

CII National Award for Excellence in Energy Management 2024

Presented By

V. Pajanivelou – General Manager

C. Kumar – Asst. Manager

Company at a Glance



One of only two global full line automotive thermal solution suppliers in the world



Headquartered in Korea; listed on the Korea Exchange



Global 2023 sales of ₩9.5T (\$7.3B)



52 manufacturing sites
3 innovation centers



Presence in 21 countries across Asia, Europe, North America and South America



More than 21,000 employees

Hanon Chennai Plant

Profile

Established : 1997
Location : Maraimalai Nagar, Chennai
Shop Floor Area : 50,000 Sq. m
Employees : 1600



Product line



C/MODULE



FLUID
TRANSPORT



COMPRESSOR



HVAC



Customers / Certification



Key Product Lines

– Innovative Solutions for Automakers



Heating, Ventilation and Air Conditioning (HVAC)

xEV & ICE Full Thermal Systems

- HVAC & Powertrain Cooling Systems
- Heat Pump Systems
- R134a, R1234yf & R744 Refrigerants
- Battery Thermal Management



Electronics and Fluid Pressure



Compressor



Powertrain Cooling / Heat Exchangers

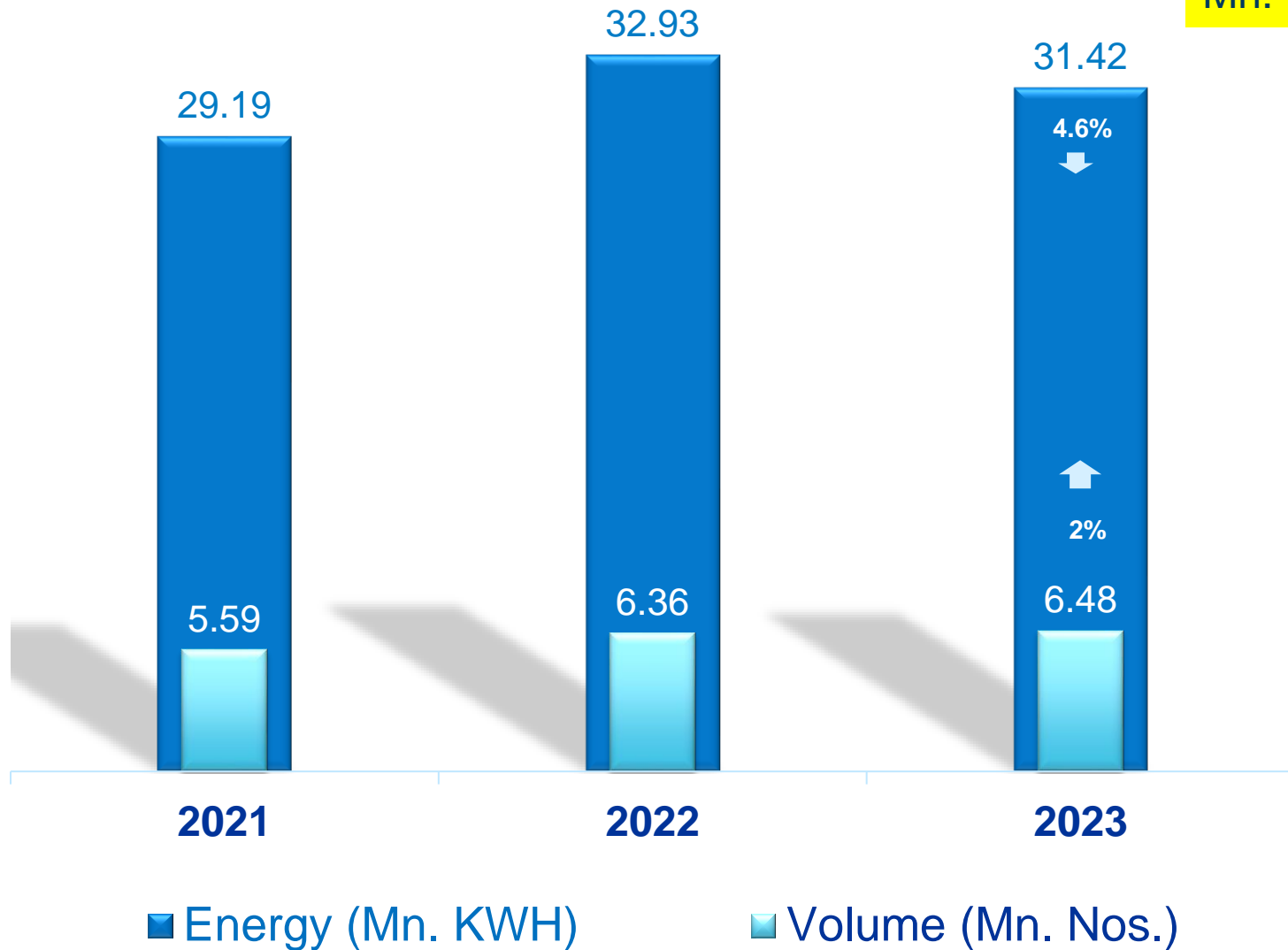


Fluid Transport

Complete xEV and ICE Thermal Management Solutions Provider

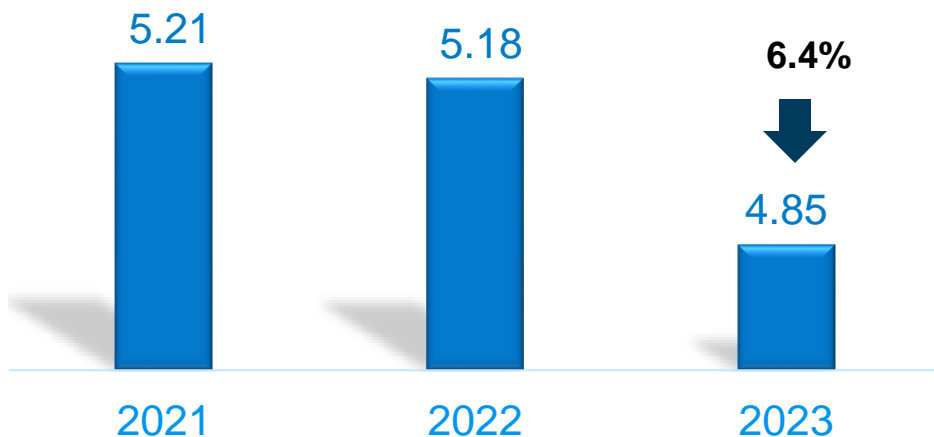
Energy Vs Volume

Mn. – Million

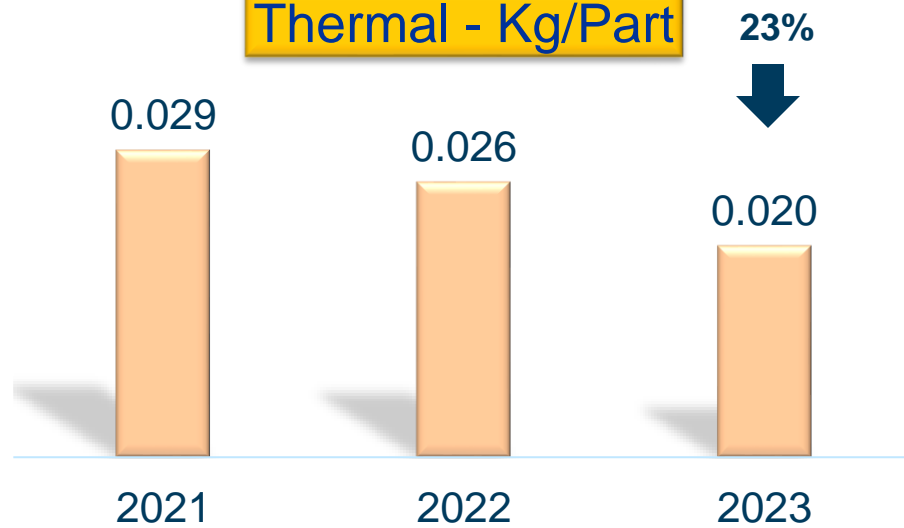


Specific Energy & Fuel Consumption Trend (Plant)

SEC – KWH/Part

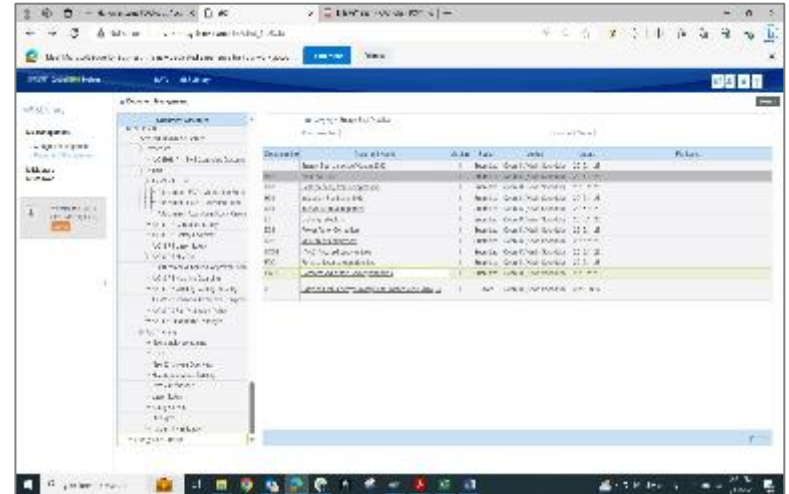
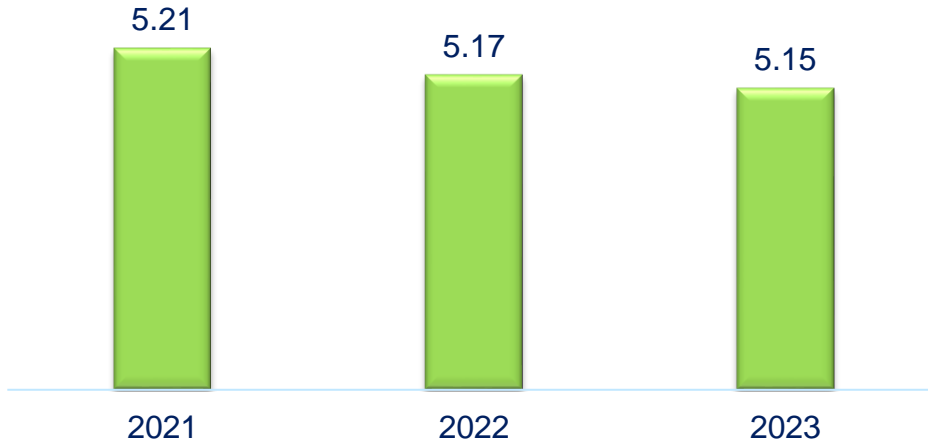


Thermal - Kg/Part



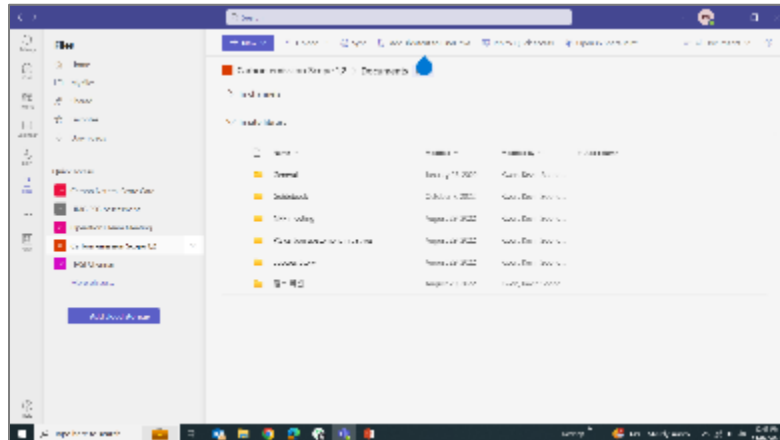
National and Global bench marking

SEC KWH/Part

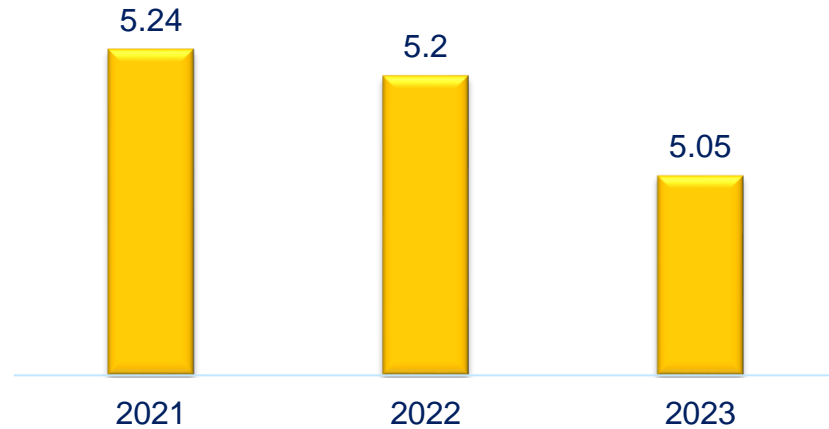


SEC KWH/Part

Denso Japan (Global)



5.35
5.25
5.15
5.05
4.95
4.85
4.75



Denso India (National)

Road map



Elimination



Substitution



**Reduce, Reuse,
Recycle**

Major Econ projects 2024~25



Additional 500 KW solar panel Installation



Automation in HEX
Savings. 0.17 Mn KWH.



