

25th National Award for Excellence in Energy Management - 2024

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Presented By: Indian Farmers Fertiliser Cooperative Ltd. Phulpur- II Unit 10th – 12th September, 2024

IFFCO: At a Glance

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

19500

DAP

- 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 ₂ O ₅ '	: 17.2
WSFs	: 0.15
Zinc Sulphate Monohydrate	: 0.30

IFFCO Nano Urea Daily Capacity Kalol: 1.5 Lakhs bottles Aonla: 2.0 Lakhs bottles Phulpur: 2.0 Lakhs bottles **IFFCO Nano DAP Daily Capacity** Kalol: 2.0 Lakhs bottles





IFFCO Phulpur Unit-II : Profile

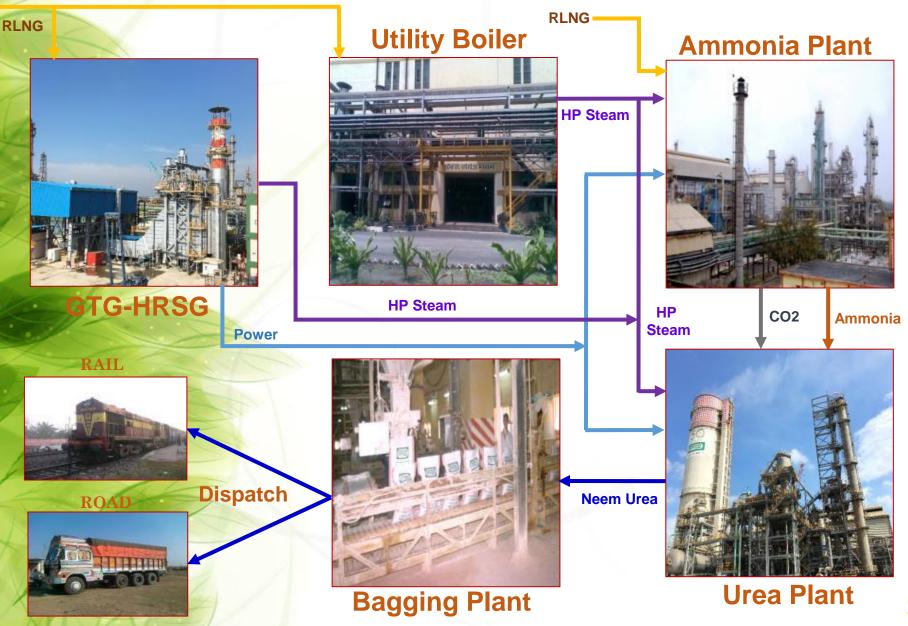


Plant	Ammonia	Urea
Process Licenser	Haldor Topsoe, Denmark	Snamprogetti, Italy
Commissioned	December	, 1997
Daily Capacity (MTPD)	1740	3030
Annual Capacity (Lakhs MT)	5.7	10.0
Till Date Production (Lakhs MT)	147	256



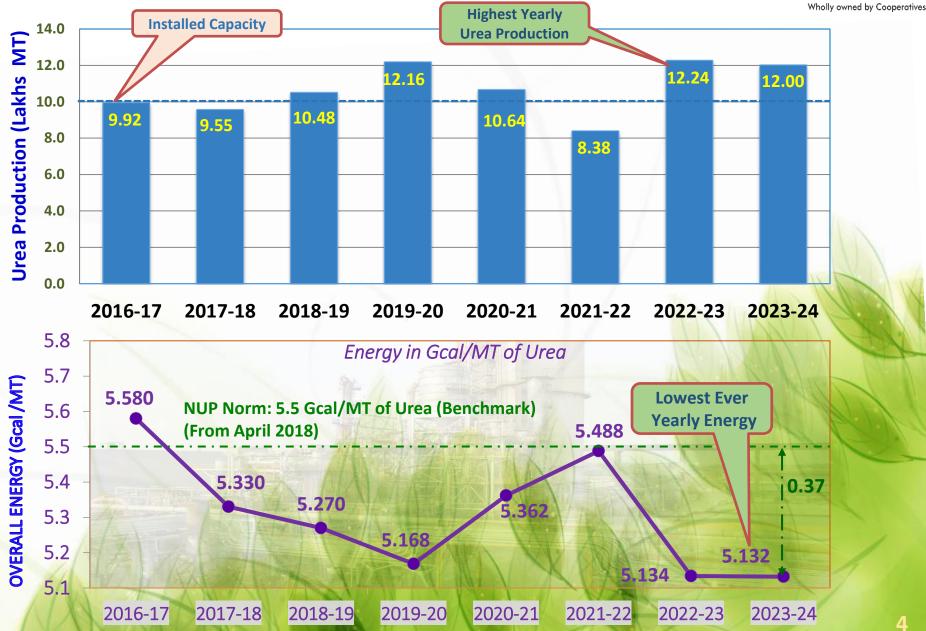
IFFCO Phulpur Unit-II : Production Outline





