



Gurgaon Haryana

CII National Award for Excellence in Energy Management-2022

Presenter :

Virender Taneja


Vivek Pandey

Ashish Meher

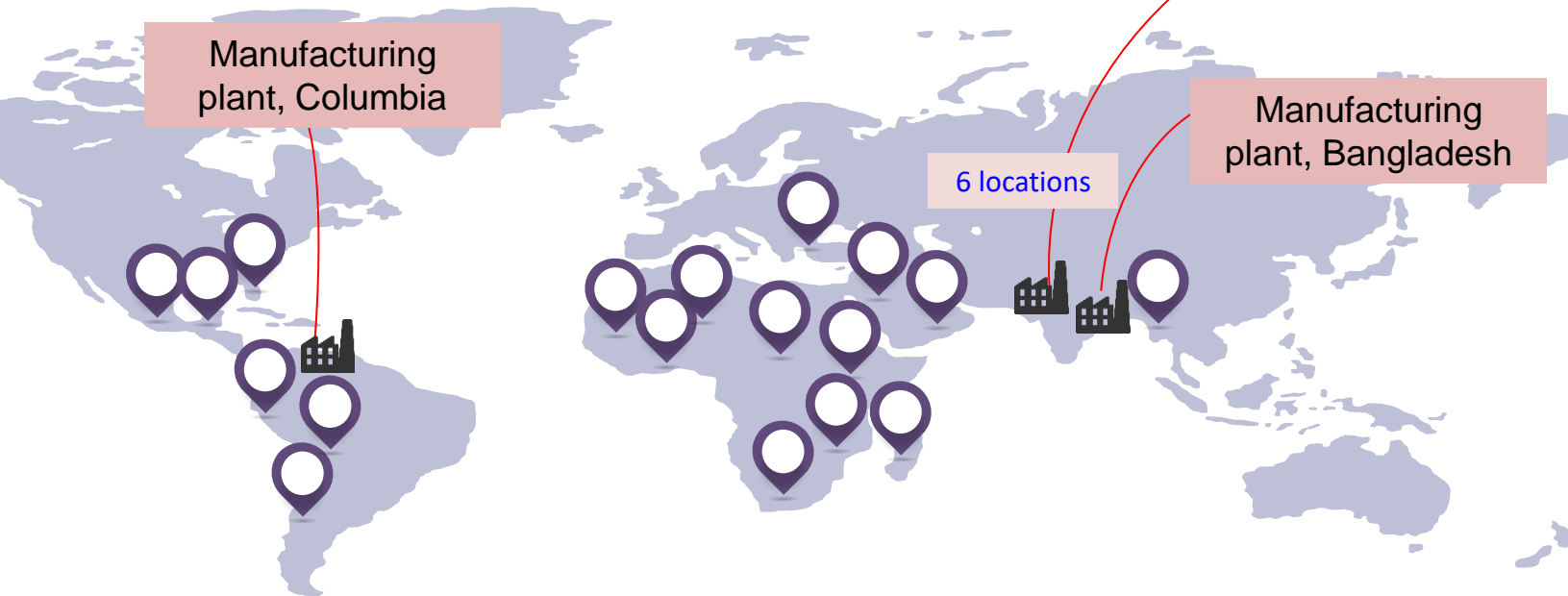
10/08/22

01	• Introduction & Energy Management
02	• Plant Energy Data
03	• ENCON Projects(2018-22)
04	• Innovative Ideas
05	• Renewable & Green Energy & Waste as Fuel
06	• Water & GHG Emission
07	• Green Supply Chain
08	• Employee Engagement

- Registered & Corporate Offices
- 6 –Plants- India
- 1 –Global Part Center
- 2 – R&D Center
- 5-Zonal Offices
- 22-Regional Offices
- Dealers
- Stockists
- Spares & Service Centers
- Authorized Reps of Dirs
- Mobile Station
- Service Har Jagah

 Manufacturing plant (M)

 Market Presence (P)



- | | | | | | |
|--------------|-----------------------|----------------------|--------------|-----------------|----------------------------|
| 1.India | 8.Guatemala | 15.El Salvador | 22. Ethiopia | 29.Djibouti | 36.Democratic Rep of Congo |
| 2.Sri Lanka | 9.Honduras | 16.Argentina | 23.Uganda | 30.Zambia | 37.Madagascar |
| 3.Bangladesh | 10.Nicaragua | 17.Guyana | 24.Nigeria | 31.Mauritius | 38.Egypt |
| 4. Nepal | 11.Costa Rica | 18.Trinidad & Tobago | 25.Ghana | 32.Kuwait | 39.Liberia |
| 5. Myanmar | 12.Panama | 19.Mexico | 26.Turkey | 33.Burkina Faso | 40.Guinea |
| 6. Colombia | 13.Bolivia | 20.Kenya | 27.Dubai | 34.Ivory Coast | 41.Ecuador |
| 7. Peru | 14.Dominican Republic | 21.Tanzania | 28.Iran | 35.Angola | 42.Mozambique |

Indian Manufacturing facilities

- Dharuhera Plant HM1D
69 km from Delhi
In Haryana
(1st Plant, Year 1984)
- Gurgaon Plant HM2G 37th Km from Delhi in Haryana (2nd Plant , Year 1997)**
- Haridwar Plant HM3H 250 km from Delhi in Uttarakhand (3rd Plant, Year 2008)
- Neemrana Plant HM4N & Global Parts Center (HP3N) 120 km from Delhi In Rajasthan (Year 2014)
- Vadodara Plant 953 km from Delhi In Gujarat (5th Plant , year 2017)
- HM6C, 2144 Km from Delhi in Andhra Pradesh Year 2019

Hero is having 9000+ touch points across India. It includes plants, zonal offices, service center & mobile service. We have 6 manufacturing plants in India, 2 in overseas market & is present in 42 countries.



Current Domestic Models

Motorcycle

200 CC

125 CC

100 CC



Scooter

125 CC

110 CC

100 CC



Current Export Model

Motorcycle

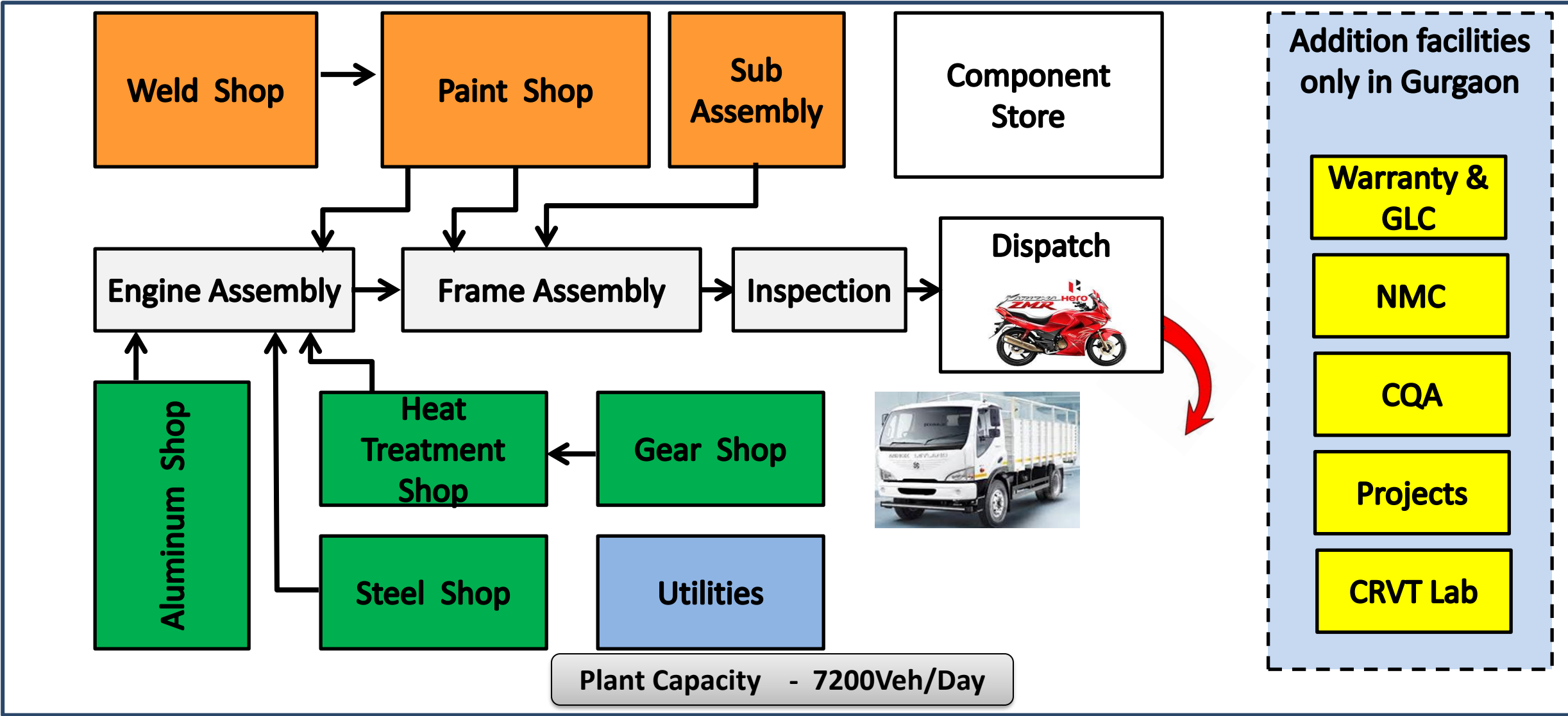
Scooter

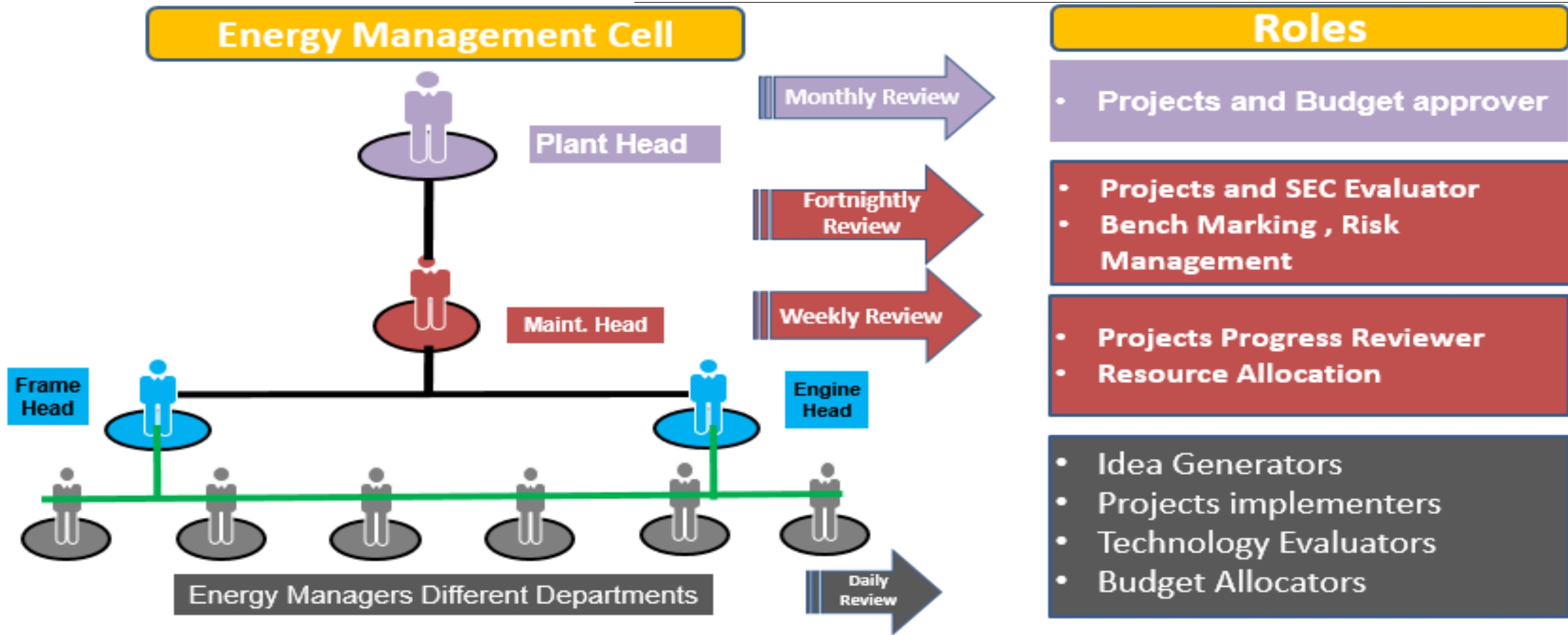


ISMART 110

HM2G is Multi Model Flexible factory, and currently all Premium & Scooter models are exclusively manufactured in this facility of HMCL

Introduction- Plant manufacturing Process



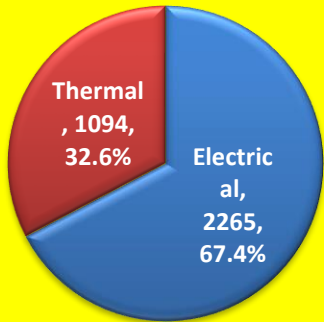


Dedicated Energy Management Cell and defined their roles & responsibilities.

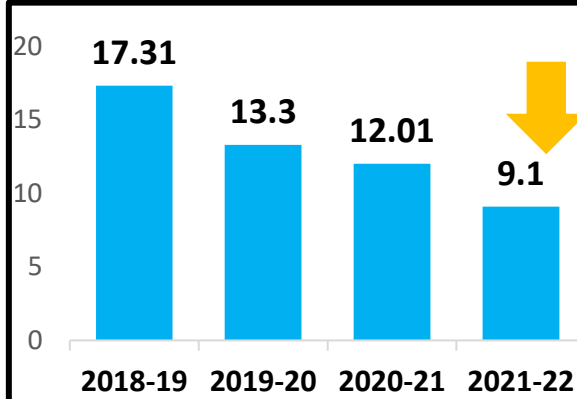
Framed Plant Energy conservation Policy from the environment policy.

