motherson

Proud to be part of planet earth.

25th National Award for Excellence in Energy Management

Marelli Motherson Automotive lighting India Pvt. Ltd.,Pune

motherson

MARELLI

Presented By:-

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Ganesh Gore (Manager –Maintenance)

CII

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1.Marelli Motherson – Company Introduction

- **50 : 50** Joint Venture between Marelli & Samvardhana Motherson (India)

22nd largest automotive supplier worldwide

Motherson is one of the world's largest manufacturers of components for the automotive and transport industries with revenues of 11.3 Billion USD in 2019-20.

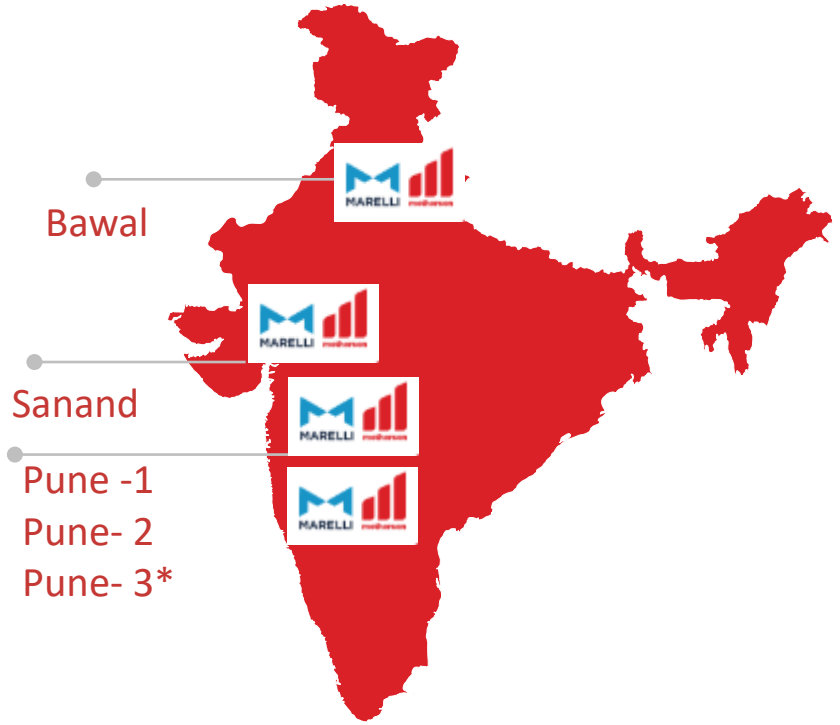
Driven by over 135,000 professionals from different cultures and nationalities.

Supports customers from over 270 facilities across 41 countries and 5 continents.

Global customer base of all the world's major automotive OEMs.

Full system solutions for automotive and other related industries.

7th largest automotive supplier worldwide



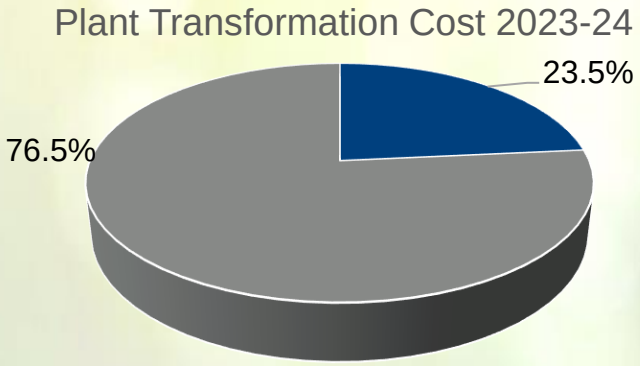
MARELLI is one of the leading Global independent suppliers to the automotive sector.
With a strong and established track record in innovation and manufacturing excellence.
With around 60,000 employees worldwide, the MARELLI footprint includes 170 facilities and R&D centres across Asia, the Americas, Europe, and Africa, generating revenues of 13.4 Billion Euro in 2019.



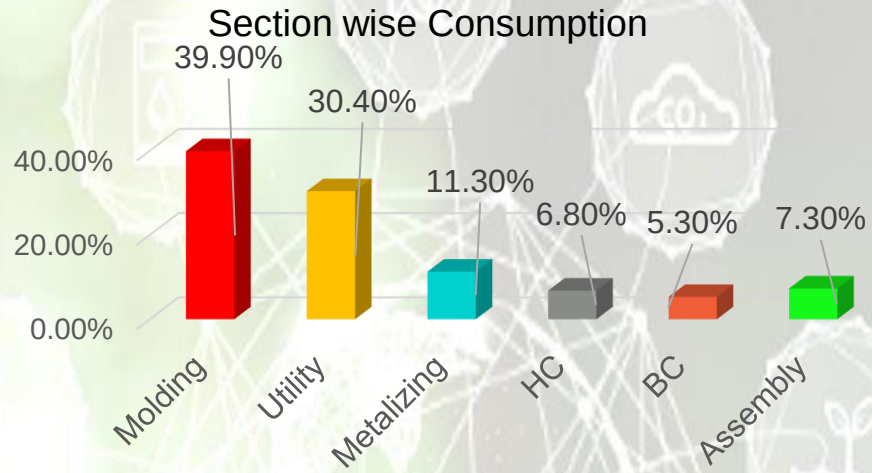
2. Manufacturing process

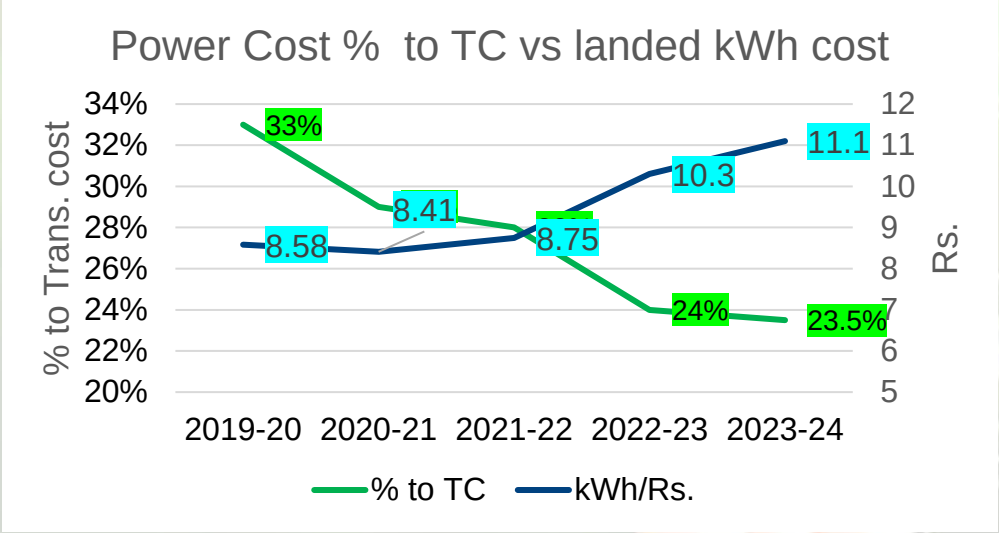
Product/Process	Head lamp	Rear Lamp	Air Intake manifold	PBA
Injection Moulding	HL housing Moulding; HL reflector Moulding; Hl bezel Moulding; Hl lens Moulding	RL housing Molding; RL lens outer Molding	Upper and Lower cover Molding	
Painting	Base coating; Hard Coating			
Surface Coating	Metalizing	Metalizing		
Assembly	Assembly	Assembly	Assembly	Assembly

3. Energy Consumption Overview



- **Energy (91.65 Mil. INR)**
- **Labor+Mainte.+Scrap+Consumables+Packaging (383.00)**

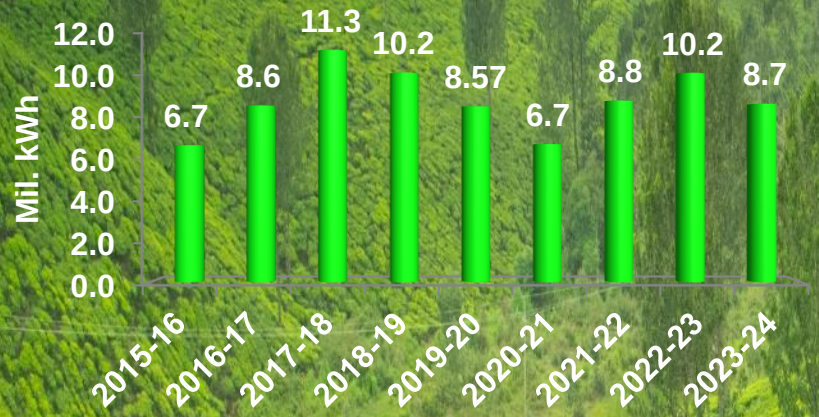


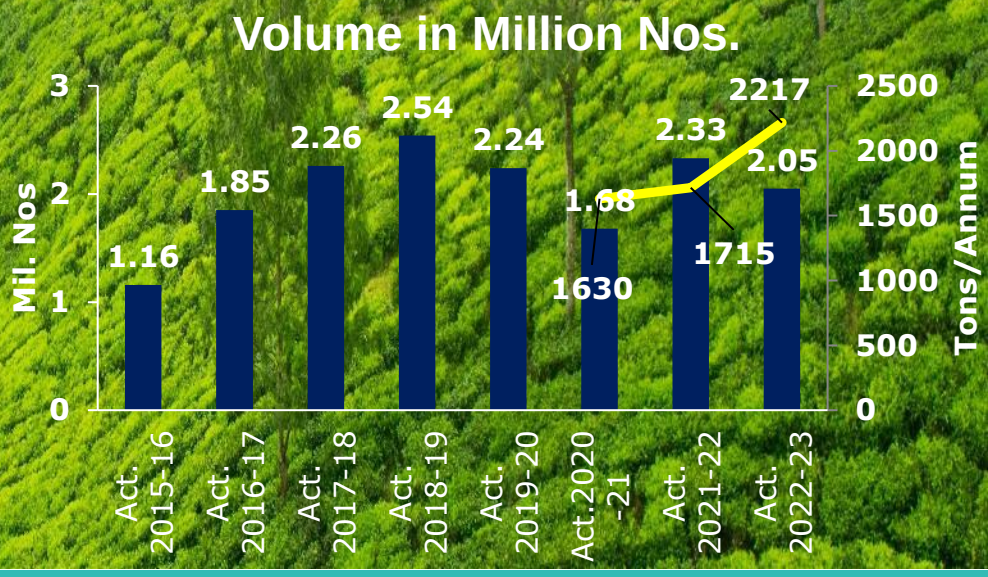


29% reduction over last 5 years

Power cost has been consistently dropping against the transformation cost. Despite hike in Power cost by 30% since 2019-20

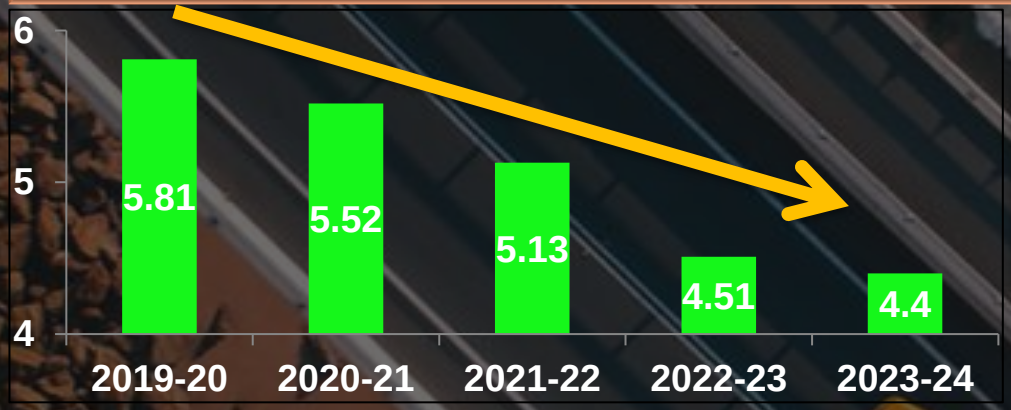
3. Specific Energy Consumption





3. Specific Energy Consumption

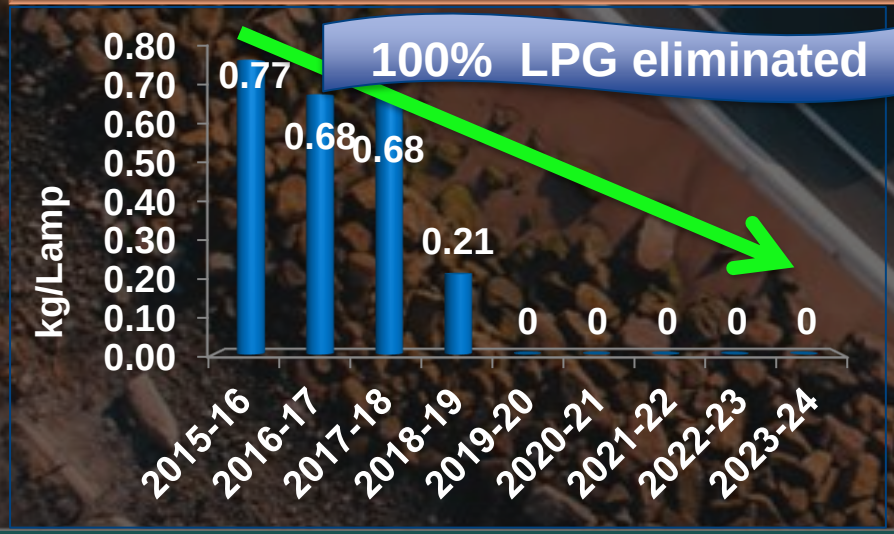
Specific Energy consumption kWh/Kg plant level