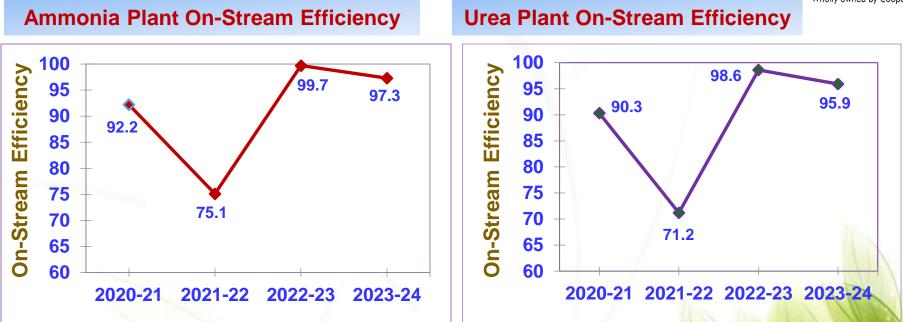
Phulpur-II: Production and Energy Performance





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 2023-24, Plant was running efficiently resulting lowest energy records. The onstream efficiency during the year 2023-24, for Ammonia and Urea plant was 97.3 % and 95.9 %, respectively.

- <u>Poor Reliability of Plant & Equipment leads to:</u>
 - ↑ Duration of Downtime days
 ↓ Productivity

↑ No. of Downtimes
↓ Productivity / Energy Efficiency

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



Specific Thermal Energy (Gcal/MT)	5.359	5.478	5.120	5.126			Specific Electrical Energy (kWh/MT)	0.96		.32	.76	2.35	
List of	Encon P	rojects	Planned	(2024-2	25)								
Energ	y Conserv	ation Mea	sures Plan	ned in 202	24-25			l Thermal Million Kca	l)	Investme (Rs. Millie		Estim Payback (
cast iro		Air Pref al fin type at				-	11	484.0		160.0)	30	.0
(Revam	ping of	f Ammo existing additiona	g 07 N	os. Cell			22	688.0		170.0)	35	.2
	e to avoid nia-II Plan	l Reformi It	ng Unit T	ripping (IS-1) ir	ו	22	200.0		0.05		0.0)2

Major Energy Conservation Measures in Phulpur-II Unit in the year 2023-24



Investment (Rs. Million)	Electrical Savings (kWh)	Thermal Savings (Million Kcal)	Saving (Rs. Millions)	Pay Back (Month)
8.2	0	14800.0	37.82	2.6
0.0	0.0	177271.0	813.44	0.0
0.47	10950	0	0.13	43.4
0.18	23214	0	0.27	8.0
0.23	58035	0	0. 69	4.0
0.07	18571	0	0.22	3.8
0.11	27857	0	0.33	4.0
0.23	29018	0	0.34	8.1
	(Rs. Million) 8.2 0.0 0.47 0.47 0.18 0.23 0.07 0.11 0.11	(Rs. Million) kWh) 8.2 0 0.0 0.0 0.47 10950 0.18 23214 0.23 58035 0.07 18571 0.11 27857 0.23 29018	(Rs. Million)kWh)(Million Kcal)8.2014800.00.00.0177271.00.471095000.182321400.235803500.071857100.112785700.23290180	(Rs. Million)kWh)(Million Kcal)(Rs. Millions)8.2014800.037.820.00.0177271.0813.440.471095000.130.182321400.270.235803500.690.071857100.220.112785700.330.232901800.34