Year wise Plant Energy consumption Trend

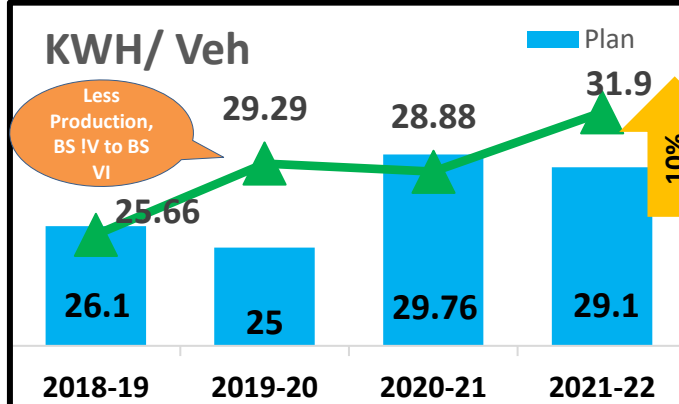
Energy (MToE) 2021-22



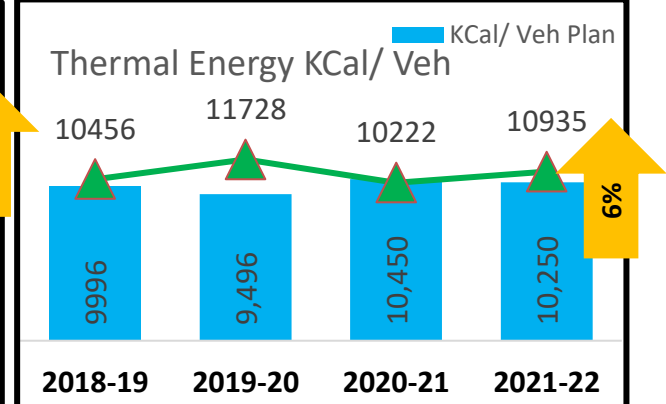
Production (Lacs.)



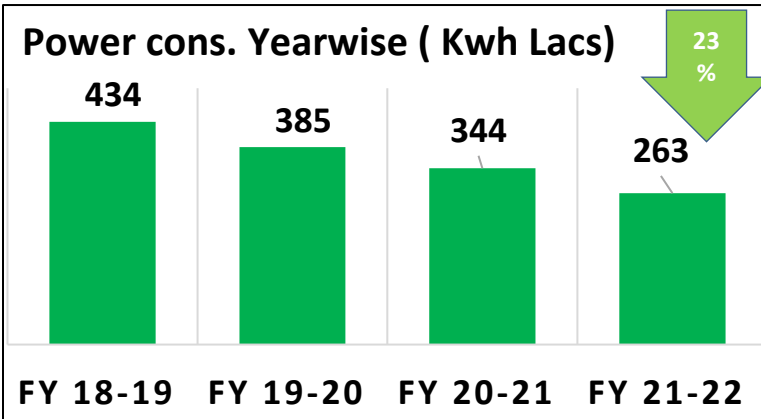
Electrical SEC



Thermal SEC

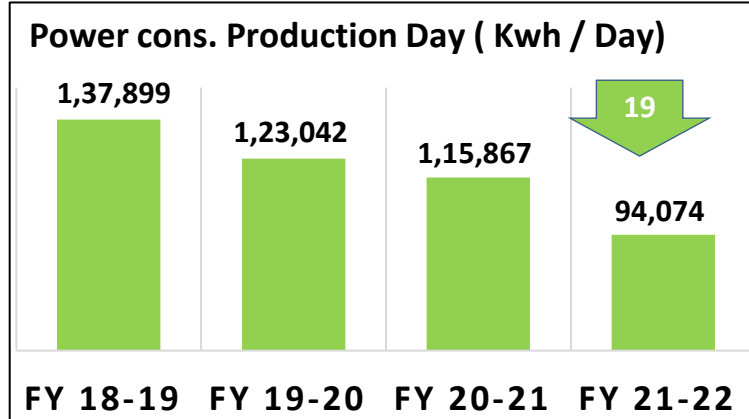


Comm. KWH consumption trend

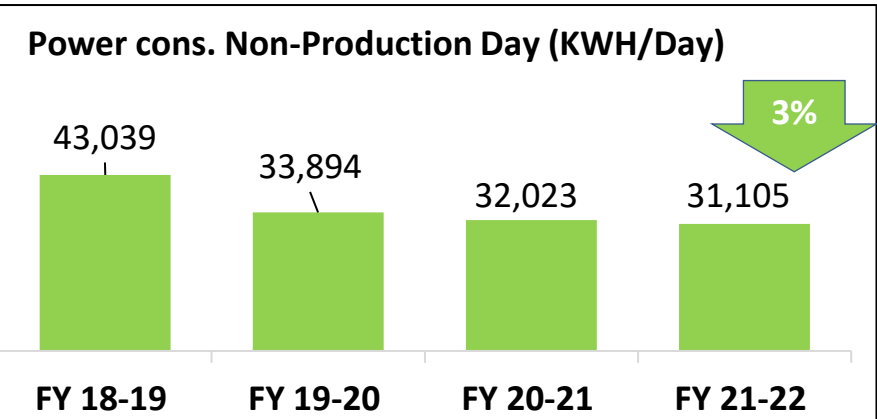


11 % reduction in comm. kwh

Energy consumption trend of Production in Non production Days

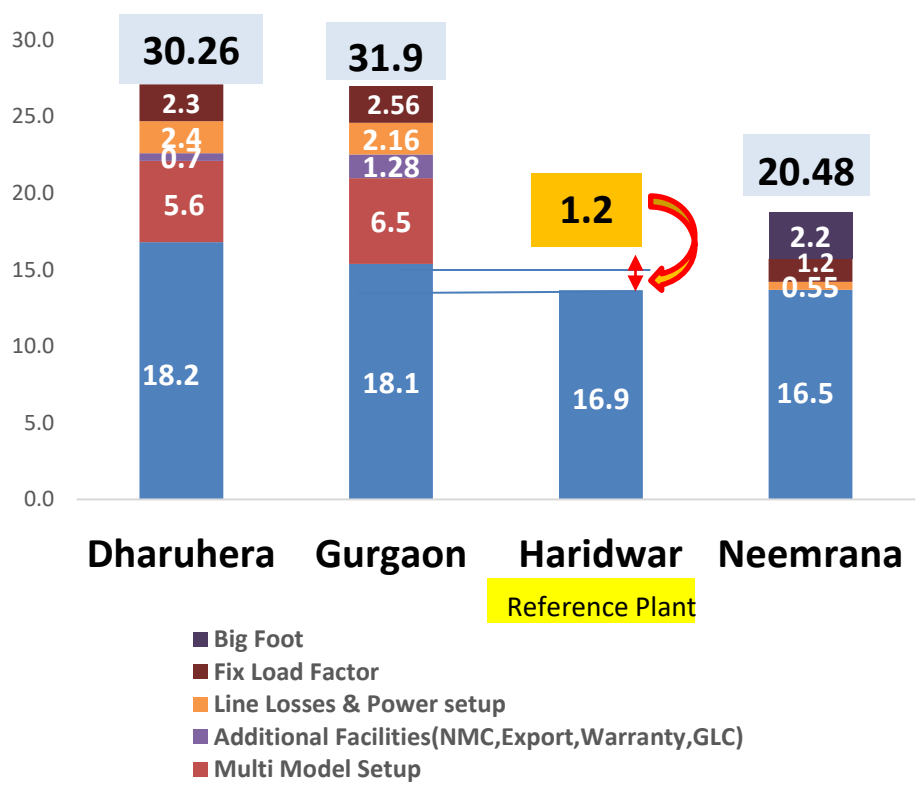


6% & 5% reduction in kwh per Production & Non Production Day respectively



Internal Bench Marking (KWH/Veh)

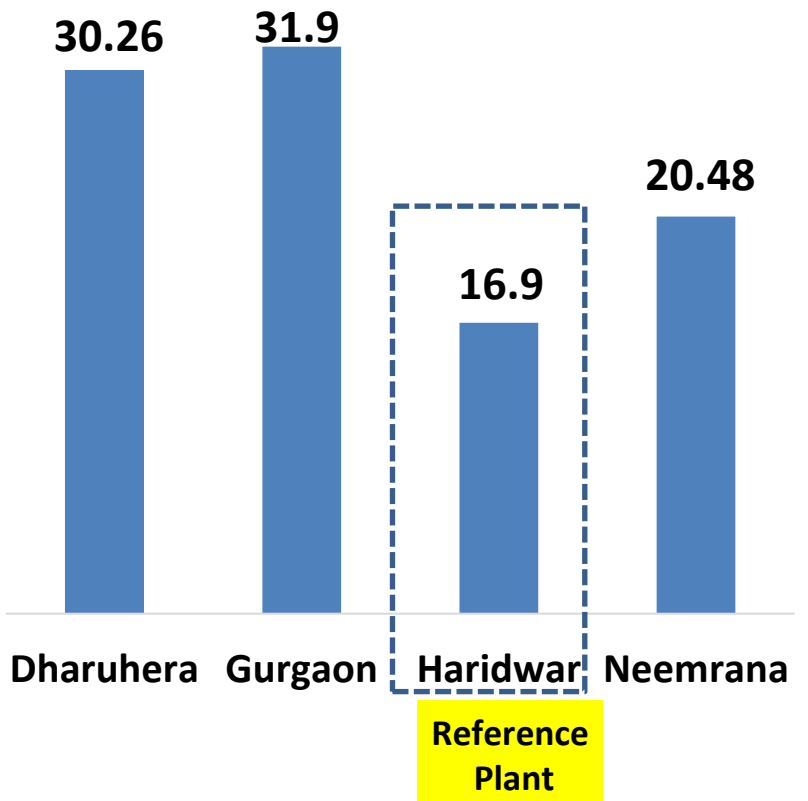
*Data 2021-22



Bench marking Done & found 1.6 kwh/Veh. is the gap w.r.t to Reference Plant.

Internal Bench Marking (KWH/Veh)

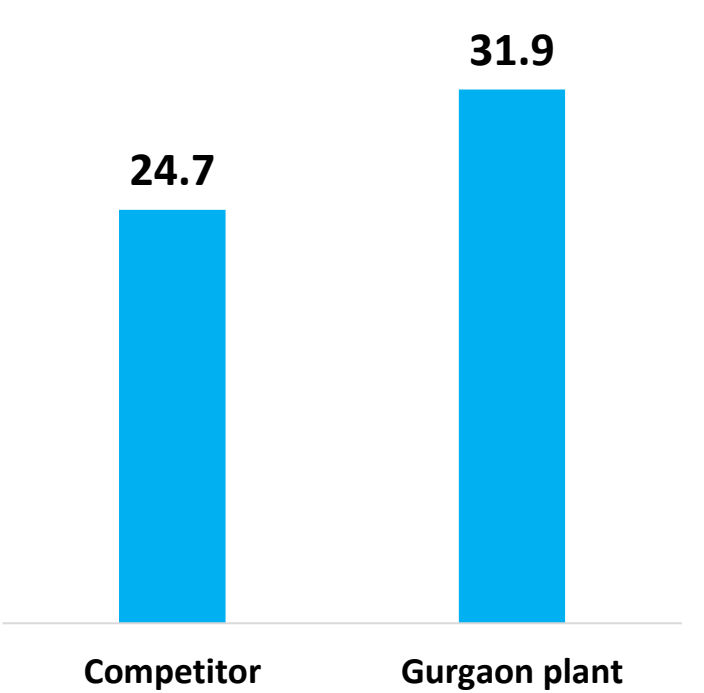
*Data 2021-22



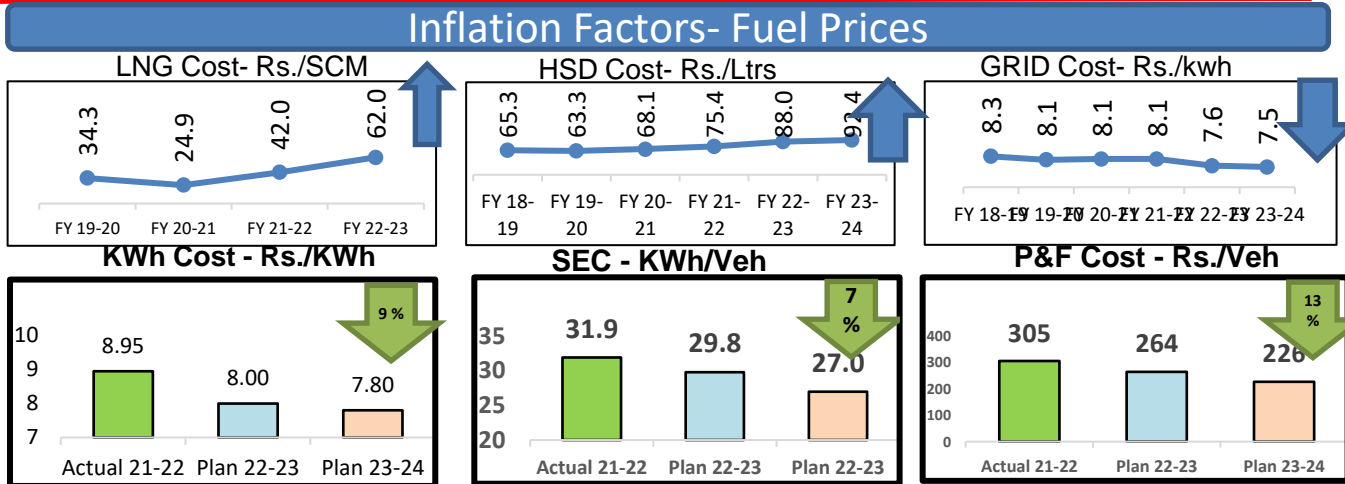
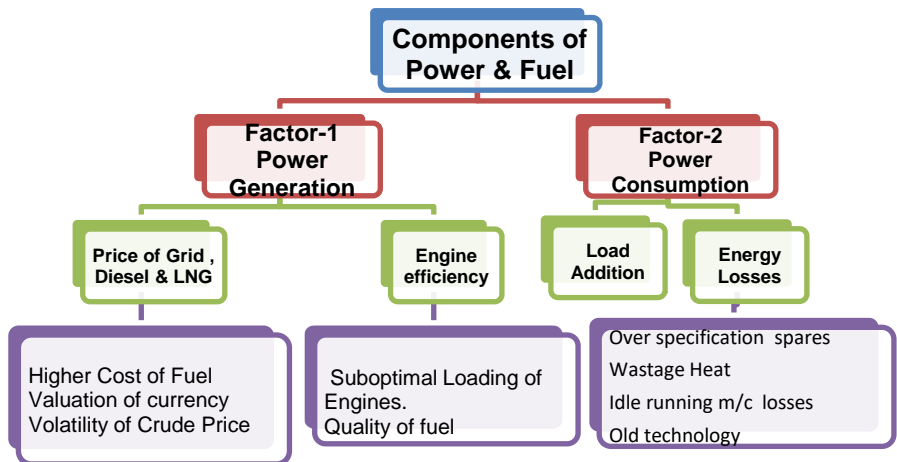
Haridwar Plant is taken as reference Plant for Internal Bench Marking

National Bench Marking(kwh/Veh)

