Hero

Gurgaon Haryana

CII National Award for Excellence in Energy Management-2023

Presenter :
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10/09/23

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Hero MotoCorp

Plant, Offices, Dealer Locations & Global Presence

- Registered & Corporate Offices
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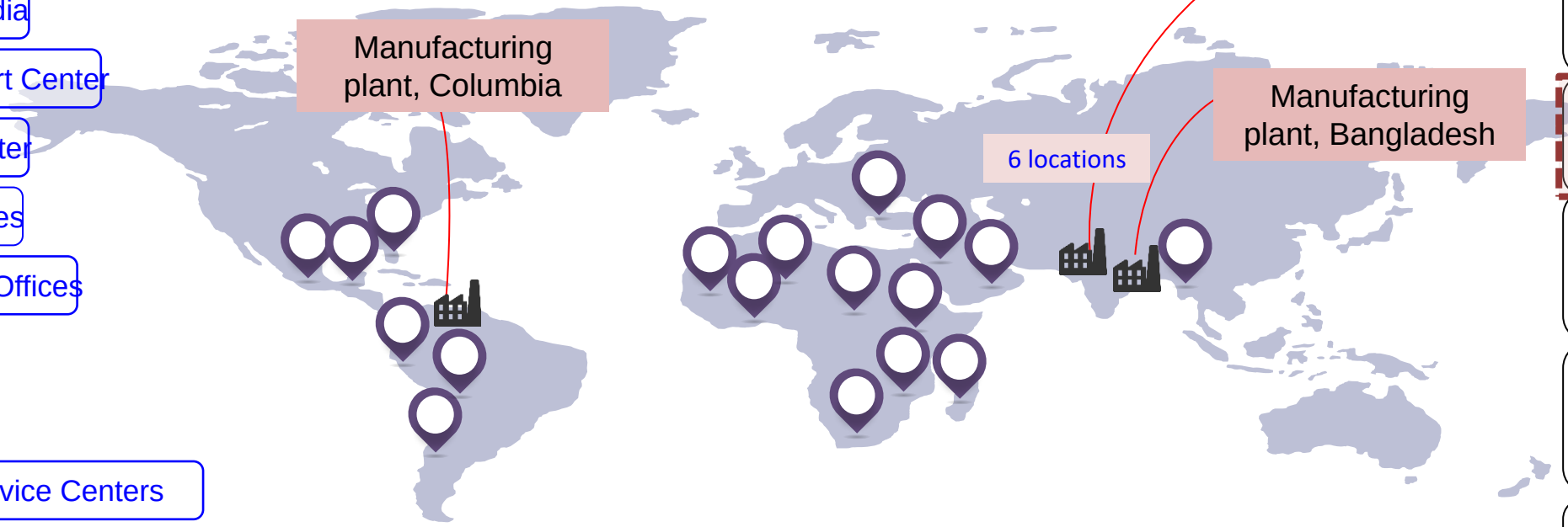
- 22-Regional Offices
- Dealers
- Stockists
- Spares & Service Centers
- Authorized Reps of Dlrs
- Mobile Station
- Service Har Jagah

Manufacturing plant (M)

Market Presence (P)



1.India
2.Sri Lanka
3.Bangladesh
4. Nepal
5. Myanmar
6. Colombia
7. Peru

8.Guatemala
9.Honduras
10.Nicaragua
11.Costa Rica
12.Panama
13.Bolivia
14.Dominican Republic

15.El Salvador
16.Argentina
17.Guyana
18.Trinidad & Tobago
19.Mexico
20.Kenya
21.Tanzania
23.Ethiopia

22. Ethiopia
23.Uganda
24.Nigeria
25.Ghana
26.Turkey
27.Dubai
28.Iran

29.Djibouti
30.Zambia
31.Mauritius
32.Kuwait
33.Burkina Faso
34.Ivory Coast
35.Angola

36.Democratic Rep of Congo
37.Madagascar
38.Egypt
39.Liberia
40.Guinea
41 Ecuador
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.

Gurgaon Plant

Current Domestic Models

Motorcycle

200 CC

XPULSE 200 2V

XTREME 200R

XTREME 200S

XPULSE 200 4V

125 CC

GLAMOUR 125

GLAMOUR

SUP. SPLENDOR SV

100 CC

HF DELUXE

Scooter

125 CC

DESTINI

MAESTRO EDGE 125

DUET 125

110 CC

MAESTRO EDGE 110

PLEASURE XTEC

PLEASURE+

100 CC

PLEASURE

Current Export Model

Motorcycle

HUNK 200

THRILLER 200

HUNTER/ECO

HUNK 150

ISMART 110

Scooter

DUET 110 FI

DUET 125 FI

MAES. EDGE 125 FI

MAES. EDGE 110 FI

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

Introduction- Plant manufacturing Process

Weld Shop

Paint Shop

Sub Assembly

Component Store

Engine Assembly

Frame Assembly

Inspection

Dispatch

Aluminum Shop

Heat Treatment Shop

Gear Shop

Steel Shop

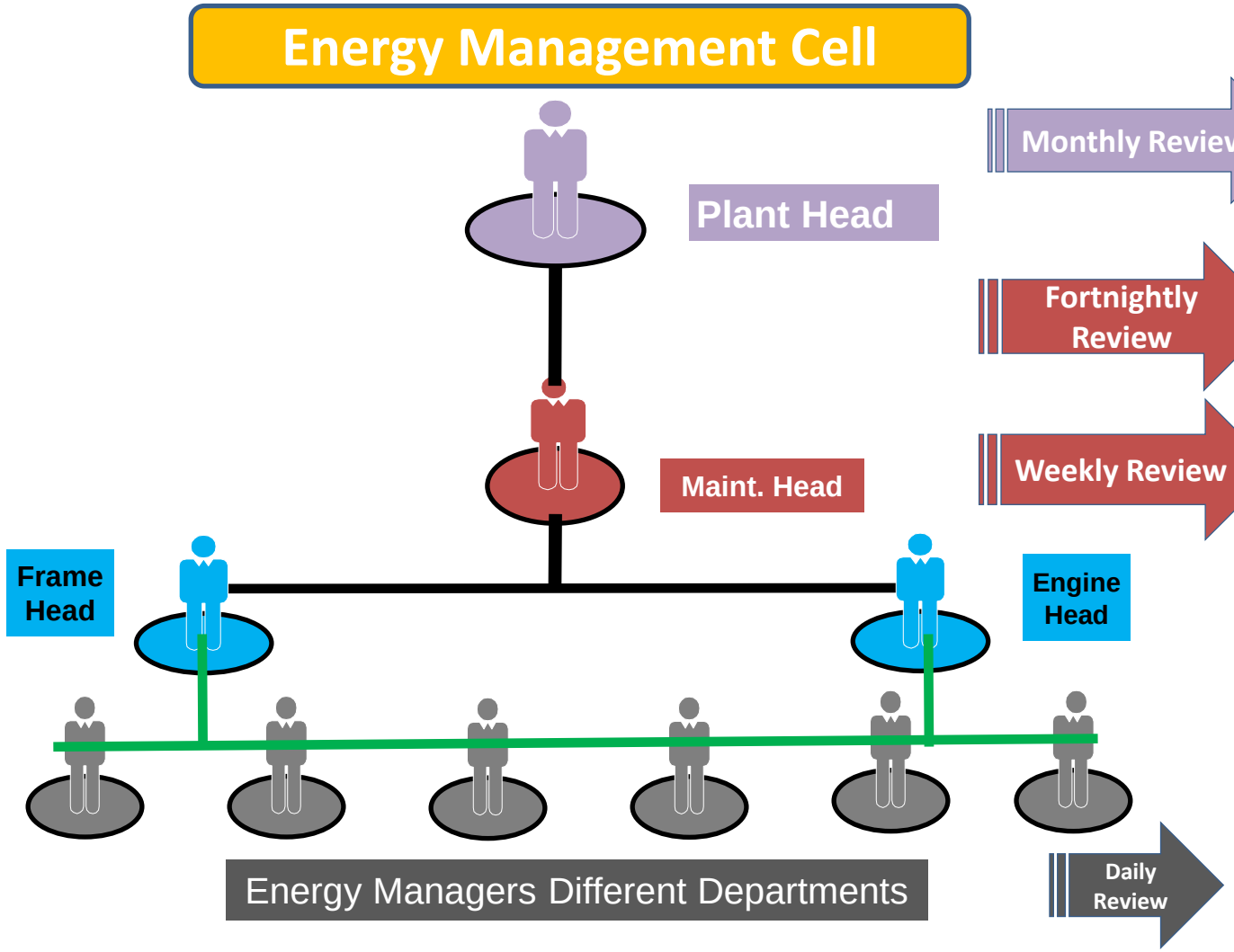
Utilities

Plant Capacity - 7200Veh/Day

Addition facilities only in Gurgaon

- Warranty & GLC
- NMC
- CQA
- Projects
- CRVT Lab

Introduction- Energy Management cell & roles



Roles

- Projects and Budget approver

- Projects and SEC Evaluator
- Bench Marking , Risk Management

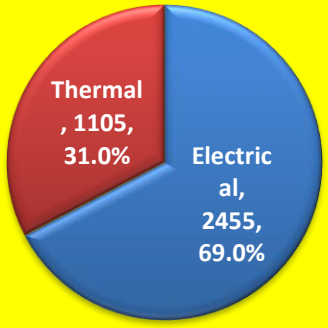
- Projects Progress Reviewer
- Resource Allocation

- Idea Generators
- Projects implementers
- Technology Evaluators
- Budget Allocators

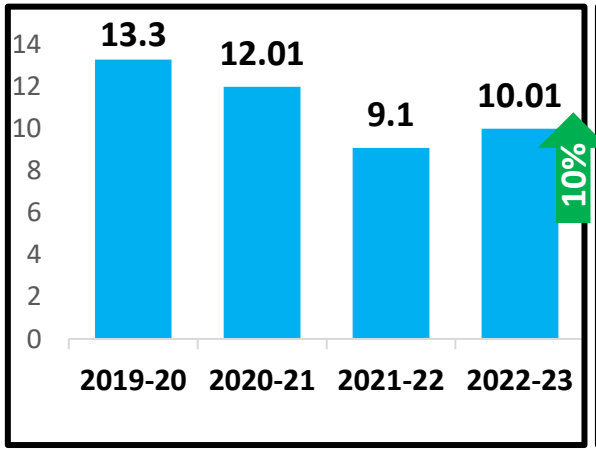
Dedicated Energy Management Cell and defined their roles & responsibilities.

Year wise Plant Energy consumption Trend

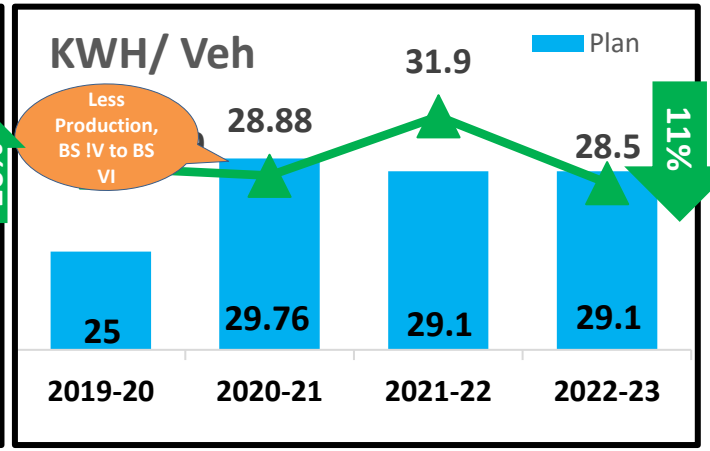
Energy (MToE) 2022-23



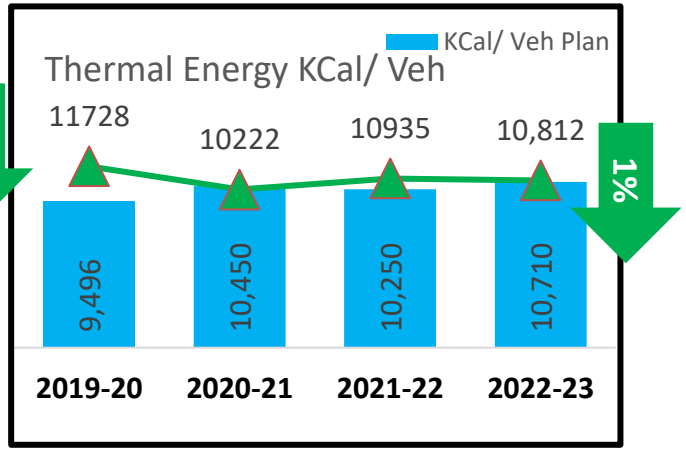
Production(Lacs.)



