HONDA
The Power of Dreams

CII National Awards For Excellence in Energy Management, 2021

Honda Motorcycle & Scooter India Pvt. Ltd. (HMSI)

Tapukara Plant

A Presentation By : 1. Manoj Ku. Singh 2. Sachin Agarwal

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The Power of Dreams

Contents of Presentation

SN	Contents	Slides	Time
1	Company Profile	1-2	1 min.
2	Energy Management	3-4	2 min.
3	Energy Data	5-13	4 min.
4	ECON Projects & Innovative Ideas	14-19	3 min.
5	Renewal & Green Energy	20-23	2 min.
6	GHG Emission, Green Supply, and Capacity Building	24-26	2 min.
7	Review Mechanism, Employee Engagement	27-29	2 min.
8	Way Forward	30	1 min.

Total 30 slides and time required for presentation is 17 Minutes.

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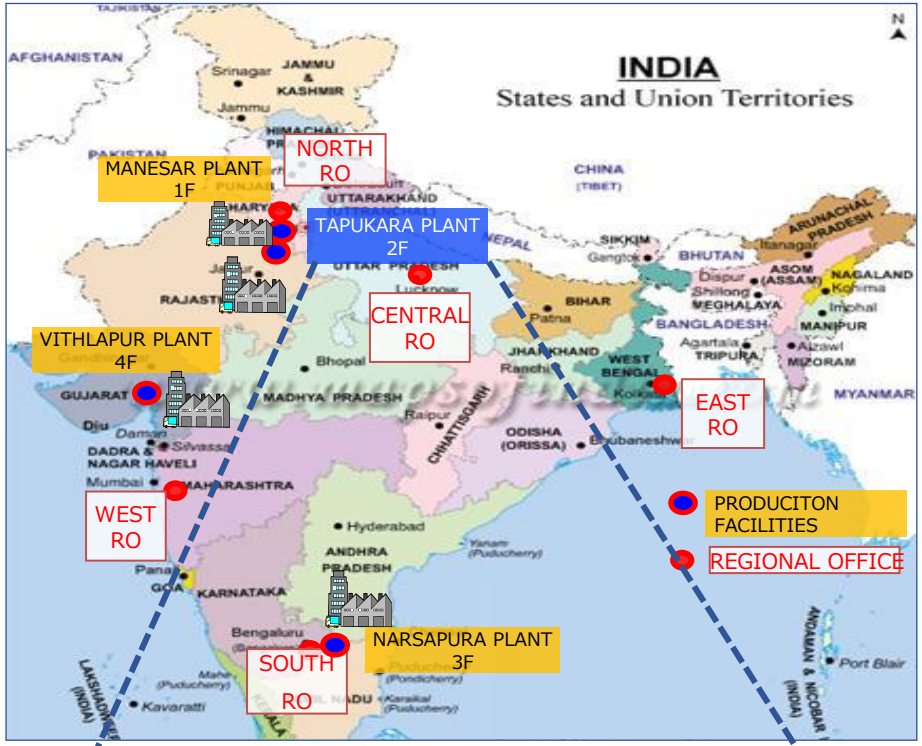
Company Profile



Plant	Mass prod Start	Planned Capacity	Area (Acre)
1F Manesar	2001	1.55 M	52
2F Tapukara	**2011**	**1.20 M**	**58**
3F Narsapura	2013	2.40 M	119
4F Vithlapur	2016	1.20 M	92

HMSI-2F (Tapukara)

SN	Particular	Details
1	Location	Tapukara, Raj.
2	Land area	239700 m2
3	Const. Area	114770 m2
4	Investment	925 M
5	Model	09 Model in 2 lines

HMSI 2F Initially started in 2011 with L1 (SC) in Step1 & L2 (MC) in Step2
HMSI 2F have become QCD Benchmark factory with a Capacity of 1.24 million Units/year

HMSI Tapukara Salient Feature

MA (PPT) → 241 M/c

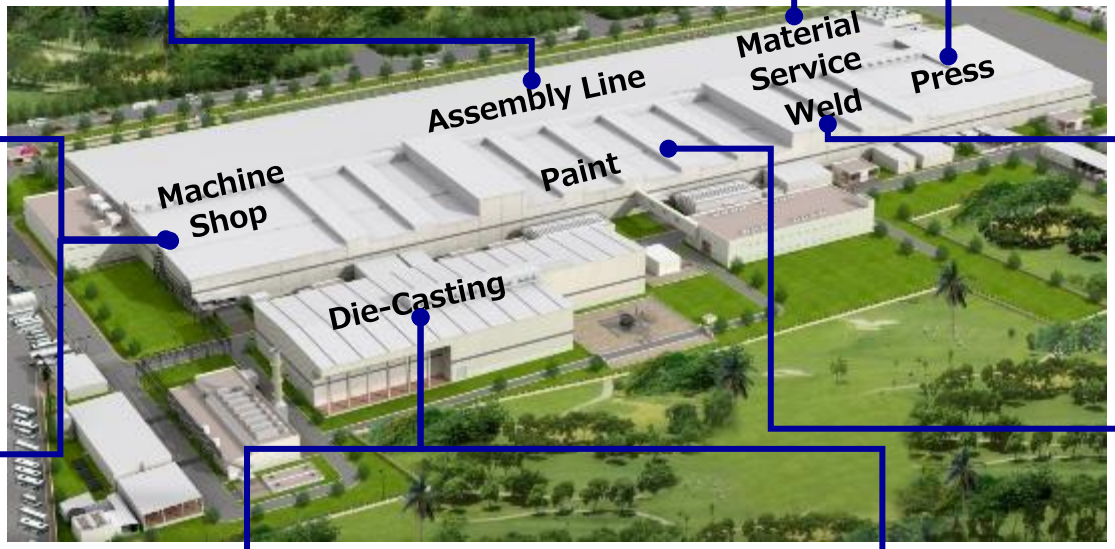
- Crank Case
- Cylinder Head
- Cylinder Comp
- Crankshaft

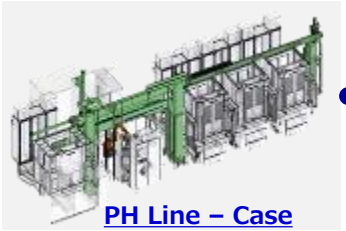
Marshal Conveyor

AGV

Press Shop

ATOS





PH Line – Case K0PA

Multi Gang head M/c

Robotic Welding

Reciprocating Bell

DC (PPT) → 11 M/c

- DC – 11
- MH & TR
- ETP

Manual Deburring

Auto Deburring

PB → 880 M/c

- Press & Weld
- Paint

All the available latest technology were incorporated to enhance the level of both Quality & Quantity with optimization of resource

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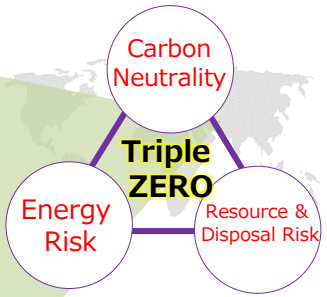
Environment Strategy & Deployment

Mr. Soichiro Honda
(Founder)

Mr. Toshihiro Mibe
(President & CEO)

Concept for Achieving Environmental Neutrality



2016
Playing a Leading Role in Reducing CO_2 Emissions

2010
New Honda Environmental Logo
Blue Skies for Our Children

1992
Released our First Honda Environment Statement

THE Clean Air Act

1970
World's 1st Automaker to comply with U.S. Clean Air Act

1960
Honda actively endeavoured to solve Environment problems.

1948
Honda was founded

GLOBAL TARGET

Carbon Neutrality	Energy Risk	Resource & Disposal Risk
CO_2 Emission net zero by 2050	100% utilization of carbon free energy by 2050	100 % use of sustainable material by 2050

Honda basic approaches to reduce environmental impacts not only in product design, development and manufacturing but in all stage of product life cycle.

Energy Policy Tapukara Plant

HMSI – 2F ENERGY POLICY

As responsible member of society, we at Honda Motorcycle & Scooter India Pvt. Ltd - Tapukara Plant will take every possible measure to eliminate wastage & Conserve energy. Our plant is committed in each of our manufacturing activity to:

- Substitute 100 % of our total energy requirement with renewable source of energy by 2050.
- Adopt energy efficient technologies & equipment for all future expansion & renovations.
- Implement intensive energy monitoring system, periodical audit & review system.
- Review periodically & compare our specific Energy Consumption with National/ International level bench marks to further drive the drive the idea of energy conservation.
- Continually improve energy efficiency through PDCA cycles & by setting short term & long term targets.
- Ensure sufficient information & resources are available to achieve the targets for energy conservation.
- Abide by the applicable legal & other requirements related to energy consumption.
- Promote awareness on the Energy Management System & propagate the energy policy among our employees, as well as persons working on our behalf & to the generic public.

Place : Tapukara

Date : 16-07-2021

Plant Head – 2F

Align our global commitment with plant specific policy and Continual PDCA and benchmarking is part of our policy.

