

National Award for Excellence in Energy Management-2024

Category: Automobile
Hero MotoCorp Limited - Dharuhera



Manoj

Punit

17 September 2024

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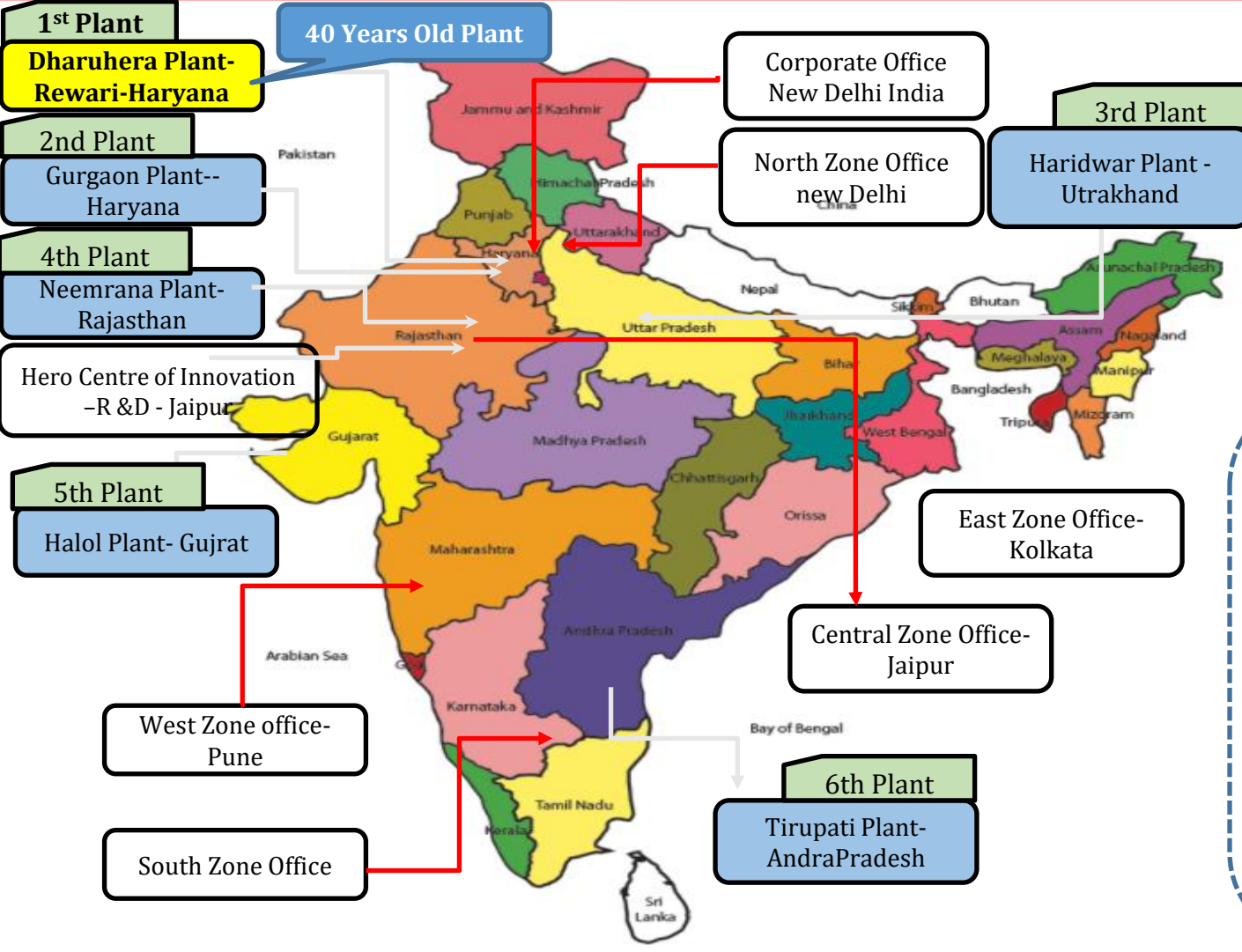
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Hero MotoCorp - At Glance

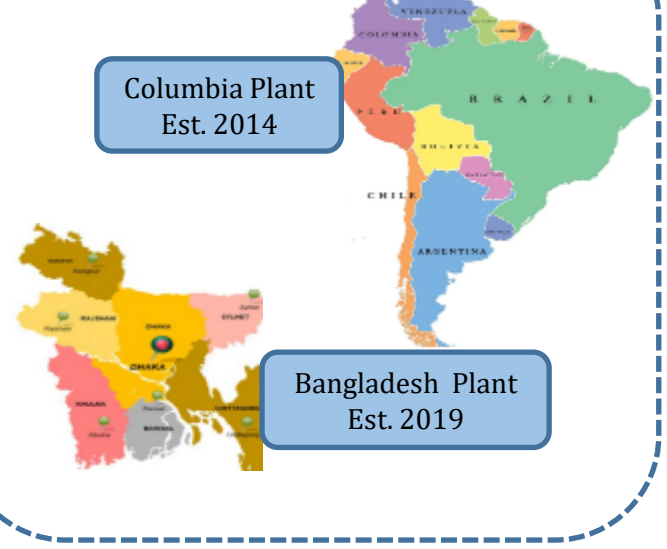
- Registered and Corporate office
- 6- Plant- India
- 1-Global Part Centre
- 2- R & D Centre
- 5- Zonal Office
- 22-Regional Office
- Dealers
- Stockist
- Spare and Service centres
- Authorised Dealer Representatives
- Mobile station
- Service Har Jagah



Global Presence in 47 Countries across Asia, Africa, south Africa, and central America

Overseas-2 Nos. Plant

Columbia Plant Est. 2014



Bangladesh Plant Est. 2019

10000+ touch points across India including plants, service centre, dealers, mobile service centres. Hero has 6 plants in India and 2 plants in overseas.



Be the Future of Mobility

Create | Collaborate | Inspire P3

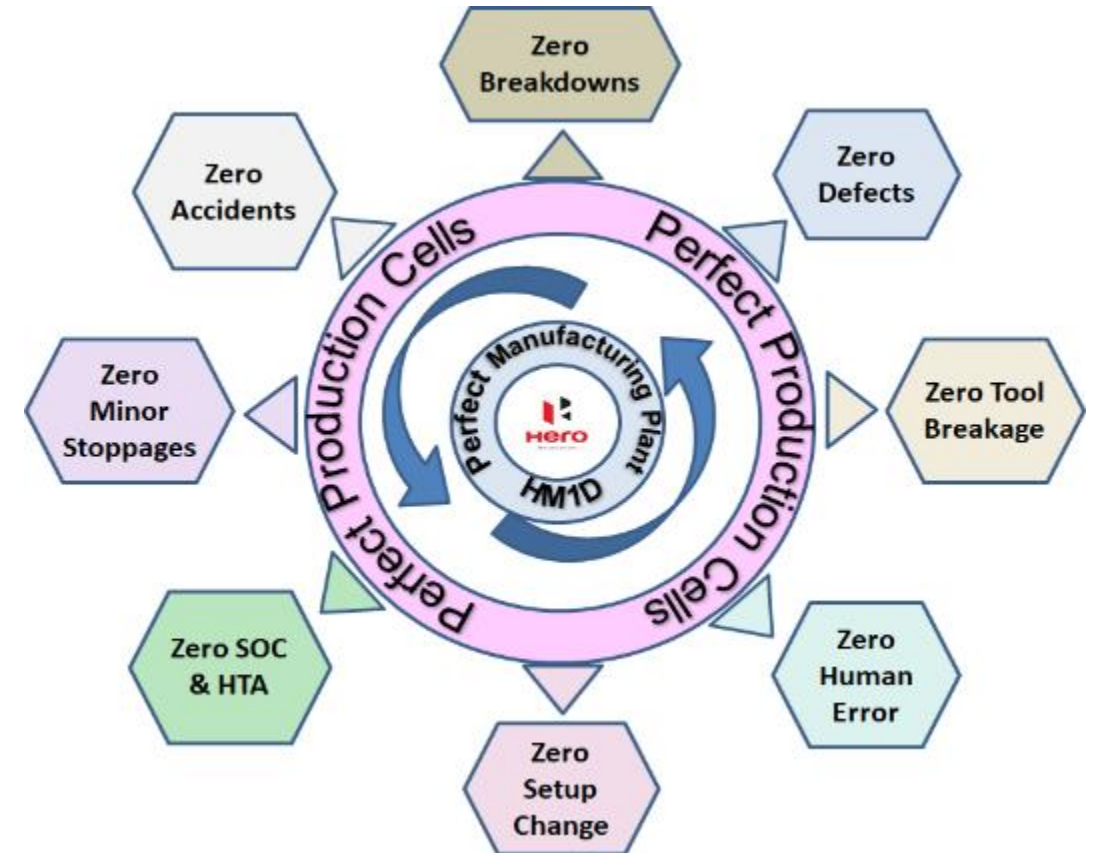
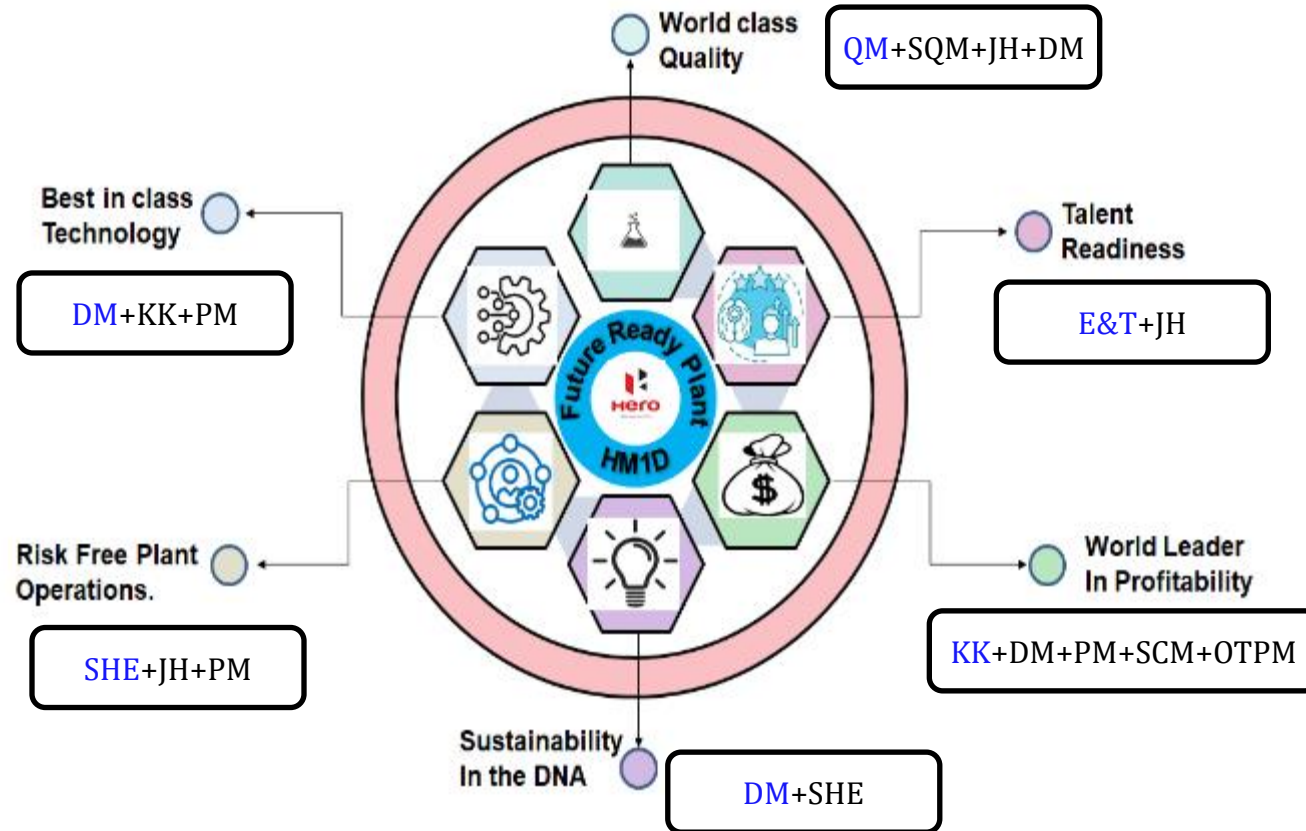
HMCL Vision and Mission

Vision of Hero MotoCorp- Be the Future of Mobility

Vision of Dharuhera Plant- Future Ready Plant

Mission of Hero MotoCorp- Create, Collaborate & Inspire

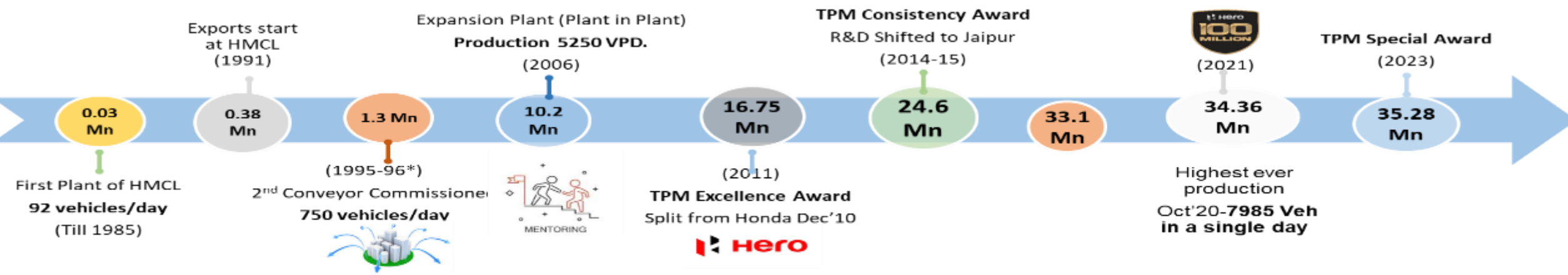
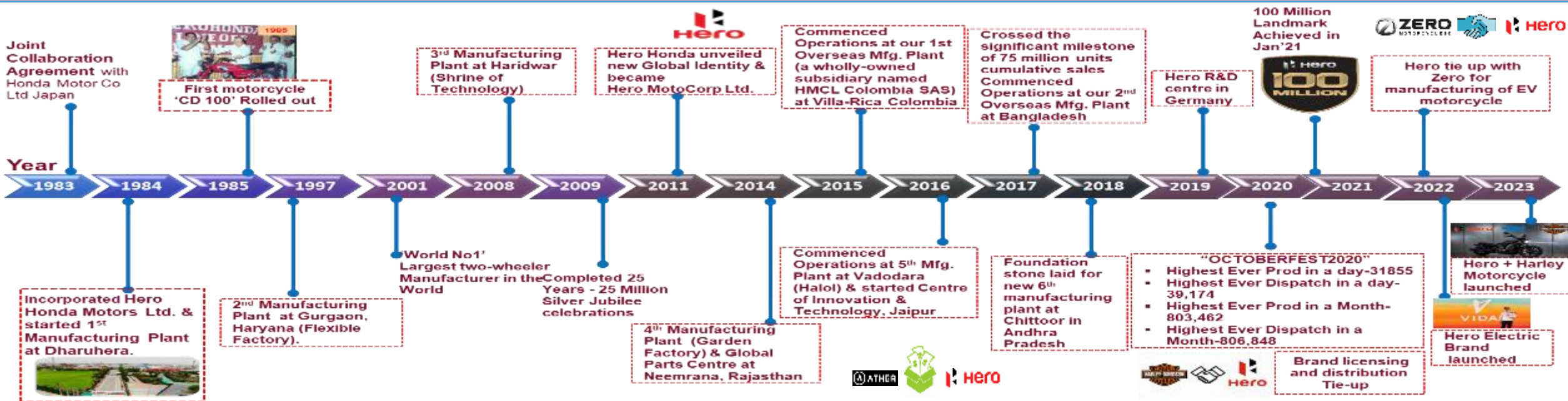
Mission of Dharuhera Plant- Perfect Manufacturing Plant



Holistic approach & strategies are formed to achieve the vision and mission of our plant which are aligned with the Organization's vision and mission.

1. Hero MotoCorp – Company Profile

1-1.1 Company History



HMCL has collaborated with promising next generation technology companies like Zero & Harley Davidson to excel and satisfy future customer needs



Be the Future of Mobility

Create | Collaborate | Inspire P5

1. Company Profile & Process: Hero MotoCorp Ltd

Hero MotoCorp Ltd

Dharuhera Plant

Area : 2,41,000 Sq. Mtr.