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



Name of Energy saving Projects	Investment (Rs. Million)	Electrical Savings (kWh)	Thermal Savings (Million Kcal)	Saving (Rs. 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	;	30024	0	0.39	14.9
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		20016	0	0.26	15.1
Replacement of 130 Nos 250 W HPMV Flood light fixture with 105 W LED Flood light fixture at Electrical and Mechanical Workshop		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		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		48610	0	0.63	6.6
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		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.		7148	0	0.09	46.9

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



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Name of Energy saving Projects	Investment (Rs. Millions)	Electrical Savings (kWh)	Thermal Savings (Million Kcal)	Saving (Rs. 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		0.0	13718.2	62.90	0.11
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	,	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		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		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		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		26077.0	0	0.52	4.9

CO2 Compressor overhauling and Seal replacement in 31 unit of Urea-II Plant



- > CO2 compressor used in Phulpur-II Urea Plant is centrifugal type.
- The compressor consists of two cases (LP & HP) driven by a steam turbine. A gear box is installed in between the two cases and used to increase the speed of the HP case rotor.
 <u>Problem faced:</u>
- High 3rd suction pressure was observed since January 2023.
- High Thrust bearing temperature in active side.

Based on above problem major overhauling was planned in short shutdown of April 2023.

- During shut down, all sealing labyrinths, Balance labyrinth, Impeller Eye Labyrinth clearances were checked and found upper limit. In, 1st and 3rd inter-stage labyrinth was found damage at parting plane.
- In, 2nd inter-stage labyrinth Bottom half was found missing. The missing labyrinth parts are found in bottom casing.

CO2 Compressor overhauling and Seal replacement in 31 unit of Urea-II Plant



- The diaphragm grooves of 1st, 2nd and 3rd interstage labyrinth found high due to erosion and loosening of seal. Rubbing marks/deep scoring on rotor at contact area of 1st, 2nd and 3rd interstage labyrinth was observed.
- During Shutdown, major overhauling of CO2 Compressor was done and 1st ,2nd and 3rd Interstage labyrinth was replaced. After shutdown, the specific steam consumption in CO2 Compressor Turbine is reduced.
- Annual savings come to 14800 Gcal and in terms of Rs. 378.2 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 2023-24, Phulpur-II Unit achieved lowest ever energy.
- Annual saving comes of 177271.4 Gcal and in terms of Rs. 8134.4 Lakhs.

Innovative way for On-line Revamping of old Urea-II Plant Cooling Tower in Phulpur-II Unit

- > The cooling Tower of Urea-II Plant consists of 5 cells with counter flow type.
- The hot water from the plant is distributed to the cells by means of concrete channels placed on an outside position.
- Fans are of axial type and provide the design cooling air delivery and they are directly coupled to the gear reducer.
- The distribution system on cells is of gravity type. On pipes are fitted with splash nozzles which provide the most complete breaking of water into small drops.
- Originally, Urea-II Cooling Tower had a conventional wooden structure which deteriorated over a period and has higher maintenance cost.
- Therefore, the original structure was revamped online without shutdown of the Urea-II plant with the latest Pultruded Fibre Reinforced Plastic (FRP) structure to increase reliability.



Innovative way for On-line Revamping of old Urea-II Plant Cooling Tower in Phulpur-II Unit

- The FRP structure has Lower maintenance cost and longer product life often equals lower overall costs.
- The Project was implemented successfully in running the plant without tripping of Urea –II Plant.
- After revamping, the Cooling Tower approach came down from 6.8 DegC to 5.2 DegC and the circulation of cooling water flow is also reduced.
- The specific steam consumption in CO2 Compressor Turbine in Urea-II Plant has been reduced.
- Annual saving comes of 7400.9 Gcal and in terms of Rs. 248.9 Lakhs. The investment was 677.5 Lakhs.