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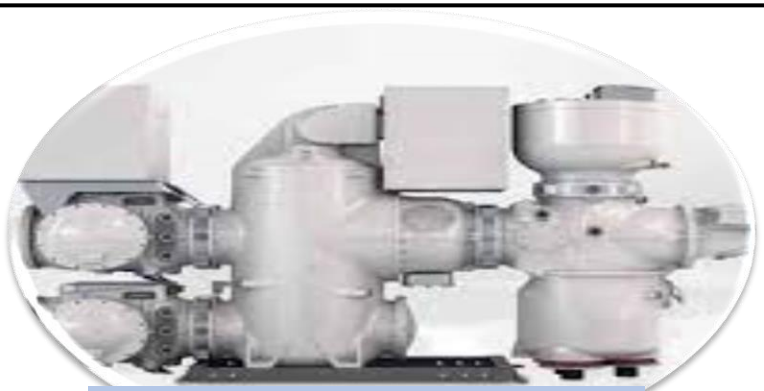
Energy Usage in Tapukara Plant

【Grid Electricity】



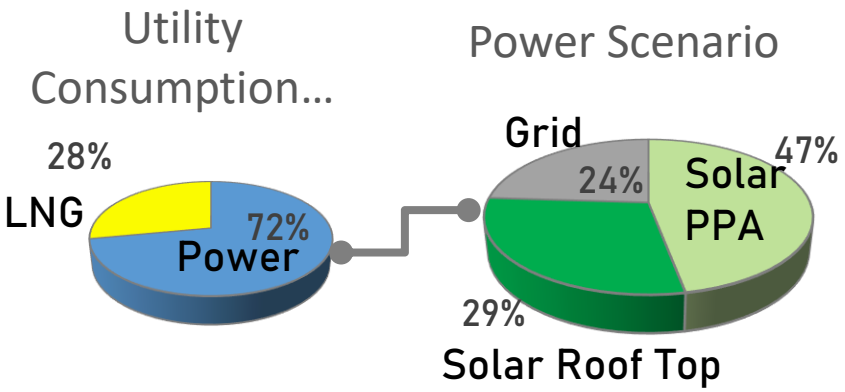
Grid Electricity - 132 KV GIS
Sanctioned Load : 12MVA

【In House Solar – 7 MW】

【Thermal Energy - LNG】

LNG
Yearly Consumption : 4MillSCM

【Overall Energy Contribution】



Energy Usage in Tapukara Plant : 72% Electricity (Solar and Grid) & 28% LNG

Energy Mix Flow Diagram

Grid Power-12MVA
132KV S/S (Grid + Solar PPA)

Source-1

71%

DG-12MVA@85% Loading

Source-2

1%

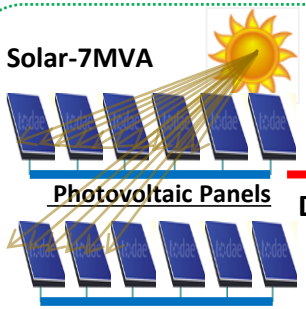
HT Room

Transformer
11KV/0.415KV

Plant

Source-3

Solar-7MVA



Photovoltaic Panels

29%

D.C

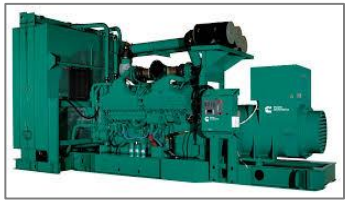
Inverter

Transformer
0.415KV/11KV

A.C
415V

Breaker1 Breaker2

A.C (11KV)

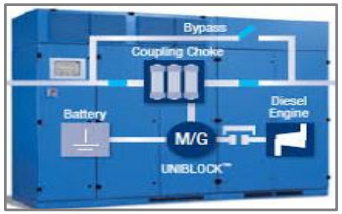


DG – 8 No's
2000KVA Each

HT – 68 No's
11KV Each

Trafo – 23 No's
11/415V : 21
132/11KV : 02

LT Panel – 310 No's
415V , 50Hz

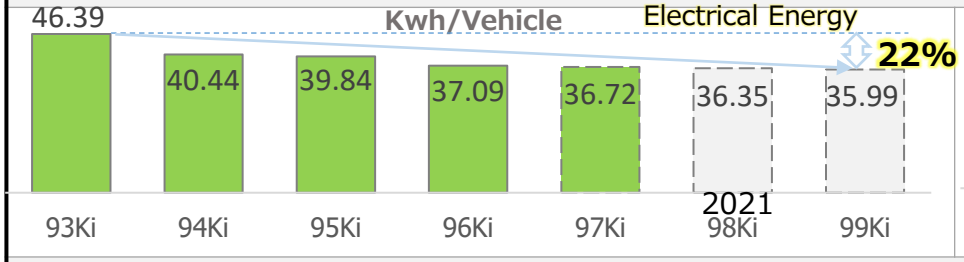


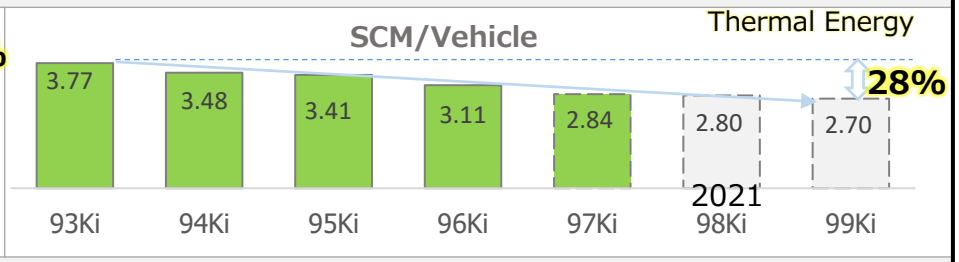
UPS – 7 No's
625 KVA Each

Power Distribution Flow is from Generation Point to User End.
Highly Efficient UPS Installed for MA and HPDC Shop.

Target & Action Plan

【Target Setting for 3 Years 】



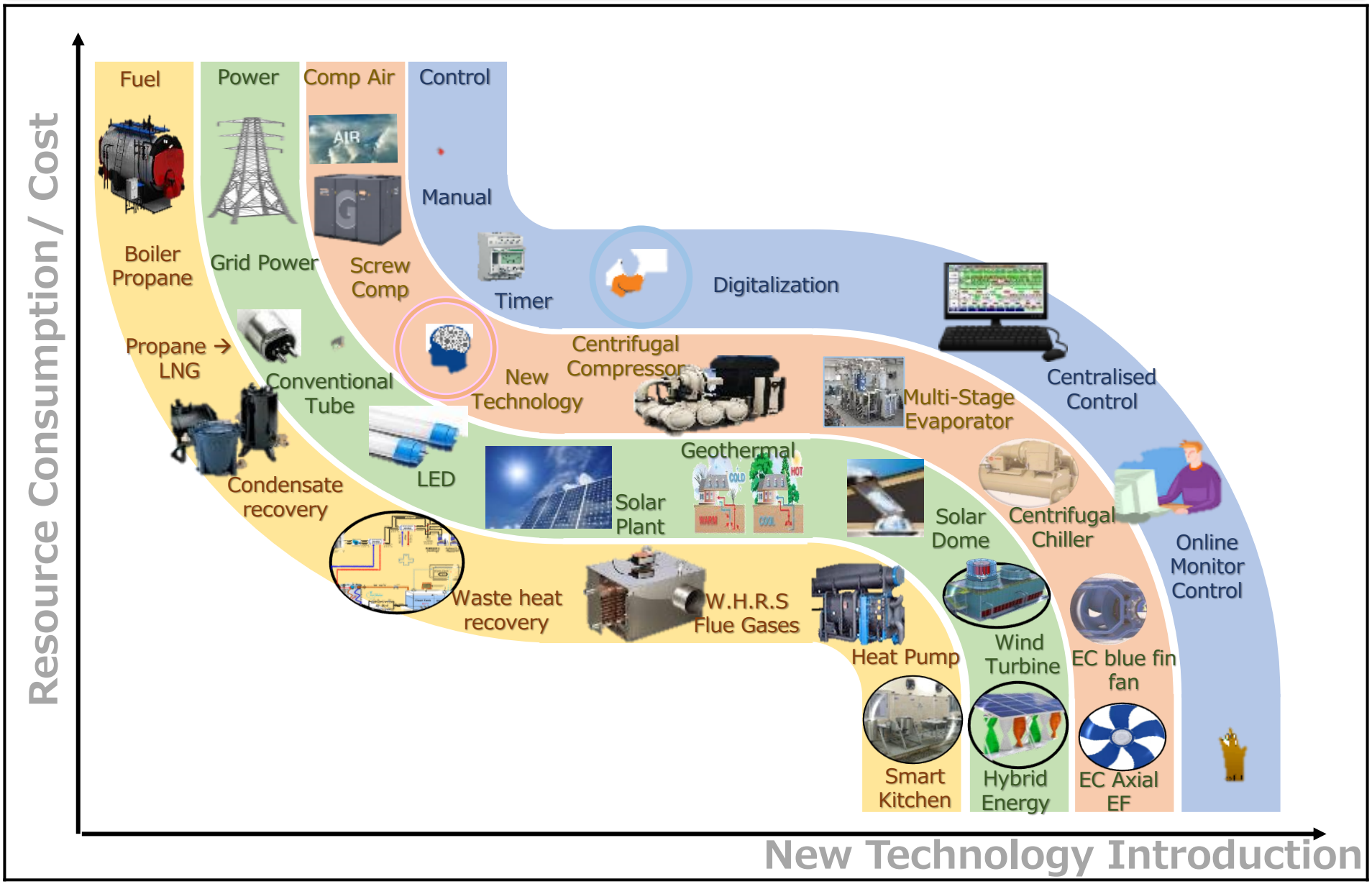


【Action Plan for achieving Targets→ Future Identified Projects】

Sr.	Themes	97 Ki (2020- 21)	98 Ki (2021 – 22)	99 Ki (2022-23)	100 Ki (2024-25)
1	Solar Step-2 (2MW Capacity)				
2	Heat Pump in DC Chiller				
3	EC Fan in Air Washers				
4	Plug Fan in PA ABS Blower				
5	Solar Power Purchase PPA				
6	Solar Surplus sell to JVVNL				
7	Mini Non IBR Boiler -LNG				
8	Smart Kitchen - LNG				
9	Centrifugal PA Chiller				
10	EC Axial roof exhaust fan				
11	EC ZA fin fan in PA ASU				
12	EC ZA fin fan in PA ASU -2				
13	Solar Step-3 (650KW)				
14	Centrifugal PA Chiller-2				
15	EC Axial roof exhaust fan -2				
16	Energy efficient burner : PA				
17	Artic master in DC chiller				
18	PA ASU - IDAC (indirect cooling)				
19	Air booster replacement				
20	Hydroxy Generator				
21	Energy efficient valve in Chiller line				
22	Renewable energy : Hydro, wind, hybrid				