Established in 1984



Current output
(1 vehicle/18 second)

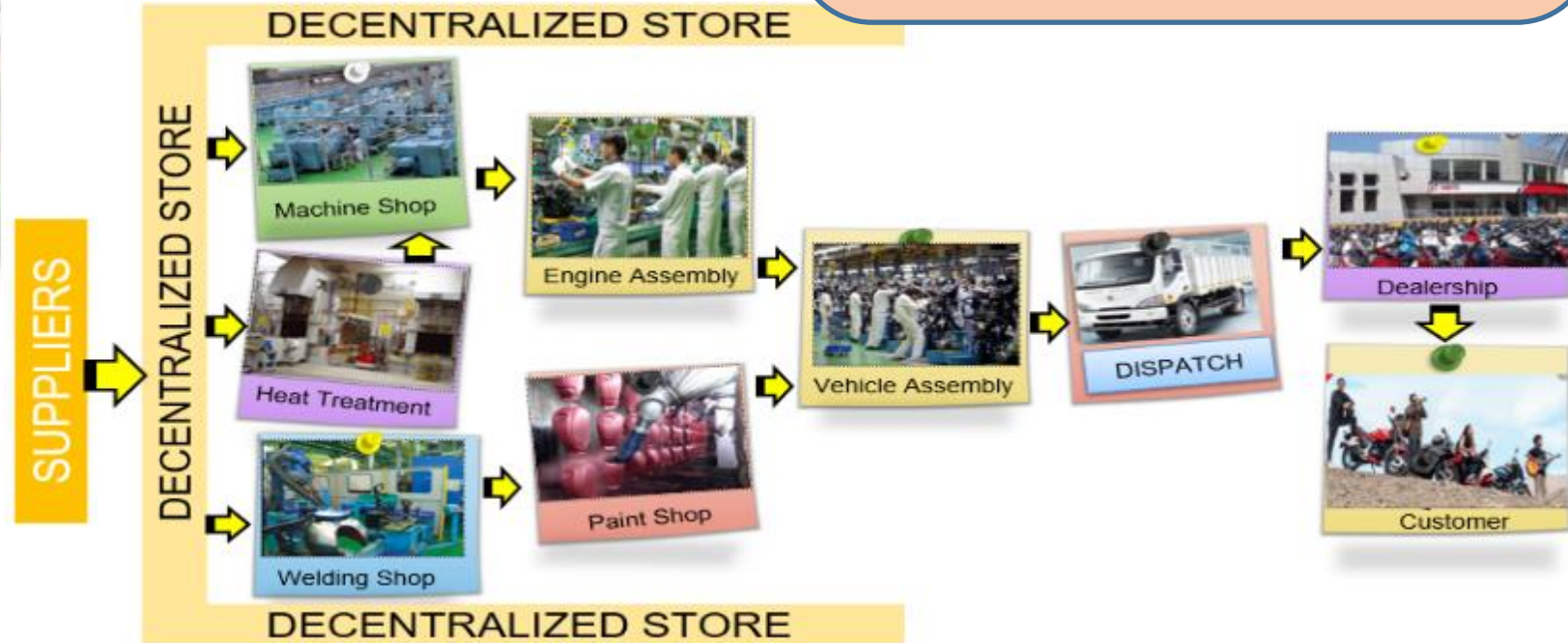
(1 vehicle dispatch/6 second)

Model Platform:
100 CC & 125 CC



- Connected Load : 29.3 MW
- Self Gen. Capacity : 17.26 MW
- Grid Contract Demand : 5 MVA
- Peak Load : 11 MW
- Renewable : 0.26 MW
- Ground water Extraction : 420 Kl/day

- Turnover(INR) : 5566 Cr.
- Conveyor : 3 No.
- Assembly Operations : 2 Shifts
- Machine Shop Operation : 3 Shifts
- Capacity : 7000 No.
- OEE : 80 %
- Production Cells : 44 No.,
- Current Models : 83
- No's of Variant : 480




HMCL Dharuhera Plant is the Mother plant having production capacity 7000 Veh./Day.




1. Company Profile & Process: Energy Policy

Energy Policy



Hero MotoCorp Ltd.

Energy Management System




We, at Hero MotoCorp Ltd. are committed to demonstrate excellence in our energy performance on continual basis, as an intrinsic element of our corporate philosophy.

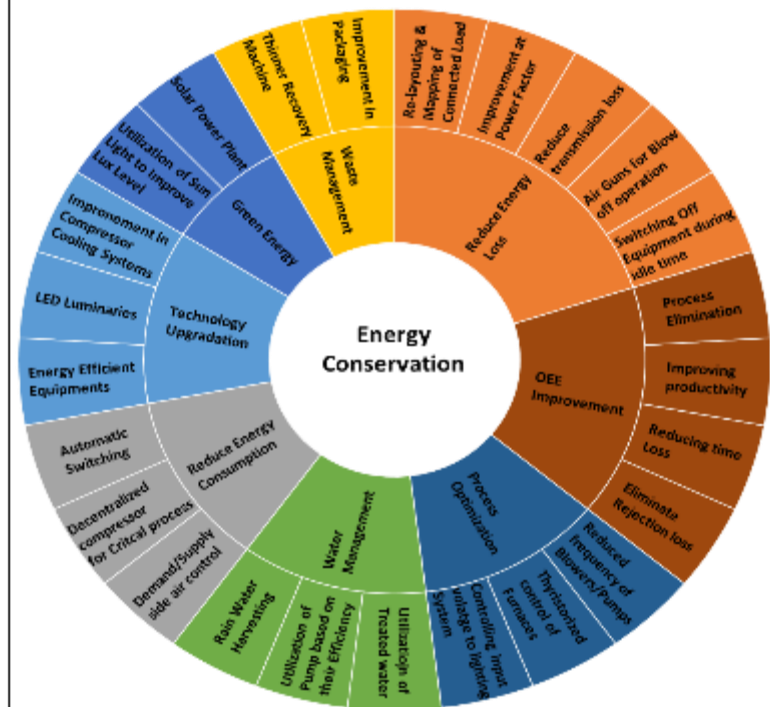
To achieve this, we commit ourselves to:

- Integrate energy considerations and cleaner production in all our business processes and practices;
- Continue product innovations to improve energy efficiency;
- Comply with all applicable legal & other requirements related to energy efficiency, energy use and energy consumption and also controlling our conventional energy usage through the principles of "ALARA" (as low as reasonably achievable) & increasing the share of Renewable Energy;
- Include continual improvement of energy performance and the EnMS;
- Institutionalize energy conservation by setting up energy objectives and Targets;
- Reduction in Energy use & consumption and increase in energy efficiency of equipment;
- Support design activities that consider energy performance improvement;
- To ensure the availability of information and necessary resources to achieve energy targets;
- Enhance energy awareness of our employees and dealers / vendors, while promoting their involvement in ensuring sound energy management;
- Supporting the procurement of energy efficient products and services that affect energy performance;
- We shall communicate this policy to all our employees and would make it available to interested parties.

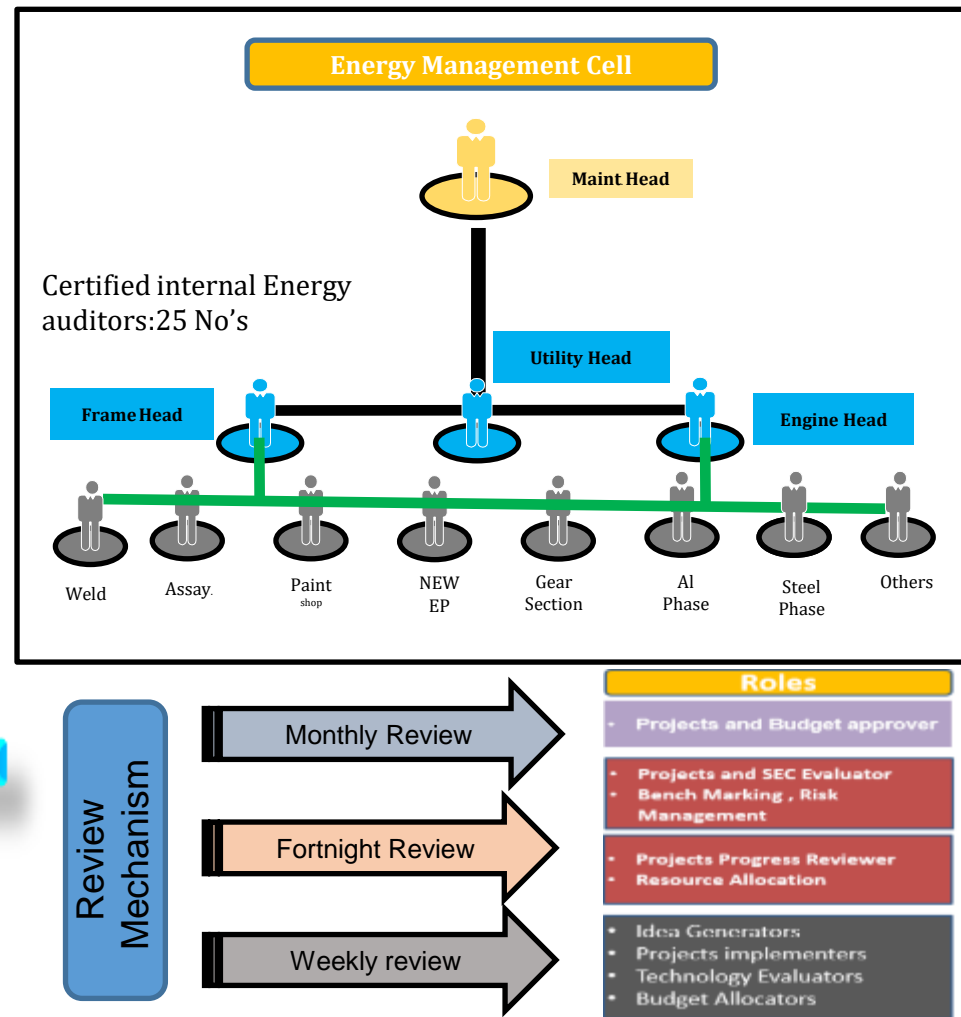
Place: Gurgaon
Date: 01.03.2022


 Head Plant Operation
 Ravil Kumar Palsipaty

STRATEGY OF ENERGY CONSERVATION



Energy Review Mechanism



Plant has framed its energy policy considering major focus on Energy Efficiency

1. Company Profile & Process: Policies



INSPECTION & TESTING FACILITIES

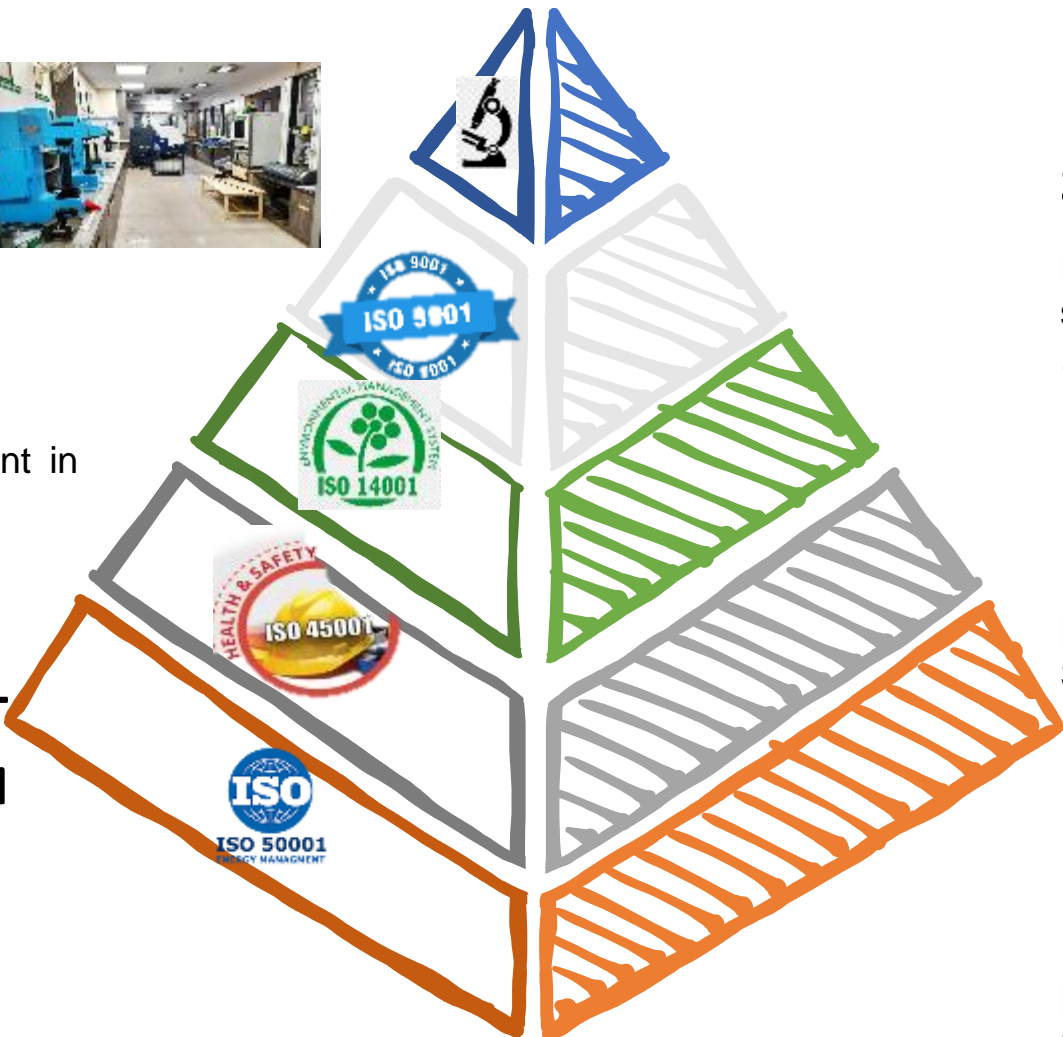


- NABL Accredited calibration Labs
- Metrology Lab
- Metallurgy & Paint testing lab
- Reliability testing Labs are present in Dharuhera Plant



QUALITY MANAGEMENT SYSTEM

ISO 9001:2015 Quality management system



ENVIRONMENT MANAGEMENT SYSTEM



ISO:14001:2015 Environment management system

SAFETY MANAGEMENT SYSTEM



ISO:45001:2018 Safety Management System

ENERGY MANAGEMENT SYSTEM

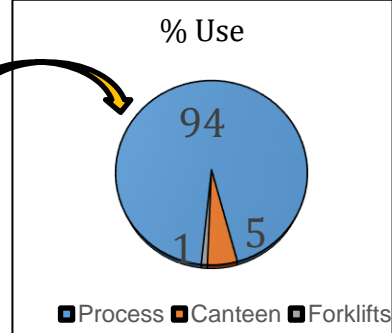
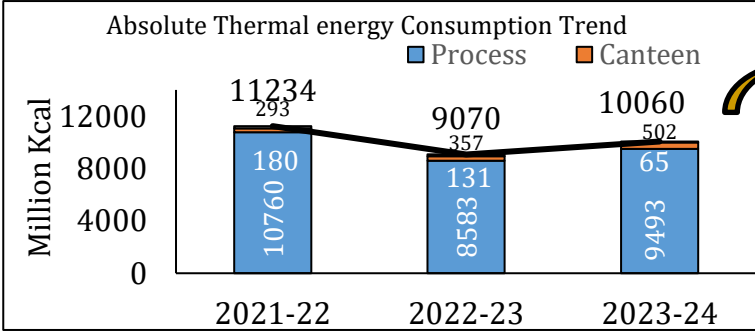
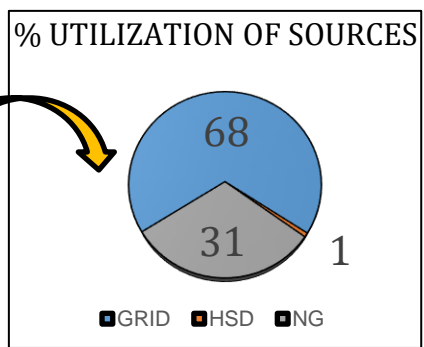
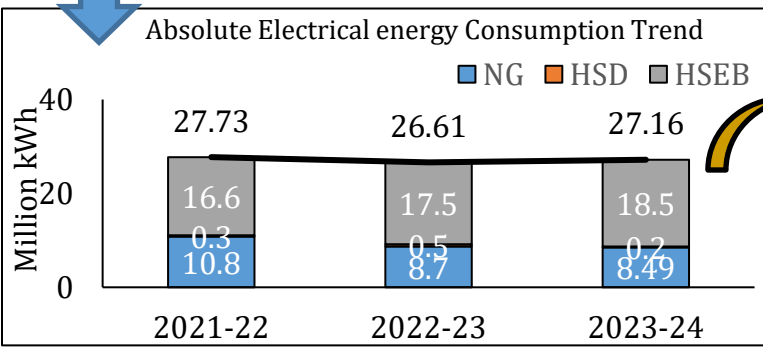
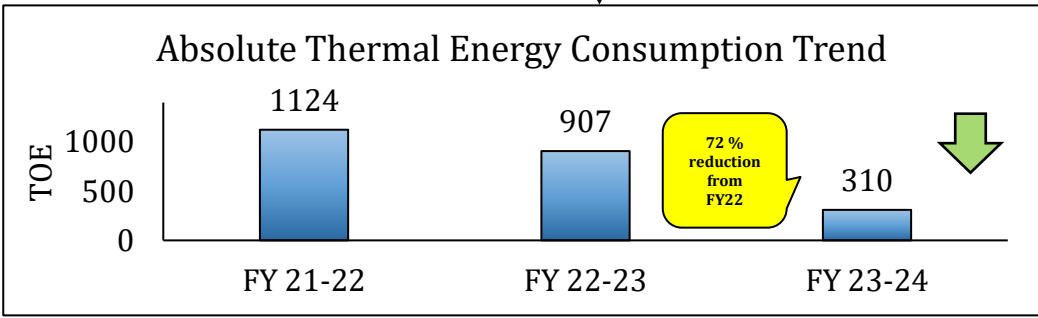
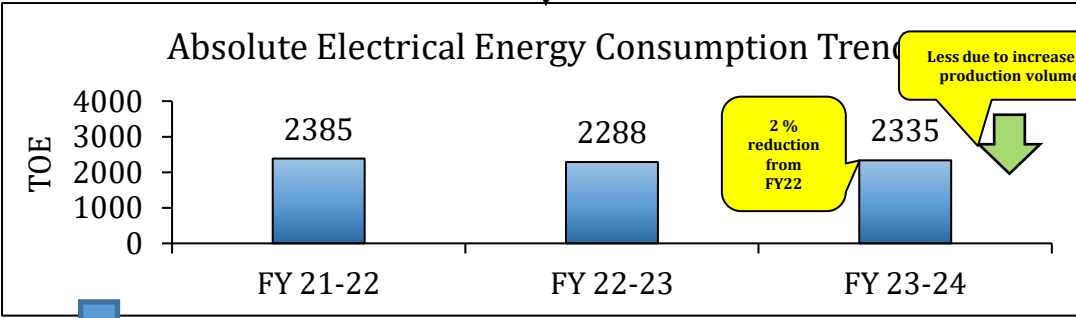
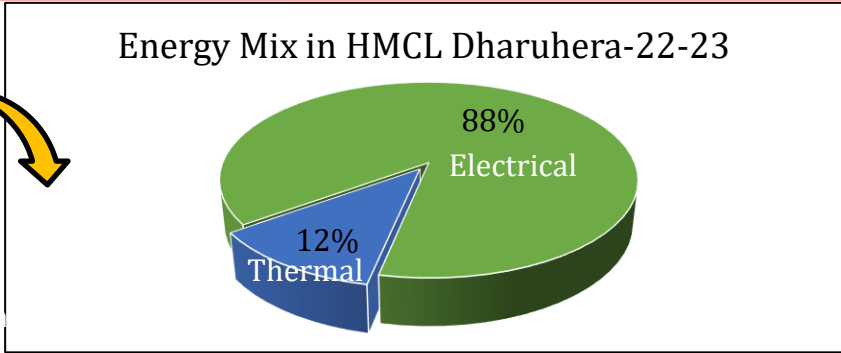
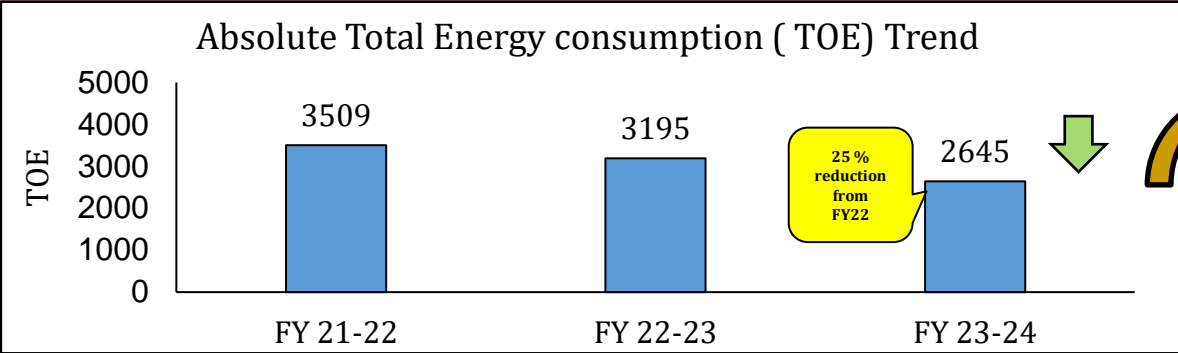


ISO: 50001:2018 Energy Management System

Systems & Facilities present in HM1D are showcased here.