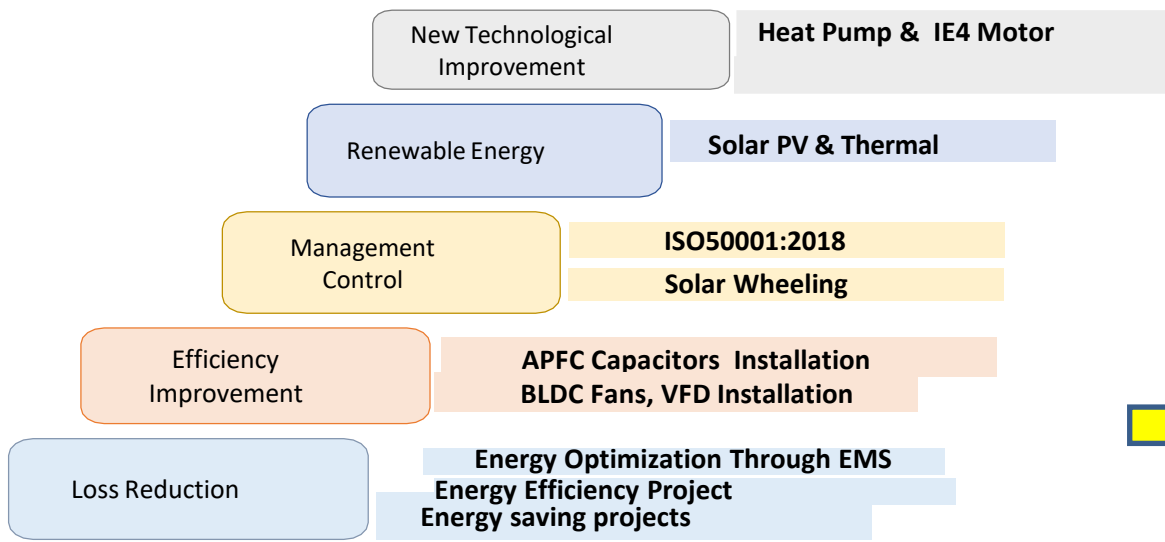
■ kwh/Veh



Strategic Approach @ Gurgaon Plant :



Methodology For Power and Fuel Consumption Reduction

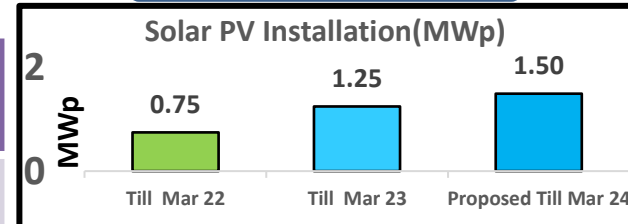


GRID utilization will reduce Rs/KWh to 7.8

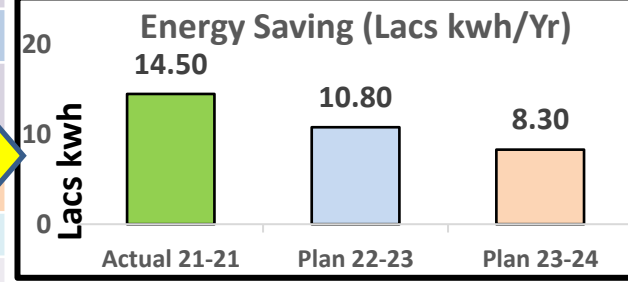
Energy Reduction Projects

Sr No	Methodology	Cumulative No of Projects(FY 22-24)	Cumulative Saving KWH/day
1	Technological Improvement	5	2166
2	Renewable Energy	1	833
3	Management Control	2	267
4	Efficiency improvement	4	1210
5	Loss Reduction	5	1500
Total		17	6076

Proposed Solar Installation



Proposed kwh Saving/Yr



Strategy to reduce Specific energy Consumption by 10% in coming 2 years

Energy Conservation projects 2018-21



Major Project 2018-19	Energy Saving (Lacs Kwh)	Cost Saving (Rs. In Lacs)	Remark
1-Air Cooled Energy Efficient Compressors in Utility	1.07	12.2	
2- Separation of Air Headers & added New air headers in compressed air lines	1.82		

25 Lacs Kwh Saved from 10 Major Energy Conservation Projects

Sr No	Major Project 2019-20	Energy Saving (Lacs Kwh)	Cost Saving (Rs. In Lacs)	Thermal Saving (in Kcal/Hr)	Remarks
1	Installation of 150KWp Rooftop Solar PV system in Employee Bike parking shed	2.18	26.16		
2	Replacement of 2 Nos. Old Compressor with Energy efficient IE4 Keaser Compressor	4.25	51.00		
3	Centralized FDV Online Monitoring & Control System for plant	7.20	86.40		Innovative Project-1
4	Replacement of 11 Nos. Conventional IE2 motors with IE4 motors in Utility area	0.47	5.66		
5	Replacement of conventional AC with Energy efficient Inverter type ACs (14 Nos.)	0.77	8.60		

17 Lacs Kwh Saved from 15 Major Energy Conservation Projects

Sr No	Energy Conservation projects 2020-21	Projected Kwh Savings	Projected INR	Thermal Saving	Remarks
1	Centralized Heat Pump System for Engine Assembly NGCT Washing Machines (3 Nos.) by Offsetting Electrical Heaters				
2	IE4 motor based Energy Efficient Air Compressor in the Utility Area	2.55	25.50		
3	Reduction of carbon footprint through Solar Thermal Collector system for AI Phase Washing M/Cs	0.900	9.00	300,000	Renewable Project
4	Conventional Motors replacement into Premium Efficiency IE4 Motors in Weld Shop & DG House (16 Nos)	0.350	3.50		
5	Electrical Agitator in Paint Shop for Paint mixing application instead of Pneumatic type	1.100	11.00		
6	Replacemnt of 55 KW Compressor Cooling Tower Pump with 32 KW Motor-pump.	0.973	9.73		
7	Compressor Cooling close ckt Pump replacement from 55 KW to 45 KW Motor-pump.	0.486	4.86		
8	Installed Air Cooled Compressors-1080 cfm. Stopping 1 Nos. Cooling Tower 200 TR-2 Nos	2.432	24.32		
9	Stopping HRU Compressor by utilizing Compressed air 5 bar from UTL Header.	0.213	2.13		
10	HSD Fork Lift Conversion to Battery Operated-1Nos	0.000	0.07	60,000	
11	Occupancy sensor for Lights-25 Nos	0.091	0.91		
12	Replacement of Old conventional split AC with 5 star rating AC-25 Nos	0.468	4.68		
13	Energy Efficient FDV Blower(Direct Coupled)-4 Nos	0.160	1.60		
14	80 W BLDC Fans in Place of 100 W Conventional Fans-100 Nos	0.097	0.97		

11 Lacs Kwh Saved from 14 Major Energy Conservation Projects

6-Heat Pump installatio	6	Replacement Of Solar Day Lighting system in the Plant main			
7- Heat Pipe at Gas Gen	7	Solar All-In-One Standlone LED Street lights (35 Nos.) from V			
8-Solar Thermal Dish fo	8	Bio Methane Plant for Canteen Application, LPG Cap: 20 Kg,			
9-Advance Energy Man	9	Replacement of HRU with Heat Pipe system for efficient tra			
Total Saving From Major	10	CED Oven Heat Recovery, Cap: 1 Lkcal/hr			
Other Misc. Project-12	11	Sludge Drying system for converting the wet sludge in to Po			
Total Saving	12	Replacement of Filter Press with Sludge Dewatering machin			
	13	Installation of STS for Engine Assamblies			
	13	Interlocking of Lights of Assembly Line with conveyor Panel			
	14	Idle tripping Ckt for Engine Plant machines-50 Nos			
	15	Installation of Motion Sensors for Lights & Fan-100 Nos			
Grand Total:					

Grand Total:			10.571	105.77	300,000	
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Energy Conservation projects 2021-22

Zero Cost /Low Cost Projects		Saving (in Lacs kWh) 2021-22	Annual Saving (in Rs Lacs)	Investment (Rs. Lac)	Payback Period
Description					(month)
1	Occupancy sensor for Lights-50 Nos	0.09	0.87	0.75	10
2	Reduction in Running of HRU Circulation motor by modification in control circuit & status through existing SCADA.-1 no.	0.24	2.28	2	11
3	Reduction in running of 1 FDV in DG House by modification in Ducting. (Operators Sitting Area)-1 nos.	0.3	2.85	2	8
4	Saving through Energy Management System -1 Lot	0.68	6.46	0	5
5	Saving through Resouse Conservation Team (RCT) Initiatives	3.65	34.675	0	0
6	Stopping Auxiliary Load after Commissioning of 66 KV Supply	3.6	34.2	0	0
Total		8.6	81.3	4.8	34.0

High Cost Projects		Description	Saving (in Lacs kWh) 2021-22	Annual Saving (in Rs Lacs)	Investment (Rs. Lac)	Payback Period
						(month)
1		Solar Plant Expansion (OBL Roof top Area) 250 KW	2	19	100	63

FY	No.Projects	Saving (Lacs. KWH)	Saving (Rs. Lacs)
2018-19	10	25	456
2019-20	15	17.4	242
2020-21	14	10.6	106
2021-22	14	14.5	137

Energy Conservation projects 2022-23 Plan



Encon 2022-23

S No	Description	Energy saving KWH/day	Saving (in Lacs kWh) 2022-23	Annual Saving (in Rs Lacs)	Investment (Rs. Lac)	Payback Period (month)
1	Solar Plant Expansion (OBL Roof top Area) 500 KW	1740	5.22	42.80	200	55
2	Replacement of Old conventional split AC with 5 star rating AC-15 Nos	100	0.2	1.64	10	48
3	PV Solar Plant for DG House auxiliaries 50 KWp feasibility study & commissioning	150	0.55	4.49	30	60
4	Capacitor Panels capacity increase of Substations			8.00	30	40
5	Pilot project of Lighting Management System	50	0.18	1.50	10	48
6	Occupancy sensor for Lights-30 Nos	25	0.09	0.75	0.75	10
7	Feasibility study of Heat Pump for Engines water heating	170	0.62	5.09	20	48
8	Saving through Energy Management System -1 Lot(Digitization Project) 1.Loss Reduction Through Daily Analysis 2.Non Working Days & C Shift Load optimization	250	0.68	5.576	40	5
9	Replacement of Conventional Fans with BLDC Fans	40	0.08	0.66	7	11
10	Saving through Resource Conservation Team (RCT) Initiatives	1200	4.38	35.92	0	0
11	Energy Saving from implementation of ISO50001:2018 EnMS	2000	6.0	48.0	5	2
	Total	5725	18.002	154.41	352.75	326.7

Planned Projects with Expected Saving 5725 Kwh /Day.



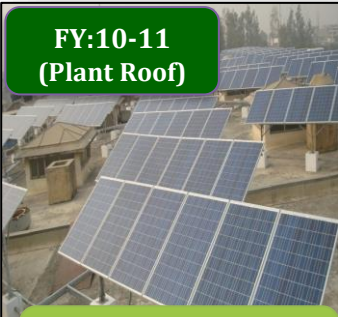
Major Energy Saving Projects Implemented (FY: 2021-22)

1- Rooftop Solar PV System of 250KWp in New OBL:

Present Condition

Installed Solar PV Capacity: 500 KWp

- In Core-1 Rooftop: 100 KWp
- In Despatch & NEP Rooftop: 250 KWp
- In Employee Bike Parking Shed: 150 KWp



FY:10-11
(Plant Roof)

100 KWp RCC
Mounted Solar PV



FY:15-16
(NEP & Dispatch
Shed)

250 KWp Roof-top
Solar PV System



FY:19-20
(Employee Bike
Parking Shed)

150 KWp Roof-top
Solar PV System

Methodology/Approach Adopted: -

- To reduce the Power generation cost & Carbon emission by installing rooftop Solar PV system.
- To enhance the percentage of Solar power generation for the plant in-order to meet the day-to-day energy demand.

Improvements Done/Kaizens done: -



- 250 KWp Solar PV in OBL Rooftop (FY:21-22): Completed
- 500 KWp Solar PV in OBL Rooftop (FY:22-23): In-Process
- 250 KWp Solar PV in OBL Rooftop (FY:23-24): Under Approval

Benefits/ Results:

Saving thrgh. 250 KWp Installed Solar PV plant:

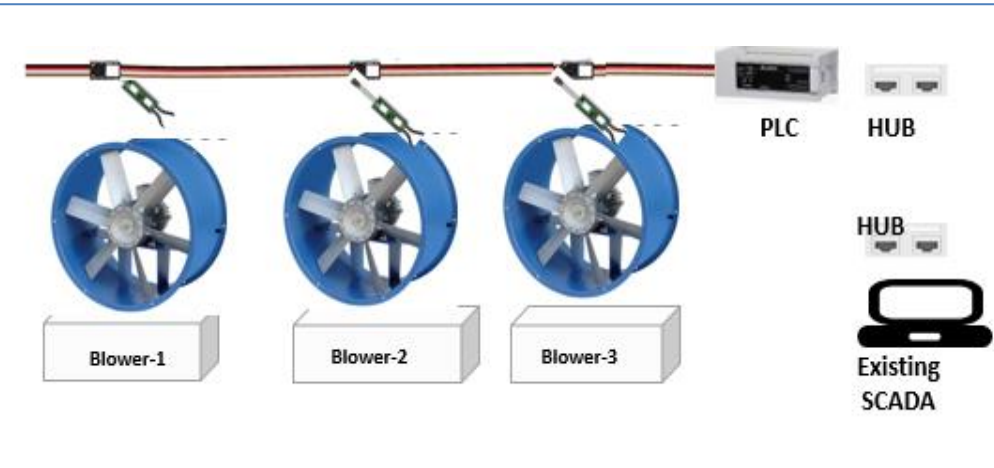
- Annual KWh Saving = 2.5 L KWh
- Annual CO2 Saving = 205 Tons

Completed in July21

Energy saved 2.5 Lacs Kwh /year

Major Energy Saving Projects Implemented (FY: 2021-22)

2- Remote Controlling of Plant Exhaust Blowers through Digitization:



Total Blowers-32 Nos. Investment-Rs.1.5 Lacs

SNo	Area	No. of VFD Panels installed
1	Gear Section	8
2	Steel phase	4
3	Weld shop	6
4	F/Assay-1,2	4
5	others	10

HAUST SCREEN - GraphWorX32 by Mitsubishi Electric Corporation
Tools Configure Help

ROOF EXHAUST BLOWERS 07-02-2022 01:16:27

	START / STOP	EXH.FAN 1	EXH.FAN 2	EXH.FAN 3	EXH.FAN 4	EXH.FAN 5	EXH.FAN 6	EXH.FAN 7	EXH.FAN 8
PANEL-1 NEW ALPHASE									
PANEL-2 GEAR SECTION									
PANEL-3 OLD AL PHASE									
PANEL-4 STEEL PHASE									
PANEL-5 STEEL PHASE									
SPARE									
SPARE									

From This Screen we switch ON /OFF the Exhaust Blowers of Plant as per requirement as well as Status of blower whether Running or Stop

