

An aerial photograph of the IFFCO Phulpur II Unit industrial facility. The image shows a large central cooling tower with a '50' anniversary banner and the IFFCO logo. Various industrial structures, pipes, and storage tanks are visible. In the foreground, there are several yellow and white buildings, a paved road, and a landscaped area with palm trees.

24th National Award for Excellence in Energy Management - 2023

Team Member:
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Presented By:
Indian Farmers Fertiliser Cooperative Ltd.
Phulpur- II Unit
13th – 15th September, 2023

IFFCO: At a Glance



PHULPUR UNIT-I

IFFCO was established as the farmers' own initiative in Cooperative Sector on 3rd Nov. 1967

❑ Largest producer of fertilisers in the country.

❑ Nos. of Plant : Five (Kandla, Kalol, Phulpur, Aonla, Paradeep)

Installed/Revamped Annual Capacity (Lakh MT)

Urea	: 42.4
NP/NPK/DAP	: 43.3
Total 'N'	: 26.3
Total ' P_2O_5 '	: 17.2
WSFs	: 0.15
Zinc Sulphate Monohydrate	: 0.30



IFFCO Phulpur Unit-II : Profile

Plant	Ammonia	Urea
Process Licenser	Haldor Topsoe, Denmark	Snamprogetti, Italy
Commissioned	December, 1997	
Daily Capacity (MTPD)	1740	3030
Annual Capacity (Lakhs MT)	5.7	10.0
Till Date Production (Lakhs MT)	141	245

