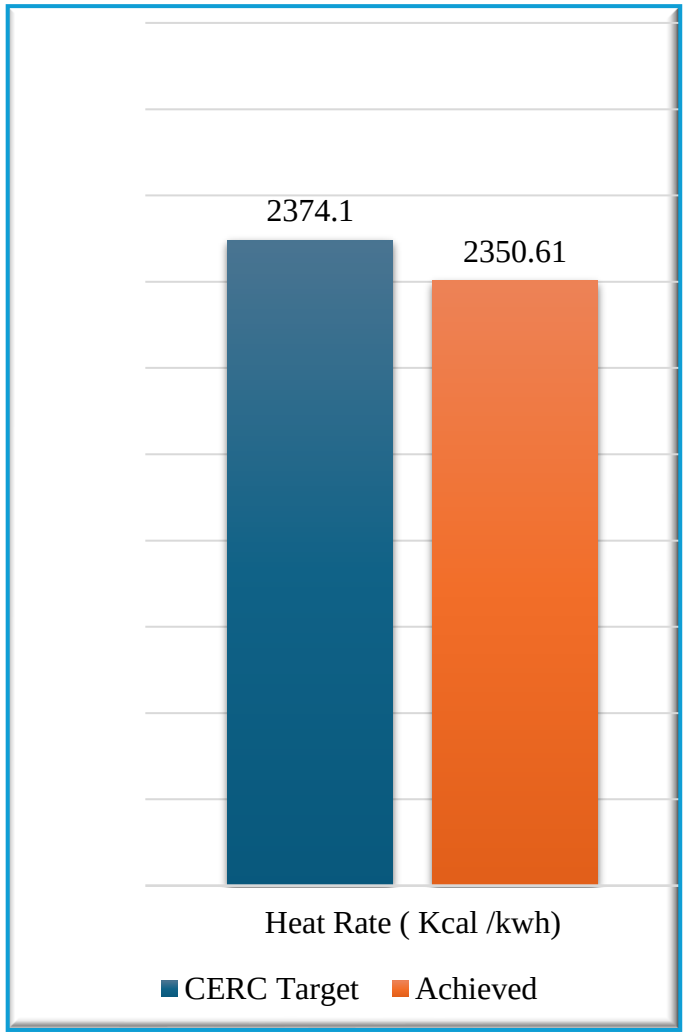


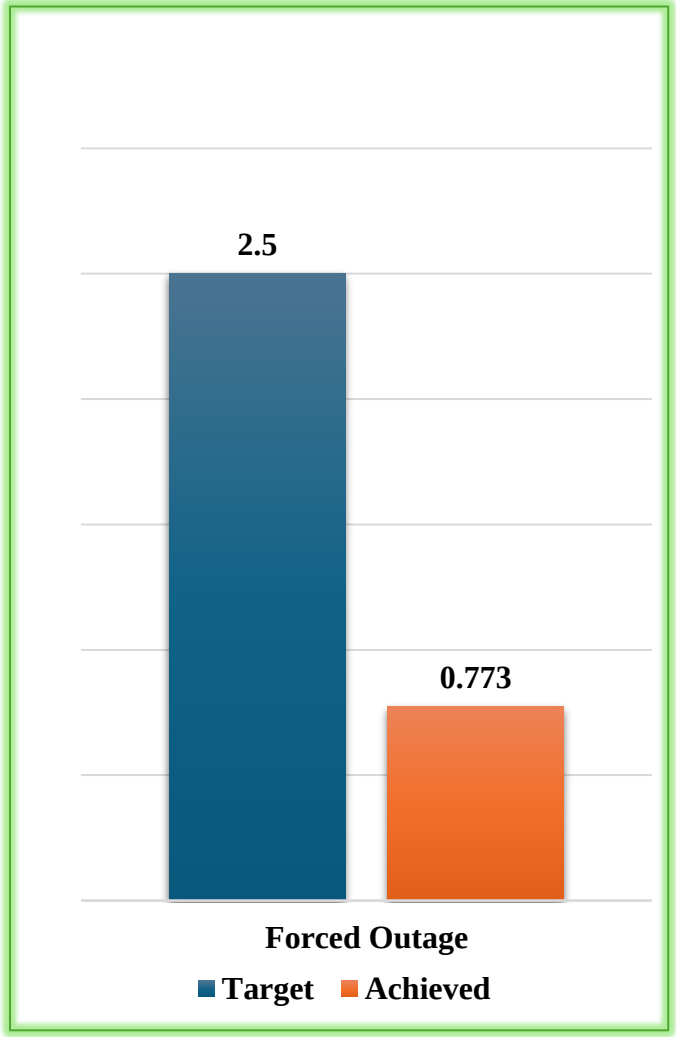




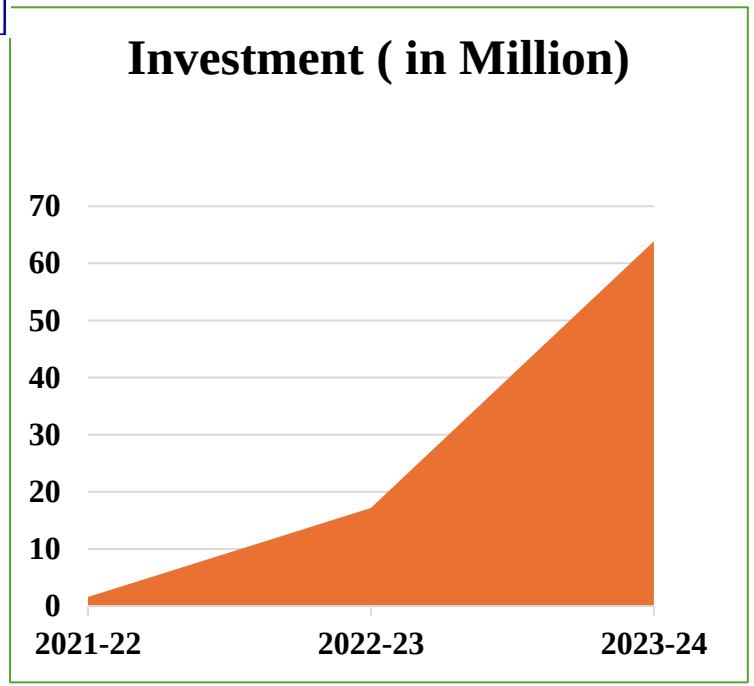
BENCHMARKING-FY 2023-24

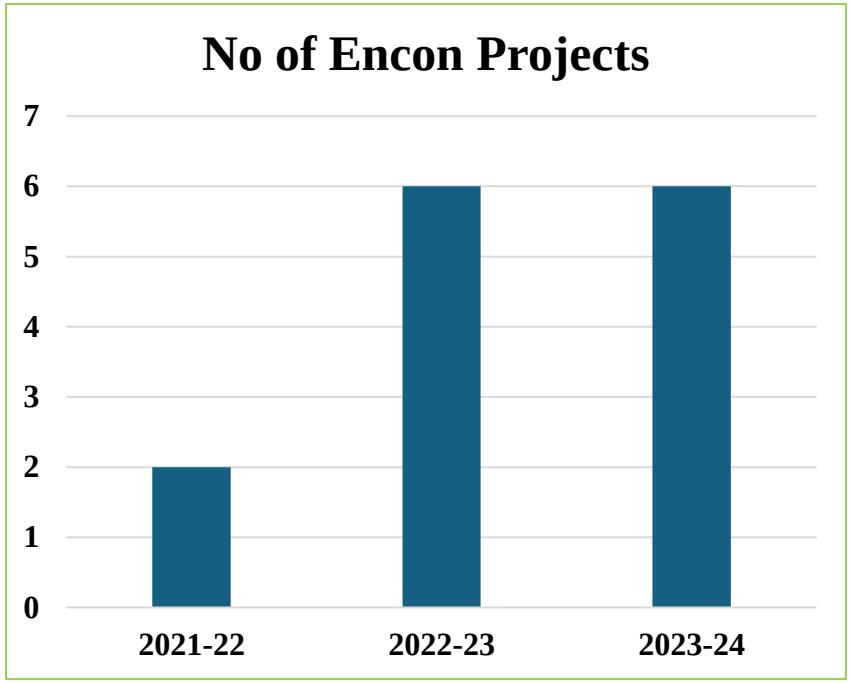


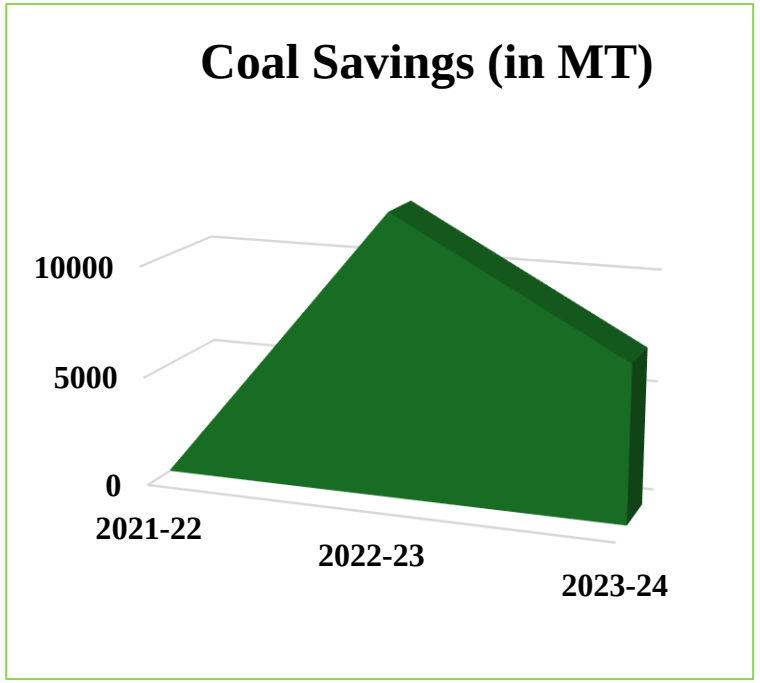




ENERGY CONSERVATION PROJECTS AT DSTPS







Year	No of ENCON Projects	Investment (in Million)	Savings in terms of Coal (Tonne)
2021-22	2	1.6	28.0
2022-23	6	17.17	12712
2023-24	6	63.88	7055

Powering the Future: DSTPS's ENCON Projects (2024-25)

Corrosion Coating for Load Carrying & Critical Pumps: Includes Circulating Water Pumps, ACW Pump, CW Makeup Pump, and Raw Water Pumps.
Investment: Approx. 1.6 Million.

BLDC Fan Replacement: Replacing 1,096 conventional fans with BEE 5-star rated BLDC fans.
Investment: Approx. 3 Million.

Solar Steam Cooking System Installation: Implementation at DSTPS Factory Canteen.
Investment: Approx. 3.92 Million.

ELECTRIC MOTOR
YOUR TAGLINE HERE

Motor Replacement Program: Phase-wise replacement of IE2 motors with IE3 motors.

Investment: Approx. 0.7 Million

Light Sensor Implementation in Illumination System: Replacing timers with light sensors. Currently, 20% of streetlights are under ambient light sensor control.
Investment: Approx. 0.2 Million.

APC & Energy Audit: Conducted by industry experts for gap analysis and recommendations. **Investment**: Approx. 0.6 Million.

Pilot Project on Agri-Voltaic Agriculture: Utilizing coal ash in the Agri-Voltaic method of agriculture.
Investment: Approx. 1.1 Million.

Powering the Future: DSTPS's Green Projects (2024-25)

Coarse Ash Utilization in Road Construction: Replacing 30-40% of sand in concrete mixtures with coarse ash for road construction within the plant premises.

Afforestation Projects: Plantation over 14 hectares and 1,200 avenue trees.

Fog Canyon Spray System Adoption: To control fugitive dust in the ash pond and coal handling plant.
Investment: Approx. 0.3 Million.

Using Cooling Tower Blowdown in Ash Water Makeup.