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Innovative way to change DM water Pump from Back Pressure Turbine Drive [|FFCO with 110 kW Motor drive in Ammonia-II Plant

- \geq 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.
- \geq DM water pumps are provided to pump DM water to the Deaerator after getting preheated in DM water preheater.
- P-4511 A is a Motor drive and P-4511 B is back pressure Turbine \geq Drive Pumps. But the Turbine drive pump (P-4511 B) was very old and inefficient.
- Steam consumption by the Turbine was on the higher side and frequent steam leaking was there.
- To reduce the energy consumption old back pressure Turbine is \succ replaced with Motor drive.
- Annual thermal saving is 13718.2 Gcal and in terms of Rs. 629.0 Lakhs. The investment in the scheme was 5.8 Lakhs.





Electrical Energy saving during 2023-24



Replacement of 100 Nos 70 W Well Glass type HPMV with 45 W highly efficient LED lamp fixture at Ammonia-II Gallery of Phulpur-II Unit

To reduce the energy consumption, 100 Nos 70 W Well Glass type HPMV with 45 W highly efficient LED lamp fixture at Ammonia-II Gallery of Phulpur-II Unit. Annual savings come to 10950 kWh.



Replacement of 20 Nos 400 W High Bay type HPMV with 135 W highly efficient LED lamp fixture at Gas Turbine Generator Area of Phulpur-II Unit

To reduce the energy consumption, 20 Nos 400 W High Bay type HPMV with 135 W highly efficient LED lamp fixture at Gas Turbine Generator Area of Phulpur-II Unit. Annual savings come to 23214 kWh.



Replacement of 25 Nos 400 W High Bay type HPMV with 135 W high efficient LED lamp fixture at Turbo Generator (TG-II) Area of Phulpur-II Unit

To reduce the energy consumption, 25 Nos 400 W High Bay type HPMV with 135 W highly efficient LED lamp fixture at Gas Turbine Generator Area of Phulpur-II Unit. Annual savings come to 58035 kWh.



Electrical Energy saving during 2023-24



Replacement of 08 Nos 400 W High Bay type HPMV with 135 W highly efficient LED lamp fixture at Pump House of Phulpur-II Unit

To reduce the energy consumption, 08 Nos 400 W High Bay type HPMV with 135 W highly efficient LED lamp fixture at Pump House of Phulpur-II Unit. Annual savings come to 18571 kWh.



Replacement of 12 Nos 400 W High Bay type HPMV with 135 W highly efficient LED lamp fixture at Compressor House (side of DG Set) in Offsite of Phulpur-II Unit

To reduce the energy consumption, 12 Nos 400 W High Bay type HPMV with 135 W highly efficient LED lamp fixture at Compressor House (side of DG Set) in Offsite of Phulpur-II Unit. Annual savings come to 27857 kWh.



Replacement of 25 Nos 400 W High Bay type HPMV with 135 W high efficient LED lamp fixture at BOP Power Plant of Phulpur-II Unit

To reduce the energy consumption, 25 Nos 400 W High Bay type HPMV with 135 W highly efficient LED lamp fixture at BOP Power Plant of Phulpur-II Unit. Annual savings come to 29018 kWh.



UTILISATIONS OF RENEWABLE ENERGY RESOURCES



itives



Roof of Central Canteen

Raw water Pump House

Bagging Top Floor

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. \geq
- The Solar Power Units are in continuous operation generating Electric Power there by reduction of CO2 emission. \geq
- Solar light installed at different locations inside the plant and as well as also township. \geq

Year	Technology (Electrical)	Type of Energy	Onsite / Offsite	Installed Capacity (MW)	Capacity addition (MW) after 2021	Generation (Million kWh)	% of purchased Electrical Energy	% of total Electrical power requirement
2021-22	Solar PV System	Solar Energy	Onsite	0.8	-	0.971	50.0	0.87
2022-23	Solar PV System	Solar Energy	Onsite	0.8	-	0.874	15.0	0.71
2023-24	Solar PV System	Solar Energy	Onsite	0.8	-	0.901	32.0	0.74