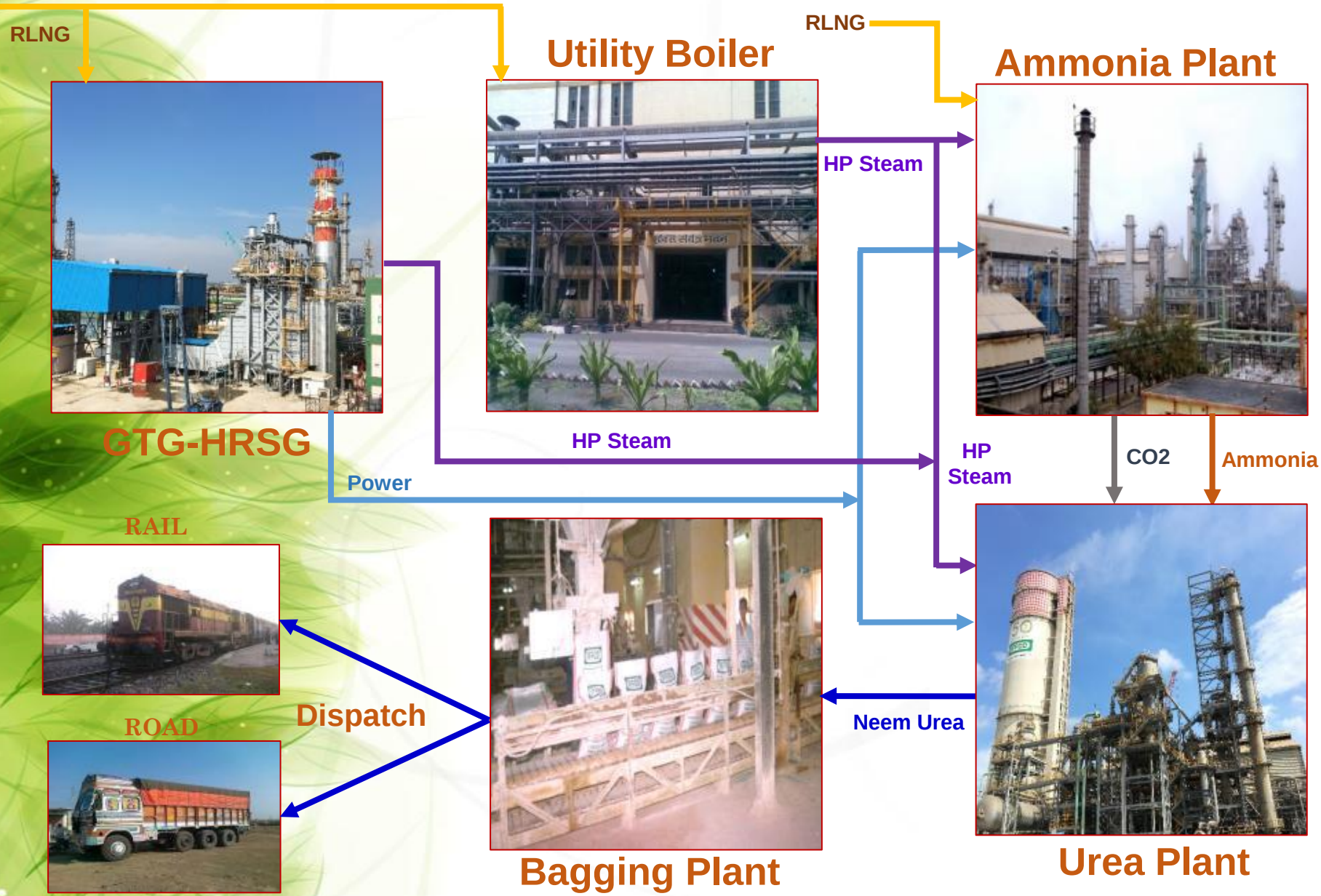


Ammonia-II Plant

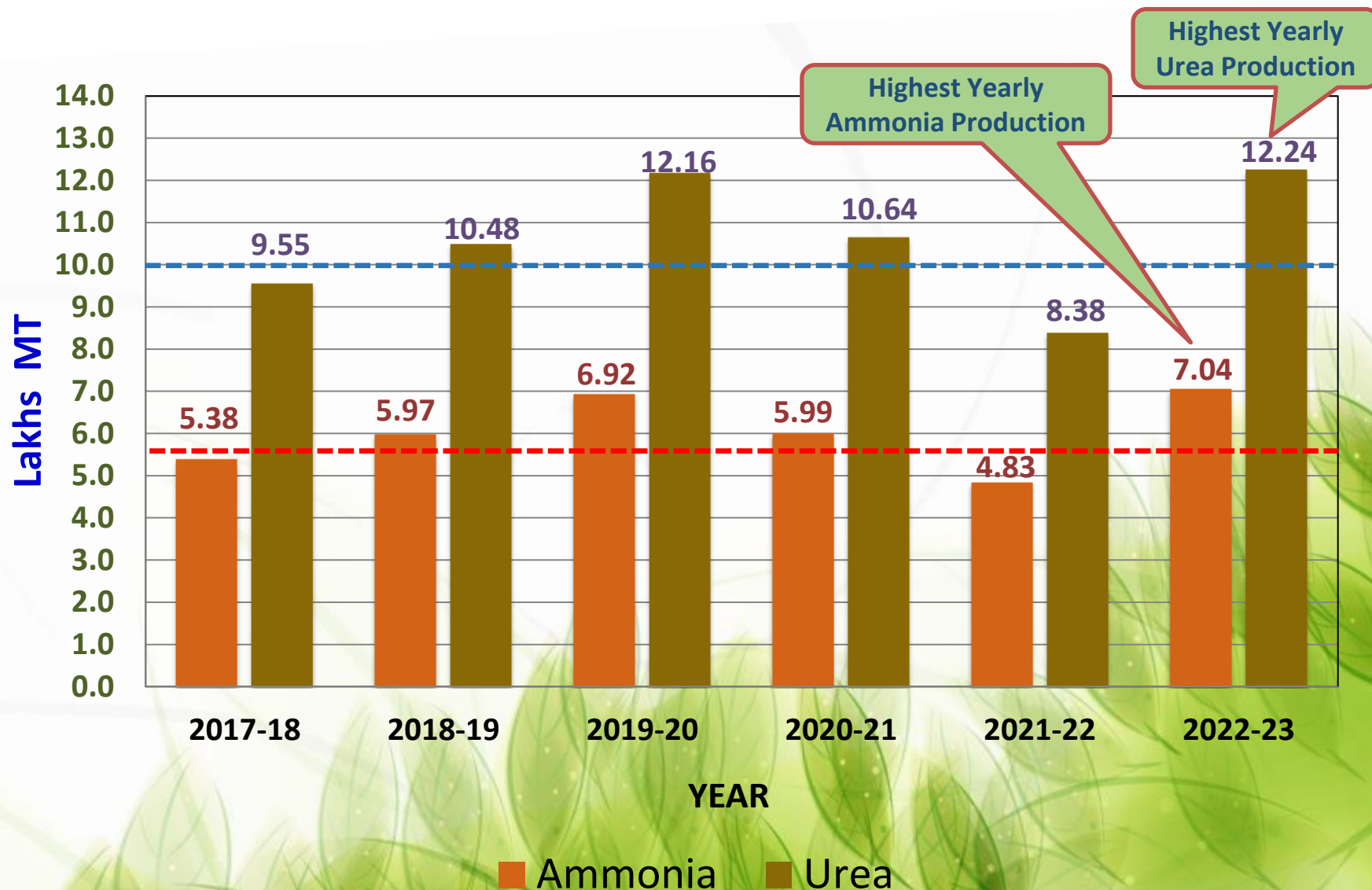


Urea-II Plant

IFFCO Phulpur Unit-II : Production Outline

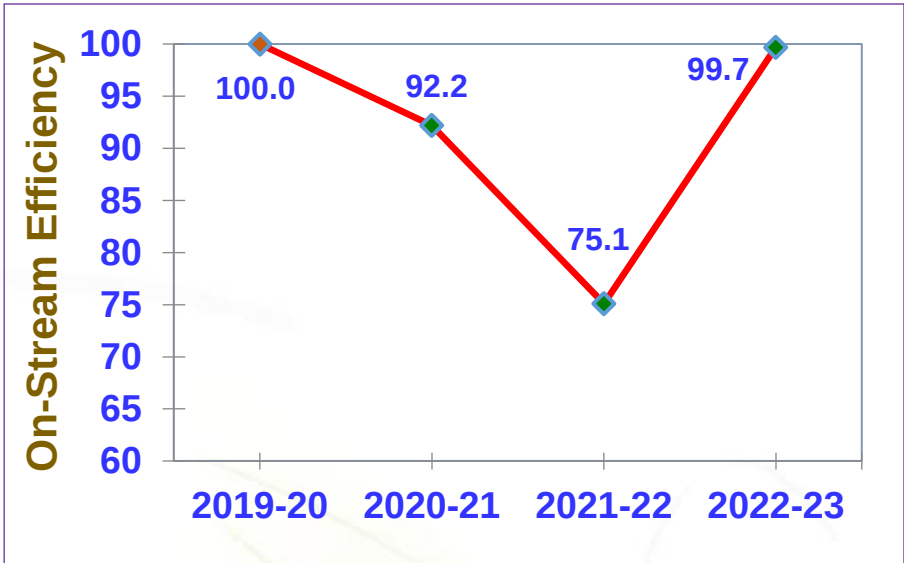


Phulpur-II: Production Performance

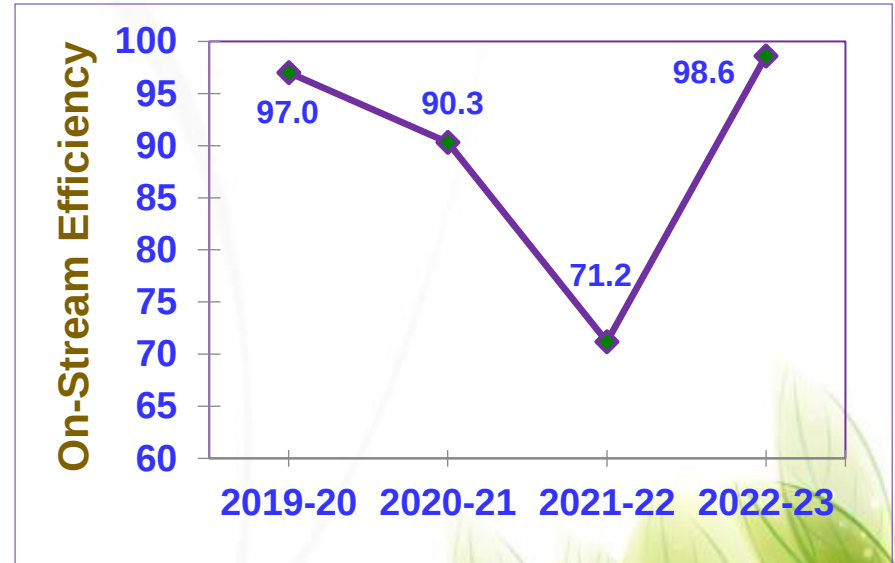


On-Stream Efficiency

Ammonia Plant On-Stream Efficiency



Urea Plant On-Stream Efficiency

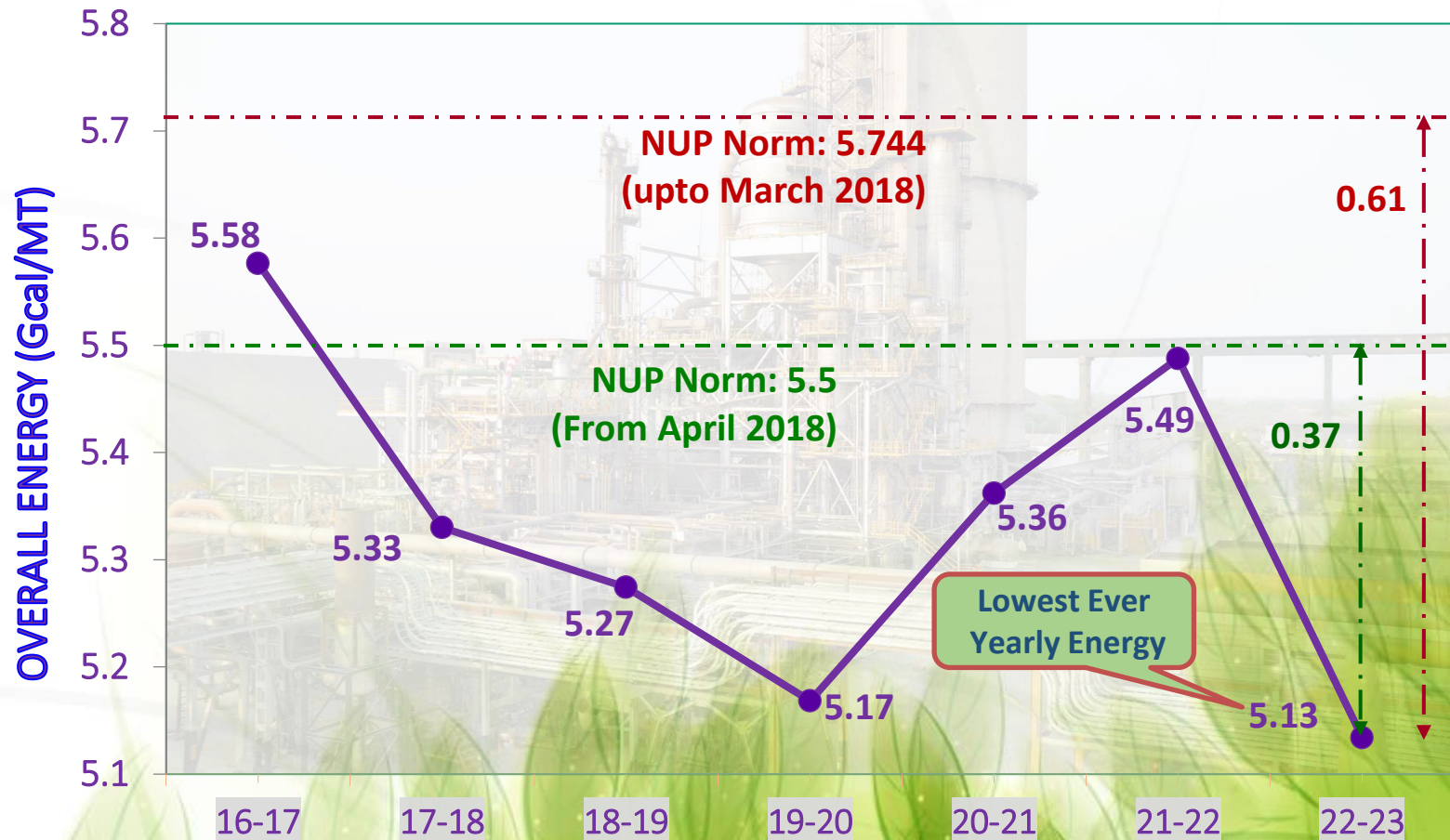


One of the important factor which effects the Productivity / Energy of the fertiliser plant is the Downtime of the plant. During the year 2022-23, Plant was running efficiently resulting highest production and lowest energy records. The onstream efficiency during the year 2022-23, for Ammonia and Urea plant was 99.7 % and 98.6 % respectively.