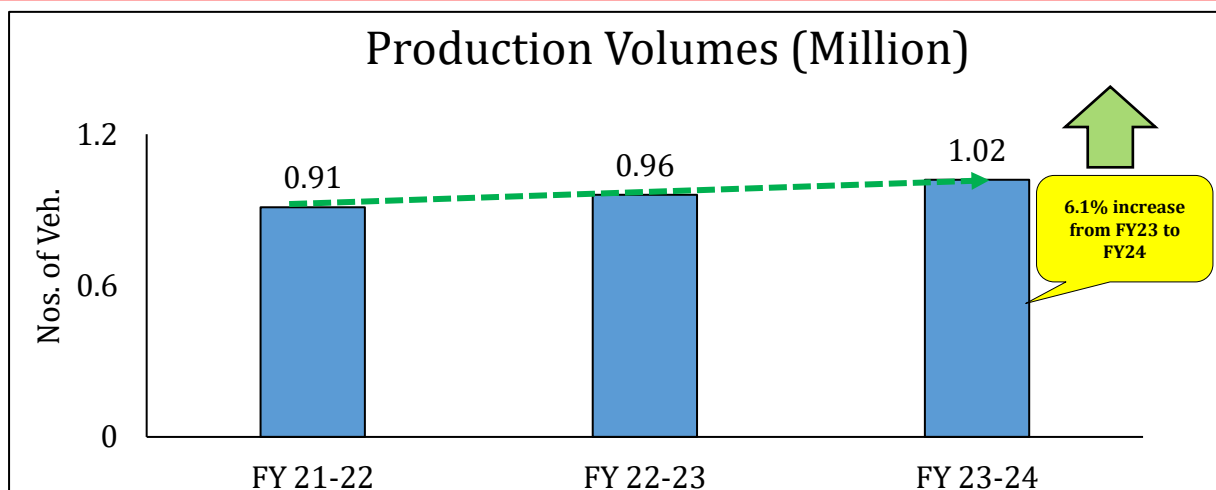
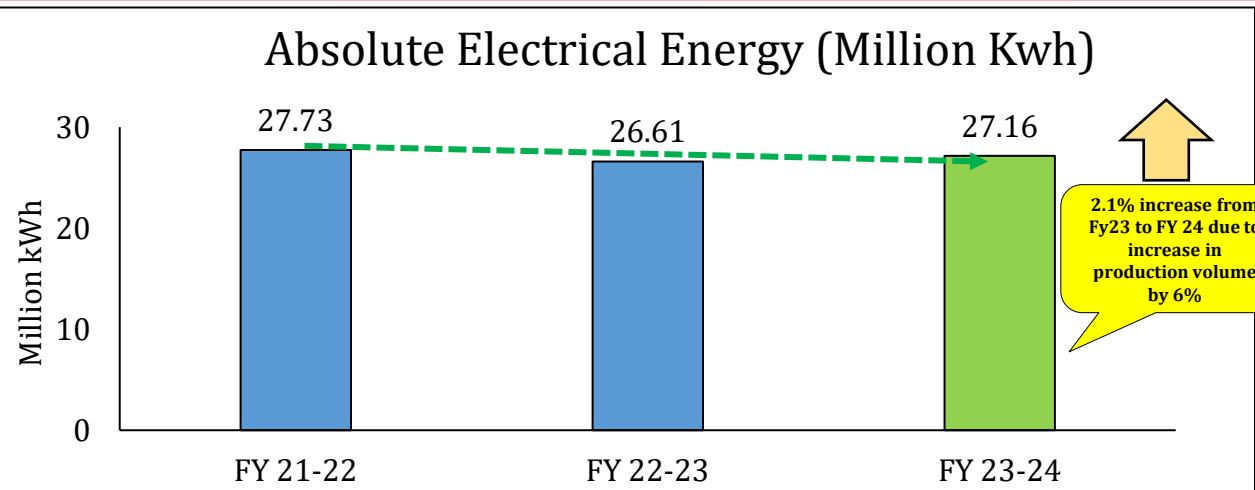
2. Energy Consumption Overview



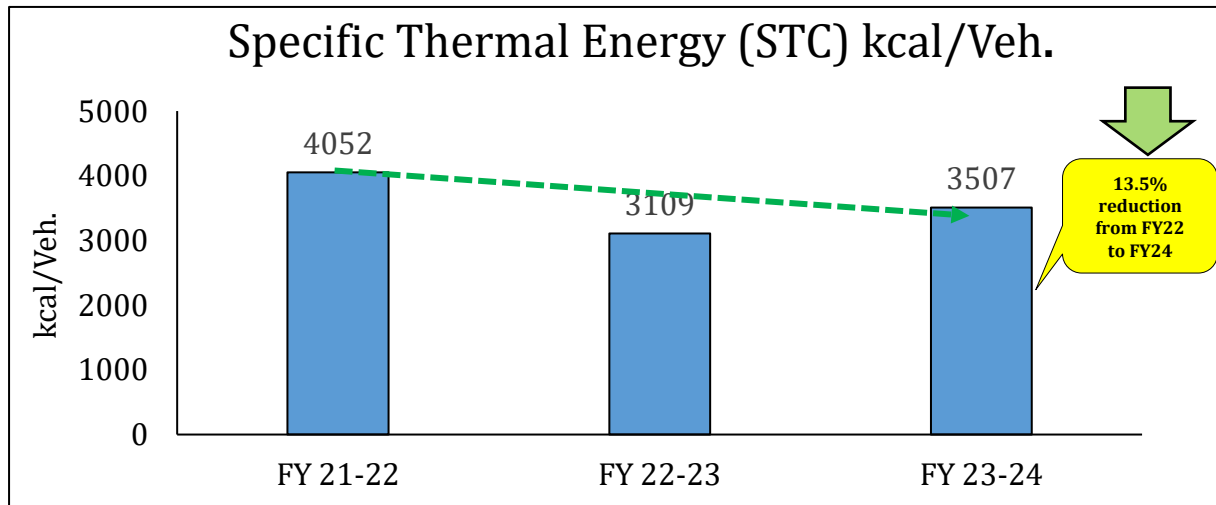
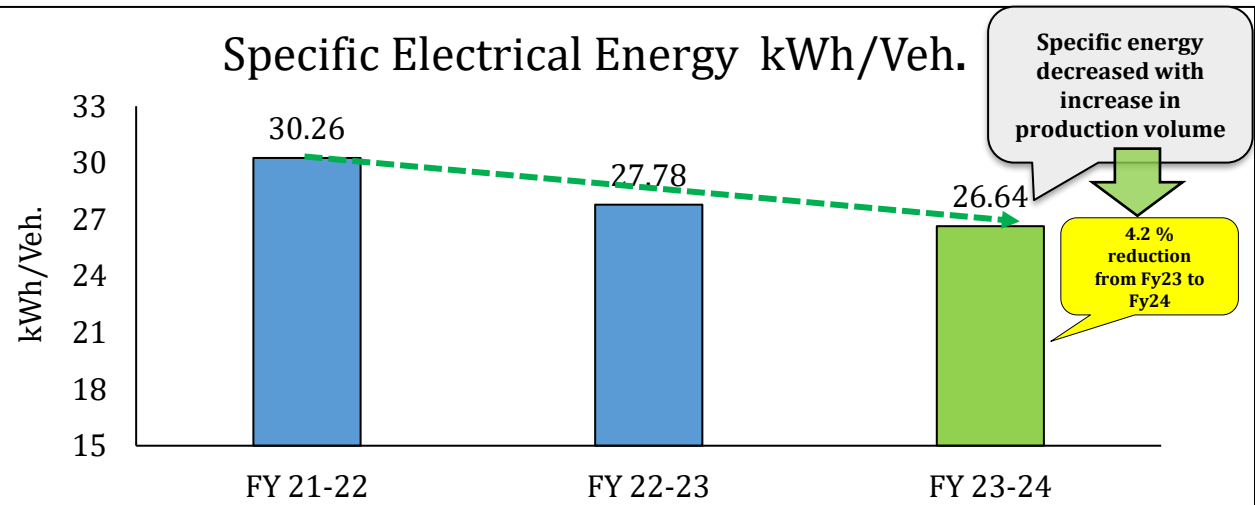
Absolute Energy & Thermal Consumption has reduced by 29% from year 2019-20 to 2022-23 owing to energy saving initiatives.



2. Specific Energy and Thermal Consumption Trend



Specific Energy Consumption (SEC) Reduction in kWh/Veh.

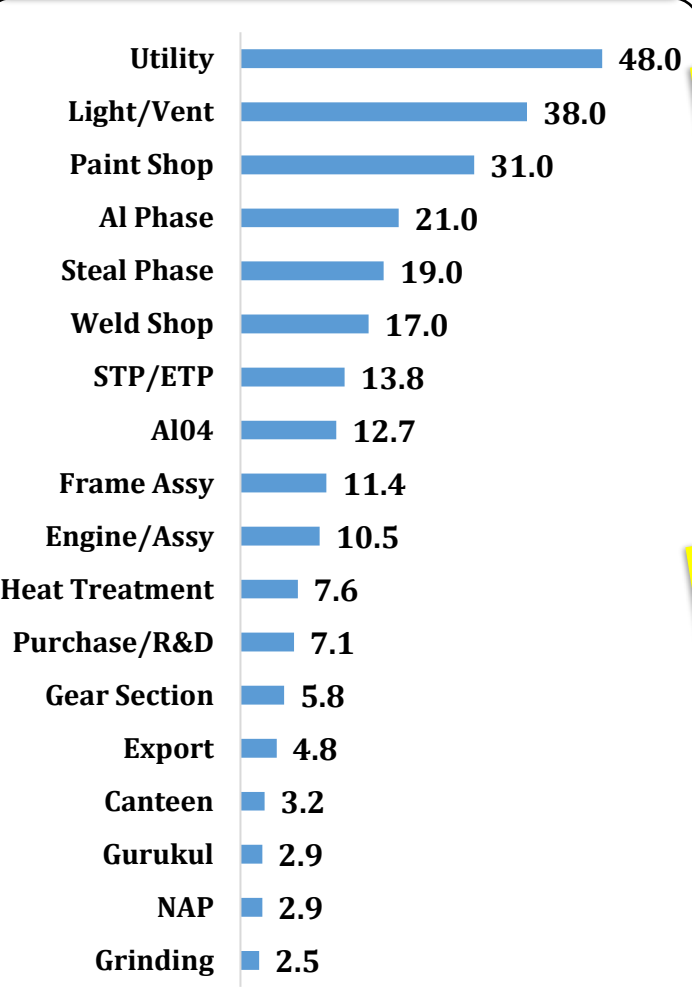


Despite of increase in production volume by 6.1%, achieve reduction in SEC from 27.78 to 26.64 kWh/Veh. i.e.4.2% and decrease in STC by 13.5% since FY22

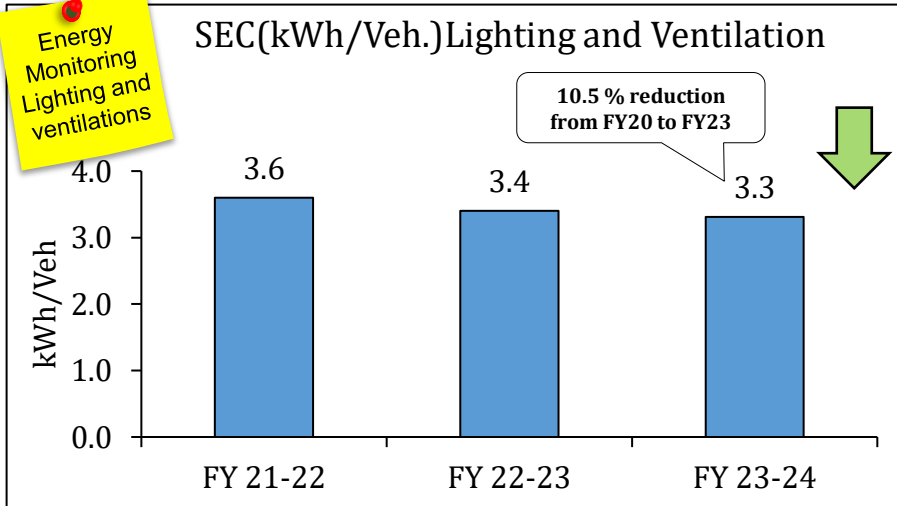
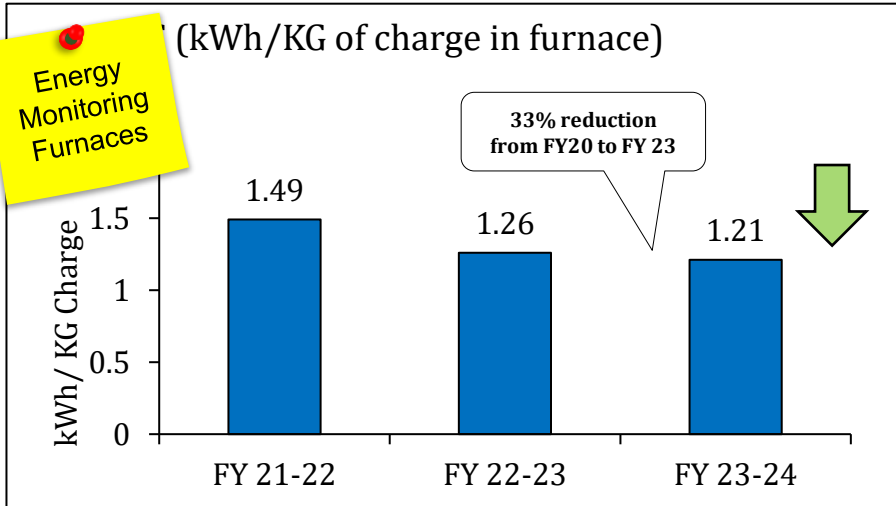
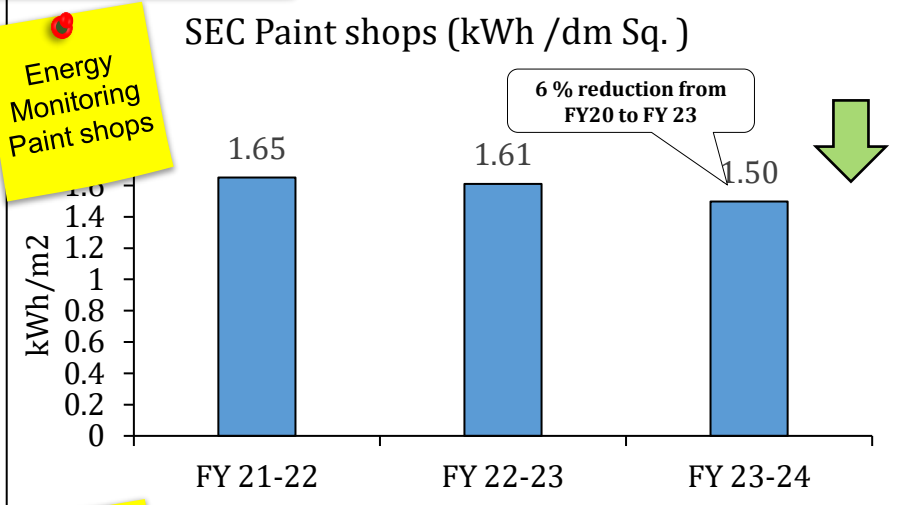
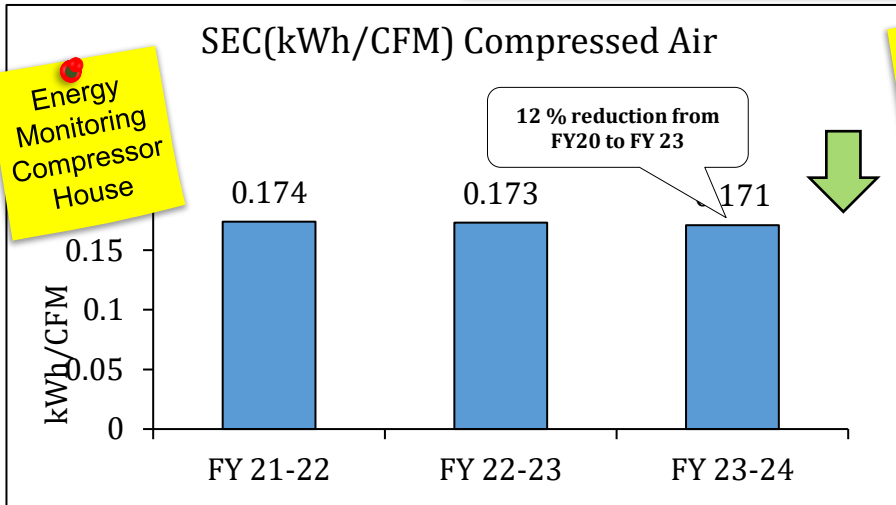