Projects Identified and implemented to achieve the target and optimize the Electrical & Thermal Energy Consumption

Energy Efficiency Projects Road Map



HMSI 2F have focus on incorporating the latest technology since beginning of any new setup to reduce Power cost & CO_2 reduction. We are sharing some important project like:-

Benchmarking Projects

Energy Audit

1st • Basic Restoration

2nd • Replaced deteriorated equipment

3rd • Implement Latest EE /RE Technology

3 R
BENCHMARKING
1R→Reduce

Govt. Metering : 11KV→132KV

Standard	
Load	Metering
< 5mva	@ 11 KV
> 5 mva	@ 132 kv

HMSI
HMSI load – 12Mva
11KV→132KV

Status
Trans. Loss : 3% → 0% (▼3%)

Power House : AIS → GIS

Standard
AIS
GIS
Hybrid

HMSI
AIS → GIS

Status
Eff : 89 -99 % (▼10%)

Compressor : Screw → Centrifugal

Standard
Screw
Centrifugal
Reciprocating

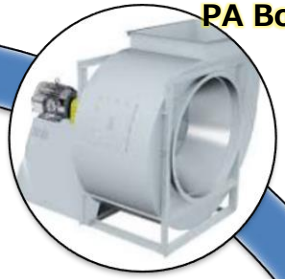
HMSI
Screw→Centrifugal

Status
SEC : kw/Cfm 0.16 → 0.14 (▼12.5 %)

HMSI 2F replaced old equipment with latest available energy efficient technology, and able to get the tangible benefits in terms of energy saving, CO_2 reduction and cost saving.

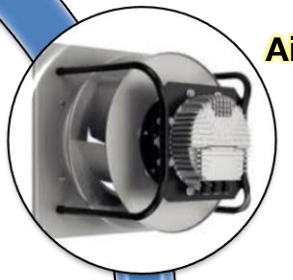
Benchmarking Projects

PA Booth Exhaust Fan: Belt →Direct Coupled



Standard	HMSI	Status
Conventional **Direct Coupled** Belt driven	**Belt Driven → Direct Coupled**	**SEC : Kw/Cfm(1000)** **0.8 → 0.65** **(▼ 30 %)**

Air Washer Fan : Belt driven →EC



Standard	HMSI	Status
Belt driven **EC** Direct Couple	**Belt Driven → EC**	**SEC : Kw/Cfm(1000)** **0.24 → 0.12** **(▼ 50 %)**

PA Booth Supply Fan: Belt→ EC BlueFin

Standard	HMSI	Status
Direct Couple **EC Blue Fin** EC	**Belt Driven → EC Blue Fin**	**SEC : Kw/Cfm(1000)** **0.24 → 0.10** **(▼ 58 %)**

Roof Exhaust Fan: Propeller→ EC Axial

Standard	HMSI	Status
Propeller **EC Axial (5th)** EC Axial (3rd)	**Propeller → EC blue Axial** **(5th Generation)**	**SEC : Kw/Cfm(1000)** **0.15 → 0.04** **(▼ 73 %)**

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Benchmarking Projects

Chiller : Screw → Centrifugal with VFD

Standard	HMSI	Status
Screw **Centrifugal** Reciprocating	**Screw→Centrifugal With VFD**	**SEC : IKW / Tr 1.13 → 0.54 (▼52 %)**

Motor : IE2 → IE5 (EE)

Standard	HMSI	Status
IE 2 **IE 5** IE 3	**IE 2 → IE 5**	**Eff. : 77 % → 95% (▼18 %)**

Monitoring : Manual → Online SCADA

Standard	HMSI	Status
Manual **Online SCADA (CMS)** Stand alone	**Manual → Online SCADA**	**Controlling : Manual → Auto (▼1 %)**

Kitchen : Conventional → Smart

Standard	HMSI	Status
Gas Cooking **Thermic Fluid** Induction Heater	**Gas → Thermic Fluid**	**SEC : Mill Scm /Yr 0.16 → 0.10 (▼38 %)**

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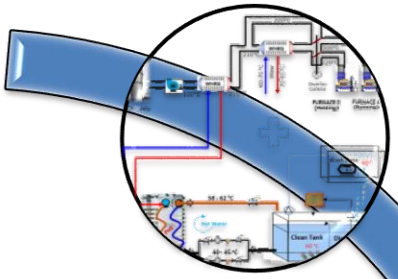
Benchmarking Projects



DC Furnace : Waste → WHRS

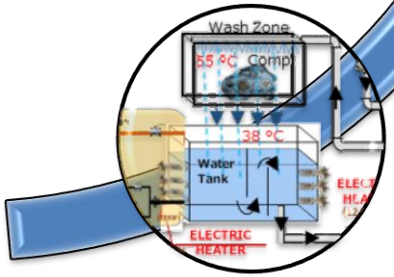
Standard	HMSI	Status
Conventional **WHRS** Electric Heater	**Electric Heater → Hot water (WE Washing m/c**	**SEC : Mill Kwh /Yr** **0.47 → 0.09** **(▼81 %)**

DC Chiller : Waste → Heat Pump

Standard	HMSI	Status
Conventional **Heat Pump** WHRS	**Waste → Heat Pump (DC Chiller +PA)**	**SEC : Mill Scm /Yr** **0.81 → 0.30** **(▼63 %)**

Compressor : Waste → WHRS

Standard	HMSI	Status
Conventional **WHRS** LNG	**LNG → Heat water (Boiler)**	**SEC : Mill Scm /Yr** **0.67 → 0.60** **(▼10 %)**



MA Washing m/c : Electrical → Heat

Standard	HMSI	Status
Conventional **WHRS** Electric Heater	**Electric Heater → Hot water (Washing m/c**	**SEC : Mill Kwh /Yr** **0.37 → 0.08** **(▼78 %)**

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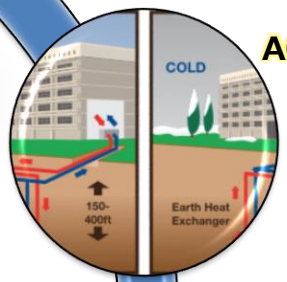
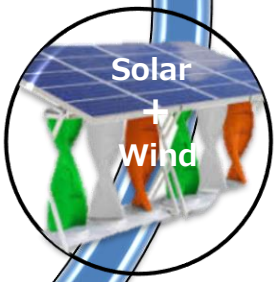
Benchmarking Projects





Power : Conventional → SOLAR

Standard	HMSI	Status
Upto Sanction Load (12 mva)	Conventional→ Solar roof top (5.9) + Solar PPA (6.1)	RE : 0 → 76 % (▲ 76 %)

AC : Conventional → Geo Thermal

Standard	HMSI	Status
Conventional **Geo Thermal** VRV	Conventional→Geo Thermal	RE : 0 → 80 % (▲ 80 %)

Power : Conventional → Hybrid

Standard	HMSI	Status
Conventional **Hybrid** Solar & Wind	Conventional→ Hybrid	RE : 76 → 76.1 % (▲ 0.1 %)

Power : Conventional → Wind

Standard	HMSI	Status
Conventional **Wind** Solar	Conventional→ Wind	RE :76.1 → 76.2 % (▲ 0.1 %)

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1	Solar Step-1 (5MW)	6.50	52.33	4856
2	Solar Step-2 (2MW)	2.60	20.93	1942
3	EC Fan in All Air Washers	1.41	11.32	1050
4	Plug Fan IC in PA Shop	0.33	2.66	247
5	Plug Fan Expansion in PA Shop	0.05	0.38	35
6	PA ASU Mezz Clean to reduce heat load on PA Chiller	0.10	0.80	74
7	WE dust collector utilize in Fume exhaust by selecting Old Blowers	0.05	0.40	37
8	Energy saving through oven circulation fan speed reduction	0.04	0.28	26
9	Energy saving through booth load reduction in ABS1 & SPC1	0.03	0.26	24
10	EC Fan in HPDC AW-24	0.07	0.53	49
11	PA Shop AW Stop in C Shift	0.02	0.18	17
12	Plug Fan in ABS Blower-3nos.	0.08	0.67	62
13	Solar Hybrid Air Conditioner 4 nos	0.01	0.05	5
14	Magnetic Coupling in Pump in Cooling Tower	0.01	0.08	8
15	Cooling Tower Blade Metallic to Epoxy Resin	0.00	0.03	3
16	PA Shop Chilled Water Valve Optimization	0.28	2.24	208
17	Centrifugal C.Tower Blade to E-Glass Epoxy FRP	0.00	0.03	3
18	Magnetic Coupling in Compressor Pump	0.01	0.04	4
19	Compressor Receiver Valve Auto Air Drain Type	0.14	1.13	104
20	Cost Saving by reducing Chiller Pump Frequency	0.01	0.05	5
21	Enhance Operation of ED Chiller	0.01	0.05	4
22	SCADA system for Paint Shop	0.08	0.65	60
23	Energy saving through Washing machine Air blower speed reduction	0.01	0.11	10
24	Air Saving by modification in trimming press in HPDC	0.09	0.74	69
25	Air Saving during lunch & Dinner time in Weld Shop	0.00	0.02	2
26	High efficiency motor in Paint shop	0.00	0.01	1
27	VFD in Paint shop, PT line pump	0.02	0.20	19
28	Scale watcher & Side Screen Filtration Unit	0.02	0.15	14
29	Air saving by modification in Baker Unit	0.20	1.61	149
30	power saving through VFD installation in ETP	0.00	0.02	2