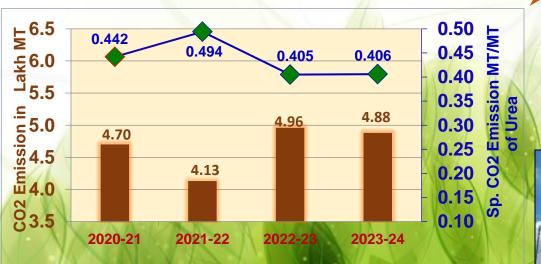
Bio-Methanation Plant

GHG EMISSION REDUCTION



Our endeavours for every year is to reduce specific energy consumption, which will also result in lesser CO2 emissions.

Parameters	Unit	2020-21	2021-22	2022-23	2023-24	
Scope 1 Emission	Kg CO2/Equivalent Product	441.1	491.7	401.6	404.6	
Scope 2 Emission	Kg CO2/Equivalent Product	0.6	1.6	3.2	1.6	
Scope 3 Emission	Kg CO2/Equivalent Product	0.308	0.348	0.267	0.259	
Total Emission	Kg CO2/Equivalent Product	442.0	493.7	405.1	406.5	



CARBON DI OXIDE RECOVERY (CDR) PLANT:

In Phulpur Unit, Carbon Di Oxide Recovery (CDR) Plant of 450 MTPD capacity installed 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.







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PURGE GAS RECOVERY (PGR) UNIT:

Purge gas from Ammonia-II plant is sent to PGR Unit to recover hydrogen. Then the recover hydrogen send back to 1st suction of Syn Gas Compressor. The tail gas generated at PGR Unit is used as fuel in primary reformer burners which in turn saves NG fuel and, also utilisation of waste.

YEAR	NAME OF THE FUEL	QUANTITY OF WASTE AS FUEL (MT)	HEAT VALUE (MILLION Kcal/year)
2020-21	Tail Gas	54648.262	209182.64
2021-22	Tail Gas	44505.206	170357.04
2022-23	Tail Gas	59123.279	226312.11
2023-24	Tail Gas	57826.045	221346.55

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 inhouse 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 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. Installation of ESP of Boiler no. 2 is under progress during the current financial year.

Installation of Ammonia Sensor and water curtain in Plants:



- To monitor ammonia leakage, ammonia sensor is installed at strategic locations of Ammonia-I, Urea-I and Ammonia Storage Tank area of IFFCO Phulpur-I 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.

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 supress 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.

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

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. It is also emphasized that for water conservation, Lake is being constructed at CORDET area.

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.

Green Supply Chain Management:

- Fly Ash Generated in Power Plant being gainfully utilized by Cement industries.
- The waste generated in Plants is disposed of to third party Vendors.
- The Main Raw material i.e. Natural Gas is being supplied by M/s GAS AUTHORITY OF INDIA LIMITED (M/s GAIL) through pipeline since 2006 and it is part of Green supply chain.

NET ZERO commitment



The energy sector is the source of around three-quarters of greenhouse gas emissions today and holds the key to averting the worst effects of climate change, perhaps the greatest challenge humankind has faced.

Key milestones:

Launching of IFFCO Nano Urea Liquid :

- IFFCO Nano Urea is a nanotechnology based revolutionary Agri input which provides nitrogen to plants.
- Nano Urea is a sustainable option for farmers towards smart agriculture and combat climate change.
- It promotes clean and green technology as its industrial production is neither energy intensive nor resource intensive.
- In addition to this, Nano urea Production is an eco-friendly energy saving process whereby the carbon footprint is significantly lower than in typical urea manufacturing.
- This product, unlike the traditional urea, is more efficient in terms of energy consumption and hence reduces emission, nitrogen use efficiency and is thus significantly reduces water pollution.
- Presently, IFFCO has three nano urea plants Kalol in Gujarat, Aonla and Phulpur in Uttar Pradesh. Installation of two other nano Urea Plants at Deoghar in Jharkhand and Bangalore in Karnataka is under progress.