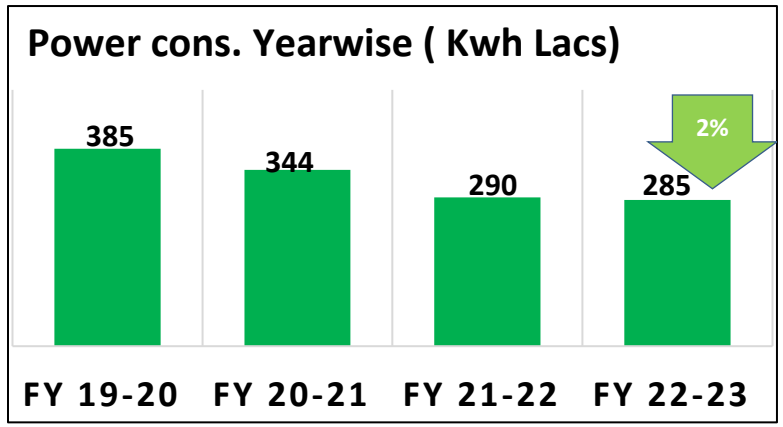
Electrical SEC



Thermal SEC

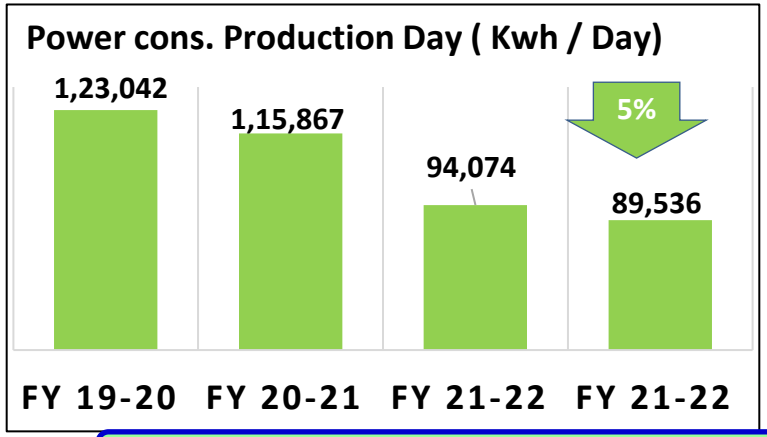


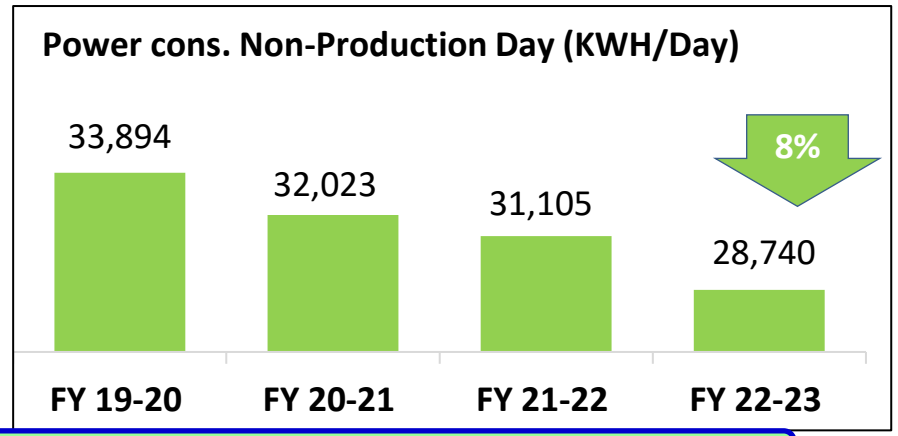
Comm. KWH consumption trend



2 % reduction in comm. kwh

Energy consumption trend of Production in Non production Days



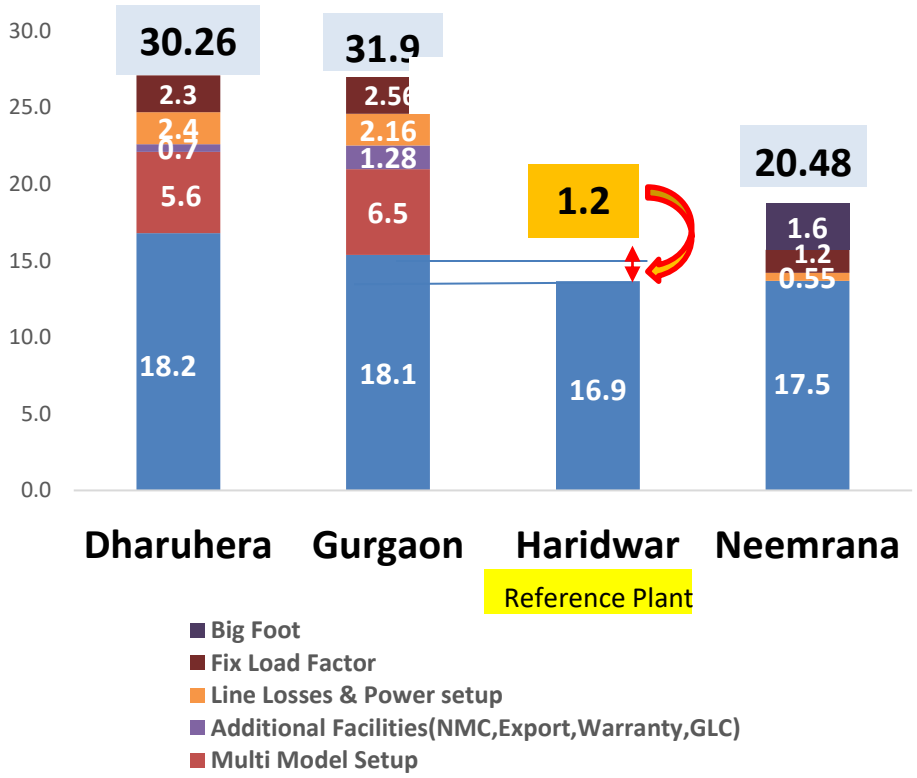


5% & 8% reduction in kwh per Production & Non Production Day respectively

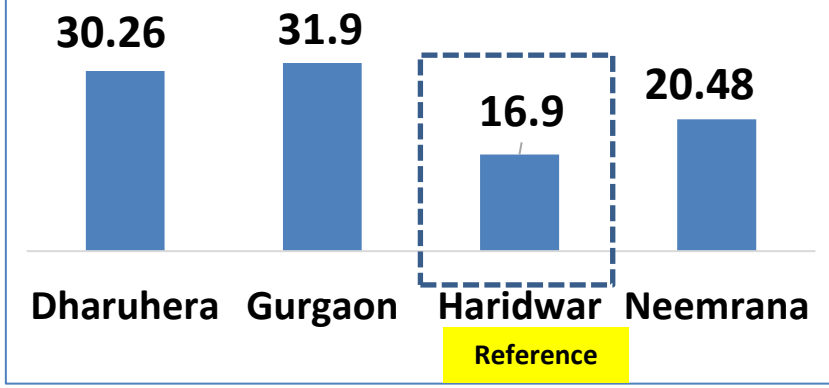
Bench Marking – Internal / National/ Global

Internal Bench Marking (KWH/Veh)

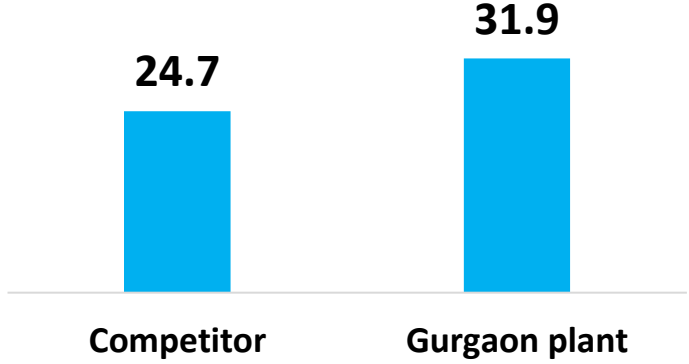
*Data 2021-22



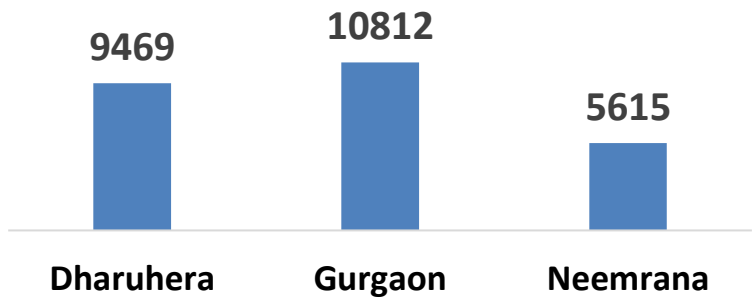
Internal Bench Marking (KWH/Veh)



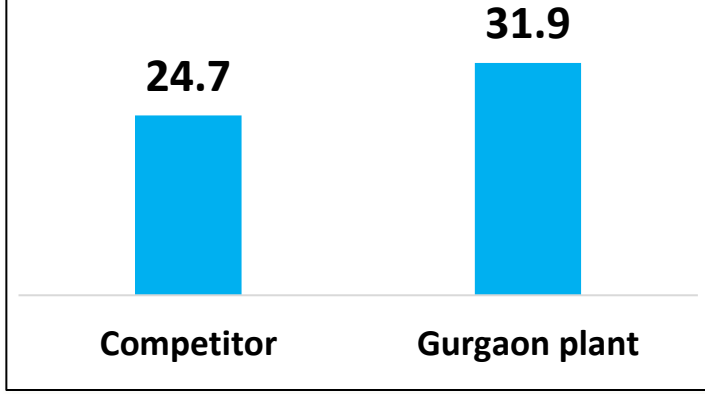
National Bench Marking(kwh/Veh)



Internal Bench Marking(kcal/Veh)



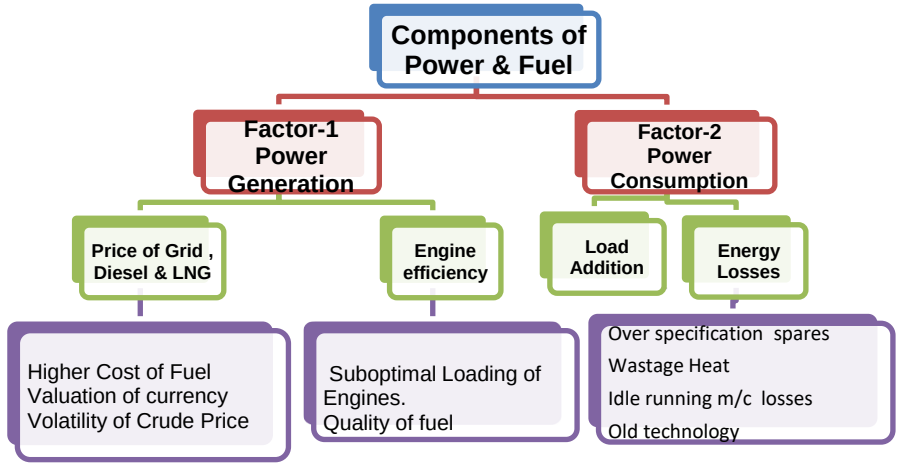
National Bench Marking(kcal/Veh)



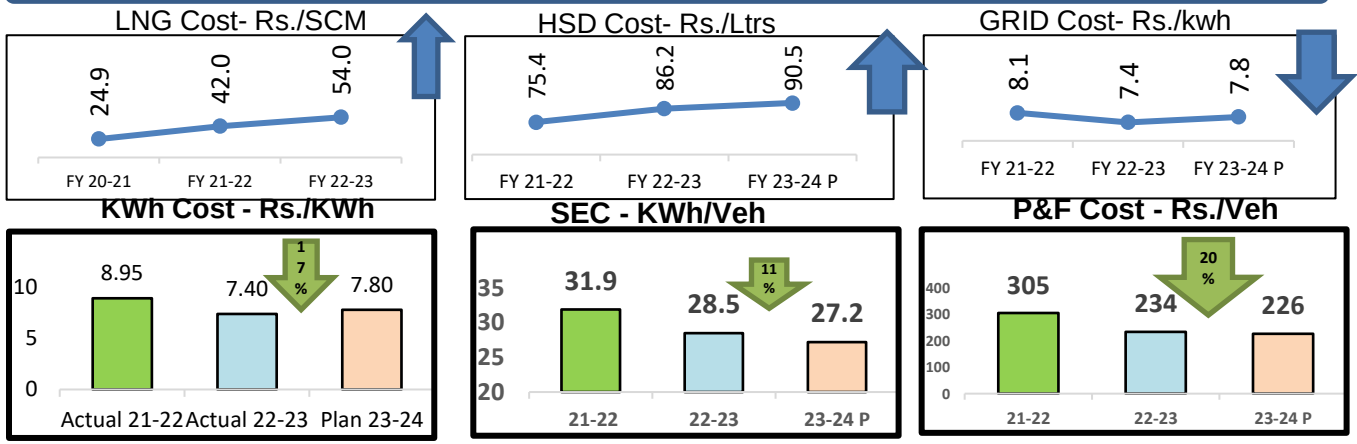
Bench marking Done & found 1.6 kwh/Veh. is the gap w.r.t to Reference Plant.

