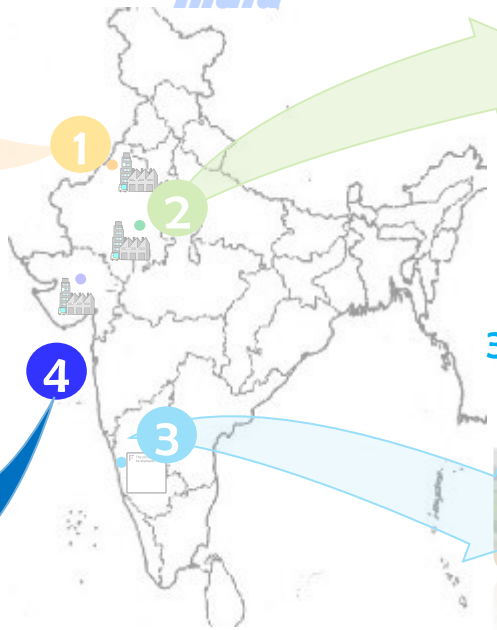
HMSI – Vithalapur Plant (4F)

Honda Two Wheelers in India

1st Factory (Haryana)

Land area : 210,000㎡
Building area : 102,000㎡
Productive capacity :1,650,000



2nd Factory (Rajasthan)

Land area : 237,822㎡
Building area : 104,283㎡
Productive capacity :1,200,000

3rd Factory (Karnataka)

Land area : 350,000㎡
Building area :132,539㎡
Productive capacity :2,400,000

4th Factory (Gujarat)

Total Area : 93 Acre (376,960 m²)
Investment : 1,100 Crores
Production Capacity: 1.2 Million Veh / Yr
Production Line : 2 Main lines (4400/day)
Manpower : 4056

- 100% Capacity Utilization of Line 1 in April'16
- Second Line Started in Jun'2016

Operation started 18th Jan 2016

About 4F Factory

2013

HMSI president Mr Muramatsu with Hon'ble PM & the then Hon'ble CM of Gujarat Sh. Narendra Modi

Further Strengthening buss. Ties with India Japan.

2014

Land Allotment

Consent to Establish

Land Development

Construction

2015

M/c Installation

Factory Office

Factory Ready with in record timings of 13 Months

2016

Start of Commercial Production

2017 - 2020

Product Technology Enhancements

- Capacity – 1.2 Mil/Year

Model
- Activa,
- Dio
- Grazia

Right now we are producing best quality product to considering environment factor

Manufacturing Process Flow


Die Casting


Machining


Engine Assembly


MS Packing


Export

Export


Suppliers


Material Storage


Frame Assembly


Vehicle Quality

Domestic


Press Shop


Weld Shop


Paint Shop


Logistics


Dispatch to Dealer

All product after quality testing goes to market through logistic

Energy Sources

Grid Electricity
Sanctioned Load: 14.5MVA
Yearly Elect. Units : 25 Mn Kwh

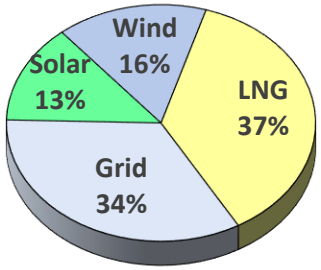
Solar Electricity
Capacity : 7 MWp
Yearly Elect. Generation : 10 Mn. Kwh

Wind Electricity
Capacity : 4.7 MWp
Yearly Elect. Generation : 11.7 Mn. Kwh

Hybrid Electricity
Capacity : 4.2 MWp
Yearly Elect. Generation : 6.3 Mn. Kwh

LNG
Yearly Consumption : 2354 TOE

Overall Energy Consumption

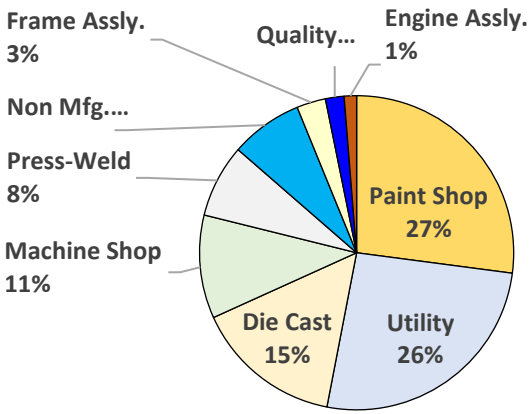


Energy Consumption→ 63% Electricity and 37% LNG

Energy Consumption

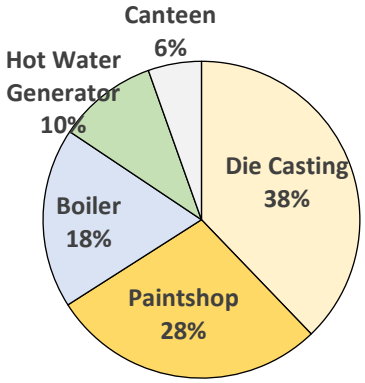
Electricity Consumption

Yearly Elect. Consumption : 45 Million Kwh



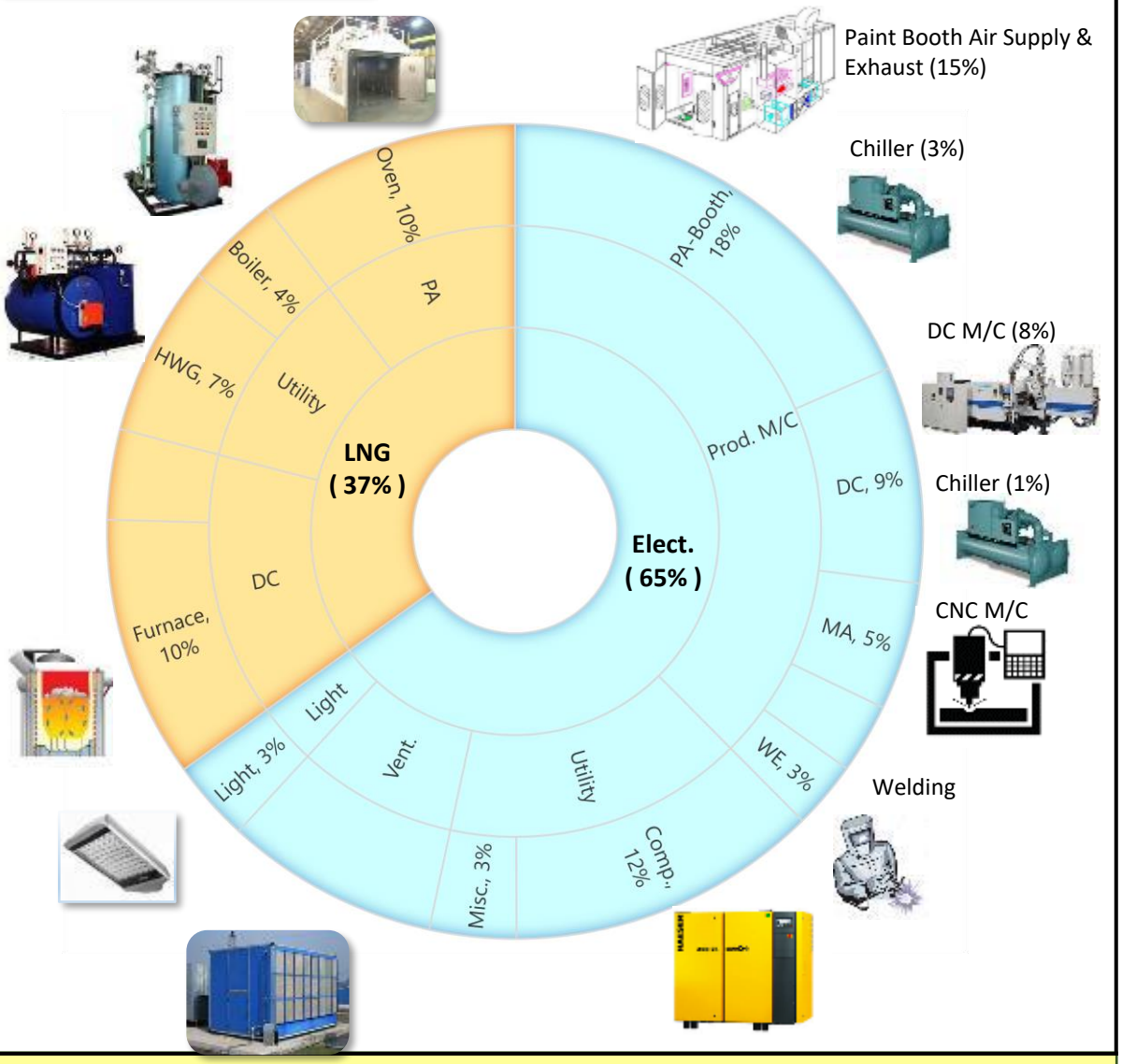
LNG Consumption- Heating

Yearly Heat Consumption : 2,354 TOE



Energy Consumption

Yearly Energy Consumption : 6223 TOE



Major Energy Consumption → Paint Shop , Utility , Die-casting and Machin Shop

Honda Environmental Vision

Strive for a sustainable and circular society that aims for

“ zero environmental impact ”

Triple Action to ZERO

Carbon neutrality

CO2 emissions, net zero by 2050

Clean Energy

100% utilization of carbon free energy by 2050

Resource Circulation

100% use of sustainable materials by 2050

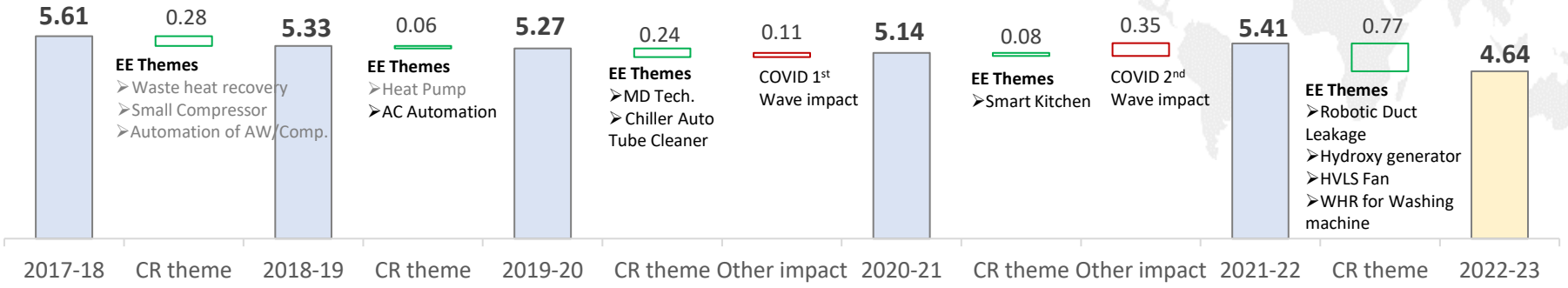
Honda globally working to reduce Env. impact & sustainable development

Energy Vision

SEC Plan

KOE / Veh

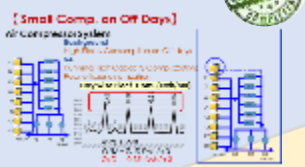
KOE- Kg. of Oil Equivalent



2017-19

Waste Heat Recovery
(LNG Saving: 2500 m3/day)

Installation of small Compressor
1.0 Rs/V



2019-20

Heat Pump
(LNG Saving: 550 m3/day)
Waste Heat from DC M/C

Reuse Heat in Paint Process

AC Automation
(Elect Saving : 269 / day)

5 MW

Renewable Energy

2020-21

Membrane Distillation
(LNG Saving: 1350 m3/ day)
Reject of RO3 in ZLD

Heated by Waste Heat

Auto Tube Cleaner in Chiller

2.0 MW

2.0 MW

2.0 MW

2021-22

Centrifugal Comp.

