National Award for Excellence in Energy Management-2023

Category: Automobile
Hero MotoCorp Ltd.
Dharuhera

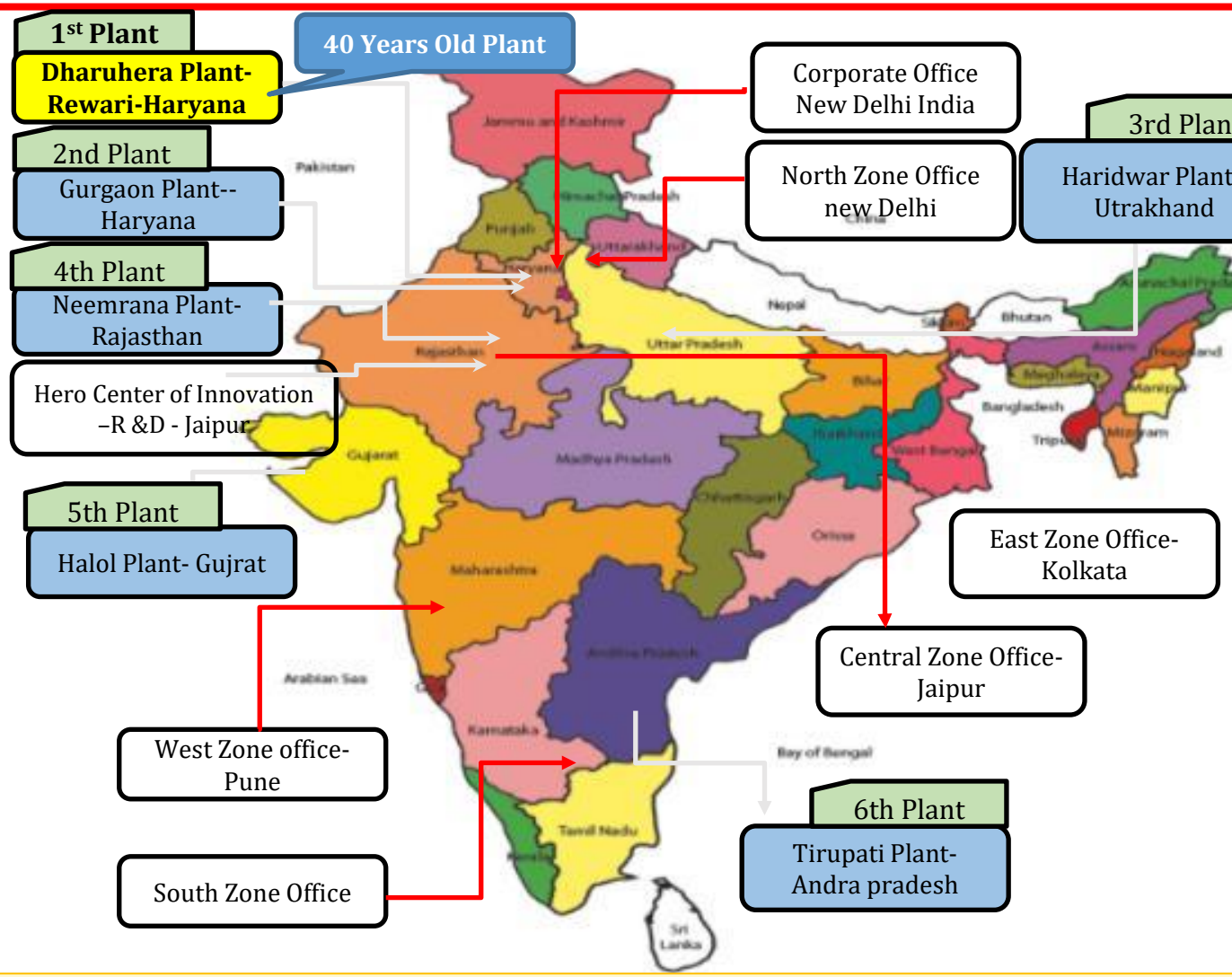
Mukesh Tyagi Manager-Maint.	Jasbir Singh Manager-Maint.	Sakshi Dubey A. Manager – P.E.

19 September 2023

Presentation Index

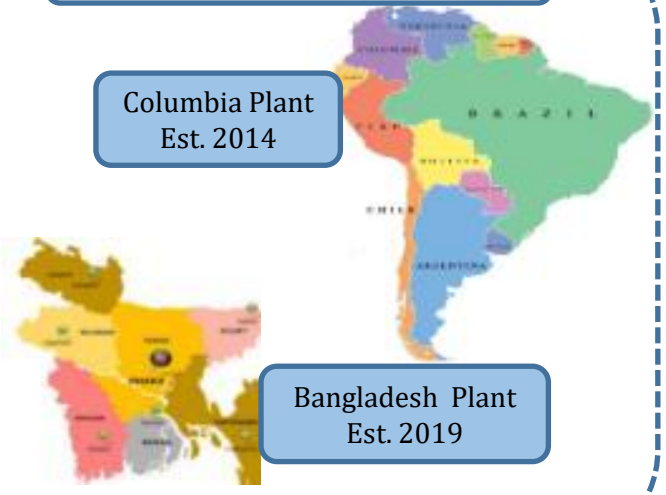
Hero MotoCorp – At Glance

- Registered and Corporate office
- 6- Plant- India
- 1-Global Part Centre
- 2- R & D Centre
- 5- Zonal Office
- 22-Regianal 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



Conclusion :10000+ touch points across India including plants, service centre , dealers, mobile service centres. Hero has 8 plants in India and 2 plants in overseas.

1983 – Joint Collaboration Agreement with Honda Motor Co Ltd Japan

1984 – Incorporated Hero Honda Motors Ltd. & started 1st Manufacturing Plant at Dharuhera.

1985 – First motorcycle 'CD 100' Rolled out

1997 – 2nd Manufacturing Plant at Gurgaon, Haryana (Flexible Factory).

2001 – 'World No1' Largest two-wheeler Manufacturer in the World

2008 – 3rd Manufacturing Plant at Haridwar (Shrine of Technology)

2009 – Completed 25 Years - 25 Million Silver Jubilee celebrations

2011 – Hero Honda unveiled new Global Identity & became Hero MotoCorp Ltd.

2014 – 4th Manufacturing Plant (Garden Factory) & Global Parts Centre at Neemrana, Rajasthan

2015 – Commenced Operations at our 1st Overseas Mfg. Plant (a wholly-owned subsidiary named HMCL Colombia SAS) at Villa-Rica Colombia

2016 – Commenced Operations at 5th Mfg. Plant at Vadodara (Halol) & started Centre of Innovation & Technology, Jaipur

2017 – Crossed the significant milestone of 75 million units cumulative sales Commenced Operations at our 2nd Overseas Mfg. Plant at Bangladesh

2018 – Foundation stone laid for new 6th manufacturing plant at Chittoor in Andhra Pradesh

2019 – Hero R&D centre in Germany

2020 – "OCTOBERFEST2020"
- Highest Ever Prod in a day-31855
- Highest Ever Dispatch in a day-39,174
- Highest Ever Prod in a Month-803,462
- Highest Ever Dispatch in a Month-806,848

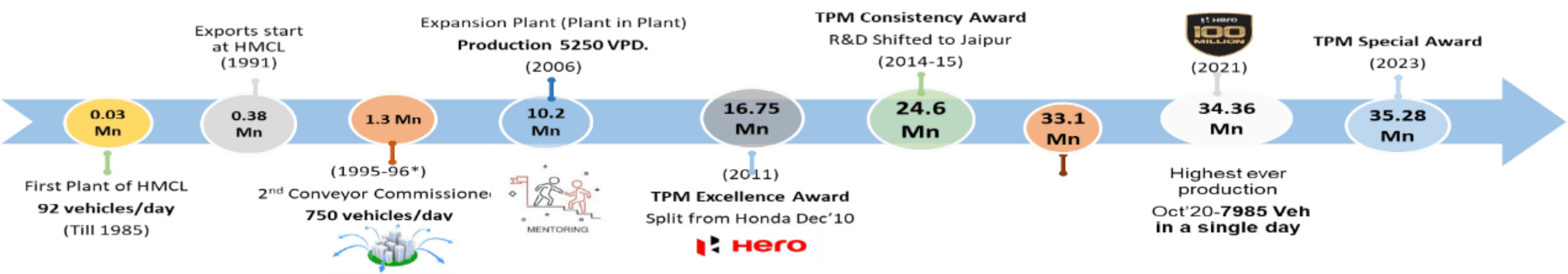
2021 – 100 Million Landmark Achieved in Jan'21

2022 – Hero tie up with Zero for manufacturing of EV motorcycle

2023 – Hero + Harley Motorcycle launched

Hero Electric Brand launched

Brand licensing and distribution Tie-up



Conclusion: HMCL has collaborated with promising next generation technology companies like Zero, Ather Energy & Gogoro to excel and satisfy future customer needs

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) : 4894 Cr.
- Conveyor : 3 No.
- Assembly Operations : 2 Shifts
- Machine Shop Operation : 3 Shifts
- Capacity : 7000 No.
- OEE : 88 %
- Production Cells : 44 No.,
- Current Models : 83
- No of Variant : 480

Conclusion: 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.

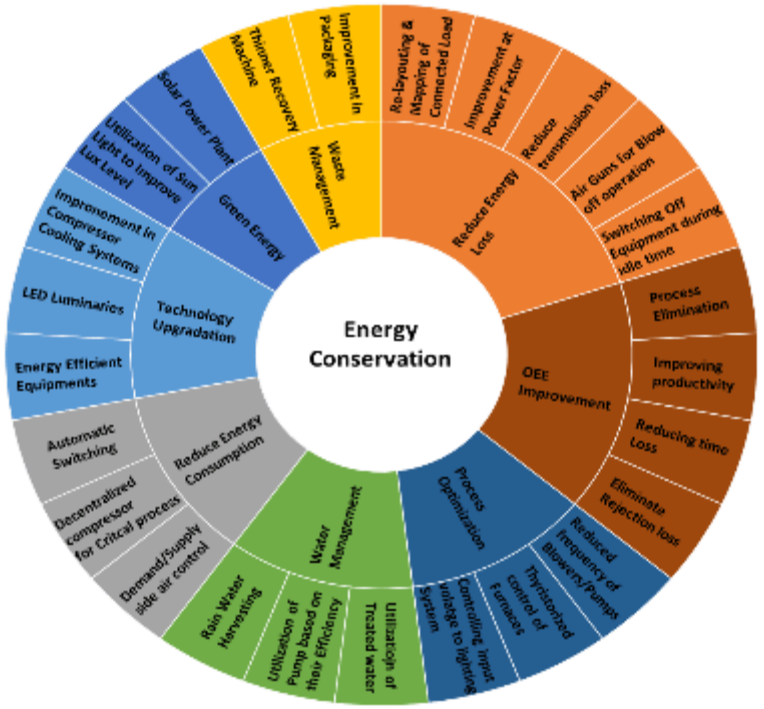
To achieve this, we commit ourselves to:

- 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
Ravi Kumar Pissipaty

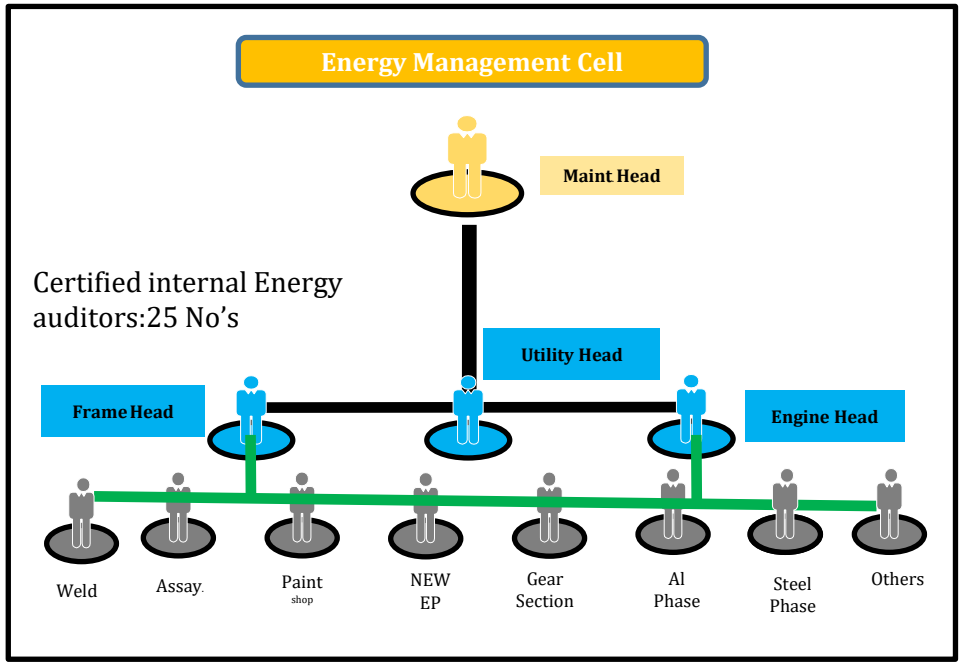
STRATEGY OF ENERGY CONSERVATION

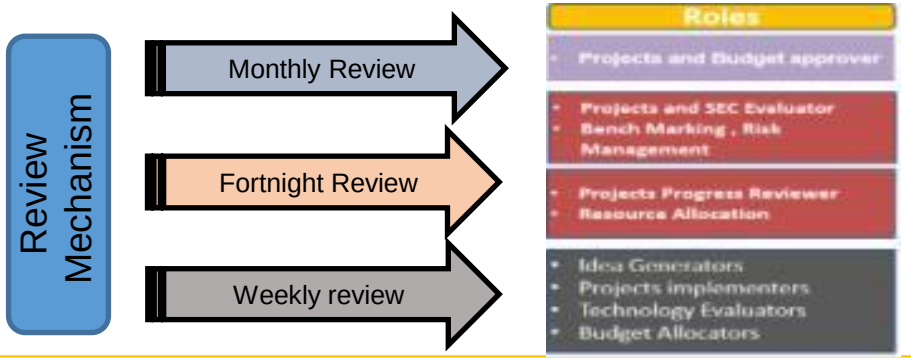


3 prolonged Approach

01	02	03
Process Optimization	Retrofits & controls	Technological Upgradations

Energy Review Mechanism





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

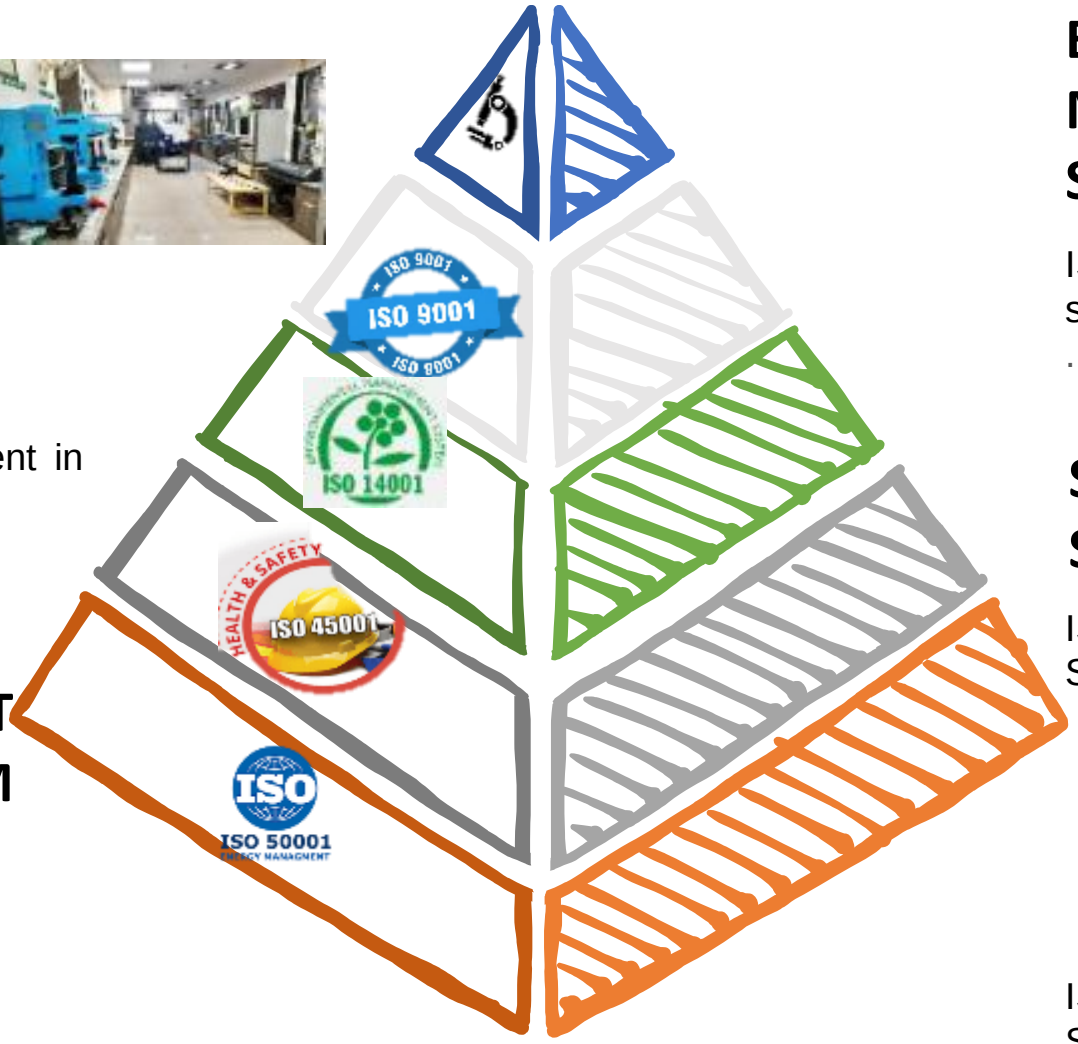
1. Company Profile & Process: Policies

INSPECTION & TESTING FACILITIES

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

TY MANAGEMENT SYSTEM

ISO 9001:2015 Quality management system



ENVIRONMENT MANAGEMENT SYSTEM

ISO:14001:2015 Environment management system

.

SAFETY MANAGEMENT SYSTEM

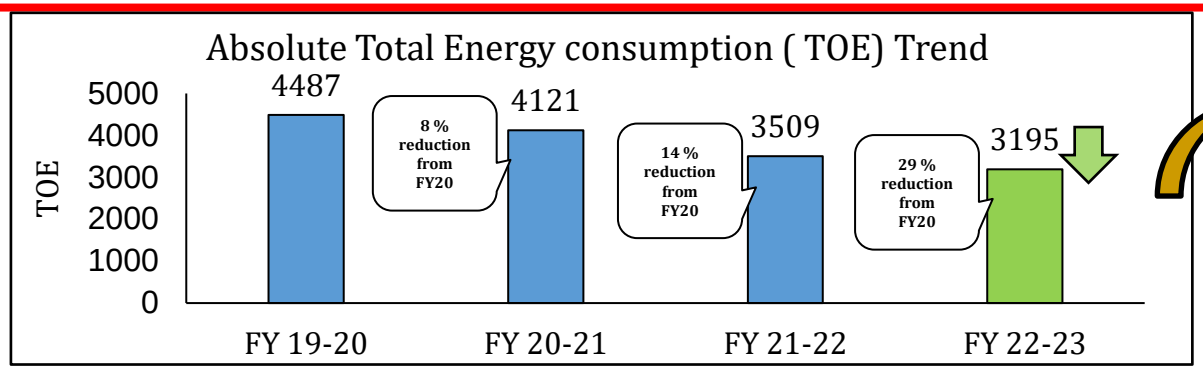
ISO:45001:2018 Safety Management System

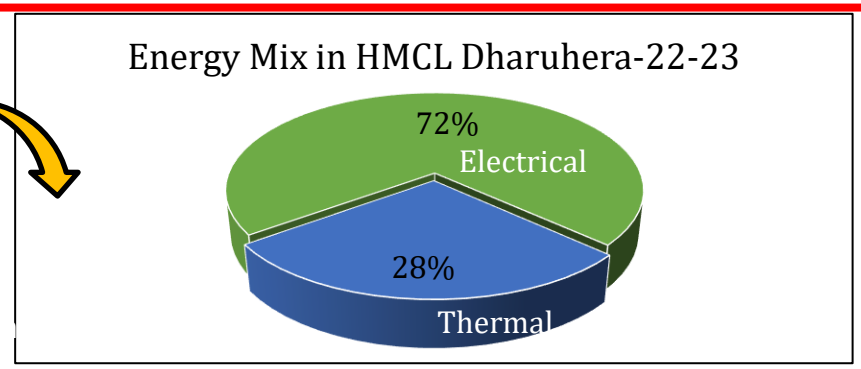
ENERGY MANAGEMENT SYSTEM

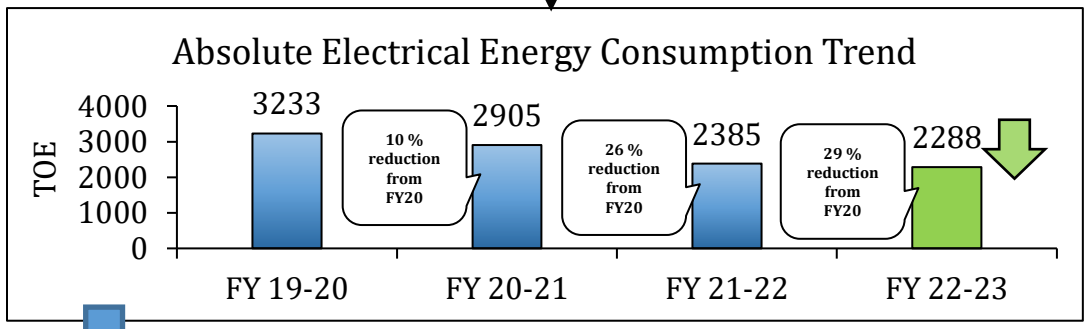
ISO: 50001:2018 Energy Management System

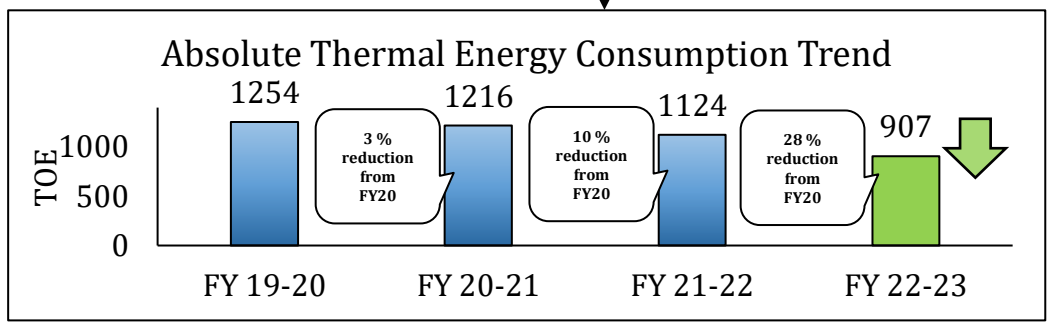
Conclusion: Systems & Facilities present in HM1D are showcased here.