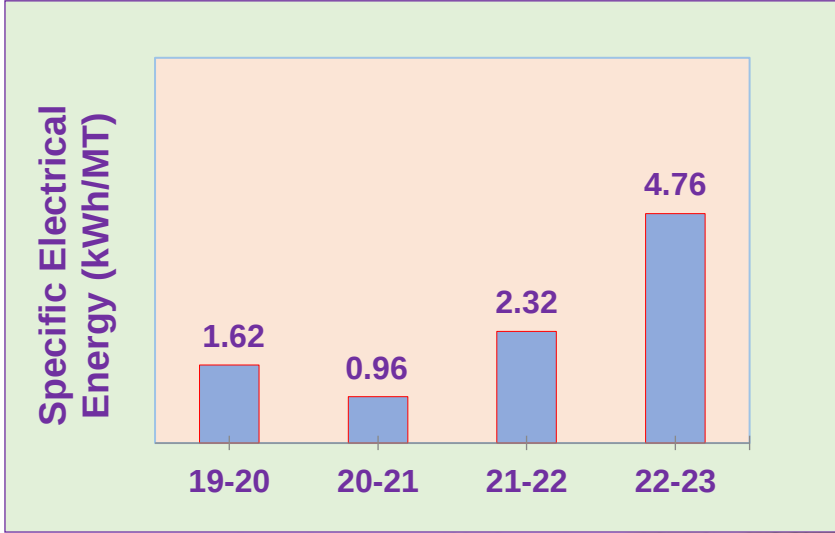
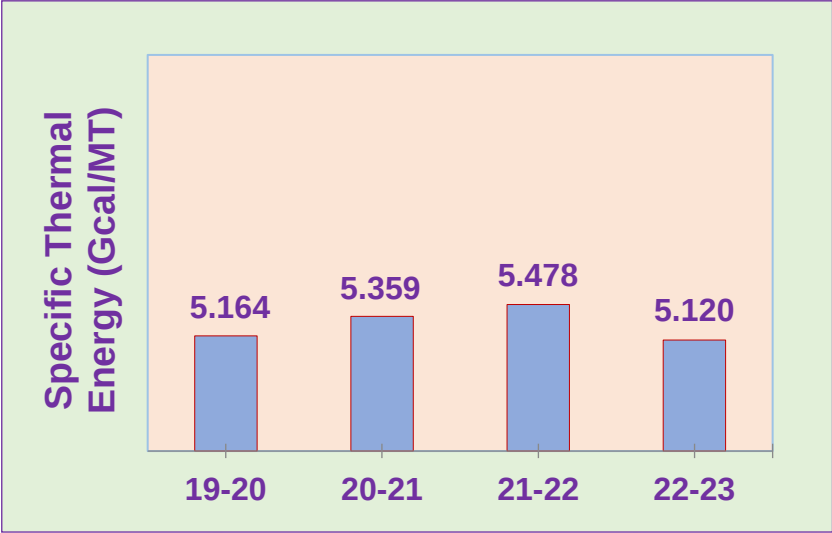
- Poor Reliability of Plant & Equipment leads to:**
 - ↑ Duration of Downtime days**
↓ Productivity
 - ↑ No. of Downtimes**
↓ Productivity / Energy Efficiency

Phulpur-II : Sp. Energy Consumption

Energy in Gcal/MT of Urea



Phulpur-II : Sp. Thermal and Electrical Energy Consumption:



List of Encon Projects Planned (2023-24)

Energy Conservation Measures Planned in 2023-24	Expected Yearly Energy Saving (Gcal)	Investment (Rs. Lakh)
Replacement of Air Preheater (APH) of existing cast iron integral fin type with plate type APH in Ammonia-II plant.	15700.0	1922.0

Major Energy Conservation Measures in Phulpur-II Unit in the year 2022-23

Name of Energy saving Projects	Investment (INR Million)	Electrical Savings (kWh)	Thermal Savings (Million Kcal)	Saving (INR Millions)	Pay Back (Month)
On-line Revamping of old Urea-II Plant Cooling Tower in Phulpur-II Unit with Pultruded FRP Structure in Phulpur-II	67.75	0	7400.9	24.89	33.5
Higher Load Operation, Maximization of on-stream days & optimization of Process Parameters in Phulpur-II Unit	0.0	0.0	197718.4	1208.75	0.0
Replacement of 150 Nos 80 W Well Glass Luminaire with High Pressure Mercury Vapour Lamp with 45 W Well Glass Luminaire LED Lamp at Coal Conveyers 2, 4 and Crusher House	0.48	30024	0	0.39	14.8
Replacement of 100 Nos 80 W Double Open Channel Type Luminaire (Tube Rod) of Fluorescent Lamp with 45 W Well Glass Luminaire LED Lamp at Coal Conveyers 5 and 6	0.33	20016	0	0.26	15.2
Replacement of 130 Nos 250 W HPMV Flood light fixture with 105 W LED Flood light fixture at Electrical and Mechanical Workshop	0.47	107799	0	1.4	4.0
Replacement of 100 Nos 400 W HPMV Flood light fixture with 135 W LED Flood light fixture at TG Floor, AMF-2, Compressor House-2 and Pump House 1 & 2	0.54	151548	0	1.97	3.3
Replacement of 250 Nos 72 W Fluorescent fixture with 38 W LED 2x19 W Tube light fixture at Bagging-1 & 2 Slat area and Platform area	0.35	48610	0	0.63	6.7
Replacement of 178 Nos 70 W Well Glass fixture of Sodium Lamp with 45 W Well Glass fixture at Bagging-2 Silo and Conveyor gallery	0.46	25449	0	0.33	16.7
Replacement of 100 Nos 70 W Post top lantern HPSV type with 45 W Post top lantern fixture at Maitri Park, Guest House walkway, Bharadwaj Park in Township.	0.36	7148	0	0.09	48.0

Major Energy Conservation Measures in Phulpur-II Unit in the year 2021-22

Name of Energy saving Projects	Investment (INR Million)	Electrical Savings (kWh)	Thermal Savings (Million Kcal)	Saving (INR Millions)	Pay Back (Month)
Replacement of DM water Pump (P-4511 B) from Back Pressure Turbine Drive with 110 kW Motor drive in Ammonia-II Plant	0.58	0.0	13718.2	62.90	0.1
Replacement of Low Temperature Shift (LTS) Converter Catalyst in Ammonia-II Plant	50.13	0.0	13167.8	58.61	10.3
Replacement of Rotor in Induced Draft (ID) Fan Turbine in Ammonia-II Plant	6.00	0.0	12380.4	33.29	2.2
Replacement of 400 Nos of 2X36 W, 4 feet Tube light Fittings & 17 W per Choke with 2X2 feet, 20 W Surface Mounted LED Fixtures at Central School in Township	0.42	65564.0	0	1.31	3.9
Replacement of 400 Nos of 2X36 W, 4 feet Tube light Fittings & 17 W per Choke with 2X19 W LED Fixtures at Ammonia & Urea MCC Buildings	0.35	135102.0	0	2.70	1.6
Replacement of 200 Nos 250 W SON-T Fittings with 120 W Street Light at Bagging area & Plant Roads in Offsites	0.49	64571.0	0	1.29	4.6
Replacement of 2400 Nos 36 W, 4 Feet Tube Lights with 19 W, 4 feet Tube Lights at Bagging floor & Offsite area	0.55	101326.0	0	2.02	3.3
Replacement of 15 Nos 1000 W Tower Light Fixtures from Towers of Boundary wall with 300 W Flood Light	0.21	26077.0	0	0.52	4.9

Major Energy Conservation Measures in Phulpur-II Unit in the year 2020-21

Name of Energy saving Projects	Investment (INR Million)	Electrical Savings (Million kWh)	Thermal Savings (Million Kcal)	Saving (INR Millions)	Pay Back (Month)
Installation of Higher capacity Ammonia Condenser (E-3522) in place of existing Ammonia Condenser to reduce the Ammonia content at the outlet from Off Gas Absorber in Ammonia-II Plant	2.0	0.0	119.4	0.32	75
Replacement of 150 Nos of 400 W HPMV / Metal Halide Bay Light Fixtures from Township Street light with 200 Nos. 70 W Crompton make LED Street light fixtures	0.29	111048.0	0.0	1.91	1.8
Replacement of 30 Nos of 400 W HPMV / Metal Halide Bay Light Fixtures from Utsav Griha and A type quarters in Township with 250 W Crompton make LED Flood light fixtures	0.15	10863.0	0.0	0.19	9.5
Replacement of 100 Nos 150 W old High Pressure Sodium Fixture from Township with 70 W Crompton make LED Street light fixtures	0.18	19313.0	0.0	0.33	6.5
Replacement of 10 Nos 80 W Fluorescent tube Lamp from Administration Building with 40 W Recess / Suspended LED Fitting	0.013	1053.0	0.0	0.018	8.7
Replacement of 47 Nos 80 W Fluorescent tube Lamp from Central Canteen Building with 40 W Philips make Recess Mounting LED Luminaire	0.06	9902	0.0	0.17	4.2

Innovative way for on-line Revamping of old Urea-II Plant Cooling Tower in Phulpur-II Unit without shutdown:

- Originally, Urea-II Cooling Tower had a conventional wooden structure which deteriorated over a period and has higher maintenance cost.
- Therefore, the original structure has been revamped with the latest Pultruded Fibre Reinforced Plastic (FRP) structure to increase reliability.
- The FRP structure has Lower maintenance cost and longer product life often equals lower overall costs.
- After revamping, the Cooling Tower approach came down without shutdown of Urea-II Plant and also the specific steam consumption in CO2 Compressor Turbine in Urea-II Plant has been reduced.
- Annual savings come to 7400.9 Gcal and investment was 677.5 Lakhs.