EC Fan in Air Washer

Smart Kitchen Vessel

Solar Dish Project

Wind Turbine

2.7 MW

2.7 MW

2022-23

Strive to be Benchmark

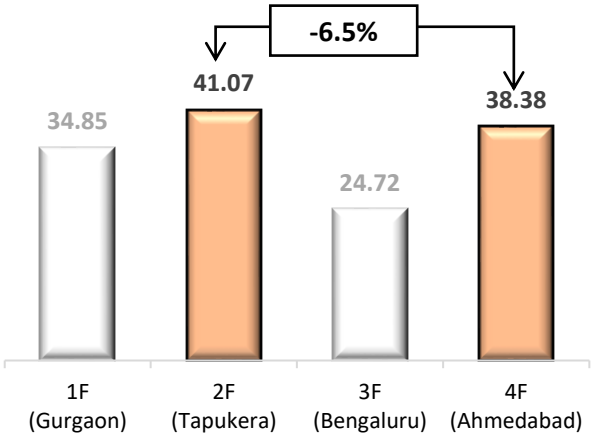
Improvement in Energy Efficiency by 3R Principle

Internal Benchmarking

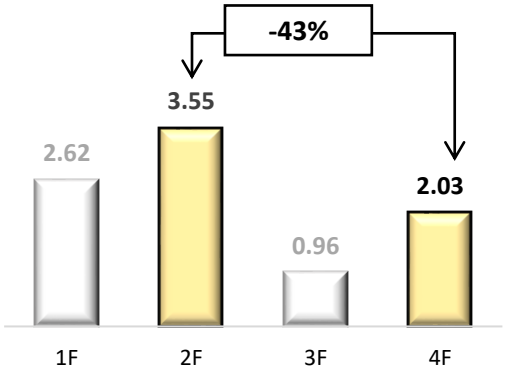
Factory wise Change Process

Process	1F	2F	3F	4F
Die-Casting 	X	●	X	●
Chiller 	X	●	X	●
Air Washer 	●	●	X	●

Electricity (kWh / Veh)

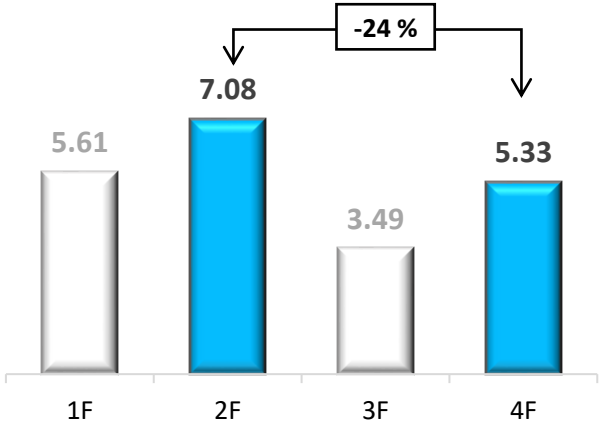


LNG (m^3 / Veh)



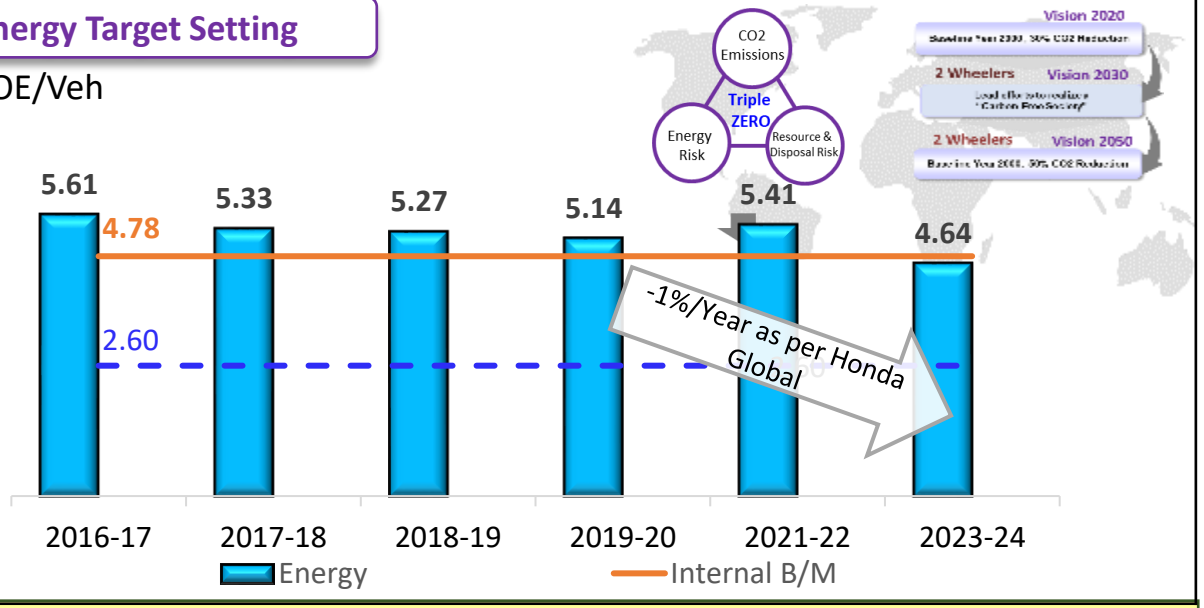
Overall SEC (KOE / Veh)

KOE- Kg. of Oil Equivalent



Energy Target Setting

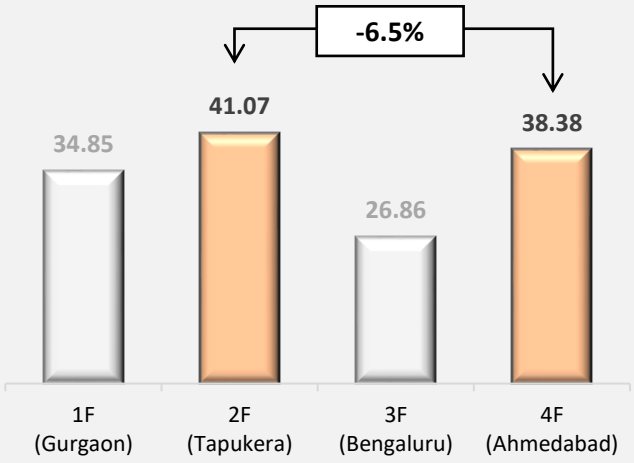
KOE/Veh



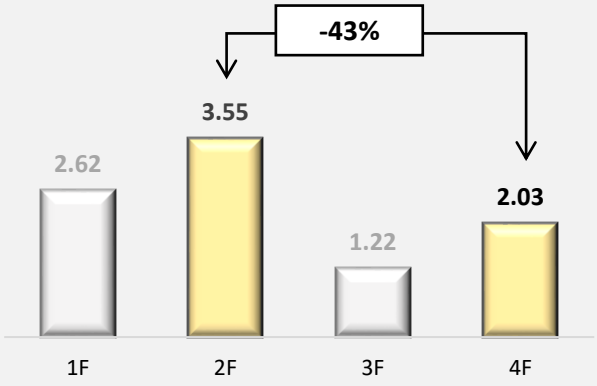
Setting Energy Target considering Internal Benchmark and Company Vision

SEC Internal Process Benchmarking

Electricity (kWh / Veh)



LNG (m^3 / Veh)



Process wise Benchmarking

Electricity (Kwh / Veh)

Process	1F	2F	3F	4F			Trend w.r.t. 2F	Judge	Remarks
				M/C	AW	Total			
Paint	8.09	**10.63**	7.76	7.61	-	**7.61**	↘	🟢	ETP is in Utility
Utility & Env.	9.45	**7.79**	9.25	10.04	0.07	**10.11**	↗	🟢	Common Water Treat.
MA	6.08	**4.30**	4.31	3.22	0.65	**3.87**	↘	🟢	
Weld	2.43	**1.79**	1.92	1.69	0.63	**2.32**	↗	🟢	Wedding length is higher in 4F: 2F : 0.94 kwh/m, 4F: 0.93 Kwh/m
Press	0.47	**0.45**	0.37	0.28	0.11	**0.39**	↘	🟢	
QC	2.65	**0.58**	0.41	0.41	0.20	**0.61**	↗	○	
Frame Assembly	0.93	**0.80**	0.48	0.15	1.05	**1.20**	↗	○	
Engine Assembly	0.54	**0.43**	0.39	0.15	0.30	**0.45**	→	🟢	
MS	0.58	**0.55**	0.39	-	0.35	**0.35**	↘	🟢	
Logistics	0.25	**0.11**	0.25	0.05	0.27	**0.31**	↗	🟢	Higher Storage Capacity 4F : 10,080 m^2 (33Kwh/m^2), 2F : 3,370m^2 (38Kwh/m^2)
Admin	0.60	**-**	0.16	0.34	0.41	**0.75**	↗	🟢	
Canteen	0.54	**0.58**	1.18	0.39	0.31	**0.70**	↗	○	
Lighting	-	**1.96**	-	1.95	-	**1.95**	↘	🟢	
DC	-	**8.93**	-	4.98	0.88	**5.87**	↘	🟢	
Paint Chiller	-	**1.99**	-	1.90	-	**1.90**	↘	🟢	
Total	34.85	**41.07**	26.86	33.15	5.23	**38.38**			

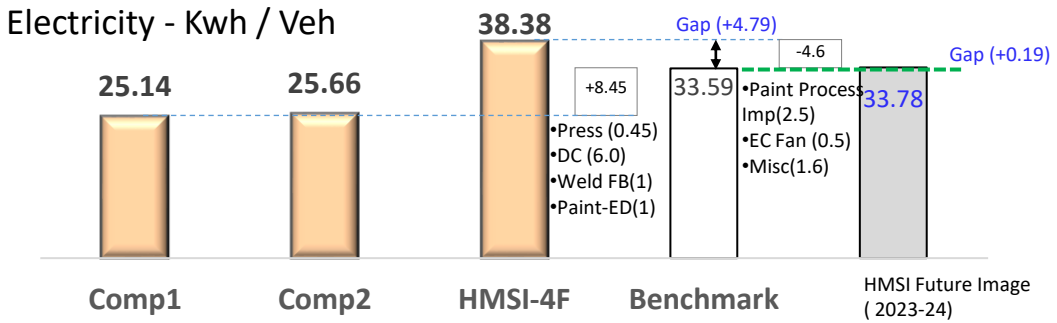
LNG (m3 / Veh)

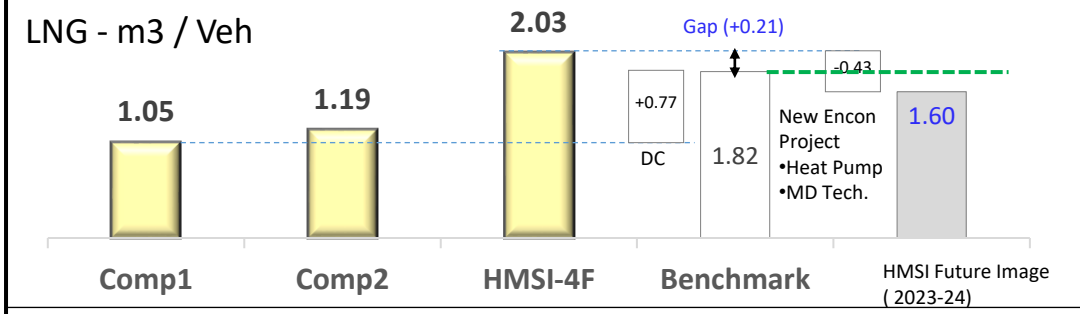
Process	1F	2F	3F	4F	Trend w.r.t. 2F	Judge	Remarks
Die Casting		**1.13**	-	**0.76**	↘	🟢	
Paint shop		**1.33**	0.50	**0.58**	↘	🟢	
Boiler & HWG		**0.95**	0.72	**0.58**	↘	🟢	
Canteen		**0.14**	-	**0.11**	↘	🟢	
Total		**3.55**	1.22	**2.03**	↘	🟢	

Process wise benchmarking is also done for Target Setting

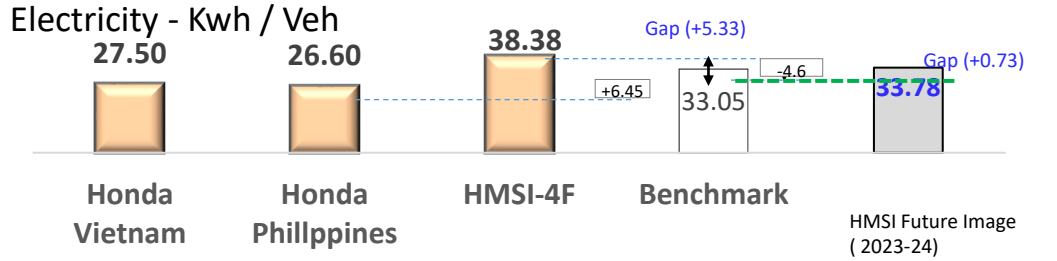
SEC National / International Benchmarking

National Benchmarking





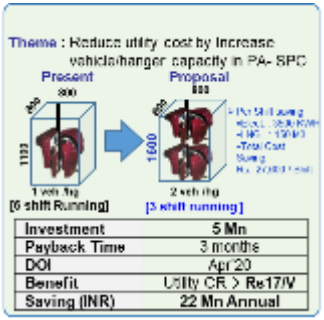
International Benchmarking



No Standard Benchmarking available for Automobile sector, Competitor data collected from various presentation available at CII website.