Haridwar Plant is taken as reference Plant for Internal Bench Marking

Strategic Approach @ Gurgaon Plant :



Inflation Factors- Fuel Prices



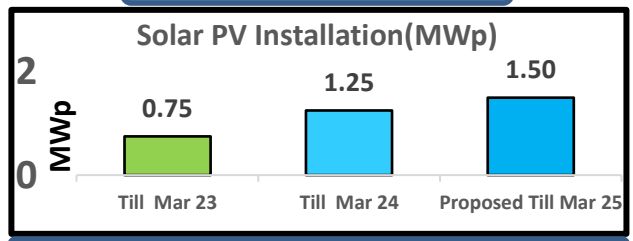
Methodology For Power and Fuel Consumption Reduction

New Technological Improvement	**Heat Pump & IE4 Motor**
Renewable Energy	**Solar PV & Thermal**
Management Control	**ISO50001:2018** **Solar Wheeling**
Efficiency Improvement	**APFC Capacitors Installation** **BLDC Fans, VFD Installation**
Loss Reduction	**Energy Optimization Through EMS** **Energy Efficiency Project** **Energy saving projects**

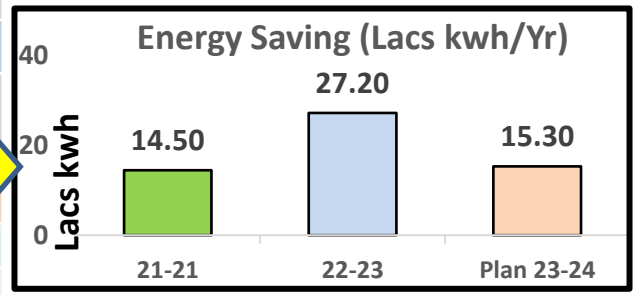
Energy Reduction Projects

Sr No	Methodology	Cumulative No of Projects(FY 23-25)	Cumulative Saving KWH/day
1	Technological Improvement	5	2500
2	Renewable Energy	1	2000
3	Management Control	3	1500
4	Efficiency improvement	4	2200
5	Loss Reduction	5	2500
	Total	17	10700

Proposed Solar Installation



Proposed kwh Saving/Yr



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

Energy Conservation projects 2019-22

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.)	0.72	8.60		
6	Replacement Of Solar D				
7	Solar All-In-One Standlo				
8	Bio Methane Plant for C				
9	Replacement of HRU wi				
10	CED Oven Heat Recover				
11	Sludge Drying system fo				
12	Replacement of Filter P to 30% in ETP				
13	Installation of STS for Er				
13	Interlocking of Lights of				
14	Idle tripping Ckt for Eng				
15	Installation of Motion S				

Sr No	Energy Conservation projects 2020-21	Projected Lacs KWH Saving/Year	Projected INR Saving/Year (in Lacs)	Thermal Saving (in KCal/day)	Remarks
1	Centralized Heat Pump System for Engine Assembly NGCT Washing Machines (3 Nos.) by Offsetting Electrical Heaters	0.750	7.50		Innovative Project
2	IE4 motor based Energy Efficient Air Compressor in the Utility Area	2.550	25.50		
3	Reduction of carbon footprint through Solar Thermal Collector system for Al Phase Washing M/Cs	0.900	9.00	300,000	Renewable Project
4	Conventi House (1				
5	Electrical				
6	Replacem				
7	Compres				
8	Installed				
9	Stopping				
10	HSD Fork				
11	Occupanc				
12	Replacem				
13	Energy E				
14	80 W BLD				

S No	Projects Description 2021-22	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
2	Replacement of Old conventional split AC with 5 star rating AC-15 Nos	0.5	4.75	13	
3	Replacement of IE4 motors with conventional motors-1 lot	0.45	4.28	10	
4	Replacement of DOL starters with New VFD Panels for FDV's-7 Nos	0.47	4.47	15	40
5	Controlling of Exhaust Blowers from DG House-1 lot	1.75	16.64	10	7
6	Occupancy sensor for Lights-50 Nos	0.09	0.87	0.75	10
7	Reduction in Running of HRU Circulation motor by modification in control circuit & status through existing SCADA.-1 no.	0.24	2.28	2	11
8	Reduction in running of 1 FDV in DG House by modification in Ducting. (Operators Sitting Area)-1 nos.	0.3	2.85	2	8
9	Saving through Energy Management System -1 Lot	0.68	6.46	40	5
10	Replacement of Conventional Fans with BLDC Fans	0.12	1.12	7	6
11	Saving through Resouse Conservation Team (RCT) Initiatives	3.65	34.68	0	0
12	Stopping Auxiliarry Load after Commissioning of 66 KV Supply	3.60	34.20	0	0
13	Localized capacitor panel for PF Correction at Source(Utility Section)	0.60	5.70	20	4
14	Centralized Heat Pump System for NEP Washing M/Cs to offset Electrical Heaters.	0.36	3.42	10	3
	Total	**14.45**	**137.3**	**220**	**215**

17 Lacs Kwh Saved from 15 Major Energy Conservation Projects

11 Lacs Kwh Saved from 14 Major Energy Conservation Projects

14.5 Lacs Kwh Saved from 14 Major Energy Conservation Projects

Energy Conservation projects 2022-23

Zero Cost /Low Cost Projects

S No	Description	Saving (in Lacs	Annual Saving	Investment (Rs. Lac)	Payback Period
1	Occupancy sensor for Lights-30 Nos	0.09	0.75	0.75	10
2	Saving through Resource Conservation Team (RCT) Initiatives	5.29	43.40	0	0
3	Controlling of Non critical Circuit Breaker's of Substations from DG House SCADA	0.07	0.60	2	3
4	PLC programe for Auto Start /Stop of Pre lube pump of MAN DG Sets	0.22	1.80	0.5	0
5	Duct Modification for Stopiing non required FDV unit	0.48	3.94	4	1
6	Cooling system shifting of compressor from water to air for partial load	2.40	19.68	4	0
7	HWG Circulation pump replaced with energy efficient pump.	0.45	3.69	2	1
8	Controlling the Hot Water Circulation of the HWG with the Help of VFD by Decreasing the Frequency of	0.36	2.95	6	2
	Idle tripping circuits for Engine plant machines	0.45	3.69	5	1
		9.82	80.5	24.2	19

High Cost Projects

S No	Description	Saving (in Lacs kWh)	Annual Saving (in Rs	Investment (Rs. Lac)	Payback Period (month)
1	Replacement of Old conventional split AC with 5 star rating AC in Executive canteen	0.2	1.64	10	48

FY	No.Projects	Saving (Lacs. KWH)	Saving (Rs. Lacs)
2019-20	15	17.4	242
2020-21	14	10.6	106
2021-22	14	14.5	137
2022-23	**16**	**27.2**	**220**

Energy Conservation projects 2023-24 Plan

SN	Area	Project / Task Description	Expected saving			Remarks
			No. Of days	Saving KWH/Day	Saving in Lacs KWH	
1	ESS-2	To reduce the energy losses of Distribution system by replacement of Transformer of ESS-2 (Energy Loss reduction).	365	150	0.5475	
2	NEP	To reduce the energy losses of M/C's by providing MCB's on Input of M/C's Stabilizers & switching off during C shift.	250	50	0.125	
3	ETP	Reduction of Electrical energy consumption by Installation of HWG thermal heating system in place of non efficient Sludge Drying M/C electric heater.	300	165	0.495	
4	Utility	To Reduce energy consumption (400 KWH/day) of Auxiliaries by providing air cooled radiator along with Cooling tower for air compressors & usage in C shift during winter from Nov-Feb	100	400	0.4	
5	Utility	To reduce Energy consumption (192 KWH/Day) by replacement of HWG Circulation pump one number with energy efficient pump.	200	192	0.384	
6	Chillers	To reduce the energy losses (750 KWH/Day) by shifting Chillers Shifting from DGH to above E/A & removal of 50 KW chiller pump.	200	750	1.5	
7	DG House	Reduce energy consumption by providing Centralized solar heating system on plant roof for drinking water in place of decentralized Electrical Geysers. (feasibility study)	150	800	1.2	
8	Plant	To reduce Energy losses (1700KWH/Day) by Energy Mapping of shops & identify energy conservation opportunities & implementing countermeasures to eliminate losses with the help of Resource Conservation Team.	300	1700	5.1	
9	Sub stations	Reduction of losses by Controlling of plant shop's panels ACB's from single point through Digitalization.(60 breaker auto control)	150	50	0.075	30 nos. converted for 15 nos. PO to be released in aug-23
10	Plant	Reduce energy consumption (100 KWH/Day) by Plant Split AC's replacement with 5 Star AC's 15 nos.	150	100	0.15	H2
11	Steel, Gear	Reduce energy consumption (100 KWH/day) by providing 35 nos of Solenoid valves on main headers of Compressed air line & switching off during non production time.	100	100	0.1	3 Nos. solenoids fixed in Gear Section & start closing in C shift
12	Utility	Reduce energy consumption (50 KWH/Day) by providing Solar charging stations for charging of Batteries of electrical Forklifts. (feasibility Study)	150	50	0.075	H2
13	Plant	Reduce energy consumption (200 KWH/Day) by replacement of existing cabin fans with Efficient BLDC fans 300 nos	200	200	0.4	In Progress
14	Utility	Reduction in Energy consumption (100 KWH/Day) by Chiller's & AHU's monitoring & Controlling through digitalization.	150	100	0.15	H2
15	Steel, Gear	Energy consumption reduction (100 KWH/Day) by provision of BLDC Ceiling Fans in rest Area of operators in plant. (Removal of existing Almonard fans)	200	100	0.2	In PPC 3 Nos. almonard fans remove & BLDC Fans fixed
16	Utility	Reduction of fixed charges of 66kv CD from 9 MVA TO 8 MVA	365	0	19.8	H2
				4907	**11.5**	

Planned Projects with Expected Saving 4907 Kwh /Day.