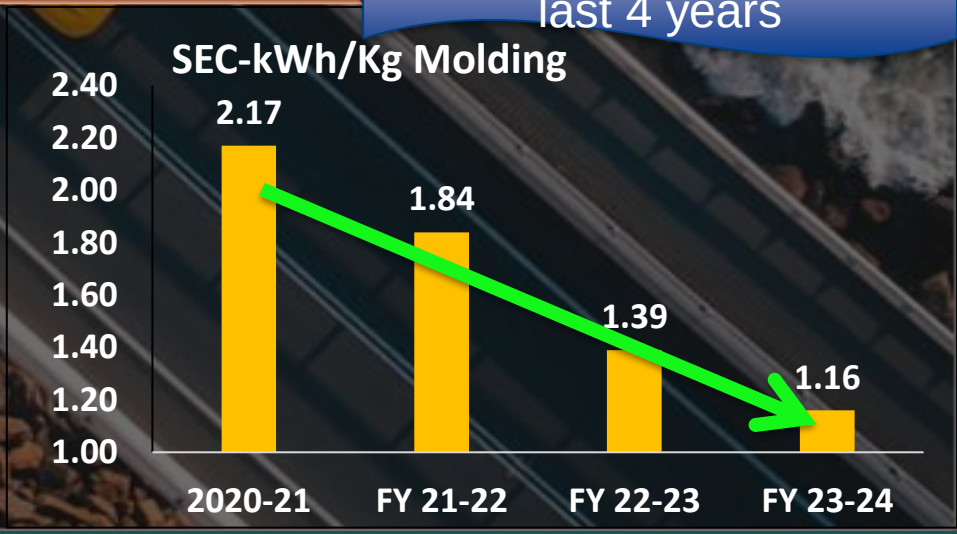
24.3% Reduction in last five years
Last one year 2.4% SEC reduction

Specific Energy consumption Thermal, Kg Lpg /Lamp

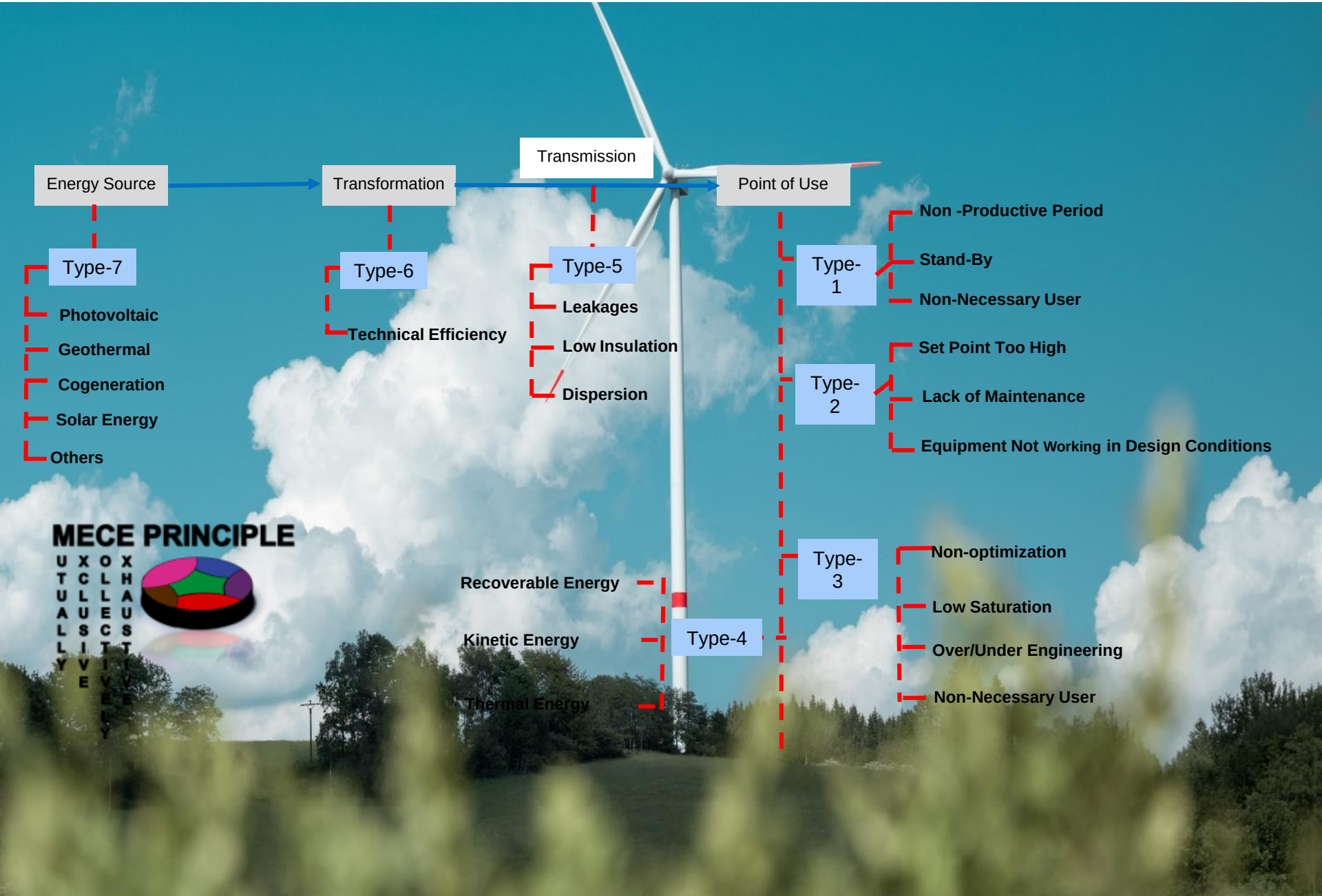
100% LPG eliminated



47% SEC reduction over last 4 years

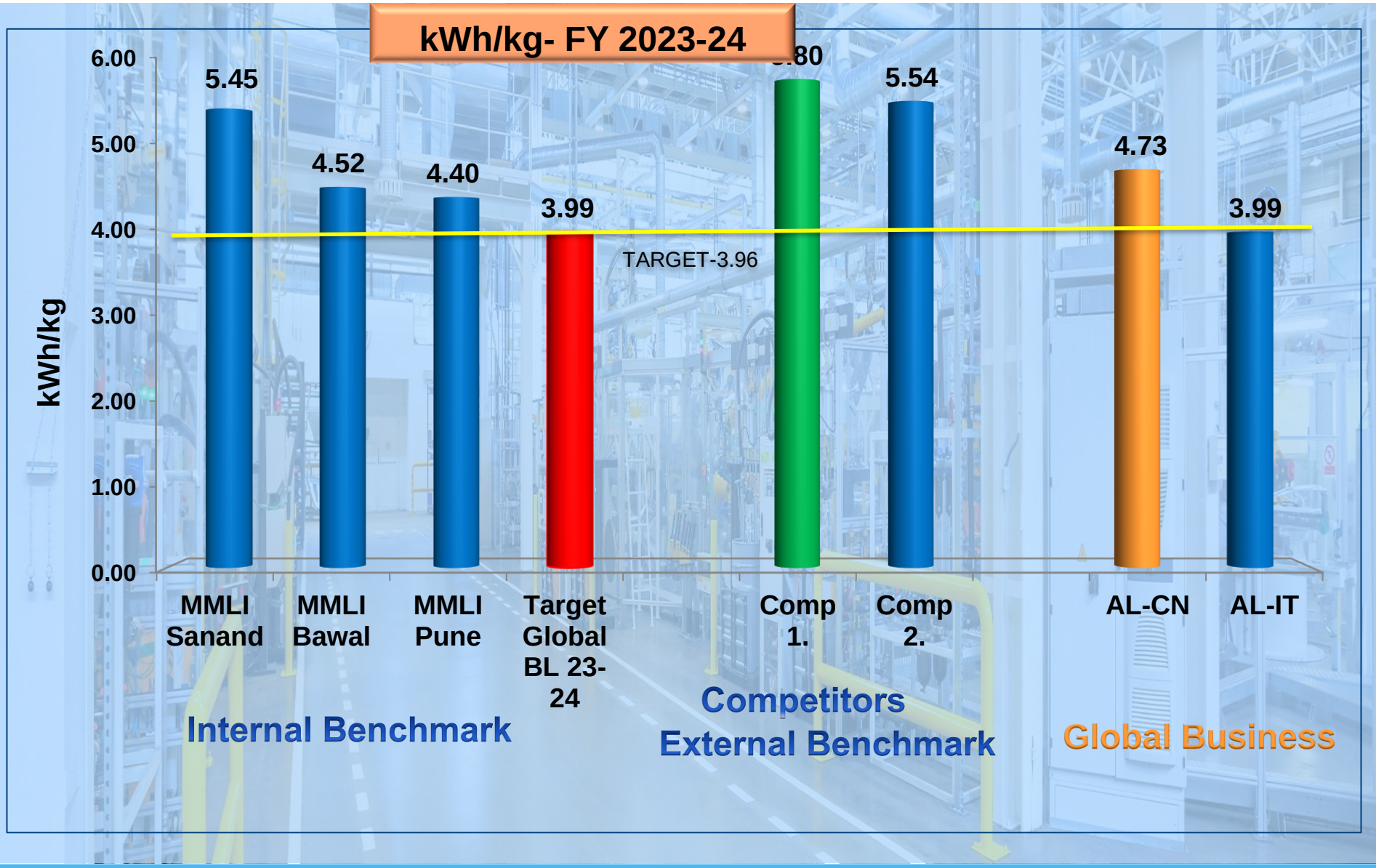


Energy- Types of Losses

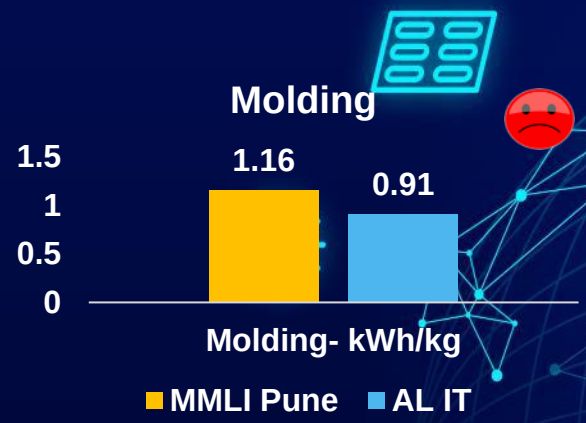


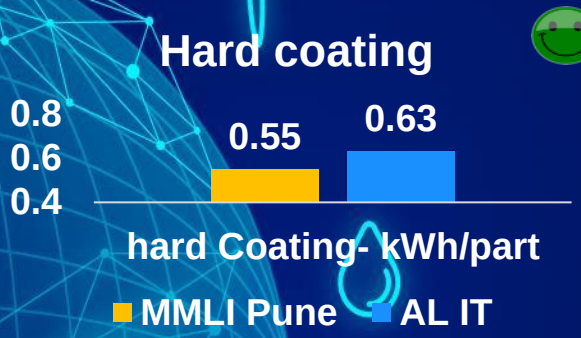
TO TD – Motherson Mantra

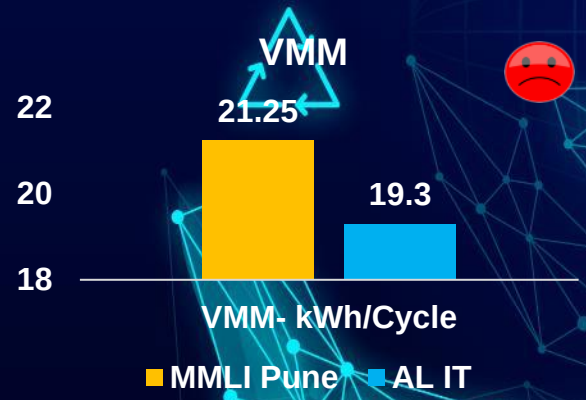
4. Competitors, National & Global Benchmark

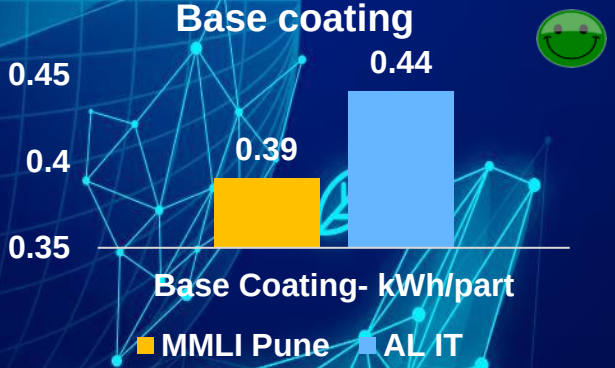


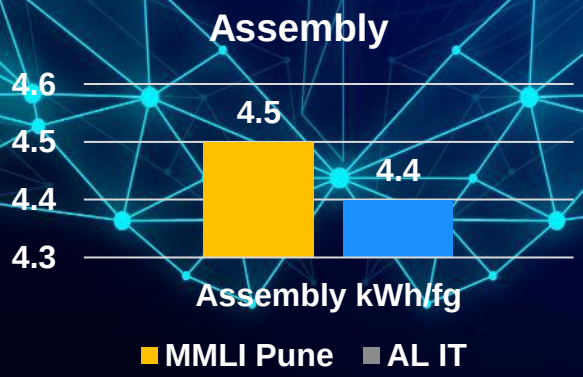
4. Process wise benchmark with global benchmark