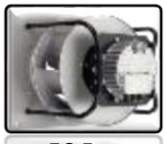
4F Consumption			Process Comparison		
Process	Elect	LNG	4F	Comp1	Comp2
Paint	10.69	0.58	✓	✓	✓
MA	4.20	-	✓	✓	✓
QC	0.76	-	✓	✓	✓
Weld	2.51	-	✓	✓	✓
Veh Assembly	1.68	-	✓	✓	✓
MS	0.60	-	✓	✓	✓
Press	**0.45**	**-**	✓	X	X
Logistics	0.61	-	✓	✓	✓
Utility & Env	10.24	0.58	✓	✓	✓
DC	**6.00**	**0.77**	✓	X	X
Heat Treatment	-	-	X	✓	✓

Process Improvement



Best Practices in Other Companies to be National Benchmark


VFD

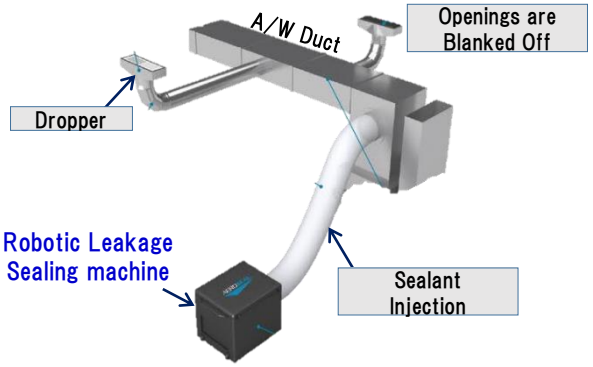

EC Fan

IE4 Motor


ATC

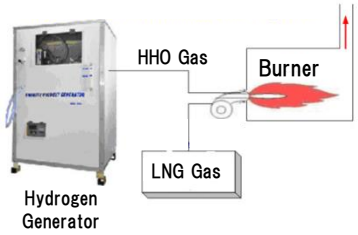
Striving to become Benchmark

A/W Duct Leakage sealing



Invest. (Mn Rs)	Saving (Mn Rs/Yr)	ROI	DOI
2.5	0.8	38 Month	Jul' 22

Hydroxy Generator

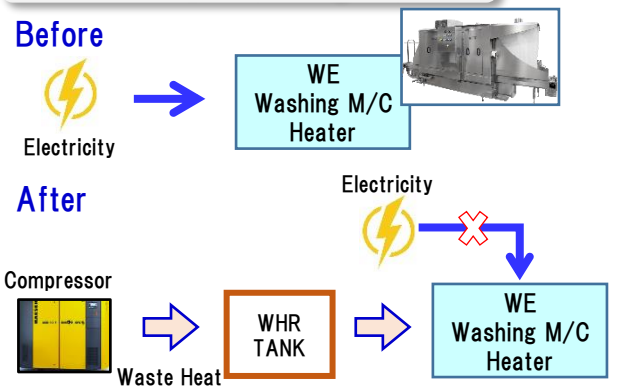


Use of Hydroxy Generator for Efficient LNG burning

Area	Status
HPDC	
LPDC	
PA(SPC)	
PA(ABS)	

Invest. (Mn Rs)	Saving (Mn Rs/Yr)	ROI	DOI
8	3.2	30 Month	Sep' 22

WHR in WE Washing Machine

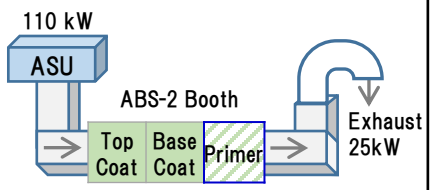


Invest. (Mn Rs)	Saving (Mn Rs/Yr)	ROI	DOI
3.0	1.2	30 Month	Aug' 22

Utility saving by Mono-coat

Before

Monocoat running	Status
ABS-1	
ABS-2	
ABS-3	
SPC-1	
SPC-2	
SPC-3	OFF

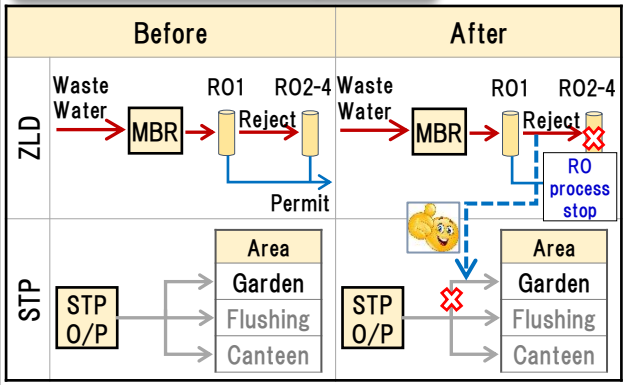


Proposal :
Monocoat paint→ Switch OFF Primer zone Air supply & Exhaust

Benefit :
Monocoat paint→ Elect. Cons. Reduce by 20%

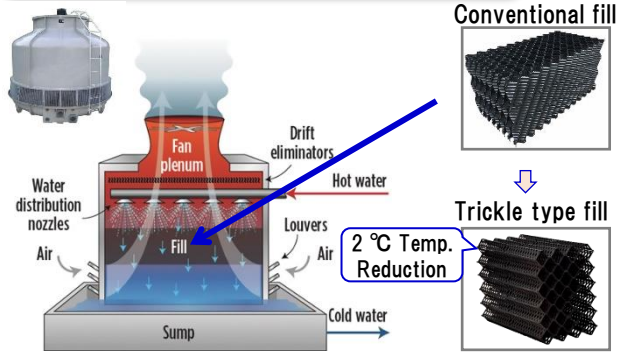
Invest. (Mn Rs)	Saving (Mn Rs/Yr)	ROI	DOI
2.0	0.7	34 Month	Aug' 22

Elimination of RO process



Invest. (Mn Rs)	Saving (Mn Rs/Yr)	ROI	DOI
-	1.0	-	Oct' 22 (CTO revise)

Trickle fills in Cooling tower



Invest. (Mn Rs)	Saving (Mn Rs/Yr)	ROI	DOI
0.6	0.2	34 Month	Aug' 22

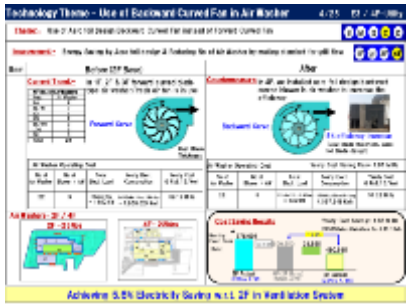
Encon Projects to achieve target Saving 60 Mn Rs

Energy Conservation Strategy

Green Field Phase(2014)

Improvement based on PDCA of Other Factories

Backward Curve Blowers in AW



LED Lighting

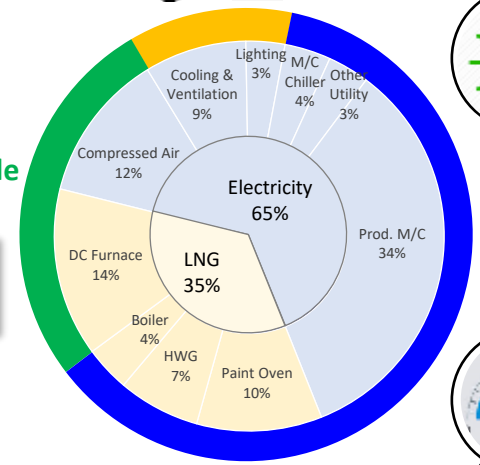
Natural Lighting Maximization

Operational Phase(2016...)

Continual Improvements to Control Energy consumption by 3R principle

Potential Wastage Area

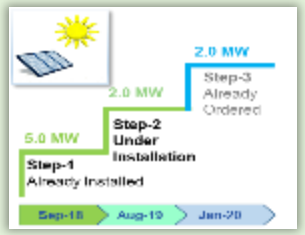
Waste Energy Recycle



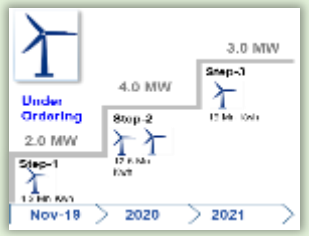
Optimize Energy Consumption

Renewable Energy Growth Plan

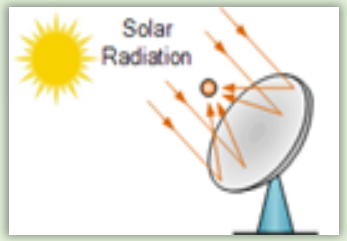
Solar Electricity



Wind Electricity



Solar Heating



Improve Energy Efficiency by 3R Principle

Conservation Approach – 4R (Reduce,Reuse,Renewable,Replenish)

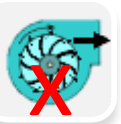
2018-19

LED Lights

Lighting T/F

Energy Efficient Blowers

Forward Curve



Backward Curve

5% More Eff.

IE3 Motor

Automation for Air Washers

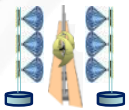
Manual

Clock Timer

Dish Wash M/c

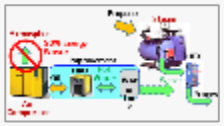
Cond. Recovery

Primer less Paint Technology



2019-20

Waste Heat Rec.



Heat Pumps

Sky pipe light

Roof Top Solar Panel

5 MW

Use of River Water

Blank Size Red.

Co-processing of Waste

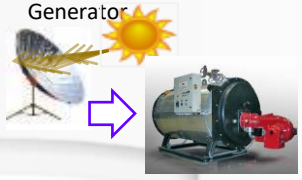
Waste Thinner Recovery

2020-21

Solar Heater

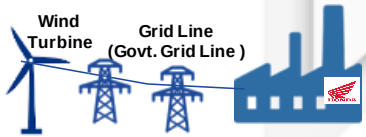
Solar Sludge Drying

Solar Dishes for Hot water Generator



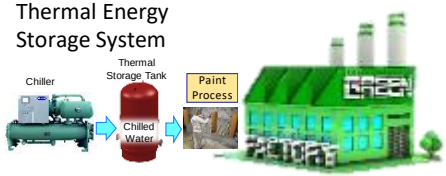
2MW

Wind Power PPA



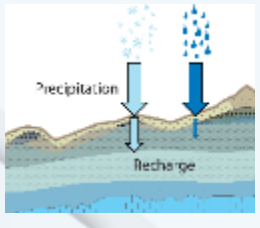
Green Factory Certification

Thermal Energy Storage System



2021-22

Rain Water Recharge



Bio-composting of Organic Waste

Green Earth

"Leave blue skies for our children"

Soichiro Honda, 1966
Founder, Honda Motor Co. Ltd.

2018-19	2019-20	2020-21	2021-22
CO_2 Emission : 39 kg/veh	CO_2 Emission : 33 kg/veh	CO_2 Emission : 19 kg/veh	CO_2 Emission : 14 kg/veh
Water Consumption : 0.21 KL/veh	Water Consumption : 0.19 KL/veh	Water Consumption : 0.15 KL/veh	Water Consumption : 0.08 KL/veh
VOC Emission : 170 gm/m^2	VOC Emission : 163 gm/m^2	VOC Emission : 160 gm/m^2	VOC Emission : 158 gm/m^2
Waste Generation : 5.2 kg/veh	Waste Generation : 4.6 kg/veh	Waste Generation : 4.4 kg/veh	Waste Generation : 4.3 kg/veh
Reduce Consumption	**Reuse / Recycle**	**Replace by RE source**	**Replenish Resources**

We have planned to achieve Global Honda Environment Commitment 2050 target

Encon Projects Implemented in Last 3 Years

Investment Projects

S.n.	Project Name	Year	Elect. Saving (Kwh / Yr)	LNG Saving (m3/ Yr)	Cost Saving (Mn Rs/ Year)	CO_2 Reduction (MT/Yr)	Investment (Million INR)	Payback (ROI)
A	EE Projects- Electricity							
1	Small Compressor	2017	88,015	-	0.55	47	2.0	42 months
2	Installation of Sky Pipe light	2018	50,000	-	0.32	43	2.23	60 months
3	AC Automation	2019	57,200	-	0.36	49	0.6	24 months
4	Air Washer and Compressed Air Automation	2019	455,675	-	2.87	387	2.0	12 months
5	Waste Heat Recovery- Melting Furnace	2020	752,950	-	4.74	640	8.0	20 months
6	Replacement of MH streetlight with LED	2021	166,375	-	1.05	141	1.5	12 months
7	Replace of Conventional blower with EC+ fan in AW	2021	4,327,400	-	25.0	3000	45.0	22 months
B	EE Project – Heating		-					
8	Waste Hear Recovery –Compressor	2018	-	692,450	24.24	1494	43.0	22 months
9	High Temperature Heat Pump	2019	-	148,225	5.19	319	10.6	24 months
10	Installation of MD Technology	2021	-	300,000	12 .0	607	32.5	33 months
Total (A+B)			**5,897,615**	**1,140,675**	**76 Mn Rs.**	**6727**	**147.43**	