Induction brazing for HEX.
Savings. 0.08 Mn KWH



Compressed Air
Auto shut Off in machines
Savings. 0.07 Mn KWH



Use of AHU condensation water
Savings. 0.04 Mn KWH



Auto Air conditioner
temperature switching
Savings. 0.12 Mn KWH

Summary - ECON Projects

Year	No. of Energy saving projects	Investment (Mn. INR)	Electrical savings (Mn. KWH)	Thermal Savings (Mn. Kcal)	Total savings (Mn. INR)	Payback period (In months)
2021	14	1.9	0.25	154	1.41	15.6
2022	15	3.9	0.45	187	3.32	11
2023	14	9.79	1.56	74	8.24	13
Total	43	15.59	2.26	415	12.97	13.2

Energy Saving projects 2021

Fin Mill Upgradation



Savings

KWH : 38,000
₹ 2.8 Lacs.

Inv. & ROI

₹ 3.5 Lacs.
14 Months

Design change in Hydraulic power pack



Savings

KWH : 16,000
₹ 1.2 Lacs.

Inv. & ROI

₹ 2 Lacs.
18 Months

Seven Days timer for fans



Savings

KWH : 6,000
₹ 0.45 Lacs.

Inv. & ROI

₹ 0.05 Lac.
12 Months

BLDC Fans



10 Fans

Savings

KWH : 7,480
₹ 0.56 Lacs.

Inv. & ROI

₹ 1.1 Lacs,
23 Months

Local Preheating system



Savings

KWH : 20,000
₹ 1.5 Lacs.

Inv. & ROI

₹ 1.2 Lacs.
8 Months

LPG Ionizer



Savings

MKCl : 99
₹ 1.1 Lacs.

Inv. & ROI

₹ 2.2 Lacs.
24 Months

Header Forming Machine Upgradation



Savings

KWH : 37,000
₹ 2.8 Lacs.

Inv. & ROI

₹ 5 Lacs.
19 Months

Hydraulic to servo



Savings

KWH : 47,000
₹ 3.5 Lacs.

Inv. & ROI

₹ 2.5 Lacs.
7 Months

Condensation water use



Savings

KWH : 1,700
₹ 0.13 Lacs.

Inv. & ROI

Zero
Immediate

Energy Saving projects 2022

Header modification in air compressor



Savings

Inv. & ROI

**KWH : 37,000
₹ 2.8 Lacs.**

**₹ 0.45 Lacs.
2 Months**

Cab furnace on sleep mode



Savings

Inv. & ROI

**KWH : 72,000
₹ 5.4 Lacs.**

**Zero
Immediate**

Exhaust fan automation



Savings

Inv. & ROI

**KWH : 5,400
₹ 0.41 Lacs.**

**Zero
Immediate**

Solar street light



Savings

Inv. & ROI

**KWH : 12,000
₹ 0.91 Lacs.**

**₹ 2 Lacs.
26 Months**

Heat Resistance paint



Savings

Inv. & ROI

**KWH : 11,000
₹ 0.87 Lacs.**

**₹ 1.8 Lacs.
24 Months**

Energy Efficient LPG torch & PID Controller



Savings

Inv. & ROI

**MKcl : 126.5
₹ 2 Lacs.**

**₹ 2.7 Lacs.
24 Months**

Hydro pumping system for Industrial water pump



Savings

Inv. & ROI

**KWH : 23,000
₹ 1.7 Lacs.**

**₹ 2.1 Lacs.
13 Months**

Air compressor with VFD



Savings

Inv. & ROI

**KWH : 140,000
₹ 10.06 Lacs.**

**₹ 6 Lacs.
6 Months**

PG wise compressed air isolation



Savings

Inv. & ROI

**KWH : 120,000
₹ 9.1 Lacs.**

**₹ 4 Lacs.
5 Months**

Energy Saving projects 2023

Automatic Air Isolation valve



Savings

Inv. & ROI

**KWH : 74,880
₹ 5.7 Lacs.**

**₹ 0.45 Lacs.
2 Months**

Cab furnace on sleep mode



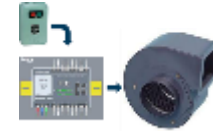
Savings

Inv. & ROI

**KWH : 4,99,200
₹ 38 Lacs.**

**Zero
Immediate**

Blower switching with PLC



Savings

Inv. & ROI

**KWH : 59,904
₹ 4.6 Lacs.**

**Zero
Immediate**

Barrel heater on sleep mode



Savings

Inv. & ROI

**KWH : 1,55,520
₹ 12 Lacs.**

**₹ Zero
Immediate**

Chiller control with machine operation



Savings

Inv. & ROI

**KWH : 75,690
₹ 5.8 Lacs.**

**Zero
Immediate**

LP^g to Induction brazing



Savings

Inv. & ROI

**MKcl : 74
₹ 4.5 Lacs.**

**₹ 65 Lacs.
14Years**

Air blower in place of Compressed air



Savings

Inv. & ROI

**KWH : 52,416
₹ 4.1 Lacs.**

**₹ 2 Lacs.
6 Months**

BLDC fan populated



Savings

Inv. & ROI

**KWH : 37,440
₹ 2.9 Lacs.**

**₹ 5.5 Lacs.
21 Months**

Roll grooving automation



Savings

Inv. & ROI

**KWH : 624000
₹ 4.8 Lacs.**

**₹ 25 Lacs.
60 Months**

Potential Areas addressed



Lighting
LED

Compressed Air
Pressure, VFD



Fan
BLDC, HVLS

Water
3R



Motors
De-rate, VFD, IE3/4

Upgradation
Old Machines



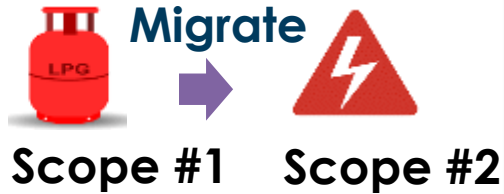
Efficiency
< 60% to >85%
Automation

Power factor
Close to Unity



Innovation (Induction Brazing for Fluid Transport Line)

Need of the Project:



Net Zero



Was:



- 3 Nos. x 3 sets (9 no's) LPG Torches.
- High Ambient Temperature
- Unsafe - Fire Hazard

Cycle Time	LPG Consumption/Annum	Carbon Emission	LPG Cost / Annum
16 ~ 18 Secs.	4.8 x 2 = 9.6 Tons	29.6 tCO _{2e}	9.2 Lakhs

Now:



- Induction based flameless Brazing.
- Replaced 2 LPG brazing machines.
- Green Power utilized for the process.