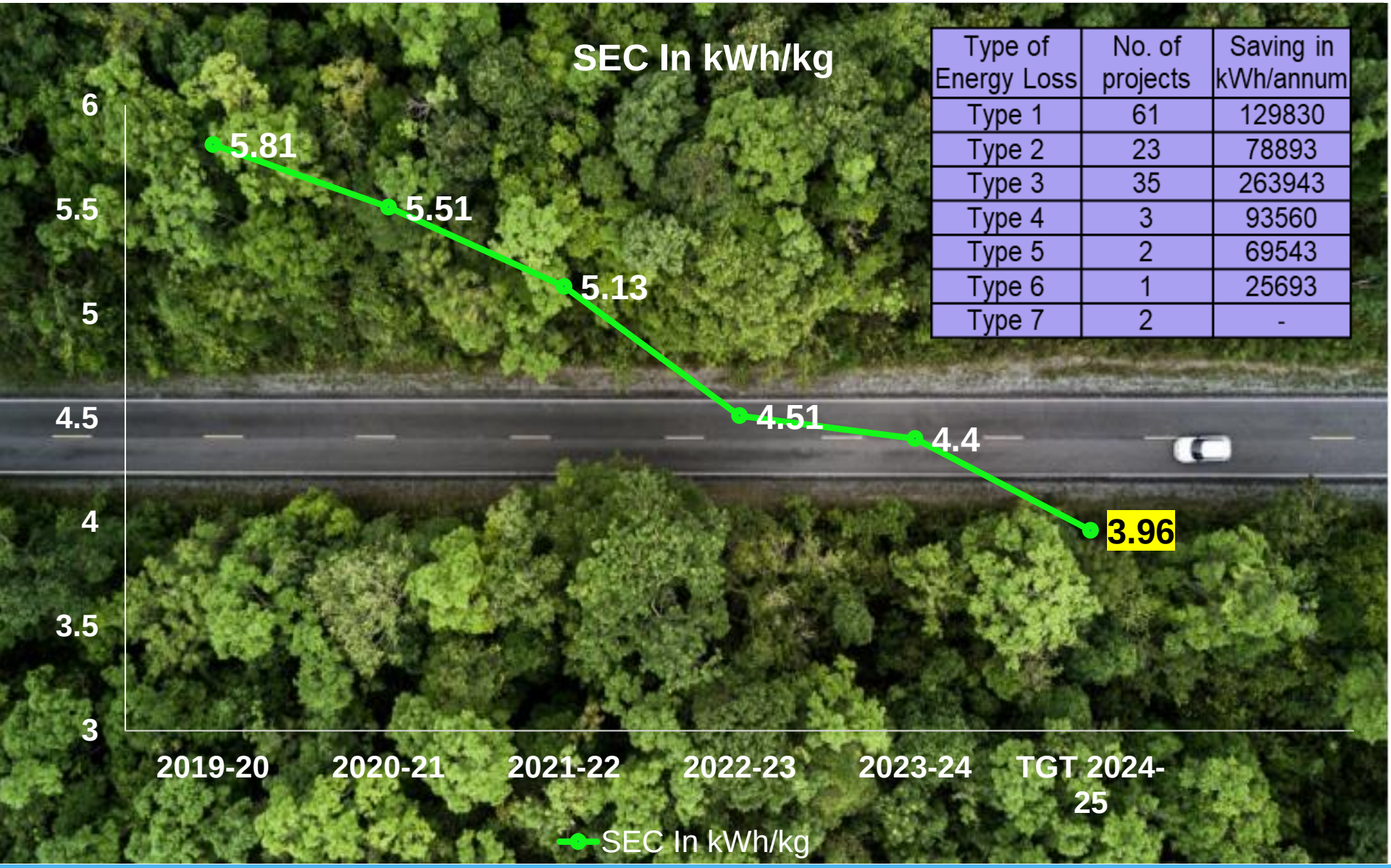




4.Internal benchmarking – connected load

Machine		1100T	1300T	NB 550T-II	650T	910T	1000T	1050T	BMC-1	BMC-2
Consumers										
In KW	Motor 1	36	45	45	45	13.6	37	55	90	107
	Motor 2	175	45		45	13.6	37	55		
	Motor 3	7.5	45			13.6			7.5	7.5
	Motor 4					13.6				
Motor type	Motor 1	Servo	Induction/VFD	induction/ DFE	Induction/VFD	Servo	induction/ DFE	Induction/VFD	induction/ DFE	Servo
(induction/servo/VFD controlled)	Motor 2	Servo	Induction/VFD		Induction/VFD	Servo	induction/ DFE	Induction/VFD	induction	induction
	Motor 3	induction	Induction/VFD			Servo				
	Motor 4					Servo				
	REFILLING	hyd motor	hyd. Motor	hyd. Motor	hyd. Motor	hyd motor	induction + VF	hyd motor	hyd motor	hyd motor
Idle current (Amp)	Motor 1	4.12	41.66	26.12	40.29	0.45	25.9	48.7	36.5	2.15
	Motor 2		38.01		38.91	2.13	25.83	47.7		
	Motor 3		38.9			0.87				
	Motor 4					2.14				
Nozzle heater (KW)	Heater 1	0.5	0.5	0.5	0.5	0.75	0.8	0.5		
Adapter	Heater 2	_	1.5	_	1	1.5	_	1	_	_
Barrel heater (KW)	Zone 1	12.2	16.39	2.8	11.48	12.4	6	11.48		
	Zone 2	12.2	14.07	2.8	11.04	12.6	6	11.04		
	Zone 3	12.2	14.07	2.8	11.04	12.6	6	11.04		
	Zone 4	12.2	12.9	2.8	10.13	12.6	6	10.13		
	Zone 5	12.2					6			
	Zone 6	12.2								
Barrrel length (mm)		3415	3050	1700	2800	2150	2900	2900		
Barrel diameter (mm)		260	245	105	226	215	245	230		
Hourly consumption kWh		45	53	10.7	35	21	24	40	30	20

4. Road map to achieve Target / global benchmark



Type of Energy Loss	No. of projects	Saving in kWh/annum
Type 1	61	129830
Type 2	23	78893
Type 3	35	263943
Type 4	3	93560
Type 5	2	69543
Type 6	1	25693
Type 7	2	-

4. Short /Mid/Long term Projects Planned

Short Term Plans

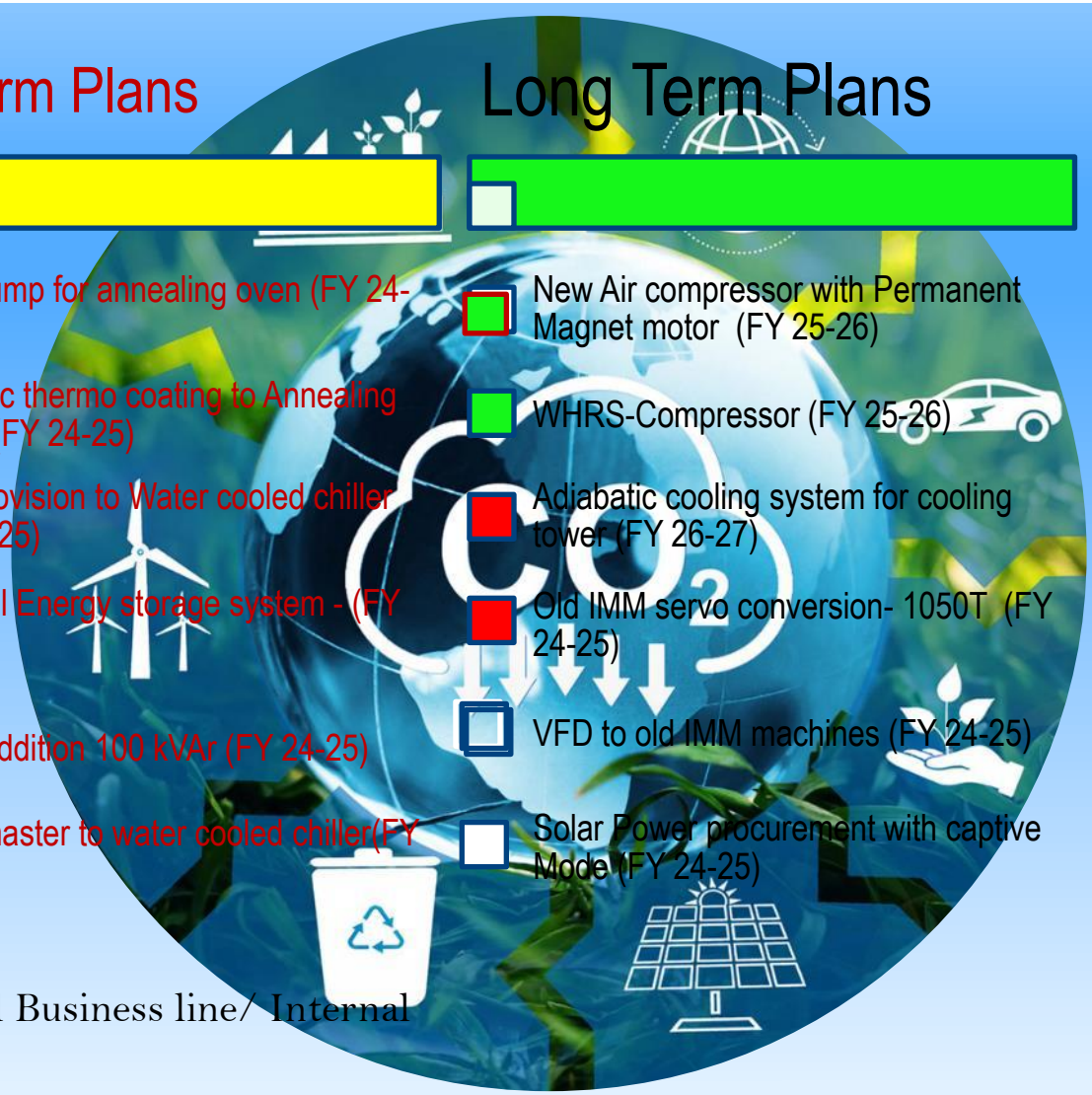
- Auxiliary IE 1 motors replacement with IE 3 6 no's. (Ongoing)
- Part cooling chamber provision in place of Air nozzle for part cooling .(Ongoing)
- Energy efficient gun instead of conventional air gun - 40 Nos (FY 24-25)
- Hard coat and Base coat UV energy consumption optimization - (FY 24-25)
- IMM Parameter optimization Type 2 Projects- 39 Nos (FY 24-25)
- Multi cavity Tool design

Mid Term Plans

- Heat pump for annealing oven (FY 24-25)
- Ceramic thermo coating to Annealing ovens (FY 24-25)
- VFD provision to Water cooled chiller (FY 24-25)
- Thermal Energy storage system - (FY 24-25)
- SVG addition 100 kVAr (FY 24-25)
- Artic master to water cooled chiller(FY 24-25)

Long Term Plans

- New Air compressor with Permanent Magnet motor (FY 25-26)
- WHRS-Compressor (FY 25-26)
- Adiabatic cooling system for cooling tower (FY 26-27)
- Old IMM servo conversion- 1050T (FY 24-25)
- VFD to old IMM machines (FY 24-25)
- Solar Power procurement with captive Mode (FY 24-25)