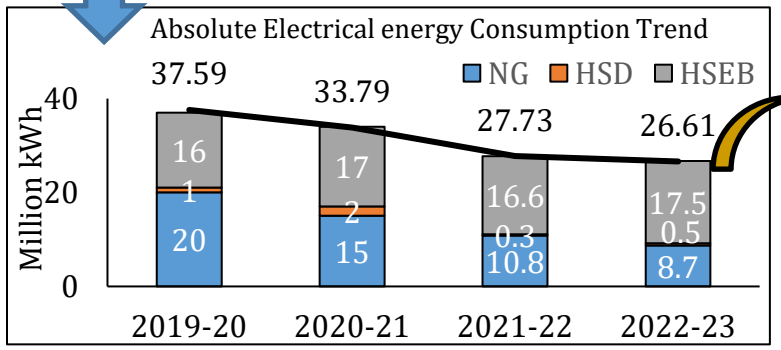
2. Energy Consumption Overview

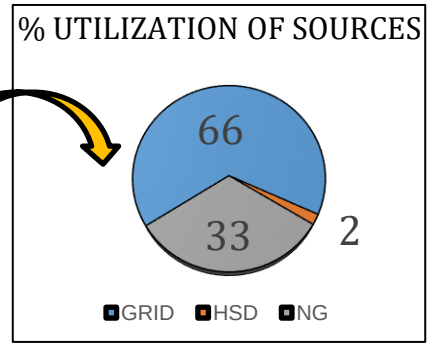


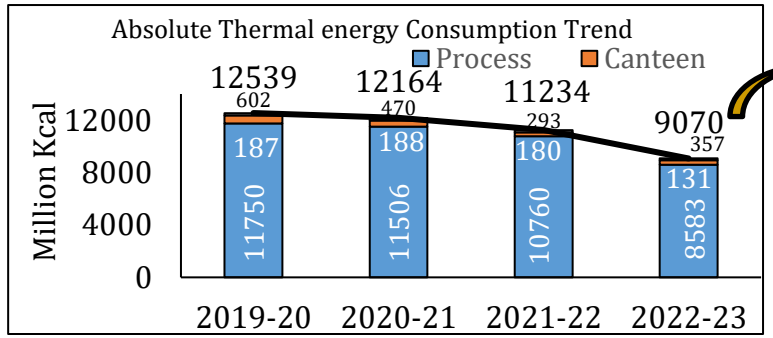


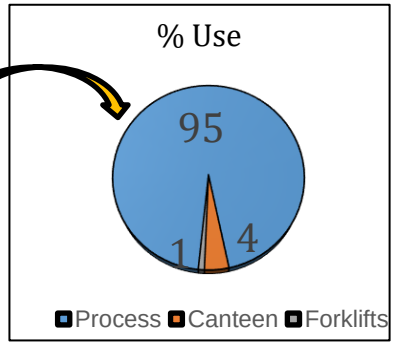






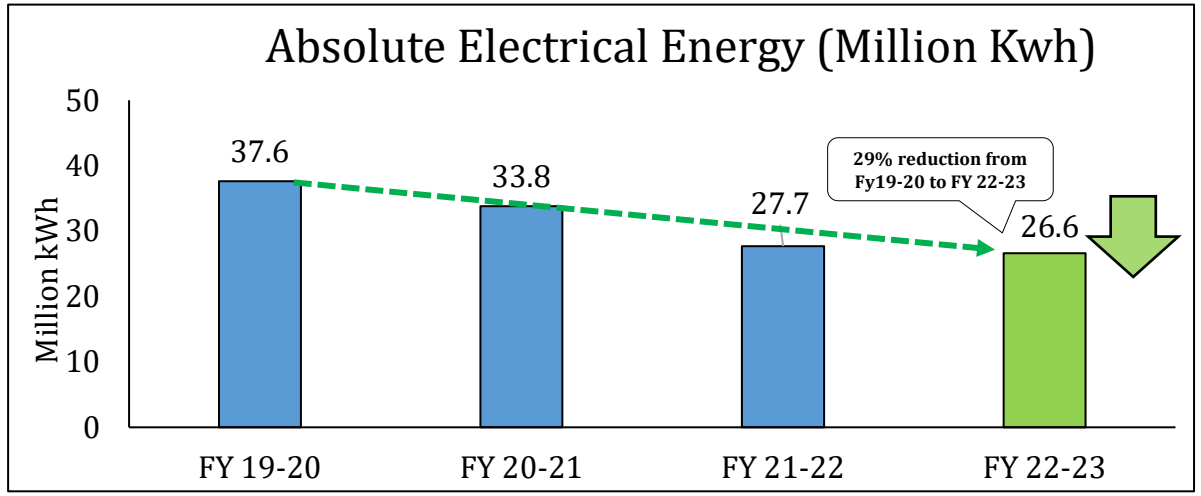


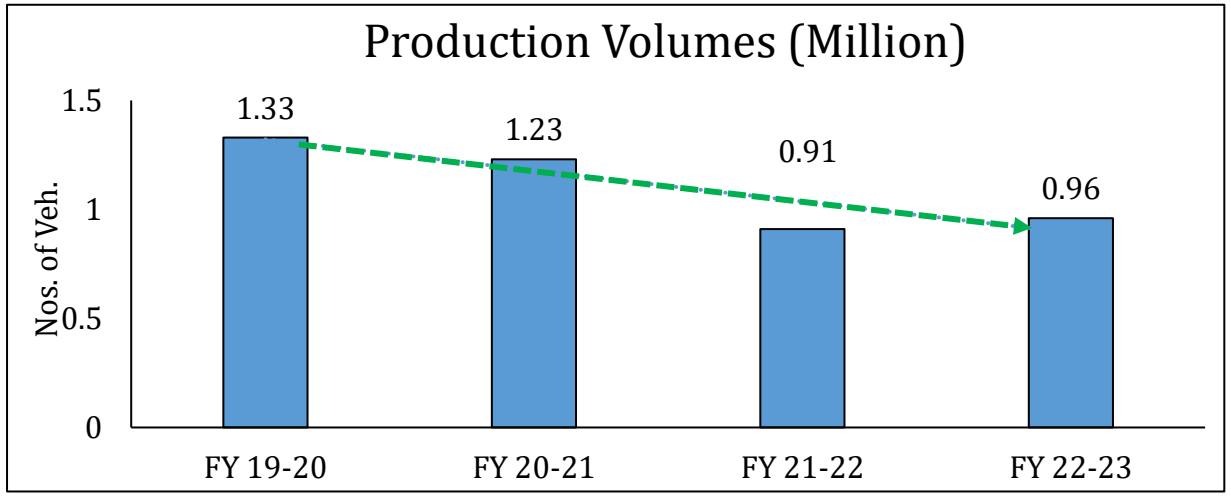




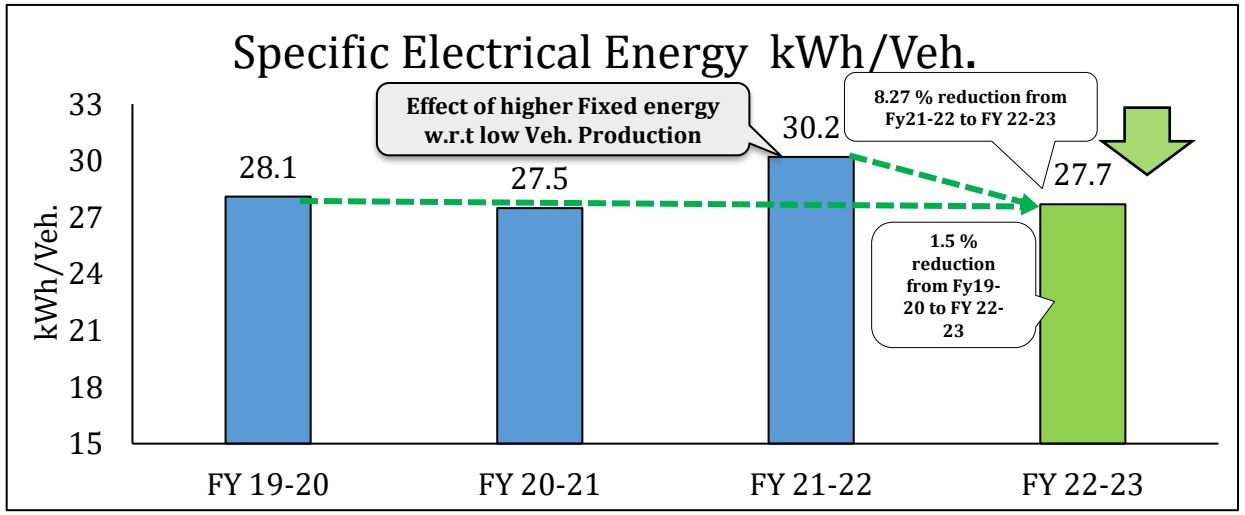
Conclusion: Absolute Energy & Thermal Consumption has reduced by 29% from year 2019-20 to 2022-23 owing to energy saving initiatives.

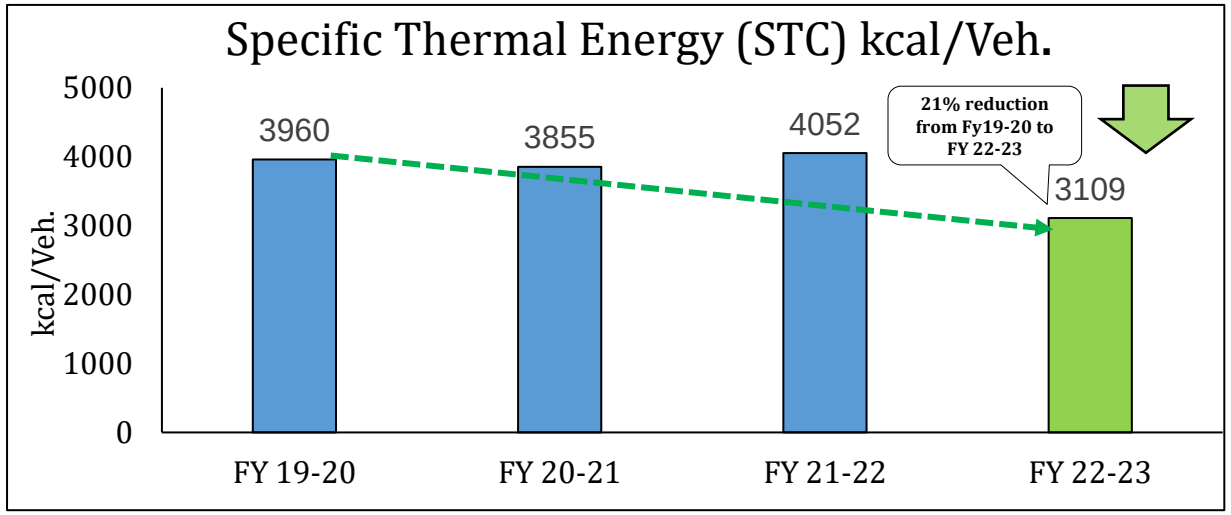
2. Specific Energy and Thermal Consumption Trend





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

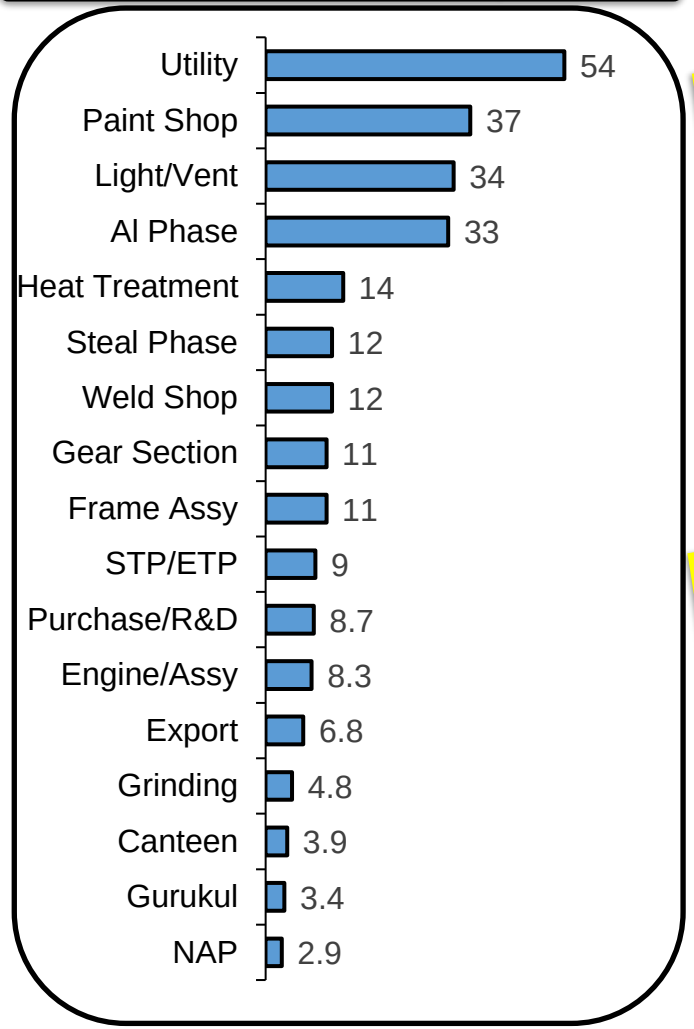




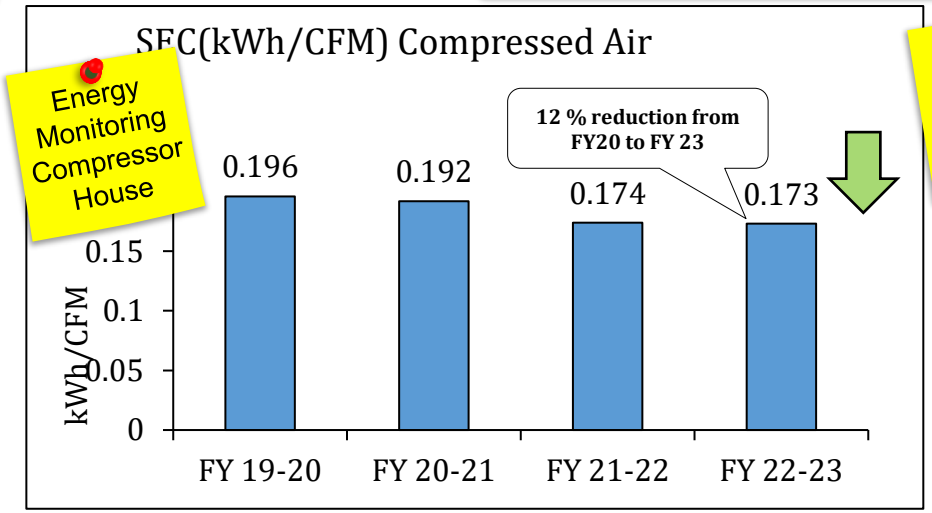
Conclusion: Despite of BS4 to BS6 Migration and COVID Pandemic impact, dedicated energy saving countermeasures ensured reduction in SEC SEC from 28.1 to 27.7 kWh/veh. i.e.1.5% and decrease in STC by 21% since FY18

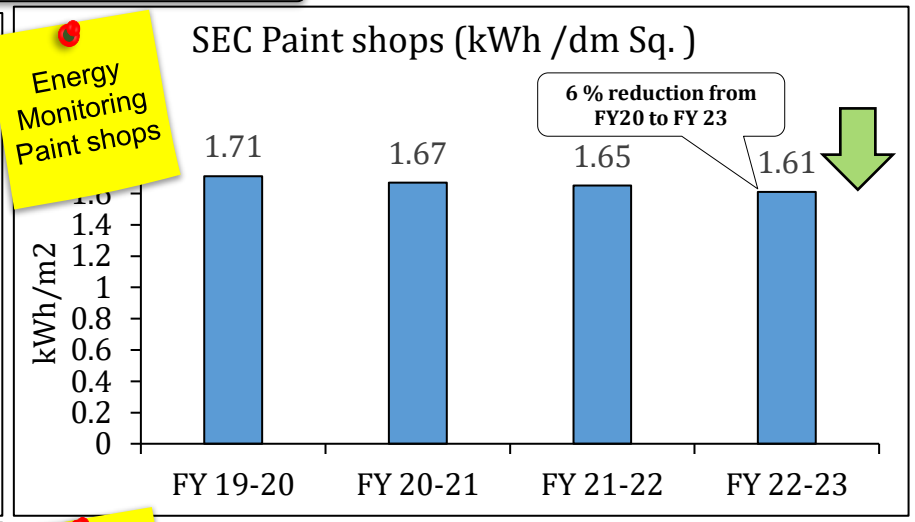
2. Specific Energy Consumption Trend:- Process wise

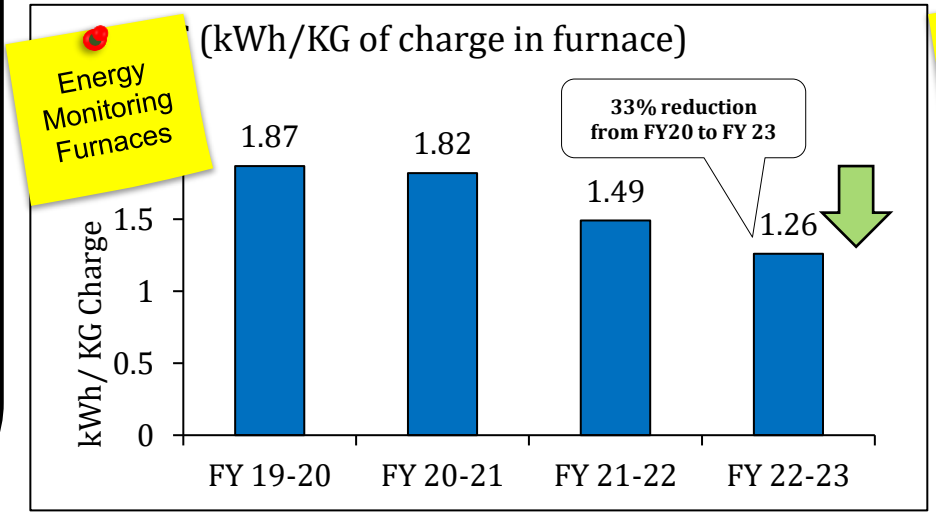
%Contribution of Shops

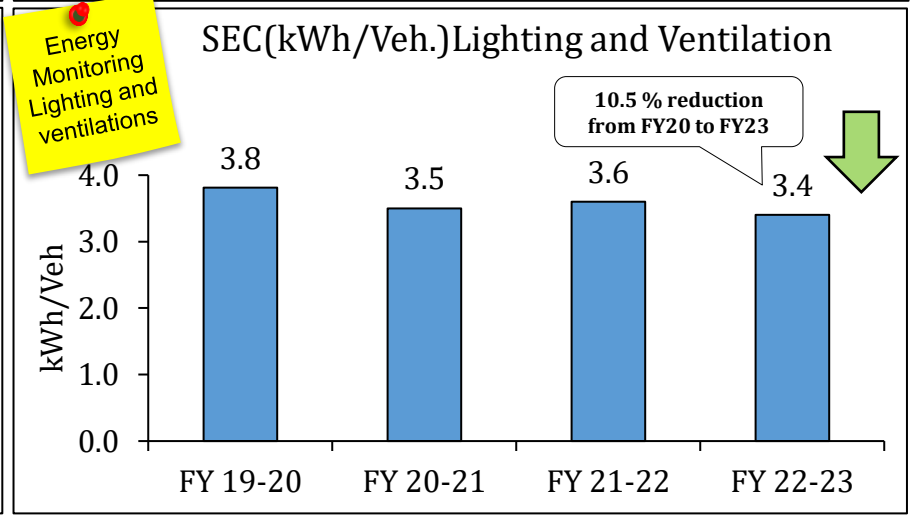


Major energy Contributor in FY 2022-23





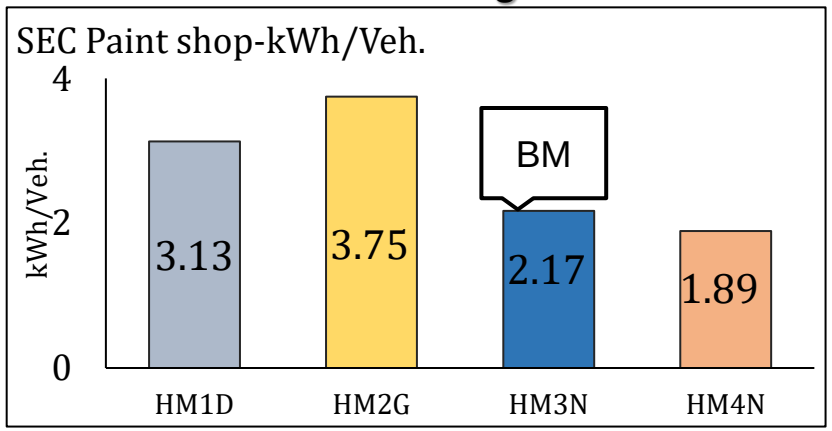


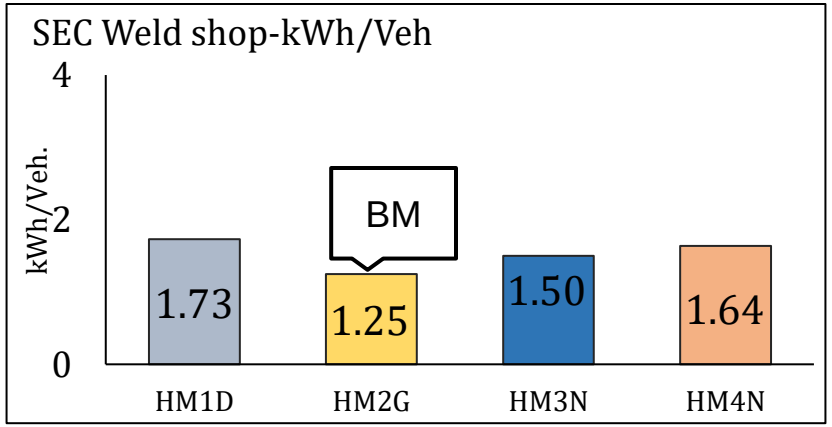


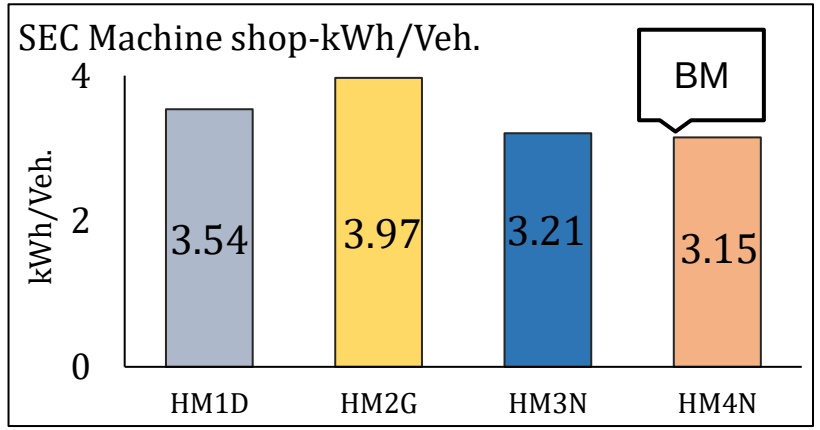
Conclusion: Owing to the energy saving initiatives, SEC witnessed a promising decrement in FY23 in Compressed Air by (12%), Paint Shops (6%) Heat Treatment (33%) & Lighting & Ventilation(10.5%) as compared to FY20