BLOWERS WILL SWITCH-OFF AUTOMATICALLY AFTER 4HOUR OF CONTINUOUS RUN

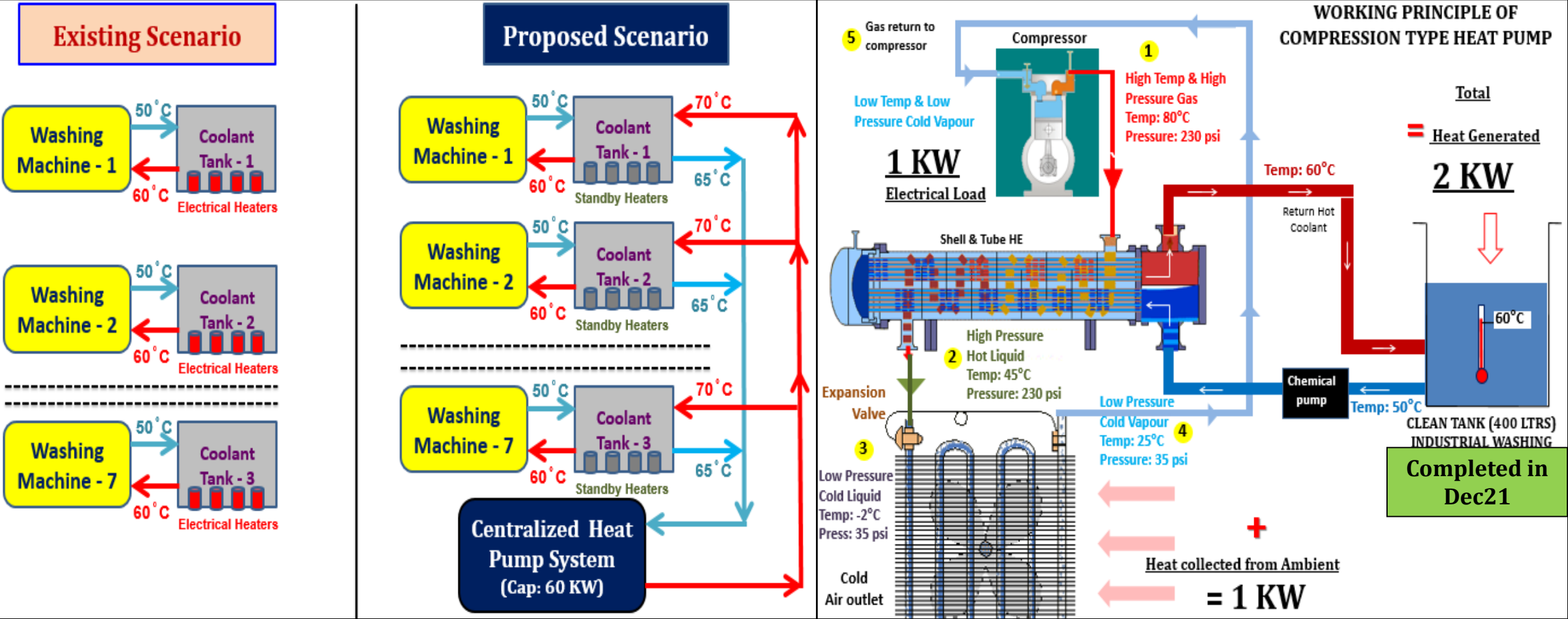
Back Master Page **ALL STOP** **ALL START** MAP-LAYOUT NETWORK MAINT.

Installation of VFD Panel on FDV Blowers of NSM Paint shop, Canteen , F/Assay-3 & , Weld shop.

Energy saved 1.75 Lacs Kwh /year

Major Energy Saving Projects Implemented (FY: 2021-22)

3- Energy Efficient Heat Pump System for NEP Washing M/Cs:

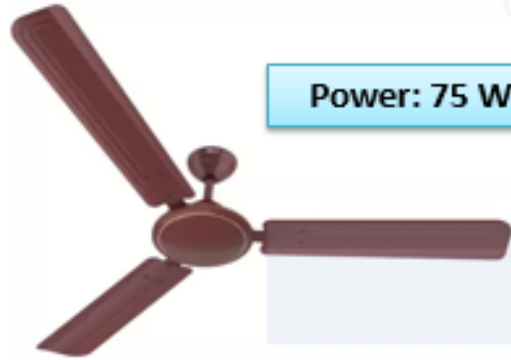


Energy saved 0.85 Lacs Kwh /year

Major Energy Saving Projects Implemented (FY: 2021-22)

4- Energy Efficient BLDC Fans in Canteen (120 Nos) & PE Floor(20 Nos):

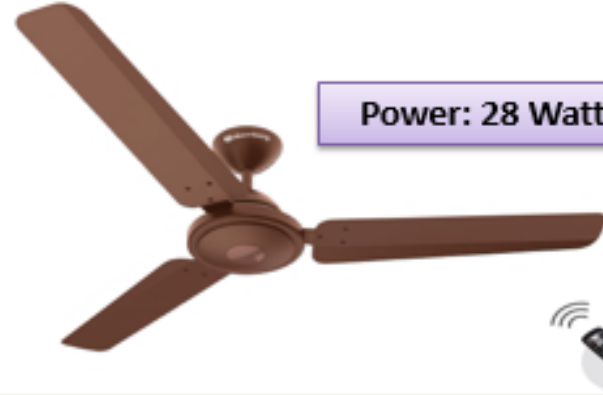
Conventional Fans



Power: 75 Watts

- Conventional Fans with Brushes for power transfer to rotor
- Electricity: Alternate Current Supply
- High Mechanical wear & tear due to present of Brushes
- High heating problems due to absent of commutator & brushes
- Shorter Life span (nearly 3,000 Hrs)
- Remote operation Not-available
- Warranty: 1 Year

Energy Efficient BLDC Fans



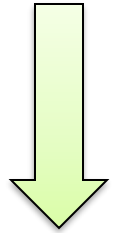
Power: 28 Watts

- Brush Less DC (BLDC) Fans with Electronics Rectifier circuit
- Electricity: Direct Current Supply
- No mechanical wear & tear due to absent of Brushes
- No heating problems due to absent of commutator & brushes
- Longer Life (more than 10,000 Hrs)
- Remote operation available
- Warranty: 3 Years

Completed in Nov21



Conventional Type Crompton Make Wall Mounted Office Fans (20 Nos)

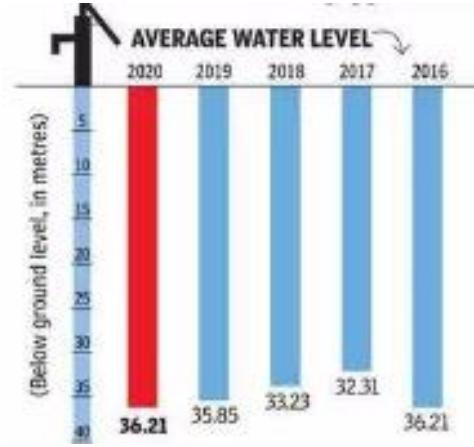
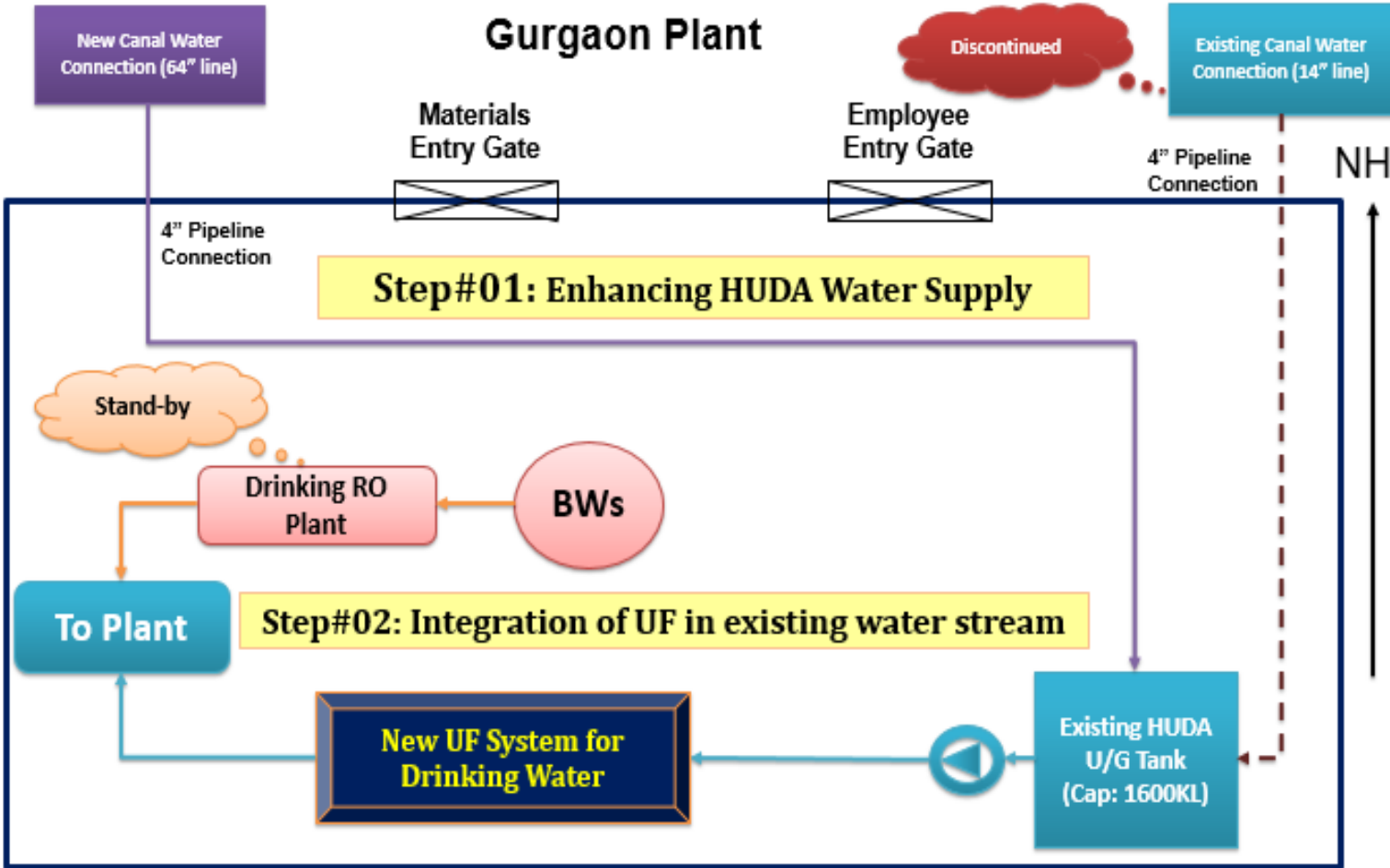


Energy Efficient BLDC Type Atomberg Make Wall Mounted Office Fans (20 Nos)

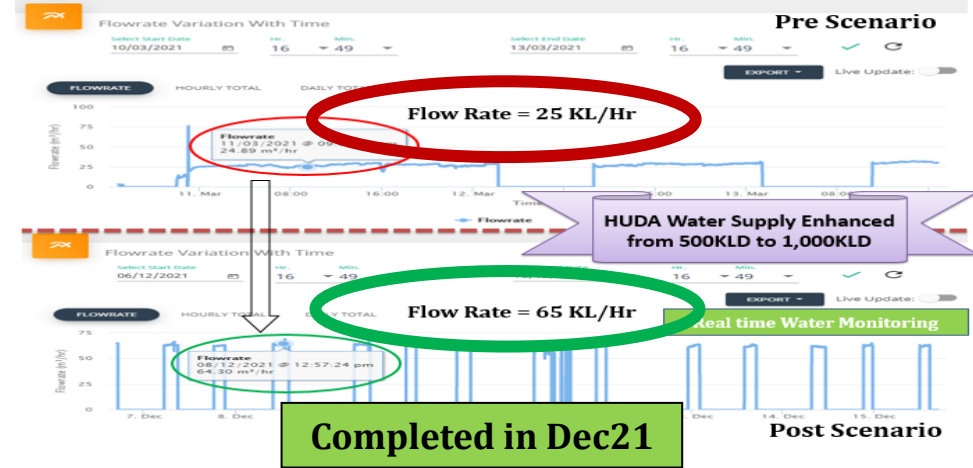
Energy saved 0.26 Lacs Kwh /year

Major Energy Saving Projects Implemented (FY: 2021-22)

5- Two Step Approach for Water Management System:



Gurugram Ground Water Table reduced to nearly 4 Mtrs in Last 3 Years



Water Saving of 2KL/Hr has been achieved by shifting the Drinking RO generation from the RO plant to the New UF Plant.

Major Energy Saving Projects Implemented (FY: 2021-22)

6- Water Based Fire Protection System for NSM Paint Shop:

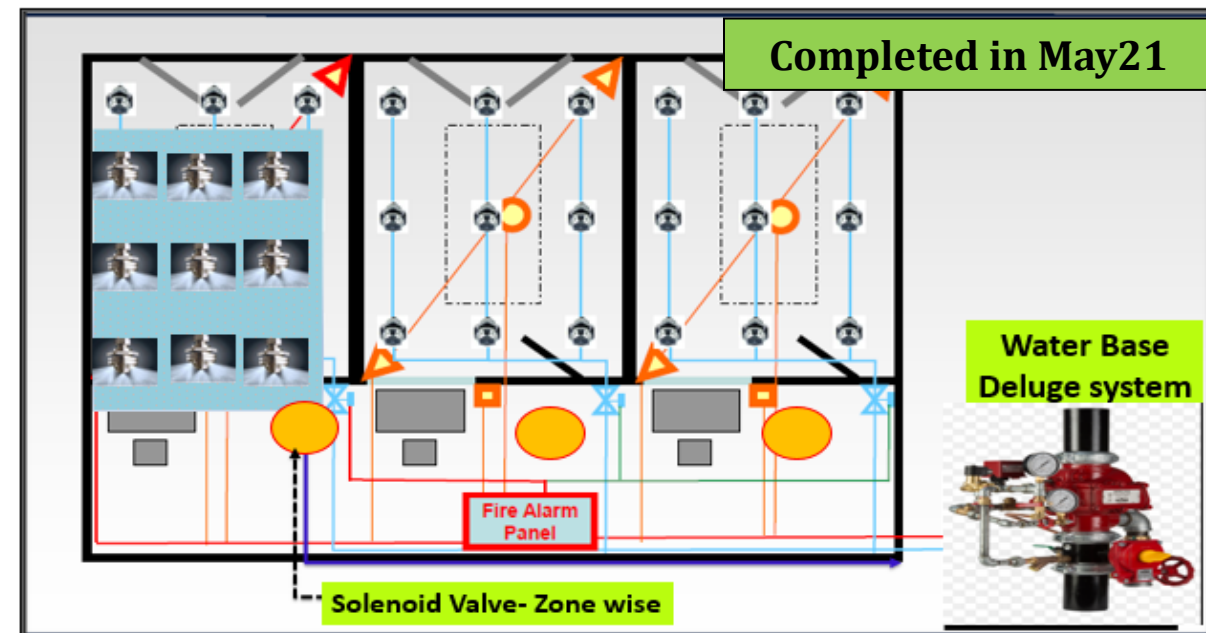
To enhance Human safety & upgrade the Fire extinguishing media (i.e.CO₂ to H₂O) by introducing water mist based Fire protection system in critical areas of Paint Shop.