Green Initiatives: Senior Officials Lead the Way

Bird's-Eye View of DSTPS Plantation

INNOVATIVE ENERGY SAVING PROJECTS

- **Development of Hybrid Microgrid**
- **Implementation of Real Time ABT –DSM Screen & EMS System**
- **LED Light Retrofit at DSTPS**
- **Boosting System Resilience: Bus Transfer System (BTS) and ESP High level Hopper Alarm in DCS**

Development of Hybrid Microgrid for Stable and Secure Operation of Interconnected power distribution (Critical Load)

- A solution was implemented to supply auxiliary power to IT and OT components (SAS servers, client PCs, network switches) in the 220 KV and 400 KV interconnected switchyards.
- It ensures uninterrupted 24/7 power distribution.
- Achieved through a standalone microgrid inverter with multiple power source options (Solar PV/Grid/DG/Battery).
- Switching time between sources is minimized compared to other hybrid inverters.
- The pilot project was developed as part of renewable energy to provide stable auxiliary power for seamless operation of the 400/220 KV interconnected grid and substation.
- The model is scalable and economically viable for clean power delivery.

Sl. No	Title of the Project	Year of Implementation	Annual Electrical Savings Achieved Units in million	Investment Made (in Lakhs)
1	Development of Hybrid Microgrid for Stable and Secure Operation of Interconnected power distribution (Critical Load)	2022	**0.03113**	**14.27**

LED Lighting Retrofit at DSTPS

- Conventional lights across various power plant locations (CHP, Boiler, BOP, High Mast Lights) were replaced with LED lights.
- This transition was implemented to improve energy efficiency in illumination.
- Annual energy savings of 5.26 MU have been achieved as a result.
- The lighting load of the powerhouse has seen a significant reduction due to this replacement.

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Sl. No	Title of the Project	Year of Implementation	Annual Electrical Savings Achieved Units in million	Investment Made (in Lakhs)
1	"LED Lighting Retrofit at DSTPS"	2022	**5.12**	**500.34**

Implementation of Real Time ABT –DSM Screen & EMS System

- A Real-Time ABT-DSM Monitoring Screen has been installed in the Control Room.
- The screen displays real-time power demand and pricing from the market.
- Control desk engineers use this information to optimize the unit's load according to market demand.
- The system helps minimize deviations from the schedule provided by SLDC.
- An energy monitoring screen is also provided to facilitate gap analysis of equipment power consumption.
- Investment:6.20 Million (approx.)

Boosting System Resilience: Bus Transfer System (BTS) and ESP High level Hopper Alarm in DCS

BTS: A Bus Transfer System (BTS) ensures continuous power supply to critical loads during bus transfers in industrial processes. By preventing unnecessary interruptions, BTS reduces revenue loss, operational costs, and safety risks. Previously, system reliability was compromised due to potential failures in auto closing operations of breakers. Our newly implemented station-to-station bus transfer scheme addresses this issue by minimizing reliance on these breakers, enhancing overall system resilience.

Investment : 3.8 Million.

ESP High-Level Alarm: The DCS panel now includes high and low hopper level alarms for the electrostatic precipitator (ESP). This allows operators to optimize ESP performance by proactively addressing high ash levels, enhancing system redundancy & boosting ESP performance.

Details of Installed Renewable Energy Projects

Type of Renewable Energy	Installed Capacity (in Kwp)	COD	Year	Energy Generated (in Kwh)
Roof Top Solar	428.47	February 2022	2022	400914.98
			2023	486978.44

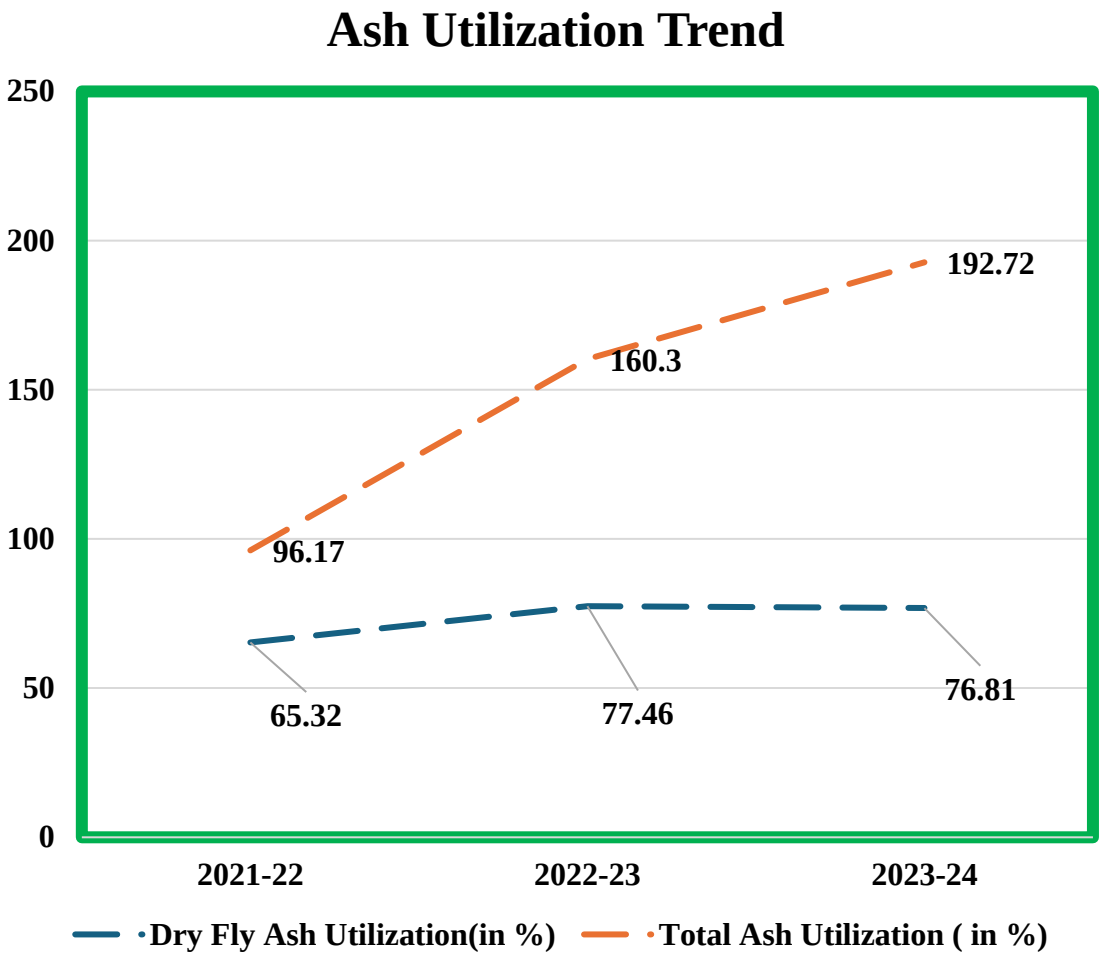
Future Renewable Projects at DSTPS:

A feasibility study is underway to evaluate the installation of rooftop solar systems across all buildings at DSTPS. Approximately 23,000 square meters of rooftop area has been identified for this project.