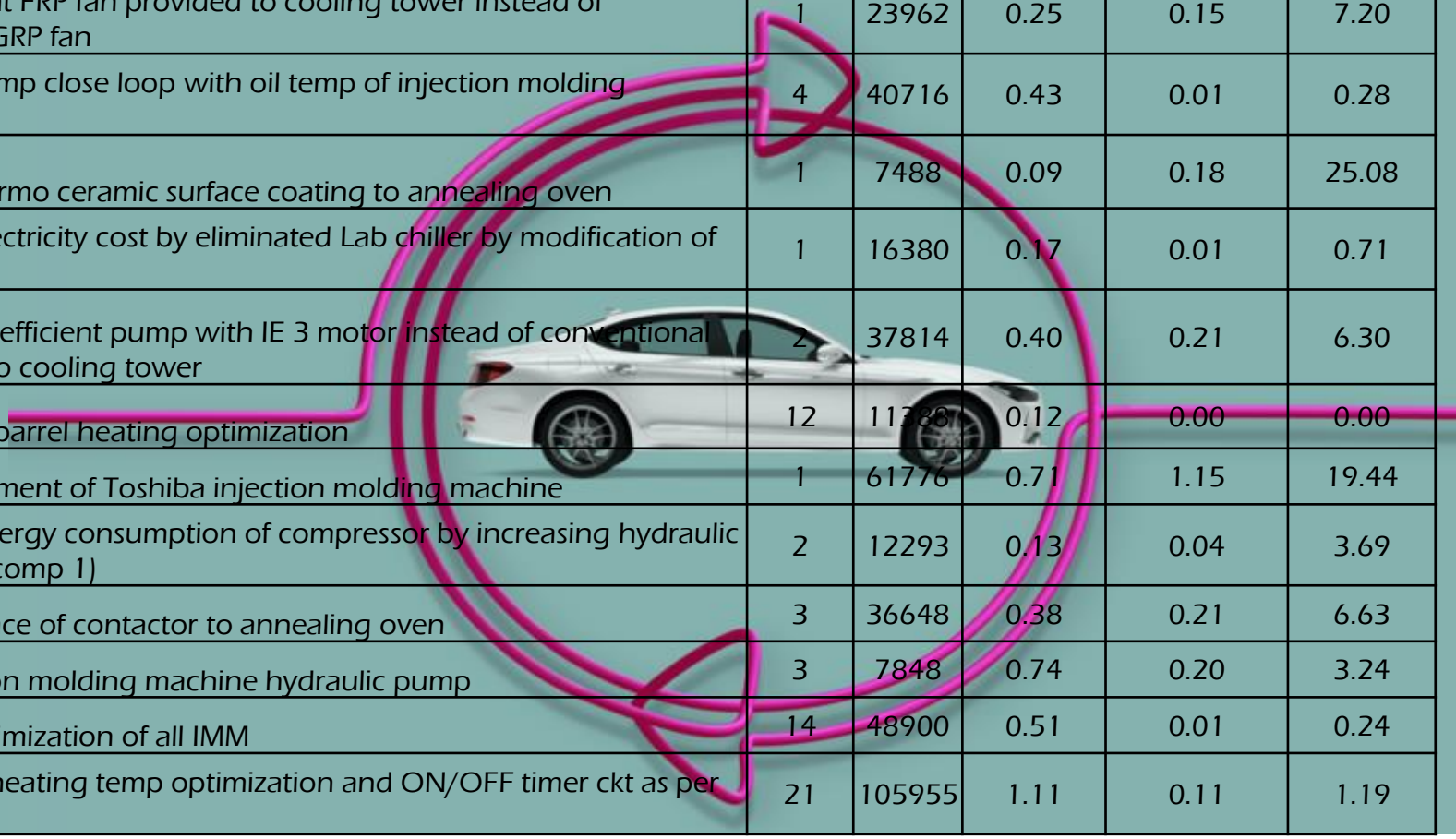


Marked projects from Global Business line/ Internal Benchmarking

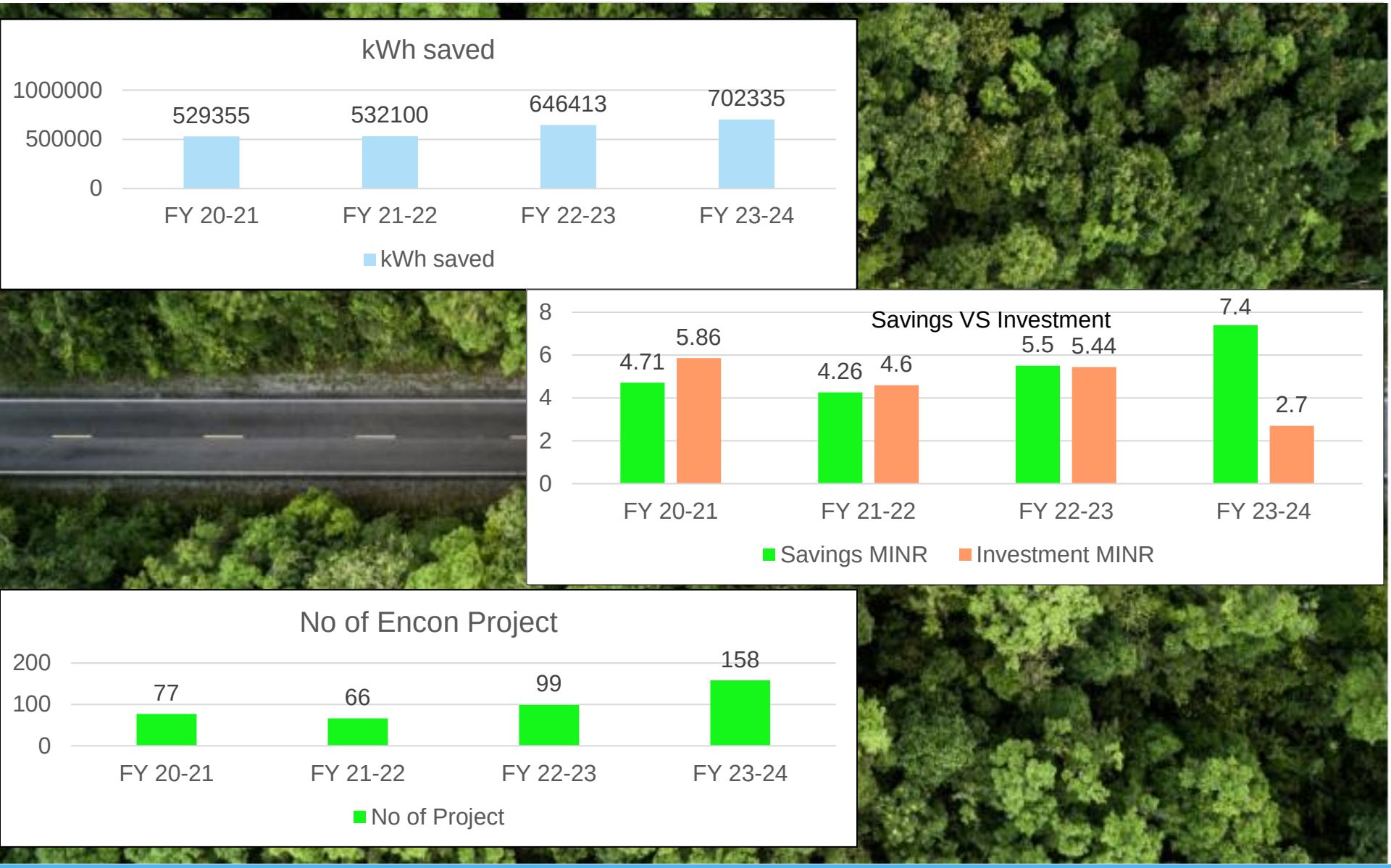
Marked projects from External Energy Audit

5. Energy saving projects Summary

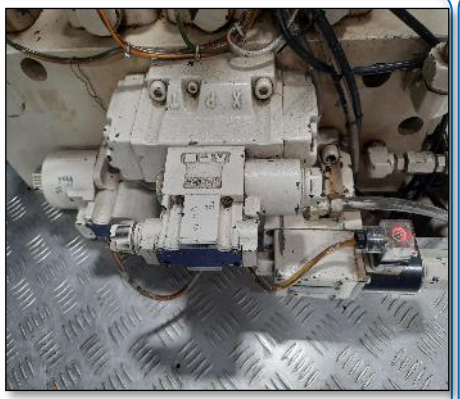
Sr. No.	Type of Project	No of Projects	kWh Saving Annual	Cost Saved	Investment Made	ROI
1	To reduced energy consumption of hard coat/Base coat machine by waste heat recovery	2	39762	0.42	0.15	4.29
2	Energy efficient FRP fan provided to cooling tower instead of conventional GRP fan	1	23962	0.25	0.15	7.20
3	Oil cooling pump close loop with oil temp of injection molding machine	4	40716	0.43	0.01	0.28
4	Innovative thermo ceramic surface coating to annealing oven	1	7488	0.09	0.18	25.08
5	To reduced electricity cost by eliminated Lab chiller by modification of pipe line	1	16380	0.17	0.01	0.71
6	IE 2 to Energy efficient pump with IE 3 motor instead of conventional water pump to cooling tower	2	37814	0.40	0.21	6.30
7	IMM stand by barrel heating optimization	12	11388	0.12	0.00	0.00
8	Hydro retro fitment of Toshiba injection molding machine	1	61776	0.71	1.15	19.44
9	To reduced energy consumption of compressor by increasing hydraulic hose pipe ID (comp 1)	2	12293	0.13	0.04	3.69
10	Thyristor in place of contactor to annealing oven	3	36648	0.38	0.21	6.63
11	VFD to injection molding machine hydraulic pump	3	7848	0.74	0.20	3.24
12	Parameter optimization of all IMM	14	48900	0.51	0.01	0.24
13	Dehumidifier heating temp optimization and ON/OFF timer ckt as per due point	21	105955	1.11	0.11	1.19



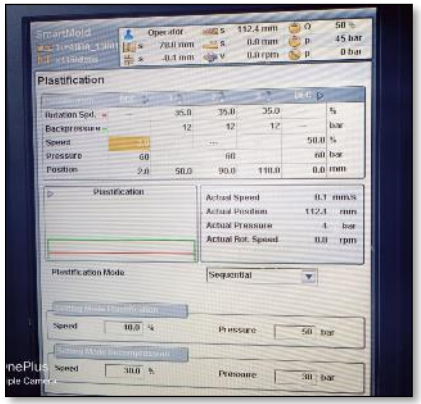
5. Energy saving projects Summary



5.Major Project -1: Electronics-Hydro retrofitment of Toshiba 1300T IMM



Before- Machine with fix pump and old technology, Power consumption Is higher



After- PLC, HMI, electronics changed added VFD with Servo valve.

P D A C

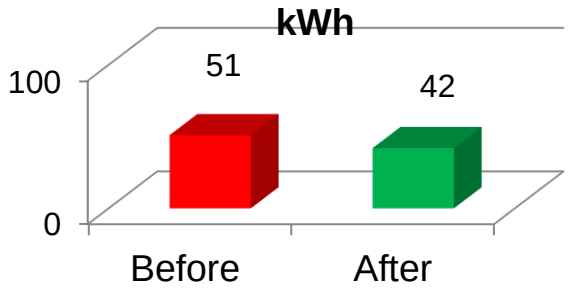
Benefits –

1)Average 67392 kWh/annum saved

2)Total 17.64% reduction in energy

3) Co2 Offset- 47.71 T/annum

Co2 emission reduction/annum- 47.71 Tons

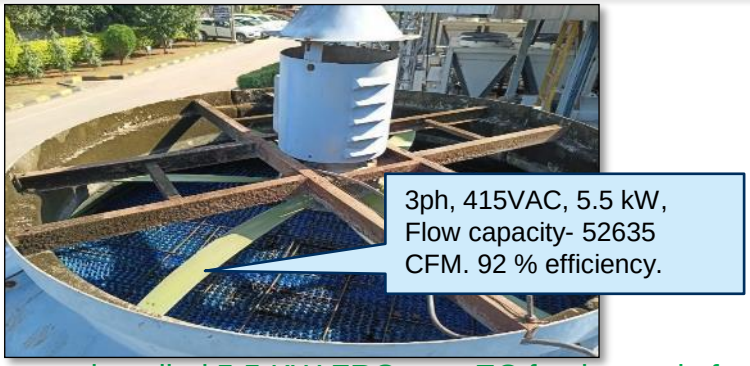


Benefit- 775008 INR/year
Cost- 1150000 INR
ROI = 17.8 months

Innovation level- Challenge is to replace entire PLC and make New program with VFD and Servo valve logic.

5.Major Project 2: Energy efficient FRP EC fan in place of GRP fan to cooling tower .

Before- Earlier we used 3ph, 5.5 kW traditional GRP type fan for 290TR cooling tower. We were running cooling tower on 30 Hz frequency. Fan flow capacity was 37894 CFM Efficiency- 69%.



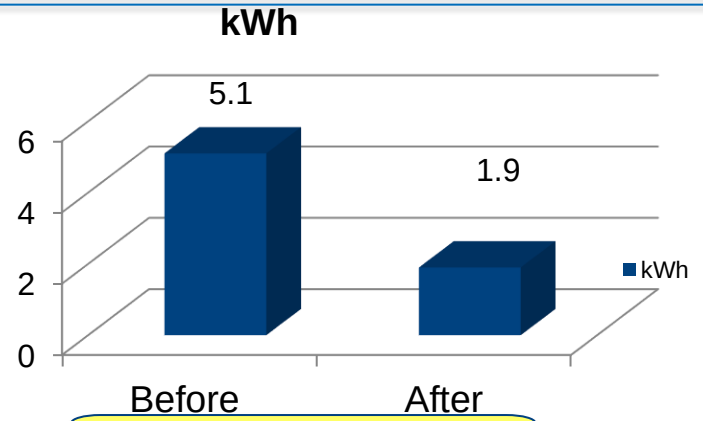
After- Now we installed 5.5 KW FRC type EC fan instead of GRP (Glass Reinforced polypropylene) type fan. Capacity 52635 CFM. Now WE are running Fan on 23 Hz On same flow. We saved 3.2 Unit/Hr. Efficiency- 92%.

P D A C

Benefits –

1) Average 23961.6 kWh/year saving
2) Total 63% energy savings achieved

Co2 emission reduction/annum- 16.96 Tons



Benefit-251597 INR/year
Cost- 158886 INR
ROI = 7.6 months

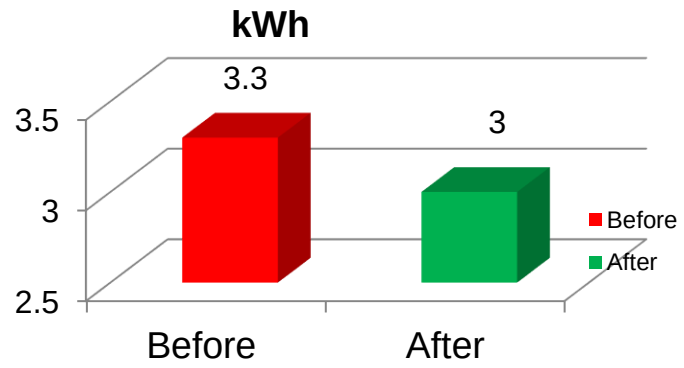
5. Major Project -3: Reduction Enegy Consumption in Dehumidifier by providing timer for Optimization of DH run hours

Before - Piovan dehumidifier heating was continuously ON for 24 hrs. Required Dew point temp -5 deg cent. for all raw material. DH was running 24 hrs. so DH achieved -21.3 deg cent. Which was more than requirement.