Higher Load Operation, Maximization of on-stream days & optimization of Process Parameters in Phulpur-II Unit:

- Specific Feed, Fuel, Steam and Power Consumption of Plants is monitored on daily basis.
- Based on design data corrective measures are taken on daily basis to run the plant at optimum efficiency.
- Other important parameters like Turbine, Compressor and Reactor's Efficiency, each Reactor's differential pressure, proper utilization of Turbine condensate, waste management, preventive maintenance of all critical machinery, stack temperature of various furnaces and Turbine exhaust pressure are monitored to achieve the lowest overall plant energy.
- Due to these measures, overall energy per MT of Urea has been realized. During the year 2022-23, Phulpur-II Unit achieved highest ever production and lowest ever energy.
- Annual saving comes of 197718.4 Gcal and in terms of Rs. 12087.5 Lakhs.

Innovative way for changing of DM water Pump (P-4511B) from Turbine Drive with 110 kW Motor drive in Ammonia-II Plant:

- In Ammonia-II Plant, DM water is received from D.M Plant at 45 deg C. It flows in D.M water Tank where it is stored. Water in the tank is stored at atmospheric pressure.
- DM water pumps (P-4511 A & P-4511 B) provided to pump DM water to Deaerator after getting preheated in DM water preheater.
- P-4511 A is a Motor drive and P-4511 B is back pressure Turbine Drive Pumps.
- The Turbine drive pump (P-4511 B) was very old and inefficient. Steam consumption by the Turbine was on higher side and frequent steam leaking was there.
- To reduce the energy consumption, the Turbine is replaced with Motor drive.
- Annual thermal saving of the scheme was 13718.2 Gcal. The investment for the scheme was 5.8 Lakhs.



Changing of Rotor in ID Fan Turbine in Ammonia-II Plant:

- In Ammonia-II Plant, ID Fan is used to maintain draft in Primary Reformer by drawing flue gases through the convection section and discharging to CDR Plant / atmosphere.
- The Fan is normally driven by back pressure Steam turbine. The Steam Turbine is driven by MP Steam at 39 kg/cm²g and 394 deg C. During normal operating load, limitation observed in ID Fan and MP steam consumption was high.
- During annual shutdown it has been noticed that turbine rotor blades got damaged. The old rotor has been replaced with spare rotor.
- After replacement, MP steam consumption in ID fan Turbine was reduced.
- Annual thermal saving of the scheme was 12380.4 Gcal. The investment for the scheme was 60 Lakhs.



Electrical Energy saving during 2022-23

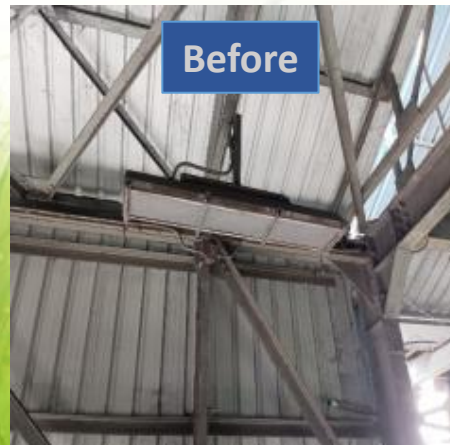
1. Replacement of 150 Nos 80 W Well Glass Luminaire with High Pressure Mercury Vapour Lamp with 45 W Well Glass Luminaire LED Lamp at Coal Conveyers 2, 4 and Crusher House:

To reduce the energy consumption, 150 Nos 80 W Well Glass Luminaire with High Pressure Mercury Vapor Lamp with 45 W Well Glass Luminaire LED Lamp at Coal Conveyers 2, 4 and Crusher House. Annual saving comes to 30024 kWh.



2. Replacement of 100 Nos 80 W Double Open Channel Type Luminaire (Tube Rod) of Fluorescent Lamp with 45 W Well Glass Luminaire LED Lamp at Coal Conveyers 5 and 6:

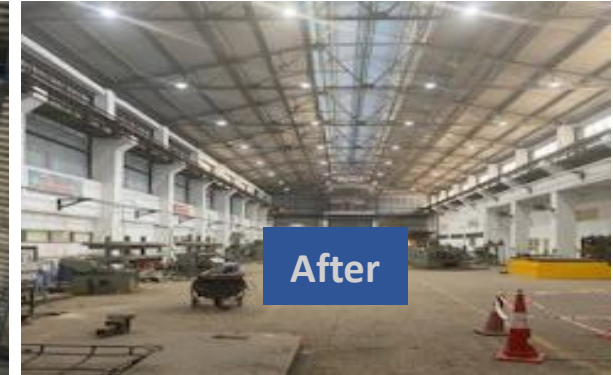
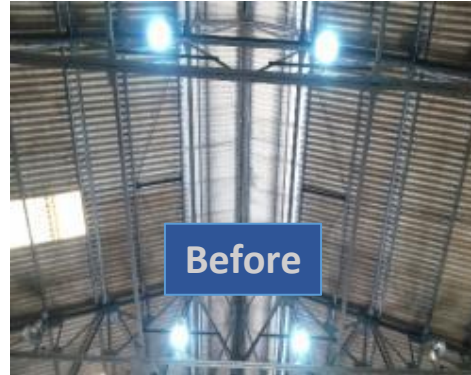
To reduce the energy consumption, 100 Nos 80 W Double Open Channel Type Luminaire (Tube Rod) of Fluorescent Lamp with 45 W Well Glass Luminaire LED Lamp at Coal Conveyers 5 and 6. Annual saving comes to 20016 kWh.



Electrical Energy saving during 2022-23

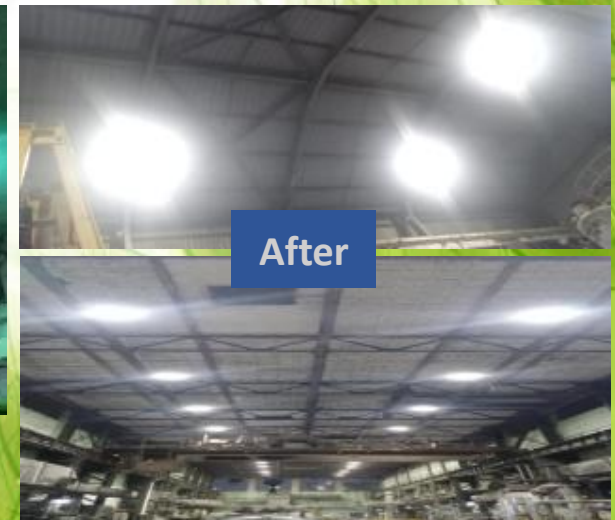
3. Replacement of 130 Nos 250 W HPMV Flood light fixture with 105 W LED Flood light fixture at Electrical and Mechanical Workshop:

To reduce energy consumption, 130 Nos 250 W HPMV Flood light fixture with 105 W LED Flood light fixture at Electrical and Mechanical Workshop. Annual saving comes to 107799 kWh.



4. Replacement of 100 Nos 400 W HPMV Flood light fixture with 135 W LED Flood light fixture at TG Floor, AMF-2, Compressor House-2 and Pump House 1 & 2:

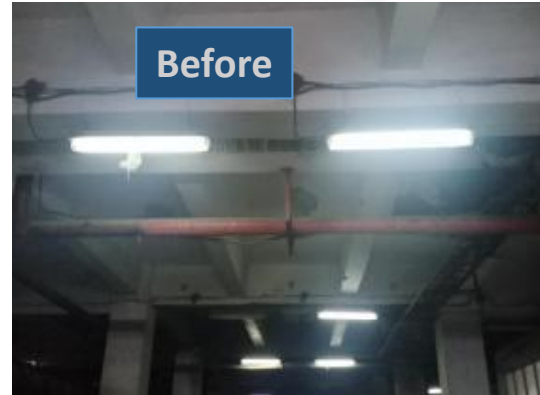
To reduce energy consumption, 100 Nos 400 W HPMV Flood light fixture with 135 W LED Flood light fixture at TG Floor, AMF-2, Compressor House-2, and Pump House 1 & 2. Annual saving comes to 151548 kWh.