Existing CO2 Fire Protection Model



CO2 is dumped in whole area, without targeting fire.

Proposed Deluge Water fire protection Model



Extinguishes targeted zone of Fire

Intangible Advantages:

- Suitable for human occupancy,Smoke reduction- Vapours deposition on burn fume particles
- Quick discharge time-20 sec,No or very less recurring cost of filling

Major Energy Saving Projects Implemented (FY: 2021-22)

7- MHE Tracking System :

Present Condition

- ❑ Total 120 MHE in Plant as Tow Truck , Fork Lift , Electric Pallet Truck
- ❑ Phase -1 , Only 30 No.s MHE have Live Monitoring in plant
- ❑ Lot Parameter can be viewed as Utilization , Battery Status , Next Service Due , Controller Temp , Battery running per Charge , Trend of its Usage & many more are not Monitored for these MHE
- ❑ Phase -2 Plan for increase the Qty 30 to 60 No.s

Benefits/ Results:

- ❑ Reliability of the system will improve
- ❑ Usage , Speed , Battery Condition & Fault Finding will be easy
- ❑ System will be digitization ready
- ❑ All Info Single Click away to Maint, User, PE Teams

Improvements Done/Kaizens done: -

Vehicle Number	Last tracked
<input type="checkbox"/> Tow Tug 24 PPC Engine	a few seconds ago
<input type="checkbox"/> Tow Tug 01 Stores	a few seconds ago
<input type="checkbox"/> Tow Tug 12 PPC Engine, shvehicles, vehicles3	a few seconds ago
<input type="checkbox"/> Tow Tug 22 PPC Engine, vehicles3	a few seconds ago

Dashboard for MHE Tracking System :-
MHE Tracked for Its Route , Usage , Battery Info , Controller Parameter , Running Hours etc



Intangible Advantages:

- ❑ Reliability of the system will improve, Usage , Speed , Battery Condition & Fault Finding will be easy
- ❑ System will be digitization ready ,All Info Single Click away to Maint, User, PE Teams

Major Energy Saving Projects Implemented (FY: 2021-22)

8- Goods Lift (Make-Kone) 24x7/Real Time /Live Monitoring :

Present Condition

- ❑ Goods Lift have Live Monitoring in plant is not available
- ❑ No Centralized Info available for Lifts
- ❑ Lot of Parameter can not be viewed as Utilization , Battery Status , Next Service Due , Controller Temp , Battery running per Charge , Trend of its Usage & many more are not Monitored for these Lift

Improvements Done/Kaizens done: -

Examples of key parameters monitored



Kone Goods Lift 24x7 Live Monitoring System :-

Lift Performance Tracked for Its Different Critical Parameter , Usage , Battery Info , Controller Parameter , Running Hours etc

Completed in Apr21

Benefits/ Results:

- ❑ Real Time display for Key Parameter as Lift Speed , Current drawn by Main Motor & Door , ARC Condition , Safety , Idle Time, Controller Temp etc .
- ❑ Notification, Report , Alarm generation for Maint, by Monitoring the Operation Parameter etc .

Intangible Advantages:

- ❑ Real Time display for Key Parameter as Lift Speed , Current drawn by Main Motor & Door , ARC Condition , Safety , Idle Time, Controller Temp etc

ENCON projects already Implemented-1



Solar Outdoor Street Light System



VAM for Plant Air Conditioning



Voltage regulators for lights



Real time capacitors



VFD for paint shop blowers



Advanced Solar Day Lighting System



Waste heat Recovery unit (HRU)



Trans vector Nozzle cleaning guns



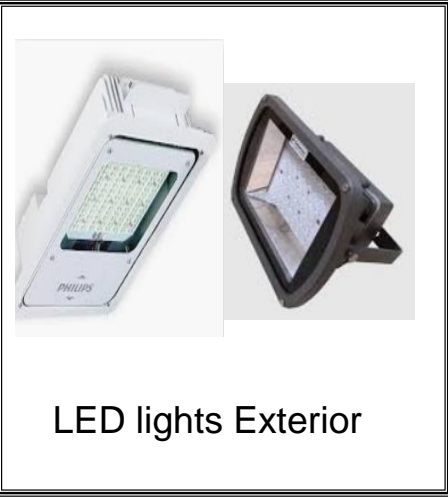
Usage of 5 ★ rated ACs



Hybrid Filters

Glimpses of various ENCON projects implemented till FY 2021.

ENCON projects already Implemented-2

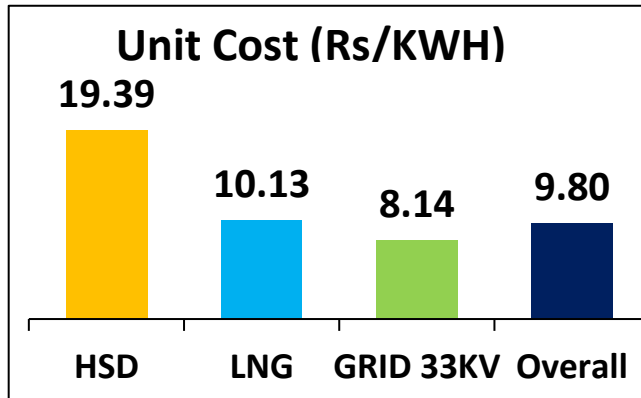
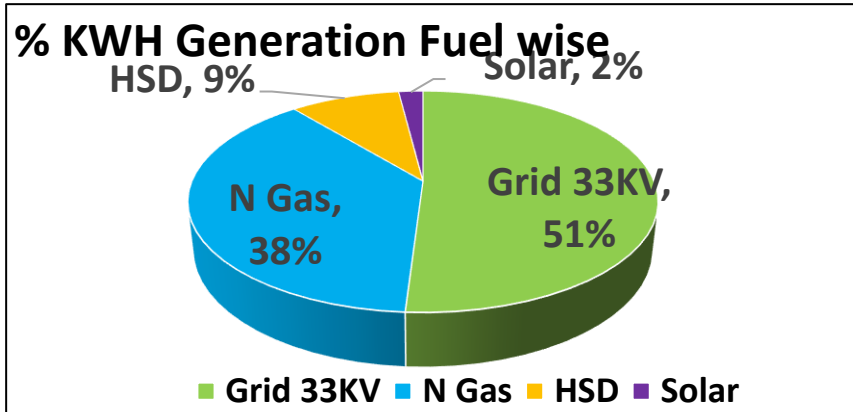


Glimpses of various ENCON projects implemented till FY 2021.

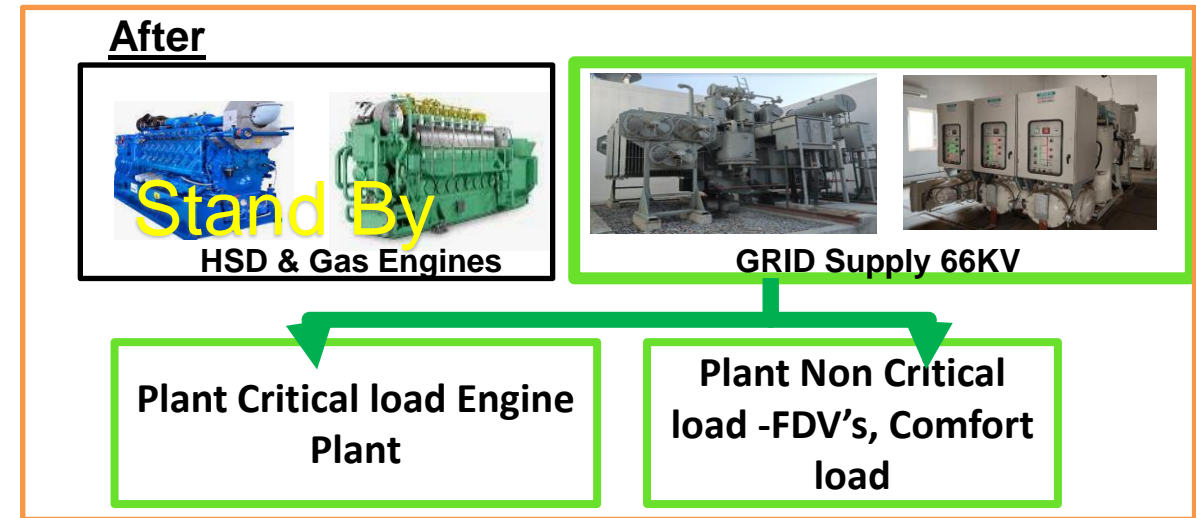
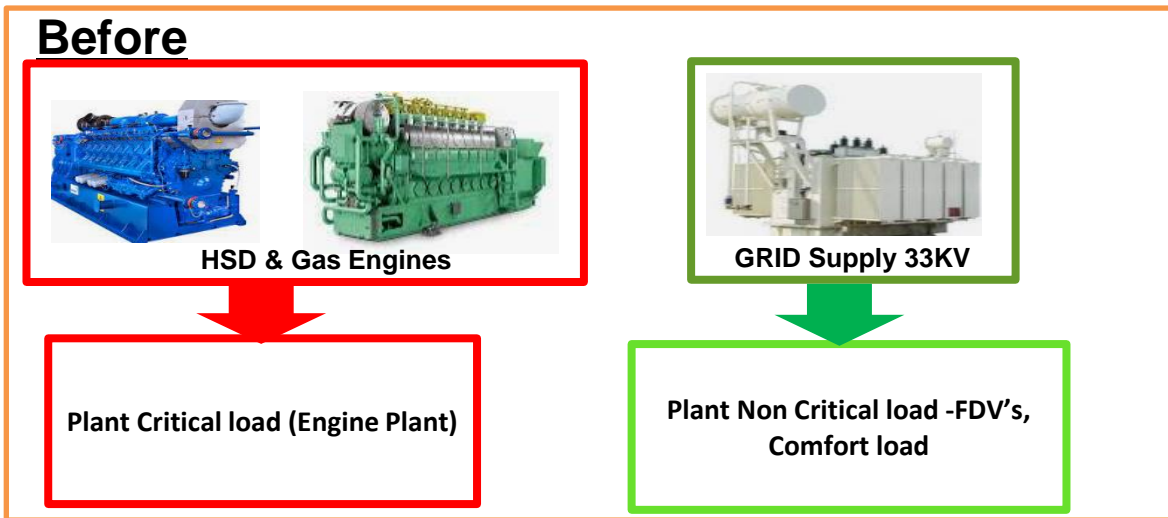
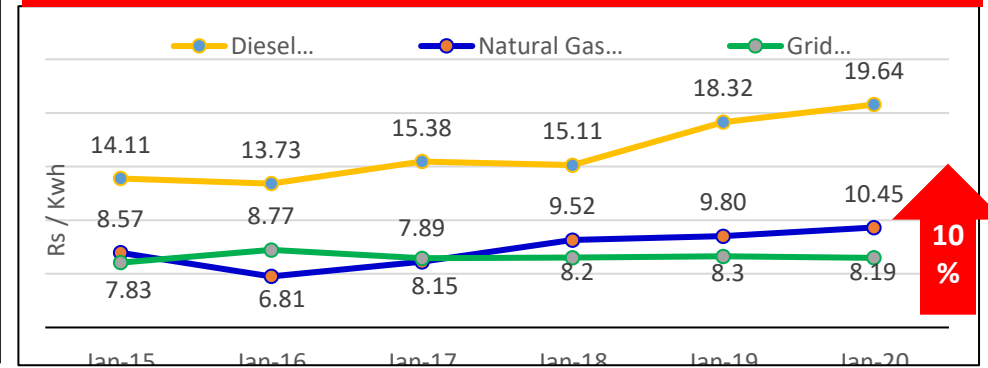


Innovation Project-1:

1.Theme: To Reduce unit Cost from Rs.9.8 /Kwh to Rs. 7.5/kwh by Reduction of HSD/NG usage & Increasing GRID Utilization upto 95%



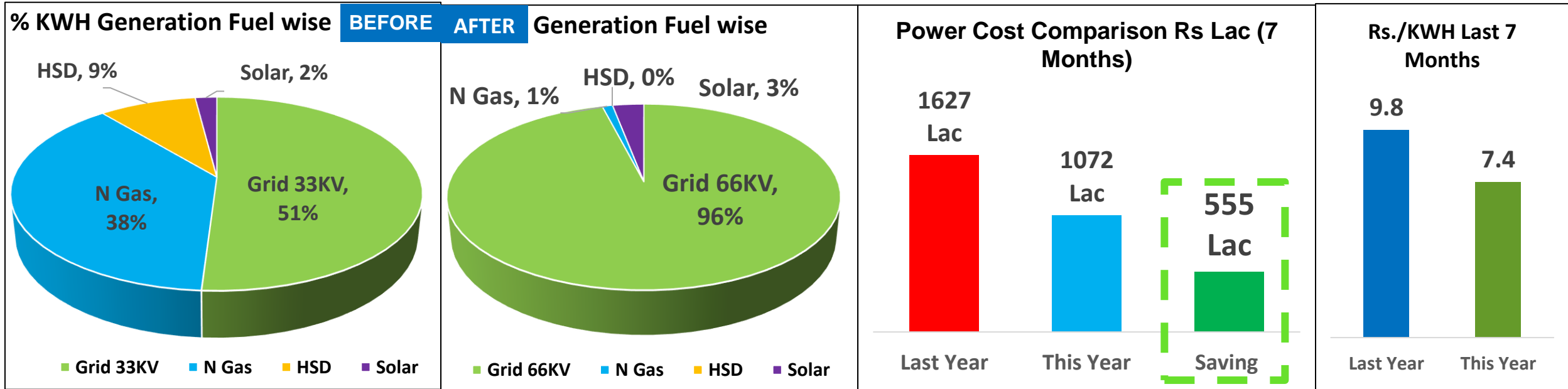
Trend of Power Cost of Six Year in Rs / kwh



**Conclusion: 1. 51% utilization of Economical Power source (GRID) due to less Reliability & Capacity.
2. Inflation of Fuel prices last 3 Years is more than 10% .**

Innovation Project-1:

Results Achieved in 7 months after Project Execution (Nov-21 to May-22):



- Complete plant Load shifted on GRID Supply 66 KV as Reliable Source, Economical KWH Cost
- HSD & Gas Engines are in Standby Mode, Run only in case of Outage of GRID.