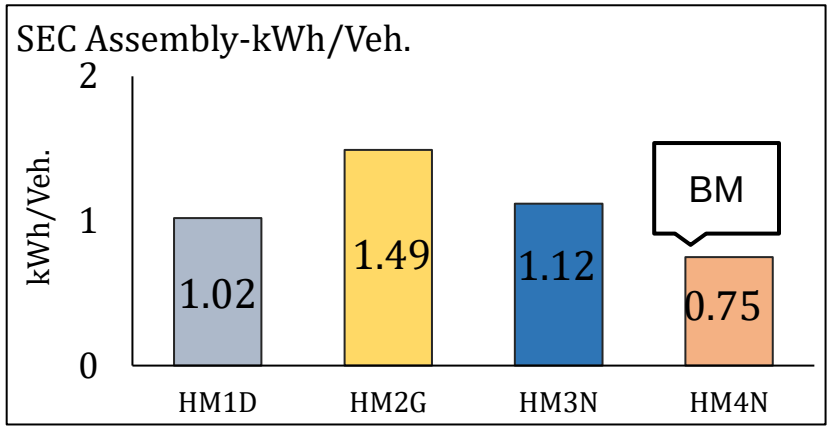
3. Energy Benchmarking

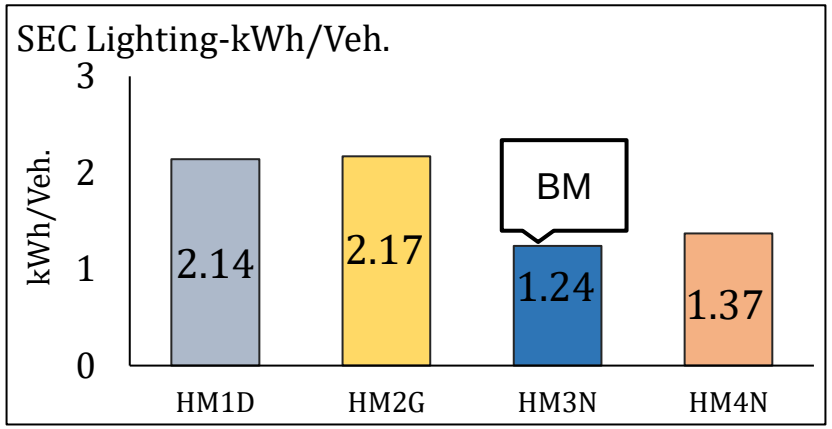
Internal Bench Marking

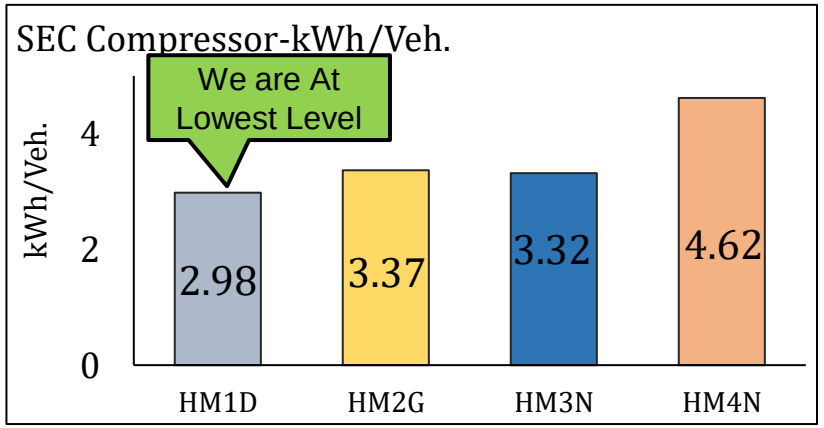








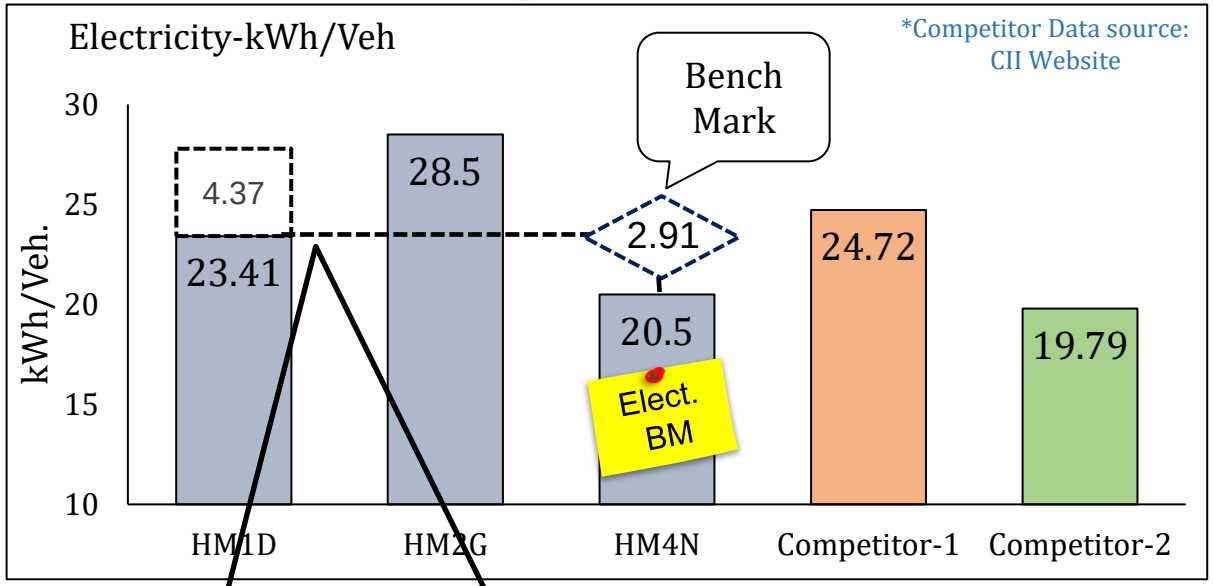


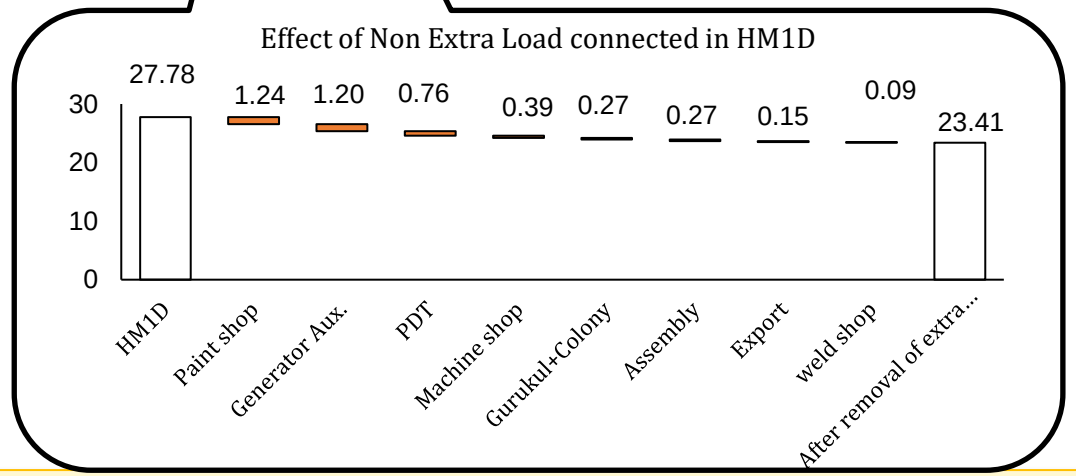


Conclusion: Bench Marking comparison based on almost similar processes within HMCL. In compressed air we have achieved lowest SEC i.e.2.98kWh/Veh.

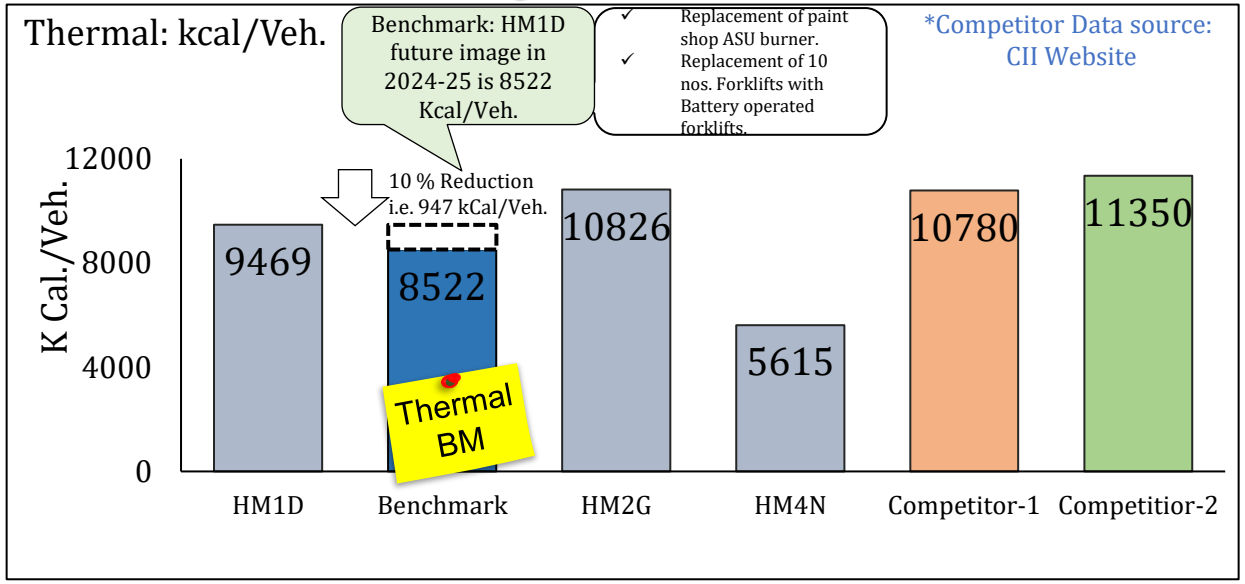
3. Energy Benchmarking

National Bench Marking





National Bench Marking



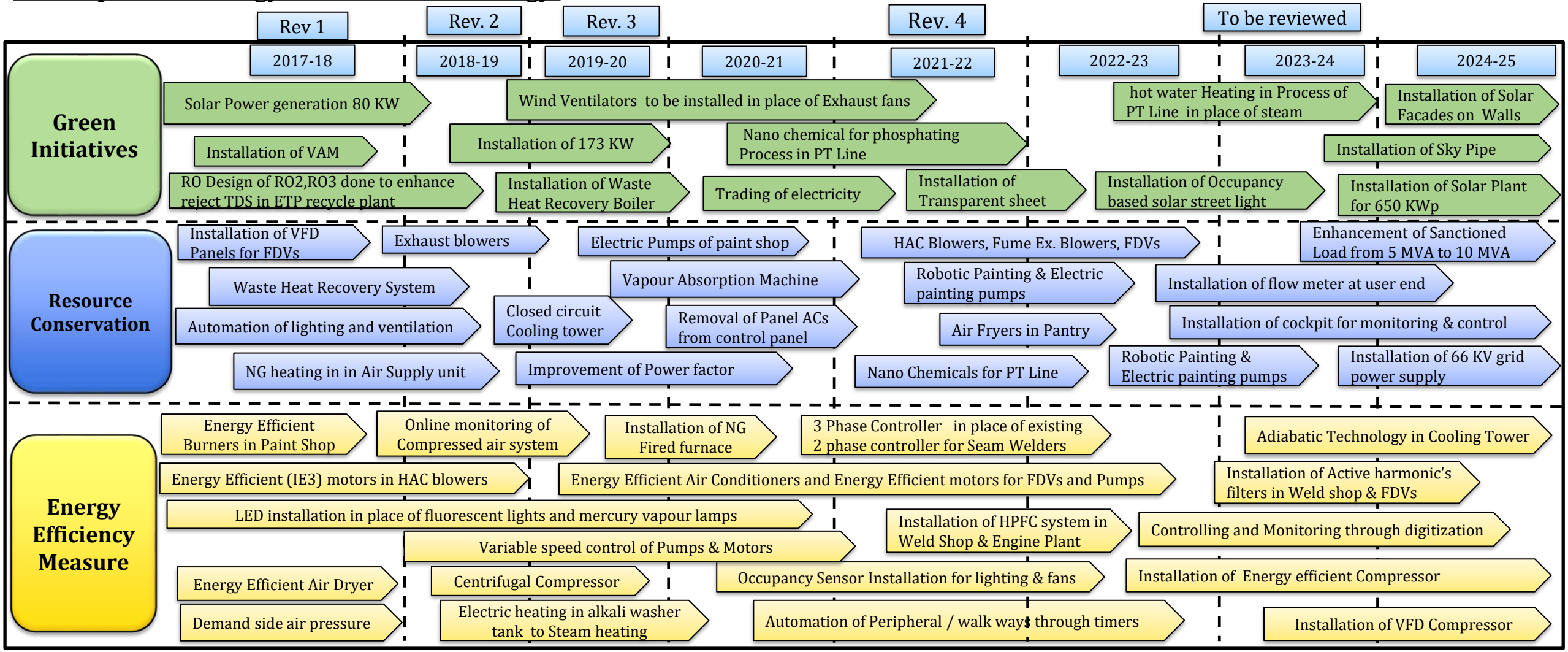
*Due to variability in no. of paint shops in HM1D and HM4N the NG gas consumption is very less.
*HM2G and Competitor's specific thermal energy is already at higher.
*The benchmarking is taken internally on calculation after replacement of RAH Type blowers in ratio metric blowers in all 10 nos. Air supply 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 2.91 kWh/Veh. are taken as target.

Conclusion: Bench Marking comparison based on almost similar processes within HMCL.

4. Strategy for technology absorption in energy Conservation from the Year 2016-17 to 2024-25

Masterplan for Energy Conservation Strategy:



Conclusion: 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 2020-21	125	19.35	1.91	0	17.25	12
FY 2021-22	133	37.2	2.05	78.9	15.83	28
FY 2022-23	146	70.6	3.77	902.9	49.46	17

5 Key projects in FY 2020-21

LIST OF ENCON PROJECTS IMPLEMENTED in FY 2020-21

S. No	Title of Project	Annual Electrical Saving (M kWh)	Investment (Rs. million)	Payback (Months)
1	Reducing energy loss through installation of 4 nos. Hybrid A.P.F.C. Panel at Load End (Weld shop)at shops having Low Power factor	0.6	7	15
2	FDV system with Novenco EC+ Blowers (Direct Coupled) instead of conventional system	0.6	15	34
3	Providing Decentralized compressed air system for new AL4 and NAP Section	0.45	3.5	12
4	Prioritization of VSD compressor for trim demand.	0.09	0.2	3
5	Reduction in Energy loss by FDV automation to run canteen FDV fan for 5 hours in place of 15 hours through RTC	0.10	0.5	8

Conclusion: 125 no. Energy saving projects were undertaken in FY 20-21 resulting in energy saving of 1.91 M kWh.

4. Energy Saving projects implemented in last three years

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/cm2 & 4.5 kg/cm2 in weld, paint shop and engine plant	0.04	0.8	23

5 Key projects in FY 2022-23

LIST OF ENCON PROJECTS IMPLEMENTED in FY 2022-23

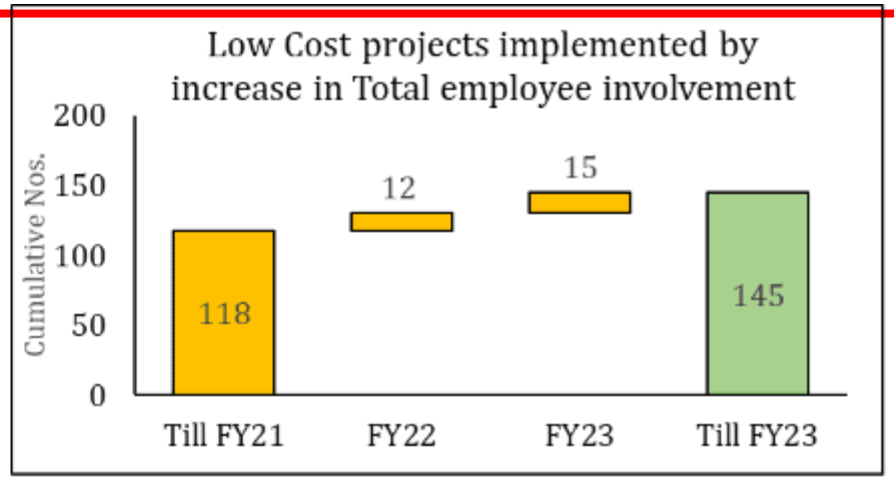
S. No	Title of Project	Annual Electrical Saving (M kWh)	Investment (Rs. million)	Payback (Months)
1	Energy saving in VAM (Vapour absorption m/c) by switchover from static to dynamic control (by thermodynamic balancing) to mitigate impact of process variability in Heat Recovery based Vapor absorption 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

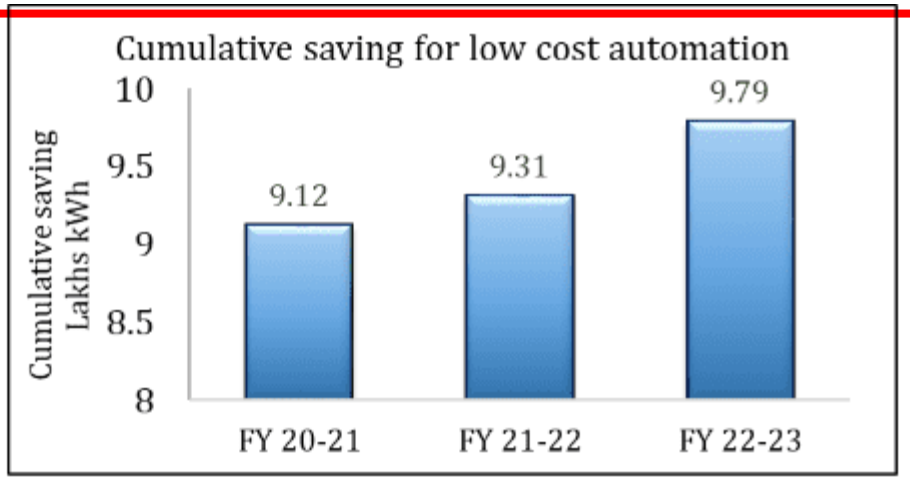
Conclusion: 133 no. Energy saving projects were undertaken in FY 21-22 resulting in energy saving of 2.05 M kWh.
146 no. Energy saving projects were undertaken in FY 22-23 resulting in energy saving of 3.77 M kWh.