Electrical Energy saving during 2022-23

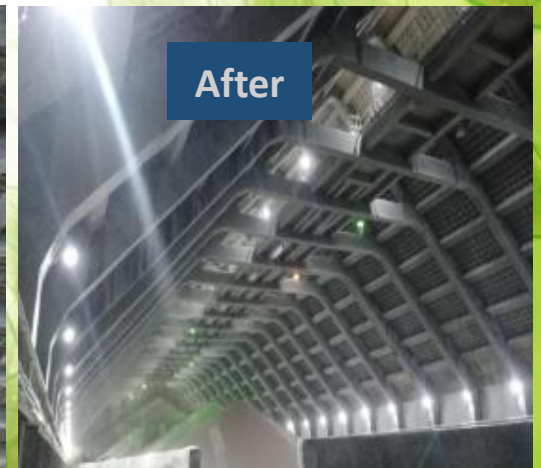
5. Replacement of 250 Nos 72 W Fluorescent fixture with 38 W LED 2x19 W Tube light fixture at Bagging-1 & 2 Slat area and Platform area:

To reduce energy consumption, 250 Nos 72 W Fluorescent fixture with 38 W LED 2x19 W Tube light fixture at Bagging-1 & 2 Slat area and Platform area. Annual saving comes to 48610 kWh.



6. Replacement of 178 Nos 70 W Well Glass fixture of Sodium Lamp with 45 W Well Glass fixture at Bagging-2 Silo and Conveyor gallery:

To reduce energy consumption, 178 Nos 70 W Well Glass fixture of Sodium Lamp with 45 W Well Glass fixture at Bagging-2 Silo and Conveyor gallery. Annual saving comes to 25449 kWh.

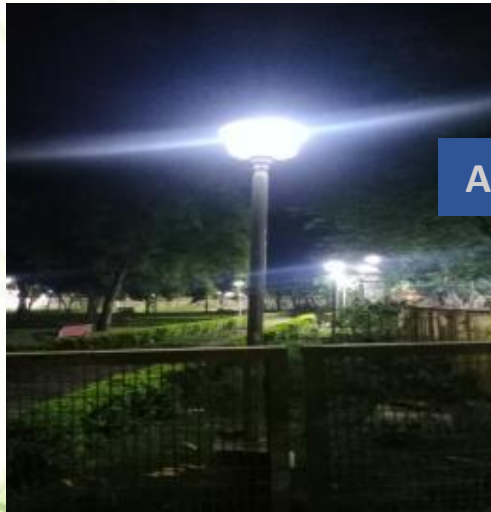


7. Replacement of 100 Nos 70 W Post top lantern HPSV type with 45 W Post top lantern fixture at Maitri Park, Guest House walkway, Bharadwaj Park in Township:

To reduce energy consumption, 100 Nos 70 W Post top lantern HPSV type with 45 W Post top lantern fixture at Maitri Park, Guest House walkway, Bharadwaj Park in Township. Annual saving comes to 7148 kWh.



Before



After



UTILISATIONS OF RENEWABLE ENERGY RESOURCES



Roof of Central Canteen



Raw water Pump House



Bagging Top Floor



Roof of Urea-2 CR



Solar Unit at Plant

Solar Power Pack:

- Total 800 KWp Solar power pack installed in Phulpur-II Unit and is connected to the LT Grid.
- The Solar Power Units are in continuous operation generating Electric Power there by reduction of CO2 emission.
- Solar light installed at different locations inside the plant and as well as also township.

Year	Technology (Electrical)	Type of Energy	Onsite / Offsite	Installed Capacity (MW)	Generation (Million kWh)
FY-2020-21	Solar PV System	Electrical	Onsite	0.8	1.014
FY-2021-22	Solar PV System	Electrical	Onsite	0.8	0.971
FY-2022-23	Solar PV System	Electrical	Onsite	0.8	0.874

Solar Water Heaters

6 Nos. of Solar Water Heater installed in Guest House.

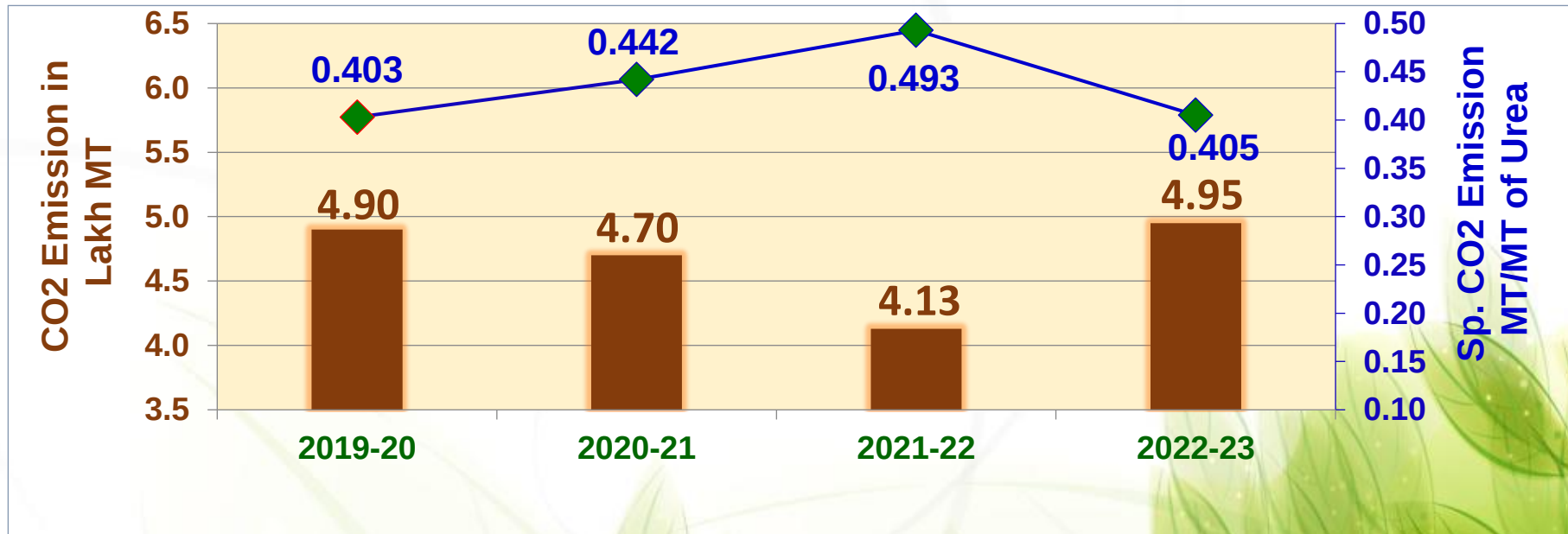


Capacity: 25 m³/day

Bio-Methanation Plant

Carbon Footprint

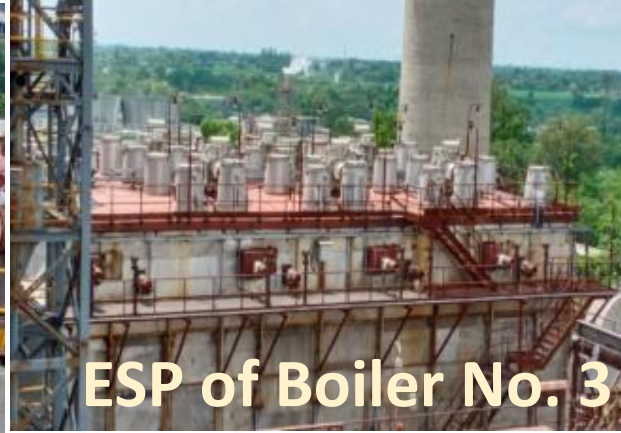
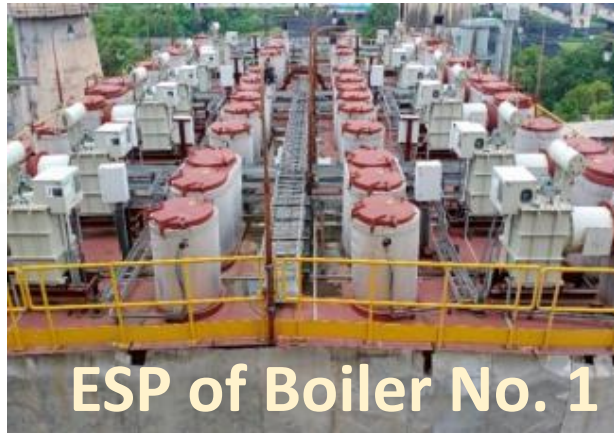
Our endeavours for every year is to reduce specific energy consumption, which will also result in lesser CO2 emissions. We have also installed solar power plants which also reduce CO2 emission.



- Phulpur-II Unit has already installed a Carbon Di Oxide Recovery (CDR) Plant of 450 MTPD capacity in the year 2006-07, to recover CO2 from flue gases of Ammonia-II Plant primary reformer furnace. This CO2 is consumed in both Urea-I and Urea-II Plants.
- We have also installed solar power plants at different locations inside the Plants such as at the roof of Bagging Plant, Raw water storage tank, roof of central canteen and roof of plant control rooms to reduce CO2 emission.