List of Encon Projects

S.N.	Theme	Saving (Mill Kwh/Yr)	Saving (Mill Rs/Yr))	Co2 Reduction (Ton / Yr)
31	Inhouse preparation of ETP control panel	0.04	0.31	29
32	Power saving by providing energy efficient motor in assembly line	0.01	0.04	4
33	Air saving in AF sub-assembly, during non-working hrs.	0.02	0.14	13
34	All hydraulic press power saving mode from 15 min to 2 min hybrid mode	0.01	0.06	6
35	VFD installation at ACED line Hot water circulation pump	0.00	0.02	2
36	Energy efficient motor provided in ETP MEE Permeate pump	0.03	0.26	24
37	High watt to low watt light at MS dock	0.01	0.12	11
38	PA Air Dryer	0.06	0.46	43
39	Optimization of DC AHU	0.01	0.06	6
40	WE dust collector utilize in Fume exhaust by selecting Old Blowers	0.02	0.15	14
41	Compressed air leakage arresting	0.07	0.60	56
42	Power consumption saving in DURR machine during non working hours	0.00	0.02	2
43	Mixing of Additives in AC/ Chiller for reducing load	0.01	0.10	9
44	Air Leakage control in Shop floor	0.06	0.45	42
45	High watt to low watt light at High Mast Pole	0.00	0.01	1
46	Steam supply optimization in HPDC evaporator	0.01	0.15	12
47	Thermal paint on HPDC furnace	0.01	0.21	17
48	Smart Kitchen	0.01	0.35	28
49	Boiler Modulation	0.00	0.10	8
50	Installation of Heat Pump on DC Chiller	0.14	3.80	304
51	Cost saving by introducing waste heat based Evaporator in place of steam based.	0.04	1.06	84
52	Airtron for Air Conditioning	0.03	0.23	21
53	Roof Exhaust Fan from Propeller to Axial flow	0.00	0.02	2
54	Solar Dome Light	0.00	0.01	1
55	Coventional Blower replacement with EC in AW 17 MA	0.13	1.03	95
56	Implementation of VFD in Airwasher	0.13	1.04	96
57	Cost saving through Maintaining Power Factor up 0.99	0.53	4.27	396
58	Centrifugal Compressor	0.45	3.59	333
59	Online Monitoring System in Utility	0.16	1.30	121
60	EC Fan in HPDC AW	0.00	0.00	0

List of Encon Projects

S.N.	Theme	Saving (Mill Kwh/Yr)	Saving (Mill Rs/Yr))	Co2 Reduction (Ton / Yr)
61	Yamada pump replacement in Die-Lubrication	0.01	0.10	9
62	Pressure Sensor	0.01	0.10	9
63	Energy efficient pump installation in ETP	0.01	0.09	8
64	Air Saving during lunch & Dinner time in Weld Shop	0.01	0.09	8
65	High efficiency motor in Paint shop	0.01	0.04	4
66	VFD in Paint shop, PT line pump	0.02	0.20	18
67	SCADA system for Paint Shop	0.40	3.23	299
68	Energy saving through VFD installation in ACED line touch-up booth.	0.01	0.07	7
69	Magnetic Coupling in CT Pump-1 nos.	0.00	0.03	3
70	Axial Fan in Roof Exhaust - 6 nos.	0.00	0.02	2
73	Power Saving Through Open Access	0.20	1.65	153
74	Boiler Modulation	0.00	0.01	0
75	Waste Heat Recovery System in HPDC Furnace	0.14	3.84	306
76	Installation of Heat Pump on DC Chiller and Utilize Waste heat to supply hot water for Paint Shop	0.38	10.14	810
77	Sludge Dewatering System	0.02	0.14	13
78	To reduce heat loss from melting furnace (LNG save through Aerogel Painting)	0.03	0.25	23
79	Power and steel cost saving by installing VFD on shot-blasting machine	0.13	1.04	96
80	Roof exhaust fan running linkage as per production.	0.04	0.32	29
81	Installation of tertiary RO to reduce evaporator running from 16hr to 7hr	0.10	0.77	71
82	Compressor Receiver Valve Auto Air Drain Type	0.15	1.22	113
83	Magnetic Coupling in Compressor Pump	0.00	0.02	2
84	Replacement of Sludge transfer Pump with High Efiiciency Pumps in WWTP	0.01	0.06	5
85	Artic Master	0.01	0.06	6
86	PA Shop AW Stop in C Shift	0.01	0.08	7
87	Thermal Paint on HPDC Furnace	0.03	0.72	57
88	High Watt to Low Watt Light	0.02	0.16	15
89	Lighting Optimization at Logistic Mezzanine	0.02	0.15	14
90	MaxR100 Refrigerant Additive in HVAC System	0.01	0.05	4

List of Encon Projects

S.N.	Theme	Saving (Mill Kwh/Yr)	Saving (Mill Rs/Yr))	CO_2 Reduction (Ton / Yr)
91	Inline Duct EC Fan	0.02	0.12	12
92	SOLAR PPA 3 MW	0.28	2.28	211
93	ED Chiller Pump operation optimization	0.01	0.12	11
94	Intelligent Touch Manager	0.01	0.10	9
95	AHF Installation in PA Shop (Capacitor Panel)	0.04	0.30	28
96	VRV to VRV-X Technology in HPDC CMM Room	0.01	0.06	5
97	Optimisation of compressed air in Paint Shop dryer for regeneration	0.06	0.48	44
98	EC Fan in HPDC AW-24	0.02	0.17	16
99	Plug Fan in ABS Blower-3nos.	0.00	0.04	3
100	PM motor in weld cooling tower pump	0.07	0.54	50
101	Hot water Evaporator (Steam stop in DC)	0.01	0.37	29
102	Elimination Of IBR Boiler	0.01	0.27	22
103	Elimination of pumps by feeding reject water directly to Z Soft	0.01	0.04	4
104	Sludge Dewatering System (Centrifugal sys)	0.12	1.00	93
105	Energy saving by replacement of existing motor with energy efficient motor	0.01	0.08	8
106	Cost saving by introducing waste heat based Evaporator in place of steam based.	0.06	0.48	45
107	Energy saving through Washing machine Air blower speed reduction	0.01	0.12	11
108	Air Saving by modification in trimming press in HPDC	0.01	0.07	6
109	power saving through VFD installation in ETP	0.02	0.14	13
110	Power saving by providing energy efficient motor in assembly line	0.01	0.07	6
111	Air saving in AF sub-assembly, during non-working hrs.	0.02	0.14	13
112	All hydraulic press power saving mode from 15 min to 2 min hybrid mode	0.01	0.07	6
113	VFD installation at ACED line Hot water circulation pump	0.00	0.02	2
114	Power consumption saving in DURR machine during non working hours	0.01	0.08	7
115	Power saving in logistics Scissor lifter	0.09	0.71	66
116	Energy saving by through coolant pump stop in idle time in FRD	0.13	1.02	95
117	Energy saving through speed reduction of oven circulation fan during post purging	0.02	0.12	11
118	Energy saving by providing VFD in Washing machine No. 1 & 3 Spray pump	0.04	0.29	27
119	Energy efficient motor to be provide in AF Subassembly Press	0.01	0.10	9
120	Hydr.Power pack motor saving in Brother mc's	0.01	0.10	9

We have implemented 120 projects in last three year and due to this HMSI 2F able to save 152 Mil Rs. / yr, 118 Mil. Kwh/Yr and 13,837 MT CO_2/ yr.

Innovation - Small Wind Turbine

Theme :- Utilize wastage of air from Cooling tower fan , to generate the electricity thru "Wind Turbine"		Power Saving	.03mill kwh/Yr	Category
		CO2 Reduction	23 Ton/Yr	Reuse/ Renewable
Investment : - 0.7 Mill Rs	ROI : - 35 Months	Cost Saving	0.24 Mill Rs/Yr	

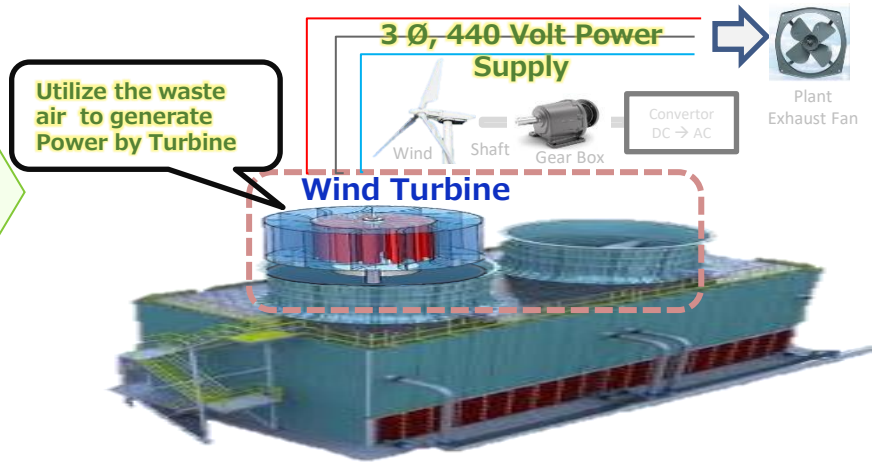
Before

CT Fan : Air wastage in Atmosphere

Draft Air loss Velocity	17 mm/ sec (wastage)
KWH Generation	Nil

After

Wind Turbine



Draft Air loss Velocity	Utilize in wind turbine
KWH Generation	0.01 Mill Kwh

CO_2 Reduction	**23 %**

Reduce CO_2 23 % by reduction of Power 0.03 mill kwh/yr thru installation of "Wind Turbine"