4. Energy Conservation Projects - Summary of Elementary Projects

No. of Projects - 146

Annual Energy Saving – 37.7 Lakh kWh





OEE Improvement Projects: Summary

1

Eliminating Rejection Loss
(24 No's Projects)
kWh saved: 9780

2

Process Elimination
(19 No's Projects)
kWh saved: 12600

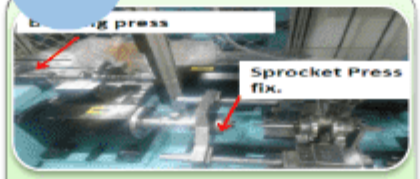
3

Shift optimization
(09 Nos Projects)
kWh saved: 39800

4

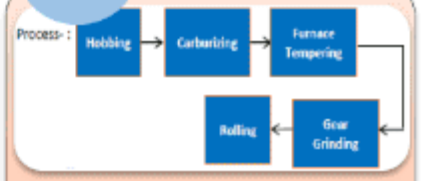
Reducing time Loss
(13 No's Projects)
kWh saved: 14300

5



Reducing Set up time Loss
(14 No's Projects)
kWh saved: 21100

5



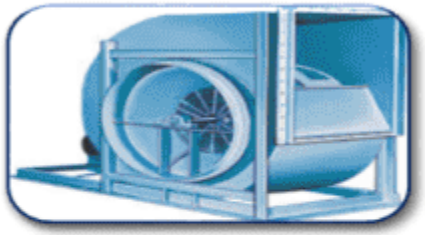
Improving Productivity
(18 Nos Projects)
kWh saved: 126000

Conclusion: 145 no's Low Investment projects & 97 no's Major OEE improvement projects were completed till FY23 for Energy conservation.

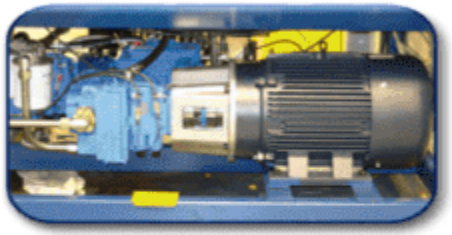
4. Energy Conservation Projects - Summary of Elementary Projects

Automatic Switching off the Equipment during Non productive time:

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



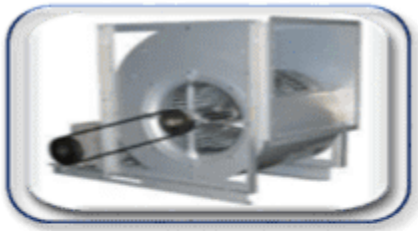
- FDVs during breaks
- No. of FDVS -72
- kWh Saved – 2.4 Lakh kWh



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

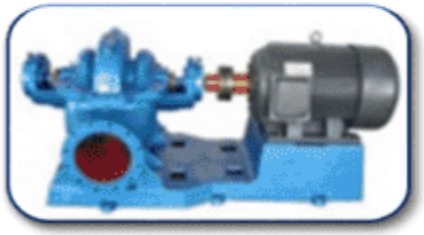
- Compressed Air supply in Assembly lines in Idle time
- No. of Lines – 13
- kWh saved – 0.4 Lakh kWh

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

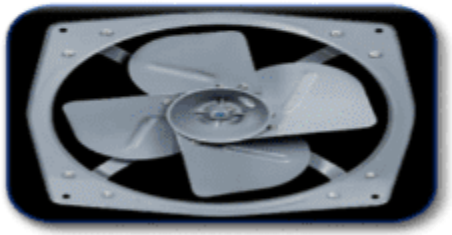


- Paint Shop Blowers during Breaks
- No. of Blowers- 32
- kWh Saved – 1.10 Lakh kWh

- 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

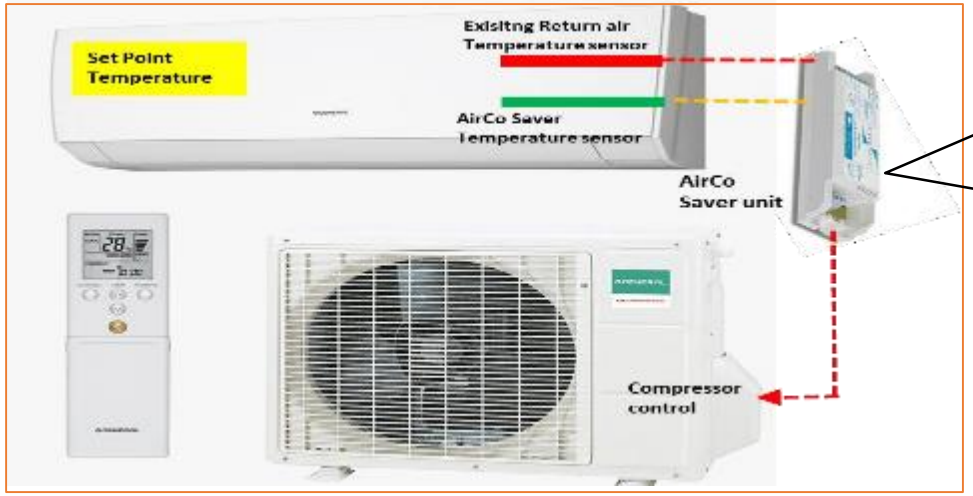
Conclusion: Automatic switching off the equipment during non productive time resulted in Energy Savings of 6.8 lakh kWh/year

4. Energy Conservation Projects – Technology Upgradation

Project: EER improvement in Fixed Speed Old Air conditioners in offices.

Description:

Integration of Airco savers (Auto Saturators) in fixed speed Air Conditioners in series with return air temperature sensors which switch off the compressor once evaporator refrigerant obtains the saturation temperature level irrespective of set point temperature and return air temperature



102 nos. installed in Fixed speed ACs

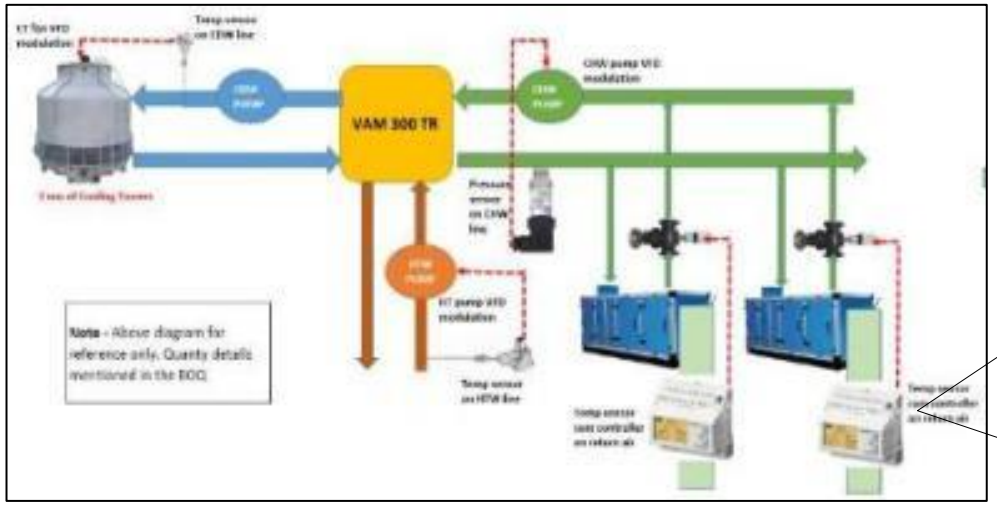
Investment: Rs. 6.6 Lakhs

Benefits:

- Energy Savings = 0.67 lakh KWH/annum
- CO2 reduction = 52 Tons/annum
- Cost Saving = 5.38 Lakhs/annum

Project: Automation of VAM process Control through integration of VFD and sensor based technology in Engine assembly.

Description: Integration of VFD in Hot water, chilled water and condense cooling circuits along with pressure and temperature transmitters &replacement of 3 way valve by 2 way valve at the AHU end.



PLC, HMI & 2 way valve based control from sensor feedback

Investment: Rs.13.15 Lakhs

Benefits:

- Energy Savings – 2.52 Lacs KWH/annum
- CO2 reduction – 199 Tons/annum
- Cost savings of INR 20.19 Lacs/annum

Conclusion: Airco savers and VAM process automation resulting in saving of 3.19 lakh kWh/annum, which help in reduction of 250T co2 annually.

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

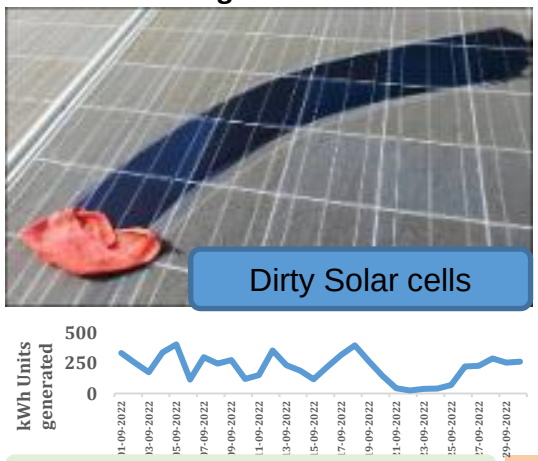
Project : Manual process of cleaning of solar cells to be upgraded to auto cleaning on roof top solar panel.

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

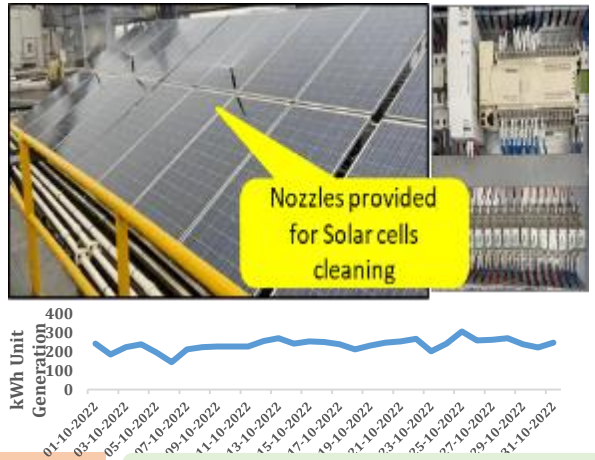
Manual cleaning of solar cells is done



Avg. generation- 216 kWh/day

After

In-House automation of Solar cells cleaning



Avg. generation- 236 kWh/day

Investment: 1.86 lakhs

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

Conclusion: Automatic switching off the equipment during non productive time resulted in Energy Savings of 1.6 lakh kWh/year

4. Energy Conservation Projects – Loss Elimination

Project : To reduce compressed air energy consumption on off days and holidays by "Air On Wheel"-4 nos. small compressors.

Description:
Introduction of air on wheels concept to meet the requirement as desired.

Before - Air requirement met through centralized compressor house

After – 4 Nos small portable compressors fixed where its is required.

Investment: 12 lakhs

Benefits:
- Reduction in energy cost by INR 3.72 Lakhs/year
- Air cooled machine in place of water cooled machine to save cooling tower and water requirement
- Minimisation of Line Loss

Project: Installation of HVLS Fans .(4 nos.) in exp. plant.

Description:
Loss of energy due to large number of wall mounting fan in shop. During non production hours fans was remain ON leading to wastage of energy

Maximum area coverage 6800 Sq.ft

Benefits:
- Reduced Cooling cost and over all energy cost
- Provides high volume of Air 1,28,700 CFM at lower power consumption 1.1 KW
- Low speed operation 86 RPM

Conclusion: Integration of mobile compressor for energy conservation on off days/holidays requirement against running of centralized air compressor results in Energy Savings of 3.8 lakh kWh/year

4. Energy Conservation Projects – Technology upgradation

Project :
Upgradation of fixed speed compressor with 98% Efficient compressor include in-build 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

Compressor no. 16
- 1000 CFM , Fixed speed Oil Lub. Screw
- Efficiency : 83%
- CF/kWh : 315
- Average Unloading per day in other fixed speed compressor : 2 hrs day.

After

Compressor no. 16
- 1000 CFM , VFD operated Oil Lub. Screw
- Efficiency : 98%
- CF/kWh : 390
- Average Unloading per day in other fixed speed compressor : 1 hrs day

Investment: 40 lakhs

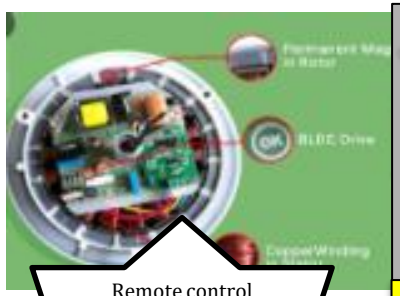
Benefits:
- Saving in energy consumption of individual compressor = 96000 kWh/ Year
- Saving in Power Consumption due to less Unloading = 21000 kWh /Year
- Reduction in CO2 emission : 99.5 Ton annually

Project: Replacement of 70 Watt induction fans with 32 watt upgraded technology BLDC Fan in canteen, Gurukul area.

Description:
-Obsolete technology.
-High energy consumption.

Before

Ordinary ceiling fan 48 inch sweep – 70 watt previously installed



Remote control operation is available now on BLDC fan and total 44 watt energy saving on each fan

After

28 watt BLDC-285 Nos. Fan replaced .

Investment: 11.5 lakhs

Benefits:
- Energy Savings = 0.37 lakh kWh/annum
- CO2 reduction = 43 Tons/annum

Conclusion: Technology upgradation of compressor and fan resulted in Energy Savings of 1.3 lakh kWh/year

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

Project : To stop idle operation of exhaust blowers with interlocking with oven heat up complete feedback in 5 nos. Paint shops.

Description :

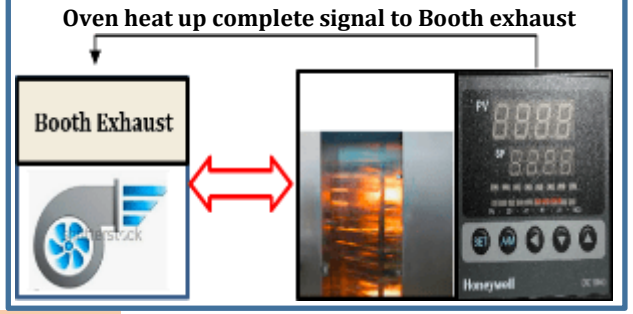
Interlocking of booth exhaust blowers with Oven heat up feedback. If Oven temperature is not maintained then booth exhaust will not start.

Before

Paint shop exhaust blowers remains "ON" even when Oven temperature is not reached at assigned set point. Unnecessary power consumption is there even there is no need of running it.

After

Interlocking of booth exhaust blowers with Oven heat up complete feedback done. If Oven heat up is not complete then booth exhaust will not start.



Investment: 03 lakhs

Benefits:

- Energy Savings = Approx. 0.36 KWh/annum
- CO2 reduction = 3T CO2/annum

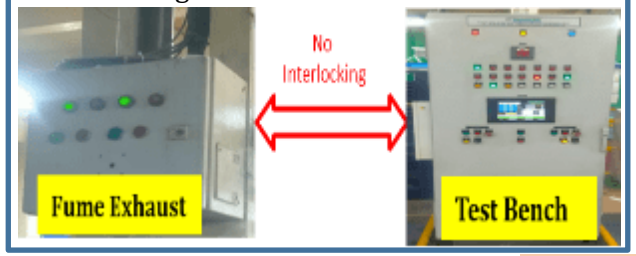
Project: Auto switching off in fume exhaust blowers during non use of test bench (Low prod. Volume) in 7 nos. test benches.

Description:-

Interlinkage of exhaust blowers with test bench running operation.

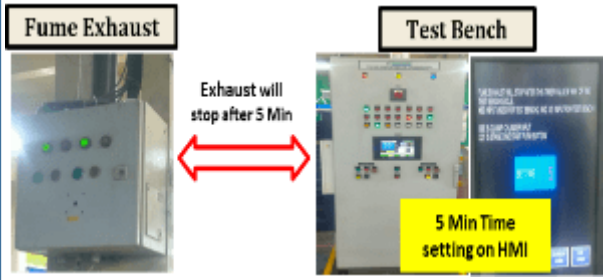
Before

Earlier Fume exhaust blowers remains on during non working hours.
Energy consumption was high due to manual system was used for switching off the exhaust blowers so energy wastage due to idle running.



After

Interlocked fume exhaust blowers with test bench cycle start signal. If test bench is idle for 5 min's than fume exhaust will automatically turn off to save energy during lunch, dinner and break times.



Investment: 0.5 lakhs

Benefits:

- Energy Savings = 0.27 lakh kWh/annum
- CO2 reduction = 30 Tons/annum
- Motor and other equipment's life will be enhanced

Conclusion: Automatic switching off the equipment during non productive time resulted in Energy Savings of 0.7 lakh kWh/year

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

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

Before

Power Stabilizer are always Charged by power supply & operator sometime forgot to switch off power when not in use because they are placed at mezzanine floor and far

After

Remote controlling of power stabilizers through machine control circuits provided for easy switching.

Investment: 1.65 lakhs

Benefits:

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

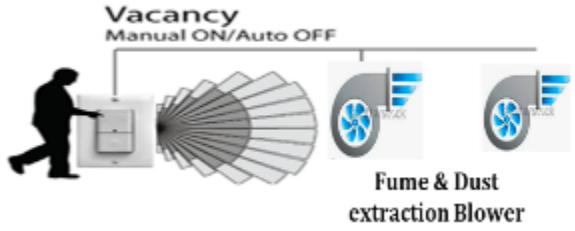
Project: To stop idle running of Dust & Fume extraction system during idle running and non working hours (9 No's in weld shops).

Description:-

Automation of operating system by occupancy control & machine running interlock for extraction system in frame plant.

Before

Earlier Dust & fume extraction blower remain on during non working hours.
Energy consumption was high due to manual system was used for switching operation and energy wastage due to idle running.



After

Provided Occupancy sensors which detect the occupancy of human and also interlock with machine operation, which energised the circuit and eliminates the idle running of system.

Investment: 0.75 lakhs

Benefits:

- Energy Savings = 0.05 lakh kWh/annum
- CO2 reduction = 3.9 Tons/annum
- Increased the reliability of system and life of Blowers

Conclusion: Automatic switching off the equipment during non productive time resulted in Energy Savings of 0.4 lakh kWh/year

4. Energy Conservation Projects – Process optimization

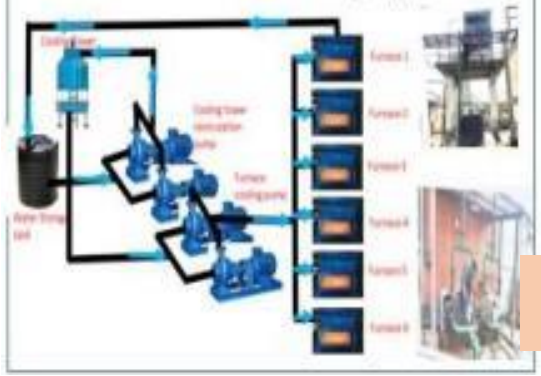
Project : Offsetting water cooled process through glycol based cooling in Heat treatment.

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

2 numbers Pump (7.5 Kwh) were running continuously for the cooling of furnace fan jackets which consume 360 KW/day)

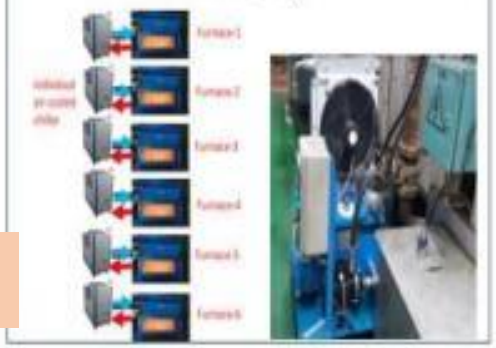


Optimized the energy & water consumption through replacing with natural cooled air chiller

Investment: 15 lakhs

After

Optimized the Cooling of furnace through Natural air cooled chiller Which consume only 43.2 KW/day



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

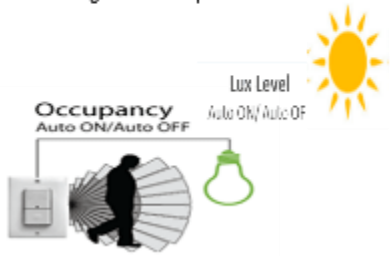
Earlier Lighting remain on during non working hours. Energy consumption was high due to manual system was used for switching operation and energy wastage due to idle running.

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

Investment: 12.9 lakhs

After

Provided Occupancy sensors which detect the occupancy of human and energised the lighting & fan circuit and eliminates the idle running of system. Also made off the light with respect to lux level during day time



Benefits:

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

Conclusion: 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

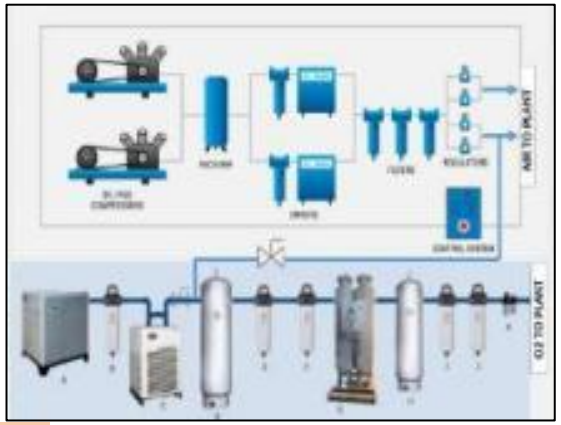
4. Energy Conservation Projects – Loss Elimination (In-house automation)

Project : Interconnect the oxygen plant with centralized compressed air system to made off the decentralized compressed air system during working hours in weld shop.