Environment monitoring system and reduction of Stack emission:

New Electrostatic Precipitator (ESP) in Coal Fired Boilers



ESP of Coal fired boilers were very old and their performance was deteriorated in due course of time and needed improvement. So, new ESP installed in both Boiler 1 & 3. In next year, we have planned for installation of ESP of Boiler no. 2 also.

WASTE DISPOSAL IN POWER PLANT



- Fly Ash Generated in Power Plant being gainfully utilized by Cement industries.
- Fly Ash also used for Brick Making at in-house Fly Ash Brick Plant. Brick is used for Paving & Boundary walls and for Usar land reclamation. This bricks are also provided for renovation of schools in nearby villages with free of cost.



Environment & Sustainability

Liquid Effluent Treatment

Rejection water of Reverse Osmosis Plant used in Coal yard in Phulpur Unit:



We are using cooling tower blowdown for RO Feed. The recovered RO product is being used in softening plant as make-up water and the reject water is being used in coal yard to suppress the coal dust. The Plant Capacity is 3000 M3 /day (Recovery 85 %).

Sewage Treatment cum Recycle Plant:



The sewage generated in Plant Township is treated in Sewage Treatment Plant and is being used for irrigation purpose at Farmland at CORDET. The Plant Capacity is 125 M3 / hr.

Waste Disposal from Horticulture and Kitchen:



Biodegradable wastes from kitchen and horticulture are converted into very good manure by vermi composting System. The manure is used in horticulture, green belt area & 150 Acres farmland at CORDET.

Rainwater Harvesting System:



Total 5 Nos. Rainwater Harvesting systems are installed in township. IFFCO is also planning to install more Rainwater harvesting systems at different locations.

Installation of Online Environment Monitoring System

Liquid Effluent Monitoring:

IFFCO Phulpur Unit continuously monitored the pH, Ammoniacal Nitrogen at guard pond area and Flow in pipeline of liquid effluent generated in the complex. After treatment, the liquid effluent reused effluent in horticulture & irrigation of farmland within IFFCO's premises.



Flow Instrument & local display



Local display for pH & TAN



Installation of Ammonia Sensor at strategic locations of Plants:



- To monitor ammonia leakage, ammonia sensor is installed at strategic locations of Ammonia-II, Urea-II and Ammonia Storage Tank area of IFFCO Phulpur Unit.
- In case of any leakages in the plants, the Panel operator shall identify the location of Ammonia Leakage and take action accordingly to arrest the leakage.
- Water curtain has been provided at the periphery of the control room as well as ammonia feed pumps for safety of the Plant personnel.

Procurement Process

IFFCO Phulpur has taken care of Energy optimization right from Procurement process among Vendors / Suppliers / Contractors

- ❖ The Evaluation of a Bid is done based on Operating Cost.
- ❖ Loading is being done to take care of the Performance and Productivity of equipment offered.
- ❖ In case the consumption of utilities is different for different Bidders. Extra operating cost over the minimum one shall be calculated as below for loading.

Operating cost = Difference in utilities consumption x Unit cost of Utility x 8760 x 0.9 x 5.5860 x N

Where:

- 8760 is number of available hours in a year
- 0.9 is availability factor
- 5.5860 is discount factor at an interest rate of 10% per annum for one year erection/commissioning and ten years operational period.
- N is the number of operating equipment items.



EMS System and other requirements

- Energy consumption of the plant is monitored on daily basis. Energy conservation is the topmost priority of our company since its profitability is directly linked with it.
- Energy is being monitored daily morning meeting in the presence of Unit Head, and other Plant Personnel to facilitate these various reports are prepared and corrective actions are taken immediately to rectify the problem.
- Developing management structures that empower staff to address energy efficiency issues directly.
- Various types of Reports are generated on daily/weekly/monthly/quarterly and yearly basis for Reporting & Monitoring of Energy Consumption.



IFFCO
Wholly owned by Cooperatives

Phulpur Unit-II

EM-PRO-F-01

Performance Report for :11.05.2023

Overall Input Norms per MT of Urea

Inputs	Unit	Day	Month	Year
RLNG	000 SM3	0.6033	0.6092	0.6176
POWER PURCHASED	KWH	0.0000	0.3180	8.6985
HSD	MT	0.0000	0.0000	0.0000
COAL	MT	0.0100	0.0121	0.0294
PURCHASED AMMONIA	MT	0.0000	0.0000	0.0000
BAGS	NO	22.2228	22.2228	22.2228
ENERGY	GCAL	5.0274	5.0732	5.2489
AMMONIA				
Inputs	Unit	Day	Month	Year
Feed RLNG	0005M3/MT	0.6479	0.6524	0.6539
Fuel RLNG	0005M3/MT	0.3747	0.3771	0.3780
Total R-LNG	0005M3/MT	1.0226	1.0295	1.0319
HP STEAM IMP	MT/MT	0.0000	0.0000	0.0000
HP STEAM EXP	MT/MT	1.5324	1.4883	1.3882
MP STEAM EXPORT	MT/MT	0.1386	0.1386	0.1496
LP STEAM EXPORT	MT/MT	0.0903	0.0797	0.0630
ENERGY (B.L)	GCAL/MT	7.0430	7.1234	7.2595
ENERGY (OVERALL)	GCAL/MT	7.1792	7.2525	7.4424
UREA-I				
AMMONIA	MT/MT	0.5700	0.5700	0.5702
HP STEAM (WITHOUT CDR)	MT/MT	0.8406	0.8390	0.8384
HP STEAM (WITH CDR)	MT/MT	0.9632	0.9560	0.9498
LP Steam Export	MT/MT	0.0298	0.0276	0.0298
ENERGY B.L	GCAL/MT	4.9413	4.9416	4.9546
ENERGY (OVERALL)	GCAL/MT	5.0274	5.0732	5.2489
UREA-II				
AMMONIA	MT/MT	0.5700	0.5700	0.5702
HP STEAM (WITHOUT CDR)	MT/MT	0.8402	0.8392	0.8241
HP STEAM (WITH CDR)	MT/MT	0.9628	0.9562	0.9135
LP Steam Export	MT/MT	0.0298	0.0276	0.0298
ENERGY B.L	GCAL/MT	4.9409	4.9418	4.9324
ENERGY (OVERALL)	GCAL/MT	5.0274	5.0732	5.2489
STEAM GENERATION				
RLNG	0005M3/MT	0.0000	0.0000	0.0000
HP Steam internal	MT/MT	0.0000	0.0000	0.0000
LP STEAM IMPORT	MT/MT	0.0000	0.0000	0.0000
ENERGY (B.L)	GCAL/MT	0.0000	0.0000	0.0000

JGM (TECH.)

Distribution: MSD/SGM(P)/GM(Prod)/JGM(Util)/DGM(U)/DGM(P)/DGM(PH)/DGM(Pro)/DGM(E)/DGM(O)

Sample of Daily Performance Reports

EMS System and other requirements



पूर्णतः सहकारी स्वामित्व
Wholly owned by Cooperatives

WEEKLY PRODUCTION AND ENERGY

Weekly Data (08th -15th May, 2023)

Date	Phulpur-I						Phulpur-II						Overall (Phulpur-I + II)		Remarks
	Ammonia Production, MT	Ammonia Energy (B.L.), Gcal/MT	Ammonia Energy (Overall), Gcal/MT	Urea Production, MT	Urea Energy (B.L.), Gcal/MT	Urea Energy (Overall), Gcal/MT	Ammonia Production, MT	Ammonia Energy (B.L.), Gcal/MT	Ammonia Energy (Overall), Gcal/MT	Urea Production, MT	Urea Energy (B.L.), Gcal/MT	Urea Energy (Overall), Gcal/MT	Total Urea production (MT)	Complex Energy (Gcal/MT)	
Theoretical Minimum Energy		4.47			2.53			4.47			2.53				
ESP Revamp Case	1215		7.77	2130		5.750	1850		7.17	3250		5.17	5386.00	5.40	Shutdown Details / Reason for High Energy Gcal
08 May 2023	1255.1	7.695	7.735	2166.0	5.342	5.764	1897.4	7.093	7.217	3392.9	4.940	5.066	5558.9	5.338	
09 May 2023	1249.9	7.653	7.698	2184.0	5.343	5.755	1901.3	7.060	7.199	3347.2	4.947	5.040	5531.2	5.323	
10 May 2023	1255.2	7.670	7.727	2155.4	5.329	5.764	1907.5	7.068	7.206	3414.2	4.942	5.039	5570.6	5.320	
11 May 2023	1256.4	7.627	7.668	2163.3	5.337	5.756	1904.9	7.043	7.179	3426.8	4.941	5.027	5590.1	5.309	
12 May 2023	1255.6	7.630	7.672	2195.9	5.327	5.735	1903.3	7.066	7.192	3412.4	4.947	5.040	5608.3	5.312	
13 May 2023	1257.1	7.671	7.721	2189.9	5.324	5.767	1902.7	7.050	7.166	3425.0	4.949	5.034	5614.9	5.320	
14 May 2023	1257.6	7.638	7.697	2192.4	5.333	5.756	1900.0	7.080	7.213	3422.0	4.944	5.042	5614.4	5.321	
15 May 2023	1256.5	7.677	7.735	2190.2	5.334	5.768	1897.9	7.078	7.204	3415.0	4.950	5.056	5605.2	5.334	
Weekly Data (08th -15th May, 2023)	10043.4	7.658	7.707	17438.1	5.334	5.758	15215.0	7.067	7.197	27255.5	4.945	5.043	44633.6	5.322	
Monthly Data (May, 2023)	18640.6	7.690	7.736	32579.6	5.339	5.768	28550.1	7.109	7.237	51186.5	4.943	5.065	83766.1	5.339	
Yearly Data (Apr.-2023 to March, 2024)	56501.7	7.687	7.775	96466.1	5.377	5.832	79968.8	7.241	7.415	137140.0	4.943	5.228	233606.1	5.477	