2. Specific Energy Consumption Trend:- Process wise

%Contribution of Shops



Major energy Contributor in FY 2022-23

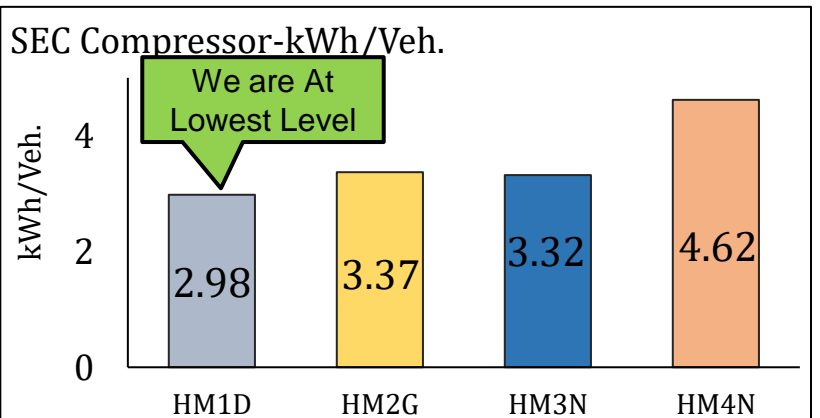
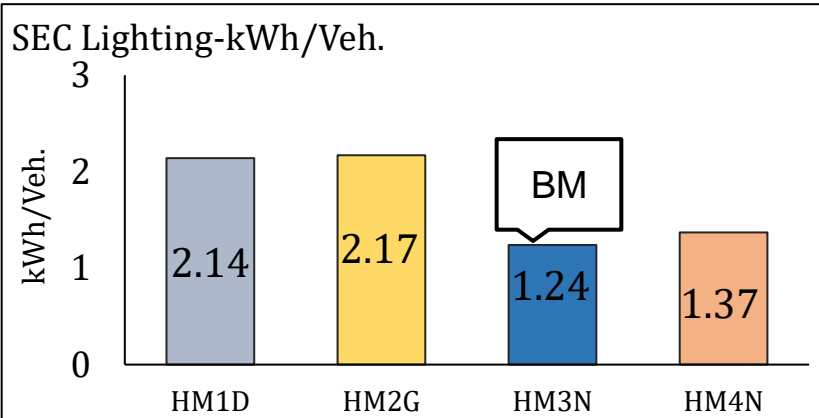
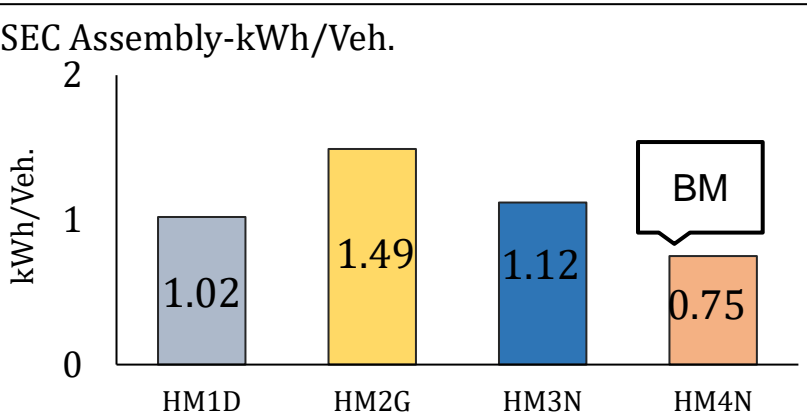
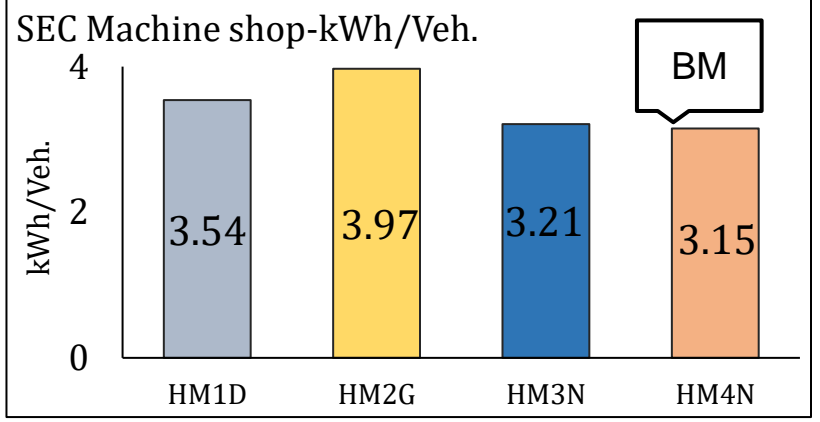
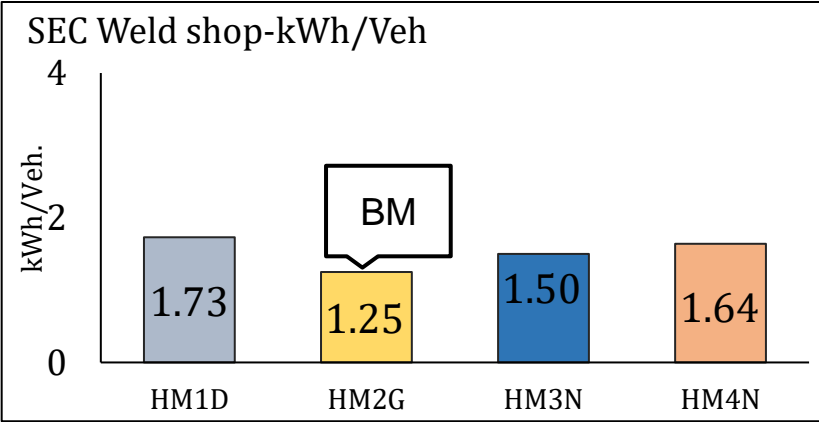
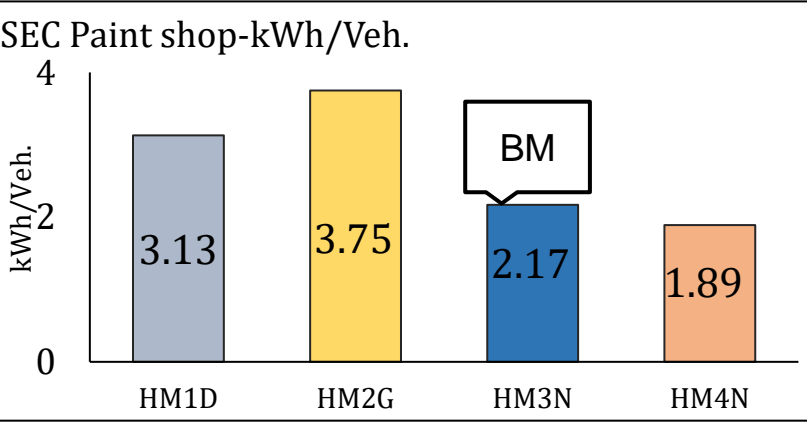


Owing to the energy saving initiatives, SEC witnessed a promising decrement in FY23 in Compressed Air by (12%), Paint Shops (6%) Heat Treatment (33%) & Lighting & Ventilation(10.5%) as compared to FY20



3. Energy Benchmarking

Internal Bench Marking

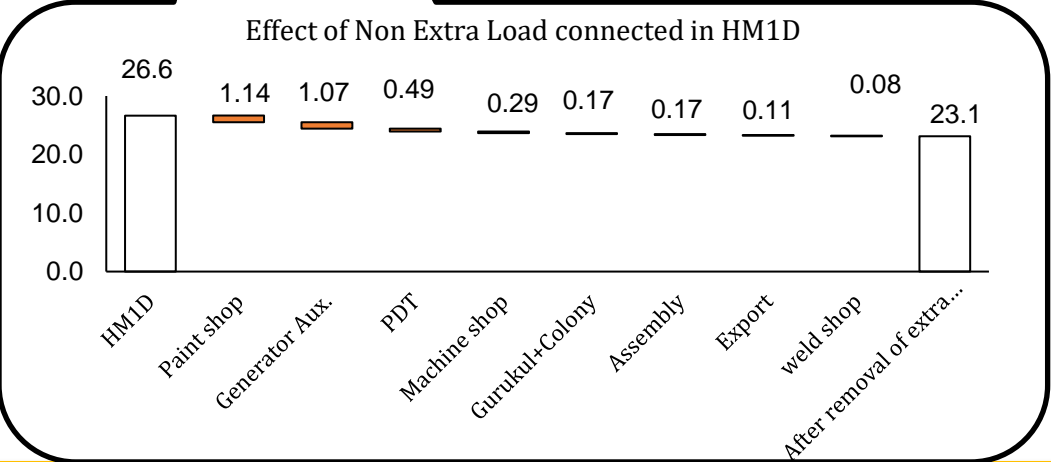
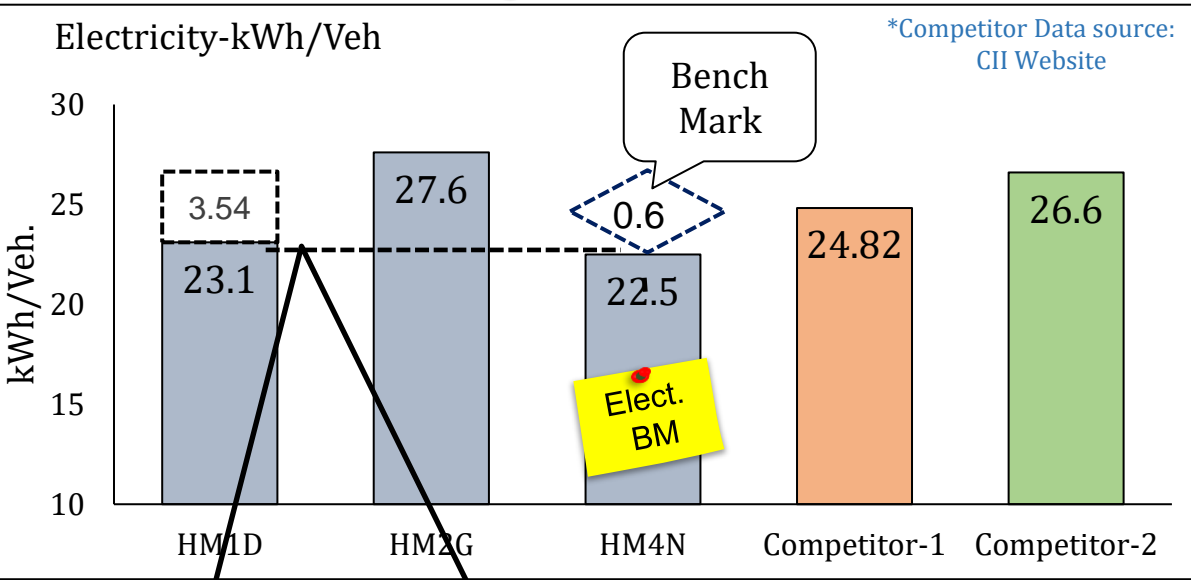


Bench Marking comparison based on almost similar processes within HMCL. In compressed air we have achieved lowest SEC i.e.2.98kWh/Veh.

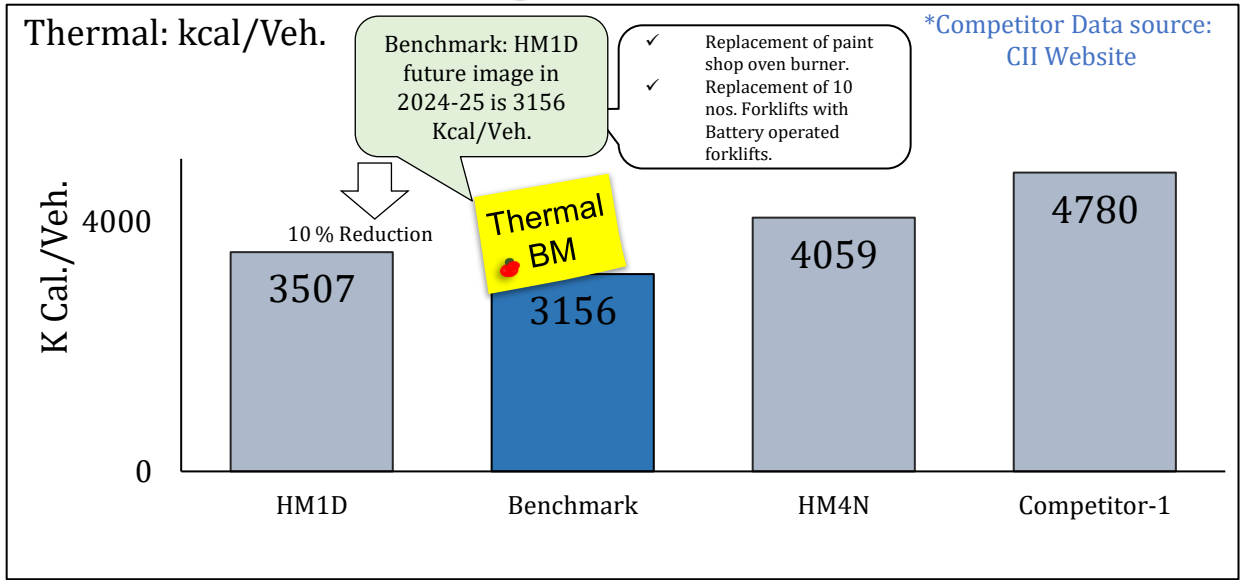


3. Energy Benchmarking

National Bench Marking



National Bench Marking



*Due to variability in no. of paint shops in HM1D and HM4N the NG gas consumption is very less.
*HM2G and Competitor's specific thermal energy is already at higher.
*The benchmarking is taken internally on calculation after replacement of RAH Type blowers in ratio metric blowers in all 10 nos. Air supply units and other projects.

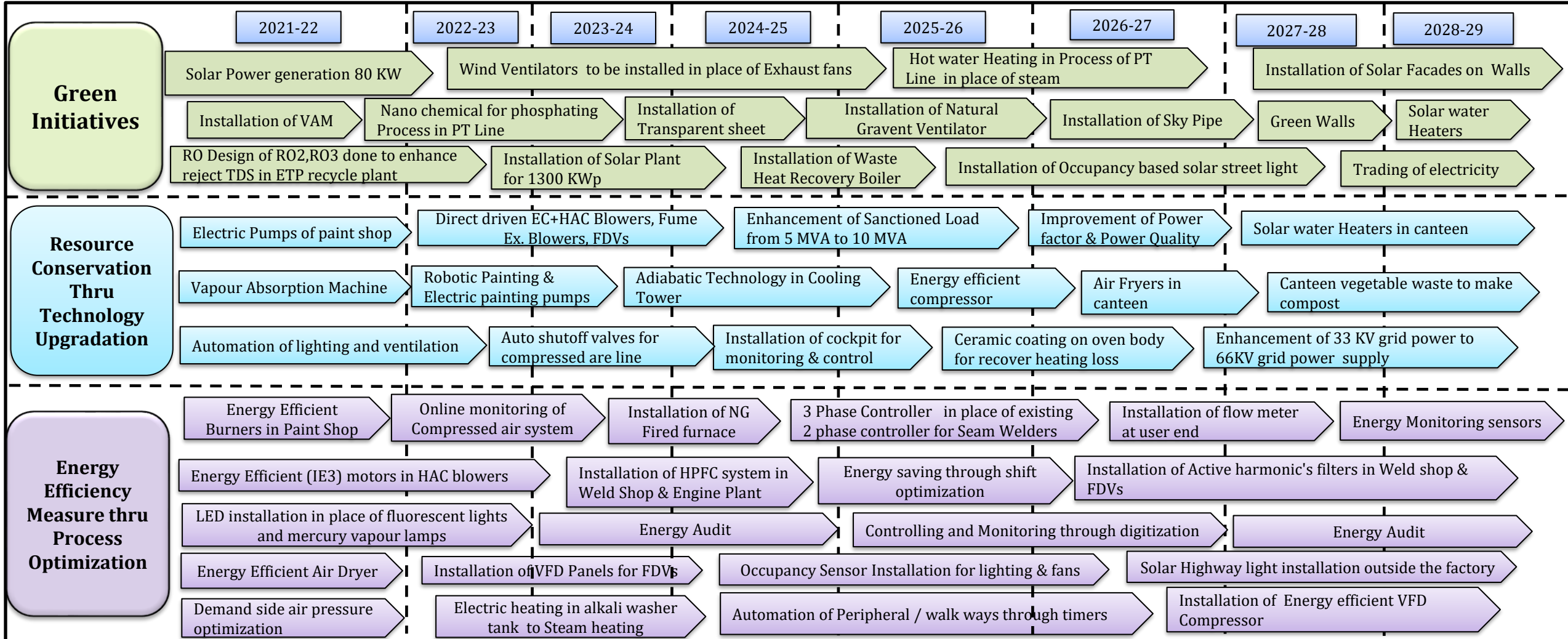
*Electrical Bench marking is done w.r.t to the competitor's data and other Hero units. After comparing the similar process 0.6 kWh/Veh. are taken as target.

Bench Marking comparison based on almost similar processes within HMCL.



4. Strategy for technology absorption in energy Conservation from the Year 2021-22 to 2028-29

Masterplan for Energy Conservation Strategy:



Strategy for Technological improvements in Energy conservation for our plant and is reviewed every year.