EMS System and other requirements

Daily Monitoring System: \geq

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.

Various types of Reports generated are on daily/weekly/monthly/quarterly and yearly basis for Reporting & Monitoring of Energy Consumption.

Energy Conservation Cell: \geq

A core Energy conservation Cell and plant wise Energy Sub-cells Conservation alreadv existing are with representatives from different departments/sections related to the plant. The role of the energy conservation cells include monitoring of energy consumption, identification of areas and coordination of various activities for energy conservation.

Budget Allocation: \geq

Since energy saving is directly linked with the profitability the Unit, top Management is very supportive for ene conservation schemes. Based on cost benefit analysis of schemes, budget is allocated.



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Phulpur Unit-II						
	Performanc	e Report for	105.05.2024			
		ut Norms per				
	Overall inp	at norms per	NT or orea			
			ACTUAL			
nputs	Unit	Day	Month	Year		
RENKS	000 SM3	0.6098	0.6106	0.5929		
YOWER PURCHASED	KWH	0.3582	0.3296	1.2556		
45D	MT	0.0000	0.0000	0.0000		
JA.CC	MT	0.0203	0.0202	0.0206		
PURCHASED AMMONIA	MT	0.0000	0.0000	0.0000		
LAGS .	NO	22.2229	22.2228	22.2228		
NERGY	GCAL	5.1091	5.1163	5.1174		
	Inputs	Unit	Dev	Month	Year	
AMMONIA	Feed RLNG	0005M3/MT	0.6560	0.6566	0.6369	
	Fuel RLNG	0005M3/MT	0.5705	0.5705	0.3592	
	Total R-LNG	0005M3/MT	1.0263	1.0270	0.9960	
	HP STEAM IMP	MICMT	0.0000	0.0000	0.0000	
	HP STEAM EXP	MT/MT	1.5459	1,5560	1.5626	
	MP STEAM EXPORT	MT/MT	0.0872	0.0871	0.0874	
	LP STEAM EXPORT	MT/MT	0.0566	0.0569	0.0537	
	ENERGY (B.L)	GCAL/MT	7.1610	7.1601	7.1414	
	ENERGY (OVERALL)	GCAL/MT	7.3216	7.8214	7.8081	
IREA-1	AMMONIA	MT/MT	0.5700	0.5700	0.5700	
	HP STEAM (WITHOUT COR)	MT/MT	0.7884	0.7920	0.8015	
	HP STEAM (WITH CDR)	MT/MT	0.9064	0.9131	0.9194	
	LP Steam Export	MT/MT	0.0547	0.0384	0.0425	
	ENERGY B.L	GCAL/MT	4.8745	4.8751	4.8801	
	ENERGY (OVERALL)	GCAL/MT	5.1091	5.1168	5.1174	Avg. B.L.
						4.8746
JREA-II	AMMONIA	MT/MT	0.5700	0.5700	0.5700	4.8752
	HP STEAM (WITHOUT CDR)	MT/MT	0.7896	0.7925		4.8804
	HP STEAM (WITH CDR)	MT/MT	0.9066	0.9134	0.9198	
	LP Steam Export ENERGY B.L	MT/MT	4.8747	0.0384	4.8807	
		GCAL/MT				
TRADE CONTRACTOR	ENERGY (OVERALL)	GCAL/MT	5,1091	5.1165	5.1174	
TEAM GENERATION	RUNG	0005M3/MT	0.0000	0.0000	0.0000	
	HP Steem Internal LP STEAM IMPORT	MT/MT MT/MT	0.0000	0.0000	0.0000	
	ENERGY (B.L)	GCAL/MT	0.0000	0.0000	0.0000	