Sample Weekly Energy Reports

DAILY STEAM BALANCE REPORT FOR PERIOD FROM 01-FEB-23 TO 28-FEB-23



DATE	PRODUCTION (MTPD)						GENERATION (MT/Hr)						CONSUMPTION (MT/Hr)						LP STEAM (MT/Hr)										
	AMM 1	AMM 2	TOTAL	UREA 1	UREA 2	TOTAL	BOILER 123	GT	SUB TOTAL	BLR 4	AM HRU	SUB TOTAL	GRAND TOTAL	AMM 1	AMM 2	UREA 1	UREA 2	TG 1	TG 2	INT 1	INT 2	CDR	TOTAL	LPS AMM 1	LPS AMM 2	LPS UREA 1	LPS UREA 2	LPS TOTAL	STEAM NORM
01	1246.0	1980.0	3226.2	2197.3	3462.9	5660.2	95	61	156	0	100	100	256	50	-18	68	126	0	0	4	0	26	256	32	5	7	1	46	1.09
02	1240.0	1979.2	3219.2	2195	3444.6	5639.6	96	60	156	0	101	101	257	48	-20	70	126	0	0	5	0	27	257	32	5	7	2	46	1.09
03	1259.0	1992.7	3251.7	2205.6	3475.4	5681.0	94	61	155	0	103	103	258	49	-21	71	124	0	0	4	0	28	258	32	5	6	0	43	1.09
04	1261.0	1993.7	3254.5	2207.9	3487.6	5695.5	93	61	153	0	101	101	254	49	-19	71	123	0	0	3	0	29	254	32	4	6	0	42	1.07
05	1260.0	2001.0	3261.1	2210.7	3492.3	5703.0	93	61	153	0	100	100	253	48	-22	71	123	0	0	4	0	29	253	32	4	6	0	42	1.06
06	1261.0	1985.8	3246.7	2207.6	3497.7	5705.3	90	61	151	0	100	100	250	48	-23	70	123	0	0	3	0	30	250	32	4	8	1	44	1.05
07	1259.0	1989.9	3249.2	2207.8	3483.4	5691.2	93	60	153	0	100	100	253	49	-22	70	123	0	0	4	0	29	253	32	3	9	0	44	1.07
08	1257.0	1988.8	3245.6	2203	3491.7	5694.7	94	61	154	0	99	99	254	49	-21	70	119	0	0	3	0	33	254	32	3	9	0	43	1.07
09	1257.0	1983.0	3239.7	2205	3486.3	5701.3	93	60	153	0	98	98	251	48	-22	70	122	0	0	3	0	29	251	32	4	7	2	45	1.06
10	1256.0	1985.9	3241.7	2202.5	3450.8	5653.3	91	60	151	0	98	98	249	49	-22	69	122	0	0	4	0	29	249	32	5	8	3	48	1.06
11	1255.0	1984.7	3239.2	2200.8	3469.6	5670.4	92	61	153	0	98	98	251	49	-21	70	120	0	0	3	0	29	251	32	4	8	4	48	1.06
12	1255.0	1984.2	3239.0	2201	3472.7	5673.7	90	60	150	0	98	98	248	50	-24	68	122	0	0	3	0	29	248	32	4	9	5	50	1.05
13	1253.0	1984.0	3237.1	2202.1	3493.2	5695.3	91	61	152	0	99	99	250	49	-22	69	122	0	0	3	0	29	250	32	4	8	0	44	1.06
14	1255.0	1980.9	3236.2	2202.3	3536.9	5739.2	92	61	152	0	99	99	251	49	-23	68	125	0	0	4	0	29	251	32	5	8	8	52	1.05
15	1254.0	1975.5	3229.2	2204	3564.5	5768.5	92	60	153	0	99	99	252	49	-22	67	125	0	0	4	0	28	252	32	5	8	0	45	1.05
16	1252.0	1970.0	3222.4	2201	3504.1	5705.1	91	60	151	0	100	100	252	49	-23	67	125	0	0	4	0	29	251	32	5	9	4	49	1.06
17	1254.0	1974.0	3228.4	2200.7	3452.5	5653.2	90	61	150	0	100	100	250	49	-22	67	123	0	0	5	0	28	250	32	6	7	7	51	1.06
18	1255.0	1980.7	3235.5	2203	3458.7	5661.7	89	60	149	0	101	101	250	49	-23	68	122	0	0	5	0	29	250	32	4	8	5	48	1.06
19	1255.0	1980.1	3235.2	2201.8	3467.8	5669.6	90	60	150	0	101	101	251	49	-22	68	122	0	0	4	0	29	251	32	4	8	6	49	1.06
20	1254.0	1970.6	3224.9	2204	3447.1	5651.1	90	60	151	0	100	100	250	49	-21	68	122	0	0	4	0	29	250	32	4	8	5	48	1.06
21	1255.0	1977.7	3232.5	2201.4	3454.0	5655.4	91	60	151	0	99	99	250	49	-22	70	120	0	0	3	0	30	250	32	4	7	4	47	1.06
22	1259.0	1973.1	3229.0	2203	3476.3	5679.3	94	60	155	0	97	97	252	50	-22	69	122	0	0	4	0	30	252	32	4	8	5	50	1.07
23	1255.0	1973.1	3227.6	2200.9	3458.4	5659.3	93	61	154	0	97	97	251	49	-22	69	122	0	0	3	0	30	251	32	5	6	6	48	1.06
24	1255.0	1969.9	3224.6	2200.6	3480.0	5680.6	92	61	153	0	97	97	250	48	-22	68	122	0	0	4	0	30	250	32	5	5	6	48	1.06
25	1256.0	1973.4	3228.9	2202.3	3478.2	5680.5	91	61	152	0	97	97	249	48	-23	63	121	0	0	4	0	36	249	32	6	8	6	51	1.05
26	1256.0	1975.5	3231.4	2203.8	3491.4	5695.2	91	61	151	0	98	98	249	48	-22	69	121	0	0	4	0	30	249	32	5	8	8	52	1.05
27	1257.0	1971.9	3228.5	2204.1	3500.5	5704.6	91	61	152	0	98	98	250	48	-21	69	121	0	0	3	0	29	250	32	6	7	0	45	1.05
28	1258.0	1972.2	3230.5	2203.6	3498.9	5702.5	91	61	152	0	98	98	250	48	-21	69	121	1	0	2	0	29	250	32	5	7	3	46	1.05

JGM(Tech.)

Sample of Daily Steam Balance Reports

EMS System and other requirements

Employee Engagement:

- ❖ IFFCO Phulpur Unit encourages its employees through Suggestion Scheme to give ideas of energy conservation.
- ❖ In our Unit, We have online suggestion scheme portal for all Employees. All Employees (Workman & Supervisor Level) participated the Suggestion Scheme Awards. The selected candidate awarded in in-house /National / International level.
- ❖ Energy Efficiency & Awareness Training programme is being conducted time to time for betterment & smooth running of the Plant with minimum specific energy consumption.
- ❖ Apart from this, our senior official frequently interact with plant operating personnel to discuss all sorts of problems and rectify the problem for reducing the specific energy consumption of the Plant.



Challenges and Upgradation:

- In the current market scenario, our endeavour for the future is to improve the all-around efficiency of Plants with increased production to bring down substantial savings in the energy consumption and cost of production by ensuring reliable and sustained run of all the plants.
- The most common issue for Ammonia pumps is seal failure. To avoid breakdown of machinery, IoT system is installed at Ammonia Pumps area. To detect and mitigate this early requires understanding the root cause.
- To identify the root cause for failure, IoT system is used to identify if any changes in pumps rpm and failure. It will give alarm well in advance before failure of pump's plungers.
- The challenge to ensuring a successful predictive maintenance monitoring solution the IoT System work successfully.