Major Energy Saving Projects Implemented (FY: 2022-23)

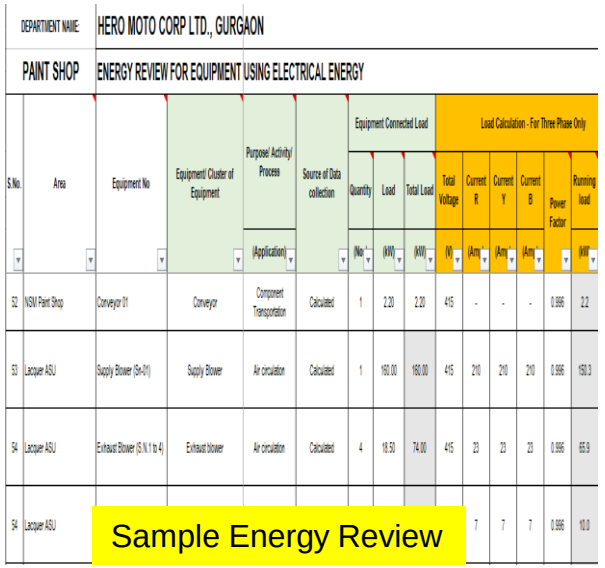
1- Identification & Controlling of Energy Consumption of Significant Energy Usage Equipments

Energy Review
Monitoring Energy Consumption Each Equipment in Shops for Better Monitoring & Loss Identification

SEU Identification
Criteria for SEU's-
1. Saving Potential more than 15%
2 ROI Less than a Year
3.Energy Consumption more than 40% of Shop

IMP's
Projects Identified from all shops
1.IMP Sheet & Target setting for completion of Projects

Confirming Effectiveness
1. Identified Saving Potential of 6050 kwh /Day
2. Achieved Saving of 3700 kwh/Day after implementation of IMP's

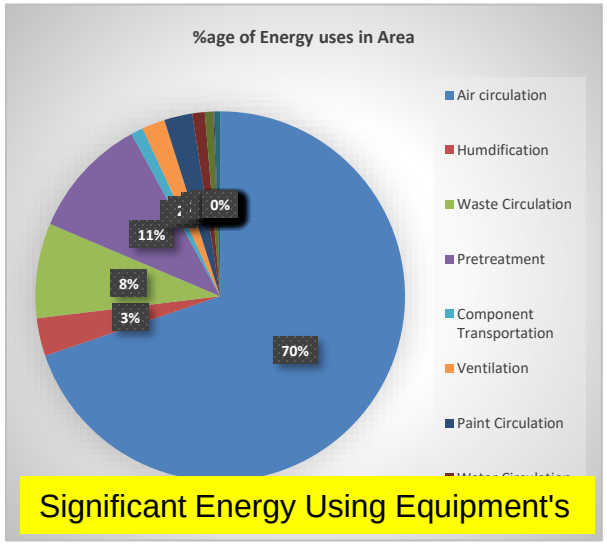


DEPARTMENT NAME: HERO MOTO CORP LTD., GURGAON

PAINT SHOP — ENERGY REVIEW FOR EQUIPMENT USING ELECTRICAL ENERGY

S.No.	Area	Equipment No	Equipment/ Cluster of Equipment	Purpose/ Activity/ Process (Application)	Source of Data collection	Equipment Connected Load: Quantity (No)	Load (kW)	Total Load (kW)	Load Calculation - For Three Phase Only: Total Voltage (V)	Current R (Amp)	Current Y (Amp)	Current B (Amp)	Power Factor	Running load (kW)
52	NSM Paint Shop	Conveyor 01	Conveyor	Component Transportation	Calculated	1	2.20	2.20	415	-	-	-	0.866	2.2
53	Lacquer ASU	Supply Blower (S#-01)	Supply Blower	Air circulation	Calculated	1	160.00	160.00	415	210	210	210	0.866	138.3
54	Lacquer ASU	Exhaust Blower (S.N.1 to 4)	Exhaust blower	Air circulation	Calculated	4	18.50	74.00	415	23	23	23	0.866	65.9
54	Lacquer ASU									7	7	7	0.866	10.0

Sample Energy Review



Significant Energy Using Equipment's

S.No	Deptt.	Section	Equipment	Projects Description	Potential Saving (kwh/Yr.)	Investment (Lacs.)	ROI (Months)
1	Maint.	DG House	DG-1.9MW-AUX LOAD	PLC programe for Auto Start /Stop of Pre lube pump	18250	0.5	4
2	Maint.	DG House	GG-2MW-AUX LOAD	Solar Heating /Heat Pump for Jacket Water	52560	10	29
3	Maint.	DG House	FDV	Duct modification to stop 1 FDV unit	43125	0.2	1
4	Maint.	Utility	Air Compressor	Cooling tower ckt shifting to Air cooled	164250	4	4
5	Maint.	Utility	Hot Water Generator	Circulation pump replaced with energy efficient pump	45300	4	13
6	Engine plant	Heat Treatment	Cooling Tower	Development and installation of localized chiller for individual furnaces so that cooling tower need not be run for operation 01 or 02 furnaces.	82125	14	26
7	Engine plant	Aluminium Phase	SPM Machines	To remove/ eliminate obsolete models/ operations drive/ spindle motors from SPM Machines.	18000	0.5	4.2
8	Frame Plant	Paint Shop	Lacquer ASU Supply Blower	Replacement of cove		40	12.3
				Total		73	

Major IMP'S & KWH Saving

Energy saved 11.5 Lacs Kwh /year

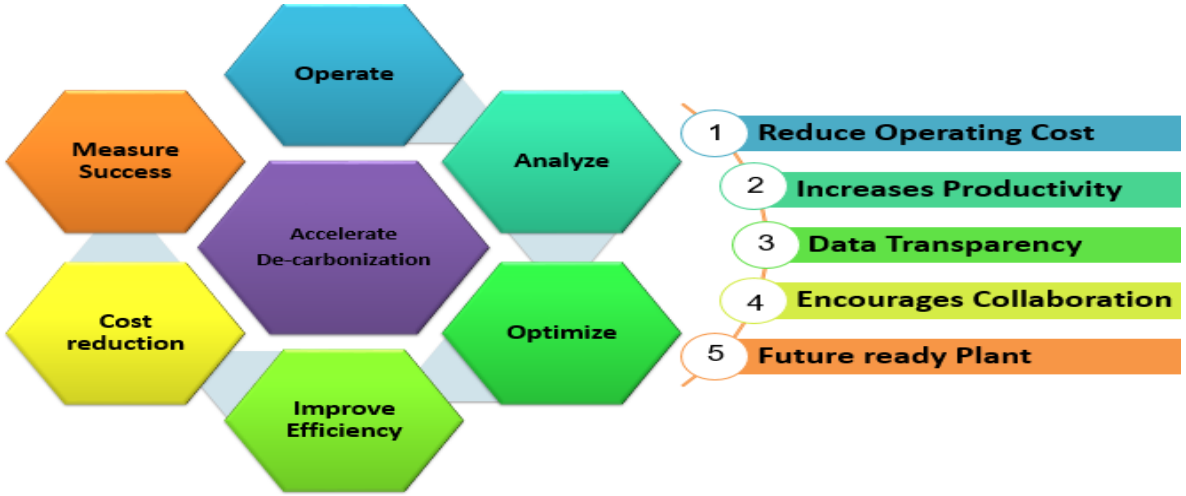
Completed in Nov23

2.Centralized Utility Cockpit:

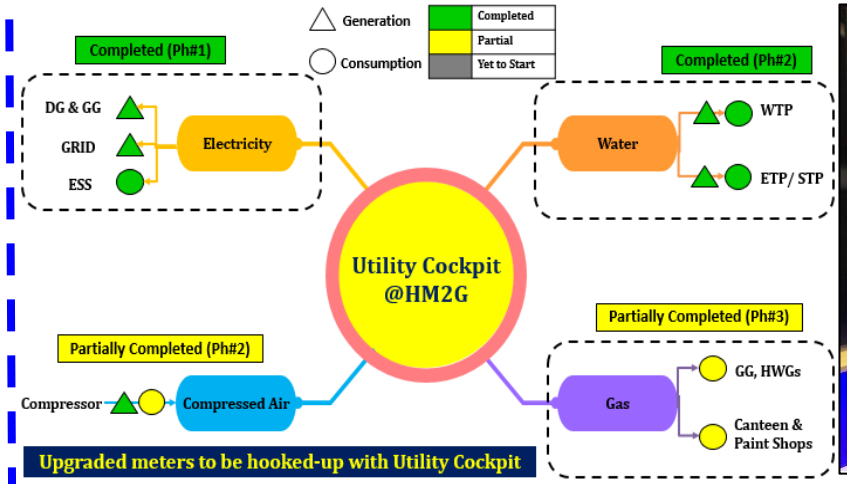
Present Condition:-

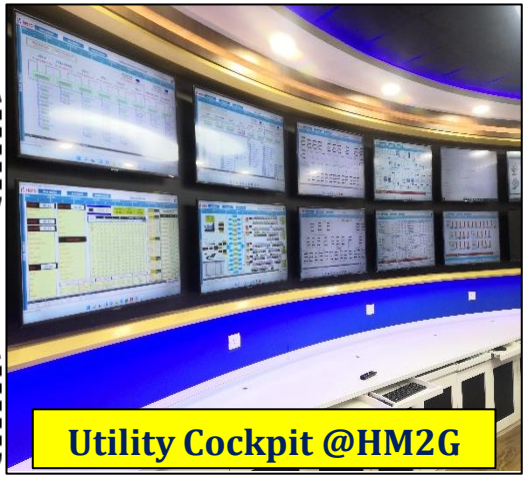
- Utilities facility Data collection & Recording system is ineffective due to manual intervention
- Human work content is more on Data collection rather than analysis & predictive control due to which response for corrective action gets delayed
- Most of the existing meters are not communicable & obsoleted

Digitalization Approach for Utility Cockpit: -



Improvements Done/Kaizens done: -





Benefits/ Results:-

- Enhanced Data Transparency & Digital data display through Digitalization of processes
- Machine wise Energy Loss identifications
- C-shift KWh consumption optimization by switching of Busbar & M/Cs
- Shop wise SEC target setting
- Effective Energy Planning & Control

Energy Saving of 5.3 Lacs KWh/Annum achieved by Loss elimination through the "Utility Cockpit System"

3.Heat Pump System for Weld Shop Washing M/Cs:

Present Condition:-

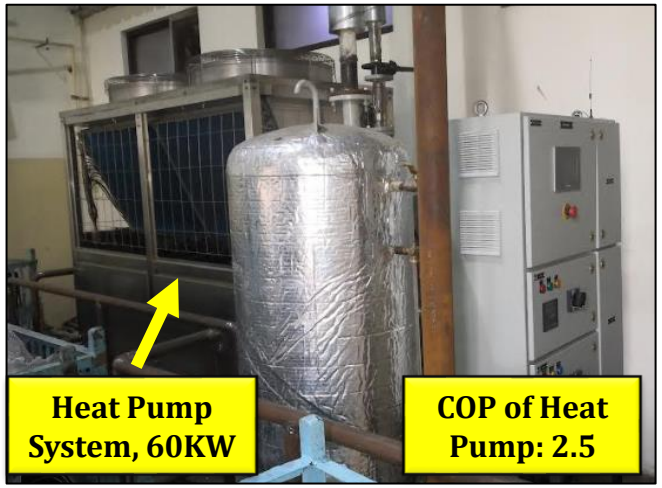
- Electrical heaters is the primary source of heating for Coolant in Washing machines (4 Nos) installed in Weld shop area.
- To meet the thermal heat load demand of Washing machines alternate sustainable heat source is required.
- Electrical Heaters are considered as the most in-efficient mode of heating the coolant up to 60degC.

Methodology/Approach Adopted: -

- Horizontal deployment of the most energy efficient Compression type Heat Pump System having Cap: 60KW has been proposed to take care the electrical demand of Washing machines.