4. Energy Saving projects implemented in last three years

Year	No of Energy saving projects	Investment (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million Kcal)	Total Savings (INR Million)	Payback period (In months)
FY 2021-22	133	37.2	2.05	78.9	15.83	28
FY 2022-23	145	70.6	3.77	902.9	49.46	17
FY 2023-24	135	31.98	2.15	63.7	15.07	25

5 Key projects in FY 2021-22

LIST OF ENCON PROJECTS IMPLEMENTED in FY 2021-22

S. No	Title of Project	Annual Electrical Saving (M kWh)	Investment (Rs. million)	Payback (Months)
1	Saving of Energy through optimizing duration of running of lighting system of Expansion plant by its automation and controlling through SCADA	0.21	3.5	23
2	Energy saving 25% by installing BLDC motors with EC+ fans in canteen, E/P and F/P FDV's.	0.18	6.2	46
3	Reduction of Energy consumption in Compressor during low production volume and non working days by installation of mobile compressor	0.16	1.2	10
4	Reduction of Energy consumption in compressor during non working days by installation of Localized Booster system for Boosting low pressure to High Pressure.	0.05	0.3	9
5	Saving of energy in compressed air system by modifying the existing system through twin compressed air pipeline and set air pressure at 5.2 kg/cm ² & 4.5 kg/cm ² in weld, paint shop and engine plant	0.04	0.8	23

Conclusion: 133 no. Energy saving projects were undertaken in FY 21-22 resulting in energy saving of 2.05 M kWh.

4. Energy Saving projects implemented in last three years

5 Key projects in FY 2022-23

LIST OF ENCON PROJECTS IMPLEMENTED in FY 2022-23

S. No	Title of Project	Annual Electrical Saving (M kWh)	Investment (Rs. million)	Payback (Months)
1	Energy saving in VAM (Vapour absorption m/c) by switchover from static to dynamic control (by thermodynamic balancing) to mitigate impact of process variability in Heat Recovery based Vapor absorption m/c.	0.26	1.3	6
2	Electrical energy Saving through 100% power saving circuit provision to eliminate the idle running in Robotic power stabilizer in frame and Engine plant machines (45 no's of machines)	0.25	0.9	4
3	Electrical energy saving 25% by replacement of Backward curved blowers in air washers into the EC+(Novanco)make blowers in Air washers 8 no's (16 Nos Blowers)	0.23	12	58
4	Electrical energy saving in compressed air system by providing auto shutoff valve (18 Nos.) at compressed air input line to shutoff compressed air at consumer end in ideal hours.	0.08	1.3	17
5	Electrical energy saving by upgradation of non efficient compressor with variable speed energy efficient compressor.	0.06	5.5	106

5 Key projects in FY 2023-24

LIST OF ENCON PROJECTS IMPLEMENTED in FY 2023-24

S. No	Title of Project	Annual Electrical Saving (M kWh)	Investment (Rs. million)	Payback (Months)
1	Reduction in Compressor House Auxiliary energy Consumption and Water consumption by replacing the Open loop cooling tower system with Adiabatic Cooling tower.	0.2	8	48
3	Electrical energy saving by Upgradation of fixed speed compressor with 96% Efficient compressor include in-build Variable frequency drive feature (1no.) in Utility.	0.19	4.5	29
2	Reduction in energy consumption by Upgradation of Scroll chiller with market best efficient latest technology VRF (Variable refrigerant flow volume Chiller) system in Engine Assembly Expansion	0.06	4	80
4	Electrical energy saving by supply the water to shop floor by Single Pump in winter season & water temperature of return line is below the requirement.	0.05	.09	21
5	Reduction in compressor house energy consumption by replacing the high size Air dryer Of 750 CFM 2Nos with one no. 10000 CFM energy efficient air dryer.	0.07	4.5	77

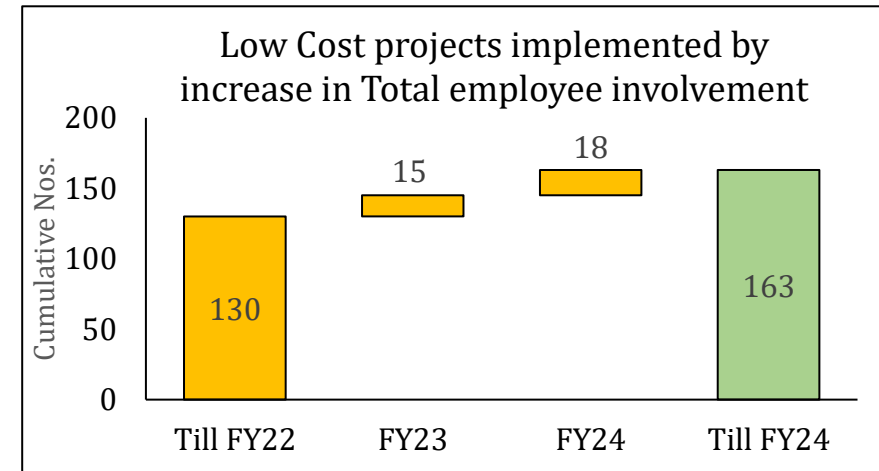
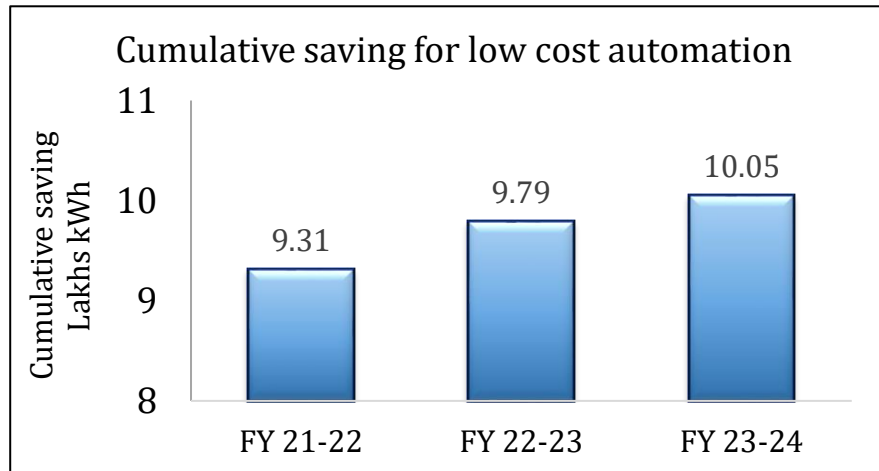
145 no. Energy saving projects were undertaken in FY 22-23 resulting in energy saving of 3.77 M kWh.

135 no. Energy saving projects were undertaken in FY 23-24 resulting in energy saving of 2.15 M kWh.

4. Energy Conservation Projects - Summary of Elementary Projects

No. of Projects - 135

Annual Energy Saving - 21.5 Lakh kWh



OEE Improvement Projects: Summary

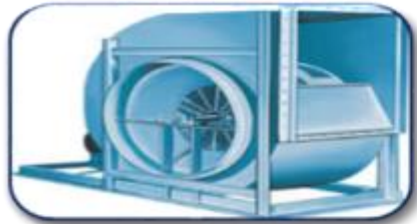
<p>1</p> <p>Eliminating Rejection Loss (27 No's Projects) kWh saved: 9780</p>	<p>2</p> <p>Process Elimination (21 No's Projects) kWh saved: 12600</p>	<p>3</p> <p>Shift optimization (13 Nos Projects) kWh saved: 39800</p>	<p>4</p> <p>Reducing time Loss (18 No's Projects) kWh saved: 14300</p>	<p>5</p> <p>Reducing Set up time Loss (15 No's Projects) kWh saved: 21100</p>	<p>5</p> <p>Improving Productivity (15 Nos Projects) kWh saved: 126000</p>
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135 no's (including Low Investment projects & Major OEE improvement) projects were completed till FY24 for Energy conservation.

4. Energy Conservation Projects - Summary of Elementary Projects

Automatic Switching off the Equipment during Non productive time:

- Elimination of Idle running of identified operations and recurring impact created.



- FDVs during breaks
- No. of FDVS - 72
- kWh Saved - 2.4 Lakh kWh



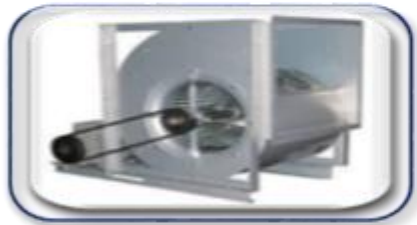
- Hydraulic motors during idle time
- No. of Motors - 125
- kWh saved - 0.86 Lakh kWh



- Compressed Air supply in Assembly lines in Idle time
- No. of Lines - 13
- kWh saved - 0.4 Lakh kWh



- Lighting control in Gangways and Rest Areas through occupancy sensor
- No. of Lights - 2500
- kWh saved - 0.25 Lakh kWh



- Paint Shop Blowers during Breaks
- No. of Blowers- 32
- kWh Saved - 1.10 Lakh kWh



- Man coolers & Wall Mounting Fans control in break time
- No. of Man cooler: 642
- kWh saved - 0.97 Lakh kWh



- Paint Shop screen water pump during Break time
- No. of Pumps - 6
- kWh saved - 0.4 Lakh kWh





- Roof Exhaust fans control during idle time
- No. of Exhaust fans - 145
- kWh saved - 0.45 Lakh kWh

Automatic switching off the equipment during non productive time resulted in Energy Savings of 6.8 lakh kWh/year

4. Energy Conservation Projects – Loss Elimination

Project :
Upgradation of fixed speed compressor with 96% Efficient compressor include in-built Variable frequency drive feature (1no.) in Utility.



Description:
Loss of energy due to Low Efficiency (83%) of Compressor no. 16 and Frequent Loading & Unloading of Fixed speed Compressors

Before	After
<p>Compressor no. 16</p> <ul style="list-style-type: none"> 1000 CFM , Fixed speed Oil Lub. Screw Efficiency : 83% CF/kWh : 315 Average Unloading per day in other fixed speed compressor : 2 hrs day. 	<p>Compressor no. 16</p> <ul style="list-style-type: none"> 1000 CFM , VFD operated Oil Lub. Screw Efficiency : 98% CF/kWh : 390 Average Unloading per day in other fixed speed compressor : 1 hrs day 
	<p>Investment: 40 lakhs</p>

- Benefits:**
- Saving in energy consumption of individual compressor = 96000 kWh/Year
 - Saving in Power Consumption due to less Unloading = 21000 kWh /Year
 - Reduction in CO2 emission : 81.5 Ton annually

Project : To Reduce the Energy consumption in HVAC System of Engine Assembly Expansion.

Description:
Introduce the Scroll chiller with market best efficient latest technology VRF system having specific energy consumption 0.80 kWh/TR.

Before	After
 <p>Scroll Chiller</p> <ul style="list-style-type: none"> Specific energy consumption = 1.33 kWh/TR. Obsolete technology In adaptive control 	 <p>Variable refrigerant flow volume Chiller</p> <ul style="list-style-type: none"> Specific energy consumption = 0.8 kWh/TR. Latest technology Variable control
	<p>Investment: 12 lakhs</p>

- Benefits:**
- Reduction in energy consumption 128000 kWh/Year of chiller
 - Air cooled machine in place of water cooled machine to save cooling tower and water requirement
 - Reduction in CO2 emission : 108.8 Ton annually

Integration of fix speed compressors and upgradation of best efficiency chiller results in Energy Savings of 2.3 lakh kWh/year and reduction in CO2 emission by 190 Tons/annum.

4. Energy Conservation Projects – Technology upgradation & Loss Elimination

Project : Reduction in Compressor House Auxiliary energy consumption and Water consumption by replacing the Open loop cooling tower system with Adiabatic Cooling tower.

Description :
Interlocking Introduction of Adiabatic cooling tower system

Before

Open Loop cooling system with PHE

- Energy consumption – 3090 kWh/day
- Water Consumption – 25 KL/day
- Compressor cooling water inlet temp – 35 °C



After

Adiabatic Cooling System

- Energy Consumption – 2358 kWh/day
- Water Consumption – 8 KL/day
- Compressor Cooling water inlet temp. – 31 °C.



Investment:
03 lakhs

First Adiabatic cooling tower in HMCL

- Benefits:**
- Saving in power consumption (3090-2358) 732 KWH * 300 days = 2,19,600 kWh / year.
 - Saving in Water Consumption (25-8) 17 KLD * 300 days = 5100 KL/year.
 - CO2 reduction = 185 Tons/annum.

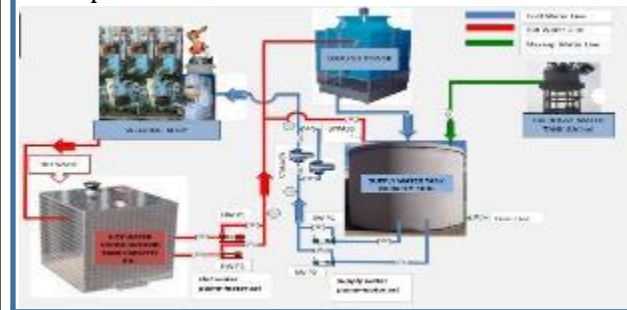
First time introduction of Adiabatic cooling tower in HMCL and process interlocks in cooling towers results Energy Savings of 2.8 lakh kWh/year and reduction in CO2 emission by 235 Tons/annum.

Project: Reduction in Energy consumption in Cooling Tower weld shop when ambient temperature is below 20°C.

Description:-
To supply the water to shop floor by Single Pump in winter season & water temperature of return line is below the requirement.

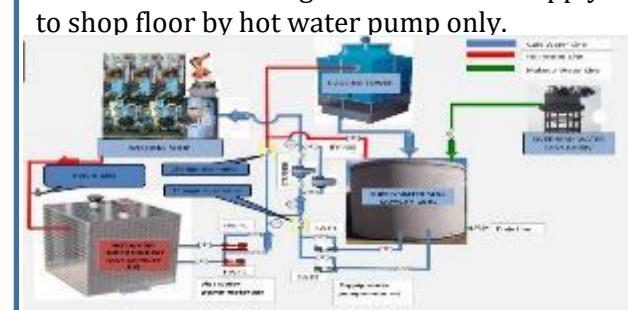
Before

Cooling fan was running with hot & cooling water supply pump at 20°C ambient temperature, although there is no need to cool the water as return line water temperature was below 30°C



After

Temp. sensor installed in hot water return line to detect the return line temp and automatically turn off the Supply pump & cooling fan operation if return hot water line below 30°C and changeover the water supply to shop floor by hot water pump only.



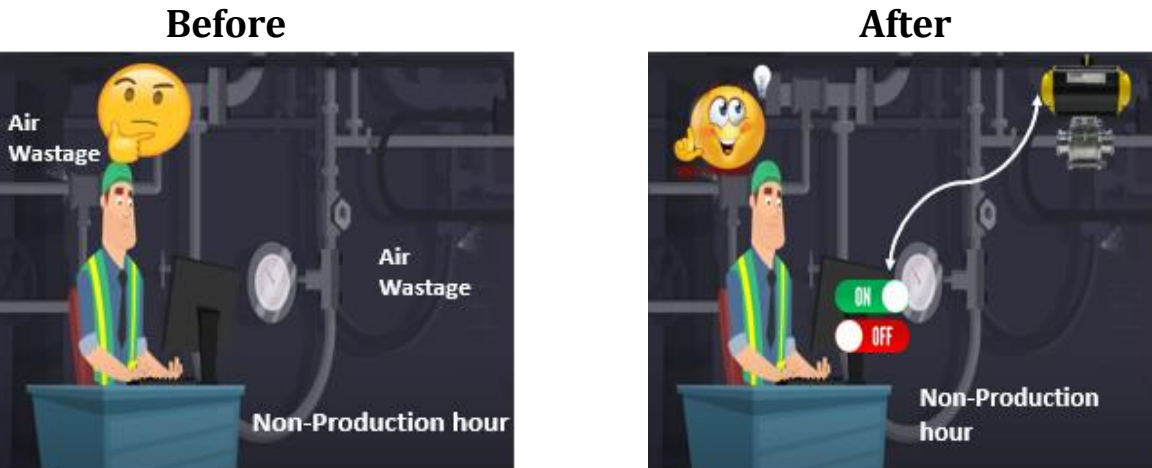
Investment:
0.5 lakhs

- Benefits:**
- Energy Savings = 60240 kWh/annum
 - CO2 reduction = 51 Tons/annum
 - Motor and other equipment's life will be enhanced

4. Energy Conservation Projects – Loss Elimination (In-house automation)

Project: Provision of 19 no's auto shutoff valve at compressed air input line at consumer end to shutoff compressed air supply locally in plant.

Description: Compressed air wastage in various shops during non production hours as there is no provision to Switch off the air supply locally.

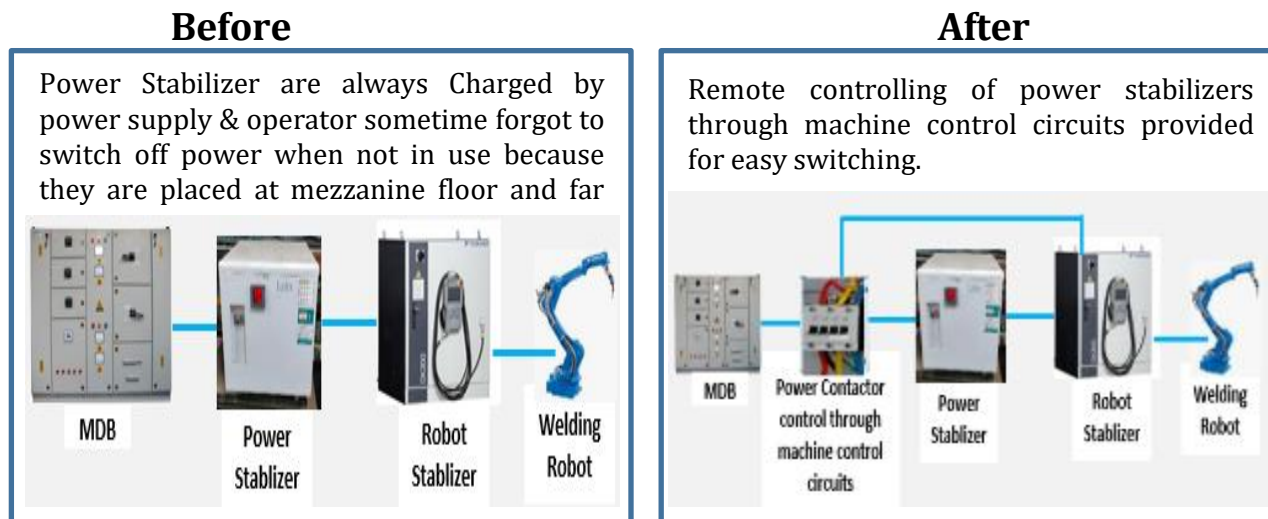


Investment:
23.3 lakhs

- Benefits:**
- Energy Savings = 0.83 lakh kWh/annum
 - CO2 reduction = 70.5 Tons/annum

Project: To eliminate no load losses in power stabilizer (15 nos.) when not in use in weld shops.