Learning from CII Energy Award 2022 or any other award program:

- The objective of the awards is to recognise and Award “Excellence” in Energy Management in Industries and to facilitate sharing of information by excellent energy efficient companies.
- It is a sense of competition to motivate other plants to achieve excellence and establish futurity by pinpointing Carbon Emission Reduction initiatives focused on energy conservation.
- The Awards evaluate all kinds of new processes, products, services, technologies, and other types of innovations in a common platform. They also assess new ideas and approaches along with tangible results.

INTERNATIONAL CERTIFICATIONS

bsi.

Certificate of Registration

ENERGY MANAGEMENT SYSTEM - ISO 50001:2018

This is to certify that:

Indian Farmers Fertiliser Co-Operative Ltd.,
Phulpur Unit:
Ghrya Nagar,
Alahabad 212-404
Uttar Pradesh
India

Holds Certificate No: **ENMS 567240**
and operates an Energy Management System which complies with the requirements of ISO 50001:2018 for the following scope:

The Manufacture of Urea and Ammonia, Generation of Compressed Air, Generation of Steam through Coal Fired, Natural Gas Boilers and HRSGs, Generation of Power through Steam Turbine and Gas Turbine.

For and on behalf of BSI:

Chris Cheung, Head of Compliance & Risk - Asia Pacific

Original Registration Date: 2020-10-25
Latest Revision Date: 2023-12-18

Effective Date: 2020-12-18
Expiry Date: 2023-12-17

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Certificate of Registration

ENVIRONMENTAL MANAGEMENT SYSTEM - ISO 14001:2015

This is to certify that:

Indian Farmers Fertiliser Co-Operative Ltd.,
Phulpur Unit:
Ghrya Nagar,
Alahabad 212-404
Uttar Pradesh
India

Holds Certificate No: **EMS 534419**
and operates an Environmental Management System which complies with the requirements of ISO 14001:2015 for the following scope:

The Manufacture of Fertiliser Grade Urea (including activities at PWD Ltd Behru Farmers Training Institute, Ghyanagar Residential Township and Township Hospital).

For and on behalf of BSI:

Chris Cheung, Head of Compliance & Risk - Asia Pacific

Original Registration Date: 2020-07-18
Latest Revision Date: 2023-12-14

Effective Date: 2020-09-18
Expiry Date: 2023-09-18

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SGS

Certificate (H2205000428)

This is to certify that:

Indian Farmers Fertiliser Cooperative Limited
IFFCO Sadan, G-1, Dist. Conna, Saket Place, New Delhi - 110017, India

achieve the minimum requirements as defined under the:

IFA Protect & Sustain Product Stewardship Programme
To achieve the level of **IFA Product Stewardship Excellence**
Production of Neem Coated Urea Fertilizers/Production of DAP, NP, NPK, Water Soluble Fertilizers

Issued after successful audit on request of the office of BSI Ltd India Registrar on:

This certificate is valid from 01 July 2022 until 01 July 2028
Issue 1, Certified since 01 July 2022

This is a multi-site certification.
Additional site details are listed on the subsequent page.

For and on behalf of SGS:

Chris Cheung, Head of Compliance & Risk - Asia Pacific

Original Registration Date: 2020-07-18
Latest Revision Date: 2023-12-14

Effective Date: 2020-09-18
Expiry Date: 2023-09-18

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bsi.

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2015

This is to certify that:

Indian Farmers Fertiliser Co-Operative Ltd.,
Phulpur Unit:
Ghrya Nagar,
Alahabad 212-404
Uttar Pradesh
India

Holds Certificate No: **FM 534418**
and operates a Quality Management System which complies with the requirements of ISO 9001:2015 for the following scope:

The Manufacture and Supply of Fertiliser Grade Urea.

For and on behalf of BSI:

Chris Cheung, Head of Compliance & Risk - Asia Pacific

Original Registration Date: 2020-05-18
Latest Revision Date: 2023-12-14

Effective Date: 2020-05-18
Expiry Date: 2023-05-18

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Certificate of Registration

OCCUPATIONAL HEALTH & SAFETY MANAGEMENT SYSTEM - ISO 45001:2018

This is to certify that:

Indian Farmers Fertiliser Co-Operative Ltd.,
Phulpur Unit:
Ghrya Nagar,
Alahabad 212-404
Uttar Pradesh
India

Holds Certificate No: **OHS 582315**
and operates an Occupational Health & Safety Management System which complies with the requirements of ISO 45001:2018 for the following scope:

The Manufacture of Urea.

For and on behalf of BSI:

Chris Cheung, Head of Compliance & Risk - Asia Pacific

Original Registration Date: 2017-12-02
Latest Revision Date: 2023-12-14

Effective Date: 2020-12-02
Expiry Date: 2023-12-01

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SGS

Certificate (H2205000428), continued

This is to certify that:

Indian Farmers Fertiliser Cooperative Limited
IFFCO Sadan, G-1, Dist. Conna, Saket Place, New Delhi - 110017, India

achieve the minimum requirements as defined under the:

IFA Protect & Sustain Product Stewardship Programme
To achieve the level of **IFA Product Stewardship Excellence**
Production of Neem Coated Urea Fertilizers/Production of DAP, NP, NPK, Water Soluble Fertilizers

Issued after successful audit on request of the office of BSI Ltd India Registrar on:

This certificate is valid from 01 July 2022 until 01 July 2028
Issue 1, Certified since 01 July 2022

This is a multi-site certification.
Additional site details are listed on the subsequent page.

For and on behalf of SGS:

Chris Cheung, Head of Compliance & Risk - Asia Pacific

Original Registration Date: 2020-07-18
Latest Revision Date: 2023-12-14

Effective Date: 2020-09-18
Expiry Date: 2023-09-18

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Awards & Recognition



23rd CII National Award for Phulpur Unit-I in 2022



23rd CII National Award for Phulpur Unit-II in 2022



Certificate of Appreciation Under PAT Cycle -II



"National Energy Conservation Awards-2020"



FAI Best Production Performance Award-2020



22nd CII National Award for Phulpur in 2021



Greentech Energy Conservation Award - 2021



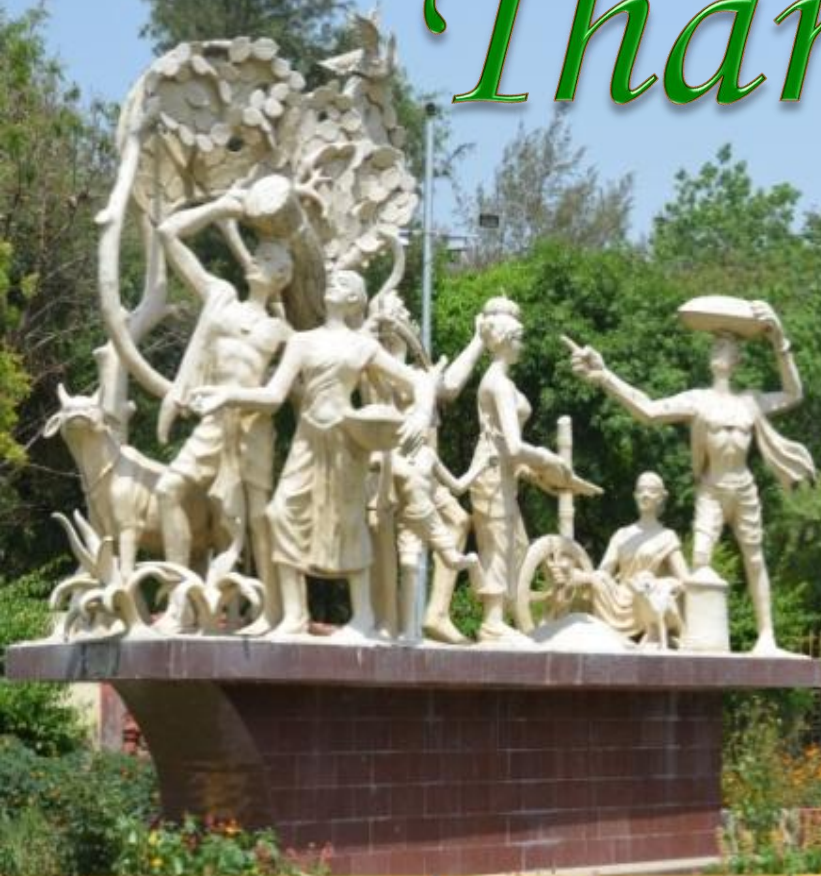
Platinum Award-Grow Care Energy Conservation 2021



Indian National Suggestion Schemes' Association (INSSAN) Award



Thank You..



OFFICE 50 डफरकी फूलपुर
टि.उ.न.शि.प. विद्यालय
गो.प.स. - 4

Team Member:

S.K.Janghel (9410499505)

T.K.Singha (9112580296)

Ashutosh Choubey (7024773154)