Energy Efficient EC Axial Exhaust Fan

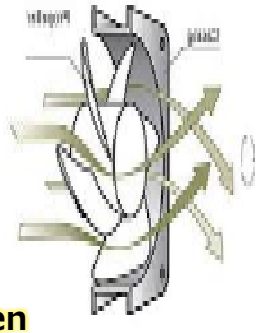
Theme :-
Replacement of Plant roof exhaust fan with Energy Efficient EC Axial Fan

Investment : - 8.4 Mill Rs | **ROI : - 30** Months

Power Saving	0.4 mill kwh/Yr	Category
CO2 Reduction	328.7 Ton/Yr	Reduce
Cost Saving	3.4 Mill Rs/Yr	

Before

Plant Roof Exhaust Fan : Propeller Type

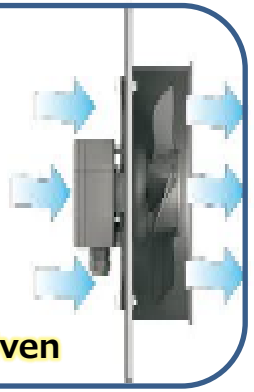


Direct Driven

Type	Propeller
Capacity	**8,000 CFM**
Quantity (Pilot Project)	Total 147 (Pilot - 42)
KW / Fan	1.42 Kw/hr

After

Energy Efficient EC Axial Fan (Next Generation Fan)



Controller Driven

Type	EC Axial Fan
Capacity	**16,800 CFM**
Quantity (Pilot Project)	Total 70 (Pilot - 20)
KW / Fan	0.6 Kw/hr

CO_2 Reduction	**73 %**

Reduce CO_2 78 % by reduction of Power 0.44 mill kwh/yr thru installation of "EC Axial roof Exhaust Fan"

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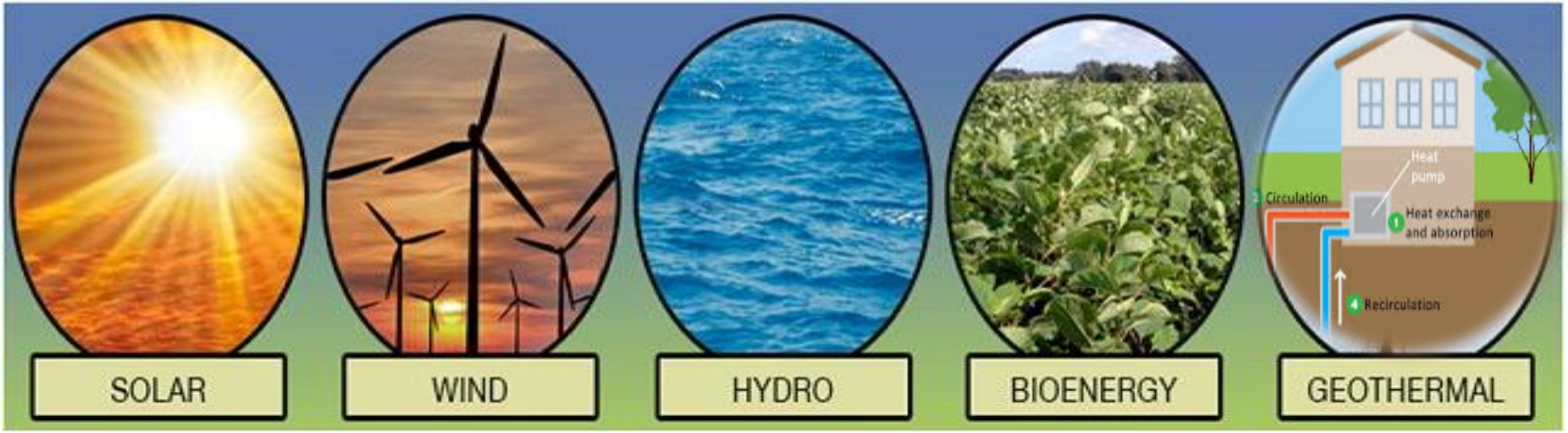
Renewal Energy



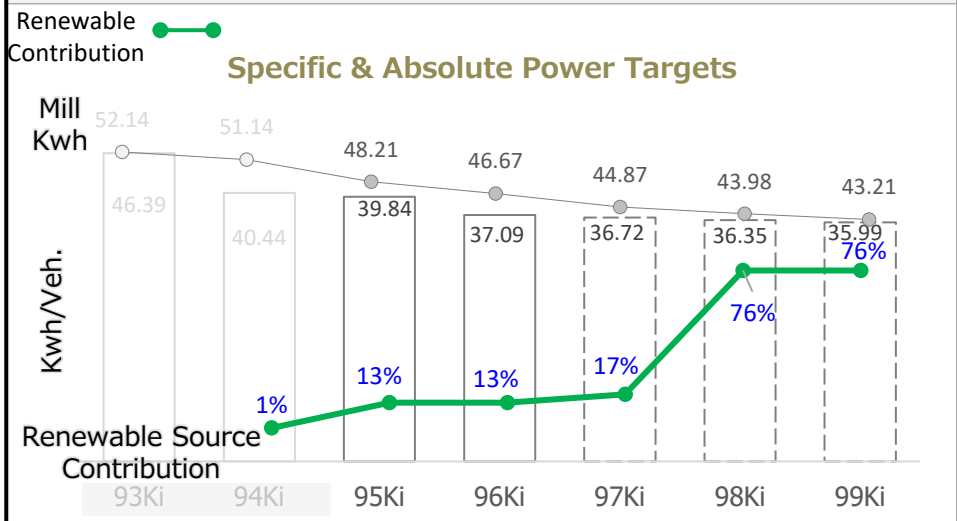
Situation analysis as per Geographical condition

Resource	Feasibility in India	Feasibility in HMSI-2F	Standard Requirement	Status in HMSI 2F	Gap Analysis
Solar	●	●	Depend on Radiation	Implemented Roof – 5.9MW PPA – 6.1MW	-
Wind		●	12~14 km/h	Implemented (2.5 KW)	Average 5 km/h in Bhiwadi
Hydro		○	Need Water Reservoir		No Water Source
Bio-Energy		○		Under Study	Technical Feasibility
Geothermal		●		Implemented	-
Hybrid (Solar + Wind)		●		Under installation	3-4 KW

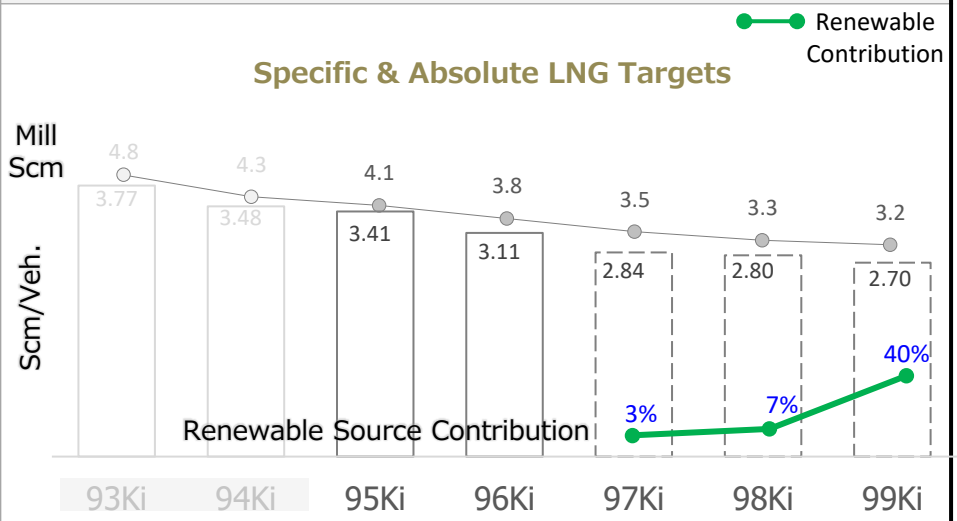
HMSI 2F long term target is 100% utilization of carbon free energy by 2050.