Zero Investment Projects

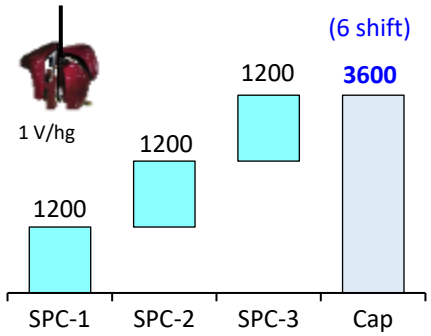
S.n.	Project Name	Year	Elect. Saving (Kwh / Yr)	LNG Saving (m3/ Yr)	Cost Saving (Mn Rs/ Year)	CO_2 Reduction (MT/Yr)
1	Separate Switch to Lighting at various locations	2018	43,930	-	0.28	37
2	Timer Base Light Control at various locations	2018	1,43,167	-	0.90	122
3	Power saving by Auto reducing the ASU & Exhaust fan frequency during Lunch break.	2019	3,06,222	-	1.93	260
4	Use the Sludge pool booth water curtain line to primer zone water curtain	2019	1,63,943	-	1.03	139
5	Temperature Based Control of Compressor Cooling Tower Fan	2020	27600	-	0.17	23
6	TVR Design change in MEE for optimize consumption	2021	-	828,00	2.90	177
Total			**684,863**	**828,00**	**7.21**	**581**

Save 83 Mn INR / Year by Energy Efficiency Projects

Background – Innovative project

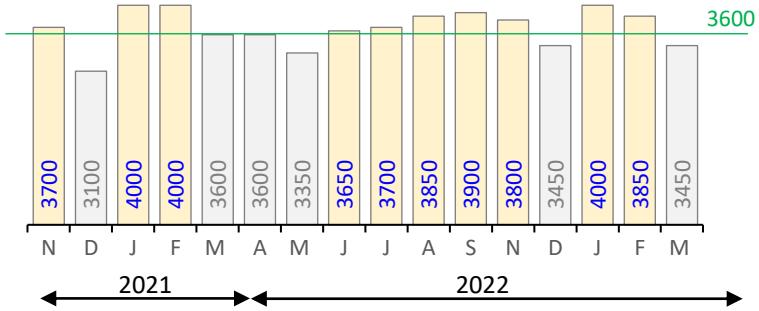
Situation Analysis

SPC line current capacity (veh)



Capacity- 3600 vehicles (6 shift)

SPC line prod volume (Activa 110 + Activa 125) – Production



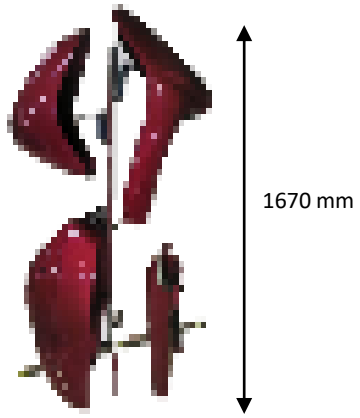
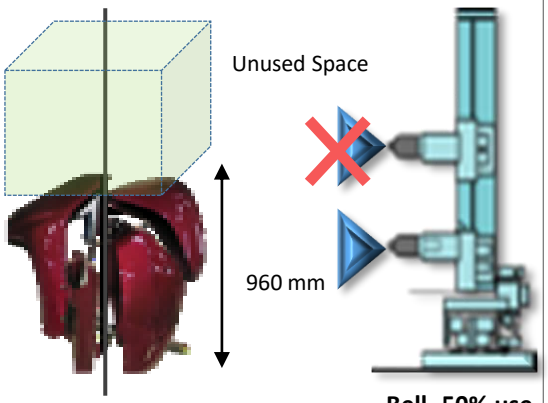
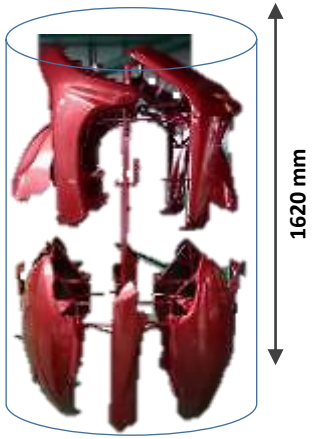
Sales demand high during festive season

In order to achieve Peak production

Cat.	Concern / Challenges
Environment	➢ High Energy Consumption ➢ Generation of waste
Quality	➢ Less time for preventive maintenance ➢ Dust generation → Booth pit & water curtain cleaning time NA
Mgmt.	➢ Daily overtime – 175 man hr. (C-shift)

Need to increase SPC capacity

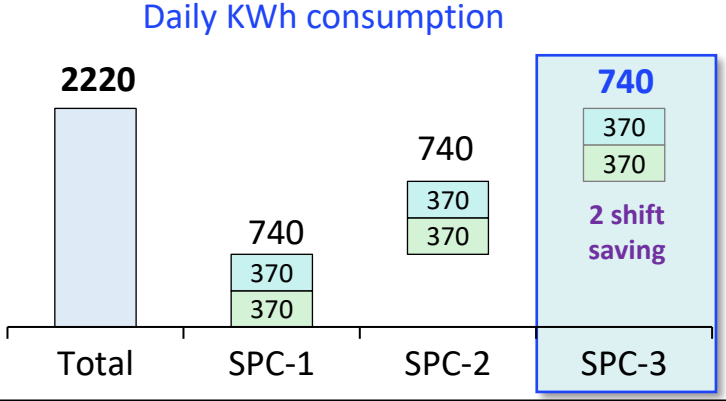
Idea generation

Year	2016-17	2018 - 19	2021-22
Loading Pattern	KWP &K24  **1 Veh / hgr** **Global Honda concept-** Same as 3F	KWP &K24  **Bell -50% use** **1 Veh / hgr** **CR Theme :** T.E 30% to 38%	K0L & K0P K0L & K0P  **2 Veh / hgr**

SPC line part loading capacity doubled…

Environmental Impact

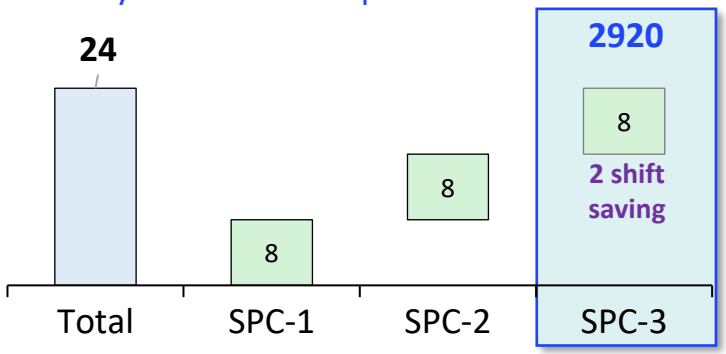
Carbon Footprint



KWh saving /day	740 KWh
KWh saving/yr.	2,00,000 KWh
Carbon emission reduced /Yr.	1,43,200 kg/Yr.
	149 Ton /Yr.

149 Ton/Yr.

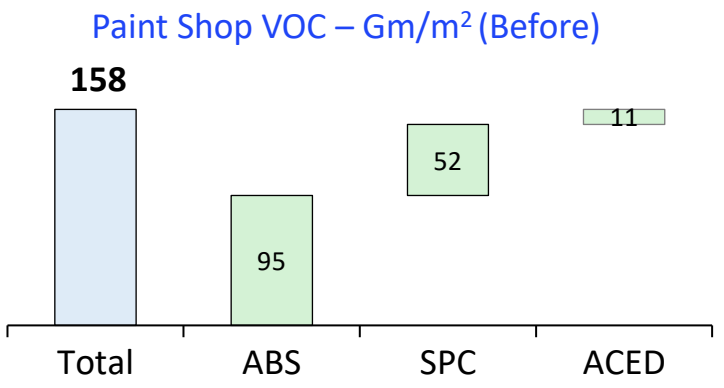
Water Saving

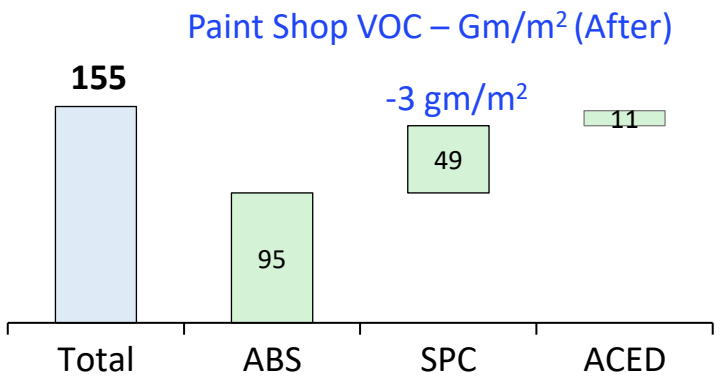


Water /day - ASU	8 KL/day
Water/yr. -ASU	2160 KL
Water/Yr. - Primer	520 KL
Water/Yr. – Sludge Pit	240 KL
Total	2920 KL

2920 KL /Yr.

VOC 's reduction



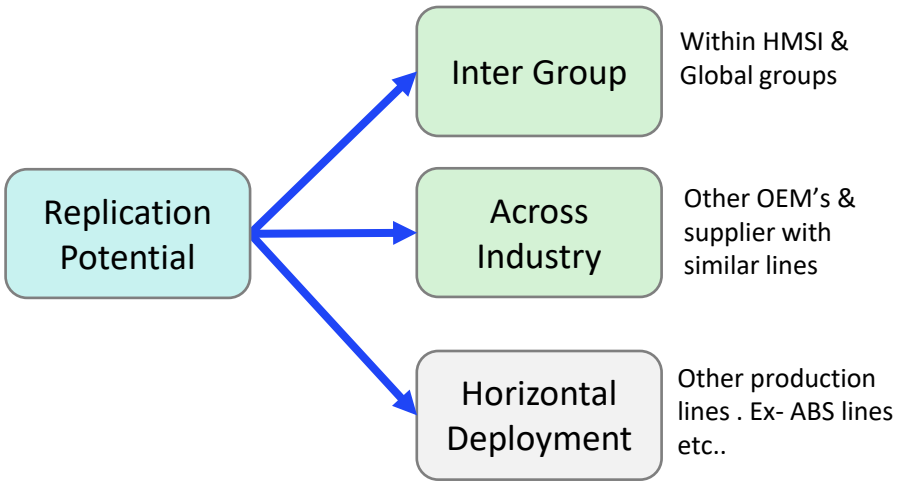


3 gm/m2
(Till now)

Significant positive environment impact by reduction in all key aspects…

Replication Potential

Potential Areas



Inter Group

HMSI Factories India (Shared via HMSI BUKAI function)

1F-Manesar	2F-Tapukara	3F-Narsapura	4F - Vithalapur
			
NA	Applicable	Applicable	●

Global Honda Group's [Shared via A&O PAPO BUKAI meeting)

Indonesia	Vietnam	Thailand	Philippines	Bangladesh
				

Across Industry

Feasibility can be checked across other OEM's with similar parts

- Similar scooter models across OEM's in India
- All models have similar sheet metal parts
- Feasibility for painting pattern in 2 veh/hg condition can be checked

Horizontal- Other Lines

Taking Cue from success of this project, we have now targeted ABS lines (Plastic parts) for similar concept implementation…

Veh/hg – 2.5

Veh/hg – 4.0

This theme has huge replication potential within HMSI & across other automobile industries..

Renewable Energy – Future Plan

Honda Environmental Vision

Carbon Neutrality

CO2 emissions, net zero

Triple Action to Zero

Resources Circulation

100% use of sustainable material

Clean Energy

100% utilization of clean energy

Clean Energy

100% utilization of carbon free energy by 2050

100% RENEWABLE ENERGY

Windmill

2020-21

60%

- 4.7 MW (Capx.)
- 1.8 MW (Opex.)

