TATA MOTORS

JAMSHEDPUR

CII – NATIONAL AWARD FOR EXCELLENCE IN ENERGY MANAGEMENT 2024

GOLAM MONDAL	GENERAL MANGER (CONSTRUCTION, CPED & ENVIRONMENT)
RANDHIR PRASAD	GENERAL MANAGER (CENTRAL MAINTENANCE)
RAMIT DUTT	SENIOR MANAGER (ENERGY MANAGEMENT)

Introduction

01 COMPANY PROFILE

02 PRODUCT PORTFOLIO

03 KEY MANUFACTURING PROCESSES

1. TATA MOTORS - JAMSHEDPUR : PROFILE

TATA MOTORS
Connecting Aspirations

CUSTOMERS

- **M&HCV Products - 19 Ton to 60 Ton** for Domestic market including export to 36 countries.
- **55 % of CV Business Revenue from JSR operations**
- Products for CRPF, BSF, Ordinance Factory, LASTEC DRDO
- Institutional Customers - BEL, DGP, Police
- **Aggregates also manufactured for CV LKO, PUN & DHW**
- **Spare Parts**

TECHNOLOGY

Plant with State-of-the-art manufacturing facilities

- 5 L Engine Manufacturing facility.
- Vehicle Electronics: Flashing & Diagnostics
- Robotic Framing & Door Robotic Hemming
- Camber Correction & Cut to Length including 5000Ton Press, CED Painting, CNC Punching
- Paint Shop: CED technology & Robotic Painting
- Profile Grinding, Dry Cutting, Laser Cutting
- Cold Box Core making, Medium Frequency Furnace. Stress Relieving & Shot Blasting
- Digital & Industry 4.0

PRODUCT

- M&HCV Products – Truck, Tractor, Tipper & Defence
- Plant Capacity – **440 Vehicles Per Day** (BS-1 to BS-6)
- **397 Vehicle Combinations** (VCs)
- Emission Norms from BS-I to BS-VI
- **CKD kits, VFJ Kits, Aggregate Business** (Genset Engine, Excavator Engine, Etc.)

GREEN CO

- First Company in eastern India to achieve the prestigious “GREENCO GOLD” Rating

ENERGY MANAGEMENT

- ISO 50001
- Operational Efficiency
- Renewable Energy
- New Technology
- GHG Protocol

PRODUCTS

- Over 200 models, ranging from multi-axle trucks, tractor-trailers, tippers, mixers and special application vehicles

FACILITIES

- Manufacturing facility spread over 600 acres and an integrated township of over 1250 acres

INCEPTION

- Mother Plant of TML established in 1954 with state-of-the-art manufacturing facility

PRODUCT PORTFOLIO : JAMSHEDPUR PLANT

TATA MOTORS
Connecting Aspirations

M&HCV PRODUCTS (BS I to BS VI range) 380 VC's

M&HCV - Trucks

117 VCs

M&HCV - Tippers

123 VCs

M&HCV - Tractors

48 VCs

M&HCV - IB & Defence

IB- 73 VCs; Defence- 19 VCs

AGGREGATES

Axles

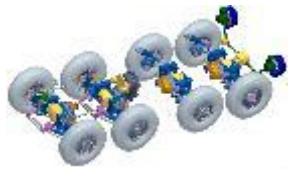
Front Axle- Single Steer & Twin Steer

70 Variants

Rear Axle- Single Reduction, Hub Reduction, Tandem

135 Variants

WhAP



Gearboxes (6S to 9S)

GBS-750 (6S)

45 Variants

TC-2500

6 Variants

GBS-950 (6S)

8 Variants

AGB-1210

5 Variants

GBS-1150(9S)

15 Variants

Engines (130 HP to 450 HP)

5 L Engine (Inhouse)

13 Variants

697 Engine (Inhouse)

19 Variants

Ashwamedha 5.6L (TCL)

30 Variants

Atulya 6.7(TCL)

77 Variants

Cabs & Cowls (AC & Blower)

Cowl

1210 Cowl & 1516 Cowl

Cab

SIGNA & PRIMA- Sleeper & Non- Sleeper

M&HCV- Medium & Heavy Commercial Vehicles**; VC**- Vehicle Configuration; **IB-** International Business;
WhAP- Wheel Armoured Platform; **TC-** Transfer Case; **AGB**- Auxiliary Gearbox

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BE BOLD | OWN IT | SOLVE TOGETHER | BE SYMPATHETIC

2. KEY MANUFACTURING PROCESSES AT TML - JAMSHEDPUR

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VEHICLE ASLY. LINE-1&2

- ASSLY. LINE – I & II
- FINAL INSPECTION & RECTIFICATION

TRIM ASSLY.

- NEW TRIM LINE
- CAB TRIM LINES

FOUNDRY

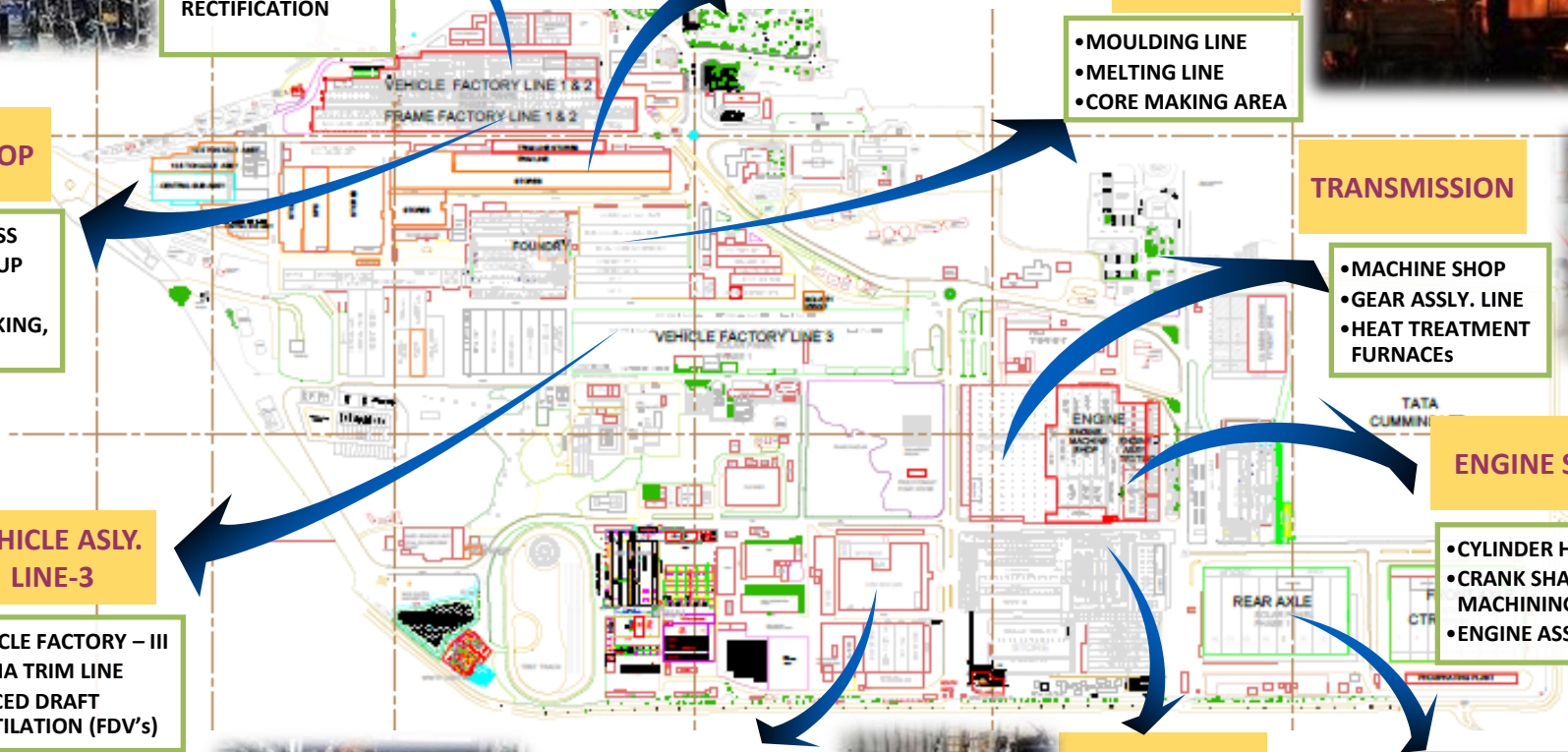
- MOULDING LINE
- MELTING LINE
- CORE MAKING AREA

FRAME SHOP

- 5000 TON PRESS
- LM PTCED SETUP
- ASSY. LINE
- PAINTING, BAKING, STORAGE

TRANSMISSION

- MACHINE SHOP
- GEAR ASSLY. LINE
- HEAT TREATMENT FURNACEs



VEHICLE ASLY. LINE-3

- VEHICLE FACTORY – III
- PRIMA TRIM LINE
- FORCED DRAFT VENTILATION (FDV's)