Captive Electric Vehicle Charging Station

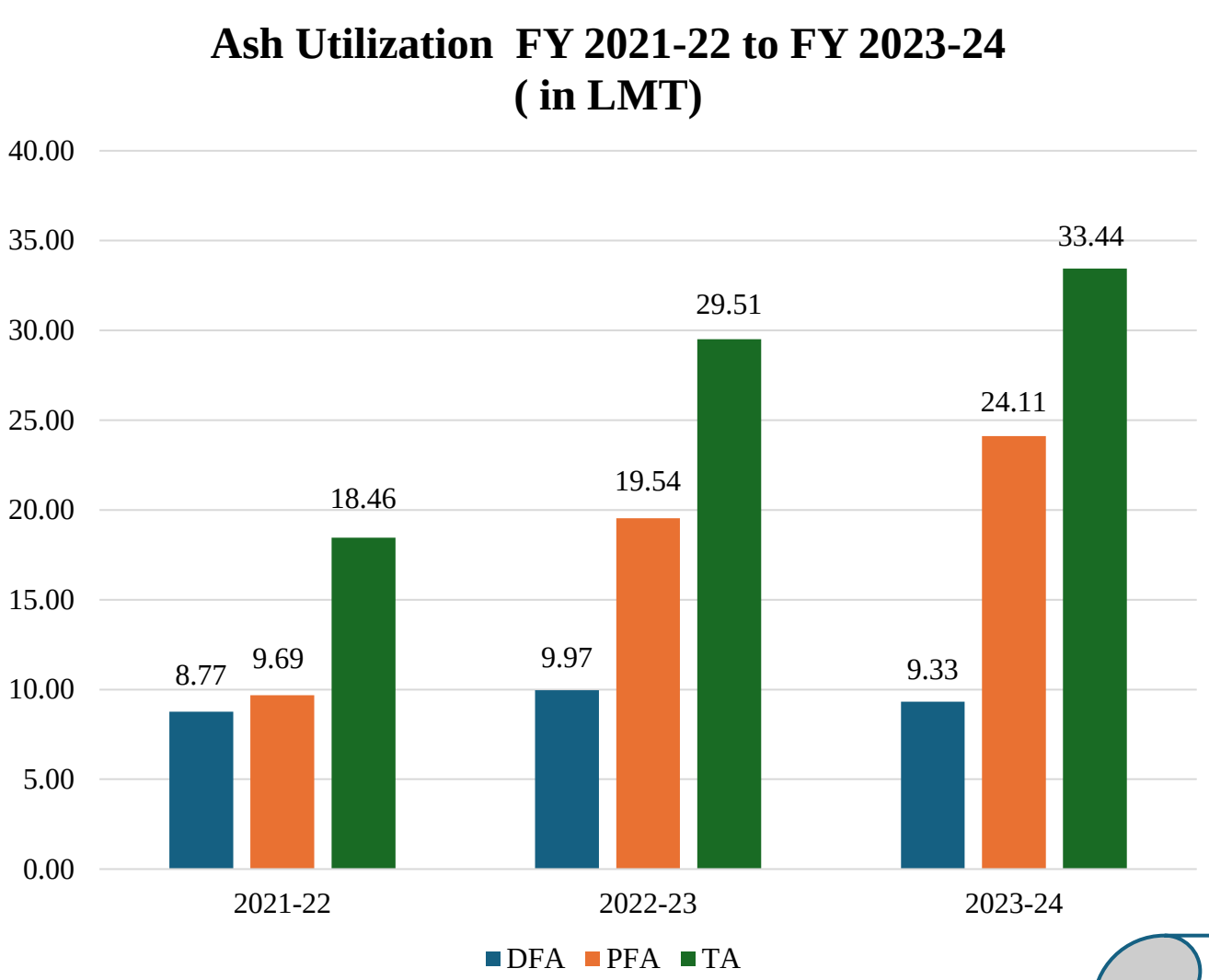
A Captive Electric Vehicle Charging Station (EV-CCS) with a capacity of 60 kW DC and 7.2-7.5 kW AC has been commissioned.

ASH UTILIZATION & INTIATIVES



Particulars	UOM	FY 21-22	FY 22-23	FY 23-24
Ash percentage in coal %	%	46.74	40	40.34
Total Ash generated Tons	Tons	1919442	1839131	1735096
Ash Utilization %	%	96.17	160.25	192.72
Ash Utilized in manufacturing of cement/concrete - other similar products	%	43.55	67.96	66.66
Ash Utilized in Fly Ash Bricks	%	21.77	9.45	18.63
Ash Utilized in Mine filling	%	0.9	3.6	3.4
Ash Utilized for Roads pavements	%	3.2	90.7	130.8
Provisional space in Ash Pond as on 22.08.2024	31.48 LMT			

ASH UTILIZATION & INTIATIVES



DSTPS Initiatives for Ash Utilization and Dust Reduction

- Implemented water sprinkling and extensive plantation in the SILO area to reduce Dry Fly Ash (DFA).
- CAQMS Installed for 24x7 monitoring air quality.
- Achieved 76.81% utilization of total Dry Fly Ash generated in FY 23-24.
- Exceeded 300% Pond Ash utilization in FY 23-24.
- Extensive plantation activities have been carried out, with plantation done in 190 acres to improve aesthetics and reduce dust.
- Upgraded roads with WBM and RCC for smoother ash transportation; water sprinklers are used along haulage routes to minimize dust during pond ash transportation.
- Initiated coal blending to reduce ash generation. Issued Letters of Award (LOAs) for DFA lifting by various end users. Established a marketing team to explore new markets for DFA utilization.
- Signed MoUs with NHAI for supplying pond ash for road construction projects.