Target & Action

【Target Setting → Electrical Energy】



【Target Setting → Thermal Energy】

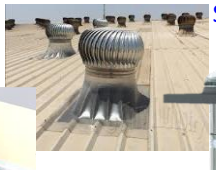


【Action Plan To Achieve The Targets】

Solar PPA
96 Ki

Smart Kitchen

Polycarbonate Sheet with Fan



Solar Dome Light

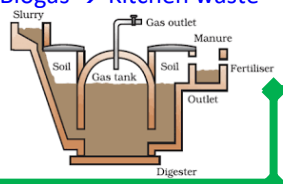
97 Ki ●

Cost Required: 18 Millrs

Increase In Renewable Contribution : 5 %

Solar Step-3

Biogas → Kitchen waste



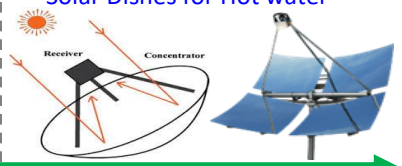
98 Ki ○

Cost Required: 25 Millrs

Increase In Renewable Contribution 8 %

Electrical (4%) + Thermal(4%)

Solar Dishes for Hot water



99 Ki ○

Green Energy 2050 Ki

Cost Required: 29 Millrs

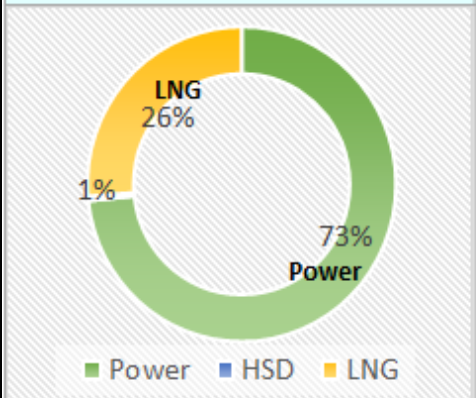
Increase In Renewable Contribution 36 %

Electrical (3%) + Thermal (33%)

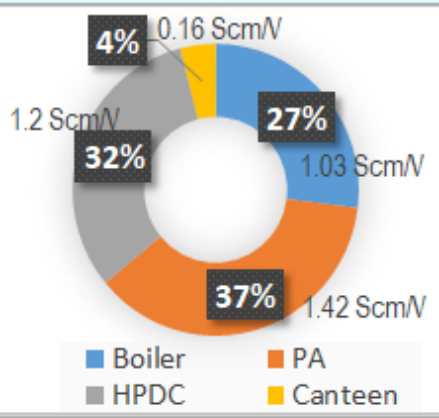
To achieve 100% utilization of carbon free energy by 2050 different initiatives has been taken.

Thermal Energy Analysis of HMSI – 2F

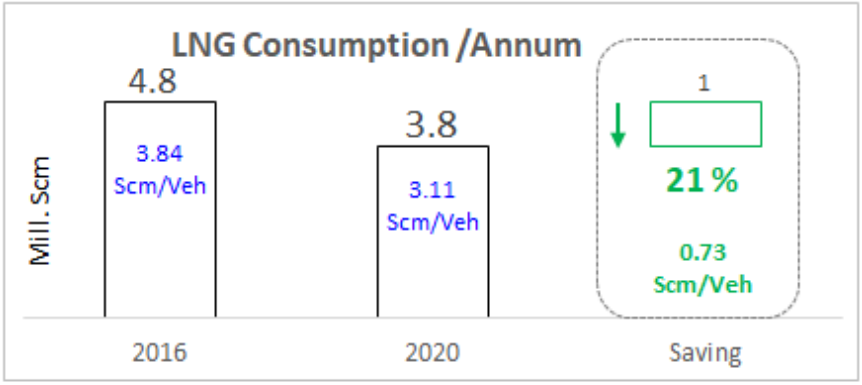
【Total Energy Usage】



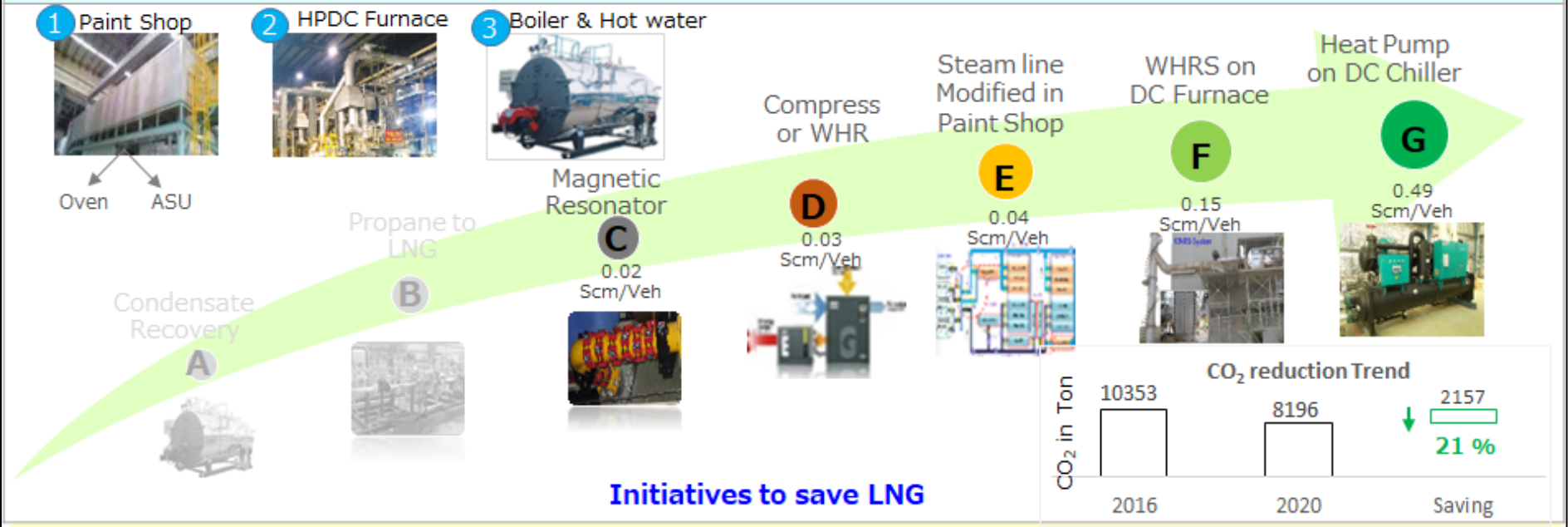
[LNG Usage]



【Specific/Absolute LNG Consumption】



【Initiatives Taken To Optimize LNG Consumption In Production Equipment】



LNG consumption in production equipment has been reduced by 21% over the yrs.

To optimize further, need to focus on non production equipment like canteen

Smart Kitchen [Before/After]

Before → Cooking Process & Vessels

LNG Skid

High ambient working env.

Chance of fire inside kitchen area

After → Cooking Process & Vessels

Thermic Oil Quantity - 3KL
Hitech Therm Food 57

Insulated Jacket

Oil Temp. → 220 ~ 250 °C
Cooking Temp. → 185 ~ 200 °C

Frying Process → Before

Frying Process → After

Technology Concept

Total LNG saving due to this project is 56322 SCM / Year and CO_2 reduction is 121 T./ Yr.

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The Power of Dreams

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Scope of GHG Emission Reduction

Scope 1

- ❑ Fuel Consumption
- ❑ Air Conditioning
- ❑ Fire Extinguisher (Only CO_2 type fire extinguisher)

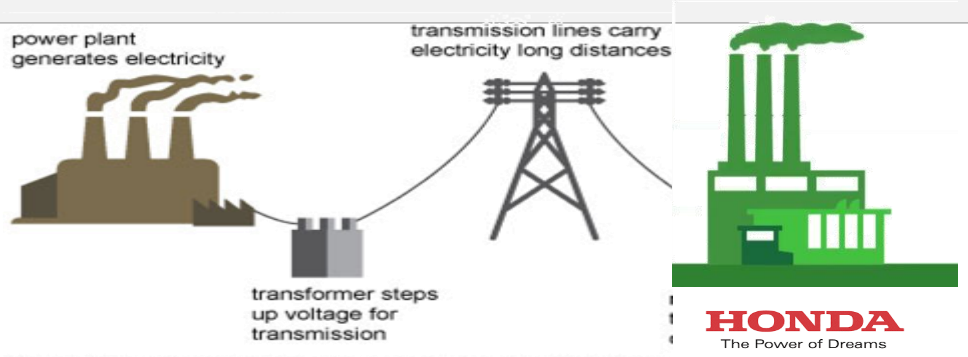
Fuel Consumption in Boiler, DG

Air Conditioning

Fire Extinguisher

Scope 2

- ❑ Grid Purchase



Scope 3

- ❑ Employee Commute

Downstream:-

- ❑ Waste Disposal
- ❑ Logistics

Employee Commute

Waste Disposal Transportation

Logistics

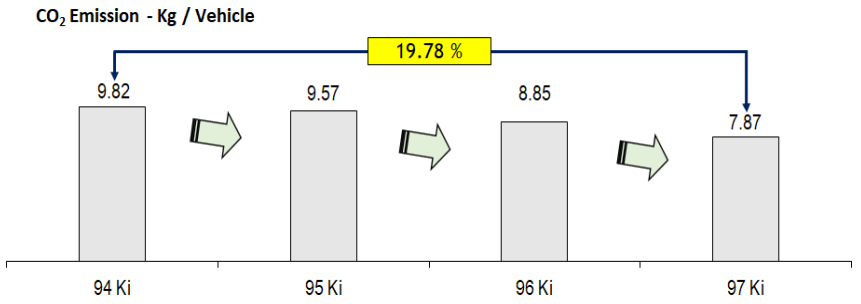
Scope identified in HMSI for GHG emission reduction

Monitoring of GHG reduction

Scope 1

Scope 01 Data

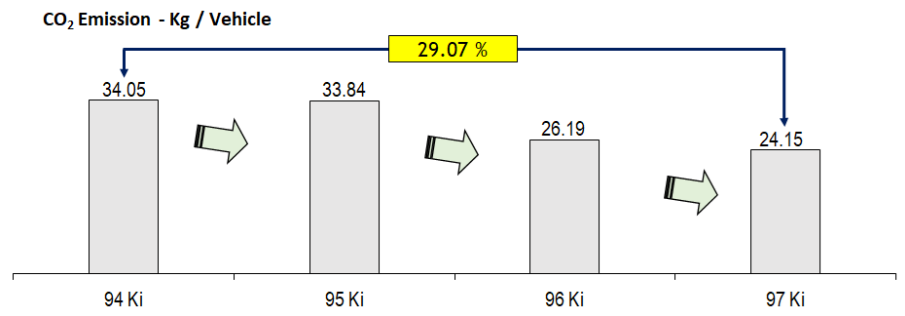
Items	94 Ki			95 Ki			96 Ki			97 Ki		
	Total Vehicle	Data (Kg CO_2)	Kg CO_2/Veh	Total Vehicle	Data (Kg CO_2)	Kg CO_2/Veh	Total Vehicle	Data (Kg CO_2)	Kg CO_2/Veh	Vehicle (Dec'19)	Data (Kg CO_2)	Kg CO_2/Veh
Fuel Consumption	1067416	9985100	9.35	1232057	10482790	8.51	1163281	10047080	8.64	831091	6383230	7.68
Refrigerants		488700	0.46		1306880	1.06		249720	0.21		161060	0.19
CO_2 Cylinders		4468	0.004186		2.5	0.000002		5	4E-06		2.07	2.5E-06
Total		10478268	9.82		11789673	9.57		10296805	8.85		6544292	7.87