Cycle Time	Energy / Annum	Carbon Emission	Energy Cost / Annum
18 ~ 20 Secs.	84,000 KWH	Zero	4.7 Lakh

Cascade the Technology & replace all LPG Brazing machines in FT & Hex. PGs

Innovation (LPG to Electric heating in Roti maker)

As is

Now

IMPROVEMENT



EFFECT

- LPG for Roti making
- Flame is used for baking
- LPG consumption 468KG/month

- Electric heater based Roti making
- No Flame, only heat.
- Electricity consumption - 1100 KWH / month

Benefits

Energy saving : 3,48,000 KWH
Investment : INR 40,000

Renewable Energy source - Onsite

Carport



Capacity : 233 KW
Year of installation : 2020
Annual Generation : 310 MWH

Admin building



Capacity : 200 KW
Year of installation : 2021
Annual Generation : 300 MWH

**Total
2383
KW**

Compressor Roof Top



Capacity : 550 KW
Year of installation : 2022
Annual Generation : 960 MWH

HEX. Roof Top



Capacity : 1400 KW
Year of installation : 2023
Annual Generation : 2600 MWH

With
WEB
Based
Realtime
Monitoring
system

Energy
Generation
reviewed
Everyday

Caters 12% of our daily consumption

Renewable Energy sources - offsite



Solar Capacity : 15 MW
Year of installation : 2022
Annual Generation : 23,000 MWH

Windmill Capacity : 10 MW
Year of installation : 2021
Annual Generation : 8,000 MWH



84% for our Plant

Waste utilization

Sl. No.	Year	Type of waste	Quantity (TON)	GCV	Waste as percentage of total fuel
1	2021 - 23	Used Oil	101.76	2383.9	100%
2	2021 - 23	Chemical waste	208.7	1627	100%
3	2021 - 23	Residues	1.9	18	100%

Sl. No	Type of Waste Generated	2021 (TON)	2022 (TON)	2023 (TON)	Disposal Method
1	Used Oil	28.98	43.26	29.52	Recycle
2	Residues	0.332	0.875	0.71	Co-Process
3	Phosphate sludge	45.84	35.21	39.31	Land filling
4	Chemical waste	74.3	61.3	73.1	Co-Process
5	Empty Bin	10.16	13.47	22	Recycle
6	Wood	51.9	58.2	61	Recycle

Emission intensity

Year	NO ₂ (MT)	SO ₂ (MT)	CO ₂ (MT)
2021	0.975	0.004	0.026
2022	0.935	0.009	0.018
2023	0.920	0.007	0.017

Short term plan

- Optimize the Specific fuel consumption
- Emission control device for Diesel Generators - Installed

Long term plan

- Migrate from Scope 1 to Scope 2
- Eliminate fossil fuels
- Adopting to latest technology



Energy Policy

	ENERGY MANAGEMENT SYSTEM MANUAL	REF	ANNEXURE 1
		REV	03
	ENERGY POLICY	DATE	21.12.2020
		PAGE	1 of 1

HASI – CHENNAI is committed to ensure in achieving continuous improvement in Energy Management in order to minimize the consumption and increase the energy efficiency of the plant, which will improve the environment and the organizational competitiveness.

Achieving excellence in Energy Management System is a plant wide responsibility and it ensures all the activities at HASI – Chennai, involved in the manufacture of automotive thermal management solutions (HVAC, Power Train Cooling, Fluid transportation and Compressors).

HASI – CHENNAI have developed an Energy Management System by promoting the efficient use of energy and other natural resources. This includes developing initiatives with customers, contractors and suppliers from Local, National and Global to maximize and promote the efficient use of energy.

As a part HASI – CHENNAI Is committed to promote and initiate continuous improvement in Energy Performance is implicated to:

- Ensuring on improving the Energy efficiency through various aspects.
- Setting Energy objectives and targets for reduction of Energy Consumption through various formal and innovative Projects and reviewing at appropriate interval on the Development.
- Complying with all relevant legislation and other requirements
- Ensure the availability information on Energy Management System to all Employees and educate them in the Energy Savings, Latest technology and Environment impact. Involving them in Projects which motivates them and creates ownership.
- Supporting the purchase of energy efficient products and services, and design for Energy performance improvement.
- Ensuring the usage of Natural resources and green energy in process .

HASI – CHENNAI is committed in implementing Energy Management Systems in accordance with the ISO 50001 – 2018 Energy Management Standard.

HASI – CHENNAI will ensure the best practices related to Energy Management Systems will be shared with other Global Plants to minimize the Energy usage at Corporate Level target.

HASI – CHENNAI ensures the involvement of Top management for effective internal communication on Energy Management System and the definition of Objectives & energy indicators, the resulting obligations are complied. Also ensures the company's Long –term planning takes energy performance into account.

PREPARED BY	REVIEWED BY	APPROVED BY

Ensuring the usage of Natural resources and green energy in process

Hanon Energy policy Encouraging Green energy usage

Energy audit with supplier and out come

Hanon supplier Energy Audit report - 2023

Supplier: **TAFE India Limited**

Plant Location : **Marimalai Nagar, Chenglepet**

Date of Audit: **14/12/2023**

Hanon supplier Energy Audit report - 2023

Supplier: **Wonjin Auto Parts India Pvt. Ltd.**

Plant Location : **Marimalai Nagar, Chenglepet**

Date of Audit: **15/12/2023**

Energy Initiatives:

- 1.80 % LED lights
- 2.Day light system implemented in stores & dispatch areas
- 3.Energy efficient motors & VFD for EOT cranes.
- 4.VFD chiller pumps
- 5.Natural ventilation
- 6.VFD for water supply pumps.
- 7.Solar street lights
- 8. HVLS fan
- 9. Solar PPA signed for 80% renewable power

Area to improve.

- 1.Roof top solar
- 2.BLDC fan
- 3.Solar light pipes in inspection area
- 4.VFD for air compressors
- 5.Hydraulic to servo conversion
- 6.Roof top solar for 300KWp
- 7.Cooling tower fan idle mode

Auditor from Hanon : **V. Dinakaraja & Sakthivel**

Representative from Tafe India Ltd

**: Mr. Maheshwar Divisional
Manager Plant Engineering**

Energy Initiatives

- 1.100 % LED lights
- 2.Day light system implemented all possible areas.
- 3.Servo conversion from hydraulic
- 4.VFD controller in Air compressors.
- 5.Natural ventilation
- 6.Ring main air distribution system.

Area to Improve

- 1.Timer control for street lights
- 2.HVLS fan
- 3.Solar light pipes in inspection area
- 4.BLDC fans for shop floor employees comfort
- 5.Solar PPA
- 6.Roof top solar for 500KWp
- 7. Induction brazing
- 8.LPG ionizer for burners.
- 9. Heat recovery for drying process.

Auditor from Hanon : **C. Kumar & Sakthivel**

Representative from Wonjin Auto Parts Ind. Pvt. Ltd.

**Mr. Aravind
Asst. Manager Utility & EnMS**

Energy audit with supplier and out come

Hanon supplier Energy Audit report - 2023

Supplier: Worry Automotive Systems India Pvt. Ltd.

Plant Location : **Marimalai Nagar, Chenglepet**

Date of Audit: **16/12/2023**

Hanon supplier Energy Audit report - 2023

Supplier: Youngshine Motherson Autotech Ltd.

Plant Location : **Urapakam, Chenglepet**

Date of Audit: **18/12/2023**

Energy Initiatives:

- 1.100 % LED lights
- 2.Flow control dampers during non using areas.
- 3. BLDC fans in shop floor
- 4.VFD controller in Air compressors.
- 5.Shop floor day light system.
- 6.Solar street lights
- 7. PPA for wind power 50 %
- 8.Planned PPA for solar power 50%

Area to improve.