Description:- Automation of operating system at control panel for controlling the power of stabilizer in Weld Shop



Investment:
1.65 lakhs

- Benefits:**
- Energy Savings = 0.37 lakh kWh/annum
 - CO2 reduction = 43 Tons/annum
 - Electronics components life increased.

Automatic switching off the equipment and elimination of no load losses during non productive time resulted in Energy Savings of 1.2 lakh kWh/year and reduction in CO2 emission by 113 Tons/annum.

4. Energy Conservation Projects – In-house automation & Technology upgradation

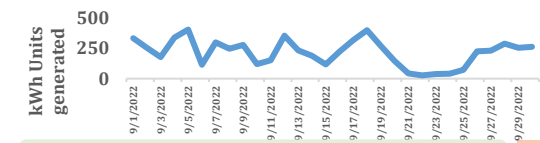
Project : Manual process of cleaning of solar cells to be upgraded to auto cleaning on roof top solar panel.

Description:

Existing solar cells are working with reduced efficiency as they become dirty due to pollution in environment. Manual cleaning of cells is done at fortnightly.

Before

Manual cleaning of solar cells is done

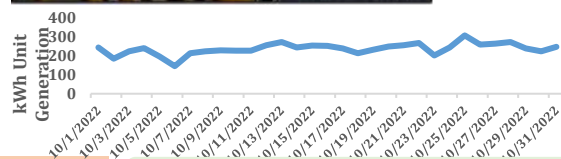


Avg. generation- 216 kWh/day

**Investment:
1.86 lakhs**

After

In-House automation of Solar cells cleaning



Avg. generation- 236 kWh/day

Benefits:

- Solar system Efficiency improved by 8%
- Shifted from man dependent process to automated process

Project: Reduction In Compressor House Energy Consumption By upgrading Low Energy Efficient Air Dryer with Energy Efficient Air Dryer.

Description:

15000 CFM Air dryer required to run against requirement of 7000 CFM air as air dryers are ageing more than 15 years & their heat exchangers need to be replaced

Before



After



**Investment:
70.5 lakhs**

Benefits:

- Energy Savings = 0.41 lakh kWh/annum
- CO2 reduction = 35 Tons/annum

Automatic solar cleaning system and upgradation of Drier improves Solar Yield and Saved 0.41 lakh kWh/Annum respectively.

4. Energy Conservation Projects – Process optimization

Project :Offsetting water cooled process through glycol based cooling in Heat treatment.

Description :

We have replaced the localized air cooled (glycol based)chiller in place of cooling tower ,Cooling for furnace fan assembly maintained temp 67-71°C while furnace temp is 920 * C

Before

Optimized the energy & water consumption through replacing with natural cooled air chiller

After

Investment: 15 lakhs

- Benefits:**
- Energy Savings = 0.96 lakh kWh/annum
 - CO2 reduction = 76 Tons/annum

Project: Energy savings through optimized operation of lighting & wall fans in plant.

Description:- Man less standalone occupancy sensor based system to control lights/Fans

- Integrated day light feature help switching off of lights in the area where direct sun light is available, despite of occupancy.
Total 118 no's of sensors with contact box installed in plant

Before

Idea:
Automation of operating system by installation of occupancy sensors for lighting system in Exp frame plant.

After

Investment: 12.9 lakhs

- Benefits:**
- Energy Savings = 0.91 lakh kWh/annum
 - Cost saving = 9 Lacks/annum
 - CO2 reduction = 75 Tons/annum

Offsetting of water cooling process in furnace and Optimization of lighting and fan operation results in saving of 1.87 lakh kWh/annum, which help in reduction of 150T co2 annually



4. Energy Conservation Projects – Technology Upgradation

Energy Conservation Project: Saving through VFD on Pump & Blowers in plant:-

Earlier flow was throttled, but now flow is controlled through VFD, thus saving of Energy by process optimisation.



✓ Cost Saving: INR 12.49 Million / Annum

FY 19-20 :
28 VFDs installed
Saving : INR 3.45 Million
Investment: INR 5.67 Million

FY 20-21 :
43 VFDs installed
Saving : INR 5.05 Million
Investment: INR 8.0 Million

FY 21-22 :
18 VFDs installed
Saving : INR 2.56 Million
Investment: INR 4.25 Million

FY 22-23
11 VFDs installed
Saving : INR 1.45 Million
Investment: INR 2.85 Million

FY 23-24
08 VFDs installed
Saving : INR 0.2 Million
Investment: INR 2.5 Million

✓ Total installation: 108
✓ Investment: INR 23.27 Million
✓ Payback Period : 21 Month

Energy saving by optimizing process parameters in Paint shop process through VFD of INR 23.7 Million.



Project-1

- Improved the compressed air quality and reduction in Electrical Energy consumption by installation of online air dew point monitoring system in Paint Shop.

Project-2

- Energy reduction & enhancing the indoor air quality by maintaining the thermal comfort of shop floor by Installation of 11 Nos Natural Low Gravity Ventilation System.

5. Innovative project-1- Reduction in Energy consumption and enhanced the compressed air quality by installation of online air dew point monitoring system in Paint Shop.

Before Condition

- ❑ Hero Moto Corp Dharuhera having 8 compressor at utility through which compressed air is supplied to the shop floor.
- ❑ One major area of compressed air consumption is paint shop where compressed air is used for robotic painting.



- ✓ Robotic painting process require dry compressed air (zero moisture content) for painting process.
- ✓ Any contaminants in the air will affect the paint quality and damages the painting equipment's.

Process Requirements

- ✓ Currently air driers are used to provide moist free compressed air for robotic painting process.
- ✓ Purge air is discharged after every predefined time to discharge the moisture from air.
- ✓ Any contaminants in the air will affect the paint quality and damages the painting equipment's.



Timer based Automatic drain control system to discharge moisture from air.



Process Challenges

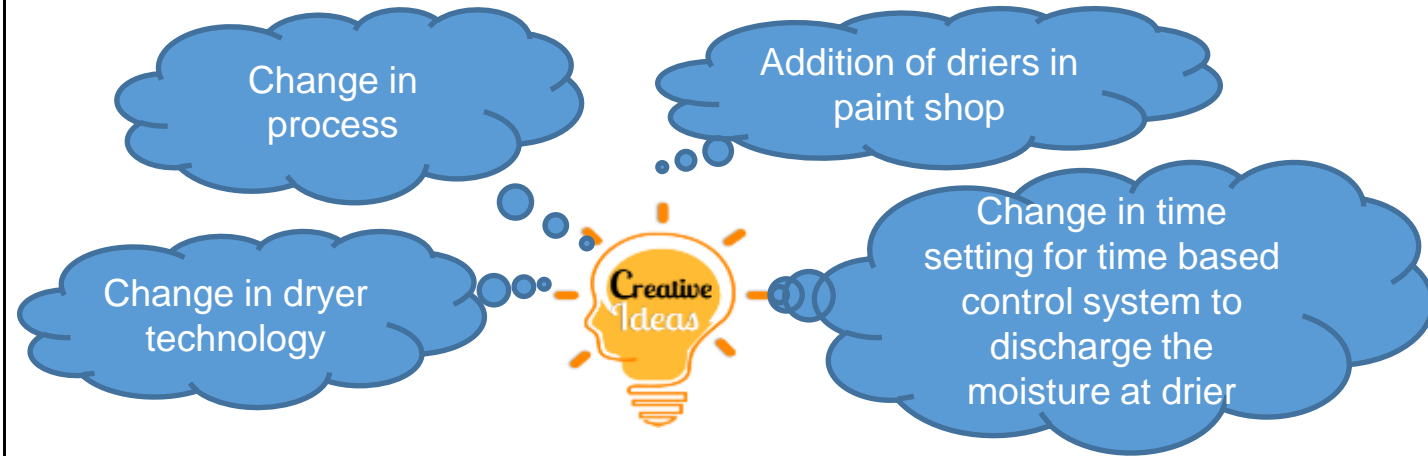
- ❖ Huge amount of compressed air loss due to purging.
- ❖ Energy wastage due to air loss.
- ❖ Zero tolerance towards affecting paint quality (failure leads to rejection & rework).

Current time-based auto purging system to discharge moisture was highly energy consuming due to huge amount of compressed air loss during purging

5. Innovative project-1- Reduction in Energy consumption and enhanced the compressed air quality by installation of online air dew point monitoring system in Paint Shop.

Necessity of process requirement

- Robotic painting requires dry compressed air. Any moisture in the air will affect painting equipment efficiency.
- Chances of part failure due to the presence of moisture.
- Moisture in the air will the quality of painting.



Idea Validation

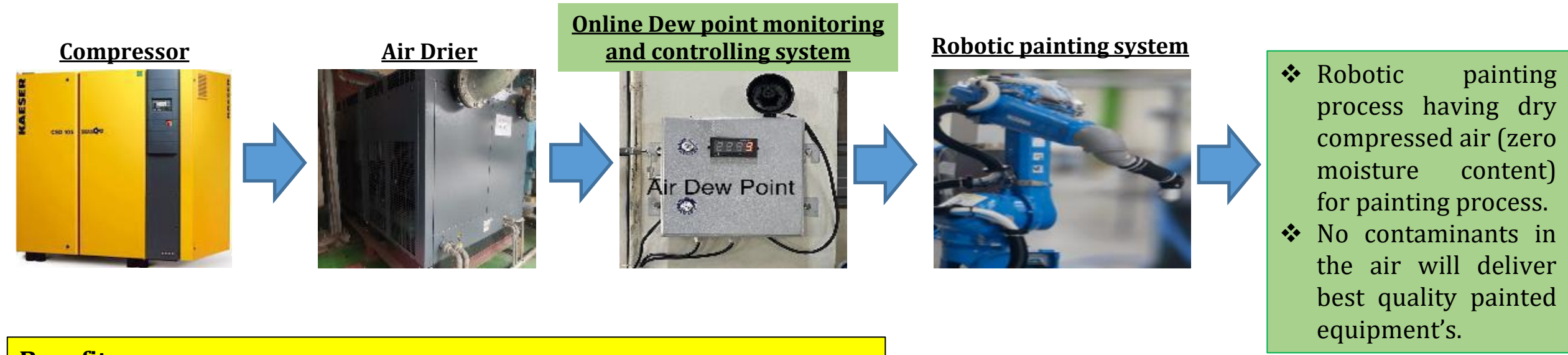
Idea	Advantages	Disadvantages	Judgement
Change in dryer technology		High investment and risk of not meeting quality requirements	X
Change in process (dew point monitoring & controlling system to be used)	Painting quality enhanced and air energy loss can be reduced.		✓
Addition of driers in paint shop		Drier addition is high investment. Dew point requirement at paint shop is -60 °C	X
Change in timer setting frequency to discharge the moisture at drier		Chances of affecting paint quality resulting in production loss.	X

Usage of alternate process was judged as successful to achieve the targets.





5. Innovative project-1- Reduction in Energy consumption and enhanced the compressed air quality by installation of online air dew point monitoring system in Paint Shop.

Current Process Condition

❑ Online air dew point monitoring and controlling system is installed in all 5 no's paint shop to maintain the dew point



Benefits:-

 <p>SAVE ENERGY</p>	 <p>COST</p>	 <p>CO₂ REDUCTION</p>	 <p>INVEST!!!</p>	 <p>ROI</p>
Reduced energy consumption 238000 kWh annually	Cost saving of Rs 25 lakh annually.	Reduction in 200T CO ₂ emission annually	120 Lakh	57 Months

Current time-based purging system to discharge moisture was highly energy consuming due to huge amount of compressed air loss during purging

5. Innovative project-2- Reduction in Energy consumption and enhance the indoor air quality & maintain thermal comfort of shop floor by Installation of 25 Nos Natural Low Gravity Ventilation System.

Before Condition



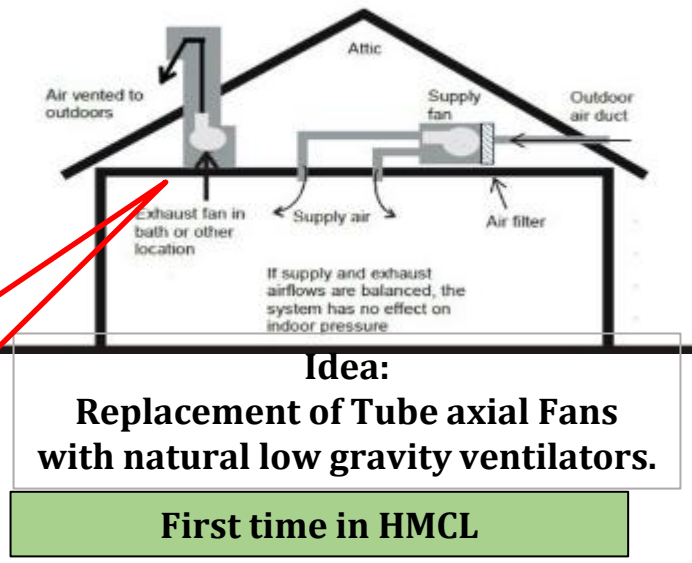
- At shop floor (DG house, Boiler House ,Exp. Plant ,Despatch) Area
- ❑ Mechanical driven exhaust system (Make-Up air system) is used to supply the fresh air to maintain the thermal comfort.
 - ❑ Exhaust system balances the indoor air pressure and prevent drafts.

Why Necessity at shop floor:-

- ✓ Removal of airborne contaminants
- ✓ Temperature control for worker comfort and equipment performance
- ✓ Compliance with Health and safety regulations.
- ✓ Prevention of fire and explosion hazard.


High Energy consumption due to continuous running of tube axial fan

- Energy consumption – 63 kWh/day
- No's of System installed – 25 Nos
- Energy consumption per Year – 470000 kWh

Zero Energy consumption

- Energy Consumption – 0 kWh/day
- No's of System installed – 25 Nos
- Energy consumption – 0 kWh



S.NO.	Factors	Exhaust Blower	Natural Low gravity Ventilation
1	Power Source	3.7 KW Induction Motor	Not Required
2	Sun Light Exposure for natural Lighting inside Plant	Not Available	Available
3	Energy consumption kWh/Year	470000 kWh	0 kWh
4	Periodic Maintenance	Required	Not Required



4.7 lakh kWh annually



Rs 47 lakh annually.



390T annually



6 Months

Reduced power consumption in ventilation system by 4.7 lakh kWh/Year and Annual saving of Rs. 47 lakh.



6. Renewable and Green Energy

On grid solar Power Synchronization with existing double Bus bar Panel to utilize the solar power

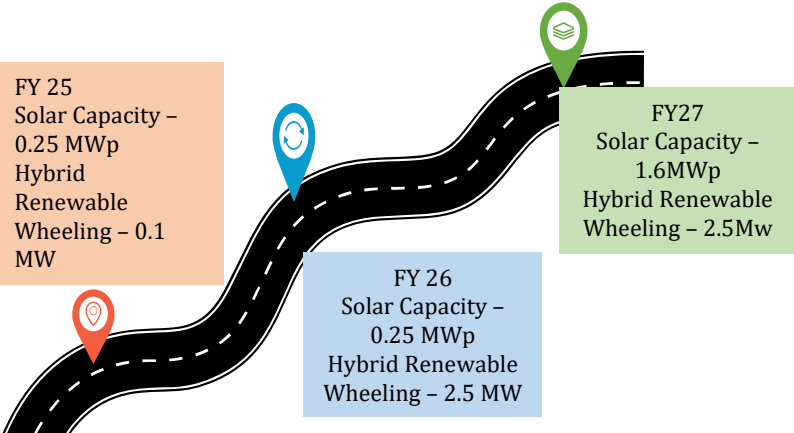


Dashboard

Details of solar Utilization FY23-24

Tech.	Type Energy	Onsite Offsite	Inst. Cap.	Gen. (Mn. KWH)	% of overall Electrical Energy
Solar PV	Elec.	Onsite	252 kWp	0.2	1.67

Road map for Renewable Energy enhancement at HM1D



S. No.	Location	Total Module Qty	Total Capacity (kWp)
1	Expansion Plant (South Face)	1656	629.28
2	R&D B and C Block (South Face)	234	88.92
3	AL4 (East & West Face)	144	54.72
4	Canteen (South Face)	234	88.92
5	Parking Area (South Face)	178	466.16
Total		2446	1328

RPO Obligation

***Requirements:**
Solar-4 % of Captive
Non Solar-3% of Captive

From
The Director General
New & Renewable Energy Department
& HAREDA, Institutional Plot No. 1,
Akshay Urja Bhawan, Sector-17, Panchkula

To
M/S Hero Honda Motors (Spare Parts)
69Km NH-8, Dharuhera,
vinod.kumar@heromotocorp.com

NO./HAREDA/BG/2022/546 Dated: 21-04-22

Subject: Notice for non-compliance of Renewable Purchase Obligation during the year 2020-21.

Please refer to Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations, 2017 vide which Fossil Fuel based Captive Power Plant of 5 MW and above including Fossil Fuel based Co-generation captive plant of 5 MW and above are Obligated entity and they are mandated to fulfill renewable purchase obligation.