ENGINE SHOP

- CYLINDER HEAD & BLOCK LINE
- CRANK SHAFT / CAM SHAFT MACHINING & HARDENING
- ENGINE ASSEMBLY

BIW SHOP

- FABRICATION LINES – LP, EDAG, SFC, TILT CAB, PRIMA
- ROBOTIC WELDING

PAINT SHOP

- PT CED
- PAINT KITCHEN, CHILLER PLANT, DM WATER PLANT
- COLOR LINES, ROBOTIC PAINTING & BAKING

AXLE

- FRONT AXLE
- REAR AXLE
- DRIVE HEAD
- HEAT TREATMENT FURNACES

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Energy Performance

01 OVERALL ENERGY & SPECIFIC ENERGY CONSUMPTION TREND

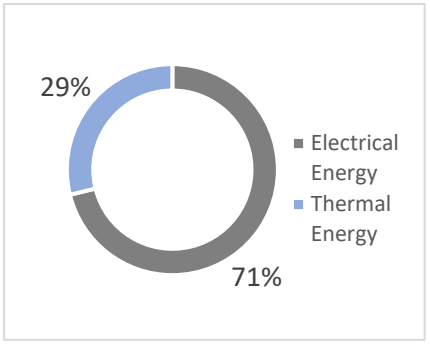
02 OVERALL & PROCESS WISE SPECIFIC ENERGY PERFORMANCE TREND

03 BENCHMARKING ENERGY PERFORMANCE

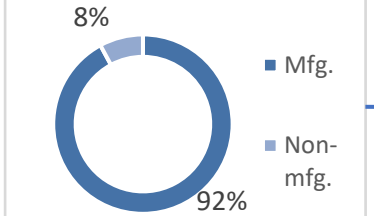
3. ENERGY – OVERALL AND SPECIFIC CONSUMPTION

TATA MOTORS
Connecting Aspirations

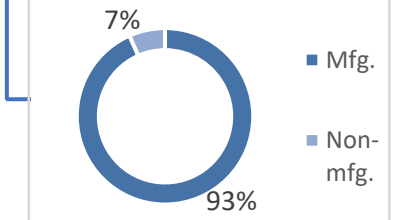
Overall Energy Consumption FY 23-24
821278 GJ

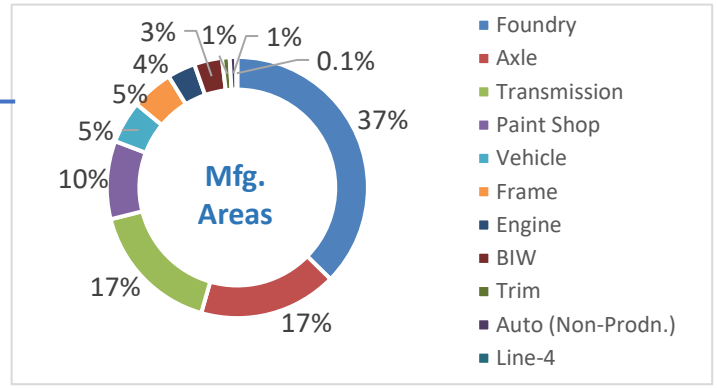


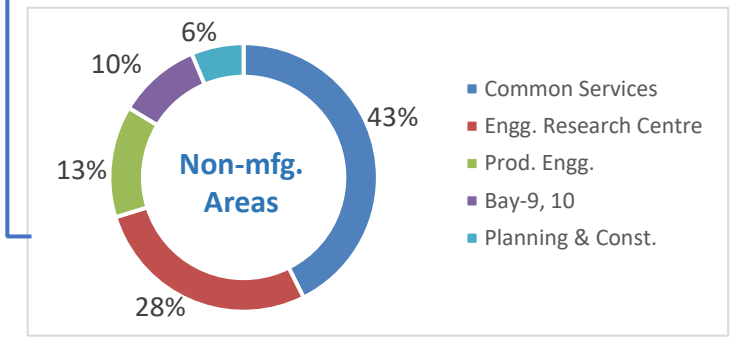
Electrical Consumption FY23-24: 584508 GJ



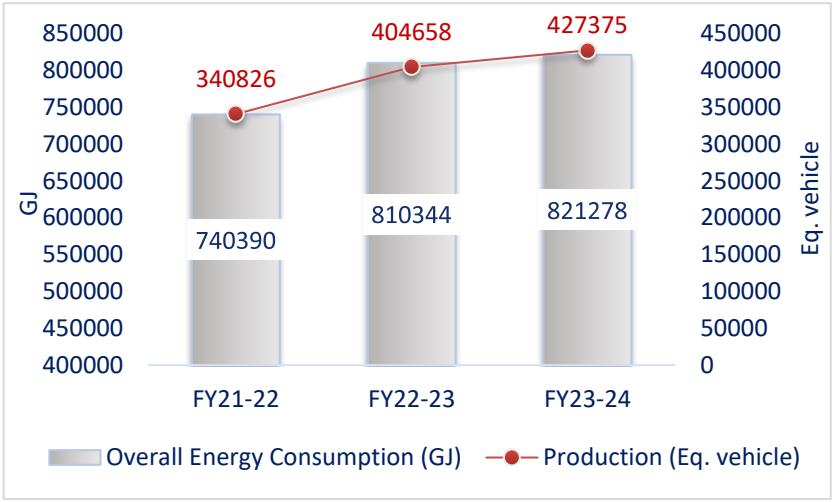
Thermal Consumption FY23-24: 236770 GJ



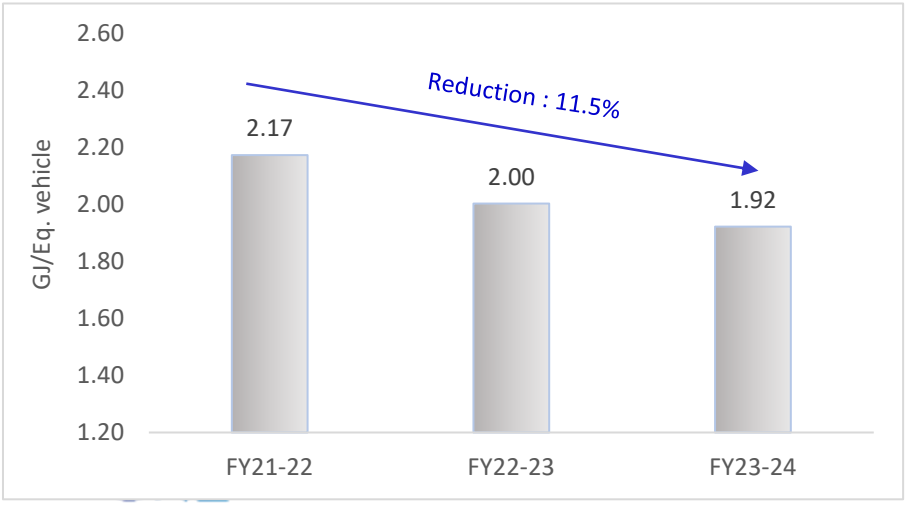




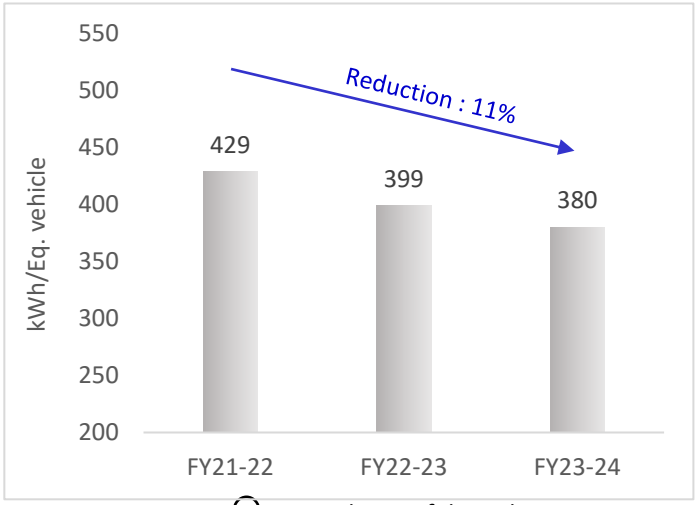
Overall Energy Consumption (GJ) and Production