- 1.Natural ventilation
- 2.Cooling tower cut off concept.
- 3.Solar light pipes in inspection area
- 4.DG switching on reduction.
- 5.HVLS fans.
- 6.Room insulation for cooling loss

Auditor from Hanon : **V. Dinakaraja & Sakthivel**

Representative from Worry
Automotive Systems India Ltd:
**Mr. Karthick, Deputy Manager
maintenance & Utility**

Energy Initiatives:

- 1.100 % LED lights
- 2.50001 certified company
- 3.Machine idle stop for hydraulic & coolant motors.
- 4.VFD for air compressors
- 5.Natural ventilation
- 6.VFD for water supply pumps.

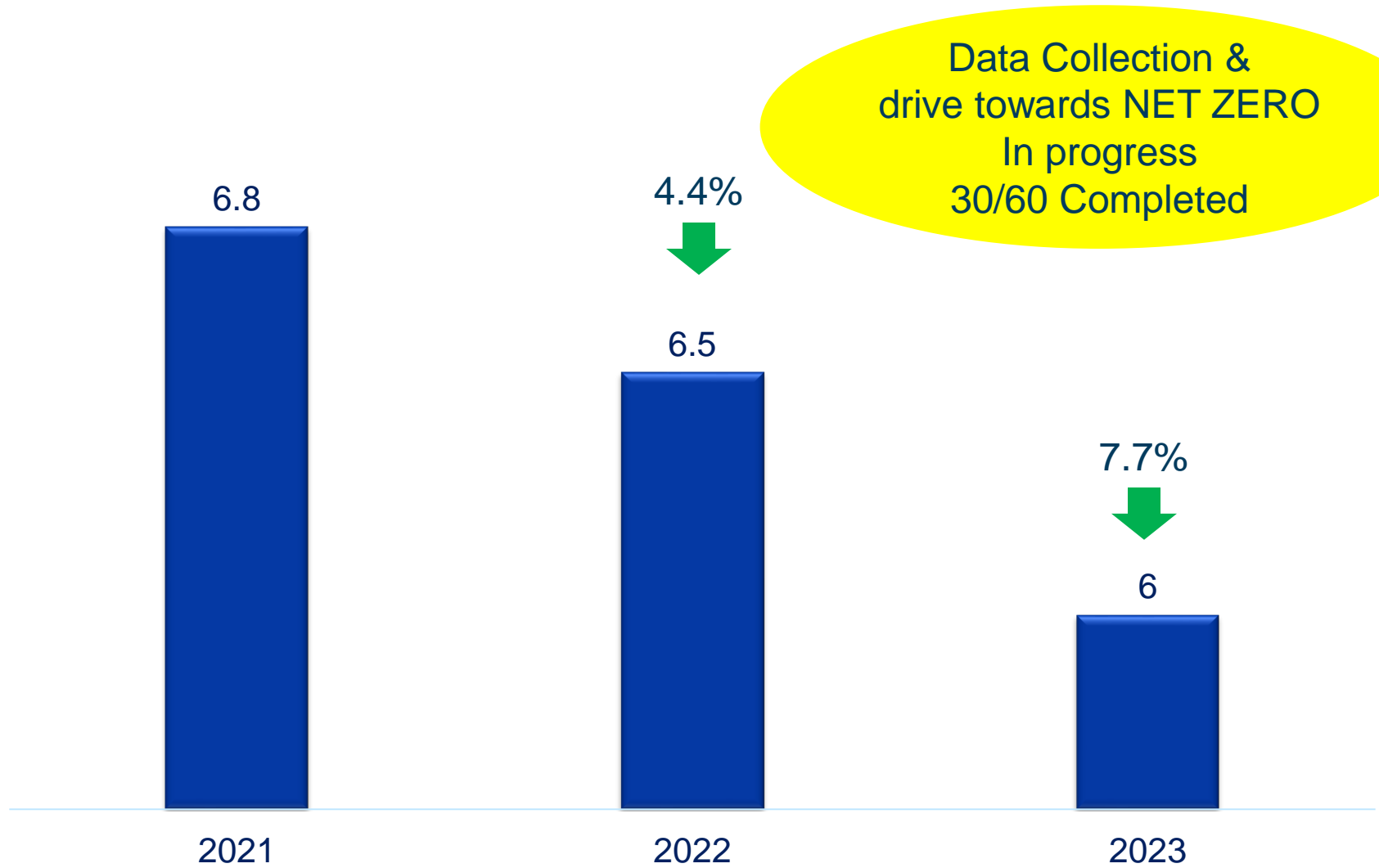
Area to Improve.

- 1.Roof top solar
- 2.BLDC fan
- 3.Solar light pipes in inspection area
- 4.Day light system
- 5.HVLS fan
- 6.Solar street lights
- 7.Assembly room & windows insulation
- 8.Air-curtain for ac rooms
- 9.Roof insulation for assembly section.

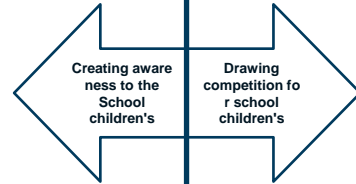
Auditor from Hanon : **V. Dinakaraja & C. Kumar**

Representative from Youngshine
Motherson Autotech Ltd.
Mr.Meenakshi Sundaram
senior Engineer- Plant Engineering
& maintenance

Average SEC of Supply Chain



Energy conservation Awareness

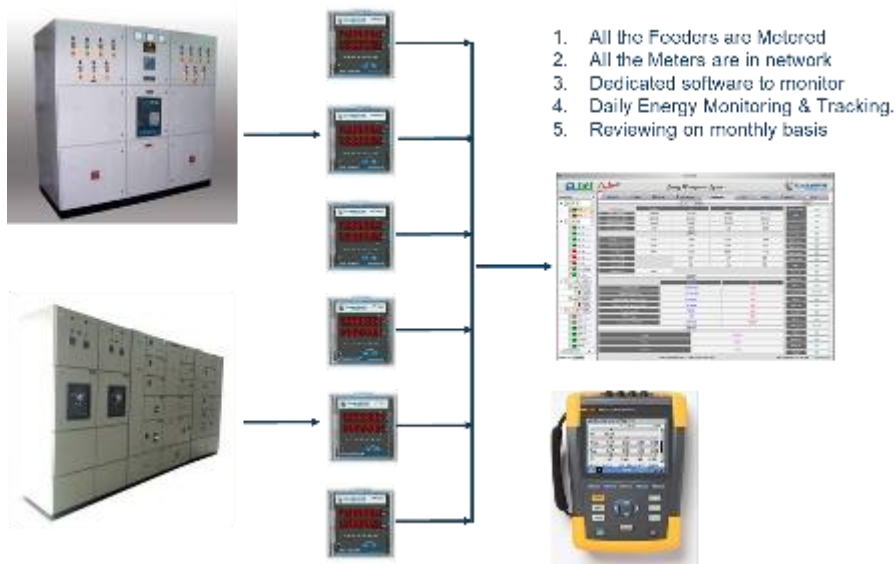


Awareness session conducted in Ninnakarai Govt. High School

Awareness to Employees

EMS system & ISO 50001:2018

Energy Monitoring system



150 MFM connected in the network

Learnings:

- Air isolation valve : CII
- Blower for cleaning : CII

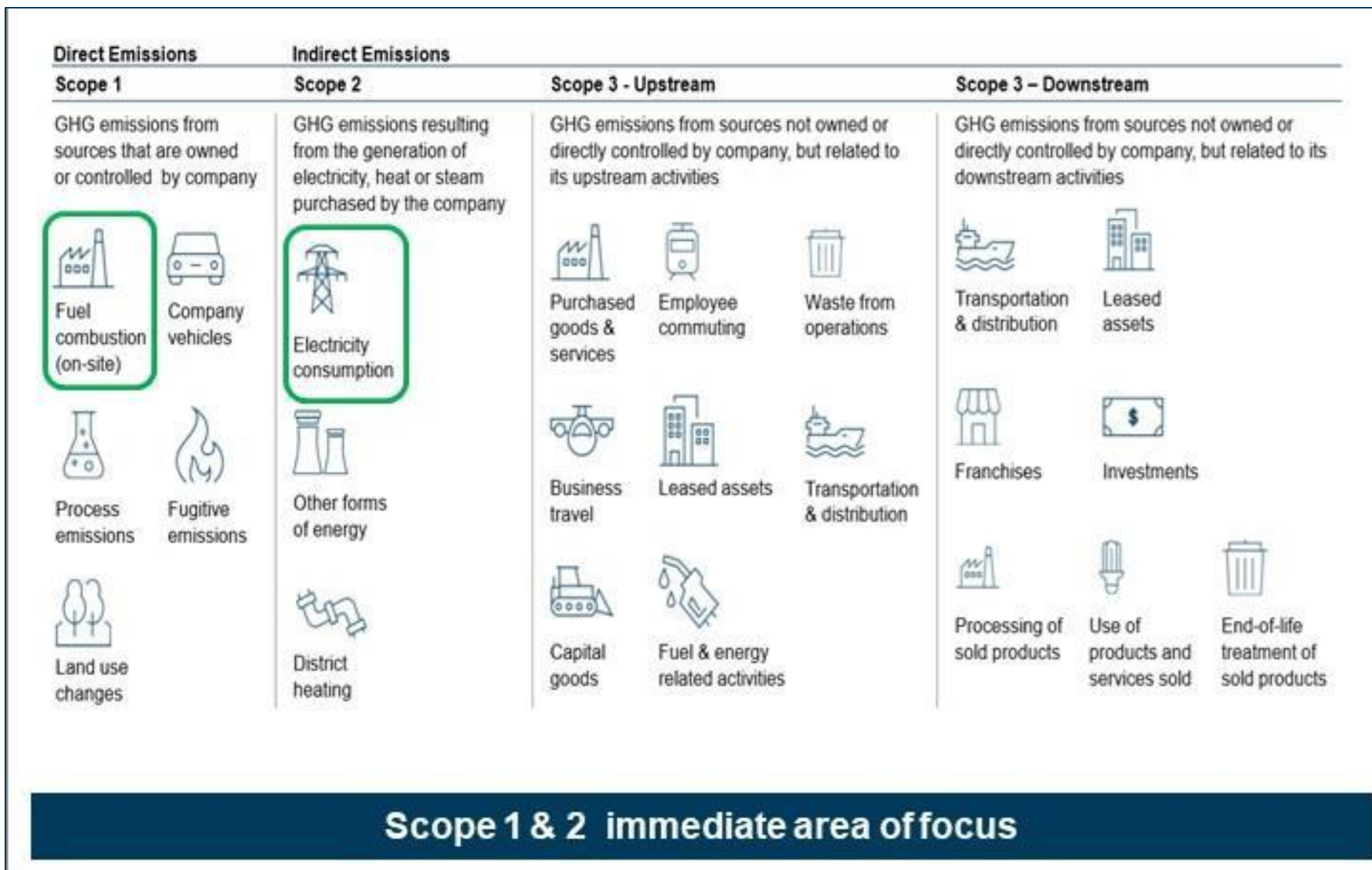


Project Categorization



Make Data a Key Asset” Right Data, Right Time, Right Decisions creates Better Value

Net Zero commitment

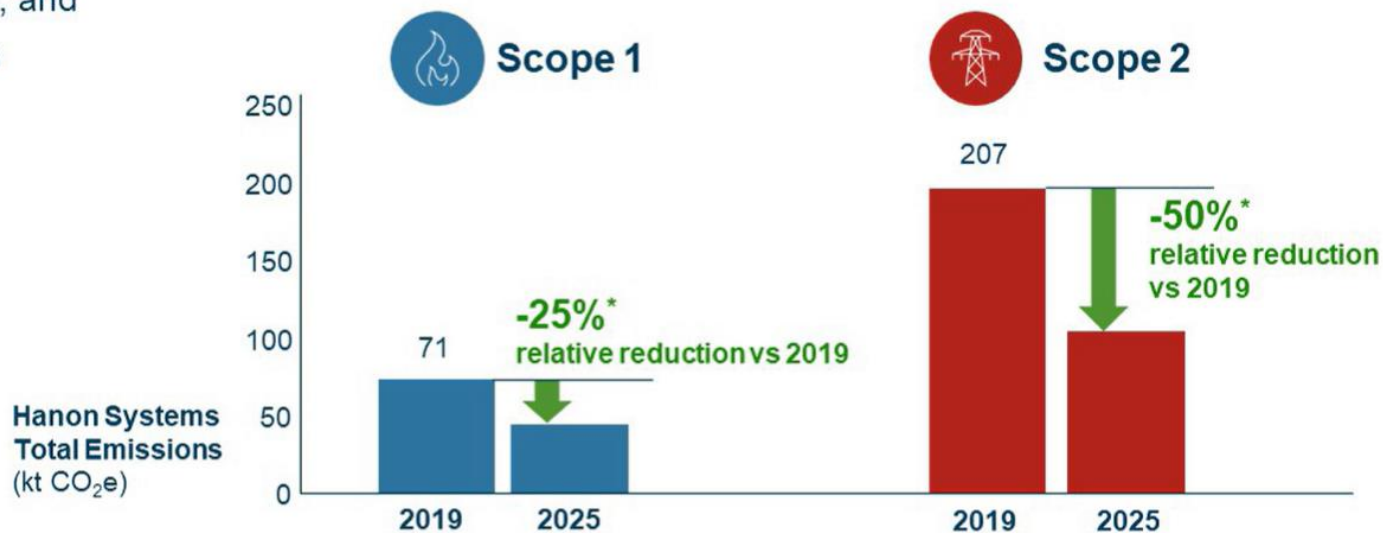


Emission Reduction Target – Short Term

Take Action

Understand the site's Scope 1 and 2 greenhouse gas emissions (in tCO₂e)