Sample of Daily Performance Reports

							m	O-PHILPUR	INT							
							WDL/R	couchos a	e bekr							
Name (Calor (The Way)	-															
			h	pv-					Pu	pa-l			Deni (ft	ulpuel + III		
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Twoles intercorp		68			201			441			150					
tor favory Can (page Series	25	176		20		578	100	138		129		100	283	538	Shubben Debils / Reace to: High lowgy	Gal
118933	1281	18	170	247	127	594	1213	titt	7.01	1963	45	12	961	538		
11 (1) (1)	1721	78	170	2981	525	594	1907	119	7.01	365	68	10	567	538		
10,33	125	754	150	253	501	597	1235	110	731	255	480	01	951	512		
14 By 228	080	187	170	2201	125	594	1851	118	734	361	1872	\$10	92.5	1204		
Hayas	1815	18	1707	263	125	297	1227	1/8	155	383	1875	5/0	5911	532		
K By 23	081	776	175	2017	110	586	19121	118	734	259	18th	416	301	502		
1943	1254	772	176	2216	126	95	1953	1/5	123	2062	492	515	550	532		
7669 200 (21 475 Mg. 204	855	781	178	50	121	SBI	9656	188	128	2764	186	10	368.1	SM		
Ref: (00 (Rg. 30))	810	10	178	50	121	SBI	10051	110	325	2781	186	12	3981	538		
hang bida (ap. 200 h) Barth 201	400	184	tar	12hz	101	100	100	114	186	1940	480	1.0	38783	538		

Sample Weekly Energy 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.