Environmental Management- Best Practices

Blue Sky Initiative-Biomass Co-firing

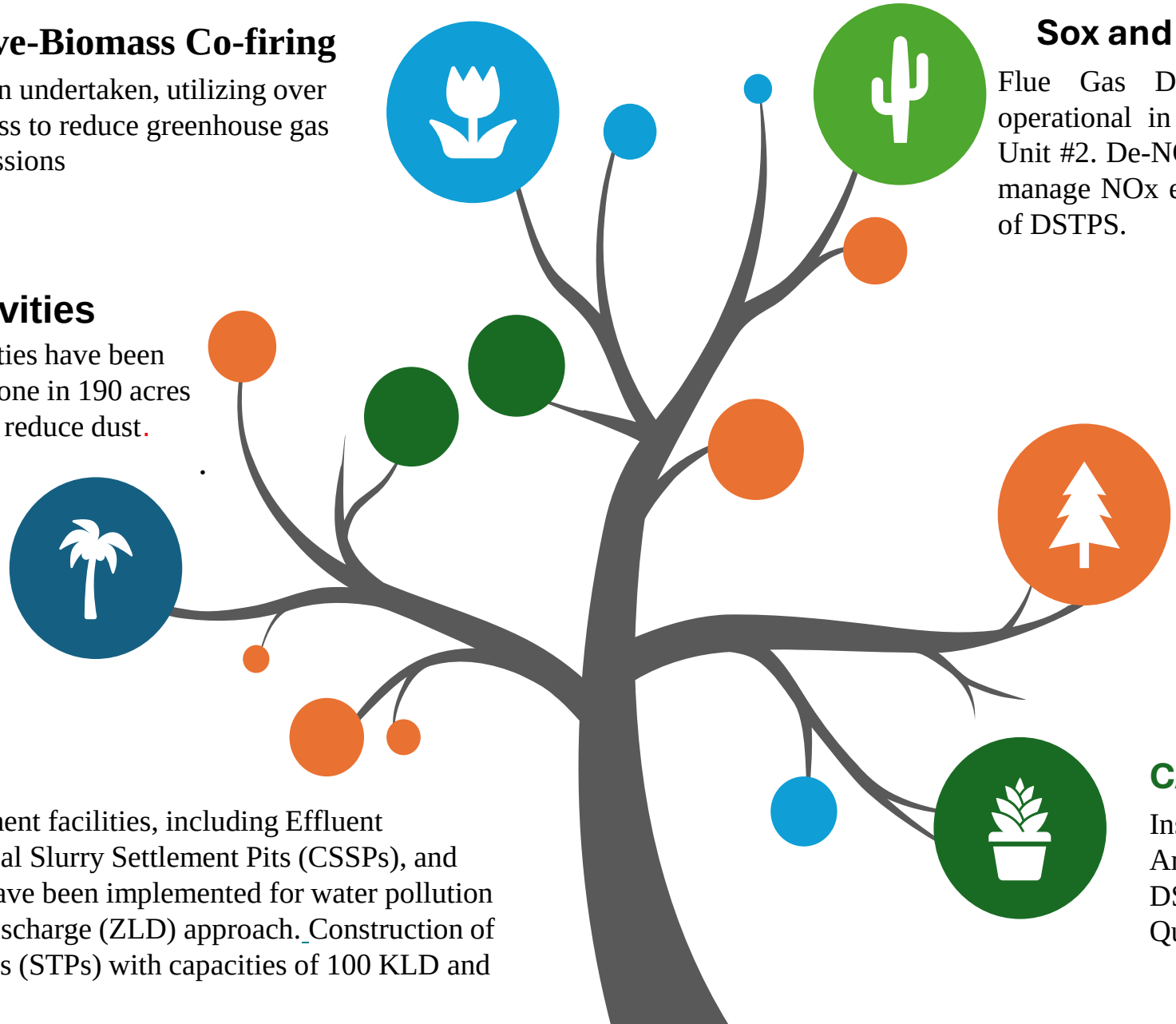
Biomass co-firing has been undertaken, utilizing over 8000 metric tons of biomass to reduce greenhouse gas emissions

Sox and NOx Emissions

Flue Gas Desulfurization for Sox control is operational in Unit #1 and under construction for Unit #2. De-NOx Burners have been implemented to manage NOx emissions effectively in both the Units of DSTPS.

Plantation Activities

Extensive plantation activities have been carried out, with plantation done in 190 acres to improve aesthetics and reduce dust.



Vermicomposting

DSTPS has successfully implemented a project to produce vermicompost from organic waste generated within the plant premises. This nutrient-rich compost is then utilized for various purposes.

ZLD & STP

Advanced wastewater treatment facilities, including Effluent Treatment Plants (ETPs), Coal Slurry Settlement Pits (CSSPs), and Ash Water Settling Ponds, have been implemented for water pollution control and a Zero Liquid Discharge (ZLD) approach. Construction of two Sewage Treatment Plants (STPs) with capacities of 100 KLD and 55 KLD is underway.

CAQMS

Installation of CAAQMS(Continuous Ambient Air Quality Monitoring Station) at DSTPS for monitoring of Ambient Air Quality.