Solar

2018-19

22%

7MW (Factory Rooftop)

Hybrid (Wind- Solar)

2022-23

70%

Hybrid

2.7 MW Wind + 1.5MW Solar

2024-25

100%

- 2.7 MW Windmill
- 8.4 MW Hybrid (5.4 MW Wind + 3.0 MW Solar)
- 2.0 MW Solar (L3 Rooftop)

Govt. Policy (Renewable Energy)

(Solar , Wind & Hybrid)

Feasibility

Elect. Demand

Renewable Energy Target 70% till 2023

Renewable Energy – Solar Plant

5 MWp Solar Power Plant

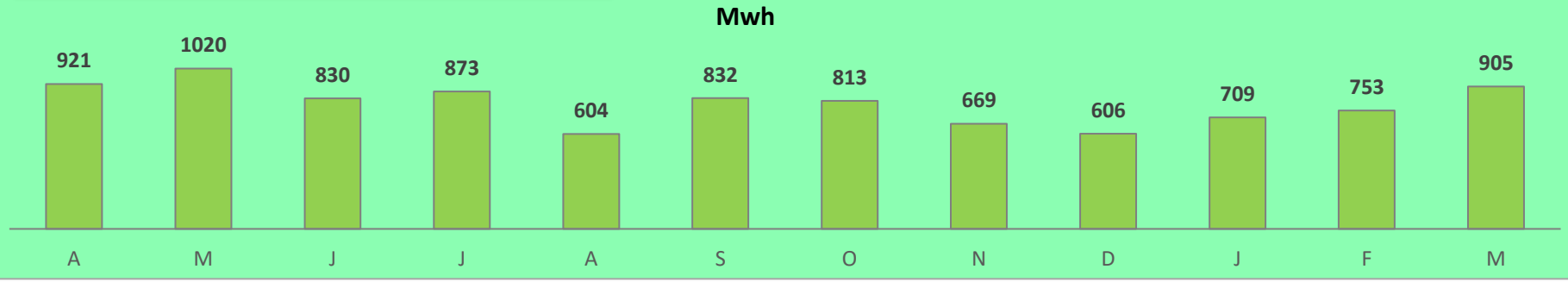
- Installation Date : Sep'18
- Roof Area : 40,000 Sq m
- Annual Elect. Generation : 72 Lac Kwh
- Power Generation Voltage : 480V
- Power Evacuation : 11kV

2 MWp Solar Power Plant

- Installation Date : Jul'19
- Roof Area : 16,000 Sq m
- Annual Elect. Generation : 23 Lac Kwh
- Power Generation Voltage : 480V
- Power Evacuation : 415 V

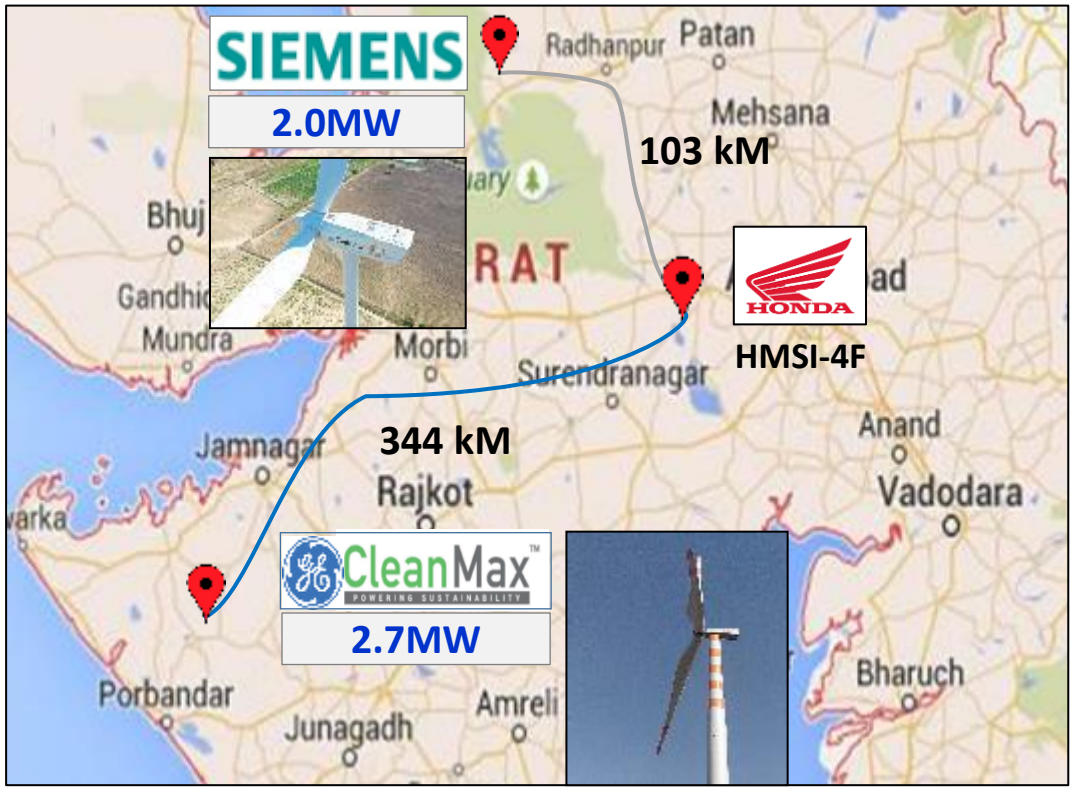
Solar plant Power Generation Trend-7MW

Yearly Electricity :95 Lac Kwh



Solar Generation 95 Lac kWh/ Year

Renewable Energy- Wind Power Plant

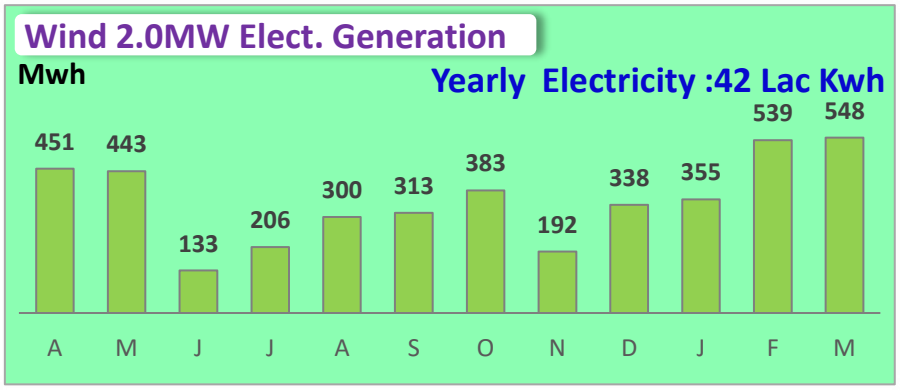


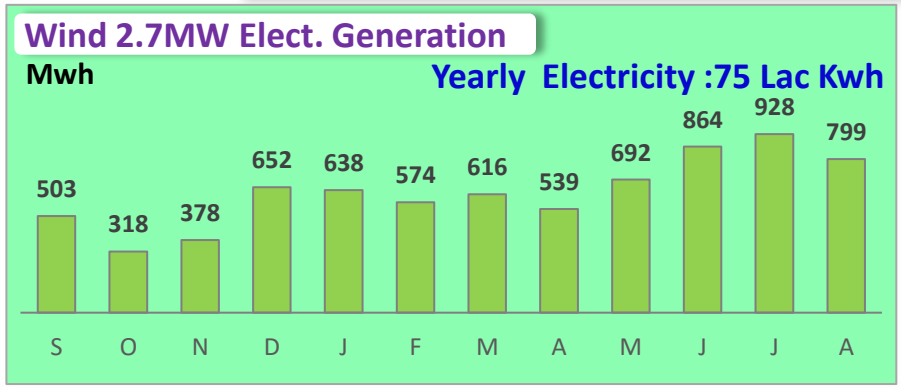
2 MWp Wind Power Plant

- ❑ Installation Date : Jun'20
- ❑ Project Location : Patan
- ❑ Annual Elect. Generation : 42 Lac Kwh
- ❑ CO2 Reduction : 3,133 TON

2.7 MWp Wind Power Plant

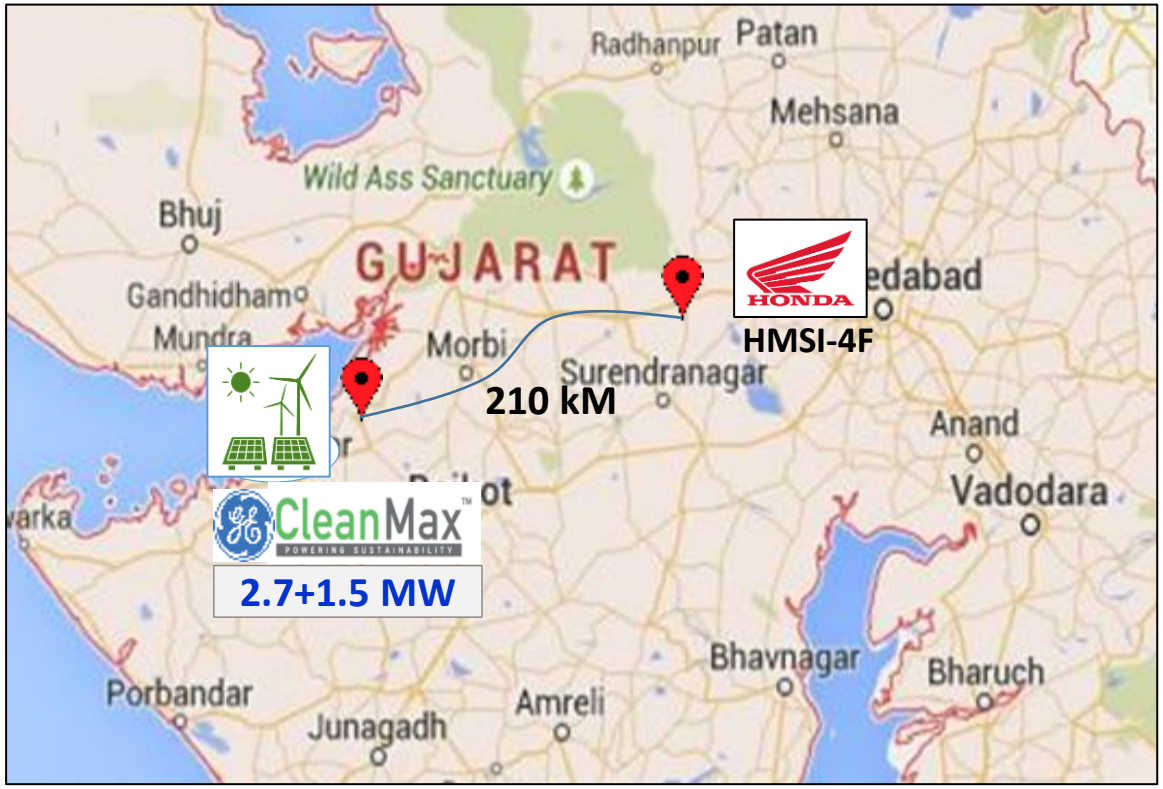
- ❑ Installation Date : Sep'21
- ❑ Project Location : Dwarka
- ❑ Annual Elect. Generation : 75 Lac Kwh
- ❑ CO2 Reduction : 5,595 TON





Windmill Generation 117 Lac kWh / Year

Renewable Energy- Hybrid Power Plant

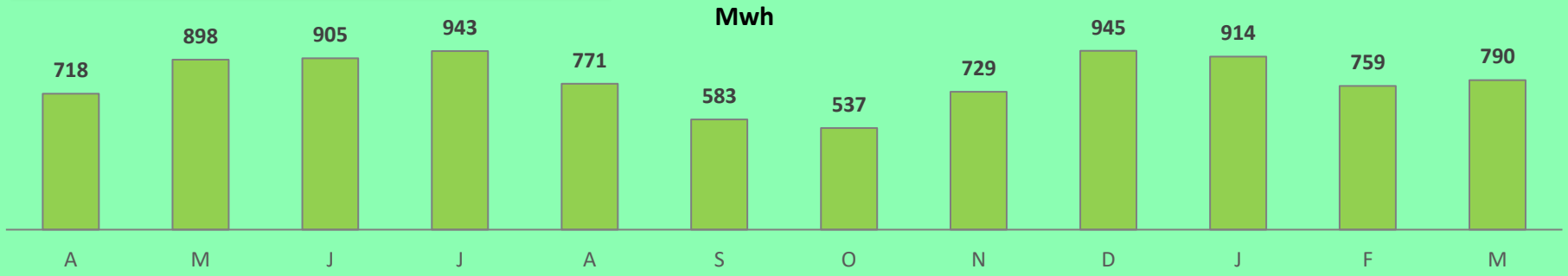


2.7 +1.5 MWp Wind-Solar Hybrid project

- ❑ Installation Date : Mar'23
- ❑ Project Location : Jamnagar
- ❑ Annual Elect. Generation : 100 Lac Kwh
- ❑ CO2 Reduction : 7,222 TON

Plan Generation trend of Hybrid Project

Yearly Electricity :100 Lac Kwh



Wind-Solar Hybrid project Generation 100 Lac kWh / Year

HONDA
The Power of Dreams

HMSI ENVIRONMENT POLICY

As responsible members of society and industry, we Honda Motorcycle and Scooter India Pvt. Ltd. (HMSI), manufacturer of two wheelers, recognize that well being of human and conservation of earth's environment is important. By adopting Environment Management System, HMSI is fast moving towards realization of Honda's Green Factory Concept.