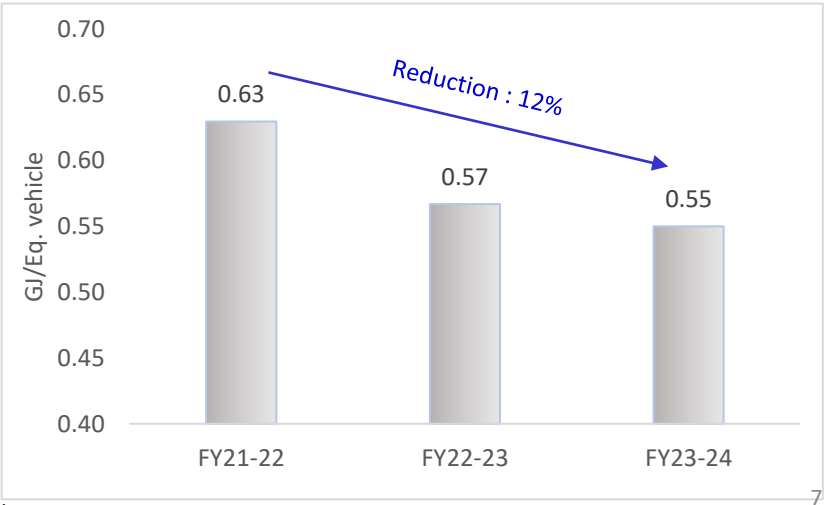
Overall Sp. Energy Consumption (GJ/Eq. Vehicle)



Sp. Electrical Energy Consumption (kWh/Eq. Vehicle)



Sp. Thermal Energy Consumption (GJ/Eq. Vehicle)



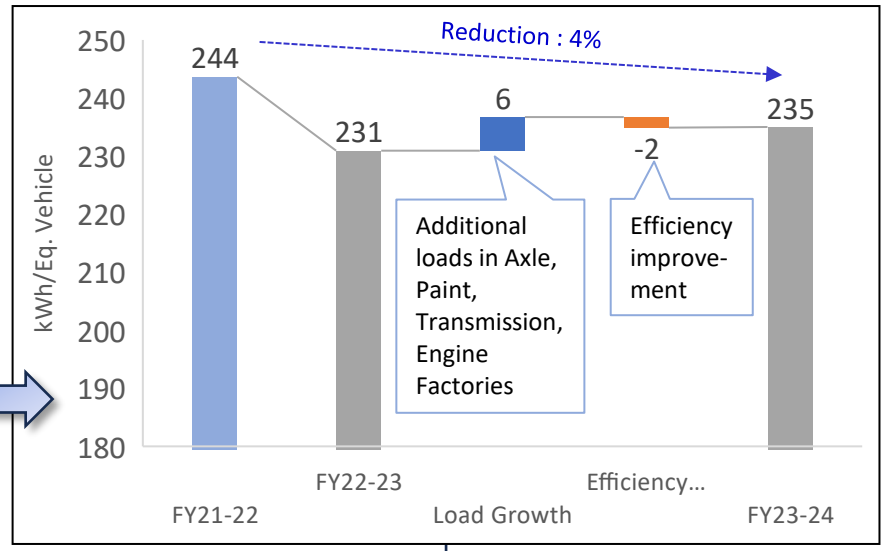
3. SPECIFIC ENERGY CONSUMPTION

TATA MOTORS
Connecting Aspirations

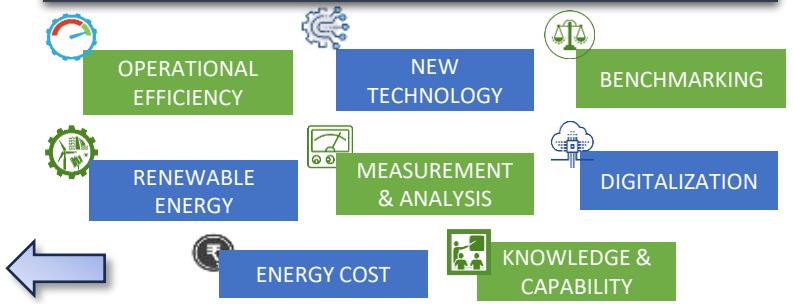
Energy Mgmt. – Governance Structure

	MENTOR :	**Mr. Ravindra Kulkarni**
	LEADER:	**Golam Mondal**
	CO LEADER:	**Randhir Prasad**
DIVISION	**CORE TEAM**	**SUPPORT TEAM**
Vehicle	M. Mahapatra	S. Bandyopadhyay, P. Joshi
Frame	Mayank Mishra	Ashok Kumar, Parvinder Singh
Engine	Prem Jha	B. Paul, Amit Kar
BIW	Saket Roshan	S. Mukherjee, Arka Ghatak
TRIM	Tamal Das	Yogesh Sharma
Paint	Somnath Karmakar	Debashis Guha
Axle	Abhas Chakraborty	Mayank Singh, H. Hazarika
Gear	Ashish Shah	Arun Roy, Tapas Maiti

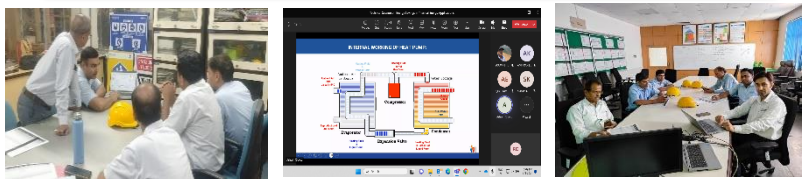
AUTO TOTAL : Sp. Electrical Energy (kWh/Eq. Veh)



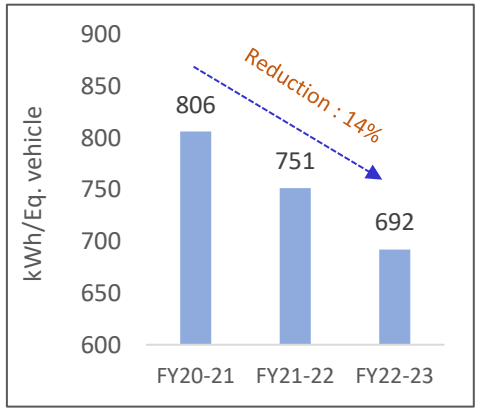
Key Levers



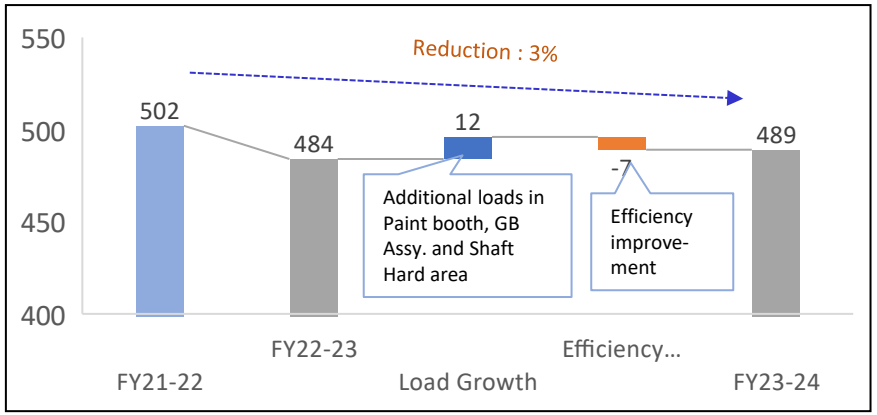
Ideation Workshops & Expert Hour Sessions



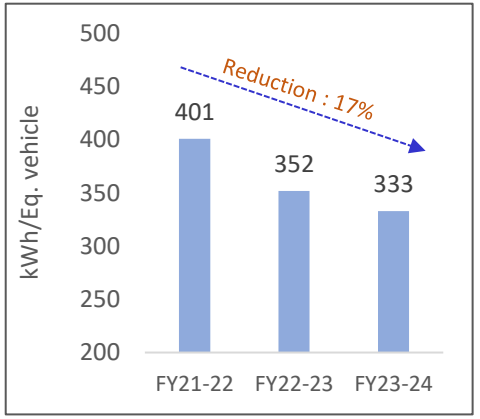
PAINT : Sp. Electrical Energy (kWh/Eq. Veh)