Description:
Loss of energy due Continuous running of decentralized compressed air system for generation of 5 bar compressed air system for generation of oxygen

Before

After



Investment: 0.6 lakhs

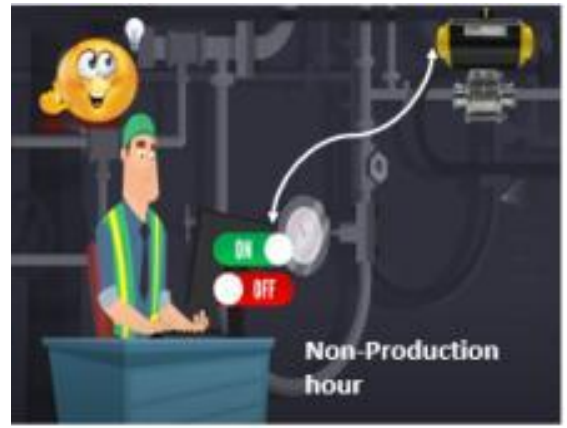
Benefits:
- Energy Savings = 0.72 lakh kWh/annum
- Reduction in CO2 emission : 62.2 Ton /annum

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.

Before

After



Investment: 23.3 lakhs

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

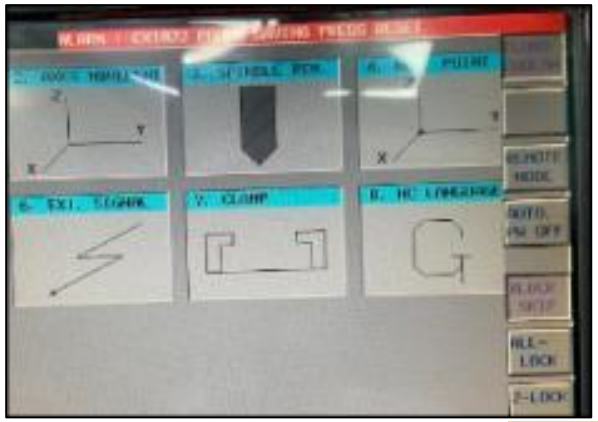
Conclusion: Automatic switching off the equipment during non productive time resulted in Energy Savings of 1.6 lakh kWh/year

4. Energy Conservation Projects – Loss elimination (In-house Automation)

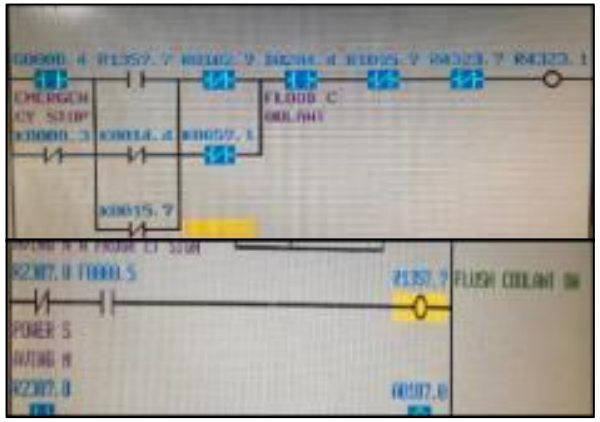
Project : Interlocking of Flush coolant ON/OFF with auto cycle in FRD machine -130 No's.

Description:
Loss of energy due flush coolant motor remains continuous ON (Design issue)

Before



After



Investment: 0.01 lakhs

Benefits:

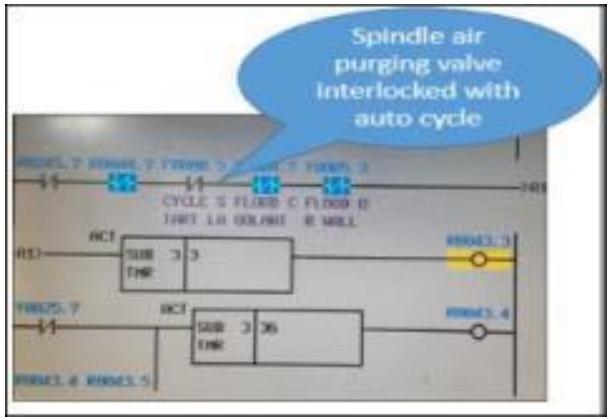
- Energy Savings = 0.31 lakh kWh/annum
- Reduction in CO2 emission : 26.3 Ton /annum
- Less fumes generation i.e. less foreign particle contamination

Project: Spindle air purging valve interlocking with auto cycle in 130 no's FRD machines.

Description:
Spindle air purging remains continuous ON just after machine power ON (Design issue)

Before

After



Investment: 0.01 lakhs

Benefits:

- Energy Savings = 0.23 lakh kWh/annum
- CO2 reduction = 19.5 Tons/annum
- No air wastage, improved life of valve

Conclusion: Elimination of Idle running of equipment's resulted in Energy Savings of 0.5 lakh kWh/year

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.

Conventional Starter

Before

Output is controlled through manual damper control and throttle valve

Damper fully opened

After

Output is controlled through Frequency of the Blower/Pumps

VFD

✓ Cost Saving: INR 12.49 Million / Annum

FY 18-19 :
28 VFDs installed
Saving : INR 3.45 Million
Investment: INR 5.67Million

FY 19-20 :
43 VFDs installed
Saving : INR 5.05 Million
Investment: INR 8.0 Million

FY 20-21 :
18 VFDs installed
Saving : INR 2.56 Million
Investment: INR 4.25 Million

FY 21-22
11 VFDs installed
Saving : INR 1.45 Million
Investment: INR 2.85 Million

FY 22-23
08 VFDs installed
Saving : INR 1.2 Million
Investment: INR 2.5 Million

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

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

4. Innovative projects

Project-1	• Thermal energy saving by **development of delay sensing module** for starting the Gas generators without dependency on other power source.
Project-2	• Energy and water saving by installation of **Adiabatic dry cooling tower** in place of forced draft cooling tower for air compressor cooling
Project-3	• Energy saving by **range distance sensor** implemented on ROF lock nut DC tool, to eliminate Clutch bearing miss & inclined fitment defect mode in 100 CC

1.Reduction of 22000 ltrs. Diesel/year.

2.Energy saving 18000 kwh/year .

1.Energy saving 2,19,600 kWh / year.
2.Water Saving 5100 Kl/year.

1. Energy saving by 45000 kWh/year.

5. Innovative project-1- Thermal energy saving by development of delay sensing module for starting the Gas generators without dependency on other power source.

Background information

SOURCE	DETAILS	AVAILABLE CAPACITY (MW)	LOADING FACTOR @75 % (MW)	SUMMER RUNNING LOAD (MW) 9 GRID POWER AVAILABLE	SUMMER GRID POWER FAILS	WINTER RUNNING LOAD(MW) 6.8 GRID POWER AVAILABLE	WINTER GRID POWER FAILS
Grid	33 KV	5	4.6		X		X
Gas Generators	MWM-1	2	1.3				
Gas Generators	MWM-2	2	1.3				
Gas Generators	MWM-3	2	1.3			SB	
HSD Generators	MAN-1	1.9	1.3	SB		SB	
HSD Generators	MAN-2	1.9	1.3	SB		SB	
HSD Generators	MAN-3	1.9	1.3	SB		SB	
HSD Generators	MAN-4	1.9	1.3	SB		SB	SB
HSD Generators	MAN-5	1.9	1.3	SB	SB	SB	SB
HSD Generators	KCL	1	0.7		SB	SB	SB

THE WHY

1.Why Gas generators are required to run?

Ans. a).Less contracted demand with Haryana Electricity board i.e. 5MW in HM1D.
b) Grid power Fails.

2.Why Diesel generators are required to run?

Ans. a).When load goes beyond 8.5 MW i.e. in case of load increases.
b) In case of grid power fails.
c).To start the Gas generators.

Cost Strategy

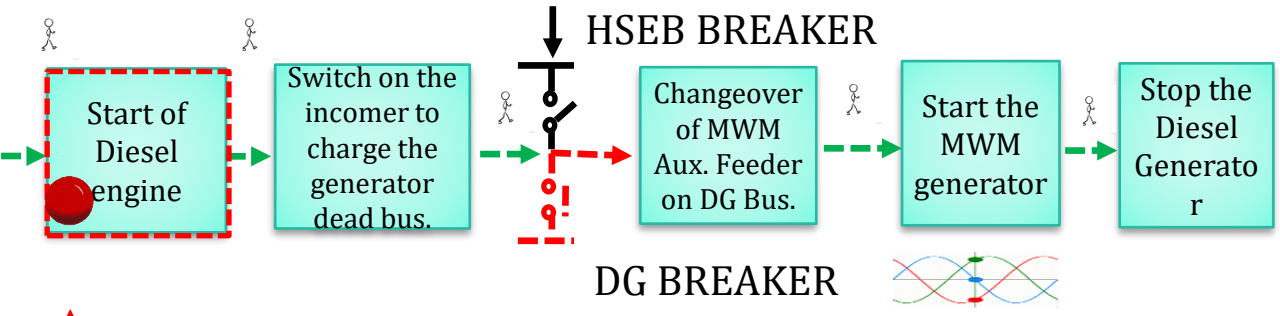
Operational Strategy

Note: To prevent the business risk and complete Black out , Gas generators can not be start with state power because of its reliability.(Within existing power infra.)

Conclusion : The 9 Mw Power requirement is fulfilled by Available grid power , And by running the Gas and Diesel Generators synchronization. The strategy of Generator running is shown.

5. Innovative project-1-Thermal energy saving by development of delay sensing module for starting the Gas generators without dependency on other power source.

CONDITION 1:PROCEDURE FOR GAS GENERATOR STARTING WHEN GENERATOR BUS IS DEAD



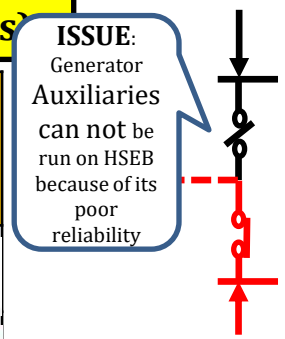
Pre-condition Required to run the Gas generators(Auxiliaries)

THE WHY

"Why Diesel Generator need to start?"

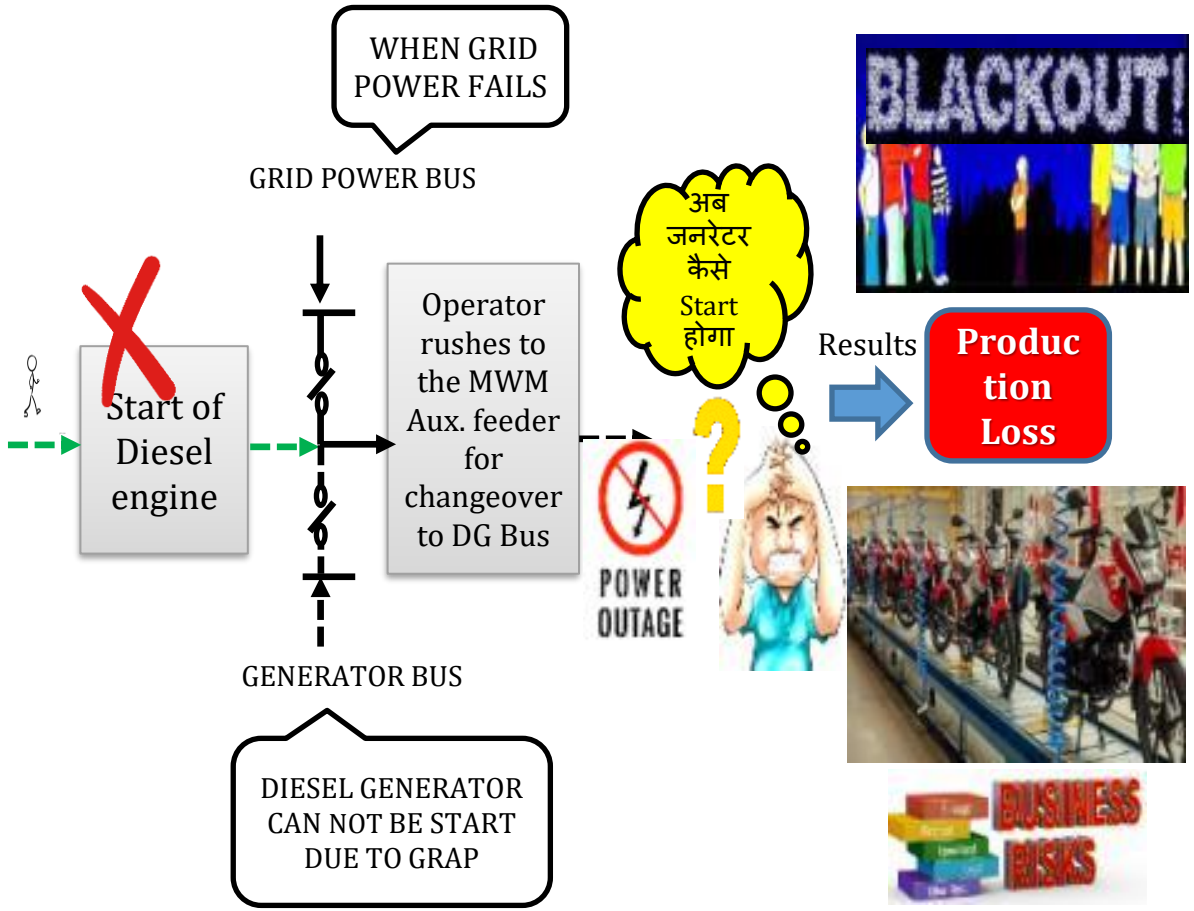
Because :

Sr. No	Requirement	Related Equipment	Condition	Symbols
1	LT PR.	LT Pump	>2bar	
2	HT PR.	HT Pump	>5 bar	
3	Lube oil PR.	Lube oil Pump	Till 350 rpm	



- If Auxiliaries charged by grid bus ,
- Sudden Failure of grid power will
- trip all Gas generators

CONDITION 2 : If Diesel generators do not starts or there will any ban on imposed by Govt. like previous FY-21-22.

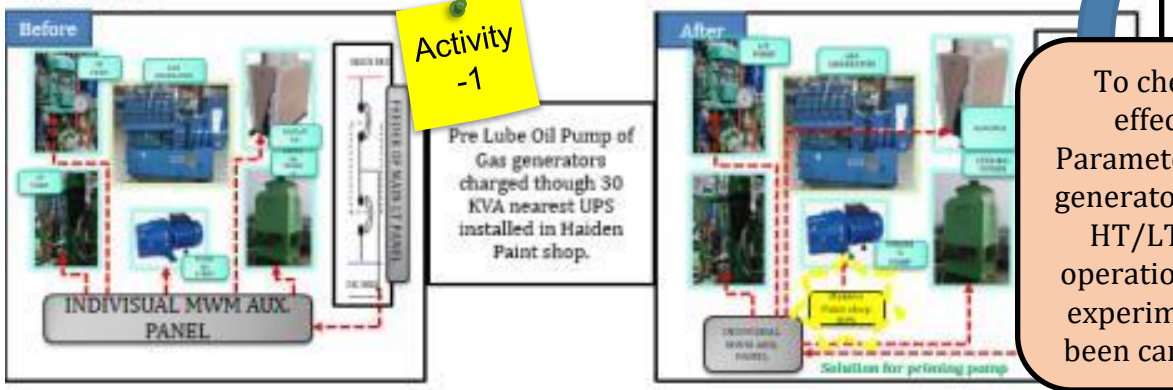


Conclusion : Process ,Conditions of Gas Generator starting , Situation of Black Out is shown.

5. Innovative project-1-Thermal energy saving by development of delay sensing module for starting the Gas generators without dependency on other power source.

Problem: Pre-Lube Oil Pump supply fails when Grid power or generator bus supply fails.

Root Cause: Power supply to the pre lube oil pump is given from Individual Aux. Panel which is charged directly without UPS.



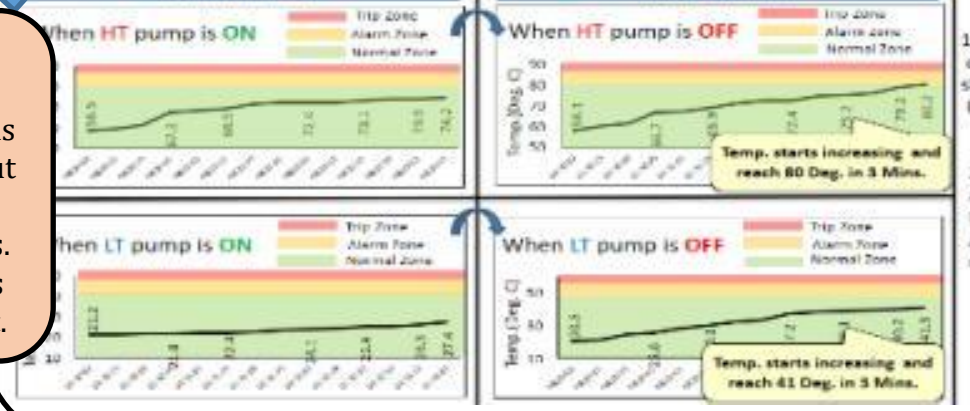
Activity -1

Pre Lube Oil Pump of Gas generators charged though 30 KVA nearest UPS installed in Haiden Paint shop.

Benefits: No capex cost involved to procure new UPS . Now Pre lube oil pumps of the generators charged through uninterrupted Supply .So threat of pre lube pump operation is eliminated.

To check the effects on Parameters of Gas generator without HT/LT pump operation . 2 Nos. experiments has been carried out.

nos. experiments has been carried out to check the after effects of delay sensing on HT & LT pump sensing.

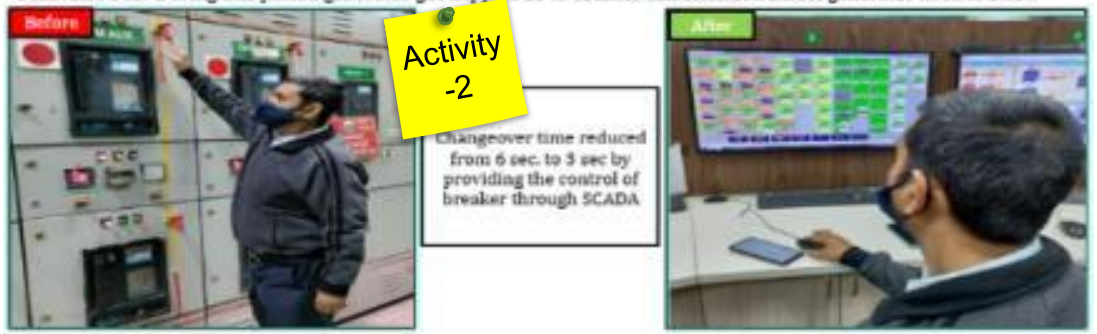


Conclusion:

1. Retention time of delay sensing should not be more than 3 Mins.
2. SOP to be revise After Implementation As Management Countermeasure.

Problem: The Gas Generator not started when Generator Power bus bar not charged.

Root Cause: In low load condition all load shifted to Grid bus but when Gas generator starts the Aux. need to be shifted to Generator bus. During this period generator got tripped. So to counter this situation Diesel generator need to start.



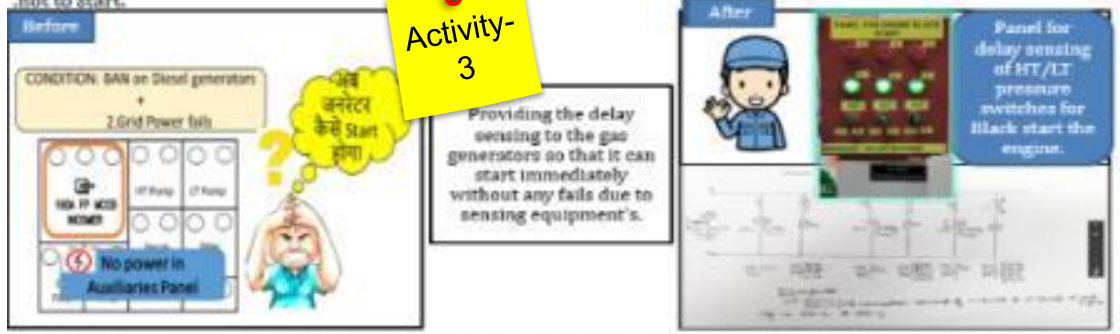
Activity -2

Changeover time reduced from 6 sec. to 3 sec by providing the control of breaker through SCADA

Benefits: Now we can start the engines if Grid power available and Generator bus power not available. We can shift the Aux. power to DG bus rapidly before pressure switches senses the pressure drop in LT and HT lines.

Problem: In GRAP period when power fails Gas generators can not be start.

Root Cause: Gas generator is interlocked with the HT pressure switch and LT pressure switch of HT and LT water line. When power Supply of the HT and LT pumps not available the pressure switch provides the sensing to the controller ,not to start.



Activity-3

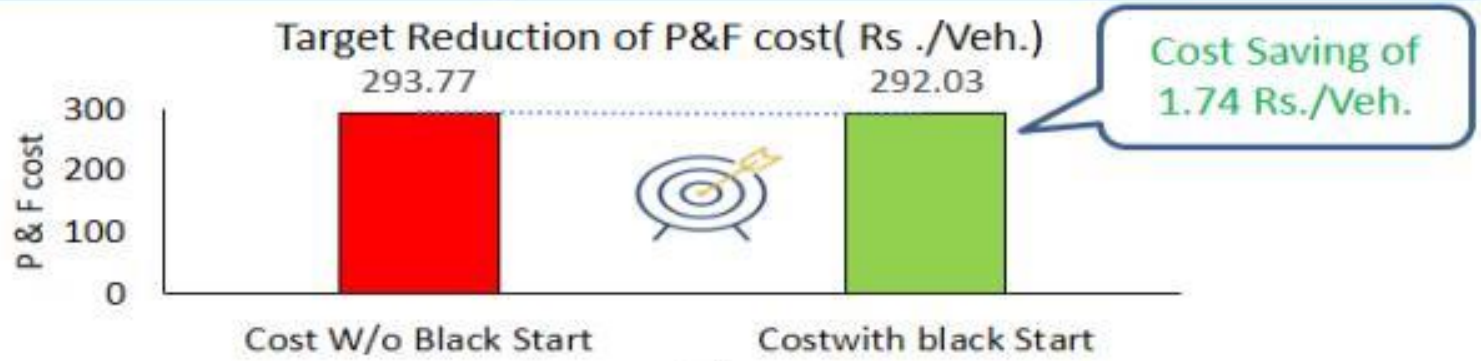
Providing the delay sensing to the gas generators so that it can start immediately without any fails due to sensing equipment's.