CONCLUSION :- Achieved Cost Saving of Rs. 555Lac in last 7 months against recurring saving Rs. 627Lacs/annum

Innovation Project-2:

Theme: To Eliminate Use of HSD/Petrol vehicle by Battery Operated Driverless Shuttle for Visitor:

Before Condition

- Conventional Car/ Van , Petrol used for Visitor
- One Driver Deployed in G Shift for Visitor
- Transportation from Gate to New Reception
- Man Dependency
- Fossil Fuel Used

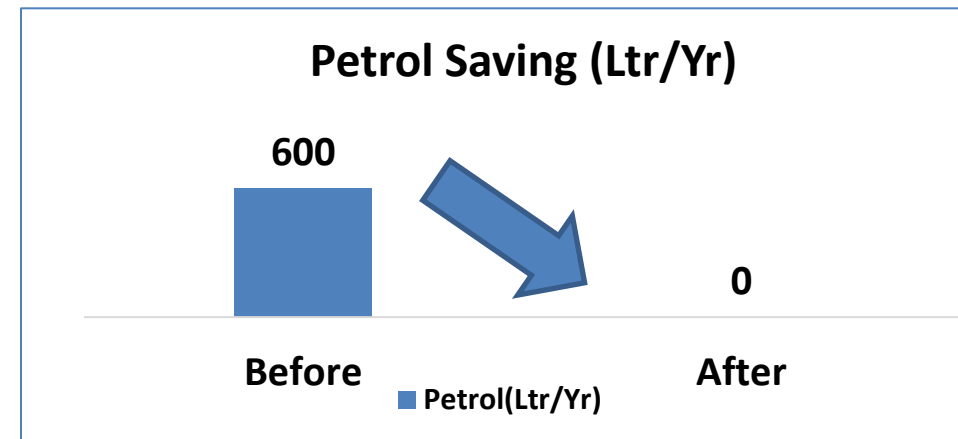
Improvements Done/Kaizens done: -

Autonomous Buggy



Benefits/ Results:

- Driverless Feature , No Driver Required
- Advance Li-ion Battery used
- No Dependency on Driver
- Advance Technology as Lidar , Camera , GPD used
- No Use of Fossil Fuel
- Live Monitoring thru VTS(Vehicle Tracking System) on Reception / Maint Team
- Feel Good Factor for HMCL Visitor
- Auto & Manual Mode for its usage
- 1st Time in HMCL



Completed in Feb22

Driverless Shuttle planned First time in HMCL, Saving of Fuel Approx 600 Ltr./Year

Renewable & Green Energy

- We have an installation capacity of **750KWp** of Solar plant with an average annual power generation of **7.5 L KWh**.
- An additional **250KWp** of Rooftop Solar plant was Installed in Yr 2021 above Employee Bike parking shed with having an annual power generation of nearly **2.4 L KWh**.

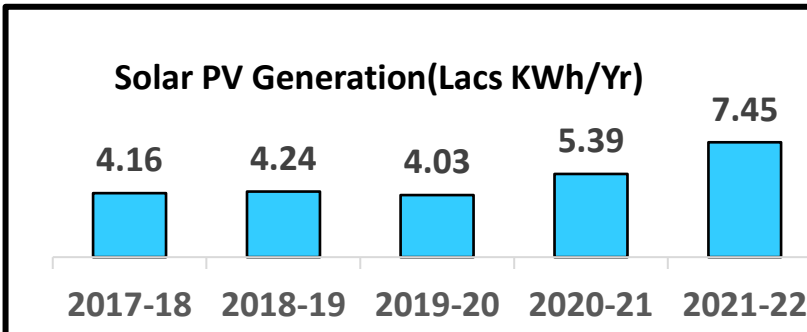
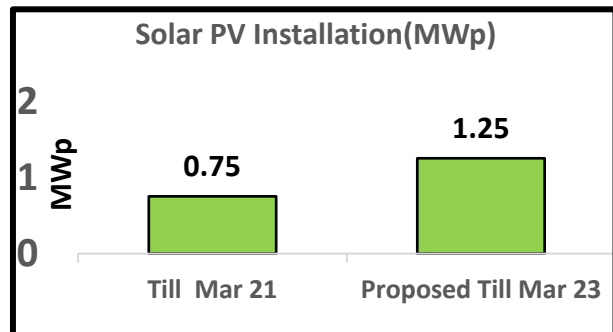
Years	RE Projects	On-Site	Off-Site	Total RE Capacity	Remarks
FY:20-21 & Earlier	Introduction of Solar SmarTree	6.5 KWp	0	6.5 KWp + 1.76LKCal/day	On site
	Concentrated Solar Thermal Dishes (16 Nos.)	4,76,000 KCal/day	0		
	Rooftop PV Solar	750 KWp			
FY 22-23 Plan	Expansion of Solar PV plant with Capacity of 500KWp	1250 KWp			
	Solar Power Wheeling through State GRID (3.57 MWp)	0	3.57 MWp		
GRAND TOTAL:		1.56 MWp	3.57 MWp		



Annual CO2 Offset : 615 Tonne

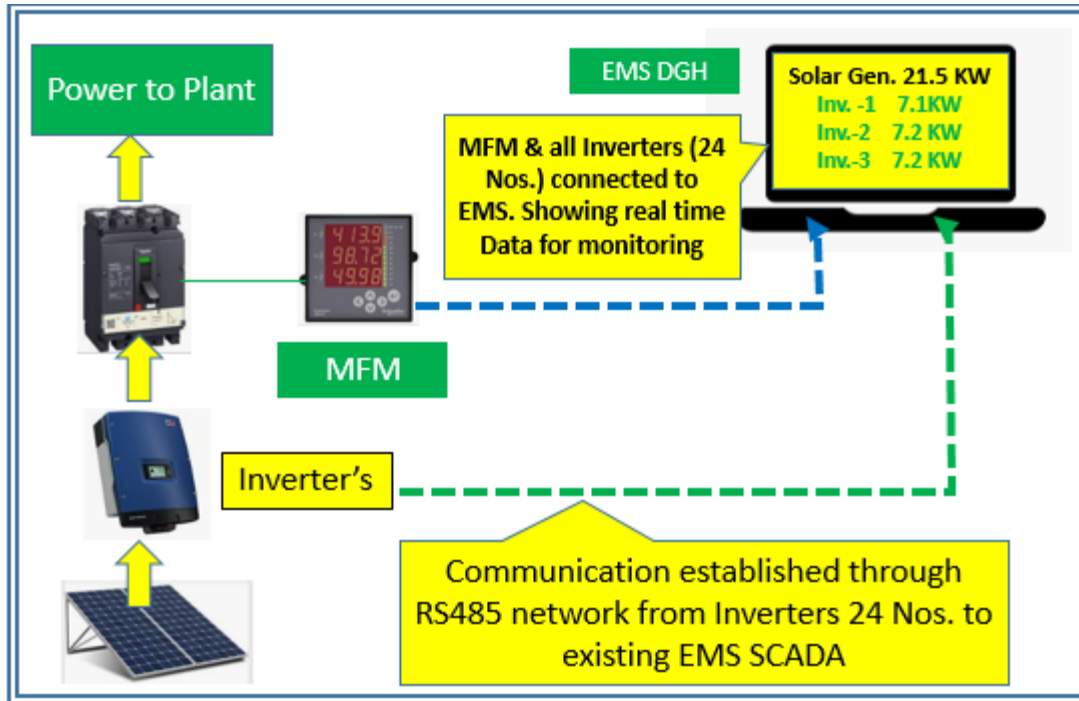
- ❖ 100KWp Solar at Alu. Phase RCC Roof
- ❖ 250KWp Solar Plant at Despatch & NEP Roof

- ❖ 150KWp Solar at Employee Bike Parking Shed



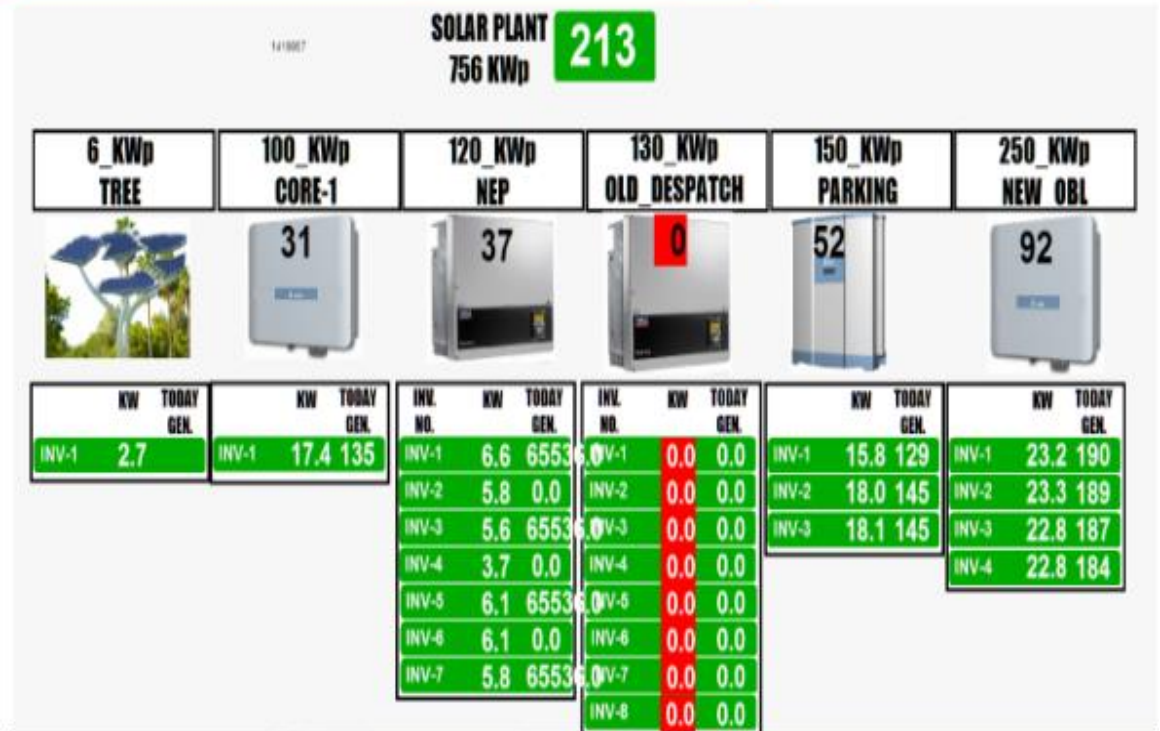
On site 750 KWp Roof top Solar PV plant for in-house use

Inverter wise Generation Data Monitoring for Optimum Generation from Solar



Solar Inverter wise Generation data integration with existing EMS SCADA. (24 Inverters integrated)

Solar Inverter wise Data Integration with existing EMS:

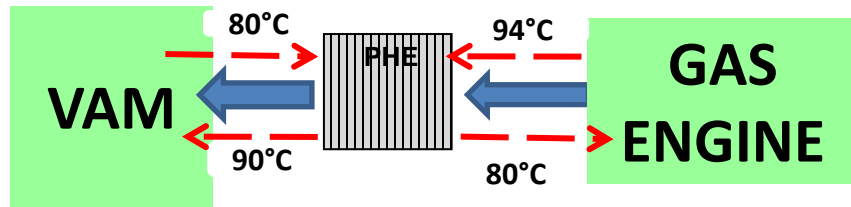


Real time inverter wise Data of Solar Generation available after connected all 24 invertors to EMS SCADA.

Digitization of Roof top Solar PV plant for Better monitoring & Reduce down time

1. Gas generator's Jacket Water Waste Heat Recovery

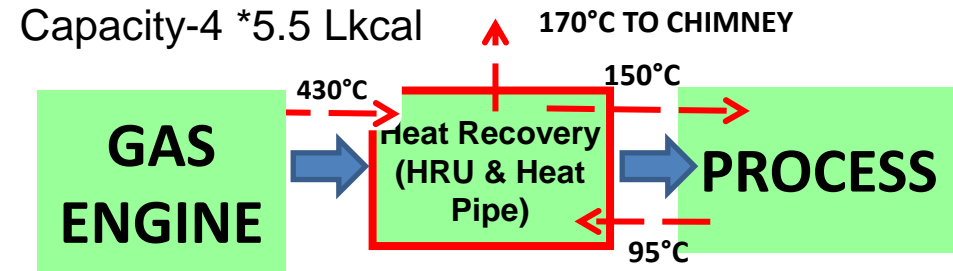
M/C	Flow Rate(m3)	Δt	Running HR/Day	Days in Year	mkcal/Yr
VAM	180	10	16	150	3629



Saving : 3629 M kcal/yr

2. Gas generator's Exhaust Gas Waste Heat Recovery

M/C	Flow Rate(m3)	Δt	Running HR/Day	Days in Year	mkcal/Yr
HRU	25	55	16	200	4400

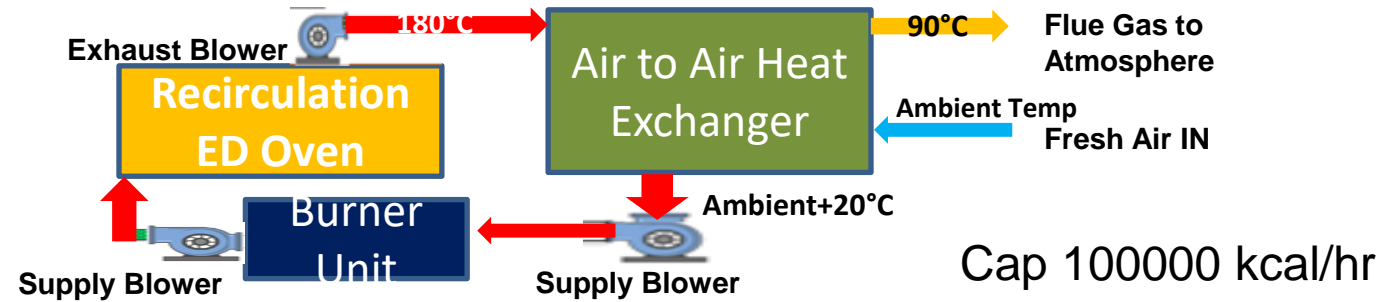


Saving : 4400 M kcal/yr

Gas Engine Waste Heat Recovered & used as Fuel resulting in Saving 8029 M Kcal/Yr

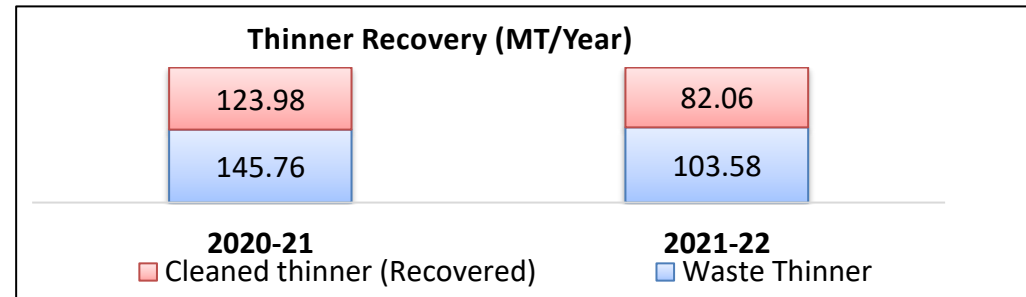
3. CED Paint shop Oven Exhaust Waste Heat Recovery