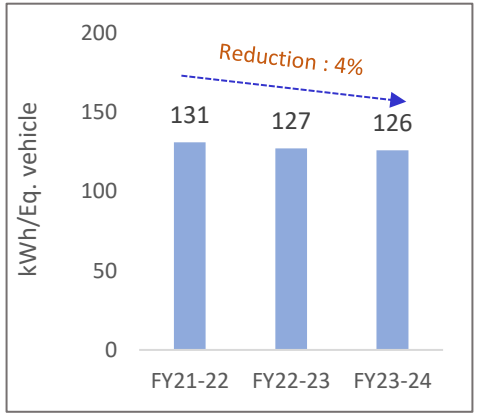
TRANSMISSION: Sp. Electrical Energy (kWh/Eq. Veh)



ENGINE : Sp. Electrical Energy (kWh/Eq. Veh)



BIW : Sp. Electrical Energy (kWh/Eq. Veh)



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4a. INFORMATION ON COMPETITORS, NATIONAL AND GLOBAL BENCHMARK

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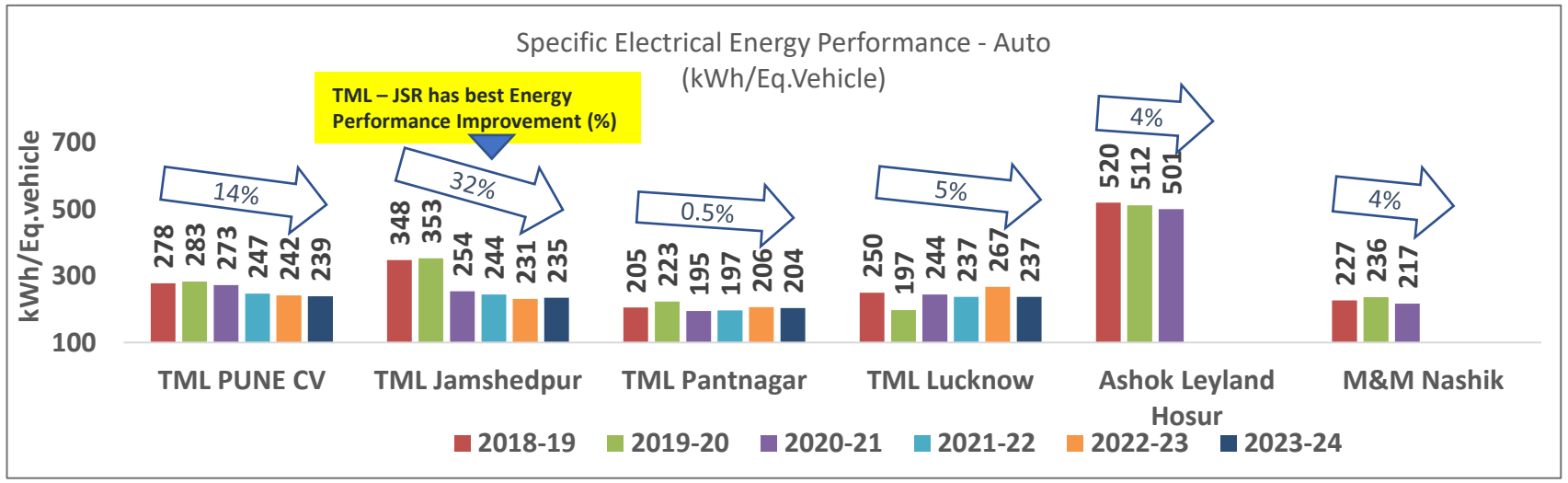
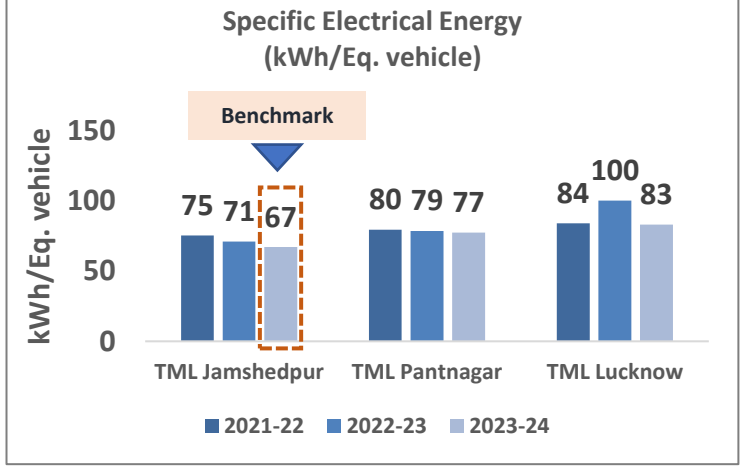
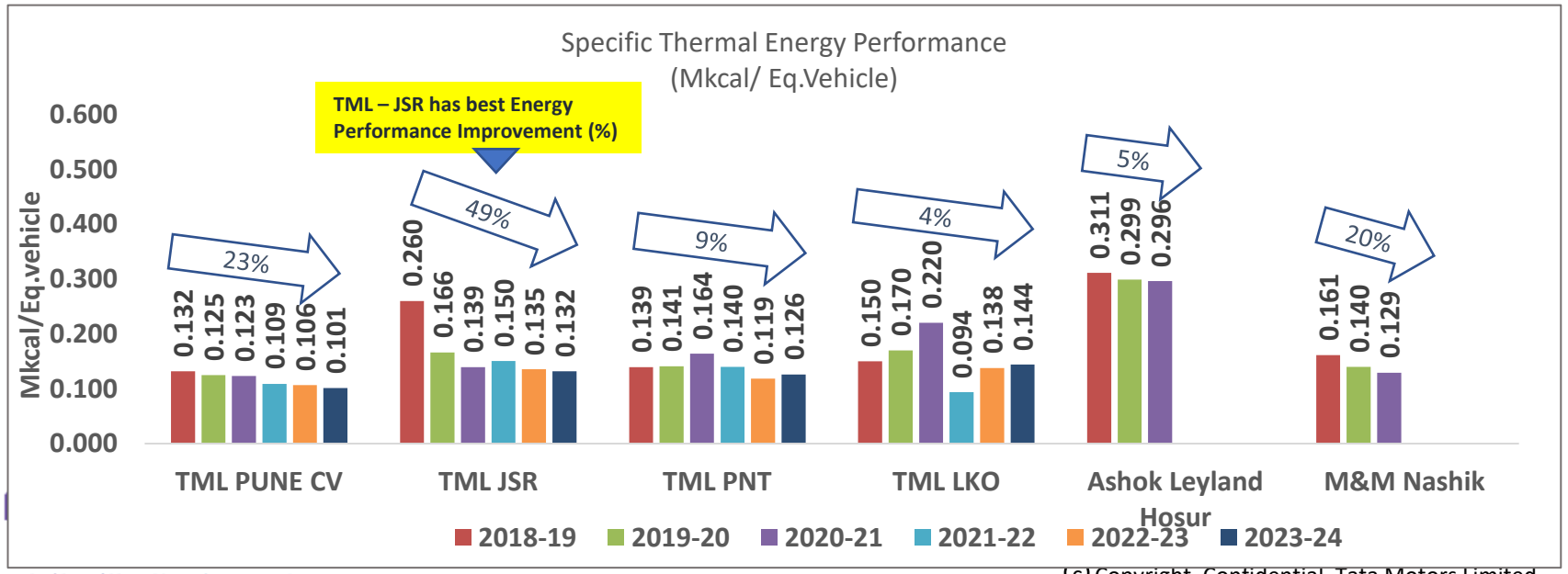
Internal / External Benchmarking – Specific Electrical Energy Performance (Auto Mfg.)