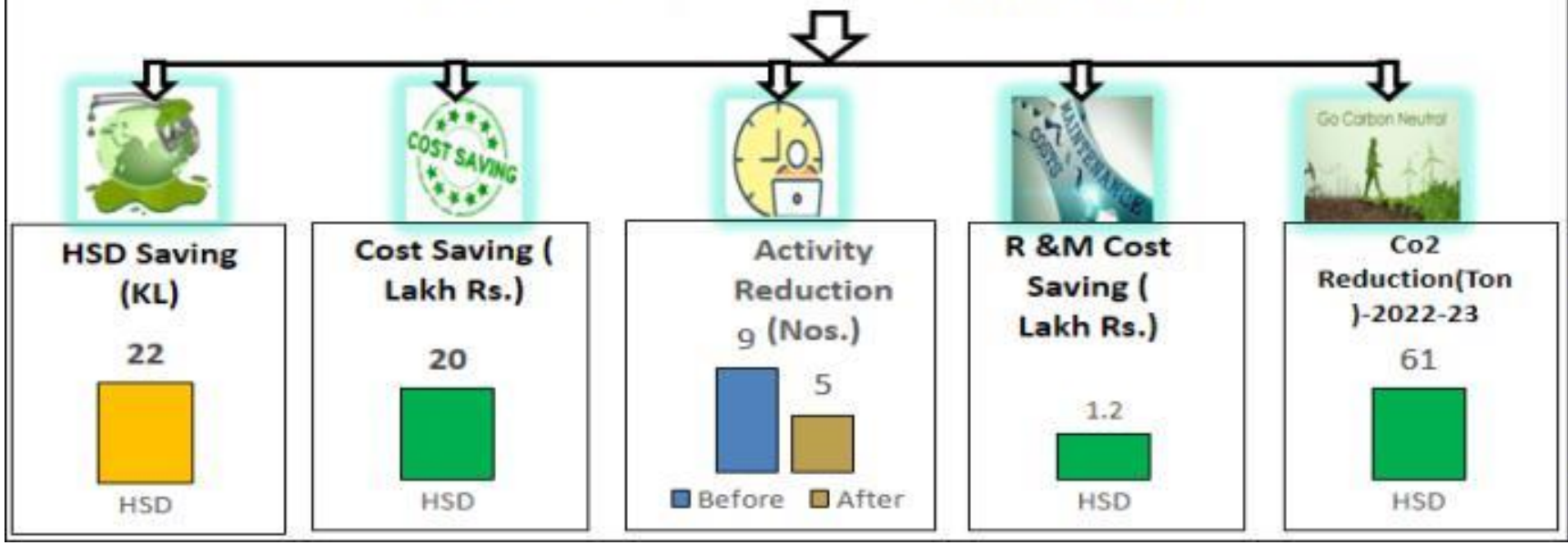
Benefits: Gas generators become Black start .It can be start independently without any other source required.

Conclusion : Supply to Lube oil pump is provided by Existing UPS ,For fast changeover of power supply from SCADA operation of Feeders and Auxiliaries done , Majorly A delay sensing module is developed having 3 mins retain facility is developed.

5. Innovative project-1-Thermal energy saving by development of delay sensing module for starting the Gas generators without dependency on other power source.

Tangible Benefits





Intangible Benefits

Increase Morale

Increase Design thinking

100 % Adherence of Compliance

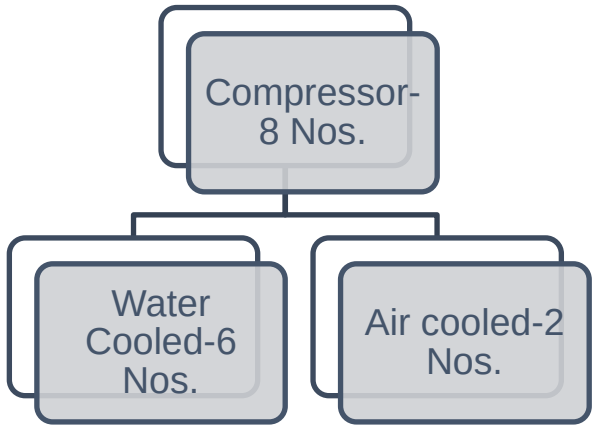
Increase technical competencies

Conclusion :Saving of 22 KL HSD/Annum, 61 tonne of CO2 Emission/Year achieved with net cost saving of 20 Lakhs/Annum.

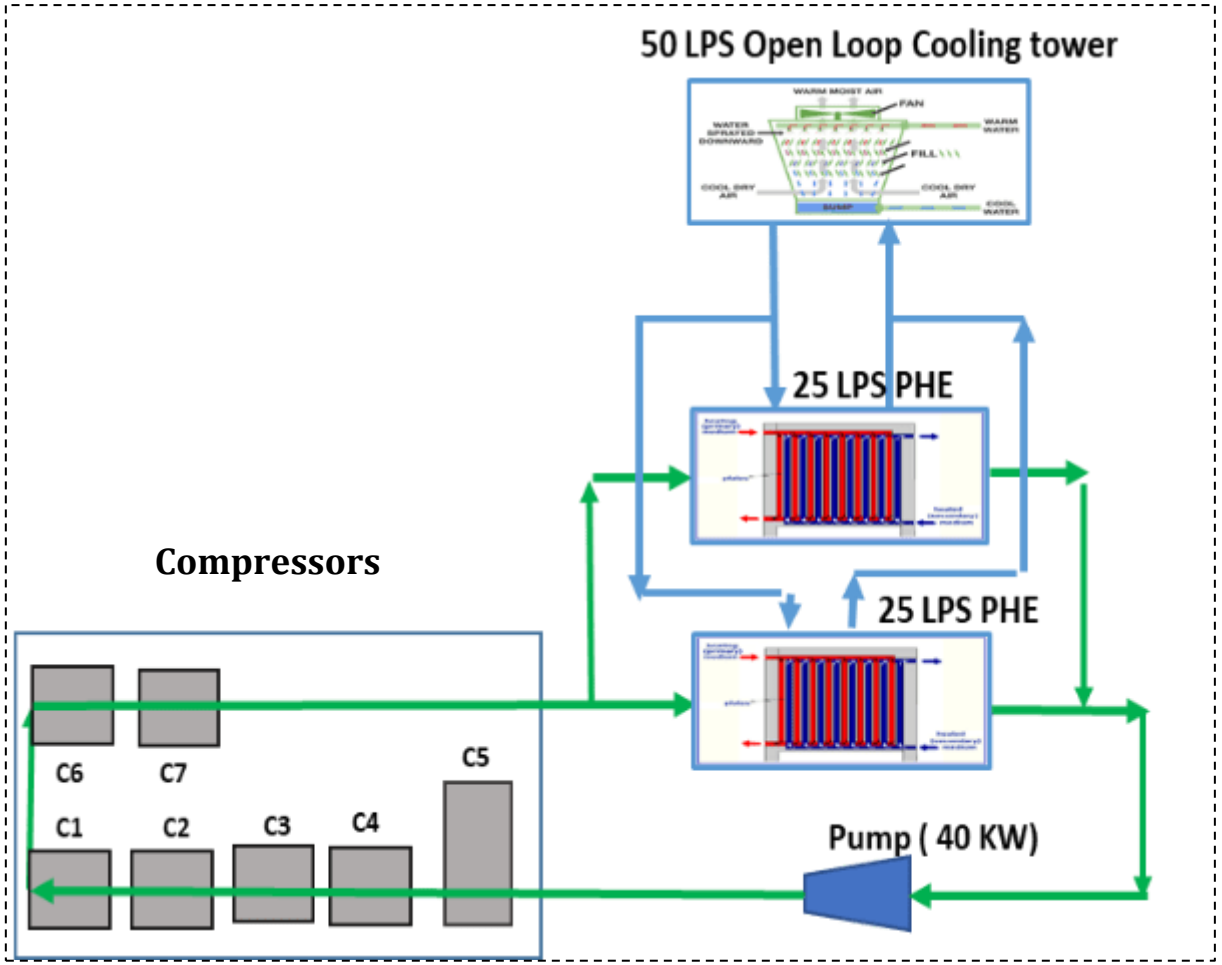
5. Innovative project-2- Energy and water saving by installation of Adiabatic dry cooling tower in place of forced draft cooling tower for air compressor cooling.

Background Information :

SN	Compressor	Model	Make	Rated Capacity (CFM)	Type of Cooling	Year of Commissioning
1	Comp 20	ZR 250	Atlas Copco	1538	Water Cooled	2010
2	Comp 21	ZR 250	Atlas Copco	1538	Water Cooled	2010
3	Comp 22	ZR 250	Atlas Copco	1538	Water Cooled	2010
4	Comp 23	Elliott	FS Elliott	1800	Water Cooled	2017
5	Comp 24	ZR 250-VSD	Atlas Copco	1538	Water Cooled	2018
6	Comp 25	ZR 250	Atlas Copco	1538	Water Cooled	2019
7	Comp AL-4	DSD 240	Kaeser	882	Air Cooled	2019
8	Comp 26	DSDX 245SFC VSD	Kaeser	1003	Air Cooled	2022



Summary and issues



Conclusion: List of the compressor and cooling scheme is shown.

5. Innovative project-2- Energy and water saving by installation of Adiabatic dry cooling tower in place of forced draft cooling tower for air compressor cooling.

Description			Adiabatic CT-42 LPS	Closed Loop CT-37 LPS	Open Loop CT-50 LPS
1	Type of Cooling system		Indirect cooling	Direct cooling	Indirect cooling with PHE
2	cooling water temperature outlet (at Wet bulb temp. of 28.5 °C)		33 °C	32 °C	36 °C
3	Energy Consumption of Cooling tower including pumps (kWh)	Summer	50.8 kWh	82.5 KWH	85 kWh
		Winter	78.1 kWh	67.5 KWH	85 kWh
		Average	69 kWh	77.5 KWH	85 kWh
4	Water Consumption KL per day	Summer	11.5 KLD	90 KLD	35 KLD
		Winter	2 KLD	60 KLD	15 KLD
		Average	8 KLD	75 KLD	25 KLD
5	Maintenance cost		5 Lakh per Year	4 Lakh Per Year	3 Lakh per Year
6	Recommendation		✓	✗	✗

Type of CT	Achieving Temperature	Impact of Water quality
Closed Loop CT	Easily obtained due to direct cooling	Required Cooling water COC is 1 which is neither feasible nor possible which is a water intense application
Open Loop CT with PHE	Water temperature not getting achieved due to indirect cooling	Though water quality is not as critical as closed loop CT, but TDS<5000 to be maintained through regular blowdowns & make up

D. PROPOSAL :-

- A reliable and maintainable cooling system is required to overcome these current issues of cooling system
- It is proposed to introduce **Adiabatic cooling system** in compressor cooling application
- Based on the available space, total cooling load of 42 LPS to be splitted into 2 nos. units of 28 LPS & 14 LPS and each unit to be installed in separate phases
- The unit to be designed based on hot water Inlet Temperature of 48 Deg C & Cooling water outlet temperature of 33 DegC (Delta T = 15 DegC)

E. KEY FEATURES OF PROPOSED SYSTEM :-

- In Adiabatic Coolers process fluid passes through copper coil in a closed loop system
- Ambient air is precooled adiabatically when it passes through wet cellulose pads. This precooled air cools the cooling coil through which the hot fluid is circulating.
- This is a indirect cooling system as water is not in direct contact with the coil i.e. direct evaporation is not happened
- CT Fans are installed with VFD which is modulated depending on water deltaT. This will lead to less energy consumption especially in winter season.
- Also cellulose pad Water flow is controlled with solenoid valve integrated with Air temperature & water temperature sensors leads to less water consumption.

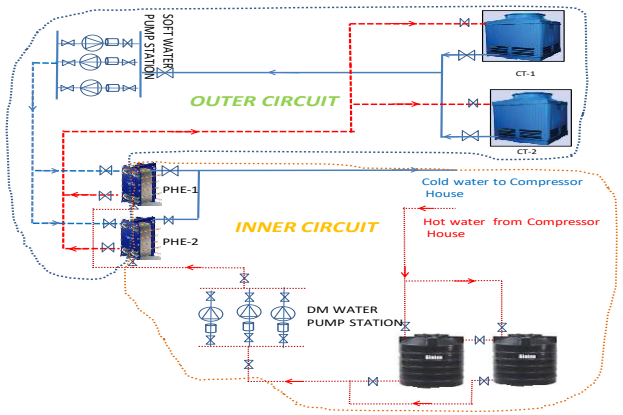
Conclusion: After comparison of all available technology suitable for our applications Adiabatic cooling Tower is selected.

5. Innovative project-2- Energy and water saving by installation of Adiabatic dry cooling tower in place of forced draft cooling tower for air compressor cooling.

Problem: High energy consumption & water consumption in Comp. House Auxiliary due to running of open loop cooling tower

Root cause: 2 nos. open loop cooling tower system with PHE is running for maintain the compressor inner circuit temperature @ 32Deg C

BEFORE



Open Loop cooling system with PHE

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

Idea:
Introduction of Adiabatic cooling tower system

First Adiabatic cooling tower in HMCL

AFTER

Adiabatic Cooling System

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

- **Countermeasure:** Installation of Adiabatic cooling tower with Variable speed drive fans & Pump. All Fans & Pump are controlled as per compressor cooling water inlet temperature.
- **Benefits :** (i) Saving in power consumption (3090-2358) 732 KWH * 300 days = 2,19,600 kWh / year.
  (ii) Saving in Water Consumption (25-8) 17 KLD * 300 days = 5100 KL/year.

Conclusion: Saving of 2.2 Lakhs /year kWh and 5100 KL water /year is achieved.

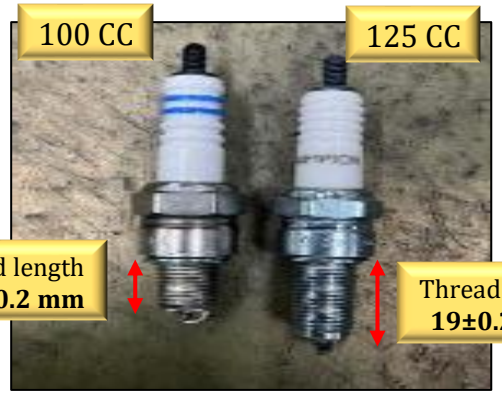
Innovative project-3- Energy saving by range distance sensor implemented on ROF lock nut DC tool, to eliminate Clutch bearing miss & inclined fitment defect mode in 100 CC.

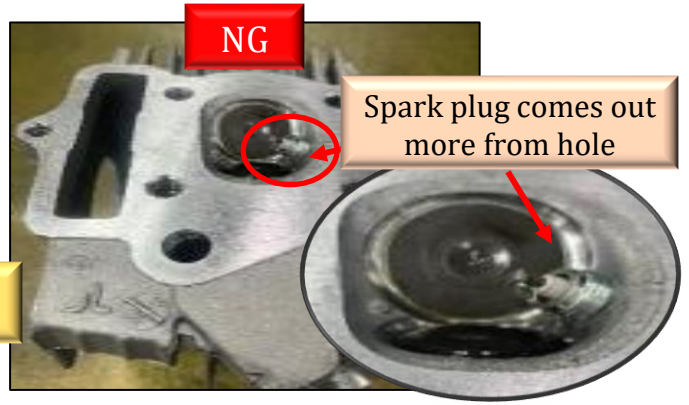
Defect Mode type– Model Mix up

Defect Mode 2.1: Spark Plug model mix up

- We have different Spark plugs in 100 CC & 125 CC. mounting dia. is same, Only difference is thread length. In 100 CC, Spark plug thread length is 12.7± 0.2 mm in comparison with 125 CC Spark plug with 19±0.2 mm.
- In case of 125 CC Spark plug assembly in 100 CC cylinder head, Valves, piston & spark plug are damaged on starting of vehicle, leads to kick jam

Spark Plug mounting on Cylinder Head

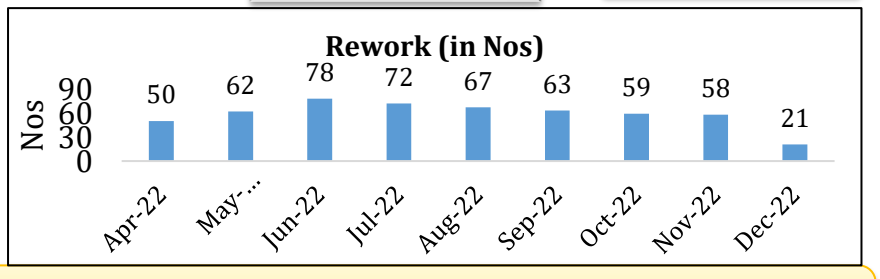




Kick Jam in vehicle due to Spark Plug model mix up

Process Flow – Assembly of Rocker arm in Cyl. head → Assy. of R side cover & Tightening → Pre assembly of spark plug → Oxygen sensor tightening → **Spark plug tightening on SPM** → Camshaft bolt tightening

- We have visited our assembly process & following observations were made
  - Operator pre tight spark plug with his hands then load it to SPM tightening m/c.
  - Spark plug is visible from head bottom side but operator load it from top side & NG Spark plug assy. cannot be captured.



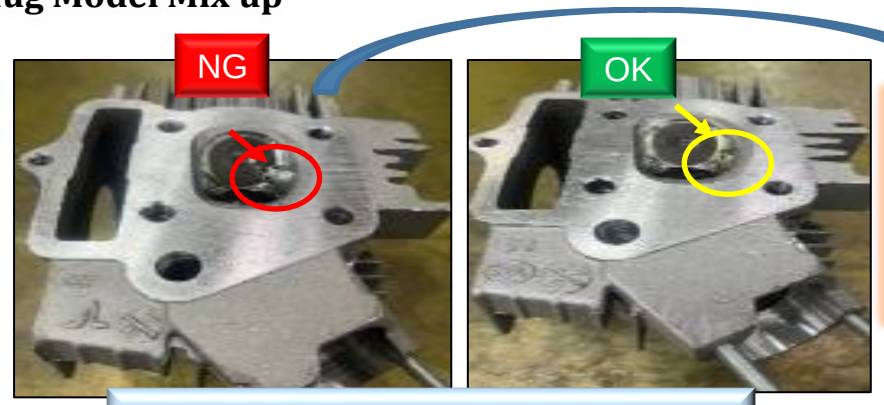
Conclusion: Spark plug assembly thread length difference is not visible from topside that's why operators at Head assembly & mounting stage are not able to identify this defect. No detection system for capturing & can outflow easily.

Innovative project-3- Energy saving by elimination of rejection/rework through development of fixture, equipped with distance sensor in engine assembly

Defect Mode type– Model Mix up

2.1- Kick Jam due to Spark Plug Model Mix up

Spark Plug mounting on Cylinder Head



Length difference in spark plug in both models which results Kick jam at FI

In case of 125 CC Spark plug assembly in 100 CC Cylinder head, Valve, piston & spark plug are damaged on starting of vehicle, leads to Kick jam.

WHY-WHY Analysis

Outflow	Factor	WHY-1	WHY-2	WHY-3	WHY-4	WHY-5
Final Inspection	Spark Plug model mismatch	125 CC Spark Plug tightening in 100 CC Cyl. Head at SPM m/c	Operator assemble wrong spark plug during pre-assembly	Wrong model spark plug feeding at sub assembly	Operator is not able to identify the difference visually	Similar looking parts, only difference is thread length
				Wrong part not removed on line during change-over	Similar looking parts, only difference is thread length	

There is no control to identify this defect mode, only based on operator's skill
(Man dependent stage so it is very critical at internal as well as external customer end.)

Root Cause — No System to differentiate between 100 CC & 125 CC Spark plug

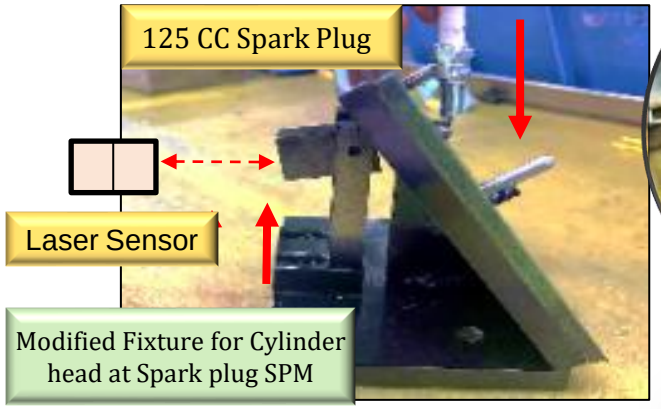
Conclusion: Problem occurred due to Spark Plug model mix-up & currently Defect mode generation & detection is dependent on operator skill, so the chances of this Defect mode generation & outflow are high, we need to establish new Poka yoke to prevent it.