- 2019 baseline
- current state; and
- 2025 targets



Net Zero commitment – Long term

Overview of individual plant targets with respect to renewable electricity switch



	To 2025			To 2030			To 2035		
	<50% green	min. 50% green	100% green	<50% green	min. 50% green	100% green	<50% green	min. 50% green	100% green
Europe	Alba	Gebze	Palmela	Alba	Gebze	Palmela	Alba	Gebze	Palmela
	Bad Homburg	Hluk	Pecs	Bad Homburg	Hluk	Pecs	Bad Homburg	Hluk	Pecs
	Benevento	Ilava	Plovdiv	Benevento	Ilava	Plovdiv	Benevento	Ilava	Plovdiv
	Campiglione	Kladno	Retsag	Campiglione	Kladno	Retsag	Campiglione	Kladno	Retsag
	Charleville	Novy Jicin		Charleville	Novy Jicin		Charleville	Novy Jicin	
Americas	Alabama	El Paso DC	Queretaro	Alabama	El Paso DC	Queretaro	Alabama	El Paso DC	Queretaro
	Atibaia	Monterrey	Rivereno	Atibaia	Monterrey	Rivereno	Atibaia	Monterrey	Rivereno
	Belleville	Monterrey EFP	San Lorenzo	Belleville	Monterrey EFP	San Lorenzo	Belleville	Monterrey EFP	San Lorenzo
	Carey	Novi (AIC)	San Lorenzo 2	Carey	Novi (AIC)	San Lorenzo 2	Carey	Novi (AIC)	San Lorenzo 2
	Concord	Paso del Norte	Santa Fe	Concord	Paso del Norte	Santa Fe	Concord	Paso del Norte	Santa Fe
Korea	Asan	Daejeon	Ulsan	Asan	Daejeon	Ulsan	Asan	Daejeon	Ulsan
	Cheonan	Pyeongtaek		Cheonan	Pyeongtaek		Cheonan	Pyeongtaek	
China	Beijing	Chongqing	Nanjing	Beijing	Chongqing	Nanjing	Beijing	Changchun	Changzhou
	Changchun	Dalian	Shanghai	Changchun	Dalian	Shanghai	Chongqing	Dalian	Nanchang
	Changzhou	Nanchang	Yancheng	Changzhou	Nanchang	Yancheng	Nanjing	Yancheng	Shanghai
Rest of Asia	Bhiwadi	Gujarat	Thailand	Bhiwadi	Gujarat	Thailand	Bhiwadi	Gujarat	Thailand
	Chennai	Pune		Chennai	Pune		Chennai	Pune	

Group locations (e.g., Novi): Scope 2 to be decarbonized by 2030 in two steps

Initiatives on GHG emission reduction – HASI Chennai



LED Lighting
100%



LPG to Electric
Scope #1 - 55% ↓



In-house Solar
2.4 MW (12%)



Water Balancing
ZLD



Miyawaki urban
Dense Forestation
5,000 Saplings



Solar & Wind Energy
thru' PPA
2023 - 83%



Induction Brazing
for FT line
Zero Emission



Energy Conservation/
Machines Upgrade
Energy Efficient

Power Purchase Agreement (PPA)



With 3rd Party



Partial supply Agreement

- 16% Renewable Energy (Solar / Wind / Bagasse) .



>80% Green Energy (Daytime)

- Solar Energy for complete year.
- 1290KWp In-house Solar.



90% Green Energy (YTD)

- 100% Solar & Wind Energy between May ~ September.

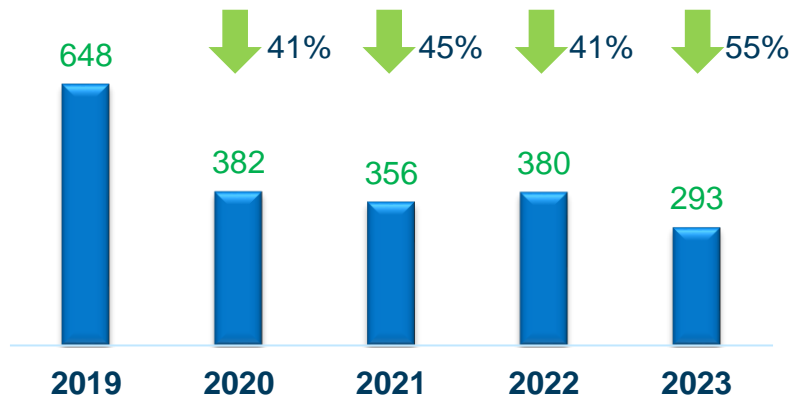


100% Green Energy (Plan)

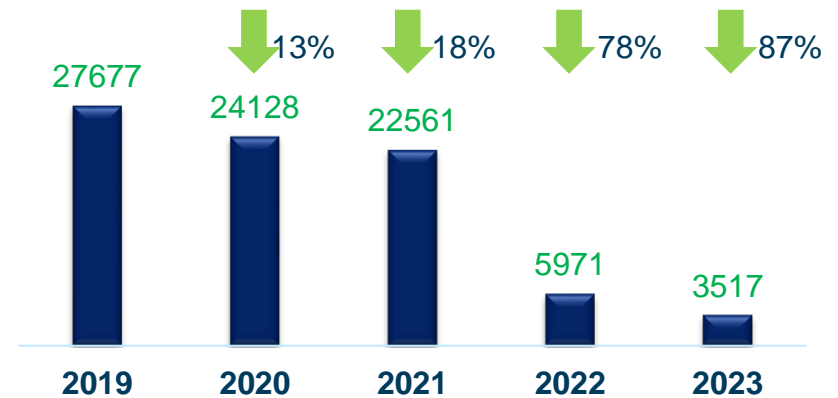
- 100% Solar & Wind Energy.
- Offset by i-REC & Green belt.