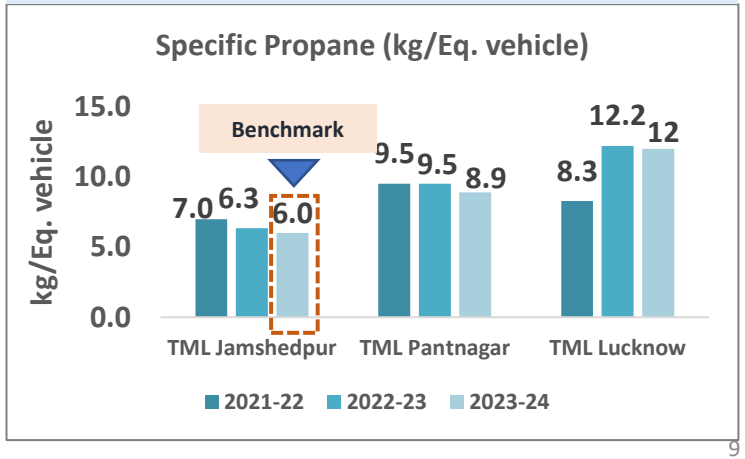
Internal Benchmarking of Paint Shop (Significant Process)



Internal / External Benchmarking – Specific Thermal Energy Performance (Auto Mfg.)



Internal Benchmarking of Paint Shop (Significant Process)



Energy Action Plans

01 SHORT TERM & LONG-TERM ENERGY TARGETS & ROADMAP

02 ENERGY SAVING PROJECTS IMPLEMENTED IN FY21, FY22 & FY23

03 BENCHMARKING ENERGY PERFORMANCE

4b & c. SHORT TERM / LONG TERM ENERGY TARGETS AND ROADMAP TO ACHIEVE THEM

TATA MOTORS
Connecting Aspirations

SHORT TERM

LONG TERM

2024-25

- 7th Generation CED system in Paint Shop.
- VFDs for Frame Line-3 FDV units.
- Cold Washing in Axle Shop washing machines
- Utilization of optimized cooling tower in Engine Factory.
- Digitalization - Online dashboard for propane monitoring of all manufacturing areas.
- Flux Maxiox for ATH in CPS
- Timer-based control of HVLS Fans in New Trim Line
- Waste Heat Recovery system for Axle Compressor House

Electrical: 215 kWh/Eq. veh.
Thermal: 0.128 Mkcal/Eq. veh.

2025-26

- Fitch Fuel Catalyst for ED oven in Paint Shop
- Heat Pump for Hot Water Generator in Paint Shop
- HVLS Fans in HT-Axle
- IRIS Power Line Quality Improved Filter
- Cold Washing in washing machines at Engine Factory
- Digitalization - AI/ML based analytics
- Waste Heat Recovery for CCHF Furnace in Axle
- Waste Heat Recovery system for AIF Compressor House

Electrical: 207 kWh/Eq. veh.
Thermal: 0.122 Mkcal/Eq. veh.

2026-27

- HVLS Fans in HT-Transmission
- Energy efficient motors for Line-3 FDVs.
- Insulation refurbishment of ED oven in Paint Shop.
- Hydroxy generator for Topcoat Oven in Paint Shop
- Energy efficient IE4 motors for ASUs in Paint Shop
- Waste Heat Recovery system for:
  - Topcoat Oven in Paint Shop
  - Compressors
  - Engine Test Bed

Electrical: 200 kWh/Eq. veh.
Thermal: 0.119 Mkcal/Eq. veh.

2027-28

- Frigi-Tech lubricant for improving chiller plant efficiency in Paint Shop
- Energy Efficient IE4 Motors for rating 30 kW and above
- Insulation refurbishment of Sealant oven in Paint Shop.
- Heat Pump for Hot Water Generator in Frame Factory.
- Concentrated Solar Thermal (CST) system for Hot Water Generator in Paint Shop

Electrical: 194 kWh/Eq. veh.
Thermal: 0.115 Mkcal/Eq. veh.

2028-29

- High efficiency Chiller Plant for:
  CED system in Frame Factory
  CED system in Paint Shop
- EC Fans for remaining ASUs in Paint Shop
- Elimination of fuel usage for Heating Bath in Paint Shop by using room temperature chemical/Solar Thermal/Waste Heat Recovery application
- Migration to 8th Generation CED in Paint Shop

Electrical: 188 kWh/Eq. veh.
Thermal: 0.112 Mkcal/Eq. veh.

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4d. LIST OF MAJOR ENCON PROJECTS PLANNED IN FY2024-25

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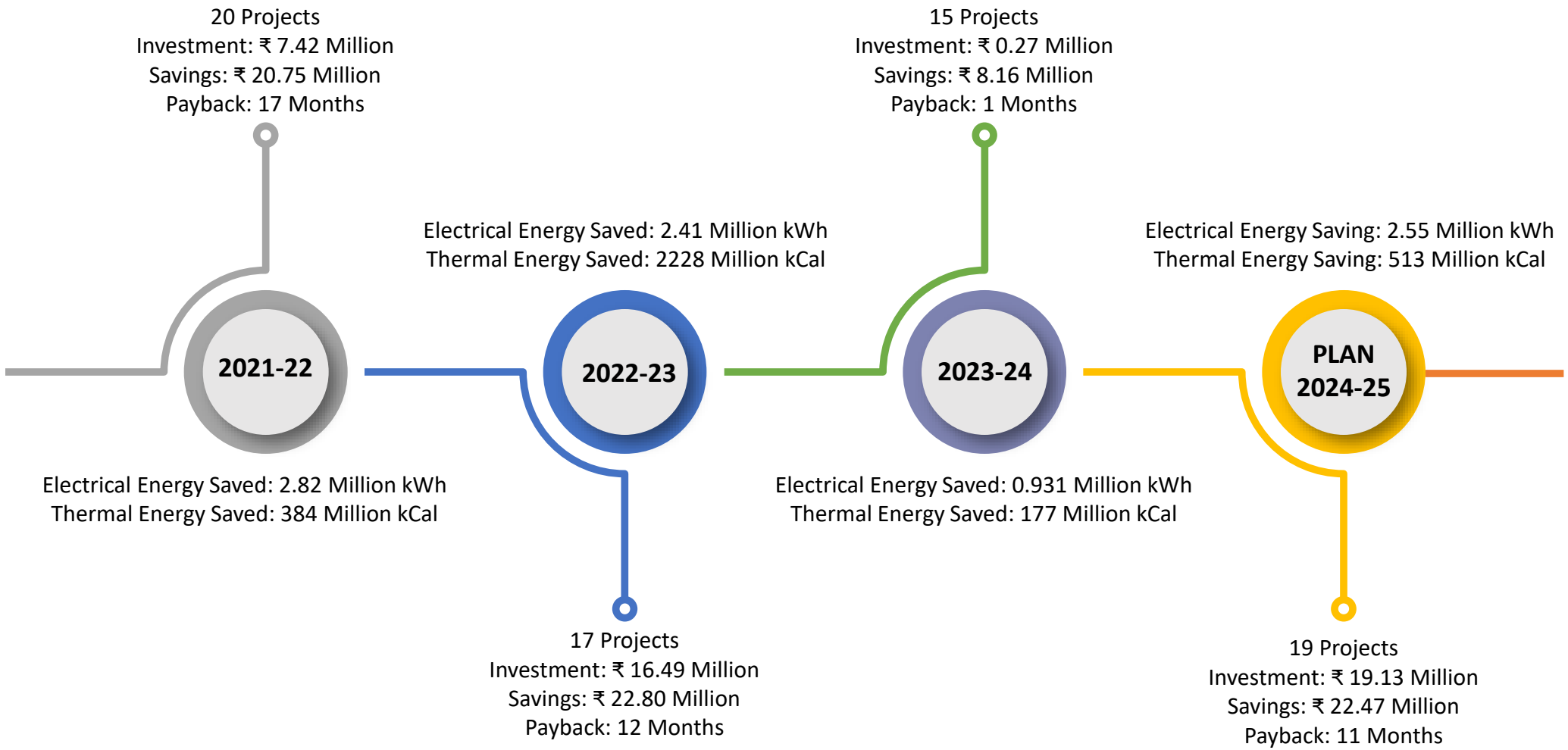
Connecting Aspirations