Innovative project-3- Energy saving by elimination of rejection/rework through development of fixture, equipped with distance sensor in engine assembly

Defect Mode type– Model Mix up

S. No.	Defect modes eliminated
1	Spark Plug Model Mismatch

Solution

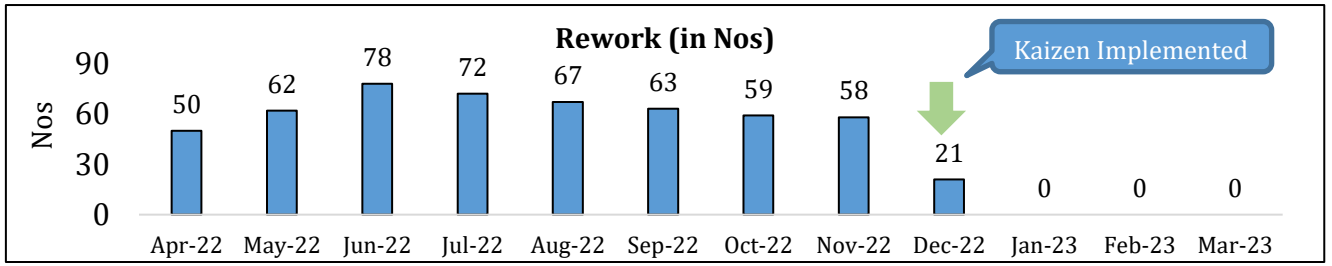


Regulated Control Type — L-1

Machine shows Red light alarm with "**Wrong Model Spark plug fitment**" written on display.

L1 ⇦ L4

Poka Yoke / Severity	Judgement Table 1	2	3	4
A	OK	OK	NG	NG
B	OK	OK	OK	NG
C	OK	OK	OK	NG



- **Benefits :**
- Rejection & Rework reduced to Zero
- Energy saving- 0.45 lakh kWh/annum
- Investment: Rs. 4 lakh.
- ROI: 3 Months

Conclusion: Mechanical fulcrum & distance sensor implemented to eliminate Spark plug model mix up defect mode in 100 CC.&125CC. Total 3 Defect mode eliminated.Energy saving of Approx.45000kwh/year achieved.

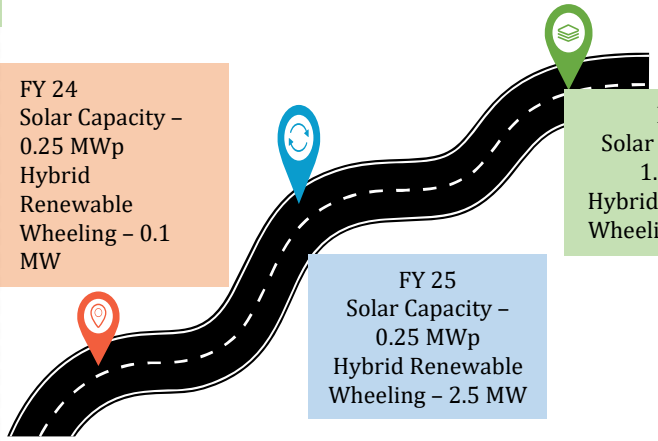
6. Renewable and Green Energy

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

Details of solar Utilization FY22-23

Tech.	Type Energy	Onsite Offsite	Inst. Cap.	Gen. (Mn. KWH)	% of overall Electrical Energy
Solar PV	Elec.	Onsite	272 kWp	0.2	**1.19**

Road map for Renewable Energy enhancement at HM1D

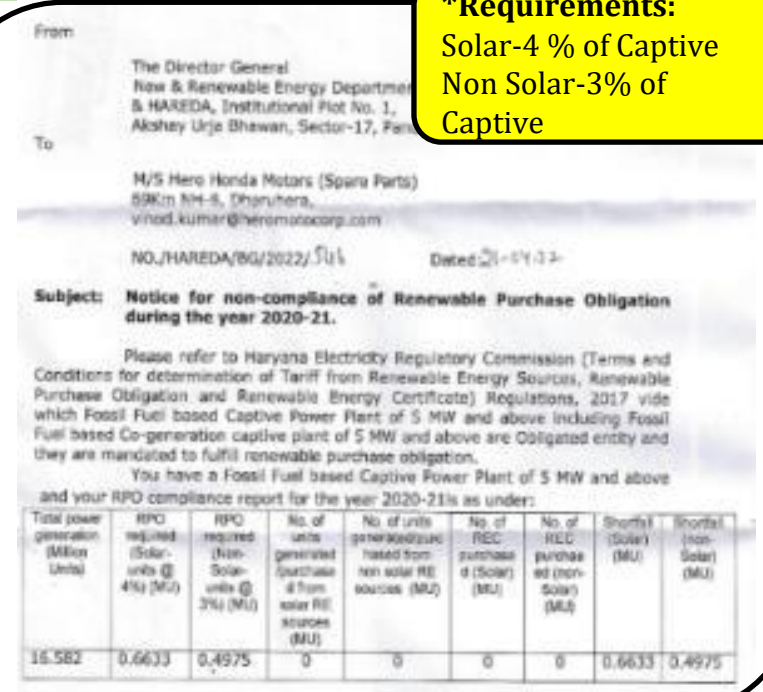


Proposed Solar generation capacity breakup area wise

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, Pan

To

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

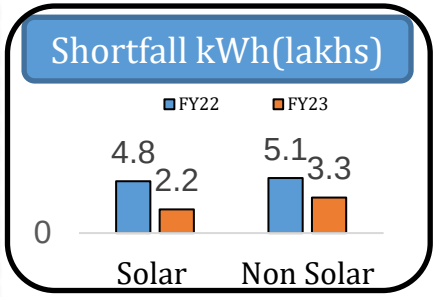
NO./HAREDA/BG/2022/ Dated:

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 fulfil 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 2020-21is 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(pur- hased 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 23

1.Solar-225 Nos.

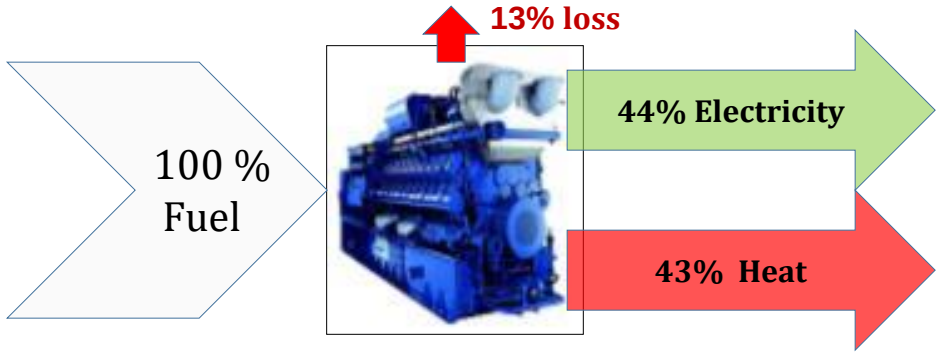
2.Non Solar-335 Nos.

Conclusion: Solar Power Plant of 272 kWp is installed and 1328 kWp & Hybrid renewable wheeling of 0.1 MW will be completed by Dec23.

7. Waste Utilization & Management

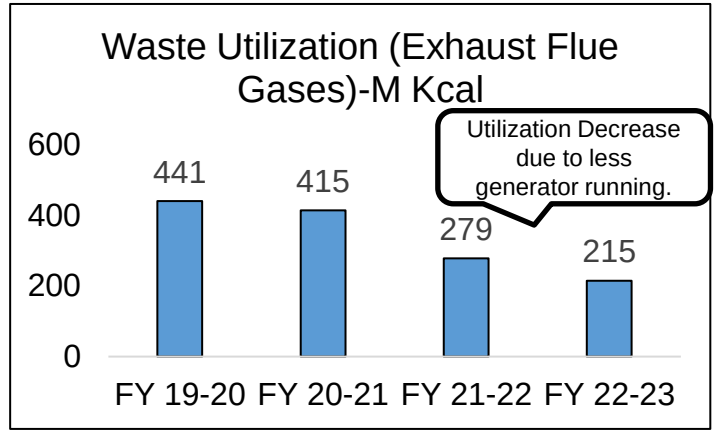
Waste as wealth: Waste Heat Utilization by co generation in Gas generators.

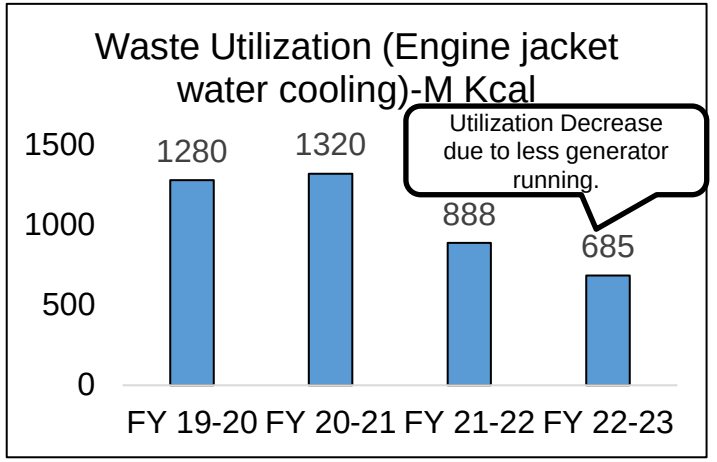
Back Ground information :



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.





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

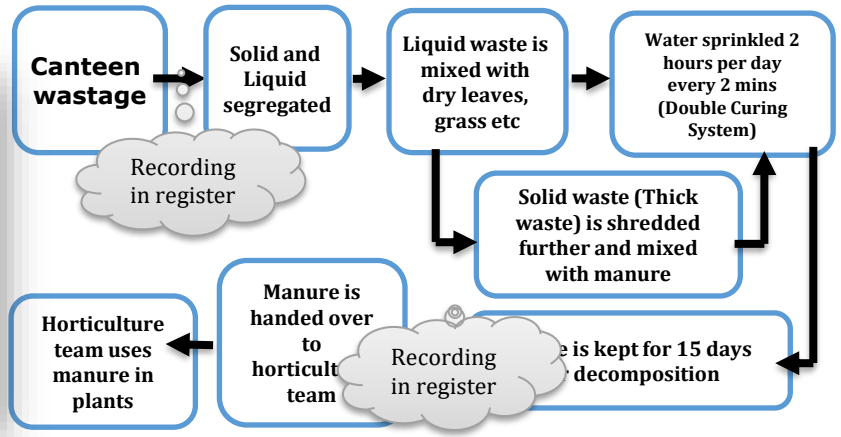
7. Waste Utilization & Management

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

Organic Waste converter

Double Curing System

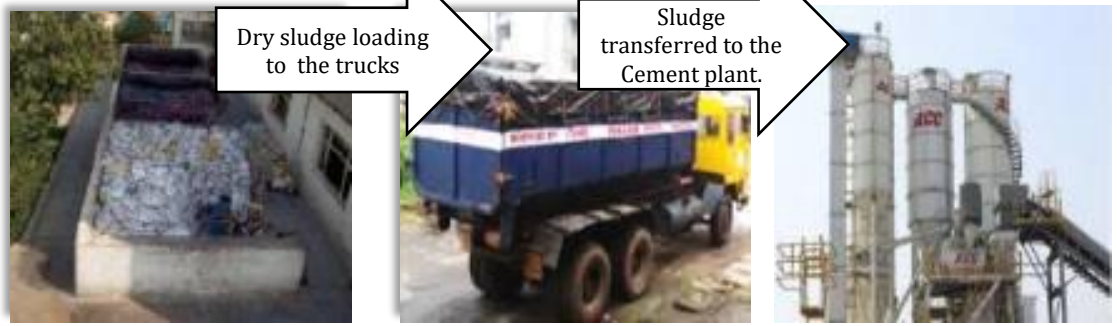
Process Flow

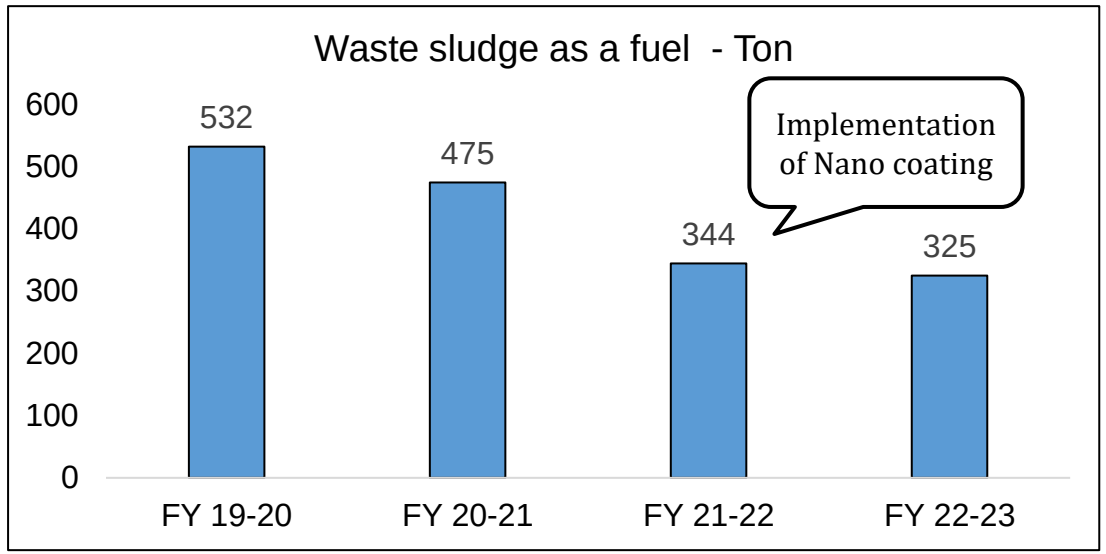


Composite Usage from FY 2021~2023

FY	Canteen Food Waste (Kg)	Horticultu re waste (kg)	Composite (Kg)	%age
20-21	11253	10457	21650	99.7
21-22	10453	10987	21440	99.2
22-23	9876	11403	21279	99.8

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

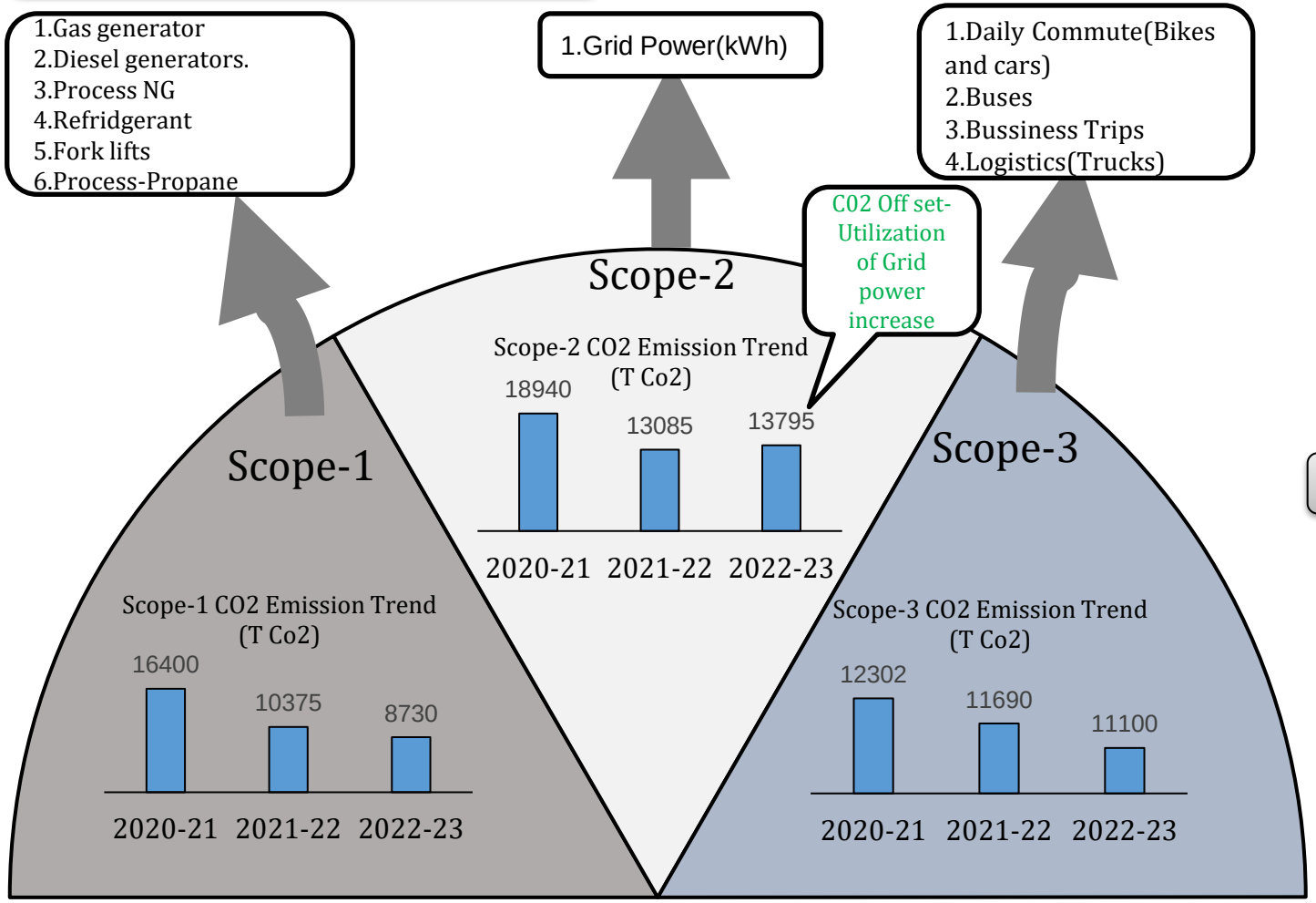




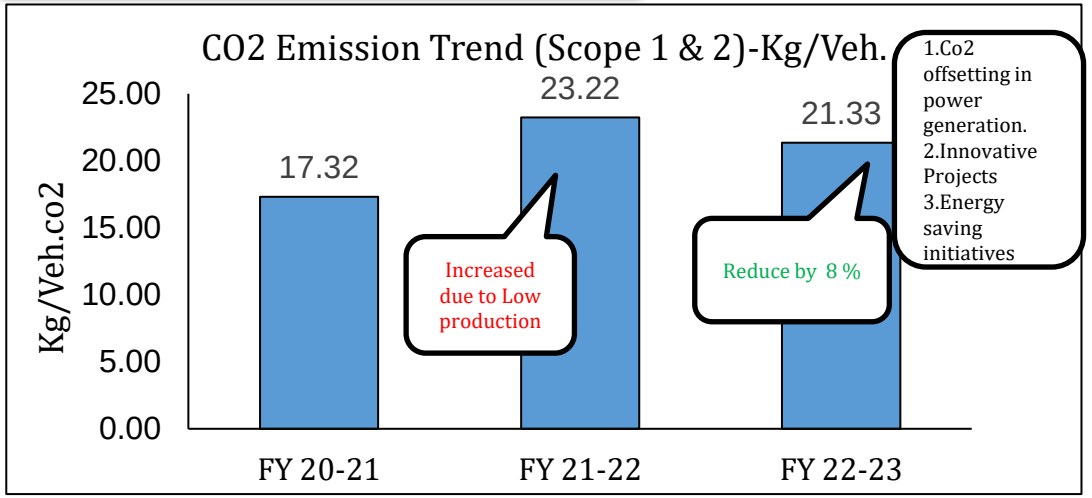
Conclusion :The canteen and horticulture waste is treated in organic Waste Converter above 99% utilization .The Sludge generated in processes sent to co processing in cement industries and used as Fuel there. The YoY sludge as fuel is shown.

8. GHG Inventorisation

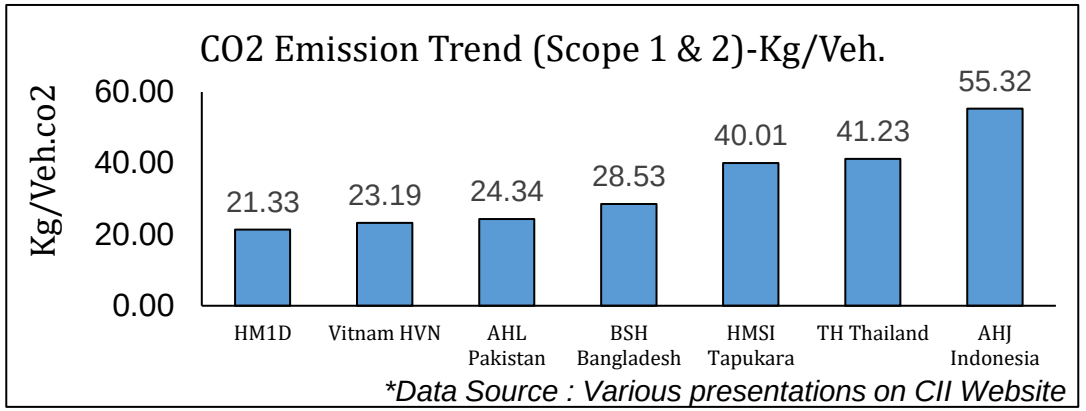
GHG Inventorisation of HM1D



GHG Emission Trend of HM1D



GHG Emission Trend of Asian Companies



Data Source : Various presentations on CII Website

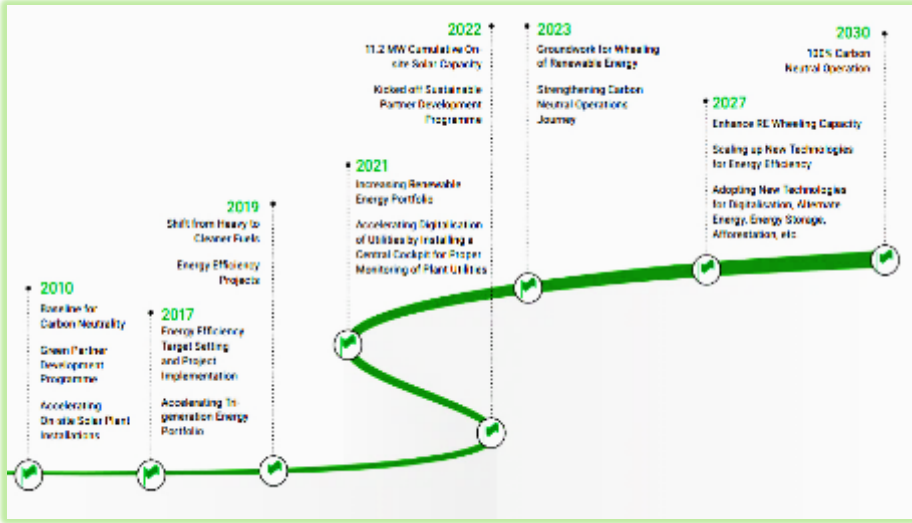
Conclusion : Inventorisation of CO2 Emission is practices in all 3 scopes. The YoY Co2 reduction is shown and reduced 8% from FY 22.