After- Provided timer to dehumidifier and We taken different trial then set time 10 off and 50 min ON in a hour. Tested on all raw material. We saved 0.3 kWh

Sr. No.	Trials	ON time	OFF time	Set temp	Dew Point temp	Requirement	Status
1	Trial 1	60	0	120	-21.3	-5	OK
2	Trial 2	55	5	110	-16	-5	OK
3	Trial 3	50	10	110	-8.3	-5	OK
4	Trial 4	45	15	120	-4.9	-5	Not OK
5	Trial 5	40	20	110	-1.2	-5	Not OK

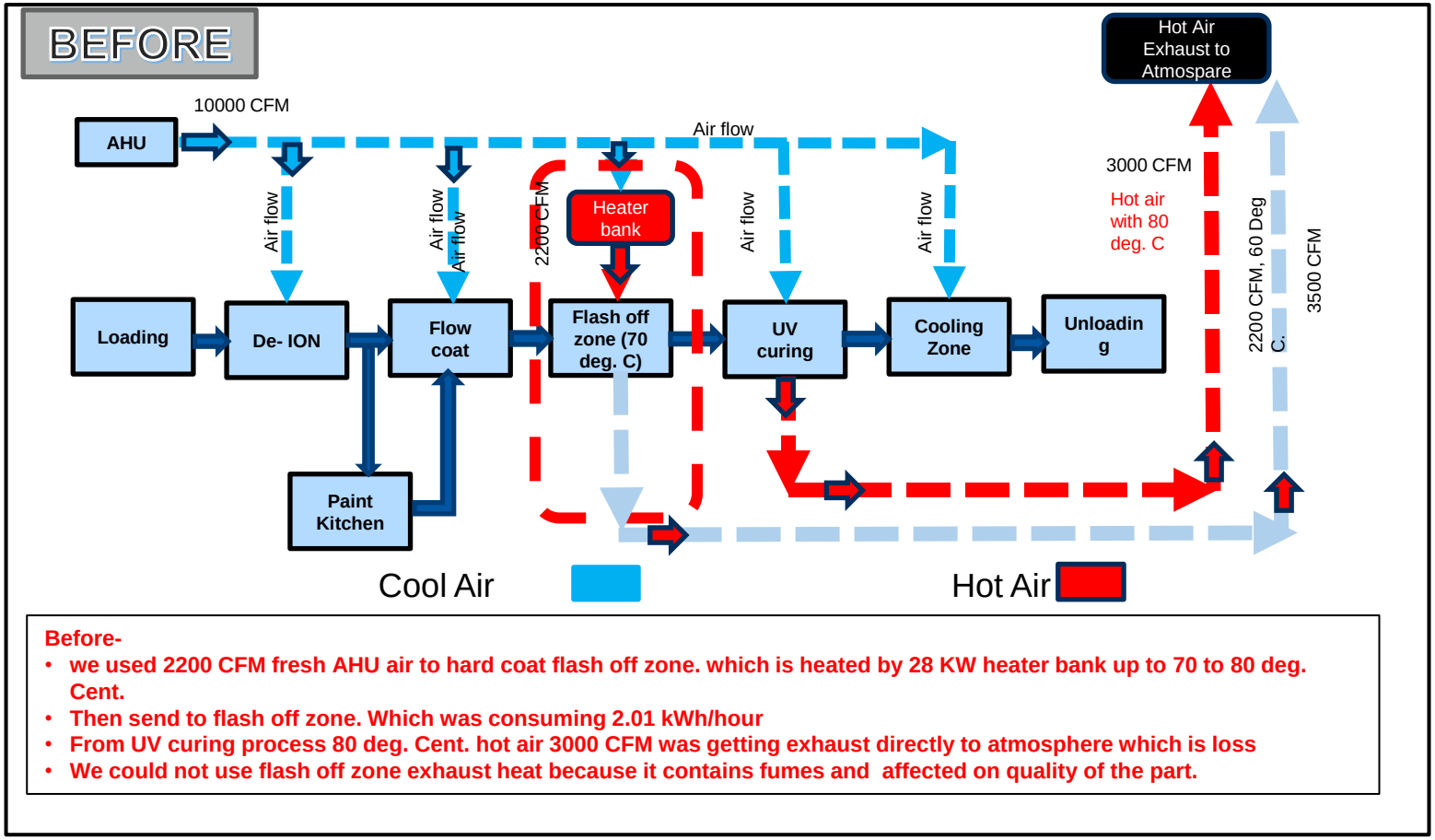
Co2 emission reduction/annum- 30.21 Tons



Benefit-23587 INR/year
Cost- 3500 INR
ROI = 1.78 months

6.Innovative Project 1: Waste Heat Recovery from Hard Coat line

Process flow Diagram Of Hard Coating

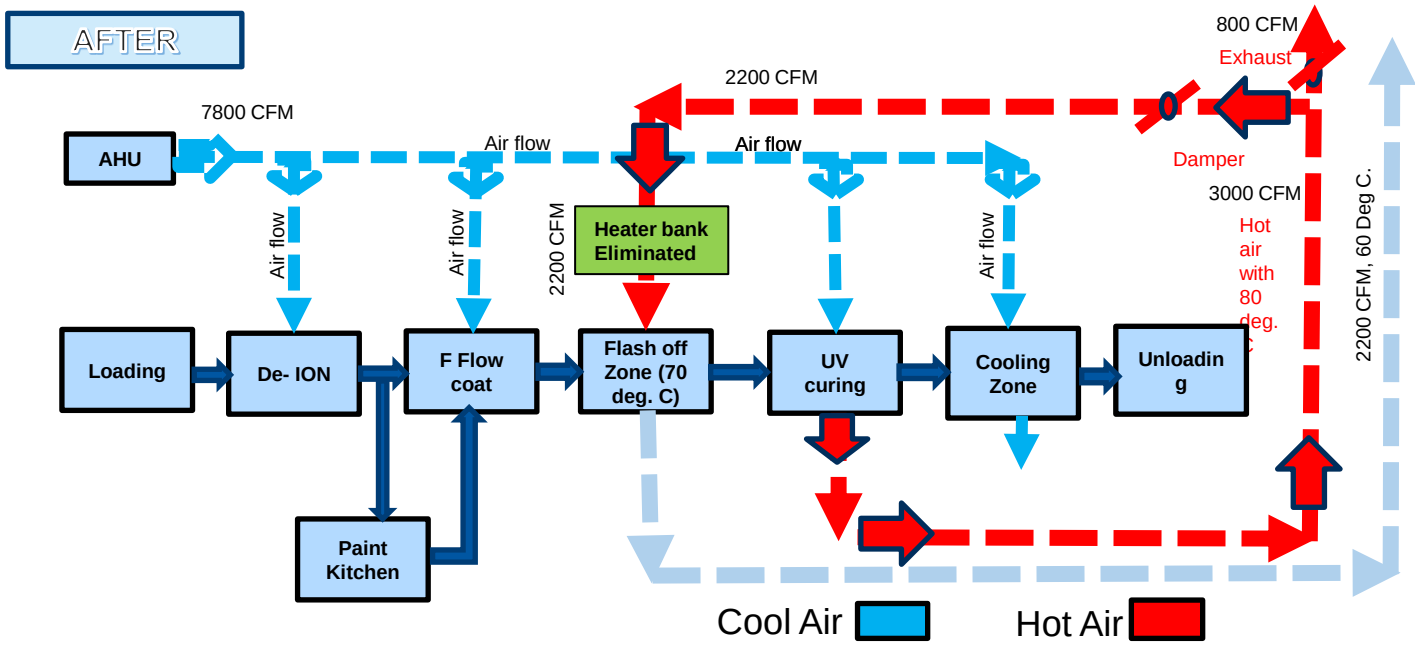


Before-

- **we used 2200 CFM fresh AHU air to hard coat flash off zone. which is heated by 28 KW heater bank up to 70 to 80 deg. Cent.**
- **Then send to flash off zone. Which was consuming 2.01 kWh/hour**
- **From UV curing process 80 deg. Cent. hot air 3000 CFM was getting exhaust directly to atmosphere which is loss**
- **We could not use flash off zone exhaust heat because it contains fumes and affected on quality of the part.**

6. Innovative Project 1: Waste Heat Recovery from Hard Coat line

Process flow Diagram Of Hard Coating



After-

- We modified new GI ducting from UV lamp exhaust duct to flash off zone by providing damper.
- Total process air balancing done
- 80 deg. Cent hot air transfer from UV exhaust to IR heating zone directly by adjusting air flow.
- Resulting heater bank is eliminated from air flow circuit & heater bank energy consumption become zero.

6.Innovative Project 1: Waste Heat Recovery from Hard Coat line

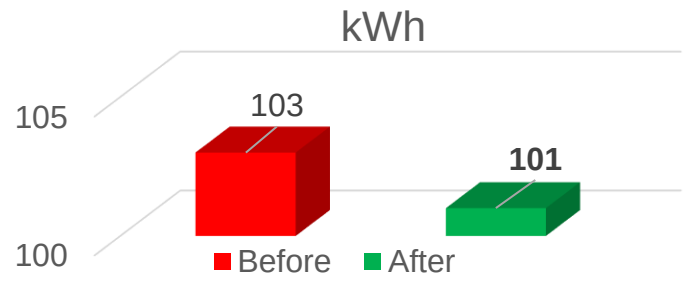
Replication Potential-

MMLI Pune 2 – Hard coat
MMLI Plant 1 – Base coat
MMLI Plant 3- Hard coat

Benefits –

1) Energy saving of HD mc- 91368 kWh/year
2) Cost saving in INR – 9.59 Lakh/Year
3) CO2 emission reduction – 73.78 Tins/year

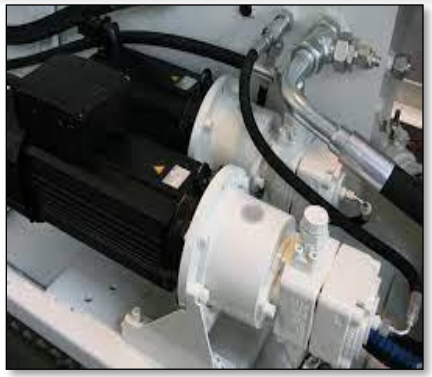
Co2 emission reduction/annum- 12.19 Tons



Benefit-158036 INR/year
Cost-75000 INR
ROI = 5.7 months

Innovation level- first time in lighting Division group Co..

6. Innovative Project 2: Energy Saving through oil cooling pump close loop circuit



Before - Engel 1500T injection moulding machine oil cooling pump was continuously running 24 hrs. There is no auto off provision provided by OEM. And no any close system given with oil temperature.

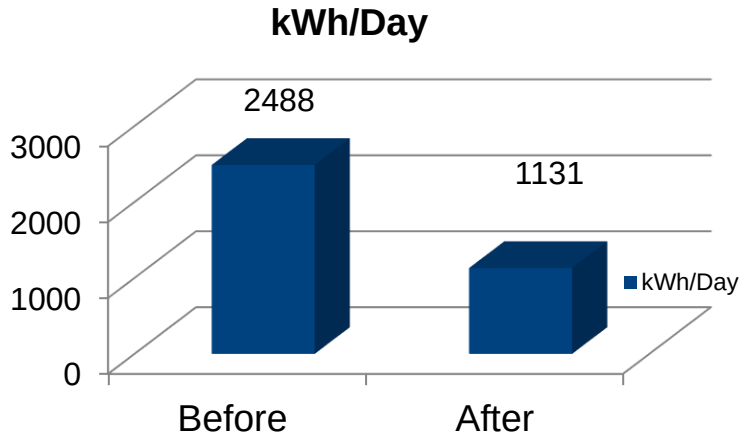
After- provided external temperature controller with sensor and it close loop with oil temp. Now cooling pump operates on oil temperature. Pump gets ON only 20 min and 15 min remains off means pump gets ON only 14 hrs. and 10 hrs. remains off in a day.

P D A C

Replication Potential -
1) Engel IMM 1500T-2
2) Engel IMM 1100T
3) Engel IMM 1500T -3

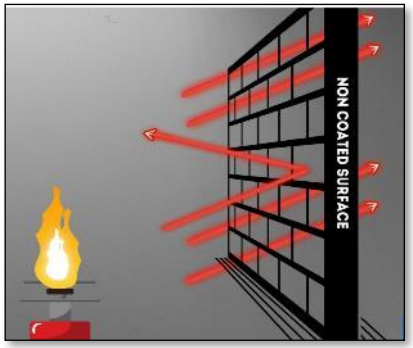
Benefits –
1)Average 16848 kWh/year saving
2)Total 10% energy saved
3) Energy saving of HD mc 40716 kWh/year saving
4)Cost saving of HD mc- 454662 INR/year

Co2 emission reduction/annum- 28.82 Tons



Benefit-156078 INR/year
Cost- 3500 INR
ROI = 0.27 months

6. Innovative Project - 3: Innovative thermo ceramic surface coating to annealing oven



Before- Earlier annealing oven heater bank ON/OFF cycle is high due to the heat dissipated more from oven. Which was consuming 22.47 unit/hour. Heating reaching time also required more than 1 hour for 85 deg cent.

After- We provided thermo ceramic coating inside of annealing oven. Heating ON/OFF cycle improved. Starting Heating reaching time decreased. Heating reaching within 35 min up to 85 deg cent. We saved 1 unit/hr. Coating THK- 244 um.