Scope 2

Scope 02 Data

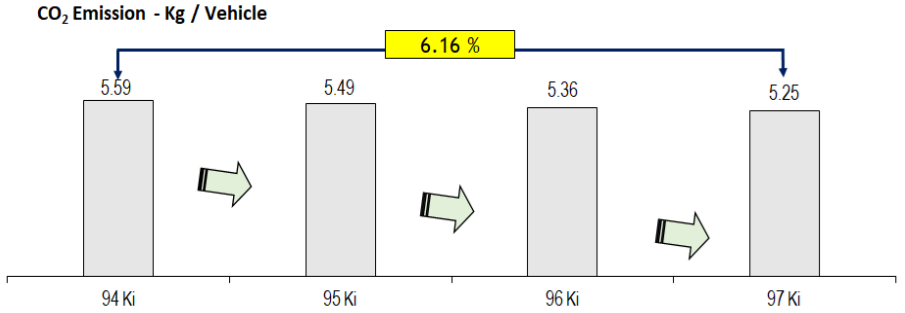
Items	94 Ki			95 Ki			96 Ki			97 Ki		
	Total Vehicle	Data (Kg CO_2)	Kg CO_2/Veh	Total Vehicle	Data (Kg CO_2)	Kg CO_2/Veh	Total Vehicle	Data (Kg CO_2)	Kg CO_2/Veh	Total Vehicle	Data (Kg CO_2)	Kg CO_2/Veh
Electricity Purchase	1067416	36347600	34.05	1232057	41696610	33.84	1163281	30465220	26.19	831091	20072930	24.15



Scope 3

Scope 03 Data

Items	94 Ki			95 Ki			96 Ki			97 Ki		
	Total Vehicle	Data (Kg CO_2)	Kg CO_2/Veh	Total Vehicle	Data (Kg CO_2)	Kg CO_2/Veh	Total Vehicle	Data (Kg CO_2)	Kg CO_2/Veh	Total Vehicle	Data (Kg CO_2)	Kg CO_2/Veh
Waste disposal	1067416	85000	0.07	1232057	115032.5	0.09	1163281	103371	0.09	831091	61260	0.07
Employee commute (Car)		23220	0.02		23649	0.02		23649	0.02		23649	0.03
Employee commute (Bus)		102340	0.08		104232	0.08		104232	0.09		104230	0.13
Logistics trucks		6679980	5.42		6519980	5.29		6007200	5.16		4172500	5.02
Total		6890540	5.59		6762893.5	5.49		6238452	5.36		4361639	5.25



Monitoring of reduction is carried out regularly in each scope.

HMSI 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

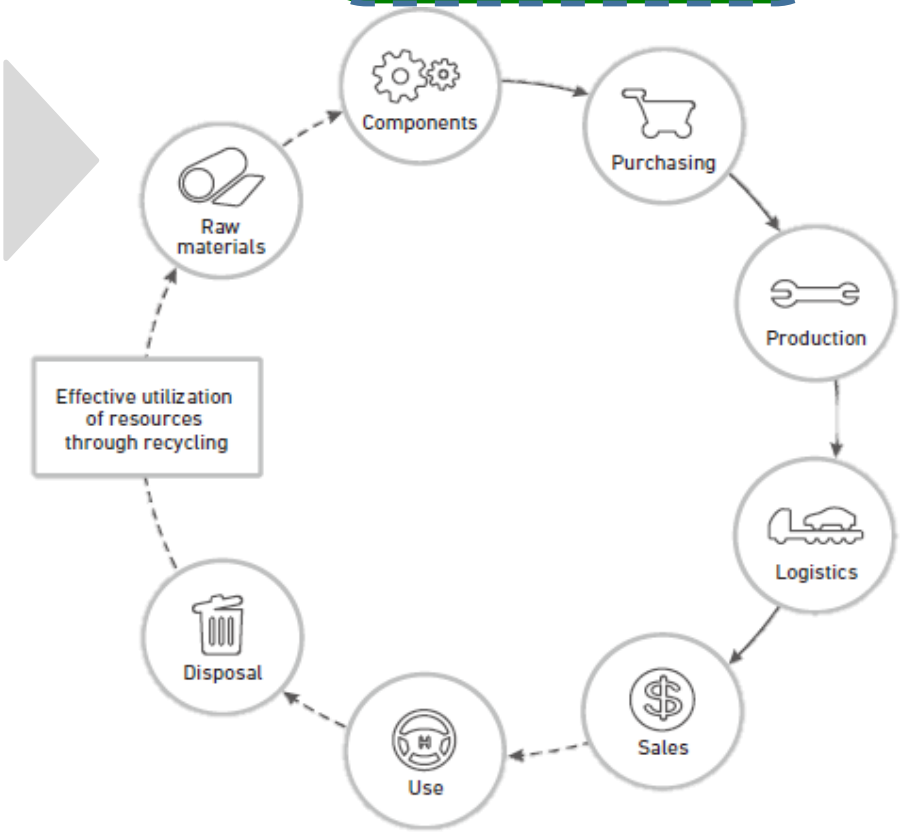
Collectively, these are referred to as the areas of our environmental activities.

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).

Honda has built its own Green Purchasing Policy



HMSI is committed for establishing the green supply chain network.

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Energy Management Cell


ENERGY CONSERVATION CELL

Committee Approval



Operating Head
(Pankaj Chauhan)

Division Head-PE
(Sunil Pandita)

Department Head-Utility
(Inder Singh)

Energy Manager

Section Head
Energy
Conservation

Core Team

Energy Manager

Section Head
Energy
Conservation

Roles & Responsibilities:

- Target Setting & Benchmarking
- Planning of Major EE Projects
- Review of Daily & Monthly Energy Report

Team Member

Sunil Kumar
Unit Leader
Energy
Conservation

- Making New EE Proposals
- Execution of Encon Ideas
- Energy Cell Co-ordination

Team Member

Anil Bhardwaj
Team Member
Ut-Mech & Inst.

- Training & Awareness

Team Member

Surender Kumar
Team Member
Ut-Elect.

- Equipment Energy Monitoring

Team Member

Satveer
Team Member
Project & Infra

- Daily Energy Reporting
- Co-ordination with all Depts.

Departmental Coordinators – CFT Team

Area	Responsible Person
MA	Shailendra Yadav
AE	Puneet Ratra
AF	Ajay Sood

Area	Responsible Person
VQ	Anand Yadav
PA	Sachidananda Pal
WE	Pradeep Pilaniya

Area	Responsible Person
LOG	Abhishek Rathore
GA	Hazari Meena
DC	Shashank Jain

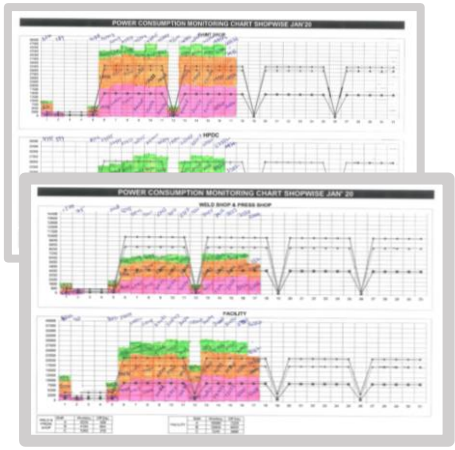
Area	Responsible Person
Maint	Vishal/Sanjay
MS	Baljeet Singh
PQ	Punit Pal

For this, Well established organization available to work on energy consumption and innovation related project in this plant.