Title of the Project	Annual Electrical Saving (Million kWh)	Annual Thermal Saving (Million kcal)	Investment (Rs. Million)
Small portable compressor for off day trial instead of central compressed air system at Foundry	0.069	--	0.50
Adoption of microwave oven in place of Hood type electrical heaters (umbrella) at Foundry	0.081	--	--
Reduced Steel scrap feeding in foundry (60:40)-Maintain foundry return to 40% (clean scrap) to reduce melting energy as lower power required for foundry return versus steel at Foundry	0.060	--	--
Infrared gun installation at MFF and interlocking with furnace power at Foundry	0.300	--	--
Shut off valve to be used at compressed air pipeline at machine inlet pipeline at Foundry	0.060	--	--
Cold box technology for few small core to be adopted instead of shell core at Foundry	0.090	--	--
Outsourcing of 5L cylinder block chunky cores, other chunky cores instead of in-house manufacturing from hot box at Foundry	0.120	--	--
Modification of circuit to stop Belt Conveyor, FDV during shift break or lunch time at Foundry	0.090	--	--
Elemination of 4 nos shell sand mixer by purchasing resin coated sand from supplier at Foundry	0.060	--	--
Optimization of CED paint temperature by 1 °C leading to energy saving in CED chiller plant at Paint Shop	0.060	--	--
Use of electrically operated paint circulation pump for paint kitchen at Paint Shop	0.210	--	0.90
Implementation of wet-on-wet sealant leading to elimination of sealant oven at Paint Shop	0.300	--	--
Implementation of Centralized switch for switching off all lights and fan for Fat cab and Tilt cab Lines at BIW	0.010	--	--
Use of portable compressor for extended shift running in Prima Line and for off day running at BIW Factory	0.040	--	0.30
Automatic VFD frequency regulation of FDV units through temperature controller at BIW Factory	0.020	--	--
Running of only one Endo Generator on standby mode instead of two at Heat Treatment-Transmission Shop	0.060	--	--
Waste heat recovery system on 5500 CFM Centrifugal Compressor at Axle Compressor House for heating water in Washing Machines in Rear Axle shop	0.573	--	8.70
Waste heat recovery system on 5500 CFM Centrifugal Compressor at AIF Compresor House for heating water in Hot Water Generator at Propane Yard	--	513	3.99
Waste heat recovery system on 1000 CFM Screw Compressor at Engine Compressor House for heating water in Washing Machines in 5L area of Engine Machine shop	0.346	--	4.74
Total	**2.55**	**513**	**19.13**

5a. SUMMARY OF ENERGY SAVING PROJECTS IMPLEMENTED IN LAST THREE YEARS

TATA MOTORS
Connecting Aspirations



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Connecting Aspirations

Major Projects Implemented In FY21-22

Sr. No.	Description of Energy Saving Project	Investment (INR Million)	Electrical Savings (Million KWh)	Thermal Savings (Million kcal)	Total Saving (INR Million)
1	Installation of 150W and 90W LED highbays in place of 250W and 150W HPSV luminaires in Vehicle Factory (I, II and III)	2.90	0.15	--	0.96
2	Installation of 2 nos. of 18.5 kW super premium efficiency IE4 motors in CED Circulation system at Frame Factory	0.53	0.05	--	0.34
3	Replacement of 250W Metal Halide luminaires with 150W LED highbays in Frame Factory	0.56	0.03	--	0.23
4	Introduction of 3 mode operation in RCDI Pump – Production, Idle & Holiday mode having frequency 50 Hz, 30 Hz and complete switching off during in respective modes in Frame Factory	0.00	0.05	--	0.35
5	Optimization of process time of PTCED Line by modification of carrier movement in Paint Factory	0.00	1.59	384	12.61
6	Optimization of ventilation loads by conversion of 1.5 kW Man-coolers to 250 W Air Circulators in BIW shop	0.15	0.02	--	0.13
7	Optimization of tubelights, highbay lights, emergency lights and floodlights using LED lights in BIW shop	0.48	0.04	--	0.28
8	Elimination of Idle running of Grinding Machines by implementation of Power Saving mode in Transmission Factory	0.00	0.08	--	0.52
9	Redistribution of power supply for fire extinguishing unit in Liebherr and Reishauer Profile grinding machines leading to Idle running elimination on Off days in Transmission Factory	0.00	0.01	--	0.06
10	Temperature optimization of air conditioning unit from 23°C to 25°C in profile grinding room in Transmission Factory	0.00	0.05	--	0.36
11	Introduction of P3 Neutrapon5013 chemical to convert Hot Washing to Cold Washing process in Axle machine shop	0.02	0.44	--	2.90
12	Optimization of shopfloor ventilation load by introducing HVLS fans in 1516 Trim Line	2.63	0.03	--	0.17
13	Design improvement in Drive system of EOT crane by installation of Twin LT Drive system (2 x 0.55 kW motor) in place of single LT Drive system (1 x 7.5 kW motor) in 10 T EOT crane in Bay-3 in PE Shop	0.14	0.02	--	0.13
14	Engg. control implementation using Timer circuit for auto ON/OFF control of two 1.5 TR window ACs to run for only 12 hours alternatively instead of 24 hours each in UPS Room in PE Shop	0.00	0.01	--	0.07
15	Optimization of lighting system using LED Downlighters in PE Shop Canteen	0.01	0.00	--	0.01
16	Improvement in heat transfer rate by overhauling of CED Heat Exchanger in Paint Factory leading to energy saving	0.00	0.05	--	0.36
17	Use of portable compressor during Block Closure & when more than 2 days of consecutive OFF days in Paint Factory	0.00	0.10	--	0.66
18	Auto switching off of lights at shift changeover time in Paint booth, Touch up, Joint sealant through PLC in Paint Factory	0.00	0.02	--	0.14
19	Interlocking Tempering Furnace Exhaust Blower & Blast Cooler running with Furnace Cycle in Axle-Heat Treatment	0.00	0.01	--	0.08
20	Optimized running of all Chips Conveyor with cutting cycle by logic modification in BFW machines in Axle Factory	0.00	0.06	--	0.38
	Total	**7.42**	**2.82**	**384**	**20.75**

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5b. ENERGY SAVING PROJECTS IMPLEMENTED IN LAST THREE YEARS

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Major Projects Implemented In FY22-23

Sr. No.	Description of Energy Saving Project	Investment (INR Million)	Electrical Savings (Million kWh)	Thermal Savings (Million kcal)	Total Saving (INR Million)
1	Elimination of Topcoat Baking Oven by development & use of Quick Air-Drying Paint in Frame Factory	5.32	0.33	2228	8.02
2	Installation of 8 nos. Heat Pumps in Washing Machines at Axle and Transmission Factories	10.35	1.02		7.26
3	Optimized operation of Cooling Tower pump motor in CCHF Furnace using VFD in Heat Treatment-Transmission	0.00	0.06		0.43
4	Lighting load optimization using LED lights in Vehicle Factory	0.71	0.15		1.05
5	Refurbishment of Paint Booths leading to reduction in connected load by 10.8 kW at Frame Line-2 & 3	0.00	0.15		1.06
6	Energy optimization of task lights through timers in Vehicle Factory	0.00	0.02		0.12
7	Interlocking of conveyor pit lights with pit entry gates in Vehicle Factory	0.00	0.00		0.02
8	Installation of Timer-based controls in Air circulators energy during non-production periods in Vehicle Factory	0.00	0.01		0.09
9	Automated operation of sealant oven forced cooler (interlock with ambient temperature) leading to reduction in its running hours during low ambient temperature	0.00	0.05		0.33
10	Cycle time reduction by implementation of automatic carrier transfer operation from Pre-ED to UF in Paint Shop leading to energy saving	0.00	0.05		0.36
11	Optimization of ARP blower & Exhaust fan loads by modification in ARP plenum duct of Loop-1 Paint booth in Paint Shop	0.00	0.36		2.55
12	Air pre-heat zone temperature optimization from 500 °C to 400 °C in CCHF furnace in Axle-Heat Treatment	0.00	0.03		0.24
13	Startup loss reduction by reducing number of ON/OFF cycles in Furnaces at Axle-Heat Treatment shop through improved production planning	0.00	0.05		0.32
14	Installation of 150W LED highbays in place of 250W HPSV luminaires in Frame Factory	0.11	0.01		0.10
15	Eliminate idle running of hydraulic motors in Loramendi Oven by interlocking with machine running cycle	0.00	0.02		0.11
16	Idle running elimination of Span motors by interlocking with machine operation in Foundry	0.00	0.09		0.64
17	Logic modification of Loramendi Oven blower motors operation in Foundry Factory leading to energy saving	0.00	0.02		0.11
	Total	**16.49**	**2.41**	**2228**	**22.80**

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Major Projects Implemented In FY23-24