			ALTINA IN	(MITPD)					CNER	STRONY	20MIL/	/9473		_		COP	NSUM	46416	JON P	,mire	MR				1.00	STEAM	N DOLLARS	arg	
DATE	AAABaa	AMERI 2	1014	UREA	URLA 2	TOTM.	8044R	41	PUB TOTAL	86.8.4	4.ML 1000	100		1	2	URLA	A LOUIS	10	10		1917	COR	TOTM.		SMIN 2	UPS UNLAS	UPD UPD A	1014	
41 1	1219.0	1941.4	1211.5	3184.0	3423.8	1/07.6	H	80	154	0	307	307	291	44	-21	79	110	0	30	-	D	10	201	15		14		42	1
at 1	1279.0	1941.3	1231.0	3286-0	3421.5	\$717.3	н	60	155		106	106	291	44	-30	78	308	ø	39		ø	28	264	13	5	12		30	
(1)	1271.0	1965.9	3236.4	2285-9	3423.7	5709.6	82	60	152		106	106	258	44	-21	78	309	0	19	2	0	29	258	13	5	13	6	37	
64	1267.0	1960.3	3226.9	2155.0	3482.5	5657.4	81	60	151		105	105	256	45	-21	73	309	0	18		0	28	256	15	6	11		39	
65 1	1271.0	1963.0	3233.6	2290-5	3449.2	5729.8	96	61.	157		107	107	254	45	-21	24	112	0	19	4	0	30	264	15	6	3.5	6	39	
66 1	1272.0	1963.6	3225.6	2296.4	3429-0	5715.4	53	64.	153		106	306	290	45	-20	77	310	0	18		0	28	260	3.4	7	12		40	
67 1	1267.0	1964.7	3231.3	3288-9	3451.3	5748.3	52	64	153		106	106	259	44	-30	77	110	0	18	2	0	28	259	15		12	6	39	
46 1	1267.0	1999.5	3226.2	3261.0	3424.6	5711.6	52	60	153		106	106	258	45	-30	37	208	0	18	2	0	28	258	15	5	12	6	30	
49 1	1267.0	1960.6	3227.6	3284.9	3425.1	5710.0	90	60	150	a	106	106	256	44	-48	75	110	ø	18	8	ø	28	256	14		13		42	
10 1	1268.0	1961.3	3228.8	3287.8	3433.2	\$739.0	80	61	151	a	100	106	257	44	-23	75	110	ø	18		Ð	28	287	14		13	7	40	
11 I	1268.0	1818.8	3227.7	3281.0	3430.8	3711.8	80	80	151		100	106	257	- 61	-23	78	113	ø	18		ø	28	217	15		12		38	
11 1	1279.0	1960.0	1211.5	3180.2	3441.6	1731.8	81	61.	152	•	106	106	258	45	-23	76	309	ø	18		ø	29	218	15		13		40	
13 1	1273.0	1941.1	3214.4	3190.8	3430.6	1711.4	87	61.	158	0	107	107	285	48	-32	73	113	0	19		ø	29	265	18		1.0	7	44	
54 5	1271.0	1961.5	1031.2	2283.2	3439.6	5731.8	83	61.	154		107	107	261	45	-21	75	115	0	19		0	29	264	15		12	6	40	
15 1	1272.0	1962.4	3234.2	2292.1	3438.4	\$739.5	81	61.	152		107	107	259	44	-21	75	118	0	19		0	29	259	12	6	12	6	45	
26 1	1271.0	1909.6	3240.4	2290.2	3445.5	5725.7	52	61.	153		107	107	290	44	-20	75	118	0	29		0	20	260	15	6	12		40	
17 1	1279.0	1909.6	3239.5	2276-6	3448.2	5726.8	52	68.	152		347	307	259	44	-21	75	313	0	19		0	28	259	15	7	3.5		30	
16 1	1272.0	1968.4	3239.5	3276-9	3436.3	5713.2	90	60	150		108	108	258	44	-32	75	309	0	1.8	4	0	29	258	3.4	7	12		45	
10 1	1276.0	1960.3	3234.3	3278.4	3449.4	\$737.8	90	61.	151		108	108	259	44	-43	76	113	0	18	5	0	29	299	13	7	1.0		30	
20 1	1275.0	1903.9	3233.5	3281.8	3428.1	5209.4	91	61	183		108	108	259	44	-30	37	208	0	18	8	0	28	299	13		12		36	
21 1	1219.0	1962.6	3233-0	3280-0	3444.5	5726.5	91	61	153		107	107	259	44	-30	75	209	ø	19		ø	28	259	15		12		38	
23 1	1268.0	1965.3	3233.8	3280.2	3430.0	1710.3	81	61	153	a	107	107	259	44	-30	78	309	ø	18		Ð	28	219	15		13		40	
23 3	1267.0	1947.2	3214.4	3183.0	3430.5	3712.3		80	150		107	107	256	44	-32	78	113	ø	18		Ð	28	236	13		12		33	
24 1	1268.0	1872.0	1239.5	3183.7	3434.4	1717.1		60	149		107	107	256	45	-23	73	115	ø	18	2	ø	28	255	13		14	7	40	
25 1	1268.0	1966.2	3234.0	2277.8	3446.5	5734.3		60	148		107	107	255	44	-23	75	118	0	18		0	28	215	15	5	14	7	42	
26 1	1272.0	1968.1	1239.5	2290.2	3446.5	\$726.7	17	61.	147		107	107	254	42	-22	75	309	0	18		0	28	254	15	6	1.0		45	
27 1	1267.0	1962.2	3234.5	2290-9	3433.4	5714.3	91	61.	151		106	106	250	43	-21	75	309	0	19	2	0	29	258	17	6	12		40	
28 1	1209.0	1967.2	3225.8	2296-8	3408.9	\$705.7	90	60	150		306	306	157	42	-29	60	113		18	1	0	23	82	17	5	1.0	6	45	
29 1	1279.0	1967.0	3237.5	3294.2	3421.4	5705.6	- 90	60	150		347	387	257	41	-19	66	306		18	2	0	28	257	12	5	1.3	6	42	

Sample of Daily Steam Balance Reports

COMPANY ADAL THE STRAM BALL



EMS System and other requirements



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 2023 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

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This is to certify that:

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Awards & Recognition





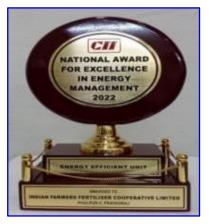
24th CII Excellence Energy Efficiency Award for Phulpur Unit-II in 2023



24th CII Energy Efficient Award for Phulpur Unit-I in 2023



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



Greentech Energy Conservation Award -2021



Platinum Award- Grow Care Energy Conservation 2021





Indian National Suggestion Schemes' Association (INSSAN) Award