We shall endeavour to continually monitor, improve and conserve the environment in which we operate. HMSI is committed to achieve, environmental excellence in all its activities related to products & services in the following ways.

- Conserving and protecting the environment by preventing pollution at its source of generation and strengthening our existing pollution control system.
- Promote activities for reduction of water consumption, CO2 emission and usage of renewable energy for conservation of resources such as electricity, water and fuels.
- Adopting 3 R principle – Reduce, Reuse & Recycle in all processes thus minimizing waste generation.
- Fulfil all applicable legal / regulatory requirements and compliance obligations and strive to go beyond wherever possible.
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HMSI will continually improve its environmental management system following PDCA cycle to make it more effective. The policy will be well communicated to our employees as well as persons working on our behalf and to the general public.

Date : 01-11-2017
Place: Gurugram

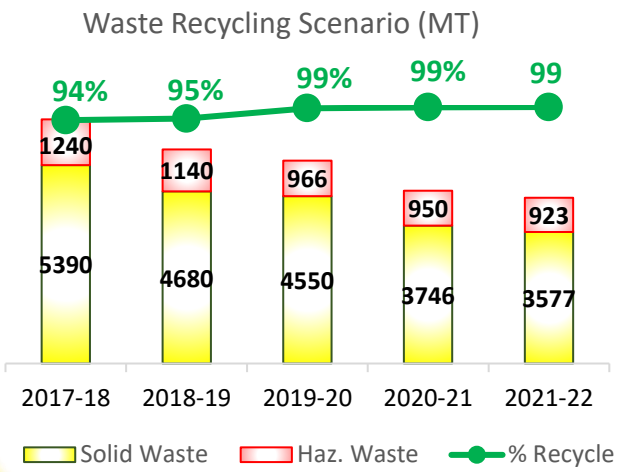
Promote activities for reduction of Waste

President & C.E.O

HMSI Environment policy consist Waste management

Waste & VOC Reduction Activities

Waste Generation Trend

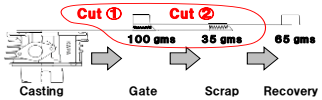


Major Waste Reduction Activities

Co-processing of Incineration Waste

Reuse : 700 MT/Year

Al. recovery in DC



Recovery : 39 MT/Year

Sheet Metal Blank Size Reduction

Red. : 800 MT/Year

Sludge Drying

Recovery : 100 MT/Year

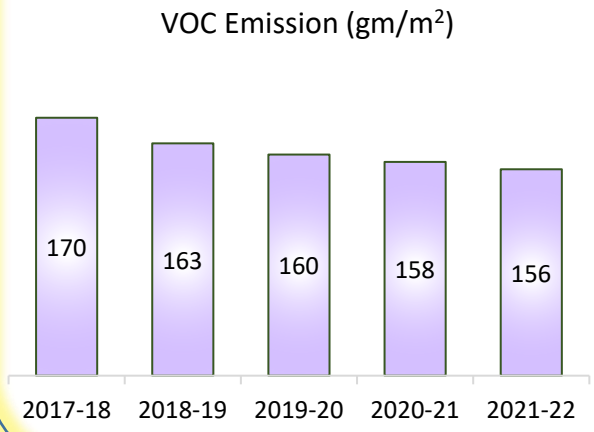
Bio-composting of Organic Waste

Reuse : 144 MT/Year

Avoid Single Use Plastic in packing

Reuse : 10 MT/Year

VOC Emission Trend



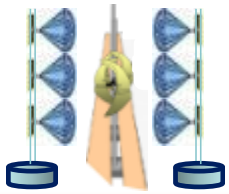
Major VOC Reduction Activities

Waste Thinner Recovery

Impact : 4 gm/m²

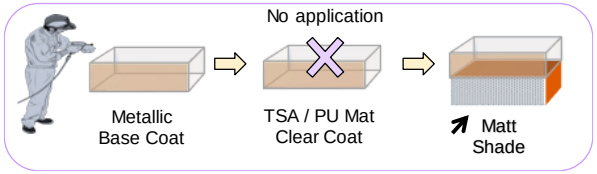
Primer less Technology

Impact : 3 gm/m²



Mono-coat System

Mono-coat System



Matt Finish 2 gm/m²

Shine Finish 2 gm/m²

Improve Bell cup eff.

Impact : 1 gm/m²

Aiming 100% recycling of both hazardous & non-hazardous waste with zero waste to landfilling

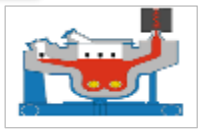
GHG Management System: Scope 1 Calculation

SCOPE 1
Calculation
Datasheet

Sources



HSD: DG & Forklifts



LNG: MF,HWG's & Canteen



Gasoline: Veh.Test.



Other's: CO2 filling & Refrigerant

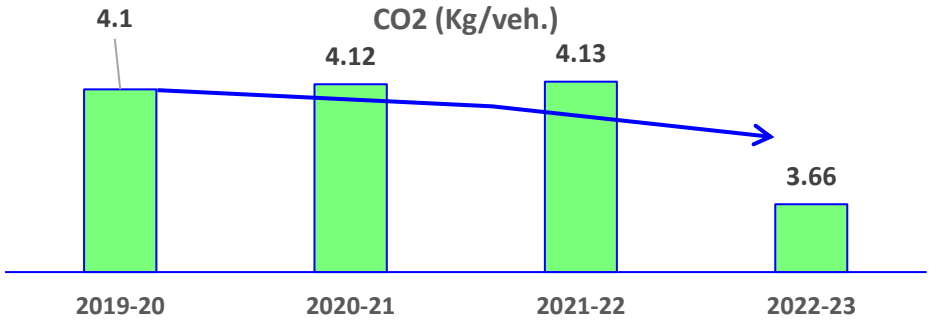
Calculation

Year	CO2 from HSD (Ton)	CO2 from LNG (Ton)	CO2 from Gasoline (In Ton)	CO2 from Fire cylinder (Ton)	Total CO2 Emission (In Ton)/Year	Production (Nos. of Scooters & Scooterettes)	KG/ veh.
2019-20	24.06	4280.48	383.06	0.23	4687.83	11,41,780	**4.10**
2020-21	23.38	3482.50	370.26	0.71	3876.85	9,40,071	**4.12**
2021-22	22.90	3361.88	414.85	0.53	3800.16	9,19,459	**4.13**
2022-23	33.25	2987.15	366.21	0.45	3387.06	9,24,644	**3.66**
Total					**15,750**		

CO2 emission factor:

Sources	CO2 emission factor
HSD	2.68
LNG	2.84
Gasoline	2.3
CO2 fire cylinder	45 Kg/Cylinder

CO2 Factor Source: ASH, Sarasin Headquarters office, Thailand



Total 25,400 ton CO_2 emission in last 3 years.

GHG Management System: Scope 2 Calculation

Sources

1: Electricity consumption from Grid

SCOPE 2
Calculation datasheet

Calculation

Year	Grid supply (MwH)	CO2 factor	UOM	Total CO2 Emission (In Ton)/Year	Production (Nos. of Scooters & Scooterettes)	Kg/ Veh.
2019-20	37,048.6	0.8	Ton of CO_2/ MwH	29,638.88	11,41,780	**25.96**
2020-21	18,158	0.79		14,344.82	9,40,071	**15.25**
2021-22	16,137.33	0.79		12,748.49	9,19,459	**13.86**
2022-23 (Till Dec'22)	17,862.92	0.79		14,111.71	9,24,644	**15.26**
Total	**89,205**			**70,841**	**39,25,954**	

CO2 Factor Source: ASH, Sarasin Headquarters office, Thailand

Electricity consumption from Grid supply is considered in scope 2 CO_2 emission.

GHG Management system: Scope 3 Calculation

Sources



SCOPE 3:
Calculation Datasheet

Scrap Mgmt., Haz. waste disposal, Employee commute & Suppliers & Dealers

Calculation

Years	Scrap: CO_2 emission (In Ton)	Haz. waste: CO2 emission (In Ton)	Suppliers: CO_2 emission (In Ton)	Dealers: CO_2 emission (In Ton)	Employee commute: CO_2 emission (In Ton)	Total CO_2 emission (In Ton/Year)
2020-21	94.21	73.21	107.85	24,211.98	263.07	24,750
2021-22	180.27	112.25	109.05	18,247.23	325.54	18,974
2022-23	162.32	93.27	107.82	19,324.33	293.23	19,980
Total						**63,704**

Calculations from Scope 1, 2 & 3 CO2 emission

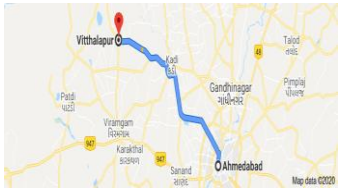
Scope 1 (Fuel resources)	**Scope 2** (Grid supply)	**Scope 3** (Waste disposal & suppliers)	**Total (Scope 1,2 & 3)**
Fuel consumption	Grid supply	Waste disposal, employee commute, Dealer & Suppliers end	1,50,295 Ton
15,750 Ton	70,841 Ton	63,704 Ton	

Total CO2 emission from Scope 1, 2 & 3 is 1,50,295 Ton for the period of Last 3 Years

Our leaders opting car pooling instead of their individuals cars

Key Project Results:

14 Cars were not used out of 26 Cars



Distance from Ahmedabad to Vithalapur: **80 Km**
2240 Km's usage saved everyday

150 Ltrs. of Petrol saved

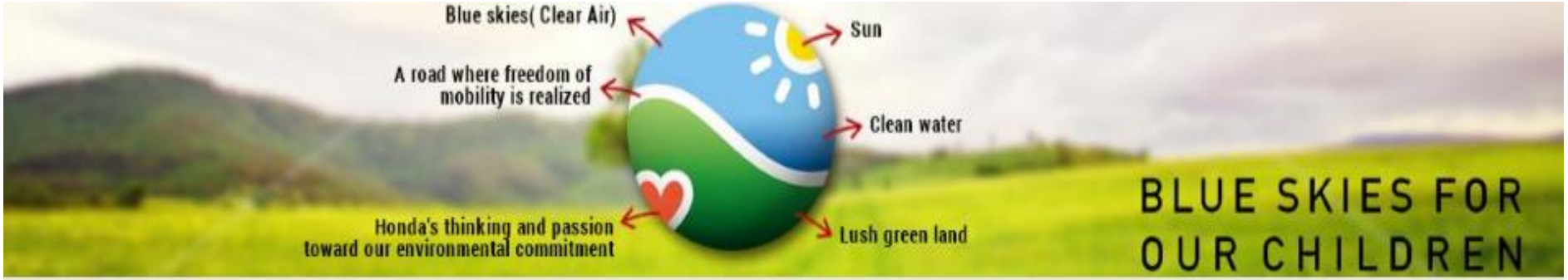
424 Kg's of CO2 emission saved everyday (**114 Ton** CO2 saved per annum)

Daily 70 Kms saved due to club of Kalol bus with Kadi bus used for employee commute

18,200 Kms reduced per year.

37.03 Kg's of CO2 emission saved everyday (**9.62 Ton** CO2 saved per annum)

They have done their bit for a greener future!!!



Small Initiatives taken by Top Management to save Mother Earth.

➢ Green Supply Policy

❑ Green supply chain commitment

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Date : 01-11-2017
Place: Gurugram

President & C.E.O

❑Honda Green Purchase Policy

II. Honda Green Purchasing Policy

For Honda, activities to conserve the global environment establish an important pillar in our corporate policies. Our goal is to reduce our environmental footprint over the entire life cycle of our products, from product development to purchasing, production, administration, transportation, and to sales and recycling.

To carry out these activities effectively, we are continuing to take strong measures to reduce our environmental footprint in each area, together with our suppliers. We are also adding E (Environment) to our supplier evaluation categories (*1) of Q (Quality), C (Cost), D (Delivery) and D (Development) to allow us to more actively encourage purchasing environmentally friendly parts and materials.

Below is a list of the individual areas in Honda green purchasing activities.

- Environmental management activities to ensure environmental control for products (parts and materials) and corporate activities
- Corporate activities (*2) to supply these products (parts and materials) (Development, Purchasing, Production, Administration, Transportation, Sales, Recycling)
- Products (parts and materials, etc.) purchased by Honda

Collectively, these are referred to as the areas of our environmental activities.