Sr. No.	Description of Energy Saving Projects	Investment (INR Million)	Electrical Saving (Million kWh)	Thermal Savings (Million kcal)	Total Savings (INR Million)
1	Running of 5-chamber Shot Blasting machine in A,B & C-shifts till AICHELIN furnace running and then run single chamber shot blasting machine at Heat Treatment-Transmission	--	0.06	--	0.47
2	Running of only 2 nos. Endo Gas Generators in standby mode against earlier practice of keeping 4 nos. Endo Gas Generator on standby mode at Heat Treatment-Transmission	--	0.08	--	0.59
3	Optimization of Preheat temperature in 50 Kg/hr CCHF furnace from 850 °C to 800 °C at Heat Treatment-Transmission	--	0.03	--	0.23
4	Conversion of hot washing process at 60 °C to cold washing process at 30 °C in 50 Kg/hr CCHF Furnace at Heat Treatment-Transmission	--	0.02	--	0.12
5	Energy saving through OEE improvement from 75% to 85% by preparing component matrix for charging in 50 kg/hr CCHF furnace at Heat Treatment-Transmission	--	0.05	--	0.37
6	Optimized running of Dust Collector ID Fan by controlling damper during stoppage of Moulding Line at Foundry	--	0.02	--	0.16
7	Auto switching off of all hydraulic pumps, belt conveyors, shake-out system during shift changeover and long stoppages of Mouling Line at Foundry	--	0.24	--	1.83
8	Intermittent running interval of Vibro motor Belt Conveyor-106 and 107 changed from 30 min. ON, then 15 min. OFF to 15 min. ON, then 30 min. OFF at Foundry	--	0.00	--	0.02
9	Replacement of 1.5 kW, 3-phase Mancooler fans with 250 W single phase Air Circulators in Tilt Cab Line at BIW Factory	0.08	0.02	--	0.17
10	Optimization of lighting system of Prima fabrication Line using 150 W LED highbay luminaires at BIW Factory	0.17	0.02	--	0.15
11	Automatic control of 2 x 18W LED task light luminaires through PLC logic modification in Signa Line at BIW Factory	--	0.01	--	0.07
12	Conversion of task lighting system of Front Wall sub assembly area in Signa fabrication Line to optimized highbay lighting with 150 W LED luminaires at BIW Factory	0.02	0.00	--	0.03
13	Optimized running of hydraulic motor during clamping operation in Leak Testing machines at Engine Factory	--	0.01	--	0.11
14	Optimization of running hours of ARP Blowers and Exhauster in Loop-2 Paint Booth at Paint Shop	--	0.06	--	0.50
15	Modification of charging fixtures of G950 Counter Shaft and Main Shaft in SQF Furnace at Heat Treatment-Transmission leading to energy saving	--	0.31	177.34	3.32
	Total	**0.27**	**0.93**	**177.34**	**8.16**

Innovative Energy Saving Projects

01 AUTOMATIC BALANCING OF PAINT BOOTH WATER CIRCULATION SYSTEM THROUGH ULTRASONIC LEVEL SENSOR-BASED VFD FREQUENCY REGULATION AT PAINT FACTORY

02 OPTIMIZED RUNNING OF DUST COLLECTOR ID FAN BY CONTROLLING DAMPER DURING STOPPAGE OF MOULDING LINE AT FOUNDRY

03 OPTIMIZED RUNNING OF HYDRAULIC MOTOR DURING CLAMPING OPERATION IN LEAK TESTING MACHINES AT ENGINE FACTORY

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6. INNOVATIVE PROJECT-1: AUTOMATIC BALANCING OF PAINT BOOTH WATER CIRCULATION SYSTEM THROUGH ULTRASONIC LEVEL SENSOR-BASED VFD FREQUENCY REGULATION AT PAINT FACTORY

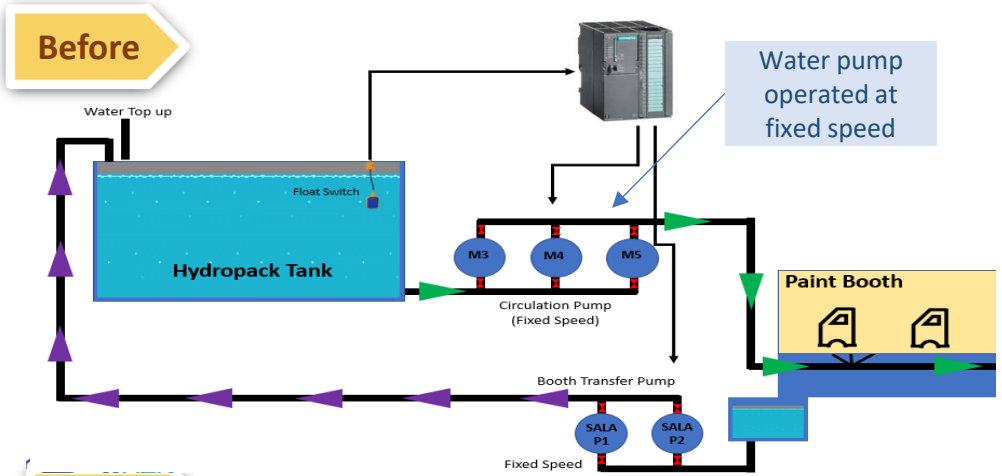
TATA MOTORS Connecting Aspirations

Project

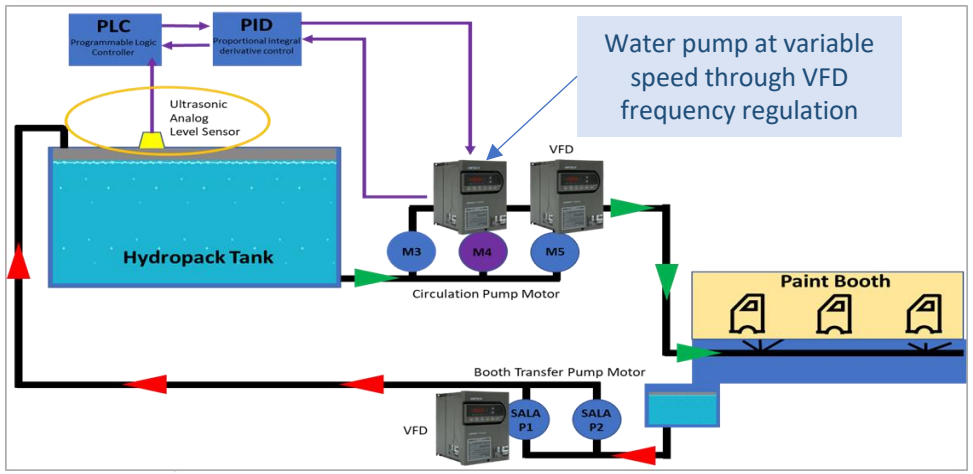
Our team implemented an innovative automatic water balancing system for Paint Booth converting old process of manual and less effective water level maintaining process of Hydropack tank into an automated system through Ultrasonic Level sensor-based VFD Frequency regulation for water circulation pumps of the Paint Booth challenging the OEM's existing standard process design.

Paint Booth Water Circulation - Process Layout

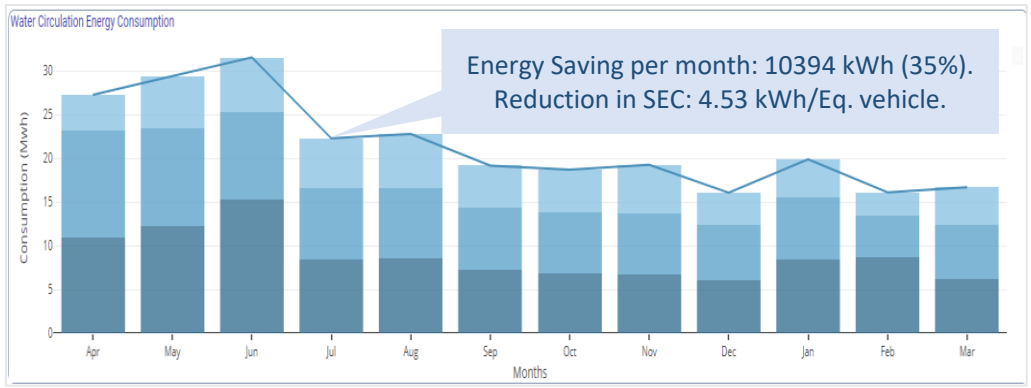
Before



After



Water Circulation System: Energy Consumption Trend (kWh) – FY23-24



Innovative Aspect

- Self-driven aspect of the team
- Taken a calculated risk in implementing the modifications beyond the OEM's standard process design
- Simultaneously ensuring a conducive environment inside the paint booth