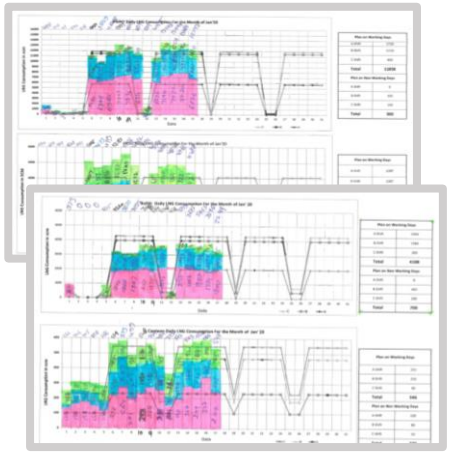
Review Mechanism

Daily Monitoring → Section/Dep't Level

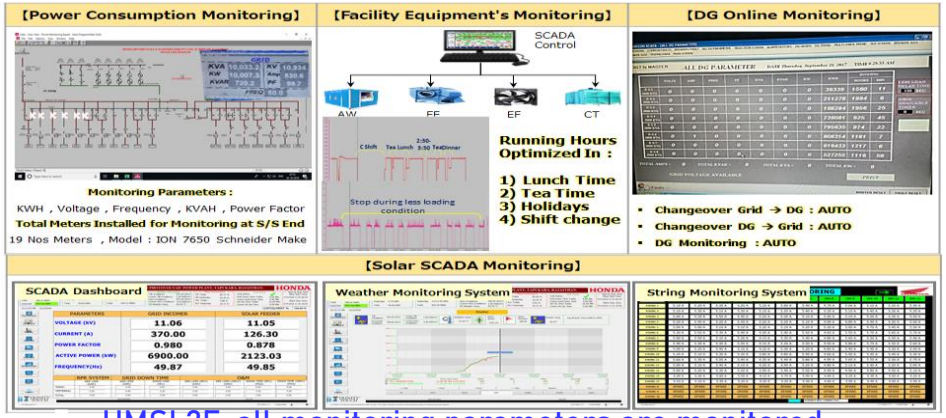
Electrical Energy



Thermal Energy

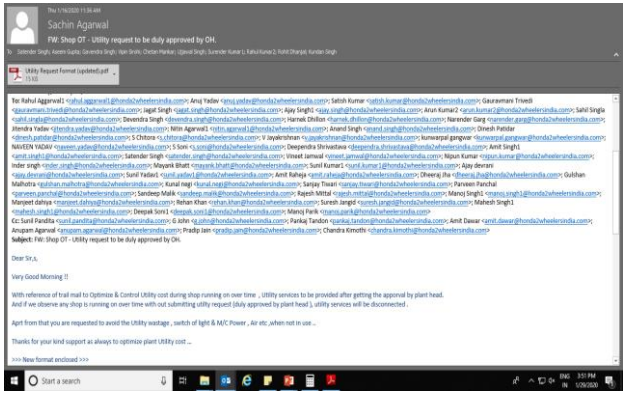


CMS System

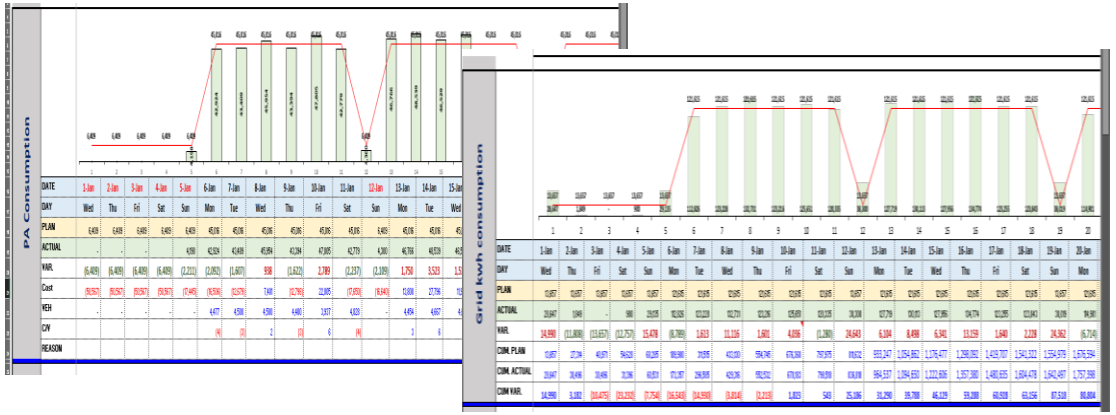


HMSI 2F, all monitoring parameters are monitored on SCADA & Online monitoring facility available at a Glance.

Sharing of Report



Sharing of Daily Data to all HODs & Operating Head.

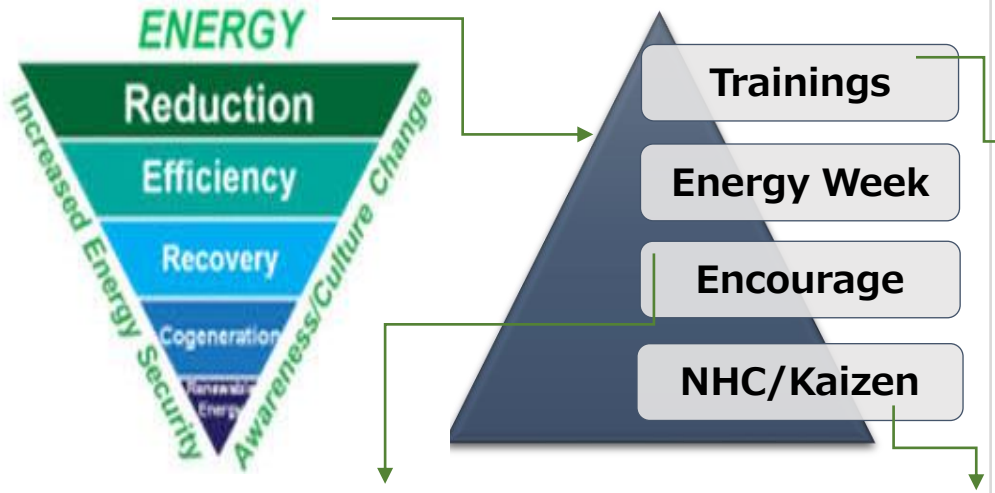


Sample Format

Review mechanism established to check the progress status of the project and regular energy consumption.

Employee Awareness Strategies

【Strategy for Employee Involvement & Awareness】

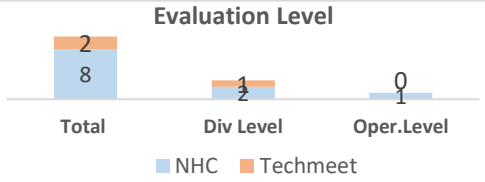


【Energy Exam Attempt】

Energy Manager Exam attempt in 2018 by HMSI "Designated Energy Manager".

Admit Card Not received

【❷ NHC/Kaizen Platform】



【❶ Trainings】

Need Identification

Familiarize company culture → Changing Technology → Greater Productivity → Improve Safety

- Skill Development
  - Soft Skill Trainings
    - HR Organized Trainings
    - Dept. Level Trainings
  - Core Technical & System Trainings
    - Equipment Specific Training
    - Basic Technical Training
    - Maint. System related Training

- HCG, Samundr Manthan
- J Course
- Interaction Programme
- 3S,
- Section Level Training
- Equip. related
- Compressor operation, VFD
- Chiller operation
- DG Operation
- Yards
- Maint. Safety
- PLC Training

GLIMPSES OF TRAINING:

External Trainings Organized for Associates

1	Corrosion Under Insulation
2	Troubleshooting of DG
3	Troubleshooting of Burner
4	Maintenance of Air Dryer
5	Maintenance of Compressor
6	PLC Training
7	Troubleshooting's of Chiller

Lot of Activities are carried out for employee awareness and employee involvement.
Encon Cell Members also being encouraged for Energy Manager Exams & Learnings

HONDA
The Power of Dreams

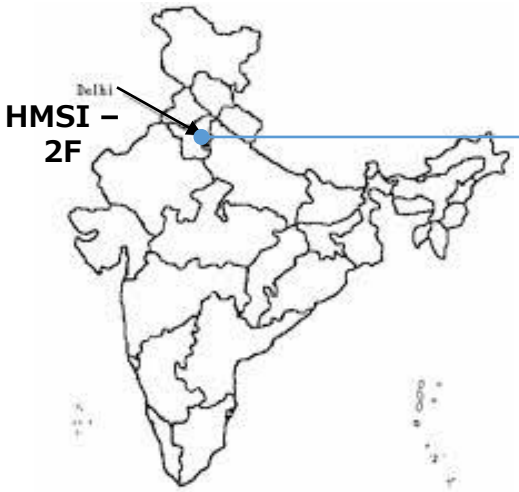
Contents of Presentation

SN	Contents	Slides	Time
1	Company Profile	1-2	1 min.
2	Energy Management	3-4	2 min.
3	Energy Data	5-13	4 min.
4	ECON Projects & Innovative Ideas	14-19	3 min.
5	Renewal & Green Energy	20-23	2 min.
6	GHG Emission, Green Supply, and Capacity Building	24-26	2 min.
7	Review Mechanism, Employee Engagement	27-29	2 min.
8	**Way Forward**	**30**	**1 min.**

Total 30 slides and time required for presentation is 17 Minutes.

Way Forward

Initiatives by HMSI 2F to Ensure Blue Skies for Future Generations



More Space
High Energy cost
High Manpower cost

Space efficient
Energy efficient
Manpower efficient

2013 - 14
1. Air Pressure 6 Bar → 5.1 Bar
2. Propane →LNG

2014 -15
1. Timer Based AC Exh. Fan Plant Lighting

2015 -16
1. Conventional Light → LED
2. Condensate recovery system
3. Zero Landfilling

2016 -17
1. Steam collection from steam trap
2. Heat recovery from compressor

2017 -18
1. 11KVA → 132 KV
2. Grid Power → 5 MW Solar power
3. Centralize equipment control
4. RTD in cooling tower.

2018-19
1. Geothermal System
2. 7 MW Solar power plant
3. Centrifugal Compressor
4. Rain water reusing system.
5. Online monitoring control system
6. Air networking in header
7. Solar PPA

2019-20
1. Hot water Supply (LNG) in place of Electric Heater Electricity
2. 2 stage RO → 3 stage RO
3. Normal Hot water → Heat Pump
4. Tech. train. centre
5. WHRS in DC furnace
6. Solar Dome light
7. Solar Dish
8. Air washer blower→ EC fan
9. Smart Kitchen to reduce LNG consumption

2021-23
1. Centralize PA chiller -2
2. Energy Efficient burner - PA
3. PA ASU - IDAC
4. Air booster replacement
5. Hydroxy generator
6. Energy efficient valve in chiller line
7. Centrifugal chiller -2

HMSI Tapukara plant has been taking continual improvement initiatives to realize our future target to archive 100% utilization of carbon free energy by 2050.

Let's make a better tomorrow for our Future Generation.....

Thank You