GHG Emission – Chennai (Base year – 2019)

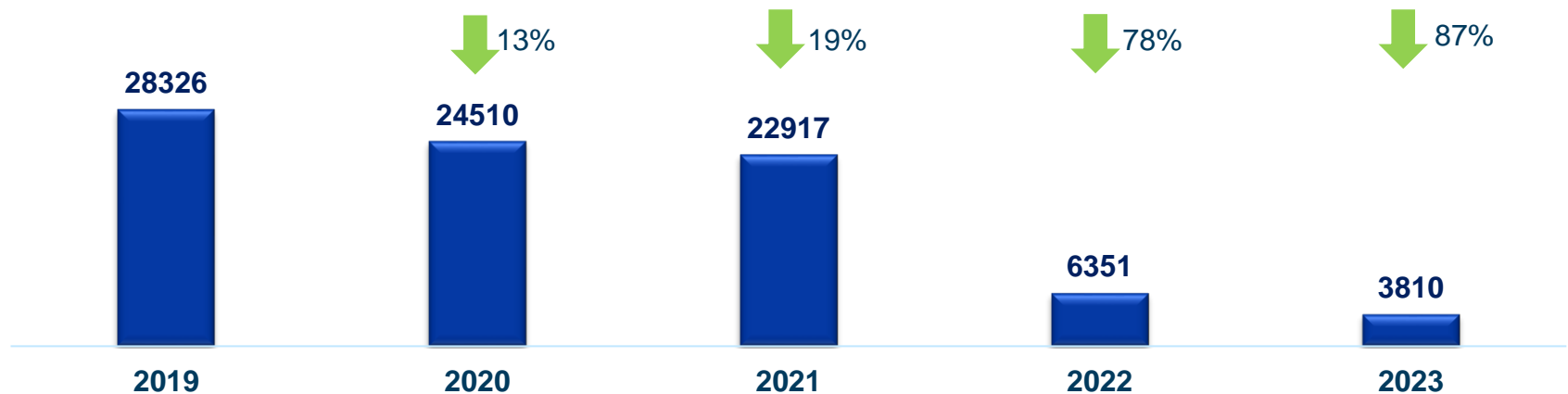
Scope 1 Emission (tCO₂e)



Scope 2 Emission (tCO₂e)



Overall Carbon Emission (tCO₂e)

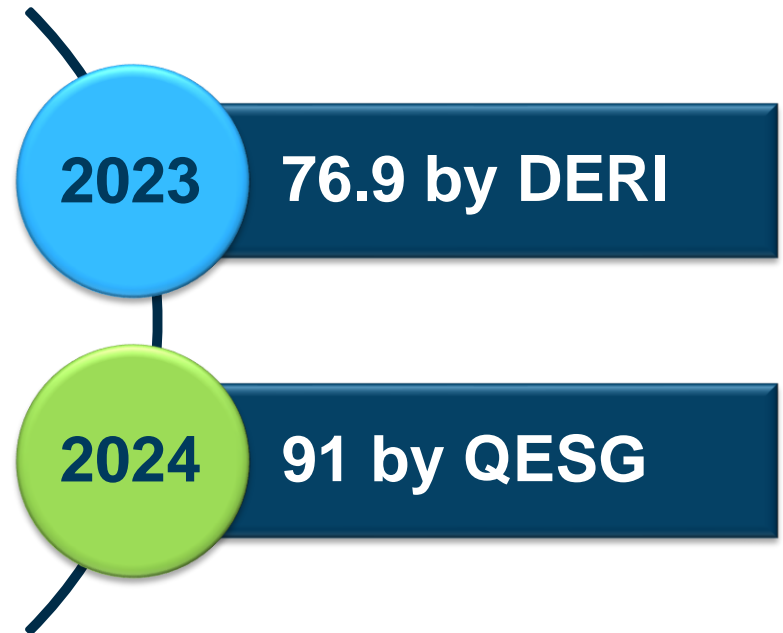


87% (tCo₂e) Carbon Reduction from 2019

ESG Assessment & Score

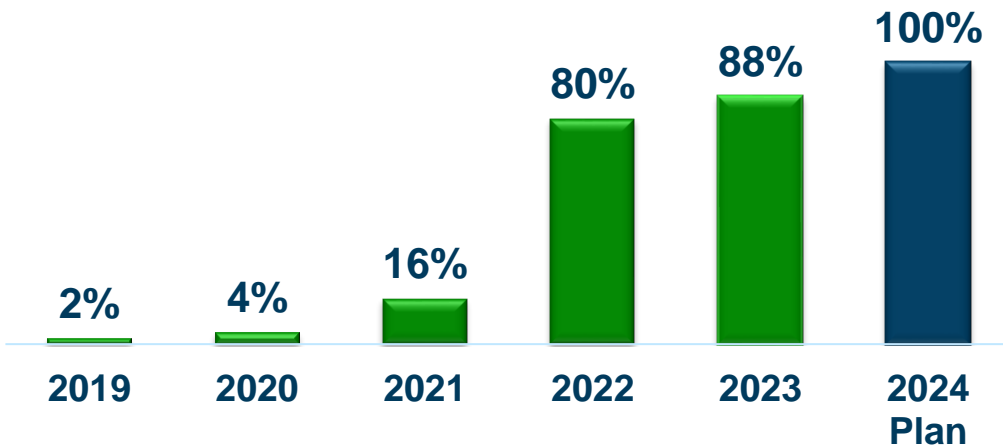


Environment Social & Governance

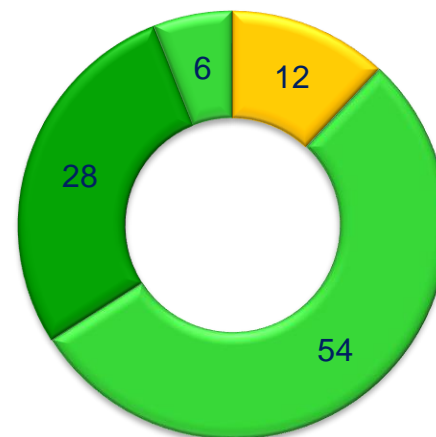


Completed Carbon Disclosure Project (CDP) for Water & Life cycle assessment (LCA) for one product

Renewable Energy Trend



% Consumption 2023



■ TNEB ■ Solar ■ Wind ■ Inhouse Solar

GHG Initiatives & Way Forward

2019-2020	2021	2022	2023	2024
Scope 1 to 2	Go Green Phase 1	Go Green Phase 2	Go Green Phase 3	Go Green Continued
LPG Burners into Electric Heaters.	540 KWp In-house Solar plant.	750KWp In-house Solar plant.	1.9 MWp In-house Solar plant.	Zero-in the Direct Emissions (Scope#1).
Miyawaki – Urban Dense Forestation – Green Belt	Solar Power from 3rd Party for Day use. (PPA)	Wind & Solar Power from 3rd Party for Day & night use.	LPG Brazing to Induction Brazing for Al. tubes.	Extend Induction brazing tech. to other PG's.
Upgrade machines – Energy Efficient.	Water balancing Zero Discharge.	Miyawaki Urban Forestation.	LPG heating to Electric heating.	100% Green Energy.
 <p>LPG to Electric</p>	 <p>Solar/ Zero Discharge</p>	 <p>Solar & Miyawaki</p>	 <p>FT Induction Brazing</p>	 <p>HEX Induction Brazing</p>



Recognition by customer



Hyundai Motors India Pvt. Ltd. Recognized us for best performance in carbon neutrality

Recognition by customer



Hyundai Motors India Pvt. Ltd. Recognized us for Excellence in Sustainability Drive



Awards & Credentials

2010 CII

2014 CII

2016 CII

2017 SEEM

2018 SEEM

2019 SEEM

2020 SEEM

2021 SEEM

Excellence in Energy Management

Awards & Credentials



CII 2022 Energy Efficient unit

SEEM 2022 Platinum Award for Energy Management 6th Consecutive Year





THANK YOU