P D A C

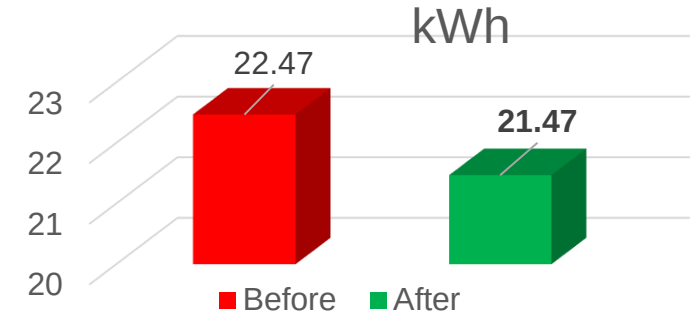
Replication Potential -

1) TL 6 annealing oven
2) TL 3 annealing oven

Benefits –

1) After installation of Pump 4.4% energy savings achieved.
2) Energy saving – 7488 kWh/year
3) Annual Savings- 86112 INR/year.

Co2 emission reduction/annum- 5.30 Tons



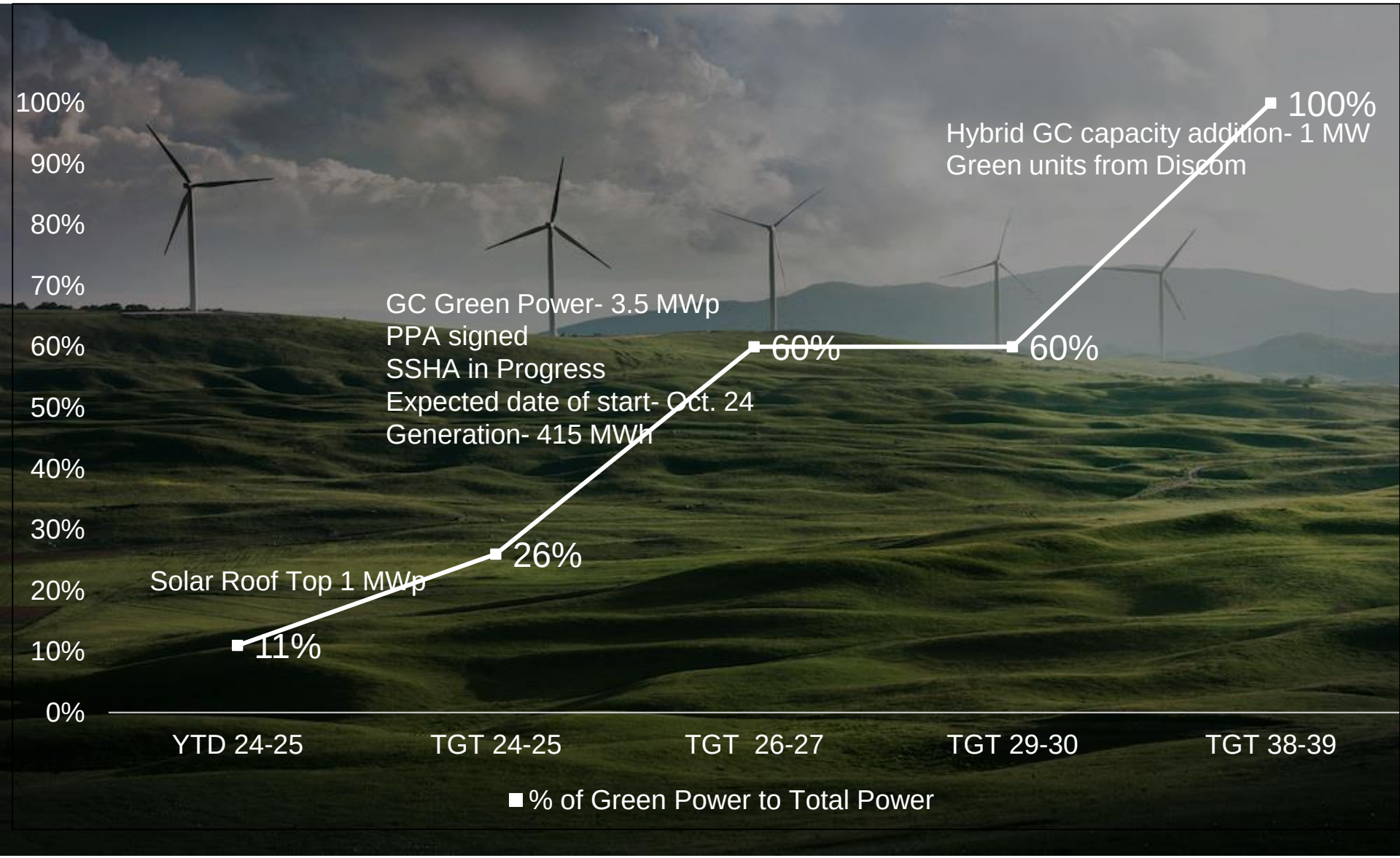
Benefit-86112 INR/year
Cost-180000 INR
ROI = 25 months

UTILIZATION OF RENEWABLE

	Installed capacity Mil Kcal /annum (Thermal)	Inst. Plant capacity –Plant onsite(Electrical) kWp	Generation kWh	% of electrical energy	Off site installation kWp
2015-16	260	0	0	0	0
2016-17	260	608	365113	4.2	0
2017-18	260	891	756738	6.7	0
2018-19	78.0	891	939584	9.2	0
2019-20	0	891	1088696	12.5	0
2020-21	0	891	1032877	15.13	0
2021-22	0	979	965829	11.04	0
2022-23	0	979	999278	9.88	0
2023-24	0	979	951949	11.0	0
Target 2024-25	0	979	2975326	30.5	3500

renewable									
Tonnes of CO2 Offset	0	310	643	799	925	878	684	707	674

7 a,b-Green Energy road map- offsite installation



Sustainability at Motherson.

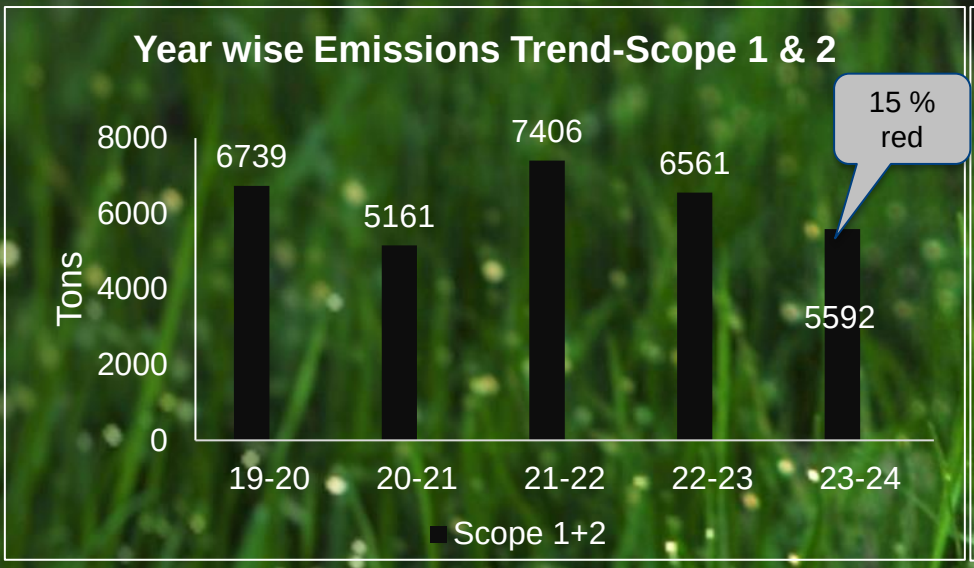
MOTHERSON JOINED THE UN GLOBAL COMPACT IN 2021

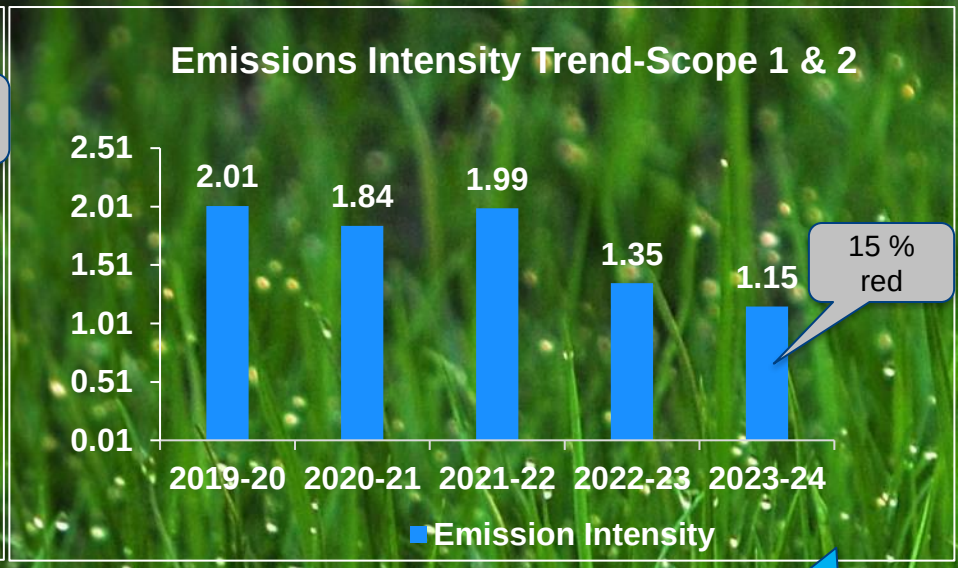
MSSL HAS BEEN INCLUDED IN THE 2021 DOW JONES SUSTAINABILITY EMERGING MARKETS INDEX, FOR THE FIRST TIME.

THE ONLY INDIAN AUTOMOTIVE COMPONENT COMPANY TO ACHIEVE QUALIFICATION TO THE DJSI EMERGING MARKETS 2021.

THIS HIGHLIGHTS THE COMMITMENT TO SUSTAINABLE BUSINESS PRACTICES AND FOCUS ON CONTINUALLY IMPROVING PERFORMANCE IN ALL ASPECTS OF THE ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) FRAMEWORK OF SUSTAINABILITY

8. GHG Inventorisation

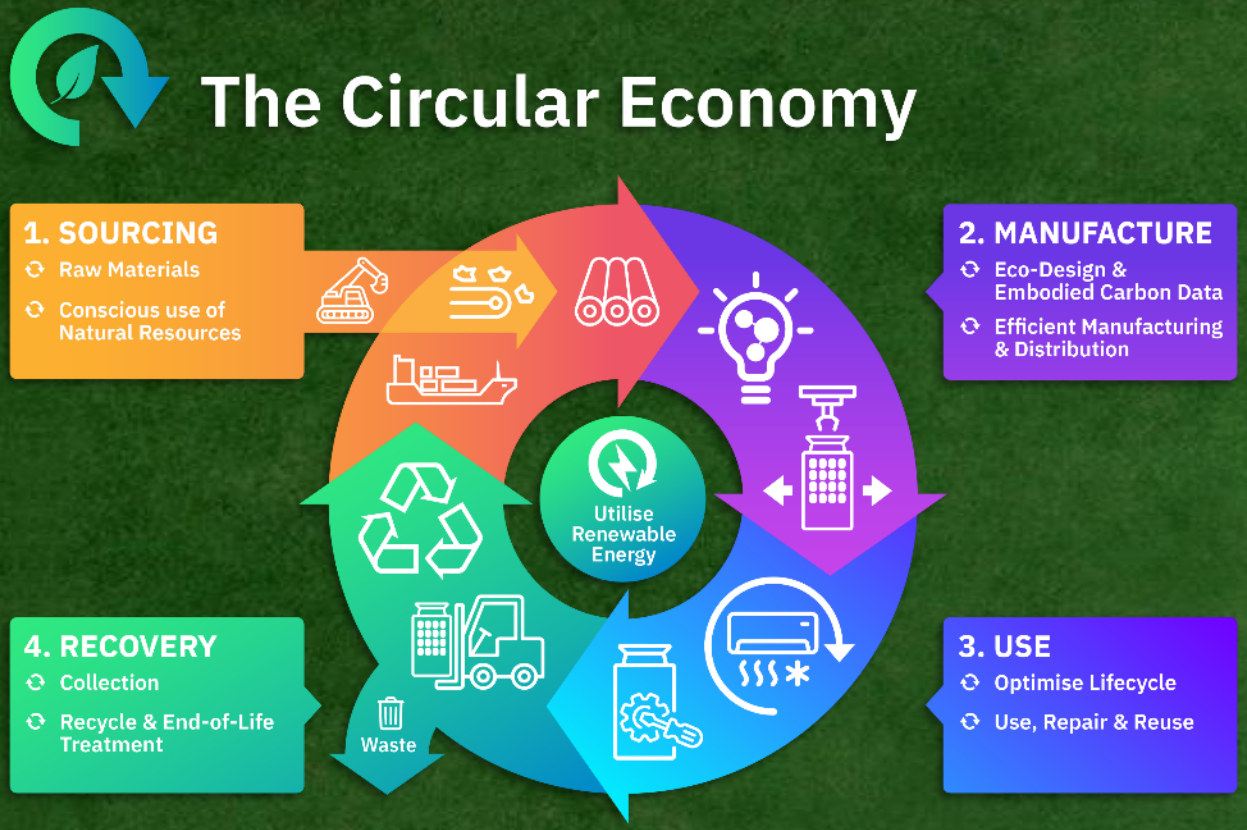




- Reduce Scope 1 + Scope 2 emissions by 25% by 2025
- 50% by 2030
- 75% by 2035
- Carbon neutral (Scope 1+ Scope 2) by 2040
- ISO certifications :-
  - ISO 50001 - Energy Management System - Certified in 21-22
  - ISO 14001 / 45001 - Certified
  - ISO 14040 - LCA – Life cycle assessment - by 2025-26
  - ISO 14067 - PCF – Product Carbon Footprint - by 2024-25
- SAQ 5.0 - > 95 % by 2024
- Water Neutral :- 2025-26