For each area, the overall purchasing activities of sharing policies with suppliers and achieving targets together are called Honda green purchasing activities.

(*1) The results of activities at each supplier in response to these guidelines may be evaluated.

(*2) Corporate activities cover all activities related to Honda products (including not only first-tier but also sub-tier suppliers).

Target setting done for supplier's awareness improvement

CO2 Reduction Activity Status

❑ CO2 Reduction Guidelines

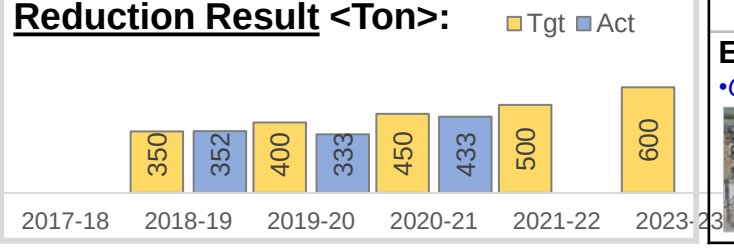
Objective:

*Reduce the **Global Warming** through energy saving initiatives.*

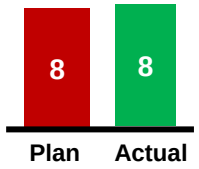
Reduction Target @ 1% Per Year

Target Area :

Reduction Result <Ton>:



❑ FY22-23 Activities Schedule

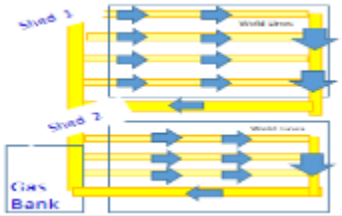
Major Activities	Unit	Tgt. Date	Status
Splr Selection for 95ki activities <4F>	4 Splrs	**Aug'22**	O
Slimoffice Nomination <HO Drive> (Representative & Approver)	55 Splrs	**Oct'22**	O
Slimoffice Registration & User id distribution <HO Drive>	55 Splrs	**May'22**	O
Training & Target Explanation	New Splrs / Person change	**Jun'22**	O
Splrs 96ki CO2 Data Collection <4F> • *To calculate CO2 Reduction of 94ki as per ASH/HM Japan guideline)*		**Mar'23**	O
Environment Award 95ki <HO Drive> *•On the basis of Suppliers GHG Rating*  • Evaluation of implemented c'measures • Verification of documents • Genba & proposing good reduction ideas		**Feb'23**	O

❑ Examples of CO2 Reduction Kaizens

IGBT Type Rectifier

PNG Melting Furnace

Co2 Main Line loop closed



Energy Efficient Compressor

CO2 Reduction activities are in progress as per ASH / HM Japan Guidelines

❑ Corrugation Box Reduction

Objective:

*Reduce the **Paper Use** through Corrugation Packing reduction*

Reduction Target @ 1% Per Year

Target Area :

❑ FY 22-23 Activities Schedule

Major Activities	Unit	Tgt. Date	Status
Splr/Part Selection for 99ki activities <4F>	4 Splrs	**Appril'22**	O
Training & Target Explanation	4 Splrs	**Jun'22**	O
Splrs 99ki Corrugation Box use Data Collection <4F> • *To be used as base for next years*	4 (Plan) / 4 (Actual)	**Mar'23**	O

❑ Examples of Corrugation Box use Reduction

Packing Corrugation → PP Box

Packing Corrugation → PP Box

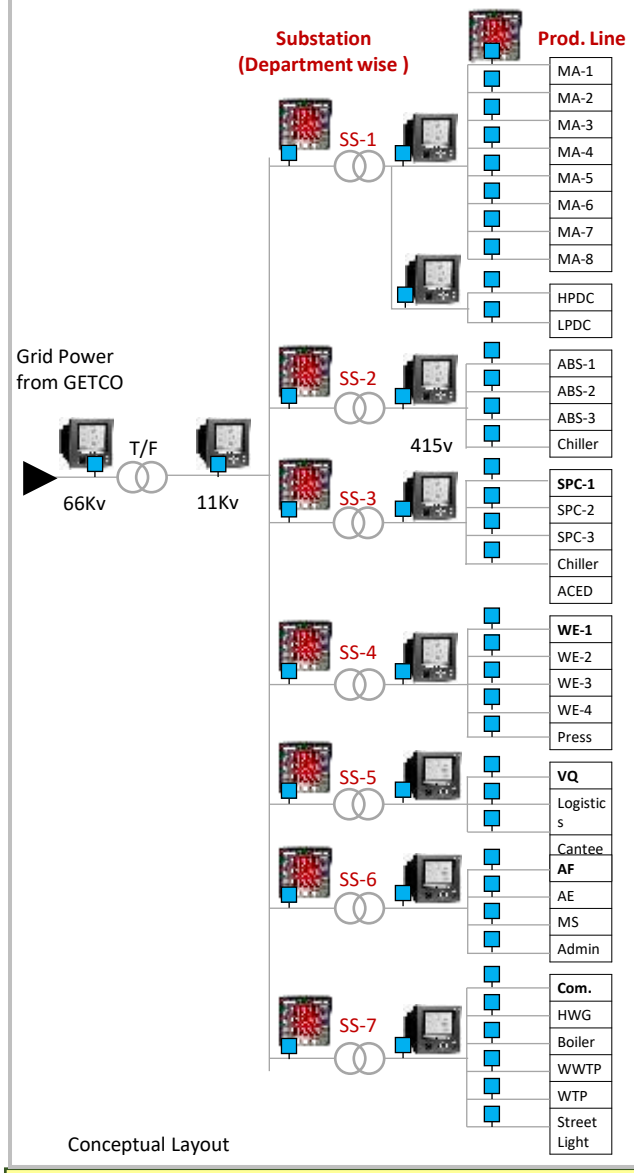
Corrugation → PP Bin

Reuse of Corrugation box

Corrugation Box use reduction is in progress

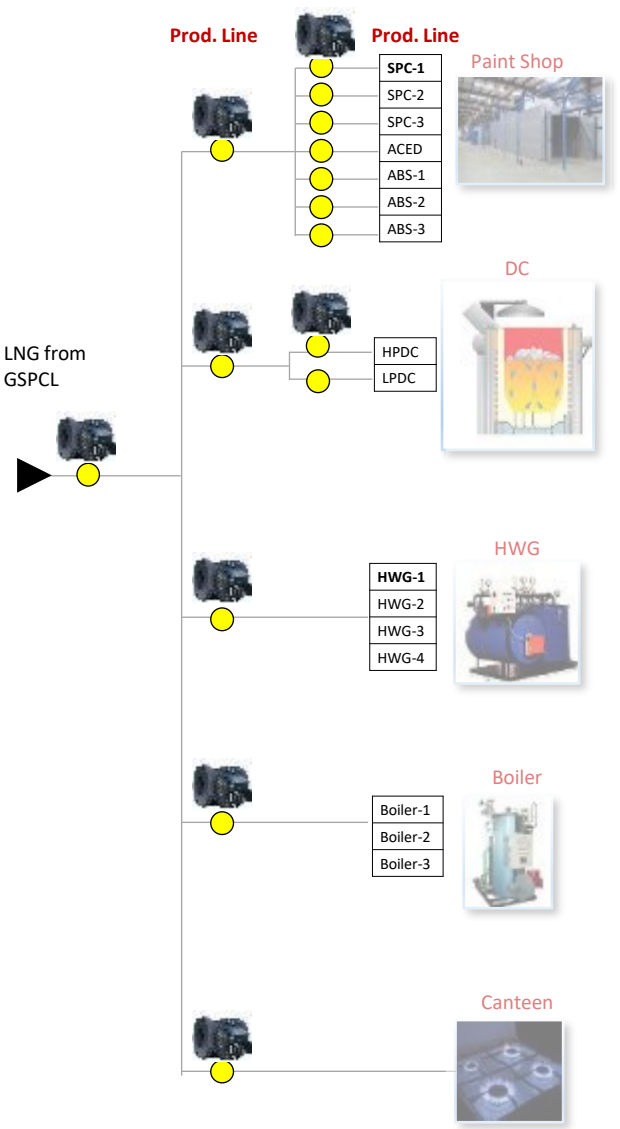
Energy Monitoring System

Electricity Monitoring (Line wise)

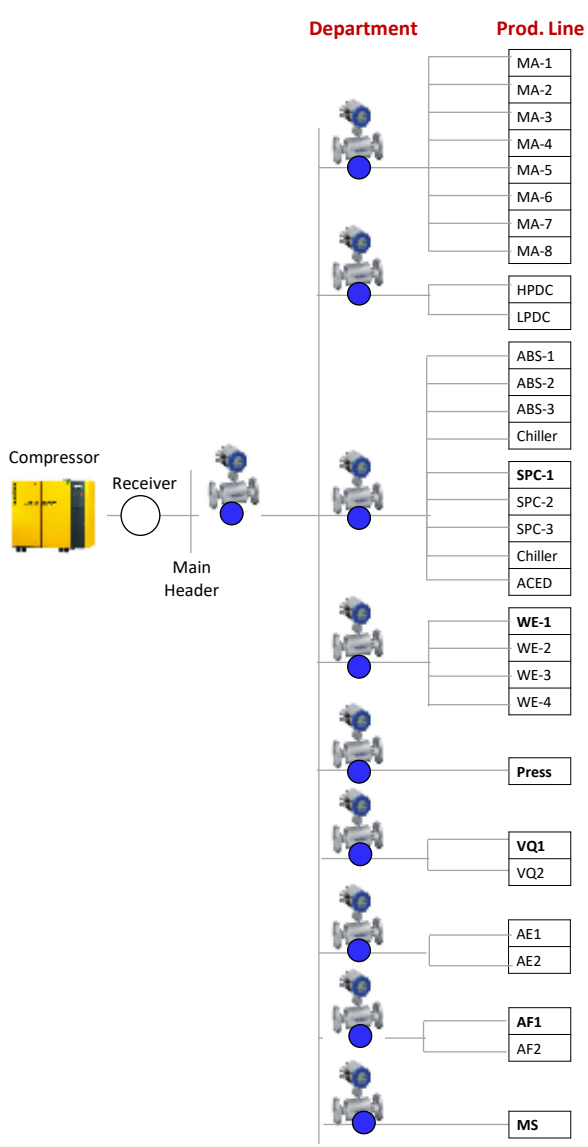


Conceptual Layout

LNG Monitoring (Line wise)



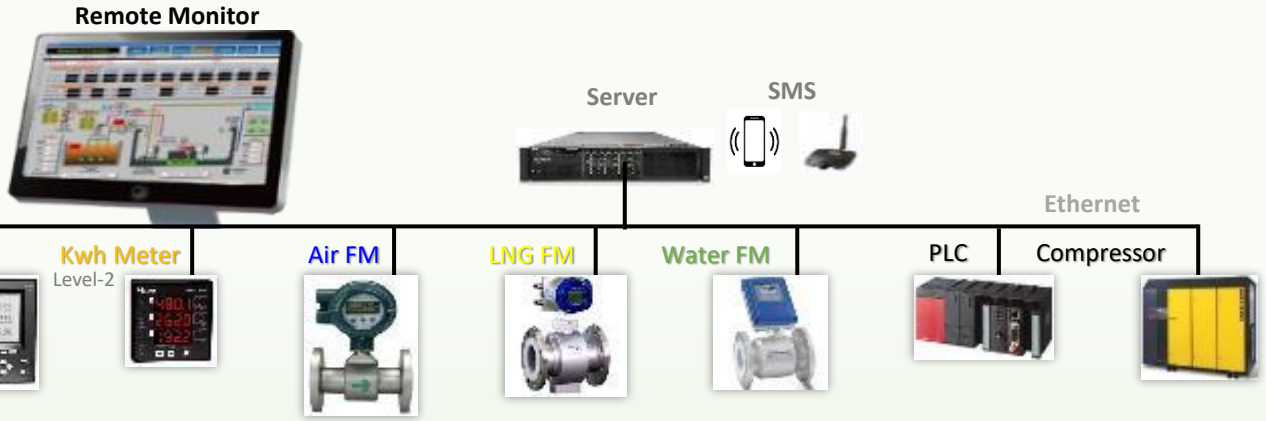
Compressed Air (Department wise)

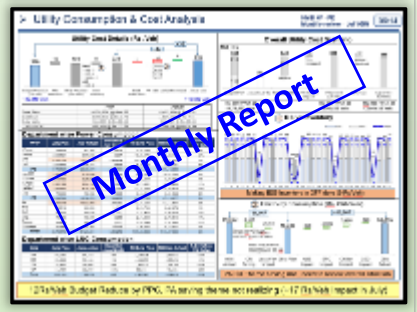


Production Line wise Energy Monitoring

Energy Monitoring System

Monitoring System





Energy and Efficiency Monitoring

- ❑ Kwh , Water , LNG and Compressed Air
- ❑ Online Compressor Performance
- ❑ Electric Distribution Loss
- ❑ Monitoring of Heat Recovery
- ❑ Compressed air leakage monitoring