Environmental Conservation Initiatives Implemented

2022

2024

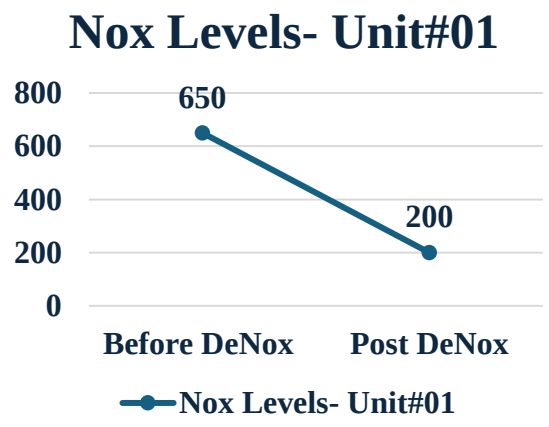
UNDER PROGRESS

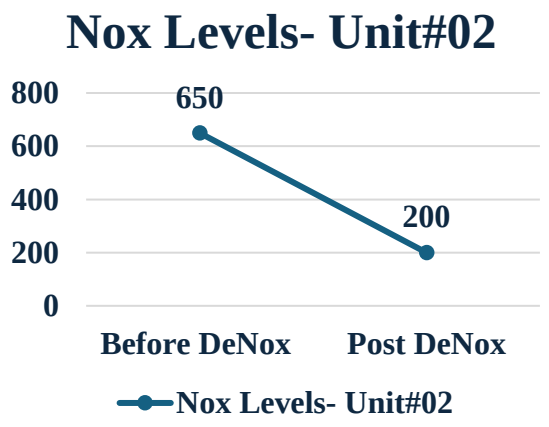
De- Nox Burners in Unit#01

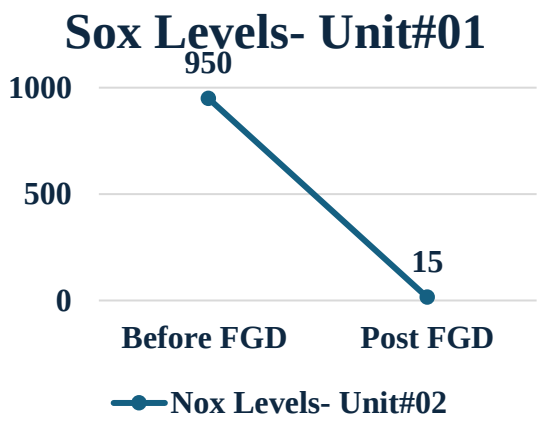
De- Nox Burners in Unit#02

FGD in Unit#01

FGD in Unit#02







The FGD for Unit #02 is currently under construction and is expected to be operational by September 2024.

Optimized Water Management and Recycling Initiatives

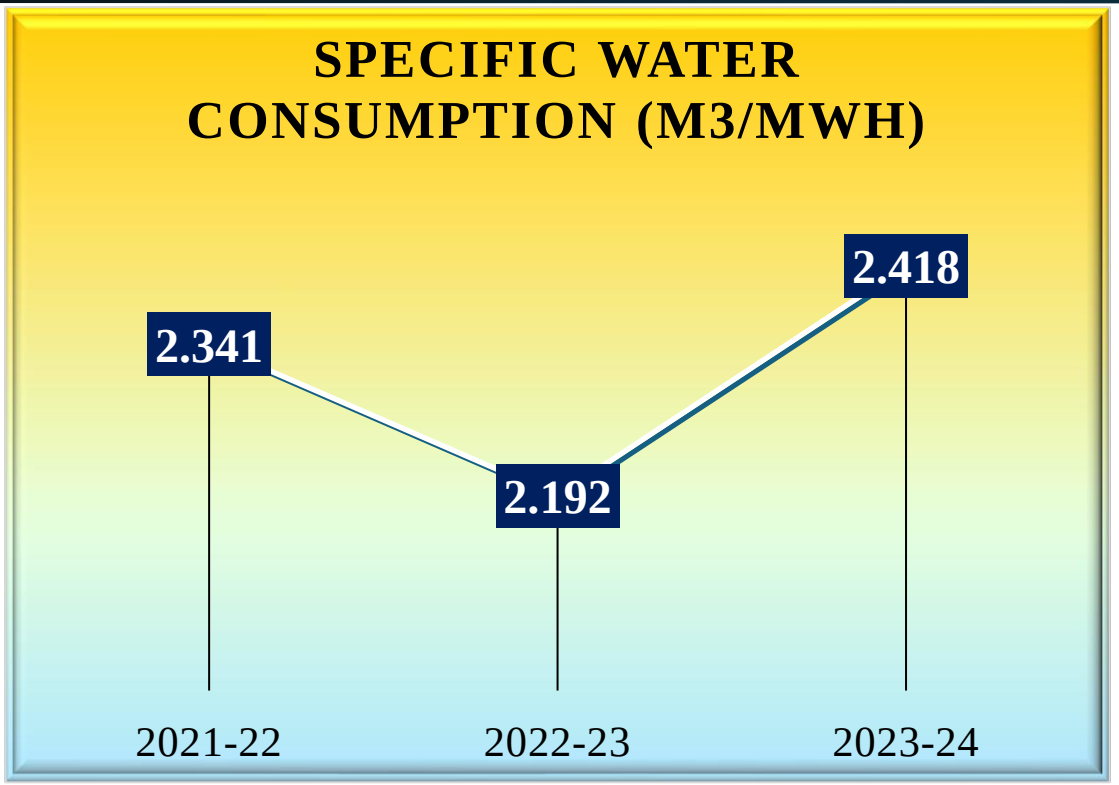
Roof Rainwater Harvesting System

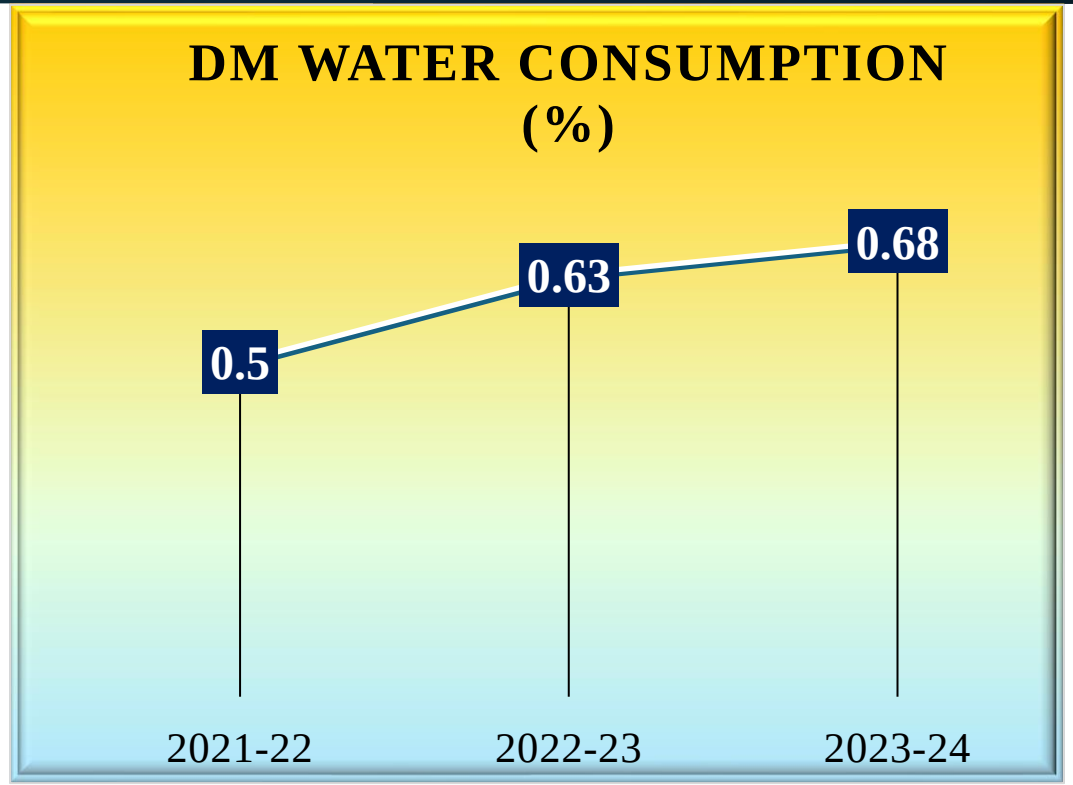
Cleaning of ESP Area by using ETP Water.