You have a Fossil Fuel based Captive Power Plant of 5 MW and above and your RPO compliance report for the year 2020-21 is as under:

Total power generation (Million Units)	RPO required (Solar-units @ 4%) (MU)	RPO required (Non-Solar-units @ 3%) (MU)	No. of units generated/purchased from solar RE sources (MU)	No. of units generated/purchased from non solar RE sources (MU)	No. of REC purchased (Solar) (MU)	No. of REC purchased (non-Solar) (MU)	Shortfall (Solar) (MU)	Shortfall (non-Solar) (MU)
16.582	0.6633	0.4975	0	0	0	0	0.6633	0.4975

No. of REC Purchased in FY 24

Solar & Non Solar-
440 Nos.

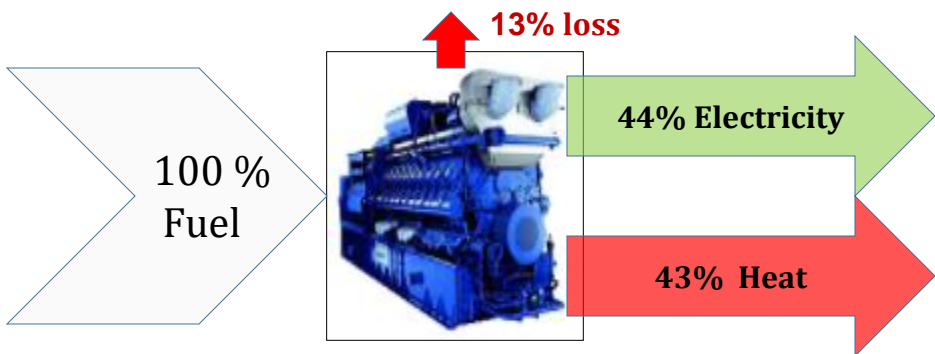
Solar Power Plant of 252 kWp is installed and 1328 kWp & Hybrid renewable wheeling of 0.1 MW will be completed by Dec24.



7. Waste Utilization & Management

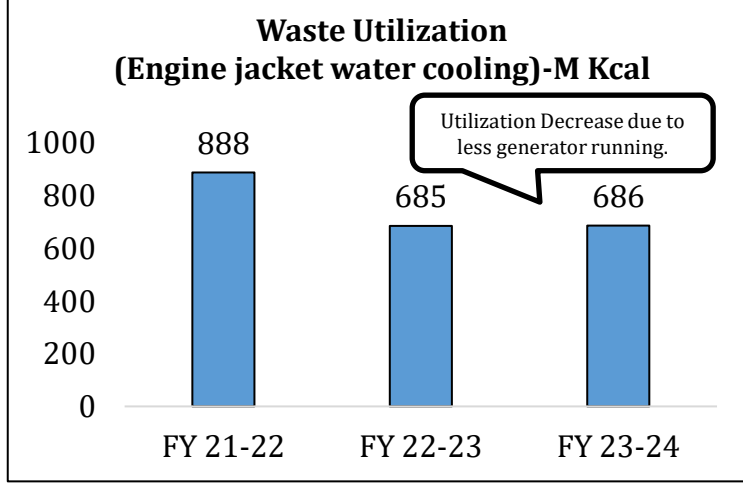
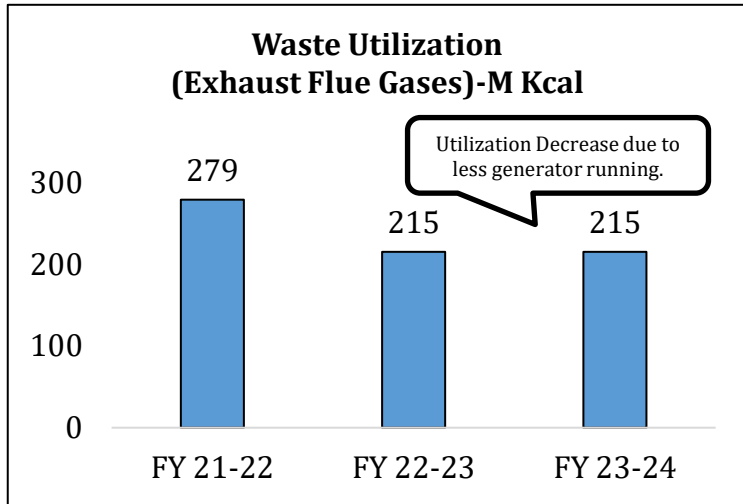
Waste as wealth: Waste Heat Utilization by co generation in Gas generators.

Back Ground information :



1. 44% of the input energy is utilized through Alternator.
2. 56% of the energy is wasted in the form of heat.

Challenge : To utilize the max. Energy which is in form of heat . So, it was found that the feasible utilization of the heat is only 43% ,rest 13% can not be use as it is the form of radiation.



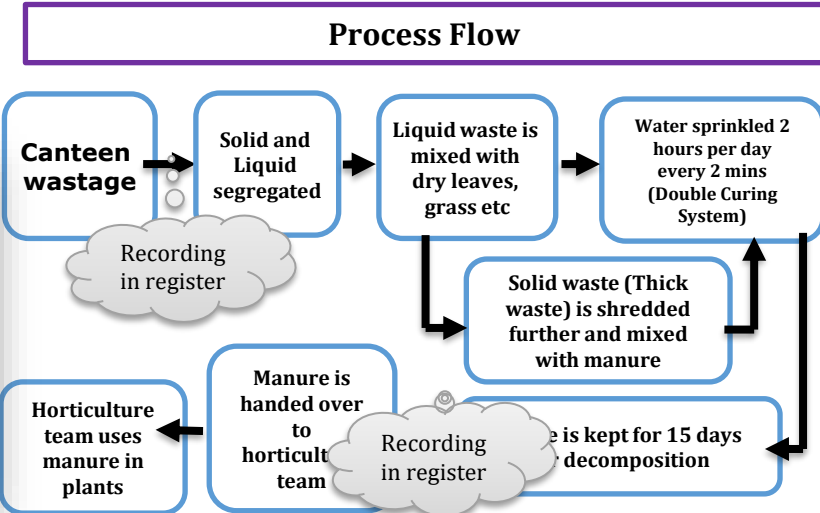
Waste is Utilized as Tri-generation of Gas Generators in Waste Heat Recovery Boiler and VAM.

7. Waste Utilization & Management

Waste as wealth: Waste Utilization in canteen and Horticulture waste .

Waste as Fuel: By co processing of Process sludge to cement industries

Organic Waste converter

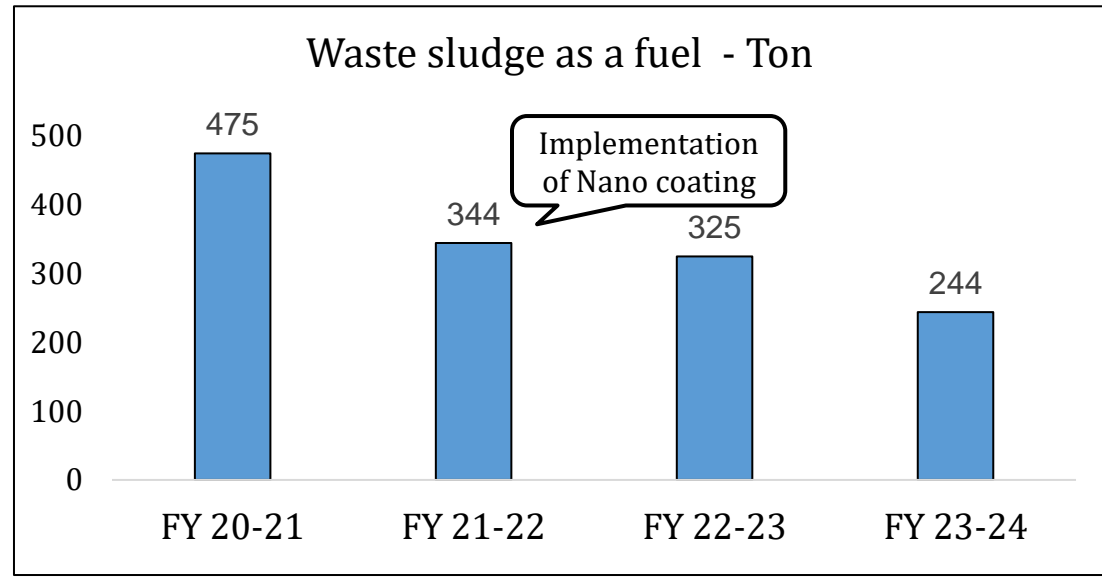


Double Curing System



Composite Usage from FY 2021~2023

FY	Canteen Food Waste (Kg)	Horticulture waste (kg)	Composite (Kg)	%age
21-22	10453	10987	21440	99.2
22-23	9876	11403	21279	99.7
23-24	8540	10372	20343	99.8

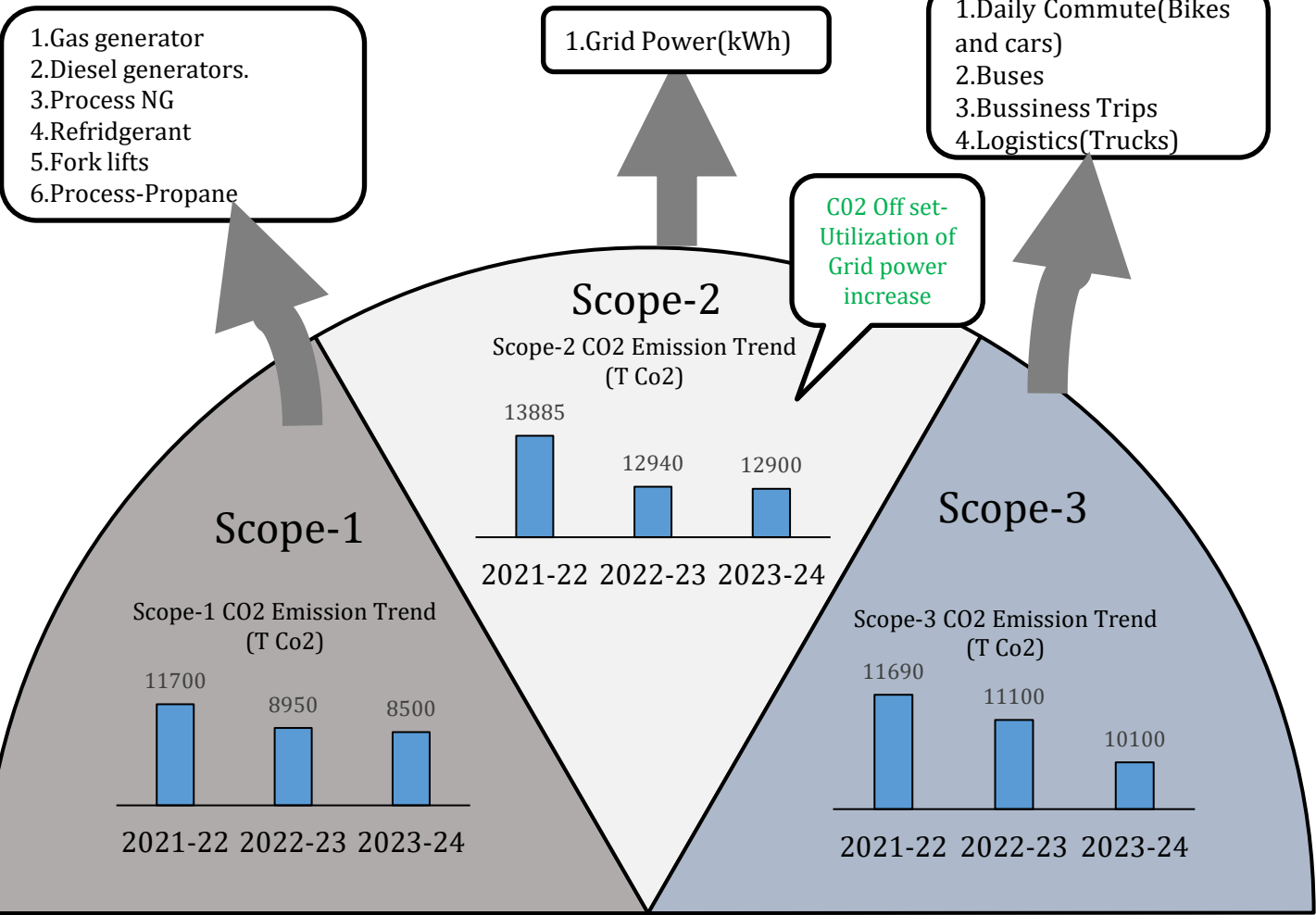


The canteen and horticulture waste is treated in organic Waste Converter above 99% utilization .The Sludge generated in processes sent to co processing in cement industries and used as Fuel there. The YoY sludge as fuel is shown.

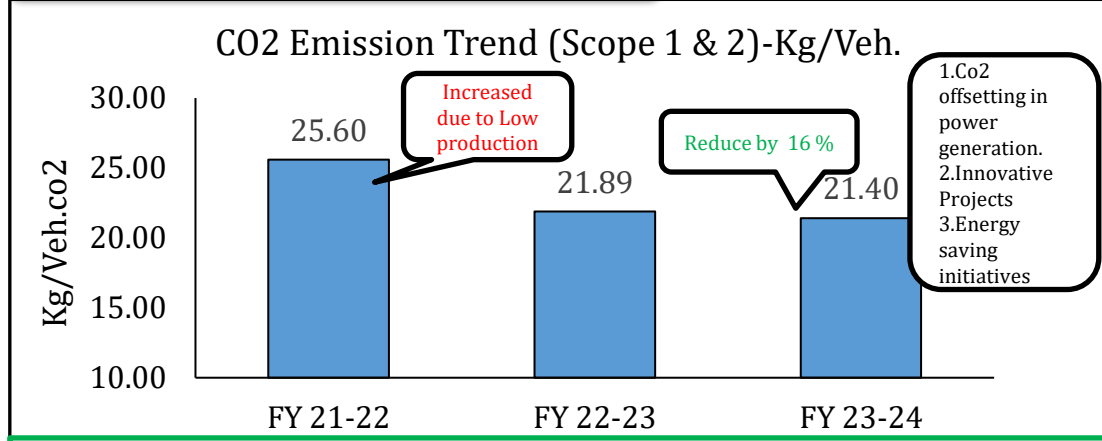


8. GHG Inventorisation

GHG Inventorisation of HM1D



GHG Emission Trend of HM1D



GHG Inventorisation (Scope-3 Reduction initiatives Example)

Major Highlight

Applicable for:- All CKD suitcase Countries
Model Applicable:- IGNITOR 125 cc
Packaging Material:- Plywood
Status: Stacking trial is done & found OK.

Before	After
Model:- Ignitor 125cc Box Size:- 77.5" x 22" x 33.75"	Benefits
FCL - 132 nos.	<ul style="list-style-type: none"> • FCL - 152 no's • FCL Increased by 14% • CO2 Emission reduction = 150 T CO2

Inventorisation of CO2 Emission is practices in all 3 scopes. The YoY Co2 reduction is shown and reduced 16% from FY 22.



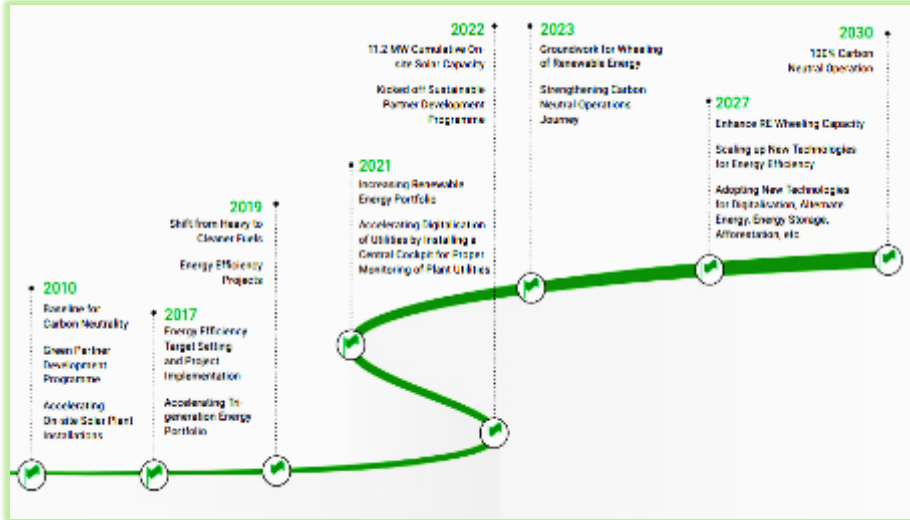
8. GHG Inventorisation

Public disclosure of sustainability report



Sustainability report published on 6 August 2023.

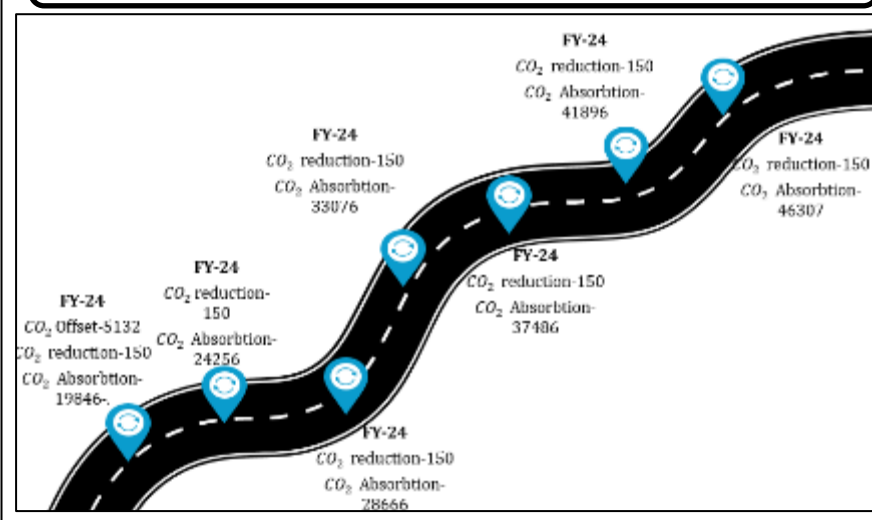
Long term Sustainability Roadmap-HMCL



Hero MotoCorp's Ambitious Targets on Sustainability (HATS)



Long term road Map carbon neutrality-HM1D



Long term Action Plan -HM1D

Action Plan		FY25	FY26	FY27	FY28	FY29	FY30
Renewable Energy Enhancement(Solar)MW	Onsite	1947	1947	1947	1947	1947	1947
Increase Utilization of Grid Power from 70%(5MVA) MVA to 10 MVA 96(%)	Offset	96	96	96	96	96	96
Solar Power wheeling (Lakhs kWh/Year)	Offset	100	100	200	200	200	200
Afforestation Drive as HMCL (Lakhs Trees)	Offset	55	65	75	85	95	105
Continuous Energy saving Projects to reduce SEC by 2% each year	Onsite	26.7	26.1	25.6	25.1	24.6	24.1

GHG emission disclosure in 1st sustainability report published in 2022 with long term targets and road maps. Aligning with the HMCL Target Road map of the HM1D prepared.