Emission Intensity –
Sanand Unit -1.65
Bawal Unit – 1.46
Pune -2 - 1.48

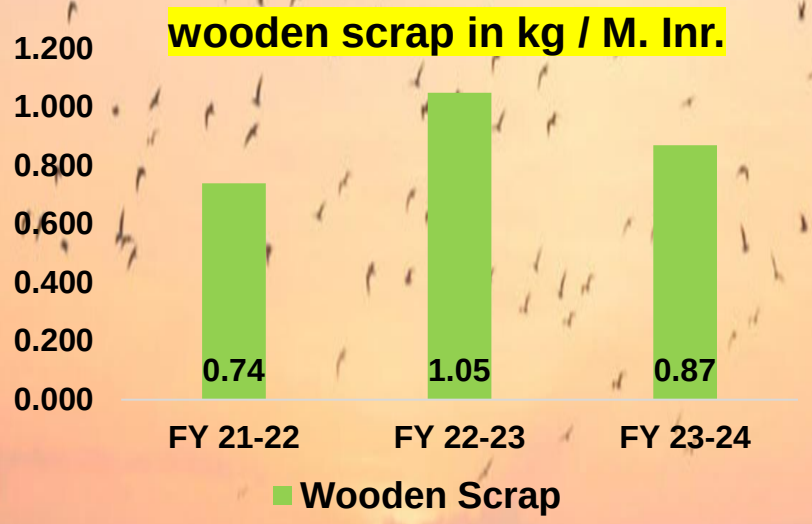
9.Sustainable Operations | Waste & The Circular Economy

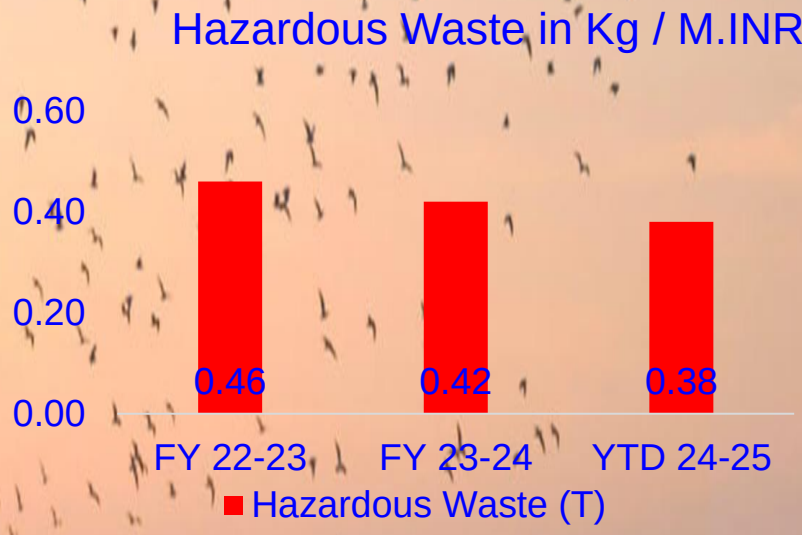


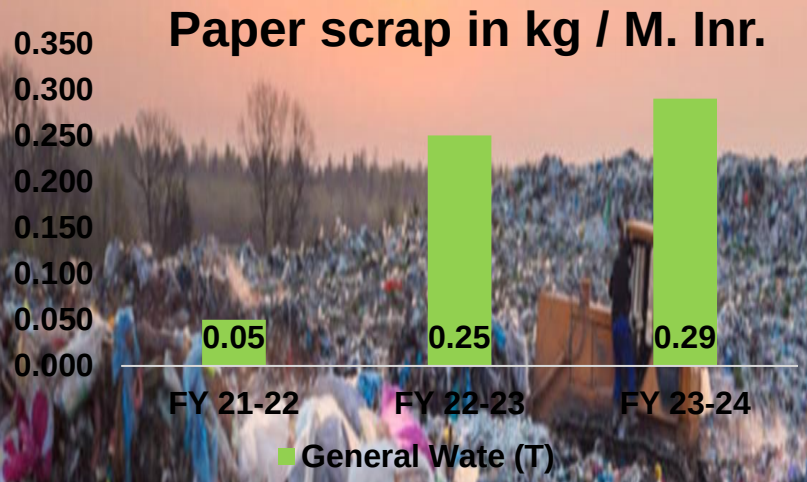
9. Waste Utilization & Management

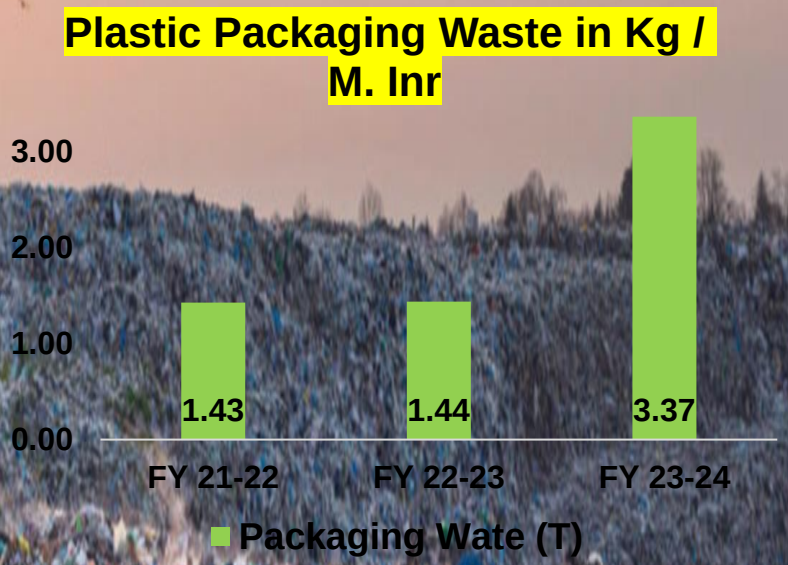
Categories	Type of Waste	Waste generation FY 20-21	Waste generation FY 21-22	Waste generation FY 22-23	Waste generation FY 23-24	Recycle %	In house Projects to reduce wastes/Disposal method
Engg. Plastic waste (in Tonnes)	1. Engg Plastic 2. runners	197	140	186	116	99%	1) Online gate grinders for runner reusage on 6 Machines 2) Part weight reduction by runner size reduction 3) 100% recycling through authorized supplier
Packaging plastic waste (in Tons)	1. Wrap films 2. Polybag 3. Bubble bags	8.6	5.31	7.0	16	100%	1) Wrapping role size reduction, wrapping elimination and reusage for FG parts 2) Polybag elimination and recirculation up to -75%
General Waste (in Tonnes)	1. Carton 2. Paper 3. Cotton 4. Metal 5. wood	35	31	46	67	100%	1)Instead of wooden pallets usage of reusable plastic pallets 2)Reduction in general waste, stationery etc.
Hazardous waste (In Tones)	**1. Oil 2. Oil soaked cotton 3. ETP sludge 4. Aerosole cont. 5. battery**	**3.6**	**3.1**	**2.23**	**2.02**	**99%**	**1)Disposal through Incinerator at MEPL authorized Vendor . 2)Process optimization**

9. Waste Utilization & Management









9.Waste Recycling method

Waste	Type of waste	Authorised agency	CTO copy	Waste treatment	Method of disposal	Assurance from agency	Status
Scrap engg. Plastic	Non hazardous	Naaz/Gauri		Re-grinding & Granulation	Recycle-reuse by External agency	Certificate	
Packaging plastic	Non hazardous	Naaz	Gauri Poly CTO	Re-grinding & Granulation	Recycle-reuse by External agency	Certificate	
Papers	Non hazardous	Naaz		Reprocess and recycle	Recycle-reuse by External agency	Certificate	
Wood	Non hazardous	Naaz		Recycling-using for furniture	Recycle-reuse by External agency	Certificate	
Carton	Non hazardous	Naaz	NAAZ CTO	Compress	Recycle-reuse by External agency	Certificate	
Cotton	Non hazardous	Naaz		washing & reuse	Recycle-reuse by External agency	Certificate	
Metal	Non hazardous	Naaz		Cutting & send to foundry for making metal bar	Recycle-reuse by External agency	Certificate	
E WASTE	Non hazardous	Sahara	SAHARA CTO	Dismantle-Hazardous – MEPL PCB/other waste – cutting Copper –External recycle	Recycle-reuse by External agency	Certificate after 45 days of disposition	
AFTER Organic (Food)				Piggery Reuse	Reuse by External agency	No	
Used oil	Hazardous	Haneywell	Haneywell Industries	Reprocess and recycle	Recycle-reuse by MMLI	NR	

9.Waste Recycling method

Waste	Type of waste	Authorised agency	CTO copy	Waste treatment	Method of disposal	Assurance from agency	Status
Air tins/Chemical Drums	Hazardous	MEPL		Incineration PGVR(Plasma Gasification)- Generation of Syngas	Incineration & Landfill (1:0.3)	Certificate	
Chemical sludge from waste water treatment (ETP)	Hazardous	MEPL		**Solidification & Stabilization (**Landfill)	Landfill (1:1.4)	Certificate	
Oil Soak cotton and gloves Glue waste/used static mixers	Hazardous	MEPL	 MEPL CTO	Incineration PGVR(Plasma Gasification)- Generation of Syngas	Incineration & Landfill (1:0.003)	Certificate	
BMC	Hazardous	MEPL		**Solidification & Stabilization (**Landfill)	Landfill (1:1.4)	Certificate	

Responsible value chain

Responsible sourcing of materials; product subcomponents, packaging (ensuring recyclability wherever possible); inbound, inter-company and outbound logistics

- Implement Product Carbon Footprint (PCF) processes and awareness throughout thevalue chain.
- Improve energy efficiency use and promote use of renewable energy throughout the supply chain.
- Actively support the implementation of carbon offset initiatives in the value chain.
- Target to avoid the use of conflict minerals and removal of any SOCs from our product lines and processes throughout the value chain

Source :- Motherson sustainability report

10.Green Supply Chain management

S. No.		2023-24	Actual Achievement 2023-24	Target 2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
1	Adhere to Motherson Supplier Code of Conduct	100%	78%	85%					
2	Supplier coverage with SAQ 4.0/5.0	60%	48%	100%					
3	SAQ 4.0 Score - Direct material suppliers	60%	48%	70%	80%	90%			
4	ISO certifications - Direct material suppliers								
	ISO 14001	75%	65%	100%					
	ISO 45001	40%	34%	50%	75%	100%			
	ISO 50001		4%	25%	50%	75%	100%		
	Product carbon footprint - ISO 14067			20% suppliers contributing 80% of purchase value	25%	50%	75%	100%	
	Life cycle assessment - ISO 14040					25%	50%	75%	100%
	Scope 3 Emission calculation			10 suppliers					
5	Establish Scope 1 and 2 emissions data - Direct material suppliers	25%	20%	50%	100%				
6	Green energy - Direct material suppliers nos.	20%	20%	40%	60%	80%	100%		
7	Green energy content of suppliers using the green energy	20%	20%		>40%		>50%	=100%	
8	Water neutral - Direct material suppliers				50%	75%	100%		
9	Non hazardous waste recycling %	50%	60%	75%	80%	100%			
10	Carbon neutrality (Scope 1+2) - Direct material suppliers								100%
11	Zero discharge			10%		50%			100%
12	Bio diversity								50%
13	Rain Water Harvesting			10%	20%	50%	60%	75%	100%
14	Eco vadis rating (Silver rating)		17%	41%	41%	50%			100%
15	Plastic packaging elimination							100%	

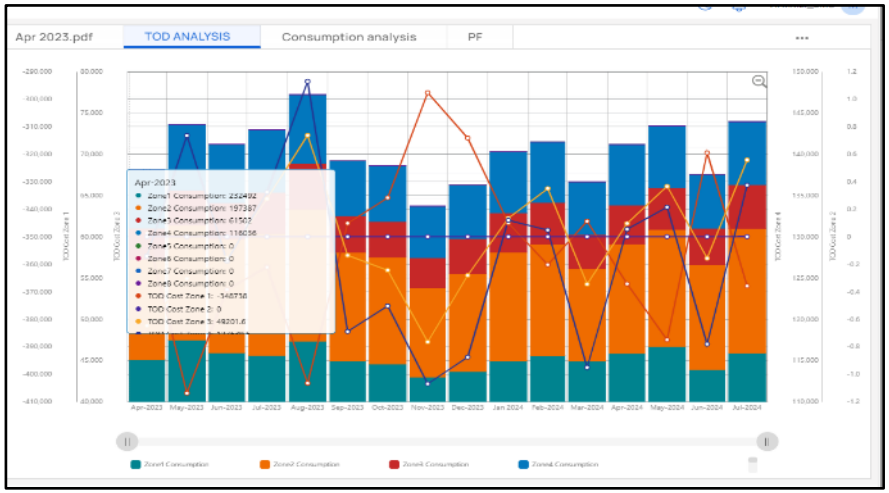
10. Green Supply chain management

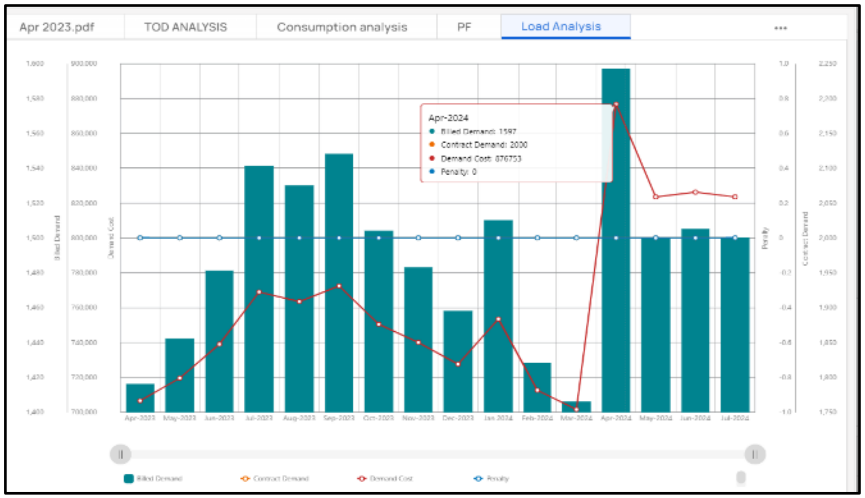
Total No . Of Supplier accessed	Year	Encon Projects Nos.	Evaluation Done	kWh Saved (‘000)	Green Energy Projects	Encon ROI (Avg.)
32	2020-21	72	43	3.39	0	< 1 year
48	2021-22	147	110	7.18	1	<2 year
93	2022-23	207	170	107.7	3	< 2 years
84	2023-24	284	201	119	5	<2 years