INITIATIVES IN BRIEF

- Necessary modifications have been made to the ETP discharge to enable its use for gardening, cleaning the ground floor of the ESP, boiler, fan areas, and roads.
- A new piping system is being installed to channel CT basin blowdown water to the ash water sump.
- The plant drain system is largely integrated with the rainwater harvesting system, which also helps to recharge the underground water table.
- ETP water is now being utilized for vermicompost production.
- FGD wastewater is being recycled for ash water makeup.
- Efforts are being made to maximize dry ash collection to reduce the need for ash water makeup.

RAW & DM WATER CONSUMPTION





Reasons of Increase in Raw & DM Water Consumption:

1. FGD Commissioning Works.
2. Pre & Post Commissioning activities related to Annual Boiler Overhauling of Unit#01 in FY 2022-23 , AOH of Unit#02 in FY 2023-24.

Overview of Flexible Operations at DSTPS

- Flexibility tests were conducted at Andal power plant to achieve a 40% minimum technical load and a ramp rate of at least 1.5% per minute.
- The tests were carried out from 28 to 31 March 2022.
- The test team included experts from DVC, IGEF, Siemens, and VGBE.
- Planning and execution were done in close cooperation with CEA and POSOCO.
- The lowest stable minimum load achieved during the tests was 152 MW (30% load).
- The highest ramp rates achieved were 12 MW/min upwards and 16 MW/min downwards.

CERTIFICATIONS & EMS

ISO 9001 :2015

DSTPS (2x500 MW) Generating station is ISO 9001:2015 Certified

NABL Certified

Coal Lab of DSTPS is NABL Certified

EMS

Advanced Energy Management for Real-Time Optimization

At present, the implementation of ISO 50001, ISO 14001, and ISO 45001 is proposed and in progress.

C-F6.4-12 Issue – 04

फार्म III (स्कीम–III के पैरा 3 के उप–पैरा (5) को देखें)
Form III (Refer Sub-Para (5) of Para 3 of Scheme III)

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
गुणता प्रबंध पद्धति प्रमाणन लाइसेंस
LICENCE FOR THE QUALITY MANAGEMENT SYSTEMS CERTIFICATION

राष्ट्रीय प्रत्यायन प्रमाणन निकाय बोर्ड, नई दिल्ली द्वारा प्रत्यायित
(Accredited by National Accreditation Board for Certification Bodies, New Delhi)

अनुज्ञप्ति संख्या- क्यूएम/एल-5004111.1
Licence Number- QM/L-5004111.1

भारतीय मानक ब्यूरो अधिनियम, 2016(2016 का 11) द्वारा प्रदत्त शक्तियों के नाते निम्नलिखित को पुनः प्रमाणन देता है: / By virtue of the power conferred on it by, the Bureau of Indian Standards Act, 2016 (11 of 2016), the Bureau hereby recertifies to:-

दुर्गापुर स्टील थर्मल पावर स्टेशन डी.वी.सी, पोस्ट - अंडाल, जिला - पश्चिम बर्दवान, पिन - 713321, पश्चिम बंगाल	Durgapur Steel Thermal Power Station DVC, P.O - Andal, Dist - Paschim Burdwan, PIN - 713321, West Bengal

(जिसे इसमें इसके पश्चात इसे अनुज्ञप्तिधारी कहा गया है) इस अनुसूची में वर्णित विशेष तौर पर उत्पाद एवं/या सेवाओं या प्रक्रियाओं के संबंध में **गुणवत्ता प्रबंध पद्धति प्रमाणन** के अनुज्ञप्तिधारकों की ब्यूरो की सूची में अनुज्ञप्ति के अनुसार इसी संख्या धारक को अधिकार एवं अनुज्ञप्ति सूचीबद्ध किया जाए। **आईएस/आईएसओ 9001:2015** के अनुसार गुणवत्ता प्रबंध प्रणाली के अधीन उक्त किए गये पते पर केवल अनुज्ञप्तिधारक धारक द्वारा ऐसे उत्पाद एवं /या सेवाओं या प्रक्रियाओं को निर्मित किया/उपलब्ध कराया/चलाया जायेगा |

(hereinafter called the Licensee) the right and licence to be listed in the Bureau's list(s) of Licensee of **Quality Management Systems Certification** in respect of the products and/or services or processes particularly described in the schedule hereto, bearing the same number as this licence. Such products and/or services or processes shall be manufactured/provided/carried out by the Licensee at only the address(es) given above, and under the Quality Management Systems in accordance with **IS/ISO 9001 : 2015**

अनुज्ञप्ति उक्त अधिनियम और उनके अधीन नियमों तथा विनियमों के संबंधित उपबंधों की शर्त पर पुनः प्रमाणन किया गया है तथा उक्त संदर्भित अनुज्ञप्तियों को इसके तहत शासित किया जाता है, तथा अनुज्ञप्तिधारक उक्त नियमों एवं विनियमों का पालन किए जाने के लिए प्रतिज्ञाबद्ध है |

The licence is recertified subject to the relevant provisions of the above Act and the rules and regulations made there under governing the licences referred to above, and the Licensee hereby covenants with the Bureau duly to observe with the said Rules and Regulations

यह अनुज्ञप्ति तारीख **25 जुलाई 2024** से **14 फरवरी 2027** तक विधिमान्य रहेगा और विनियमों में यथाविहित पुनः प्रमाणन किया जा सकेगा |

This licence shall be valid from **25 July 2024** to **14 February 2027** and may be recertified as prescribed in the Regulations.