- BTU Meters for Thermal Heat Monitoring
- Real Time Monitoring of Electrical Heaters

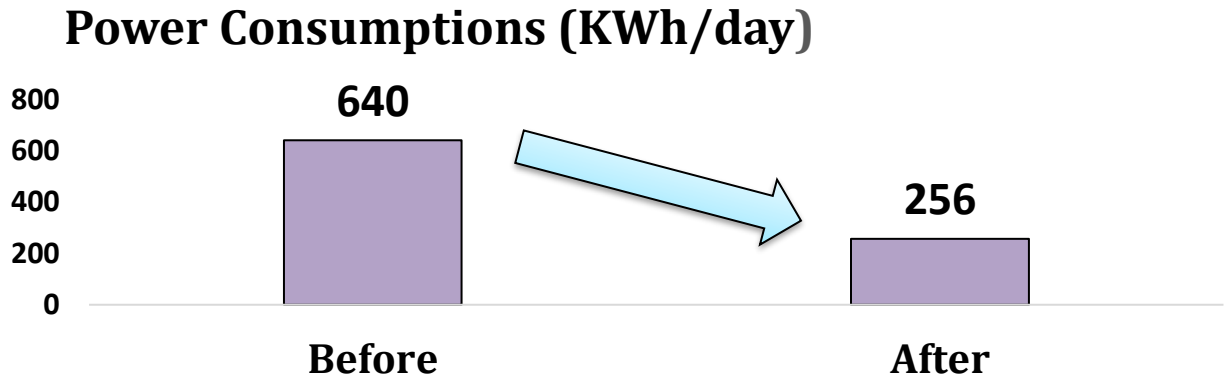
Improvements Done/Kaizens done: -



Washing Machines Mapping@HM2G :

Area	Total Washing Machines (Nos)	Pending Washing Machines (Nos)	Primary Heating Source	Secondary Heat Source
Aluminium Phase	4	0	Solar Thermal + Heat Pump	Electrical Heaters
Engine Assy.	3	0	Heat Pump	Electrical Heaters
New Engine Plant	7	0	Heat Pump	Electrical Heaters
Weld Shop	4	0	Heat Pump	Electrical Heaters
Grand Total :	18	0		

Benefits/ Results:-



Energy Saving of 1.2 Lacs KWh/Annum achieved through offsetting of Electrical Heaters by Energy Efficient Heat Pump System of Washing machines

4.Heat Exchanger System for Sludge Drying M/C in ETP:

Innovative

Present Condition:-

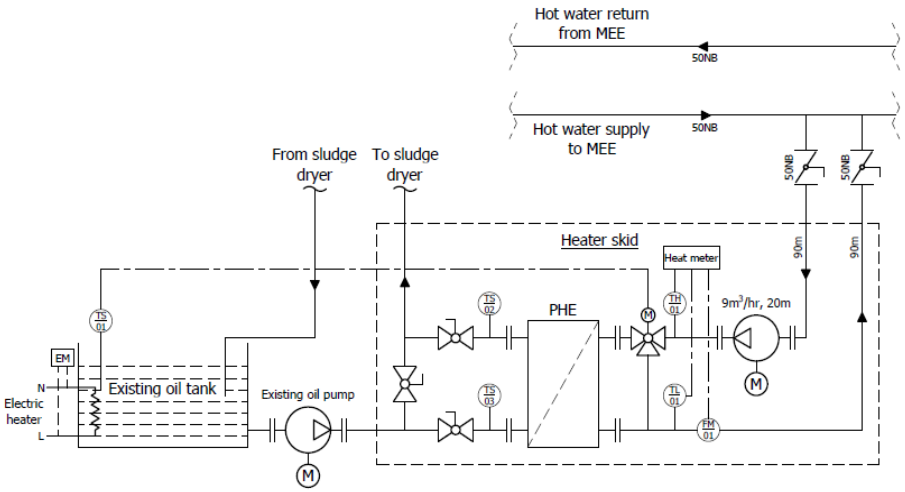
- Electrical heater is the primary source of heating for Thermic Fluid in the Sludge Drying machine operations, which is installed in ETP area.
- To minimize this High Electrical load demand of Sludge Drying machine an alternate sustainable heat source is required to heat the Thermic Fluid up to 135 degC.

Methodology/Approach Adopted: -

- Replaced the Heat source from Electrical heaters to Hot Water Supply from NG fired Hot Water Generator (HWG) installed for MEE application.
- Plate Heat Exchanger installed along with Automatic valve controller to transfer the heat from MEE hot water pipeline to Thermic fluid of Sludge Drying machine.

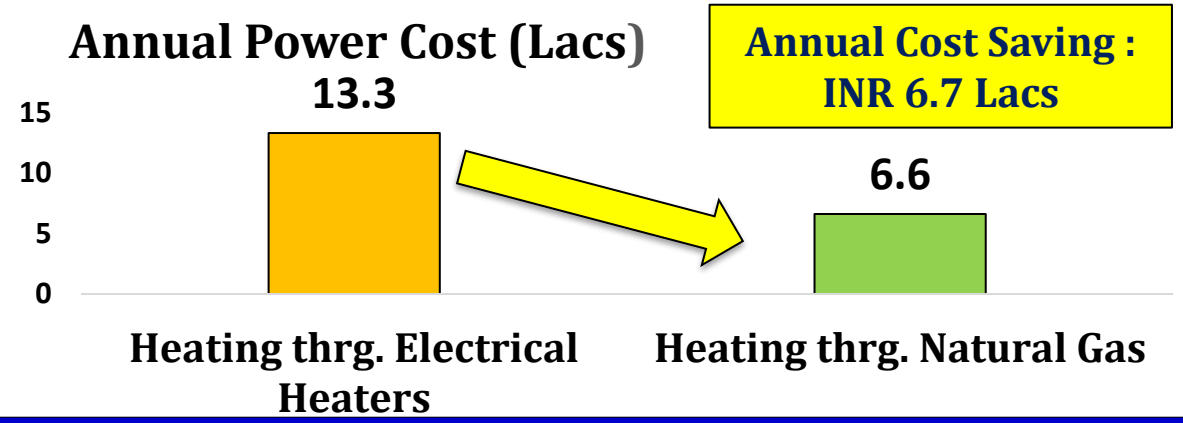
- BTU Meters for Thermal Heat Monitoring
- Real Time Monitoring of Overall System

Improvements Done/Kaizens done: -



Heat Exchanger System

Benefits/ Results:-



Annual Cost Saving : INR 6.7 Lacs

Energy Saving of 0.84 Lacs KWh/Annum achieved through offsetting of Electrical Heaters by NG fired Hot Water system for heating of Thermic fluid

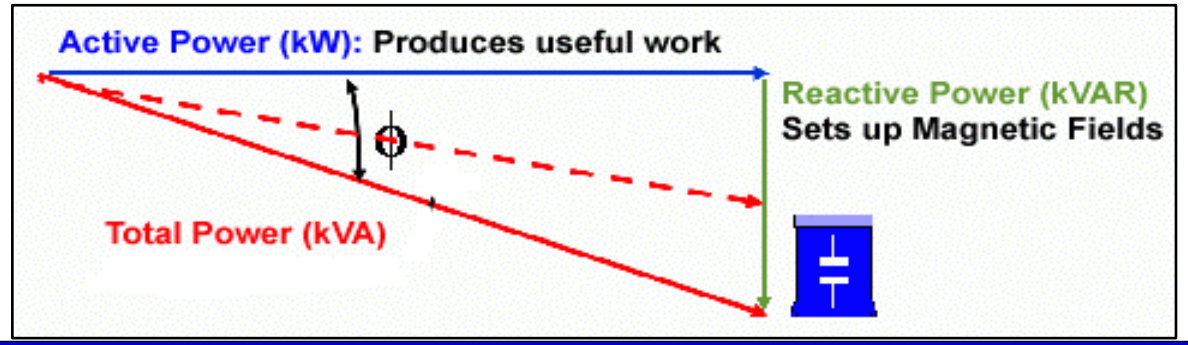
5. Automatic Power Factor Correction (APFC) Panels for Shop Floor Area:

Present Condition:-

- Power Factor in ESS varies from 0.6 to 0.8 , which is considered as Very Poor.
- Very Poor Power Factor in ESS, results into higher internal current and the excessive heat generated will damage/ shorten equipment life span.
- Increased reactive loads can reduce output voltage and damage/ trip equipment's sensitive to reduced voltage.

Methodology/Approach Adopted: -

- To make the Power Factor as 0.99 across the Plant premises.
- Reduce the reactive power by installation of Capacitor panels.



Improvements Done/Kaizens done: -

Benefits/ Results:-

Descriptions	Required KVAR	Existing Scenario (July22)	Proposed Scenario @0.99 PF	
		Existing Power Factor	Proposed Power Factor	Cost Saving (INR/Day)
ULP 1 UTY	150	0.62	0.99	557
ULP 2 UTY	150	0.66	0.99	700
ULP 3 UTY	150	0.67	0.99	422
ULP 4 UTY	150	0.69	0.99	586
MDB-1A/3 CORE-1	150	0.75	0.99	108
MDB-1A/4 CORE-1	150	0.82	0.99	77
MDB-2A/3 AL NEW	150	0.84	0.99	83
Total Cost Saving/Day:				₹ 2,533
Grand Total Cost Saving/Yr: (303 Days)				₹ 7,67,546

Energy Saving of 0.96 Lacs KWh/Annum achieved by optimizing the Power factor & subsequent Line loss reduction by installation of APFC panels in Shop floor areas.

6.BLDC Wall Fans for Office Floors:

Present Condition:-

- Conventional Wall Fan with Brushes used for Ventilation purpose in Office areas.
- There are nearly 400 Nos (approx.) wall mounted office fan installed inside plant premises.
- High Power consumption (50 Watts) for conventional fan.

Methodology/Approach Adopted: -

- Horizontal deployment of the most Energy Efficient BLDC type wall mounted fans planned for replacement.
- Phase-wise replacement planned for 400 Nos of Office fans.

Intangible Benefits: -

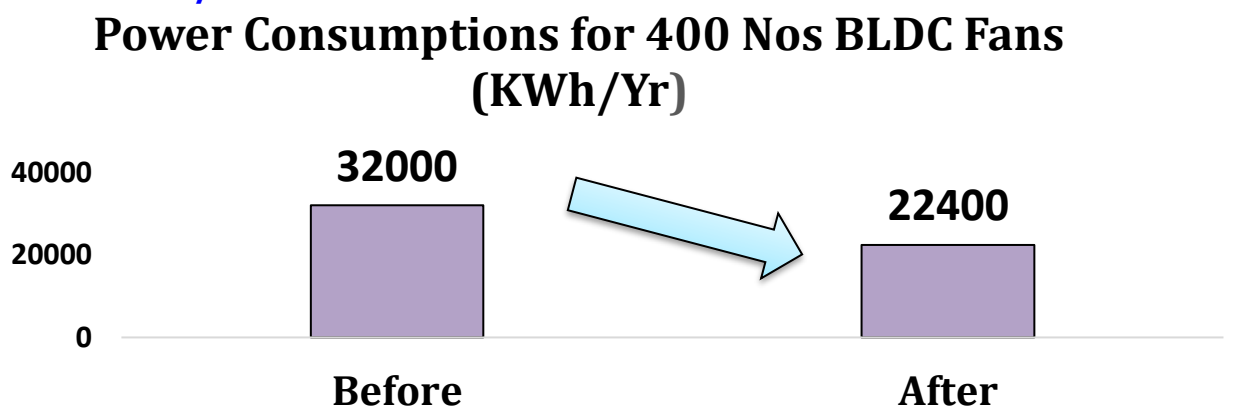
- Double ball bearings for longer life and less noise.
- Smart remote operations with boost, sleep & timer mode.

Improvements Done/Kaizens done: -

Conventional Wall Fans (P = 50 Watts)

BLDC Wall Fans (P = 35 Watts)

Benefits/ Results:-



Energy Saving of 9600 KWh/Annum achieved by replacing the Conventional wall mounted fans with the Energy Efficient BLDC type fans.

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

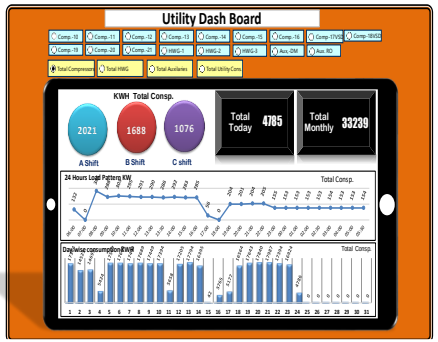
Glimpses of various ENCON projects implemented till FY 2022.