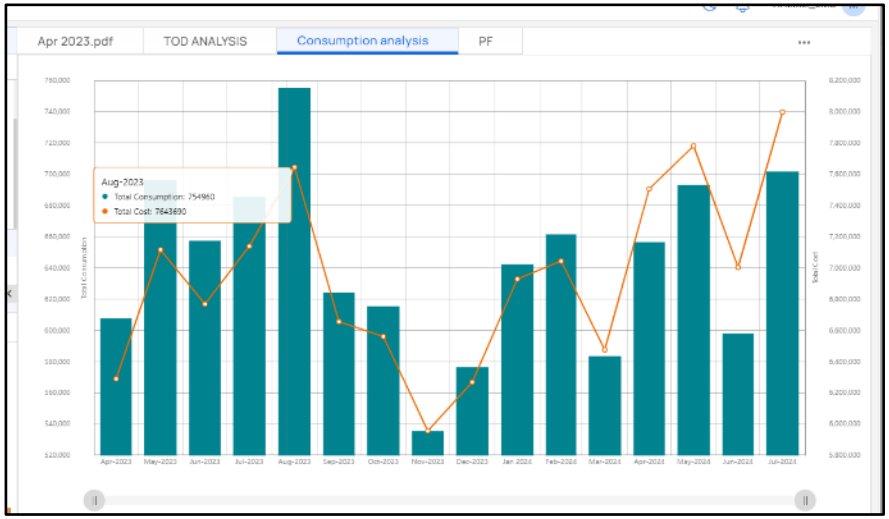
- Supplier Sustainability training
- Sustainability summit with suppliers at MMLI plant
- Energy Checkpoint added in monthly assessment check sheet
- Evaluation done during monthly audit
- ROI sheets verified during meeting with concern section heads in supplier company
- In discussion with 27 Suppliers for rooftop solar installation .

11. EMS System and other requirements

FeederName	7:00-08:0	8:00-09:0	9:00-10:0	0:00-11:0	1:00-12:0	2:00-13:0	3:00-14:0	4:00-15:0	5:00-16:0	6:00-17:0	7:00-18:0
Engle M/C-2	6.57	0.04	10.25	14.66	18.42	32.92	21.49	18.00	16.04	15.21	25.50
VRF metalizing	8.00	8.40	9.10	8.40	9.70	10.30	11.90	12.60	10.90	12.60	11.80
Engle M/C-1	32.48	34.06	40.29	40.77	38.56	33.05	39.62	40.38	41.76	38.68	39.37
Store Area	12.70	11.70	12.00	12.00	13.10	11.30	12.40	13.20	14.60	15.20	15.20
430 T Machine	13.50	13.70	13.70	13.60	13.90	13.20	13.80	13.30	13.50	13.90	13.30
650 Ton TOSHIBA M/C	27.00	27.00	25.00	27.00	26.00	27.00	24.00	14.00	28.00	28.00	27.00
550 Ton M/C-1	11.92	5.05	0.11	0.12	20.11	6.87	0.49	4.77	26.26	23.07	21.85
910 Ton M/C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1300 Ton M/C	35.00	34.00	35.00	35.00	35.00	35.00	35.00	34.00	32.00	36.00	35.00
850 Ton M/C	15.12	15.11	15.08	15.14	15.08	15.08	15.00	15.15	9.16	4.99	8.43







Enegy Monitoring System:-

- ✓ Daily and Hourly consumption report
- ✓ Actual useless consumption report on daily basis with live SMS/e mail alert
- ✓ BOT for bills analysis

Certifications

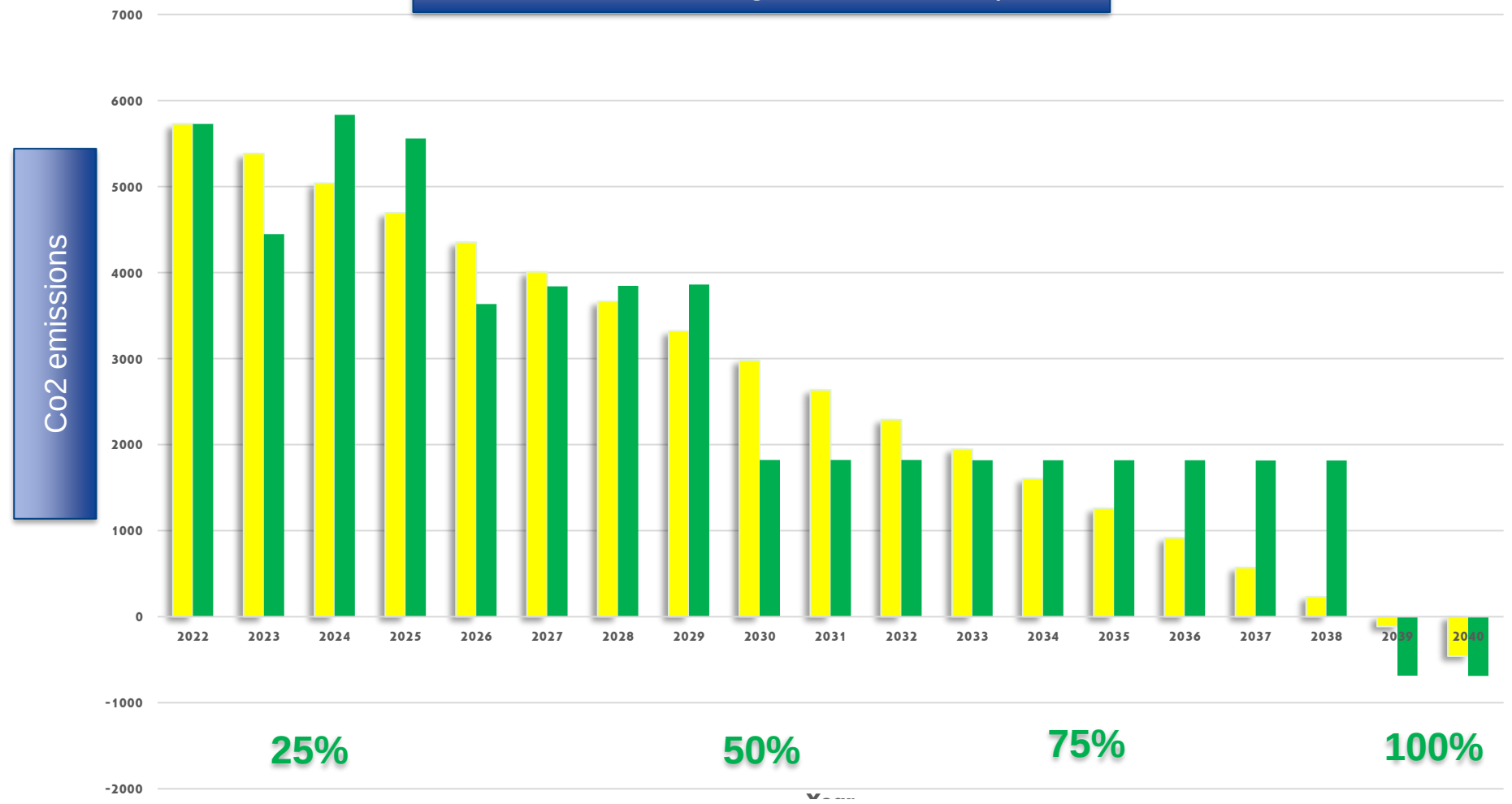
ISO 14001	Done
ISO 45001	Done
ISO 50001	Done
ISO 14067	- FY24-25
ISO 14040	- FY25-26

Learning from CII Energy awards

- New technology & vendors introduction during CII Delegates visit at plant and Energy Summit
- Green Power source identification for Solar expansion at MMLI Plant 3
- Benchmarking

12. Net Zero Roadmap

CO2 emissions target VS forecast plan



GC solar -green energy + Encon Project

Hybrid GC +Green energy from discom

12. Sustainability Roadmap

2021
(BASE YEAR)

- SCOPE 1&2 13%
- WATER NEUTRAL 10%
- % GREEN POWER 10%
- ISO 14001 CERTIFIED
- ISO 45001 CERTIFIED

2030

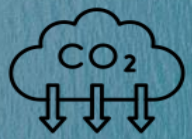
- SCOPE 1&2- 50%
- % GREEN POWER- 50%
- WATER NEUTRAL ISO 14040 CERTIFIED
- PLASTIC WASTE ZERO
- LANDFILL WASTE ZERO

2040

- SCOPE 1&2 NET ZERO
- % GREEN POWER 100%

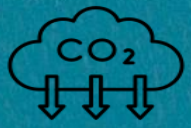
2025

- SCOPE 1&2 25%
- % GREEN POWER 25%
- WATER NEUTRAL 50%
- ISO 50001 CERTIFIED
- ISO 14067 CERTIFIED
- NON HAZARDOUS WASTE 100% RECYCLING



2035

- SCOPE 1&2 70%
- % GREEN POWER 70%



Proud to be part of planet earth.

12. Target (short/long term) for GHG emission reduction

Key Partners : ***Who will help to deliver ?***

- *Identify the key external partners / suppliers ?*
- *Identify the key internal Motherson divisions and OP-COs that will assist in this Net Zero transition plan delivery.*

Give details below :

1. Solar plant installers and providers onsite and offsite with CAPEX and OPEX models
2. WTG providers offsite
3. State Grid suppliers
4. DG green fuel conversion retro fitting suppliers
5. Green/low carbon fuel suppliers.
6. Professional energy auditors

Key activities : ***How do we propose to do it ?***

1. Install roof top solar in CAPEX/OPEX model.
2. PPA for renewable power in CAPEX/OPEX mode
3. Agreement with GRID suppliers for green energy at premium price.
4. DG conversion to green fuel
5. Energy conservation projects to reduce energy consumption
6. Replace AC refrigerants with low GWP refrigerants.

Key resources : ***What is needed to succeed ?***

1. Legal team
2. Purchase team
3. Finance team
4. Facility management
5. Specialist with good understanding of state policies on green power procurement
6. Energy managers and auditors
7. Energy measurement devices and Online EMS

Value proposition : ***What do we need to do ?***

- *Which Scopes does the proposal apply*
- *What is your Co2e baseline ?*
- *What needs / pain points does the ideation satisfy ?*
- *Does the idea / product / service offer any key USP's ?*

Give details below :

1. Replace Fossil fuel energy by green energy.
2. Reduce Scope 1 and Scope 2 emissions of the plant
3. 2020-21 Baseline of 5721 T of CO2 eq.

Target timing : ***What are the key milestones ?***

1. Get quotes on Open Access PPA for renewable energy in CAPEX/OPEX model and validate ROI. – **2024-25**
2. Initiate and finalize green power purchase agreement with state Grid supplier – **2038-39**
3. Get the feasibility of running the DG on green fuel or in hybrid mode.
4. Get quote for DG conversion to hybrid mode and validate ROI.
5. Carry out energy audits, identify and quantify the losses, work out the ROI of proposed solutions – **alternate year**

Benchmarking : ***Who are our competitors ?***

- *Are established players active in the field ?*
- *What are their key product and performance attributes ?*
- *What are the competitors price points ?*

Give details below :

1. CAPEX and OPEX solar installations – M+, Clean max, Sun-source are capable players- Most of them use standard installations.
2. No installer use dual sided panels yet.
3. For WTG used asset is preferred over new asset.

Budget activities : ***How much do Motherson need to invest ?***

1. Group Captive Solar power purchase – 16 Minr to be covered in CPAEX 2024-25
2. Encon activities budget to be covered in CAPEX and OPEX in 2024-25 – Apprx 6 Minr
3. Solar Panel replacement in 2031
4. Green Power purchase from state GRID, 3.4MWh, at cost of 2.4 Minr – Plan in OPEX of 2035 onwards

Revenue stream : ***How much return can Motherson expect ?***

1. SOLAR capex model – apprx 20 months
2. ENCON projects – ROI within max 18-36 months

State & National level Awards

2018 to 2022
5 Awards

2019 to 2023
8 Awards

2021 to 2023
3 Awards

2023
1 Awards

2024
1 Awards

International Awards

2024 Energy Management Insight Award

2024 -1 Awards

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