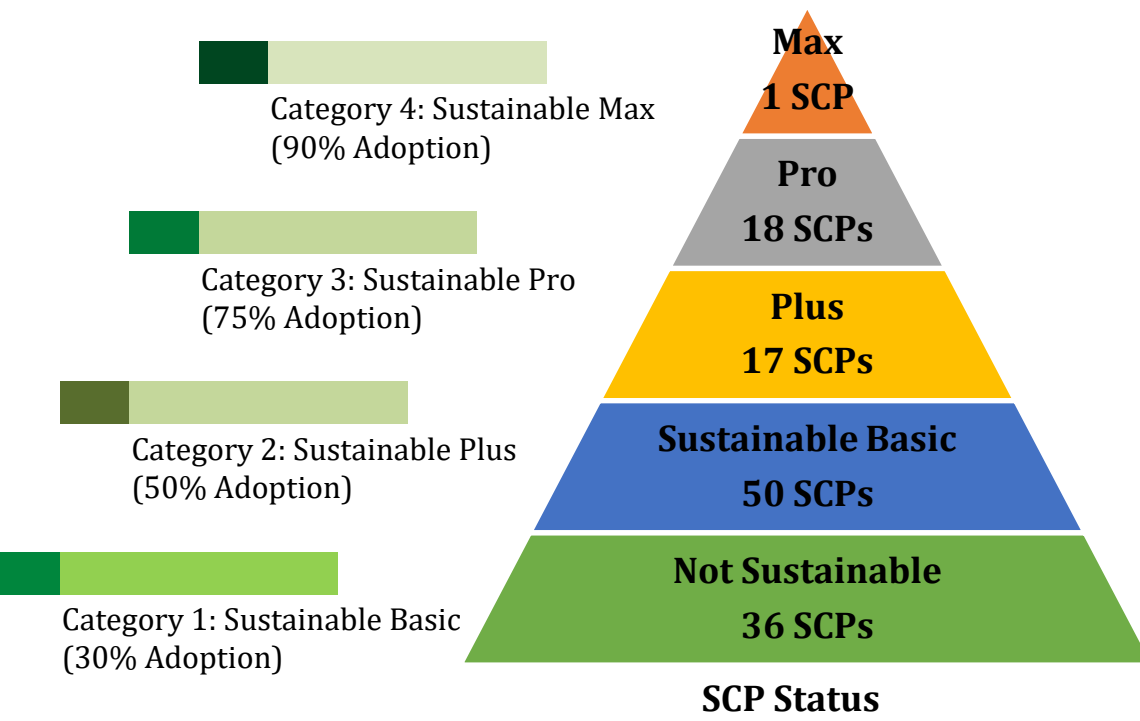


9. Green Supply Chain Management

SPDP – Sustainable Partner Development Program

- SPDP Questionnaire shared with 128 Suppliers
- Data is collected for all 128 suppliers and baselined.
- FY25 goals mapped

SCPs Categorization



Current Status

- Environment:**
 - a). **Carbon Neutrality:** CO2 emission per vehicle for 128 SCPs is 89.63 Kgs/Veh
 - b). **Water Positivity:** Water Impact per vehicle for 128 SCPs is 248 Ltr/Veh
Water Impact = Water Consumption – Water Harvested
 - Waste Neutrality:**
 - 114 SCPS out of 128 have waste segregation & disposal mechanism in place.
 - 119 SCPs are complying to SUPs (Single use plastic) free.
 - Social:**
 - Human rights, 115 SCPs out of 128 declared that they have human rights policy in place
 - Governance:** ISO Certifications declared by SCPs;
 - ISO 9001 – 53 SCPs
 - ISO 14001 – 83 SCPs
 - ISO 45001 – 73 SCPs
- *CO2 emission/veh & water impact/veh calculated on the data provided by the 128 SCPs.

Target 25

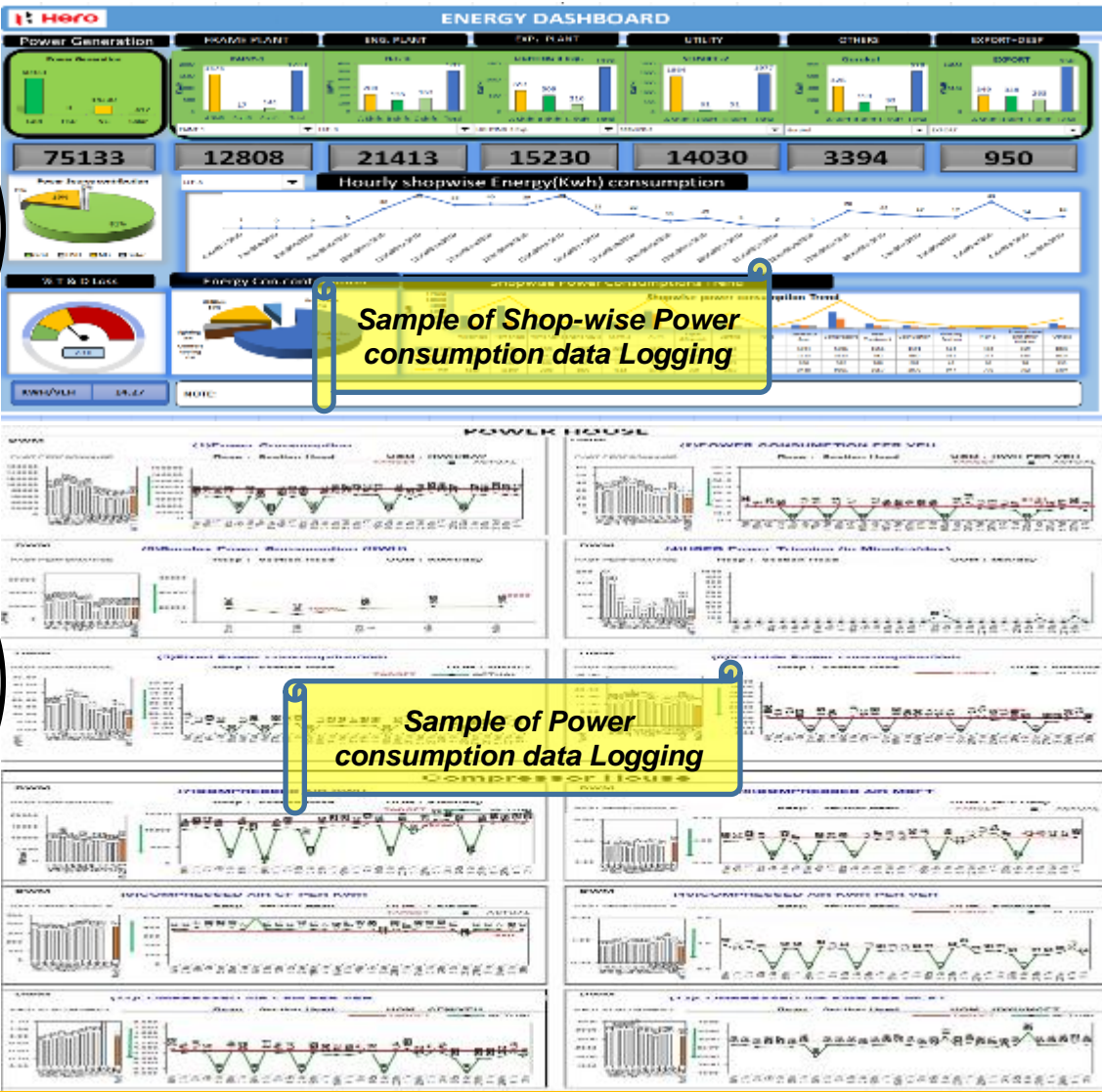
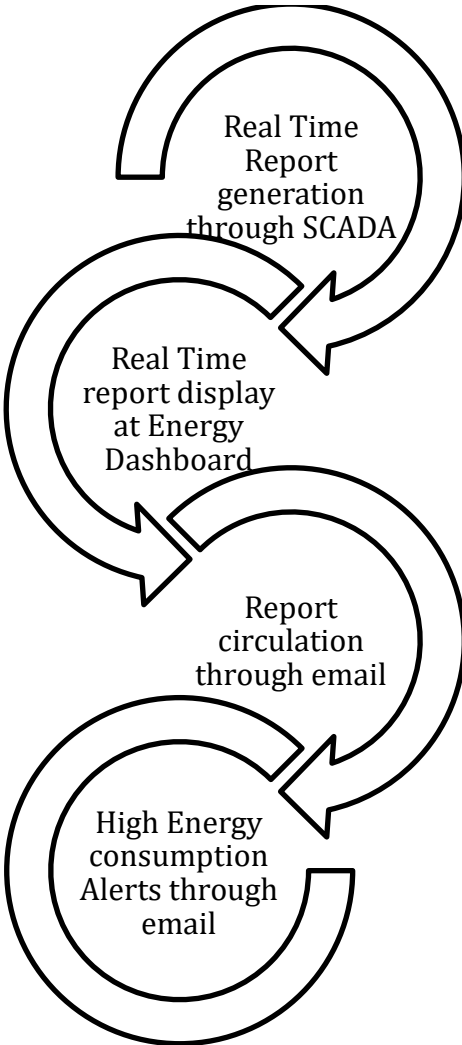
- Environment:**
 - a). **Carbon Neutrality:** 5% reduction in CO2 emission per vehicle from base line for 128 SCPs (HMCL Annual Target 2% reduction)
 - b). **Water Positivity:** 5% reduction in water impact per vehicle.
- Waste Neutrality:**
 - Validation & creation of waste segregation & disposal mechanism for 128 SCPs.
 - Validation & compliance of 128 SCPs for Single use plastic free.
- Social:** Validation on human rights policy in alignment with HMCL policy for all 128 SCPs.
- Governance:** ISO 9001/IATF, ISO 450001, ISO 14001 certifications compliance to all eligible SCPs.

GVDP program was planned for Green dealership for 128 suppliers in a phased manner. GVDP is upgraded to SPDP from FY23 with new strategy to achieve HATS targets.



10. EMS Systems

Energy Monitoring System



HM1D is awarded with Green Company Rating System Gold Award in 2019.



HM1D is awarded with Certification for ENMS ISO 50001 in 2023.



We are Green CO, Zero Waste to Landfill and ISO 50001 certified company & Zero usage of plastic certification is under process.



Be the Future of Mobility

Create | Collaborate | Inspire P36

10. EMS Systems - Learning from CII

Guidance from Honourable CII Judges

- Methodology for deciding scope of energy conservation at section/ line/ machines.
- Various Projects – EMS, Digitization.
- Utilization of 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 & EnMS Certification.

ISO 50001:2018 Energy Management System Certification

- **Certified in January 23.**



Green Co Certified Company & Vendors

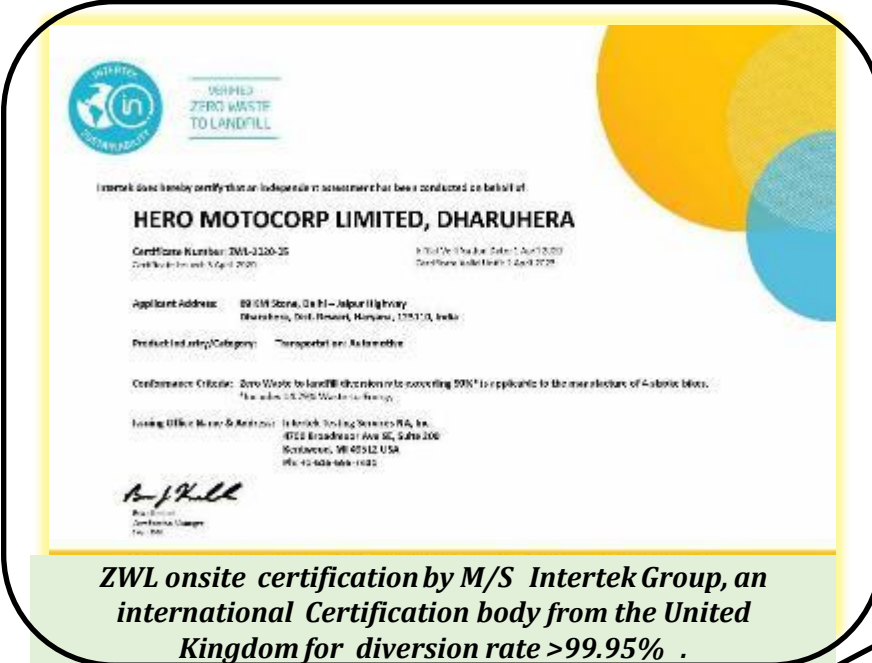


Green Purchase Policy



Systems & Facilities present in HM1D are showcased here

11. Net Zero commitment



ZWL onsite certification by M/S Intertek Group, an international Certification body from the United Kingdom for diversion rate >99.95% .

Certification of 'Elimination of Single use plastic ' will challenged on FY24. Project is started on Aug.2023 and certification is expected in Dec.2023.

Carbon neutral operations by 2030

Target FY23 - 42%
*Actuals FY23: 37%
88% Achievement



Waste neutral facilities by 2025

Target FY23 - 87.5%
*Actuals FY23: 87.5%
100% Achievement



Green dealerships by 2030

Target FY23: Scope/Baseline Assessment criteria
*Actuals FY23: Green Dealerships are mapped basis the adoption level of 12 Green elements (Green-Plus, Green Pro, Green Max)



Product recyclability by 2030

Target FY23 - 97%
*Actuals FY23: 97% (EV:95%)
100% Achievement
Recyclability potential of ICE & EV stands at 97 and 95% respectively



Water positive facilities by 2025

Target FY23 - 412%
*Actuals FY23: 405%
98% Achievement



Sustainable Partner Development Program

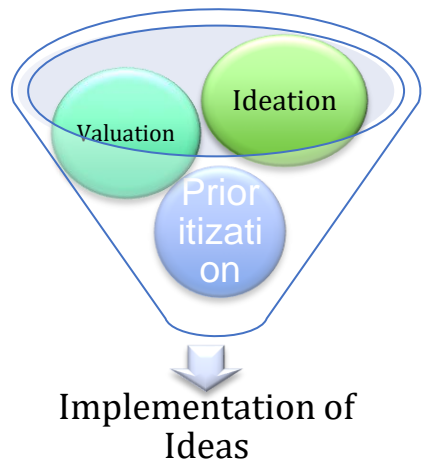
Target FY23 - 128
*Actuals FY23: 128
100% Achievement
Capacity Building completed for 100% Suppliers



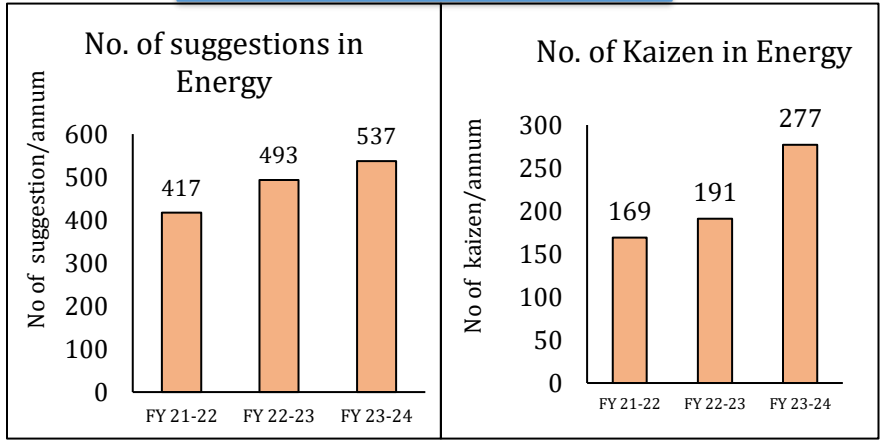
Net zero commitment is shown through 'Hero Aspirational Targets '. ZWL certification is received in FY23 and we are going to challenge Elimination of Single Use plastic in Dec.2023.



12. Team work, Employee Involvement & Monitoring



Horizontal Deployment of Ideas



Employee involvement Activities



Earth Hour Celebration(25/03/2024)



Energy Conservation Training to new joiners



Hero Green Drive



Aarush – Solar Street Light Installation



Some of the Glimpse of team Work, Employee Involvement are shown

4. Awards and accolades



**Sustainable Plant-
Sustainable
Planet**

2012
Initiatives to reduce Ground water extraction & achieve ZLD status

2013
To strengthen Rain Water Harvesting system as per plant runoff

2015
Initiate Co-processing of hazardous waste

2019
Green CO Gold Award from CII

ZWL Certificate

2020
Zero Waste to Landfill Certification from Intertek, UK



2021
Energy and Water Audit by external Agency

2022
HR Excellence Award

2022
Food safety ISO:22000



2021
EnMS ISO:50001

2017~2019, 2021
Awarded as excellence in energy management system-4 Times

2014
Planned Migration to next Gen Lighting Technology

2013
Introduction of Co-Gen concept

2012
Solar Power Plant

2011
Switching over to Natural Gas based Power generation/ processes





Thank You!

Journey continues...