ENCON projects already Implemented-2

VFD in air washers

Solar Thermal Dishes

Regulated air supply to plant



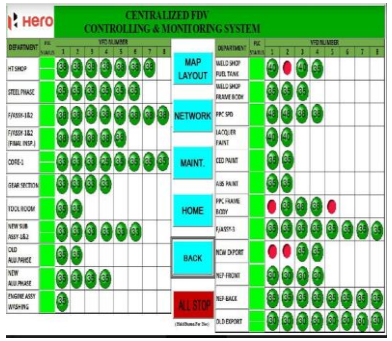
Advance EMS Dashboard

Replaced Ex fans with natural vents

EC Fan for AHU

LED lights Exterior

VSD Compressors



FDV Remote Operations

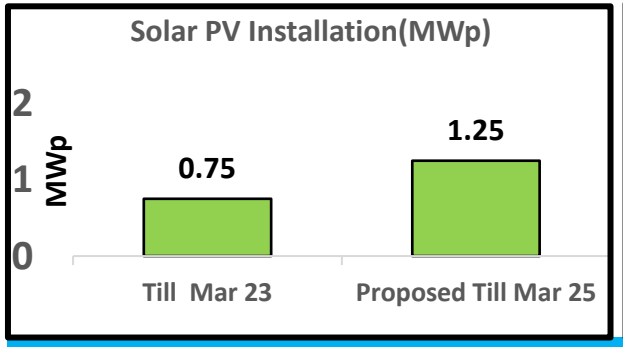
Replacement of IE1/IE2 motors with IE 3 & IE4

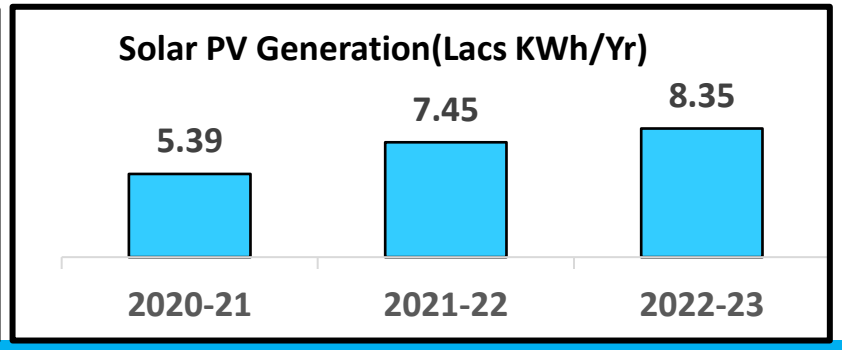
Glimpses of various ENCON projects implemented till FY 2021.

Renewable & Green Energy

- We have an installation capacity of 7**50KWp** 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:22-23 & Earlier	Introduction of Solar SmarTree	6.5 KWp	0	6.5 KWp + 4.76LKCal/day	On site
	Concentrated Solar Thermal Dishes (41 Nos.)	4,76,000 KCal/day	0		
	Rooftop PV Solar	750 KWp			
FY 23-25 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		



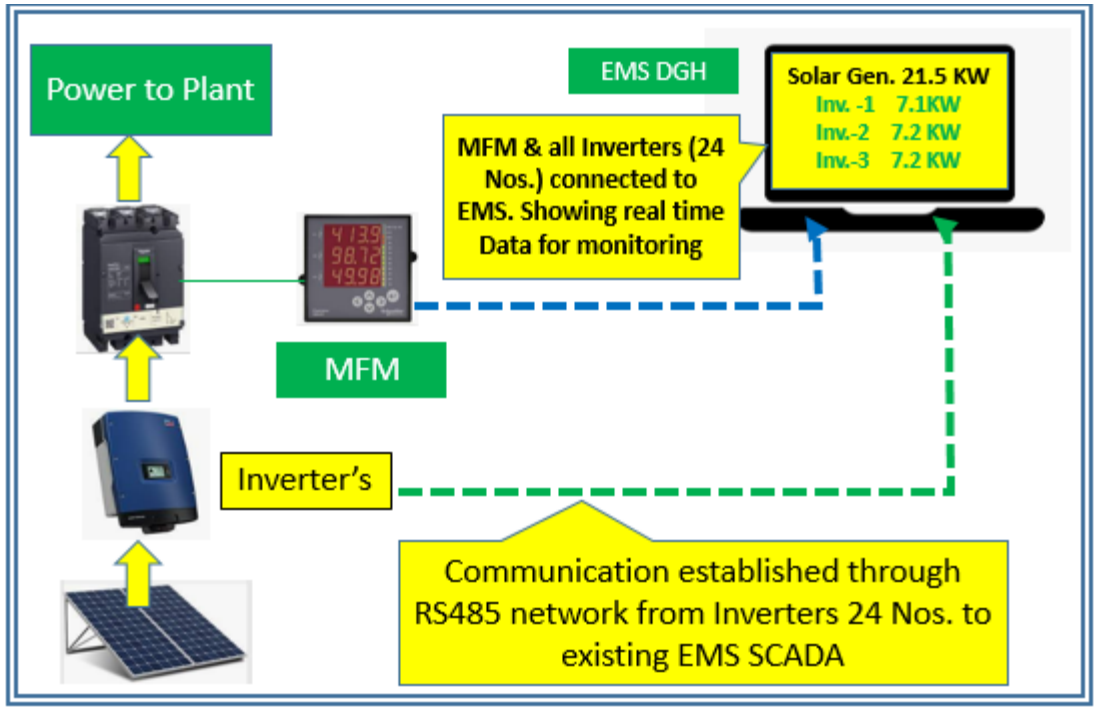


Annual CO2 Offset : 615 Tonne

- 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

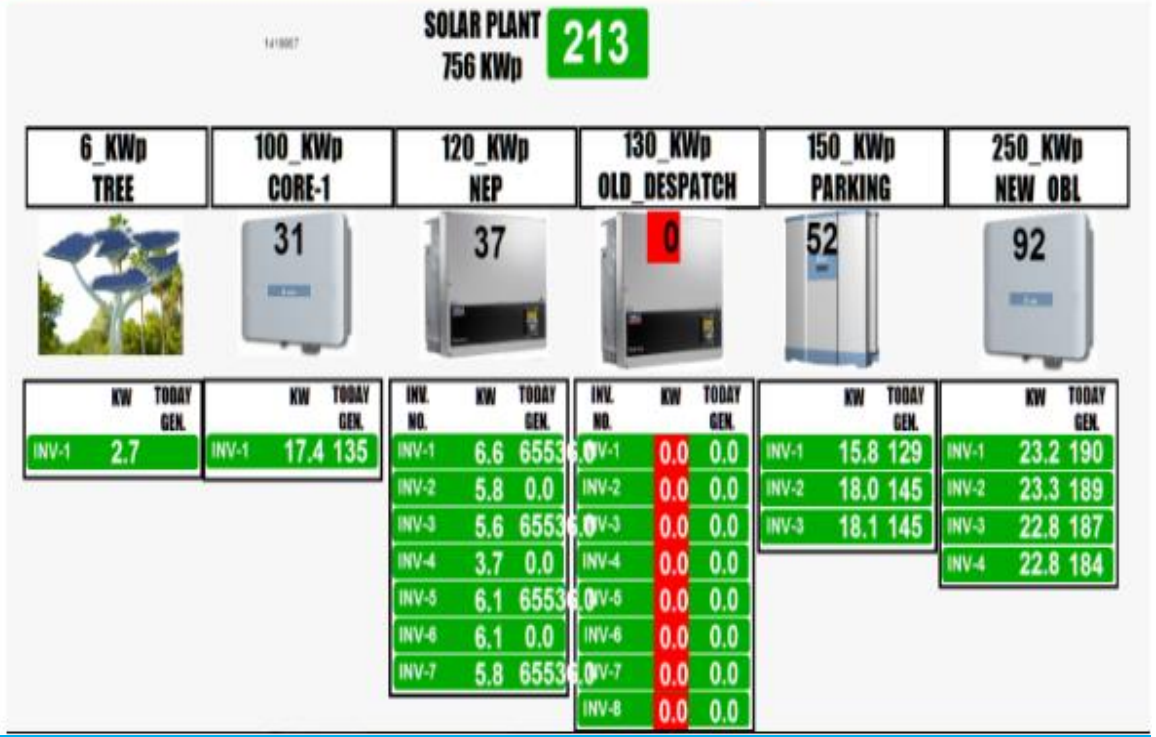
Inverter wise Generation Data Monitoring for Optimum Generation from Solar



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

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

Solar Invertor wise Data Integration with existing EMS:

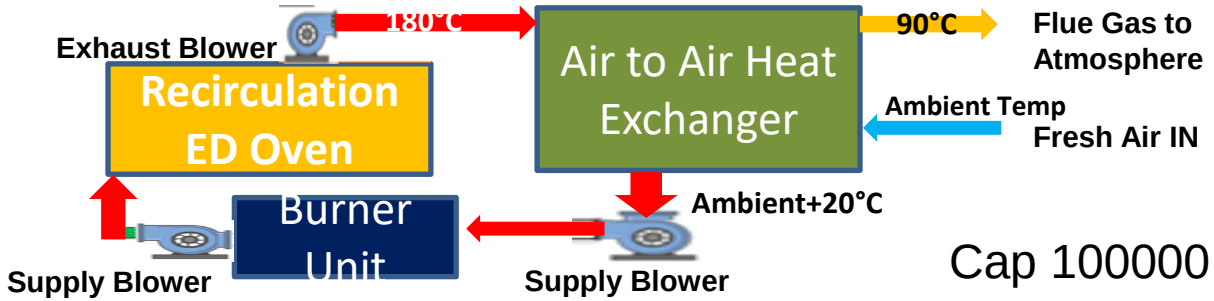


Digitization of Roof top Solar PV plant for Better monitoring & Reduce down time

Waste as Fuel

1.CED Paint shop Oven Exhaust Waste Heat Recovery

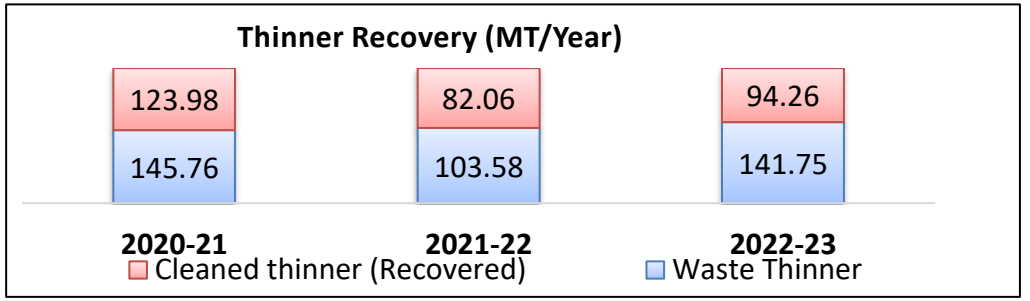
An air-to-air Heat Exchanger is used to pre-heat fresh air (on atmospheric temperature) for ED oven in CED Paint shop.
(Targeted ∆t = 20 Deg. Celsius)



Cap 100000 kcal/hr

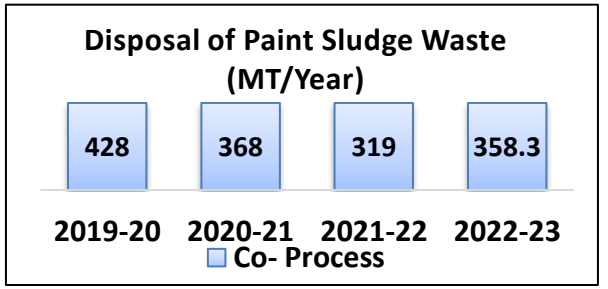
2.Thiner Recovery

Thinner is recovered by Distillation process from Waste Paint Sludge.