An air-to-air Heat Exchanger is used to pre-heat fresh air (on atmospheric temperature) for ED oven in CED Paint shop. (Targeted $\Delta t = 20$ Deg. Celsius)



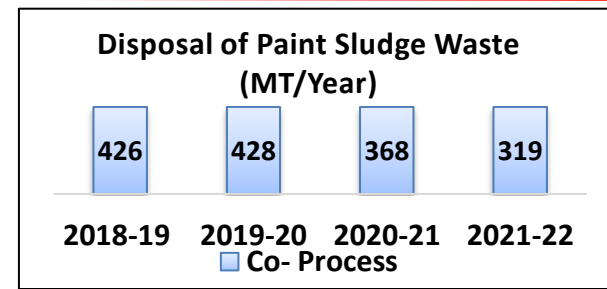
4. Thinner Recovery

Paint Sludge is generated in Paint shop from Painting Process. 100% Sludge is sent to Cement industries to be used as fuel



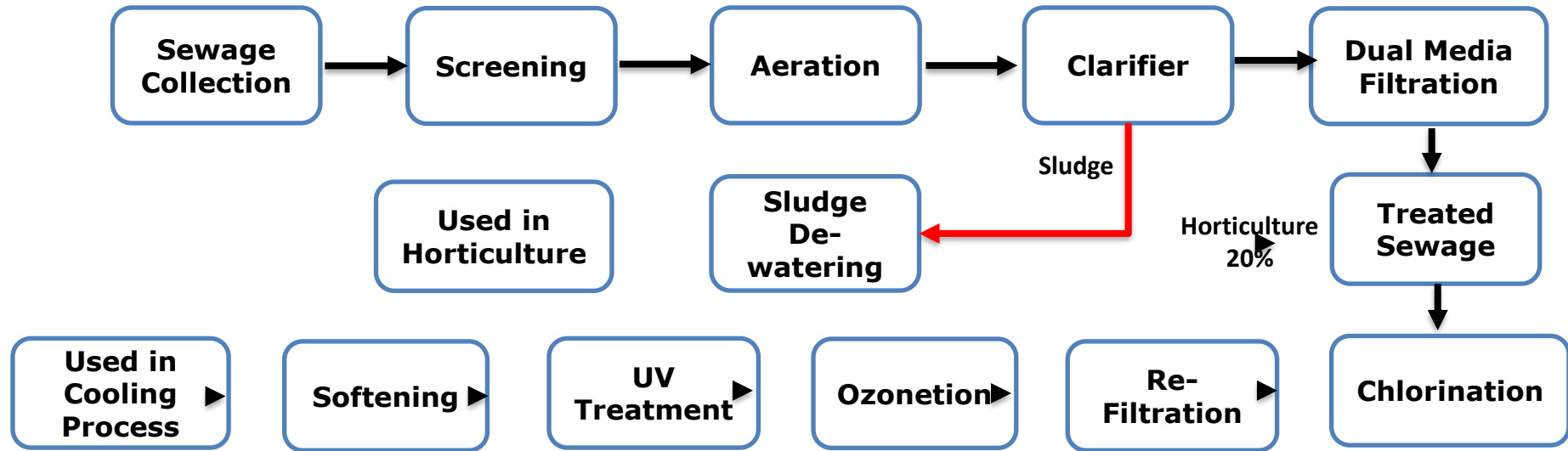
5. Paint Waste Sending to Cement Industries

Paint Sludge is generated in Paint shop from Painting Process. 100% Sludge is sent to Cement industries to be used as fuel

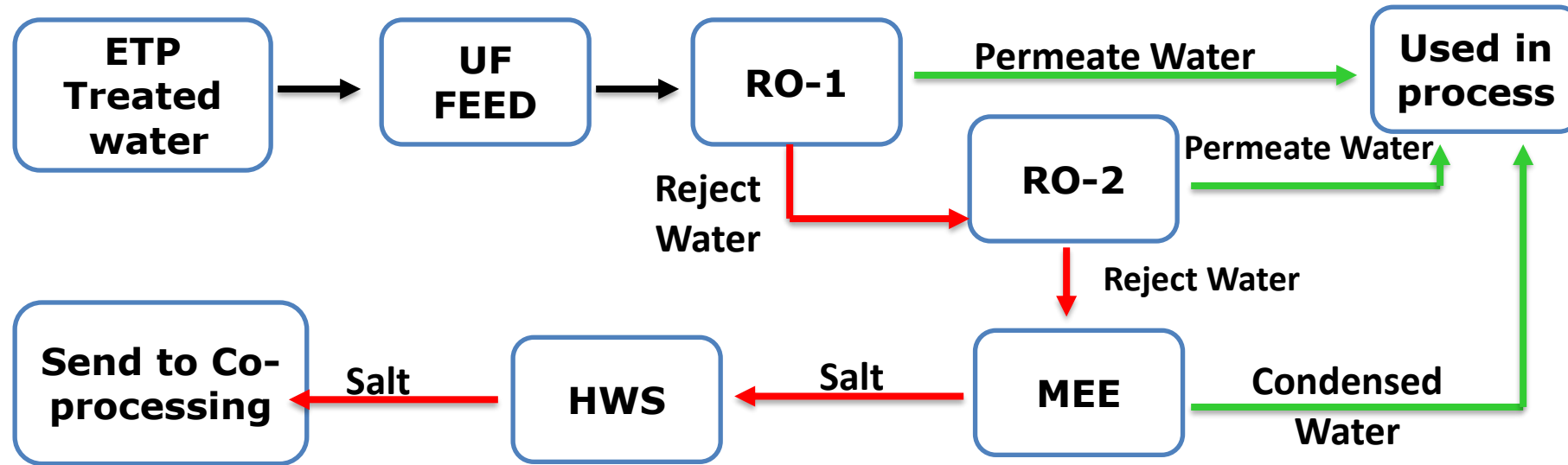


100% Hazardous waste used as alternate fuel/raw material in Cement plants from July 2018

Process Flow chart – Sewage Recycling



Process Flow chart - ZLD



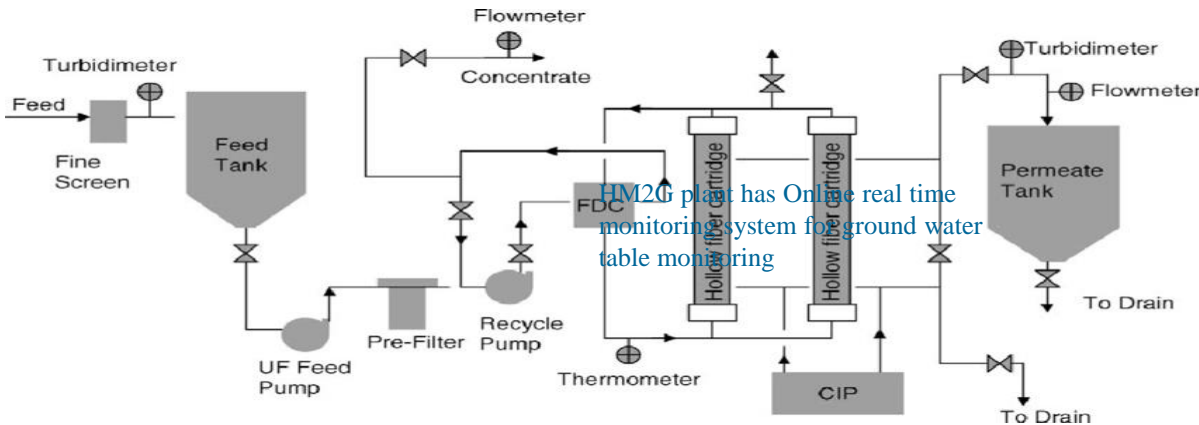
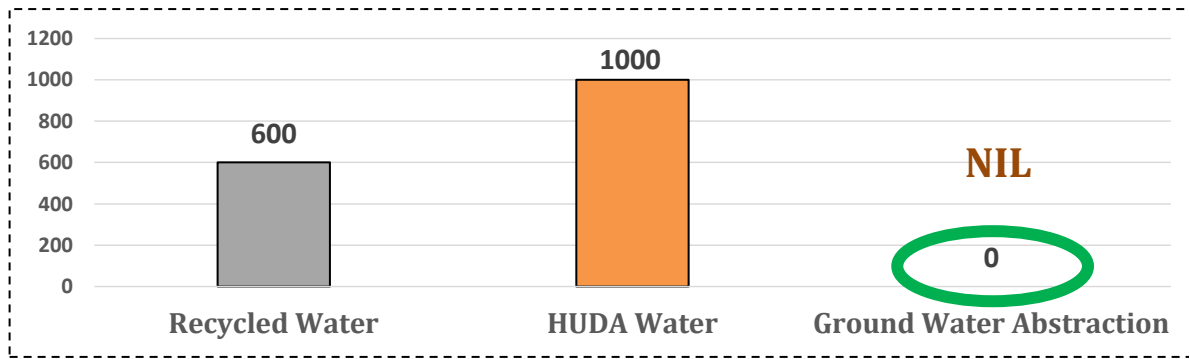
Water Resource Management System:

Objective :-

- Zero Ground Water Abstraction

Implementation Strategy :-

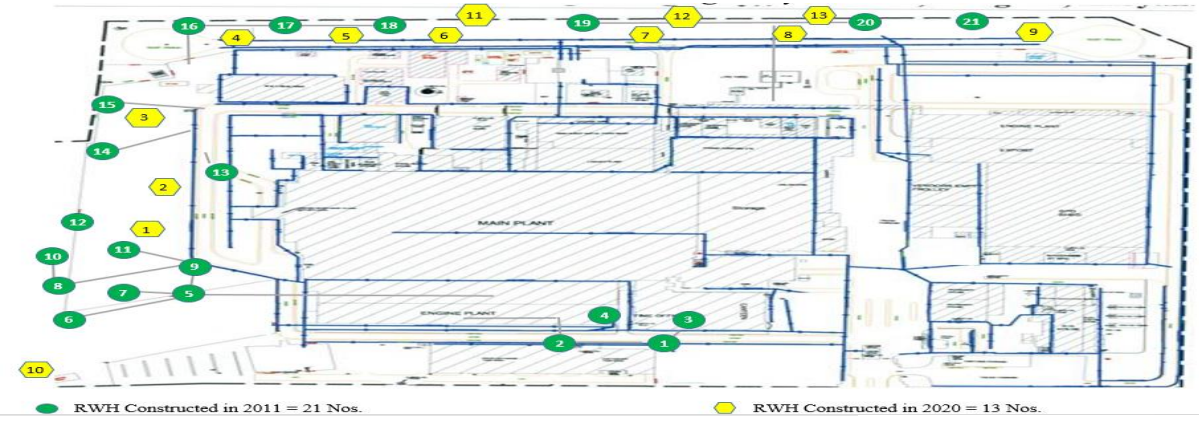
- HUDA Water Supply Enhancement from 500KLD to 1000KLD
- Ultra Filtration (UF) Plant for Drinking water supply



Achieved Water Saving 20 KL/Day thrgh. UF Plant

Water Positive Strategy :-

- Enhancement of RWHs from 21Nos to 34 Nos
- Recharge Rate @ 10 m³/hr



HM2G plant has Online real time monitoring system for ground water table monitoring



34 Shaft of Rain Water harvesting systems Achieving 250 % of Recharging

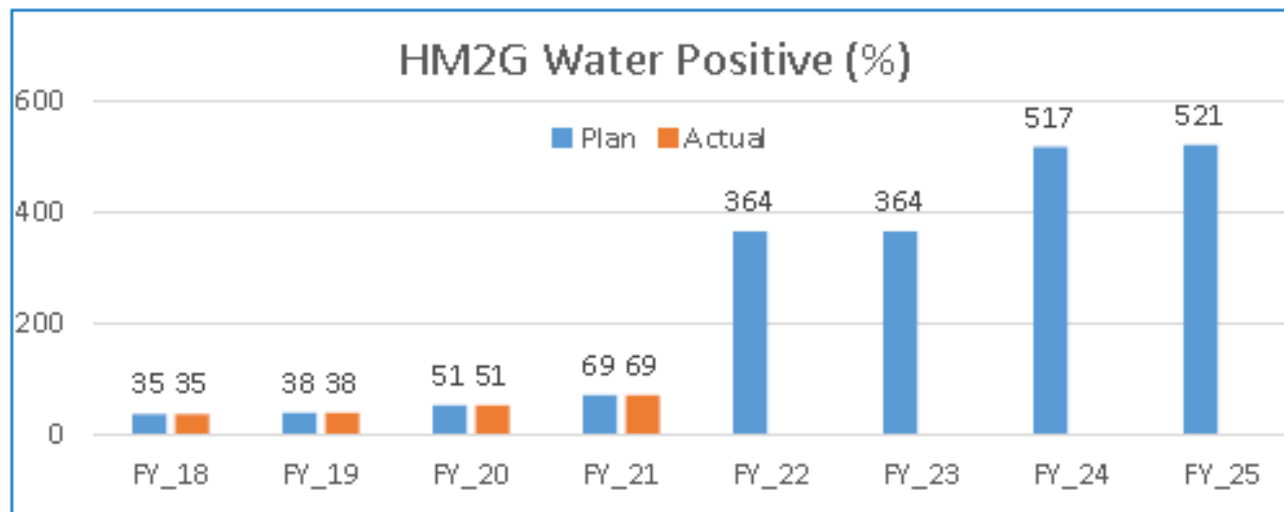
Water Positive: HM2G Road Map

$$\text{Water Positive (\%)} = \frac{\text{Total Rain Water Harvesting (KL)}}{\text{Total Fresh Water Consumption (KL)}} * 100$$

Sustainable Development Goal: 500% Water Positive by 2025.

Strategy:

1. Reduce specific fresh water consumption (L/Veh) by 10% /year.
2. Addition of rain water harvesting beyond the fence.
(FY_22=300%, FY_24=additional 150%)
3. Consider 5% growth of production volumes every year.



Projects	Resp.	FY_18	FY_19	FY_21	FY_21	FY_22	FY_23	FY_24	FY_25
1. Community rain water drive through CSR with water harvesting potential (Lac KL).	Sushil	0	0	0	0	5.6		2.4	
2. Water conservation projects in order to reduce specific fresh water cons. (L/Veh) by 10%/ year.	BD Bhateja	198	188	181	148	134	120	108	97

Goal is 500% Water Positive by 2025.