सन दो हजार चौबीस के जुलाई माह के 25th दिन हस्ताक्षरित एवं मुहरांकित
Signed, Sealed and dated this **day of July Two Thousand and Twenty Four**

डी.चक्रबर्ती
D.Chakrabarti
उप महानिदेशक
Deputy Director General
भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS

भारतीय मानक ब्यूरो / BUREAU OF INDIAN STANDARDS
एन एस आई सी भवन (आठवी मंजिल), प्लॉट नंबर 7/7, 7/8,
ब्लॉक - सीपी, सेक्टर - V, सॉल्ट लेक, कोलकाता - 700091
NSIC Building (8th Floor) at Plot No. 7/7, 7/8,
Block - CP, Sector - V, Salt Lake, Kolkata - 700091

DVC –TARGET TO NET ZERO

In alignment with the Government of India's target of achieving Net-Zero emissions by 2070, significant actions are being undertaken by Durgapur Valley Corporation (DVC). A key focus area is the expansion of renewable energy sources.

An ambitious target of installing 4,000 MW of renewable energy projects by 2030 has been set, marking a substantial increase from the current 14 MW solar capacity. Construction of solar PV plants with a total capacity of 348 MW is already in progress.

Additionally, acknowledging the critical role of energy storage, plans have been formulated to build 2,500 MW of pumped storage plants.

As a Green Transportation Initiative DVC has also hired 25 Numbers of Electric Vehicles for Transportation at DVC Headquarter, Kolkata. These initiatives demonstrate DVC's unwavering commitment to a cleaner and more sustainable future for India.

Utility Scale Solar PV Projects of DVC

Project Location	Type of Solar PV Plant	Project Capacity (MWAC)	Status
Panchet, Dist. Purulia, West Bengal	Ground Mounted	8	Under Construction
KTPS, Koderma, Dist. – Koderma, Jharkhand	FSPV (on Raw Water Reservoir)	6	Under Construction
MTPS, Durlavpur, Mejia, Dist. – Bankura, West bengal	FSPV (on Raw Water Reservoir)	10	Under Construction
RTPS, Raghunathpur, Dist- Purulia, West Bengal	FSPV (on Raw Water Reservoir)	14	Under Construction

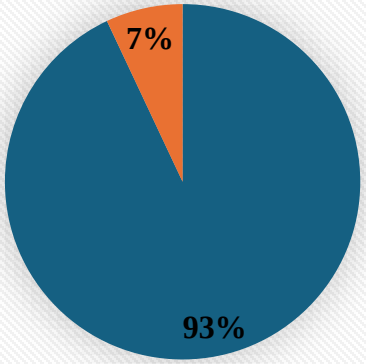
Ultra Mega Renewable Energy Power Parks (UMREPPs) through JV Company GVREL

Project Location	Type of Solar PV Plant	Project Capacity (MWAC)	Status
Tilaiya Dam, DVC, Dist. Hazaribagh, Jharkhand	FSPV	155	Under Construction
Panchet Dam, Dist. - Dhanbad, Jharkhand	FSPV + Ground Mounted	155 (105 MW FSPV + 50 MW Ground)	Under Construction

*** GVREL (Green Valley Renewable Energy Limited) is a JV Company of DVC & NGEL**

Employee Engagement & Motivation

Gender parity



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MAN:MEGAWATT RATIO

Udaan Ladies Club

Sports Activities

Yoga & Health

Felicitating Contractual Workers

Felicitating Employee Wards

Employee of Month

Corporate Social Responsibility DSTPS

CSR DSTPS covers Villages 54 Villages at DSTPS

"Highlights of DSTPS CSR Activities"

Solar Street Light in villages

Solar based Drinking water system at tribal village Babuisole

Solar based RO purified Drinking water system at Diarrhea prone village

Planation with School Children's

Promoting cotton bags to the masses

Promoting Waste segregation and safe disposal

Distribution of Plant Saplings

Desk Bench at School

Skill Development Training certificate

Drinking water Through Tanker to 26 villages every summer season

AWARDS & ACCOLADES

Performance and Efficiency:

- Best Generating Station Award (Multiple Years): Recognized for outstanding performance among DVC's thermal power stations in FY 23-24, FY 21-22, FY 18-19, FY 17-18, and FY 15-16.
- CEE Awards: "Best Plant Load Factor" Award (2023) under the Public Sector Category for exceptional energy efficiency. “Best National Ash Handling Plant" Award (2024) under the Public Sector Category for exemplary ash management.
- 1st Position in Reactive Power Performance: Recognized by ERLDC for voltage control in the Eastern Region.
- Top 10 Ranking on PLF: Consistently achieving high rankings among India's top performing central sector thermal power stations, 7th position with a PLF of 89.92% in June 2024.
- DSTPS participated in 16th Edition of the CII Energy Conservation Awards (2023), Eastern Region and has achieved the 3.5-star rating.

AWARDS & ACCOLADES

Environmental Stewardship & CSR:

•Environmental Excellence Plant of the Year" (Public Sector) in the 3rd CEE National Awards (Year-2023).

•Fly Ash Utilization Plant of the Year" (Public Sector) in the 3rd CEE National Awards (Year-2023).

•ESCerts Awarded: Received 6707 ESCerts from BEE for achievements under PAT Cycle-II, promoting energy efficiency.

•Best CSR Project Award in DVC: Recognized for its impactful social responsibility initiatives in FY 2023-24 & FY 2022-23.

Safety:

•Safety Excellence Award (FY 23-24): Recognized for its commitment to safety practices.

THANK YOU

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