8. GHG Inventorisation

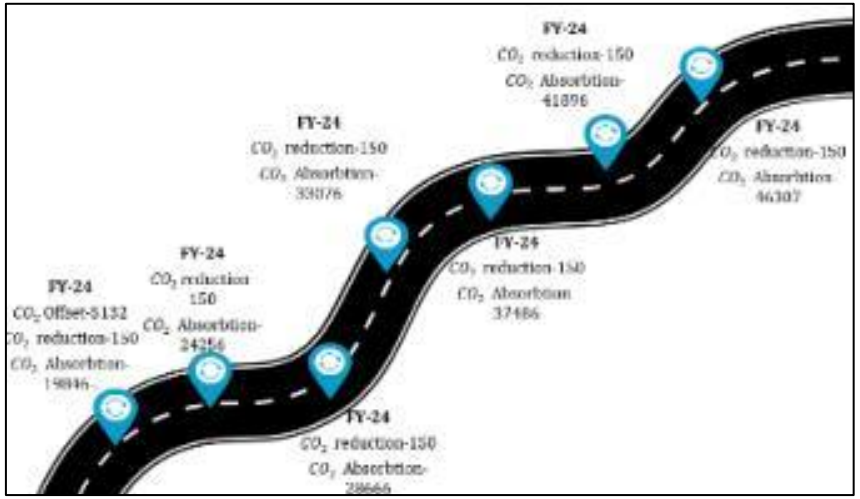
Public disclosure of sustainability report

Sustainability report published on 6 August 2023.

Long term Sustainability Roadmap-HMCL



Long term road Map carbon neutrality-HM1D



Long term Action Plan –HM1D

Action Plan		FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30
Renewable Energy Enhancement(Solar)MW	Onsite			1947	1947	1947	1947	1947	1947	1947
Increase Utilization of Grid Power from70 %(5MVA) MVA to 10 MVA 96(%)	Offset		70	96	96	96	96	96	96	96
Solar Power wheeling (Lakhs kWh/Year)	Offset			50	100	100	200	200	200	200
Aforrestation Drive as HMCL (Lakhs Trees)	Offset	25.8	35.8	45	55	65	75	85	95	105
Continuous Energy saving Projects to reduce SEC by 2% each year	Onsite		27.78	27.2	26.7	26.1	25.6	25.1	24.6	24.1

Conclusion : 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

Target under GVDP @ SCP's End

Total Suppliers for HMCL	Supplier Enrolment in GVDP				
	Enrolled till 2018	Enrolled till 2019-20	Enrolled till 2021-22	Enrolled till 2022-23	GVDP program is abandoned in FY 23 with new start up with SVDP
580	178	20	22	20	

Category	Short Term target
Water Management	Reduction in water consumption by 10%YoY(GVDP)
Energy Management	Reduction in Energy consumption by 10%YoY(GVDP)
Waste Management	Reduction in Waste consumption by 10%YoY(GVDP)
Logistics Improvements	Reduction in Veh. trip by 10%YoY(GVDP)
Packaging Improvement(Plastic/wooden/polythene/Cartoon	Elimination of Non Recyclable/Non reusable packing Material-100%byFY2025

Saving in FY-23

Electricity Savings	Water Savings	Waste Reduction
Shriram Piston - Pathredi 21 lac KWh	Shriram Piston- Pathredi 0.45 Lac KL	Shriram Piston- Pathredi 1.80 Lakh KG
MMT- Dharuhera 7.22 Lac KWh	Roop Polymer 0.44 Lac KL	Sentac Manesar 0.11 Lakh KG
Panchratna- Rohtak 9.62 Lac KWh	MMT Dharuhera 0.068 Lac KL	JNS Haridwar 0.59 Lakh KG
Shivam Auto- Rohtak 4.3 Lac KWh	Sunbeam- Halol 0.18 Lac KL	Sunbeam Halol 0.33 Lakh KG
Sentec Manesar 3.41 Lac KWh	Minda Noida 0.013 Lac KL	NBC 0.65 Lakh KG

Conclusion : GVDP program was planned for Green dealership for 580 dealers in a phased manner. Total 70.50 Lakh Kwh , 1.21Lakh KL,2.9 Lakh KG of Energy, water and waste Reduction in FY20-21 through GVDP program. GVDP is upgraded to SPDP from FY23 with new strategy to achieve HATS targets.

9. Green Supply Chain Management - Value Chain Sustainability

Green Products

Bio-Degradable consumables

Digitization

- E-Shop
- Virtual Showroom
- Digital Payment

Green Processes

Dry Wash

Disposing Lubes & Wastes

- As per EPR guidelines

Green Energy

Solar Energy

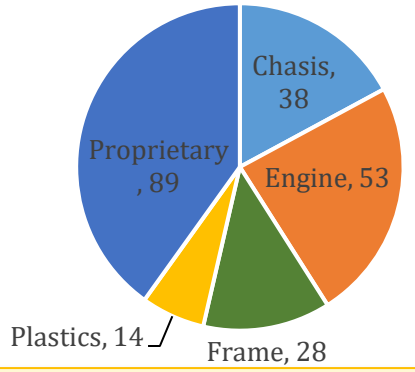
Energy Conservation

- Star rated appliances

FY23	FY24	FY30
▪ Sample Dealers visited for scope of baseline assessment ▪ 140 Dealers are poised to reduce carbon emission/wastages by adopting Green Dealership Elements	▪ 11 new Dealerships (Hero 2.0) ▪ 140 Dealers to meet Green Dealership Criteria by reducing Energy and Water Consumption by FY24	▪ 100% Dealers coverage

❑ **Green Dealerships are mapped basis the adoption level of 12 Green elements (Green-Plus, Green Pro, Green Max)**

Total 222 No. of Supply Chain Partners Signed the Sustainable Procurement Guideline



100%

Suppliers to be Covered

Conclusion: Green Dealerships are mapped basis the adoption level of 12 Green elements (Green-Plus, Green Pro, Green Max).

9. Green Supply Chain Management - Value Chain Sustainability

SPDP-Sustainable Partner Development Programme

As an organization, Hero MotoCorp has taken several steps to be a sustainable business, and we believe that integration of sustainability in the supply chain is crucial in achieving long-term sustainability.

SPDP Strategy

Sensitisation
- Baseline Assessment
- Capacity Building
- Safety Culture Sensitivity
- Compliance Management Tool
- Sustainable Procurement

Short Term

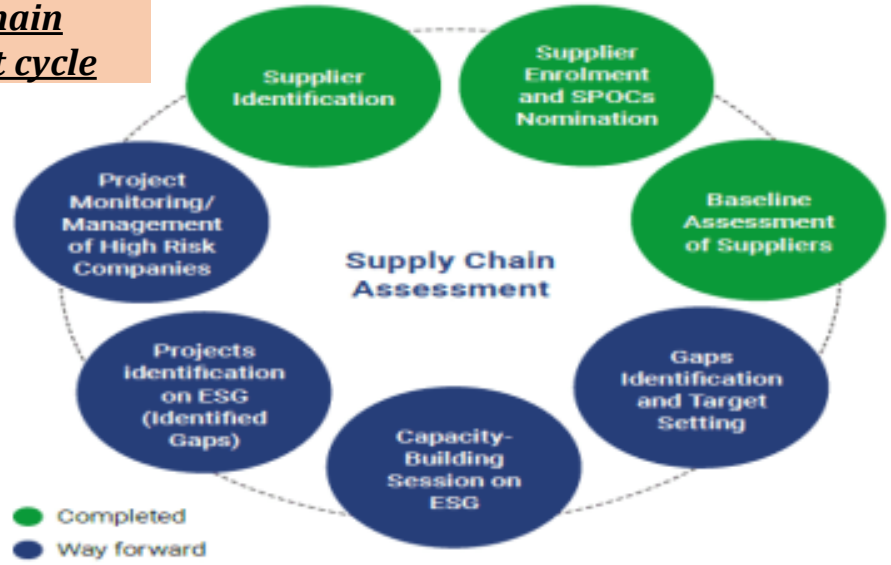
Transformation
- Strategy on Carbon Offset
- Strategy on Diversity and Inclusion
- Water Conservation Measures
- Water Positive Certification
- Zero Liquid Discharge Certification
- Policies and Codes of Supply Chain Partners (SCPs)
- ISO 45001 Certification
- ISO 14001 Certification

Medium Term

Resilience
- Ethical Risk Assessment of Supply Chain Partners and Gap Analysis
- Human Risk Due Diligence and Risk Assessment of Supply Chain Partners
- Carbon Neutral Journey
- Disclosure in various ESG Rating Platforms

Long Term

Supply Chain Assessment cycle



S. No	Indicator	No. of Suppliers	Percentage (%)
1	Suppliers Acquired ISO 45001 Occupational Health and Safety Management System Certificates	100	79.4
2	Suppliers Acquired ISO 14001 Environmental Management System Certificates	101	80.2
3	Suppliers with Environmental Policy	121	96
4	Suppliers having whistle-blowing mechanism to report on code of conduct/policy breaches	114	90.5
5	Suppliers who provide work-related stress management advice and assistance to their employees	98	77.8

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

10. EMS Systems

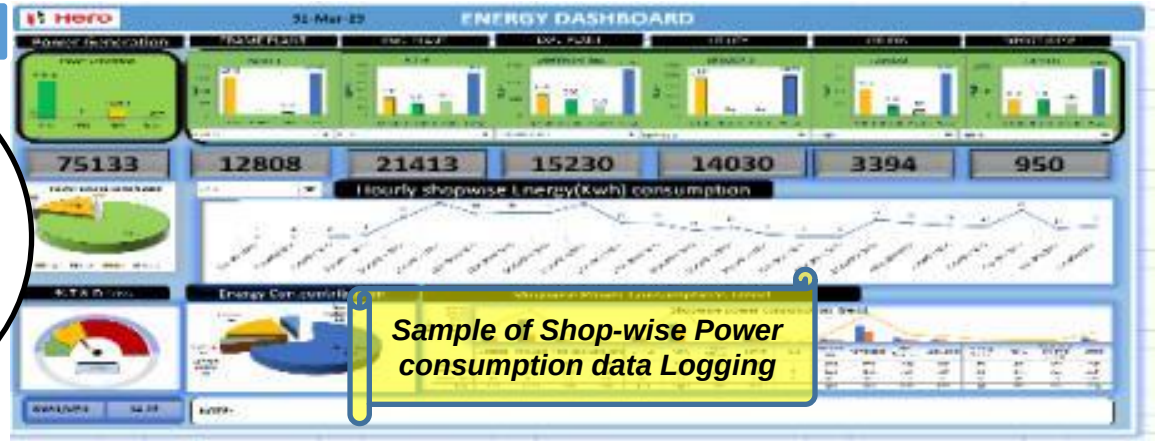
Energy Monitoring System

Real Time Report generation through SCADA

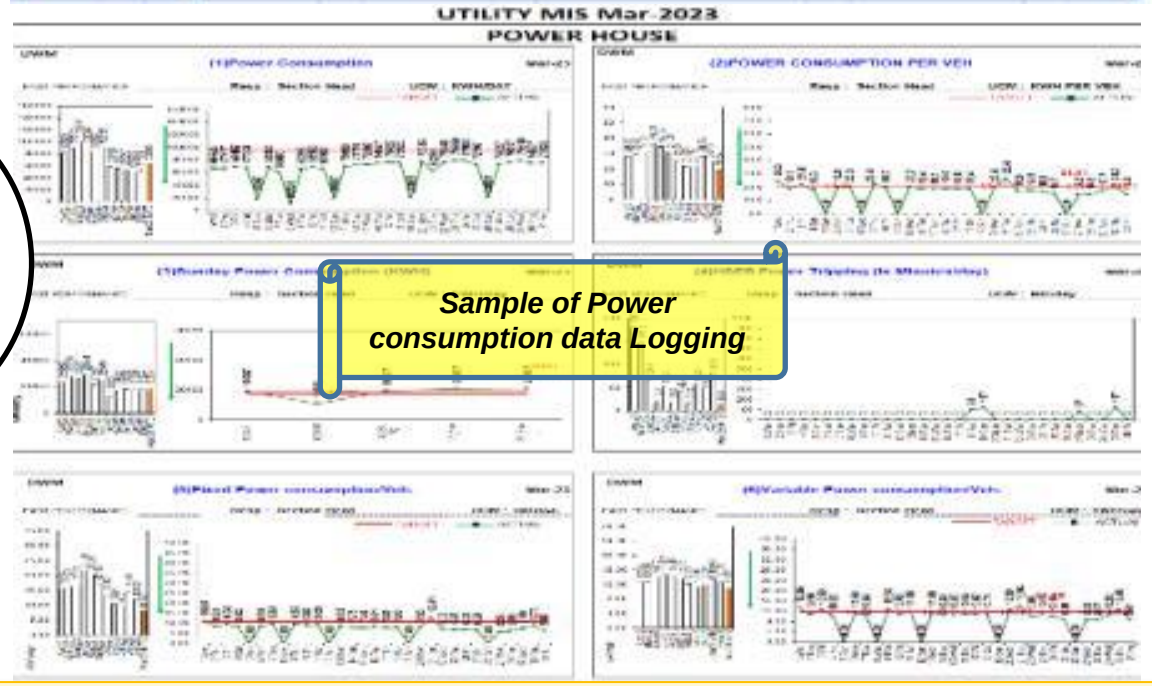
Real Time report display at Energy Dashboard

Report circulation through email

High Energy consumption Alerts through email



Sample of Shop-wise Power consumption data Logging



Sample of Power consumption data Logging

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

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

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

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.

Conclusion: 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.

11. Net Zero commitment way forward- SUP Action Plan

Objective: To Reduce the environmental degradation by stopping the single use plastic as specified

Sustainability framework encompassing ESG

Robust Governance Mechanism – Stakeholder Engagement

Responsible Business

- Brand & Reputation Management
- Business Profitability & Growth
- Business Ethics
- Data Privacy
- Value Chain Sustainability

Social Inclusion

- Health Safety & Well being
- Human Rights
- Diversity & Inclusion
- Talent Management
- Inclusive Growth

Climate Protection

- Carbon & Energy Management
- Water Security
- Waste Management
- Materials
- Product Stewardship

Activity Plan

Milestone		Task		Aug	Sep	Oct	Nov
Step-1	Project inception	Sensitization/ Capacity Building Training	Plan				
			Actual				
Step-2	Defining the project	Determination of Scope of the project	Plan				
			Actual				
		Determination of boundary of the project	Plan				
			Actual				
		Finalization of scope & boundary of the project	Plan				
			Actual				
Step-3	Data Collection	Plastic Inventory Data Collection	Plan				
			Actual				
Step-4	GAP Analysis	Data Analysis	Plan				
			Actual				
		SUP identification	Plan				
			Actual				
		Finalization of the Inventory sheet	Plan				
			Actual				
Step-5	Implementation	Implementation of CII suggestions	Plan				
			Actual				
		Data collection and formatting for verification	Plan				
			Actual				
Step-6	SUP-free certification	Desktop data verification	Plan				
			Actual				
		Audit	Plan				
			Actual				
		SUP free Certification & closing report	Plan				
			Actual				

Methodology Adopted

- Determine Scope and Boundary
- Preparing Inventory
- Communication
- Implementation
- Implementation

Training Session

EHS Bulletin

EHS BULLETIN

Phasing Out Single Use Plastics

What not to be used ?

As per amendment PWM Rules notified by MoEF & CC on August 2021 following Single use items are restricted.

- polystyrene [Thermocol] for decoration
- packing films around sweet boxes, invitation cards, and cigarette packets, ear buds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks,
- ice-cream sticks
- plates, cups, glasses, cutlery such as forks, spoons, knives, straw, trays,
- wrapping /stirrers
- Plastic or PVC banners less than 100 micron,

What is to be used ?

- Cotton bags: Natural cloth can replace plastic bags. Sustainable clothing made from organic cotton, wool, hemp, or bamboo won't shed plastic fibers when washed.
- Bamboo: This fast-growing renewable resource can replace plastic in items like tableware and drinking straws. It is lightweight, durable, and compostable.
- Wooden items: A renewable resource, wood from sustainably-managed forests can replace plastic in household items like cleaning brushes, kitchen utensils, and cutting boards.
- Pottery and Other Ceramics: pottery and other fired ceramics offer a stable, waterproof alternative that's good for food storage and tableware. Look for non-toxic glazes.
- Compostable Plastics: "compostable plastics" mean plastic that undergoes degradation by biological processes during composting to yield CO2, water, inorganic compounds and biomass at a rate consistent with other known compostable materials, excluding conventional petro-based plastics, and does not leave visible, distinguishable or toxic residue. It is one of the alternatives of plastics. To encourage compostable plastics, CPCB has prepared a Standard operating procedure (SOP) for issuing of certificate to the manufacturers and seller of compostable plastics.

For any query Contact Safety Dept.- 4671,4681,4488 Alert No. Date: 02.05.2022

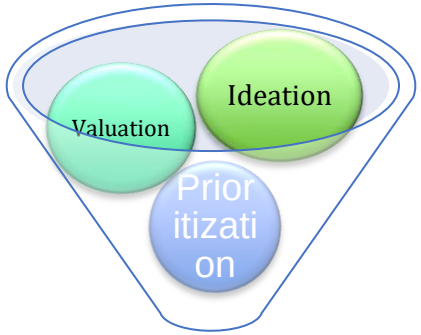
Inventorization & Plastic Ban

Single Use Plastic	Description	Present in our Premises	Single Use Plastic	Description	Present in our Premises
	Mineral Water Bottle single use	✓		Non-recyclable multi-layer plastic	✓
	Plastic Cups	✓		Cotton swab sticks	✓
	plastic dish spoons, cups, tumblers, plates, glasses, fork bowls, counter.	✓		Plastic sheet / cling film used for food wrapping	✓
	Disposable disc / bowl used for packaging foods and straws.	✓		Plastic sheet used for spreading in dinner table	✓
	Single use plastic carry bags with or without hands - less than 50-micron thickness in first phase.	✓		Plastic coated paper plates	✓
	Use of plastic & thermocol for decoration purpose.	✓		Inner poly liner of waste collection	✓

Verification and Certification

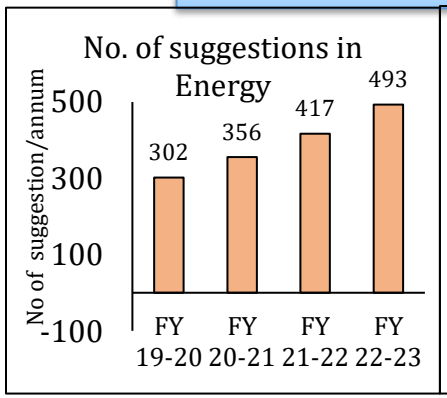
Conclusion: Methodology of Elimination of single use plastic certification is shown.

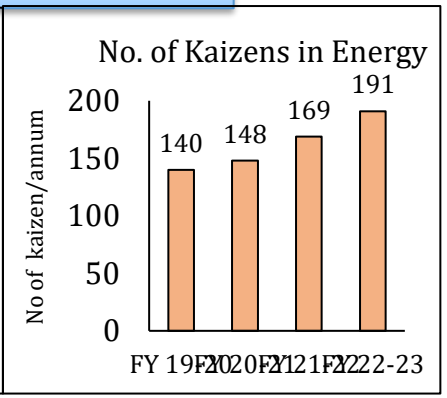
12. Team work, Employee Involvement & Monitoring



Implementation of Ideas

Horizontal Deployment of Ideas





Employee involvement Activities

Earth Hour Celebration(25/03/2023)

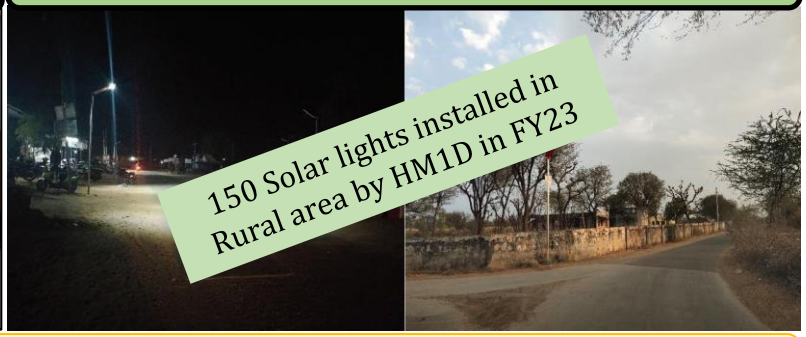
Energy Conservation Training to new joiners

Hero Green Drive

OUR VISION:
"To have a Greener, Safer and Equitable World"

Hero in FY 23
- Planted 2.38 million tress &
- Adopted 1 Biodiversity bark &
- 2 Lakh Planted by HM1D

Aarush – Solar Street Light Installation



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

13. Awards and accolades

Sustainable Plant-Sustainable Planet

2022 Food safety ISO:22000

2022 EnMS ISO:50001

2021 Awarded as Energy Efficient Plant at CII for excellence in Energy Management

2017~2019 Awarded as excellence in energy management system-3 Times in a row

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

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

2020 Zero Waste to Landfill Certification from Intertek, UK

ZWL Certificate

2021 Energy and Water Audit by external Agency

2022 HR Excellence Award

Thank You!

Journey continues…