GHG Emission: Targets for HMCL:

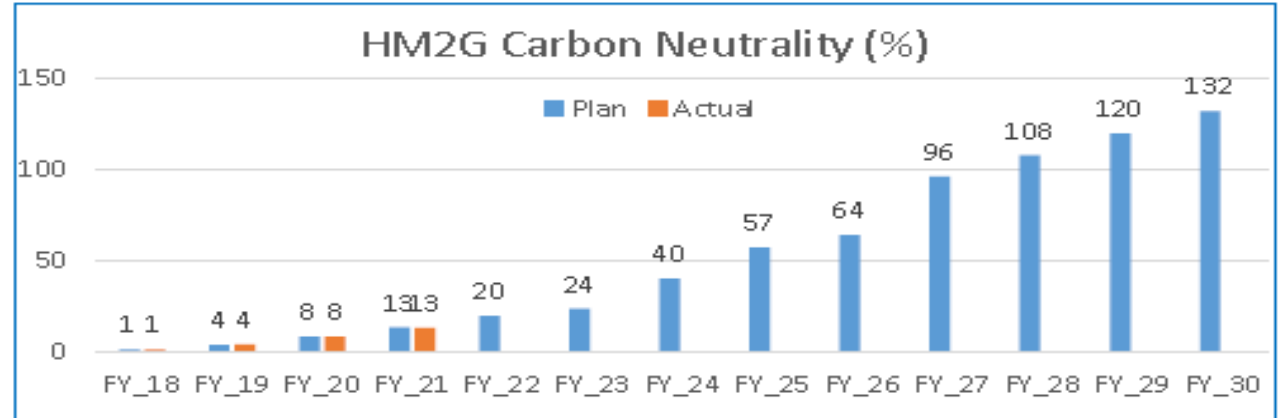
Carbon Neutrality: HM2G Road Map

$$\text{Carbon Neutrality (\%)} = \frac{\text{Total Emissions offset (ton)}}{\text{Total Emissions Generation (ton)}} * 100$$

Sustainable Development Goal: Carbon neutral by 2030.

Strategy:

1. Reduce specific power consumption (kWh/veh) by 2% every year.
2. Build capacity of 2000 KW solar power plant by FY_27.
3. Procure solar power wheeling 200 lac kWh/ year by FY_27.
4. Afforestation initiative at company level. Allocate impact to parts in proportionate to emission ratio (HM2G share = 23%).
5. Consider 5% growth of production volumes every year.



Projects	Resp.	FY_18	FY_19	FY_20	FY_21	FY_22	FY_23	FY_24	FY_25	FY_26	FY_27	FY_28	FY_29	FY_30
1. Expansion of Solar PV System in Plant. Capacity in KW.	Sanjeev				750	1500					2000			
2. Solar Power wheeling (Lac kWh/ year).	Project Team				0			50	100	100	200	200	200	200
3. Afforestation Drive as HMCL (Lac trees)	CSR Team				23.8	25.8	35.8	45.0	55.0	65.0	75.0	85.0	95.0	105.0
4. Energy conservation projects in order to reduce specific power cons. (kWh/veh.) 2% yearly.	BD Bhateja				28.9	31.9	27.2	26.9	26.7	26.5	26.2	25.7	25.2	24.7

To become a Carbon Neutral Company by FY:2030

GVDP: An Initiative by Hero for protecting and preservation of Environment



Green Vendor Development Programme



We at Hero MotoCorp are continuously striving for synergy between technology, system and human resources, to provide products and services, to meet the aspiration of our valued customers that too, demonstrating our "WE CARE" philosophy. We believe that our vendors and dealers are key stakeholders and partners to work towards the goal of sustainable development.

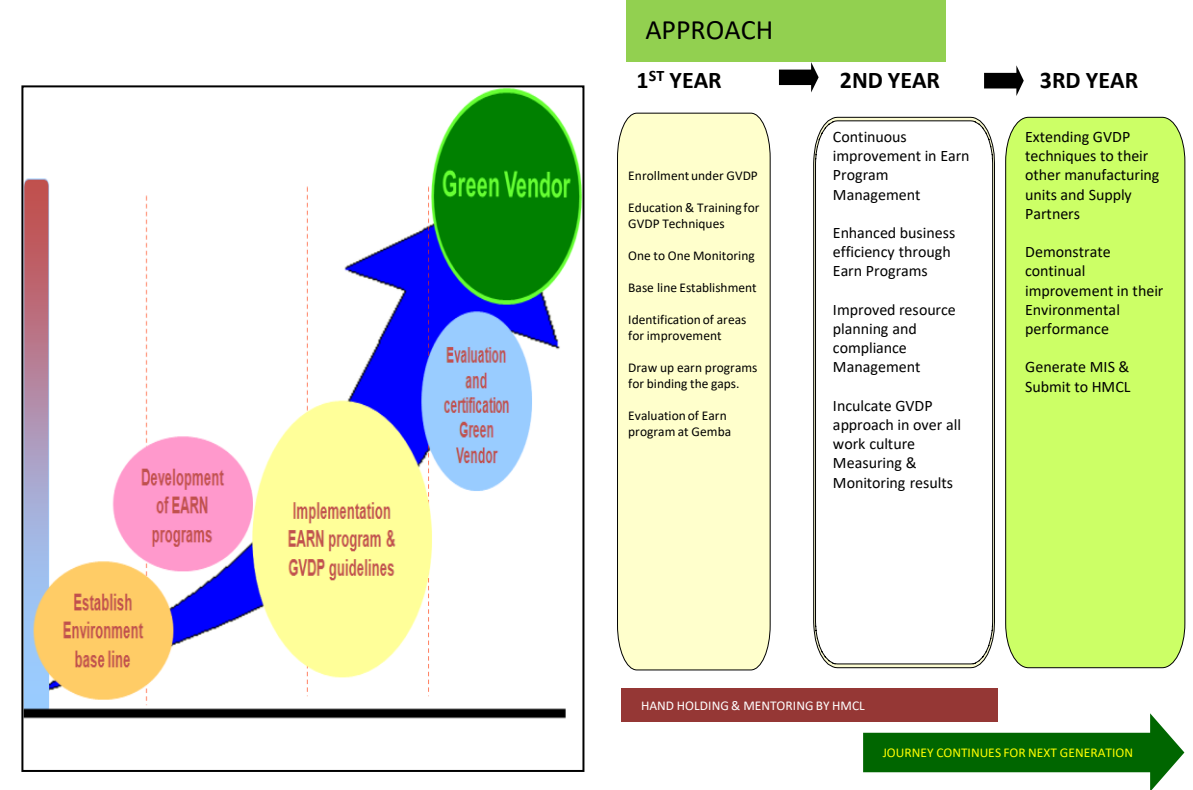
Green Vendor Development Programme (GVDP) encourages a effort between Hero MotoCorp and its suppliers to achieve Hero MotoCorp's overall corporate environmental goal. GVDP calls for partner companies to demonstrate their commitment towards improved environmental performance and striving for continual improvement.

Buyers Gain	Sellers Gain	Mutual Gains
Multiplier effect of supplier gains	Reduced production cost- resource optimization	Market competitiveness
Reduced purchase costs	Assured client commitment/ potential for more clients	Public image
Improved image	Reduced liability	Improved relations-secured ties
Improved market reach	Improved relations with regulatory agencies	Reduced production costs greater margins
Reduced liability	Competitive advantage over others	
Greater assurance of consistent & reliable supply	Improved management systems at marginal costs	

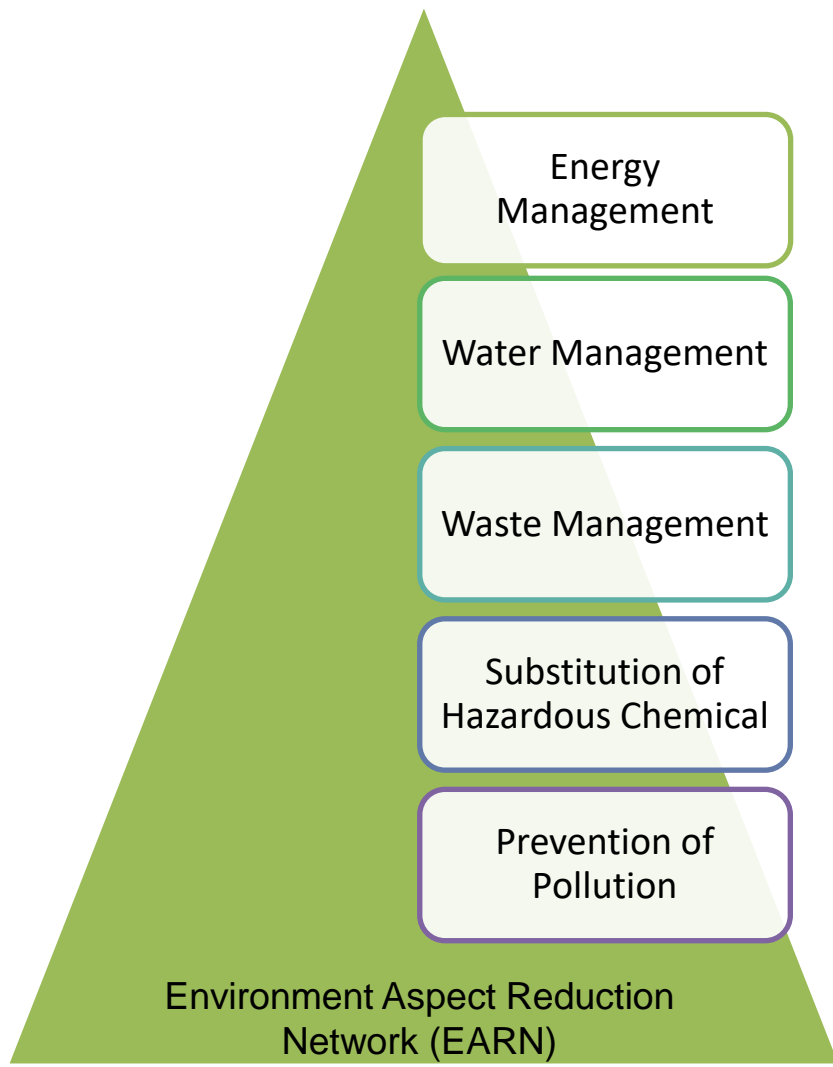
Hero's initiative for Green Vendor development program.

METHODOLOGY

Green Supply Chain Cell/Team Approach



Program Approach had Been Knocked Down Into Year Wise Activities



DP EARN Program MIS

National Engg-,Gurgaon

Project Summary :-

Company Name	National Engineering Industries Ltd.	Financial Year	No Of EARN Programs (Pillar-wise)							Savings										
			Energy	Water	Waste	Pollution	Hazardous Chemicals	Legal Compliances	Energy Savings (KWH)	Water Savings (KL)	INR	Waste Savings				Hazardous Chemicals /				
Plant Location	Gurgaon, Haryana											INR	Solid Waste (Kgs)	Solid Waste (MM)	Liquid Waste (KG)	Liquid Waste (L)	Units	Qty	Value INR	
GPDP Enrollment Year & Phase	2019 (Phase XI)	FY2017-18																		
Vendor Code	100476	FY2018-19																		
Plant Head	Mr. Chatrapal Yadav	FY2019-20	4	2	2			3	3	28506			202					LTR	7644	
		FY2020-21	4		3					82481	174		1350			60		KG	59	
		FY2021-22																		
		TOTAL																		



GPDP EARN Program MIS

AUCON CAST ALLOY, GURGAON

Project Summary :-

Company Name	ALICON CAST ALLOY	Financial Year	No Of EARN Programs (Pillar-wise)							Savings										
			Energy	Water	Waste	Pollution	Hazardous Chemicals	Legal Compliances	Energy Savings (KWH)	Water Savings (KL)	INR	Waste Savings				Hazardous Chemicals /				
Plant Location	GURGAON/HARYANA											INR	Solid Waste (Kgs)	Solid Waste (MM)	Liquid Waste (KG)	Liquid Waste (L)	Units	Qty	Value INR	
GPDP Enrollment Year & Phase	FY2021-2022	FY2017-18																		
Vendor Code	1000444	FY2018-19																		
Plant Head	MR.CHAIN SINGH	FY2019-20																		
GPDP Leader	MR. MANISH KUMAR	FY2020-21																		
		FY2021-22	5	2	3	3	1	1	4E+05	1080	3348000	4080								169500
		TOTAL	5	2	3	3	1	1	4E+05	1080	3348000	4080					0	0		169500



P EARN Program MIS

FCC CLUTCH, TAPUKRA

Project Summary :-

Company Name	FCC Clutch India Pvt. Ltd.	Financial Year	No Of EARN Programs (Pillar-wise)							Savings										
			Energy	Water	Waste	Pollution	Hazardous Chemicals	Legal Compliances	Energy Savings (KWH)	Water Savings (KL)	INR	Waste Savings				Hazardous Chemicals /				
Plant Location	SPL-2(H), Honda Complex, RIICO Industrial Area, Tapukara											INR	Solid Waste (Kgs)	Liquid Waste (KG)	Liquid Waste (L)	Units	Qty	Value INR		
GPDP Enrollment Year & Phase	Phase-12 (2021~22)	FY2017-18																		
Vendor Code	101194	FY2018-19																		
Plant Head	Amit Mahajan	FY2019-20																		
GPDP Leader	Amar Srivastava	FY2020-21																		
		FY2021-22	25	8	6	5	2	5	4025498	98,527	-	490,000	1,250	93.6	0	0	0			0
		TOTAL	25	8	6	5	2	5	4,025,498	98,527	0	490000	1249.56	94	0	0	0			0

Glimpse of some of our Supply partners Working for energy & Environment Conservation Activities



1 Happy Earth Environmental sustainability beyond compliance



- 101500 trees plantation in Gurgaon peripheral
- Biggest Plantation drives – 23+ lacs trees
- Adoption and Revival of Aravali Biodiversity Park
- 696 lakh liter water capacity developed through restoration
- Total 1458 Solar Street lights installed in villages



2 Humari Pari Empowering under privileged girls



- Supporting 2 Lakhs+ under-privileged girls for education, health & hygiene
- Scholarships to 18 students for higher Studies
- Magic Bus project to transform children by developing life skill ability



3 Educate to Empower (E2) Education and skilling to



- Financial & Infrastructure assistance to schools – 158 Sanitation Units installed in villages .
- Mobile Science Labs, Books, Mobile Library- 2 Lac + beneficiaries



4 Ride Safe India Ensuring 'safety' of commuters on India's roads



- Traffic Training Parks in 06 Cities with Audio-Visuals, Simulators: 6 lacs + beneficiaries
- 208 Two Wheelers with 2468 Helmets given to State Police & Sports Winners
- 1.13 Lakh Participant trained for Ride safe programme



Guinness Book of world record



Key initiatives taken at Environment front, supporting under privileged girls and Education for Society

Learning from CII Energy Awards

Guidance from Honorable CII Judges

- Methodology for deciding scope of Energy Conservation at section/line/machines
- Various Projects-EMS , Digitization
- Solar Thermal for Hot Water
- Benchmarking with National/Global Standards on Energy Consumption



ISO50001:2018 Energy Management System Certification

Project Started in Jan22,
Certification by Sep22



How Green Co has supported us---

- Increased Share of Renewable Energy
- Methodology for Calculating SEC
- Approach for Carbon neutrality
- Mentoring Vendors for Green Co Certification



Awarded with Gold





Thank You