3.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

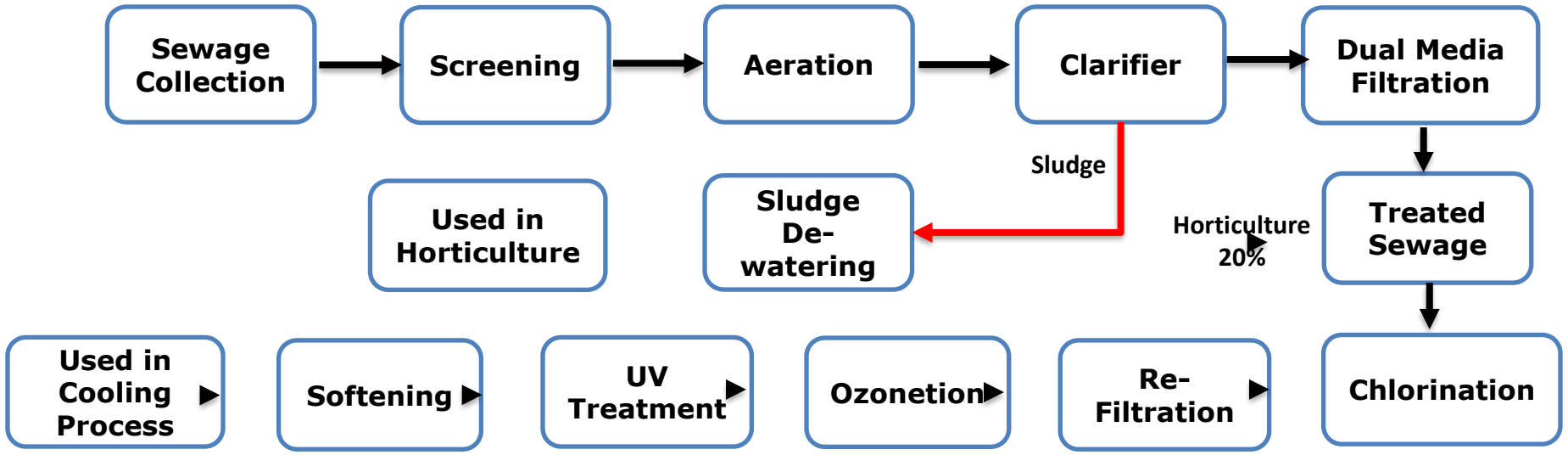


100% Hazardous waste used as alternate fuel/raw material in Cement plants from July 2018. In Fy23 94 MT thinner recover from waste &358 MT paint sludge sent to paint industry.

Sewage Effluent Management

Capacity-600 KLD

Process Flow chart – Sewage Recycling



STP Plant

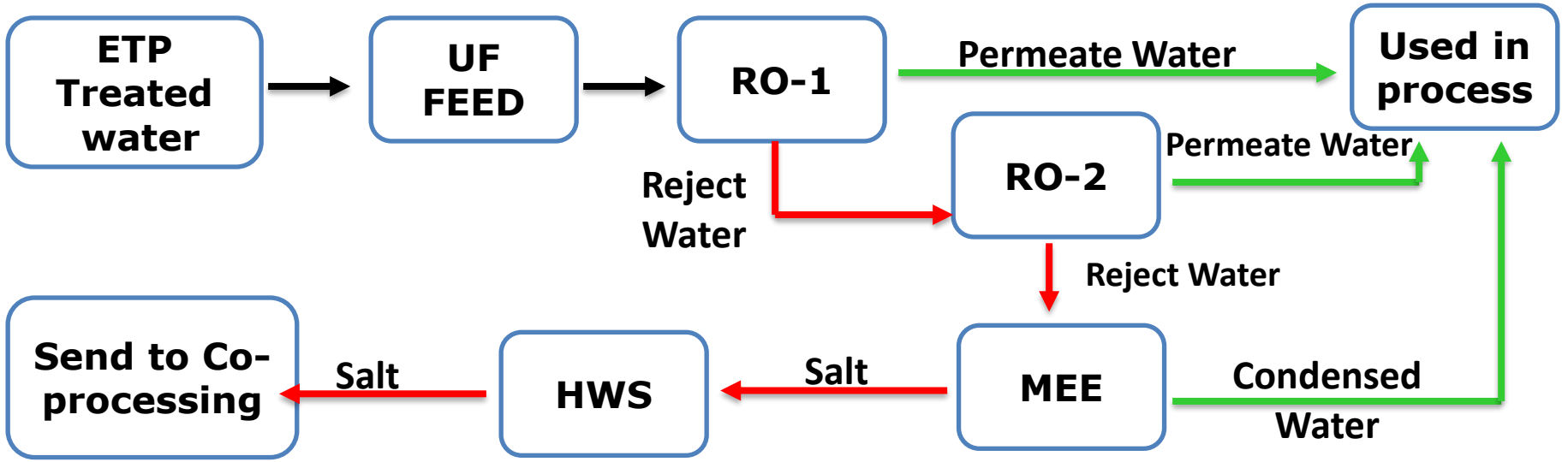

Outlet


Soft Water

Process Effluent Management

Capacity-600 KLD

Process Flow chart - ZLD




ETP Plant


ETP Recycling

MEE

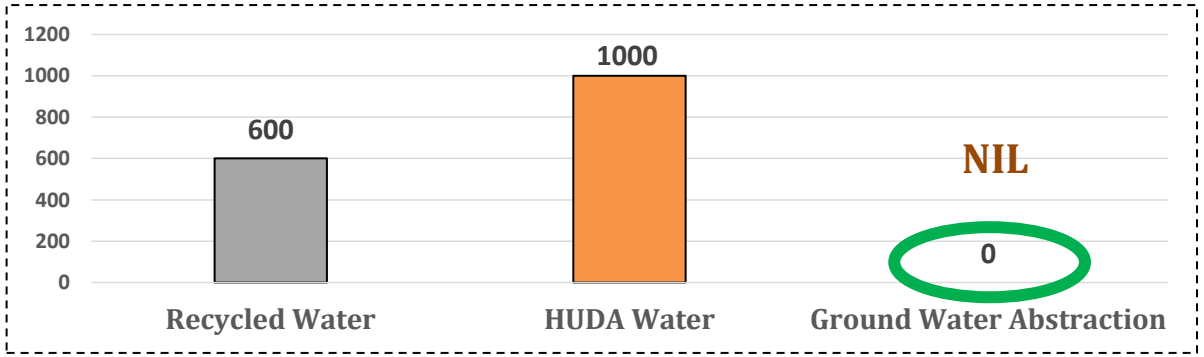
Water Resource Management System:

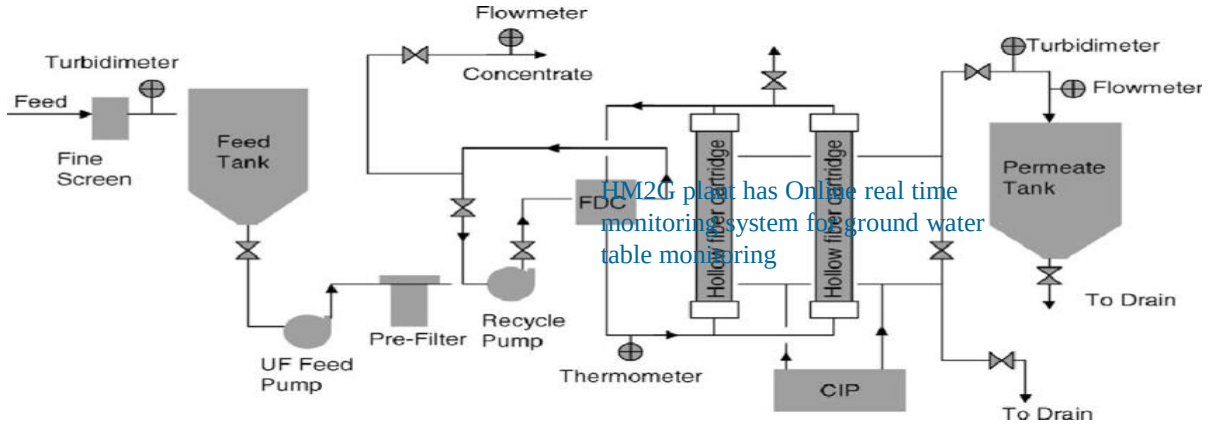
Objective : -

- 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 thrg. UF Plant

Water Positive Strategy & Certification : -

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

Rain Water Harvesting Well Site Photograph

Piezometer for real time monitoring system for ground water table

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

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

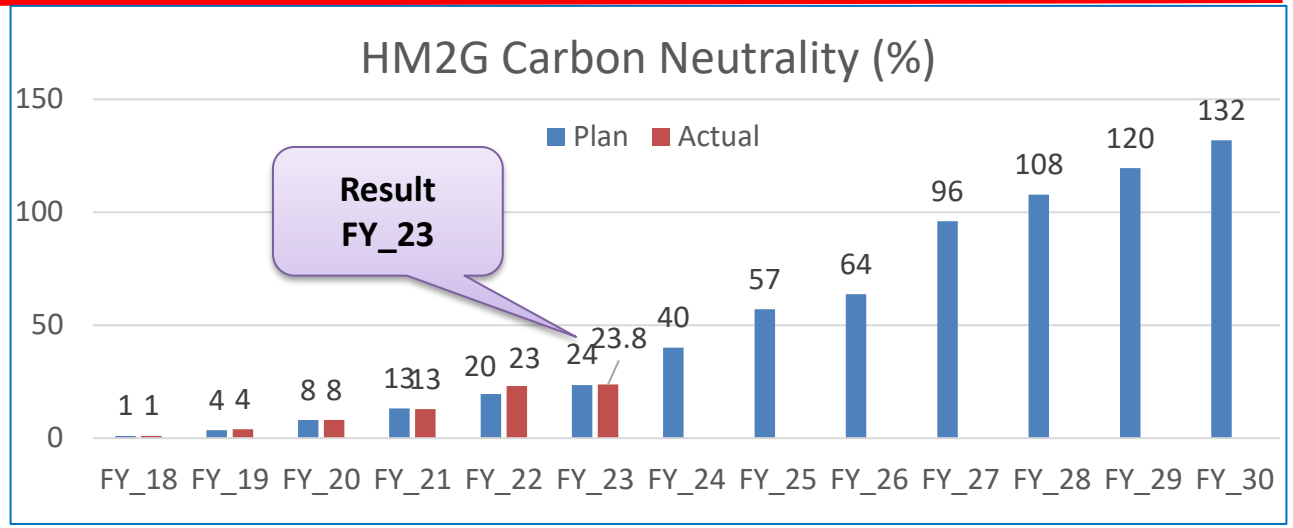
Carbon Neutrality: HM2G Road Map

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

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 pants 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				500			1500			2000			
2. Solar Power wheeling (Lac kWh/ year).					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.	B D Bhateja				29.6	29.0	28.4	27.8	27.3	26.7	26.2	25.7	25.2	24.7

HMCL Roadmap to become carbon neutral by 2030.

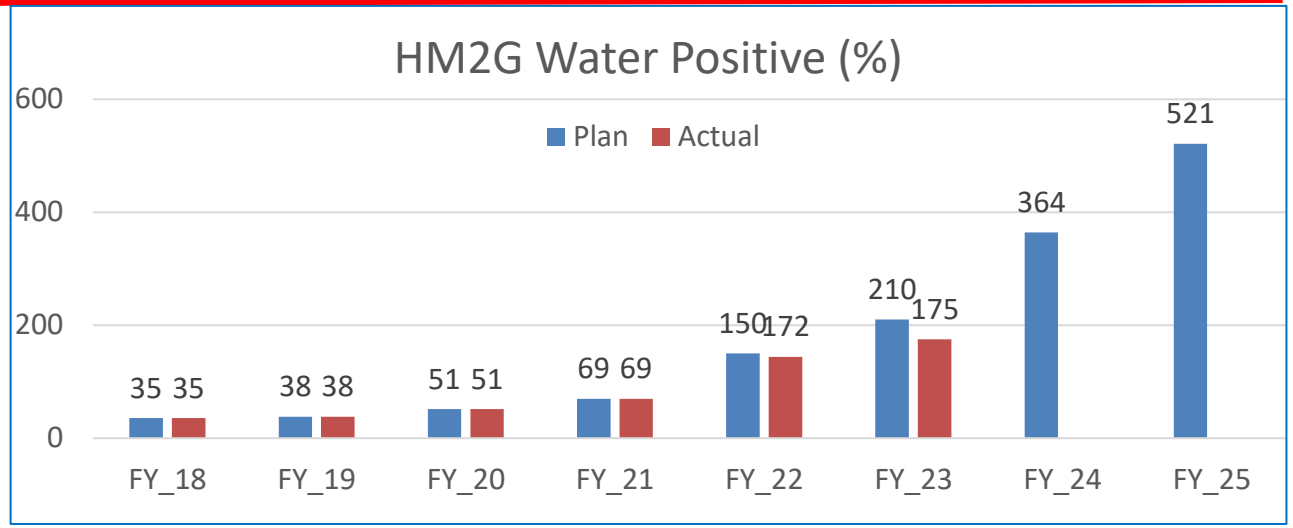
Water Positive: HM2G Road Map

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

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_20	FY_21	FY_22	FY_23	FY_24	FY_25
1. Community rain water drive through CSR with water harvesting potential (Lac KL).	Sushil K Pandey	0	0	0	0	5.6	0	2.4	0
2. Water conservation projects in order to reduce specific fresh water cons. (L/Veh) by 10%/ year.	B D Bhateja	198	188	181	148	134	120	108	97

HMCL Roadmap to become Water Positive by 500% by 2025.