Energy Review

- ❑ Daily Report to all users
- ❑ Plan vs Actual Energy Gap Analysis review by Plant Head

Portable Instruments

Power Analyzer

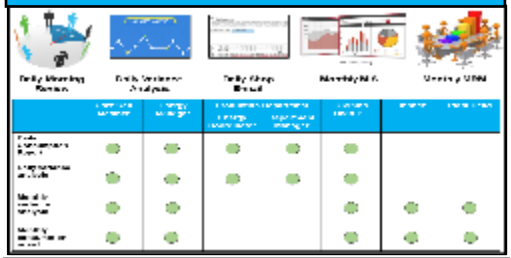
Thermal Camera

Temp logger

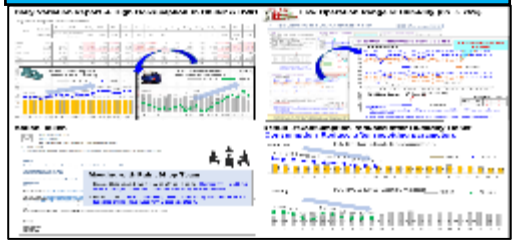
Automation in Energy Monitoring System

Energy Management Concept

Management Review



Variance Analysis



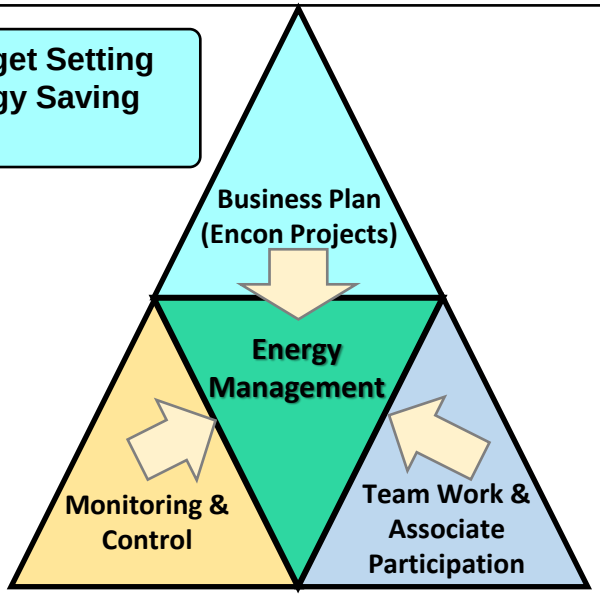
Yearly Action Plan

Level 3	Level 4	Measures	C.I.	PIC	Yearly saving	Q1	Q2	Q3	Q4
Cost Reduction C	Use of Renewable Energy	Project Investment	Saving	-	-	-	-	-	-
CR Theme - 60Mn	99ki Saving - 16 Mill. Rs.	Wind Solar Hybrid Project Rs.285 Mn	Mn	PP	66	-	-	-	10
		Solar Heater for HWG Rs. 39 Mn	Mn	LC	12	-	-	3	3
	Energy Optimization	Energy Saving Project	Saving	-	-	-	-	-	-
	99 Ki Saving - 44 Mn. Rs.	Hybrid Air Conditioner Rs.8 Mn	Mn	HV	19	-	4	6	9
		Monocoat saving Rs. 2.0 Mn	Mn	SM	1.8	-	-	-	1.8
		WHR use in Washing Machine Rs. 1.5 Mn	Mn	SM	1.5	-	-	-	1.5
		Elimination of RO process Rs. 1.3 Mn	Mn	AD	1.3	-	-	0.5	0.8
		Trickle fills in Cooling Tower Rs. 1.0 Mn	Mn	SM	1.0	-	0.2	0.4	0.4
		Hydroxy Generator in LNG Rs 0.8 Mn	Mn	SM	0.8	-	-	0.3	0.5
		A/W duct leakage sealing Rs. 0.8.Mn	Mn	SM	0.8	-	-	0.3	0.5
		Phytoremediation in STP Rs. 0.7 Mn	Mn	HV	0.7	-	-	0.3	0.4

Energy Committee

Score Card

- Energy Target Setting
- Major Energy Saving Projects



- Daily Energy Reports
- Variance Analysis
- Monthly Review

- Energy Committee
- Identify & Reduce Wastages

PDCA approach in Energy Management System

Energy Monitoring and Control

Daily Morning Review

Daily Variance Analysis

Daily Shop E-mail

Monthly MIS

Monthly MRM

	Core Cell Member	Energy Manager	Production Department		Division Head-PE	Finance	Plant Head
			Energy Coordinator	Department Manager			
Daily Consumption Report	●	●	●	●	●		
Daily variance analysis	●	●	●	●	●		
Monthly variance analysis	●	●			●	●	●
Monthly consumption report	●	●			●	●	●

Comprehensive review mechanism in place for energy consumption

Environment Awareness Activity

Annual Event Calendar-99ki

BLUE SKIES FOR OUR CHILDREN

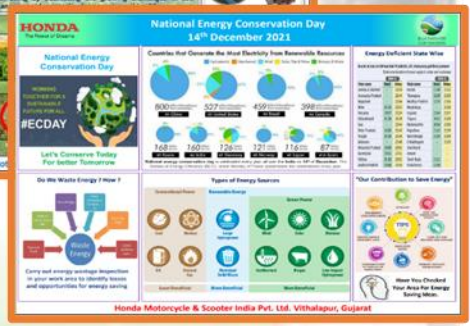
Jan
National Cleanliness Day

Dec
1.Bhopal Gas Tragedy Day
2.World Soil Day
3.Energy Conservation Day

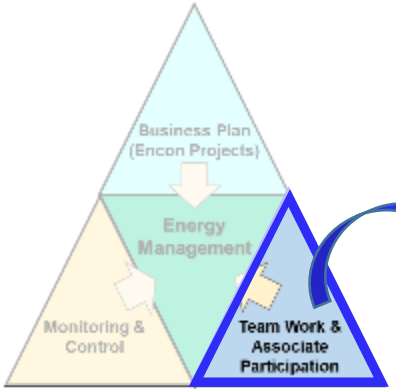
Sep
1.Blue Sky day
2.World Ozone Day
3.Green Consumer Day

July
Nature Conservation Day

June
World Env. Day



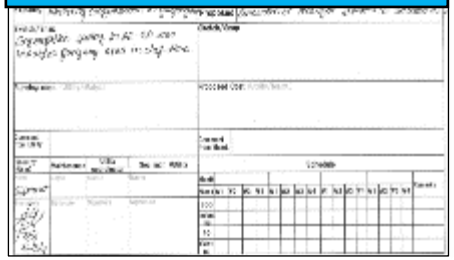
All Environmental Events Celebration done as per Schedule

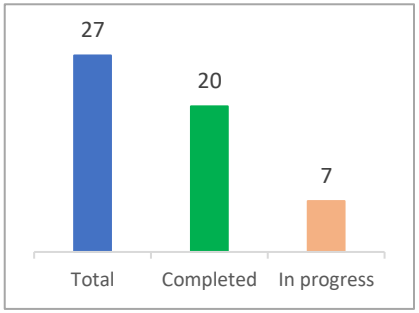


Energy Committee

Monthly Meeting

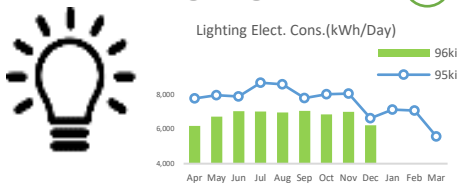
Suggestions



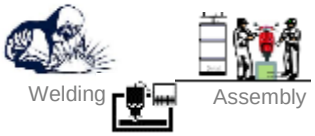


Suggestions

Lighting — 16



Equipment — 6



HVAC & Mis. — 5

Sr no.	Summary	Saving Kwh /Yr.	Cat.	Invest. (Rs)	Status
1	Use the Sludge pool booth water curtain line to primer zone water curtain	1,63,943		10,000	Done
2	Hydraulic Motor keep Off while no operation in machine in ideal condition	89,438		-	Done
3	Convert Booth inside tube lights into LED lights.	89,424		20,000	Done
4	Overhead light required timer .	62,928		10,000	Done
5	Providing the VFD & control the frequency of UF Module Circulation pump.	45,954		-	Done
6	Paint shop's many area are having halogen light that need to replace with LED light	35,770		2,00,000	Done
7	Timer to be installed in Meeting room(2 nos.),Training room(1 Nos.),Office(3 nos.).	28,980		30,000	Done
8	DC maintenance required separate lighting switch to control.	16,560		-	Done
9	Electricity Saving in meeting room by OFF the AC between 2:30-03:30pm.	15,456		-	Done
10	Energy saving by separating CKD/CBU lights with rest MS area lights.	13,116		-	Done
11	Timer based ON/OFF of press shop over head lights.	12,420		-	Done
12	PPBS and inspection area lights are getting on in day time ,timer need to install.	10,201		-	Done
13	Required separate control of lighting in HPDC and LPDC RFD area.	8,280		-	Done
14	Lighting in deburring room controlled with timer.	7,154		10,000	Done
15	Energy Saving by separating marshal loading single lights with rest MS area.	5,299		-	Done
16	Timer based auto ON/OFF of over head lights in BOP trolley storage area.	4,968		10,000	Done
17	Light separation in tool room, Training Island area.	4,928		-	Done
18	Timer based auto ON/OFF of lights in Gas bank area.	1,060		-	Done
19	Lighting Pattern to be change in QC/EQ Lab.	848		-	Done
20	Power save when machine not in use. Separate socket for LPDC machine.	199		-	Done
21	Pool cord in reception area lighting.	1,303		-	In process
22	(B1 to B2) shift time auto stopping Drive motor of Conveyors.	-		-	In process
23	To reduce the elect. consumption by Tube lights connection separation in DC & MA	-		-	In process
24	To reduce the electricity consumption in Fume Exhaust System by installing timer	-		-	In process
25	Energy saving by increase natural light installing in weld shop	-		-	In process
26	Energy saving by control air leakages in weld shop	-		-	In process
27	Power saving by reducing the ASU & Exhaust fan frequency during Lunch break.	-		-	In process
	Total	**6,18,230**		**2,90,000**	

Teamwork and Participation of Associates in Energy Committee

GreenCo. Certification

Benchmark

1 Launch & Training

2 Self Assessment & Document.

3 Implement Best Practice

4 Handholding Visit & Pre-Assessment

5 Final Assessment

GreenCo. Platinum +
Score 930/1000

Benefit Summary

10,454 TON/YEAR

78,000 KL/YEAR

3 GM/M²

112 MILLION/YEAR

Key Learning

Prepare Plant Level Policy

Improvement Requires in Energy Monitoring

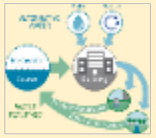
Should opt for ISO 50001

Work with Community to maintain Pond Water Quality

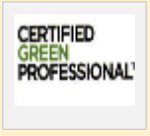
2022-23 Key Activities for Environment

Product Life Cycle Assessment

Carbon Neutrality



Water Neutrality



Certified Green Professional

Platinum+

Awarded Platinum Certification (World Class Company Rating) from CII

HMSI-4F Award & Achievement

Award

8thCII Most Innovative Environment Initiative Award 2021	Excellent Energy Efficient Unit by CII 22nd National Award	EKDKN 10th Exceed Award Environment Mgmt. 2021 – Platinum	Greentech Foundation 21st Annual Environment Awards – 2021	Golden Peacock Environment Mgmt. Award 2021 -1st Prize	CII Excellence in Renewable Management Awards 2022	12th Exceed Environment Management Award 2022
						

Achievement

Zero Waste to Landfill

Co-processing instead of landfill/ incineration of

- Paint Sludge
- Jig Stripping Sludge
- ETP Sludge
- Phosphate Sludge

Zero Ground Water Use

Using only river water & now started using rain water for industrial as well as domestic purpose

70% CO_2 reduction in last 5 year by

- 7 MW solar power
- 6 MW Wind Power
- Heat Recovery
- Energy Efficiency Improve

38% Green Cover inside plant

- 43,412 m^2 Tree Plant
- 13,699 m^2 Hedge Plant
- 11,830 m^2 Shrubbery Plant
  70,959 m^2 Lawn Area

Many award and achievement by 4F to show case how we care of environment

BLUE SKIES FOR OUR CHILDREN

Thank You...