Green Supply Chain Commitment

SPDP An Initiative by Hero for protecting and preservation of Environment

SPDP – Framework Green Initiatives

Current Emissions (Carbon Footprints)

Scope **1**

Direct Emissions:
- HSD (Diesel) Combustion
- PNG, LPG Combustion

Consumption:
- Consumables, Compressed Air

Water & Waste Management
- Water Consumption

Scope **2**

Indirect Emissions:
- Purchased Electricity for own use

* tCO2e per Year Range **: XX**

Green Initiatives

1. Energy Efficient Processes
2. Five Star Appliances (LED Lights, AC)
3. Smart Lighting System
4. Use of energy efficient equipment
5. Optimization & reduction in Compressed air
6. ETP & STP (Water recycling)
7. Rain water harvesting
8. Waste Disposal
9. Plastic Management (SUP)
10. Renewable Energy (Solar Power Plant etc.)

* Reduction in tCO2e Per Year Range **: XX**

* tCO2e Per Year – will be finalized for each SCP after baselining activity

**tCO2e : Tonnes of CO2 equivalent - per SCP*

Green Supply Chain Commitment

SPDP Target Setting – SCP ESG Journey

Green Supply Chain Partner

Current Emissions (Carbon Footprints)

Scope 1

Direct Emissions:
- HSD (Diesel) Combustion
- PNG, LPG Combustion

Consumption:
- Consumables, Compressed Air

Water & Waste Management
- Water Consumption
- Waste Generation - Hazardous

Scope 2

Indirect Emissions:
- Purchased Electricity for own use

* tCO2e per Year Range : **XX**

- *Tangible targets after baselining & Scope identification*

Social & Governance Initiatives

Social Initiatives

1. Gender Diversity
2. Employees Training & Development
3. Human Rights Policy deployment

Governance Initiatives

1. Sustainability Steering Committee
2. ESG Targets and monitoring
3. Compliance Management System

- *Intangible initiatives*

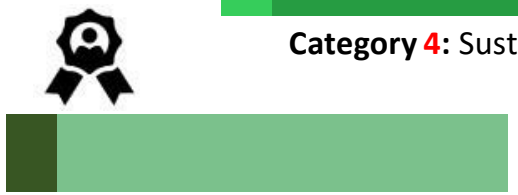
Sustainable Partner

Green Supply Chain Commitment

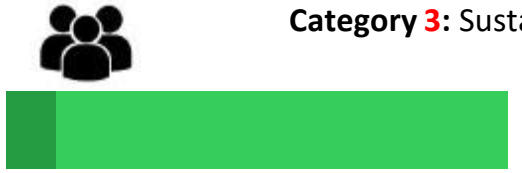
FY 24 | Current State Mapping of 128 SCPs on Social & Governance Initiatives

FY 25 | 30 SCPs upgradation to Sustainable Basic 10 SCPs
upgradation to Sustainable Plus 5 SCPs
upgradation to Sustainable Pro
2 SCPs upgradation to Sustainable Max

Category 4: Sustainable Max (Green Max + 90% Adoption in S&G)



Category 3: Sustainable Pro (Green Pro + 75% Adoption in S&G)



Category 2: Sustainable Plus (Green Plus + 50% Adoption in S&G)

Category 1: Sustainable Basic (Green Basic + 30% Adoption in S&G)

**Categorization is based on the adoption of 6 S&G initiatives*

Green Supply Chain Commitment

Activity Plan - FY24

S No	TASK	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24
Baselining of 128 SCPs - Carbon Emissions										
1	Preparation & finalization of CII Online Tool Kit for Emissions capturing									
2	SCPs training on CII's Tool Kit & sharing with 128 SCPs									
3	Follow-up with 128 SCPs & get the data filled on online toolkit									
4	SCP wise Metrics reporting on ESG - tCO2, Water, Waste, Gender Diversity, Sustainability framework & Governance etc.									
5	SCP wise target setting on Metrices, Project identification									
6	FY25 Roadmap preparation for each SCPs (128) on achieving the Targets									

Gurgaon Plant

Community Support

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

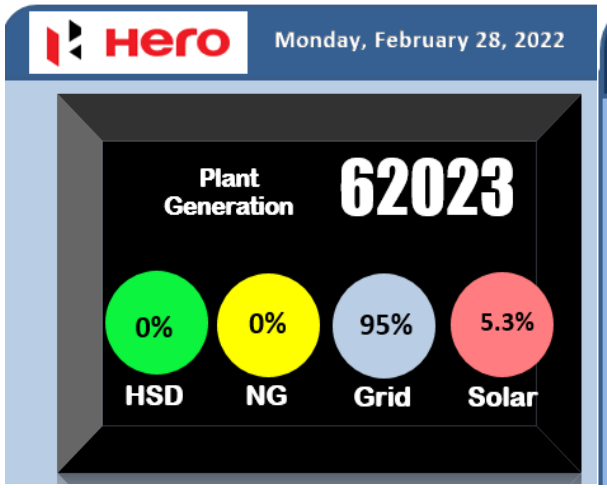
- Traffic Training Parks in 06 Cities with Audio-Visuals, Simulators: 6 lacs + beneficiaries
- 208 Two Wheelers with 2468 Helmets given to State Police & Sports Winners
- 1.13 Lakh Participant trained for Ride safe programme

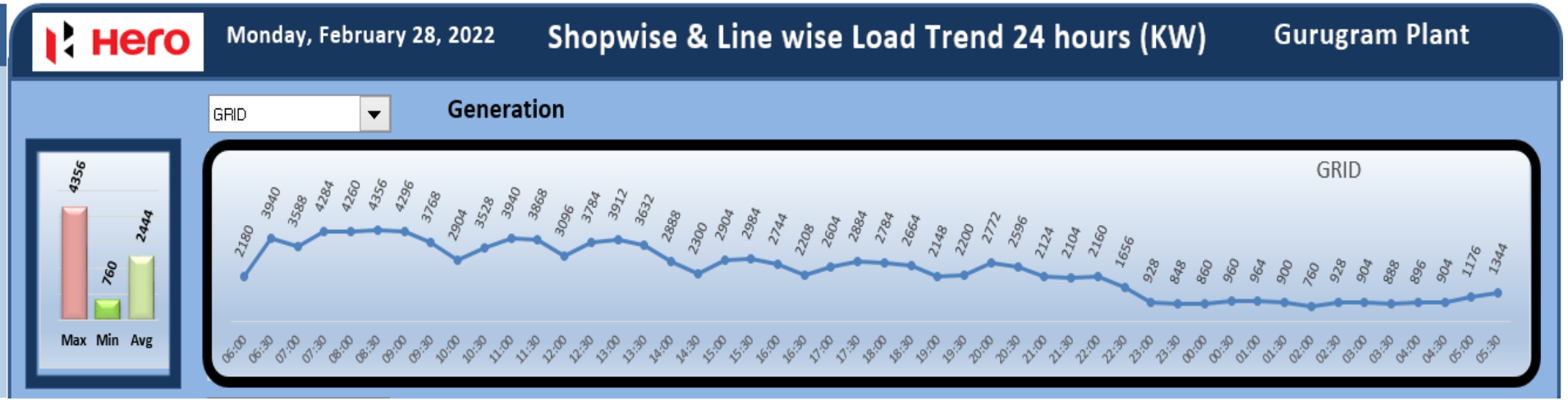
GREENER · SAFER · EQUITABLE
Hero we care
A Hero MotoCorp CSR INITIATIVE

Guinness Book of world record

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

Monitoring & Controlling

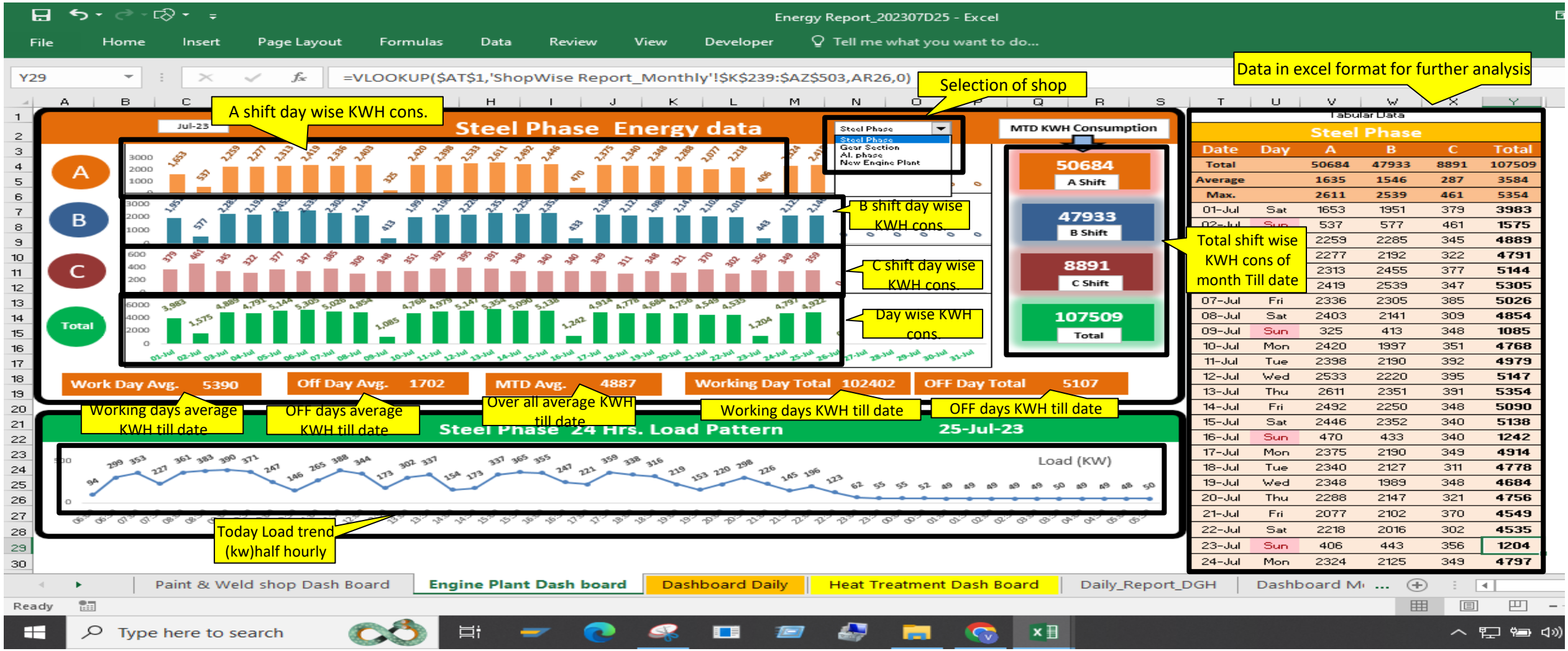




Dash Board made & Circulation to all owners on daily basis

CONCLUSION :- Establish Daily monitoring of Power Consumption through EMS. Dashboards developed in reports & Circulate to all owners through SCADA in auto mode Daily.

Monitoring & Controlling



Shopwise Data Reading & Analysis for optimum consumption sent on daily basis to all Stakeholders.

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

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

ISO50001:2018 Energy Management System Certification- Oct'2022

DNV

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of
Hero MotoCorp Limited
37 Km Stone, Delhi - Jaipur Highway, Sector - 33, Gurgaon - 122001, Haryana, India

has been found to conform to the Energy Management System standard:
ISO 50001:2018

This certificate is valid for the following scope:
Manufacture of motorcycles & scooters

Our plant is Certified with EnMS ISO50001:2018 in Oct2022.

Hero

Thank You