Impact/Benefits

ENERGY SAVING

Electrical Saving in FY23-24: 0.94 Lakh kWh

CO_2

67 Tonne of CO_2e reduced in FY23-24

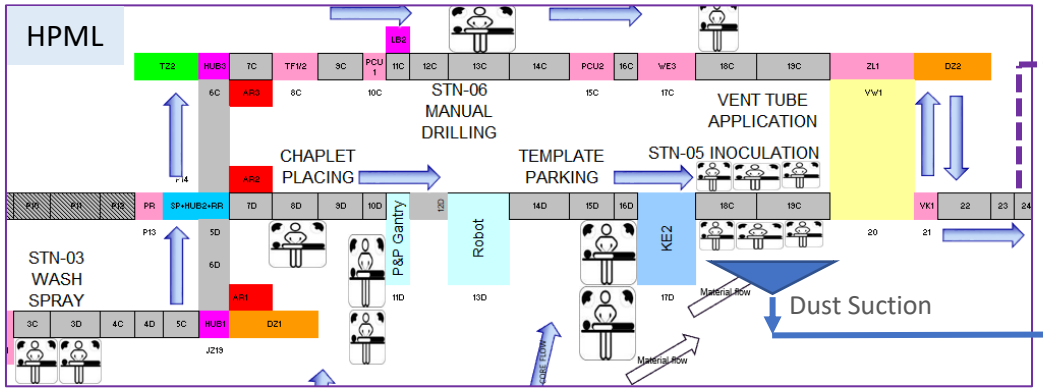
6. INNOVATIVE PROJECT-2: OPTIMIZED RUNNING OF DUST COLLECTOR ID FAN BY CONTROLLING DAMPER DURING STOPPAGE OF MOULDING LINE AT FOUNDRY

TATA MOTORS
Connecting Aspirations

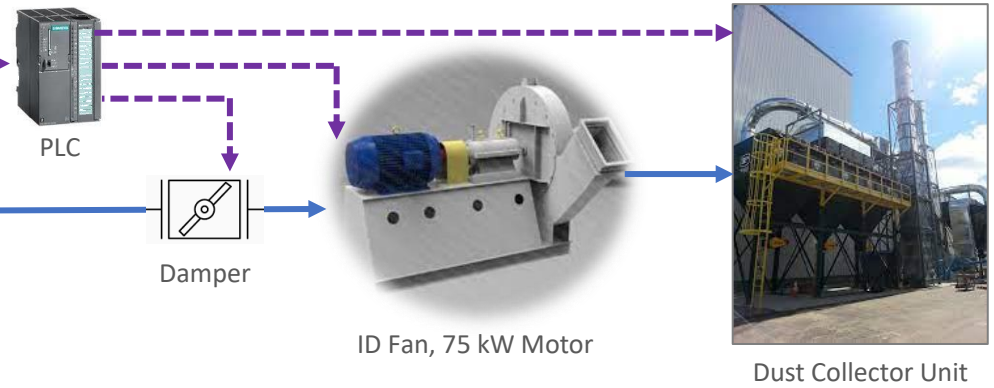
Project

This is an innovative project implemented in the High Pressure Molding Line (HPML) at Foundry, wherein the energy consumption of the Dust Collector system has been optimized by controlling the load of the ID Fan during long stoppages of HPML Line by modifying the conventional logic of the process operation established by the OEM.

High Pressure Molding Line (HPML) at Foundry - Process Layout



Dust Collection System for HPML



Before

Stoppage of HPML Line → ID Fan of Dust Collector used to run on full load

After

Stoppage of HPML Line for >10 min.

ID Fan of Dust Collector runs at ~60% load by throttling the Damper automatically through PLC

Innovative Aspect

- Self-driven aspect of the team
- Implemented by challenging the conventional operational logic established by the OEM
- Simultaneously ensuring that the desired environmental conditions in the shopfloor are not compromised

Impact/Benefits

ENERGY SAVING

Annual Electrical Saving: 0.21 Lakh kWh

CO_2

15 Tonne of CO_2e reduction annually

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6. INNOVATIVE PROJECT-3: OPTIMIZED RUNNING OF HYDRAULIC MOTOR DURING CLAMPING OPERATION IN LEAK TESTING MACHINES AT ENGINE FACTORY

TATA MOTORS
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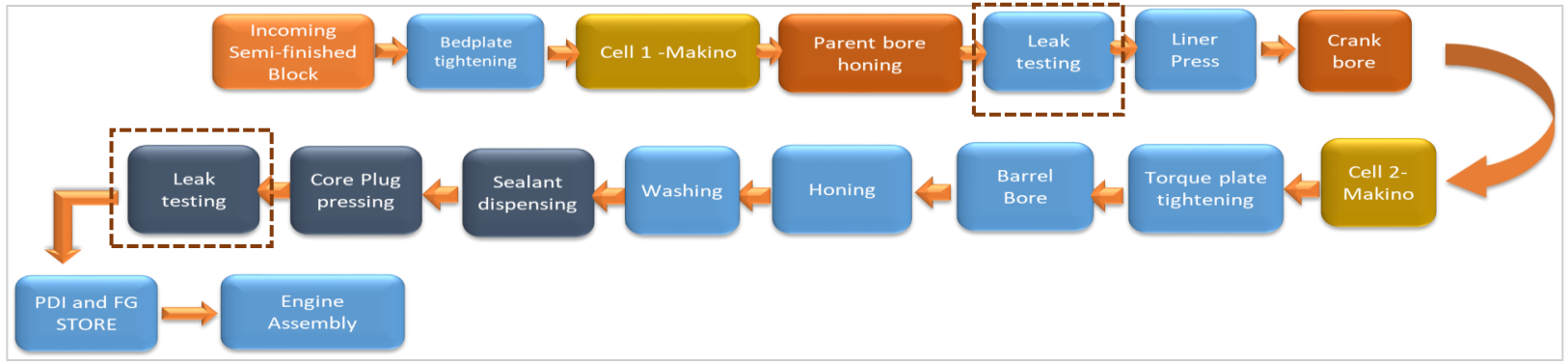
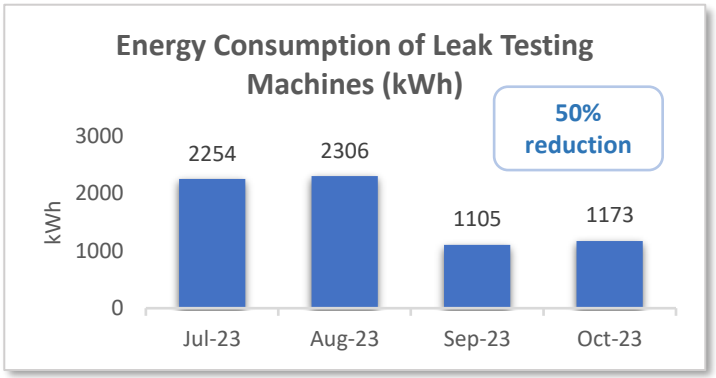
Project

There are Leak Testing machines in 5 Ltr. Engine Machining Shop at Engine Factory. These machines have a critical hydraulic system powered by 3.7 kW pump motor and is used for clamping the job inside the machine. An Engineering Control has been applied in the hydraulic system leading to optimization in its energy consumption.

5 Ltr. Engine Machining Shop - Process Layout

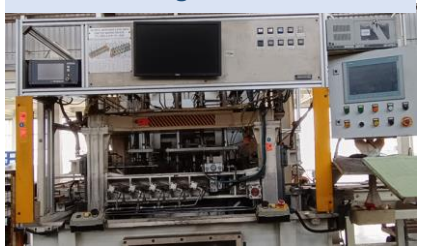


Leak Testing M/c: Energy Consumption Trend (kWh)



Leak Testing M/c: M60-0185

Hydraulic pump motor 3.7 kW



Before

Hydraulic pump motor is continuously ON during M/c operation

Leak Testing M/c: M60-0198

Hydraulic pump motor 3.7 kW

After

Hydraulic pump motor is intermittently ON only during clamping operation

Innovative Aspect

- Modifications done beyond the OEM's standard process design
- Taken a calculated risk in implementing the modifications in a very critical system, i.e., the hydraulic system
- Self-driven approach

Impact/Benefits

ENERGY SAVING

Annual Electrical Saving: 0.14 Lakh kWh

CO_2

10 Tonne of CO_2e reduced annually

Renewable Energy

01 CURRENT APPROACH & CHALLENGES

02 UTILIZATION OF RENEWABLE ENERGY

7. UTILIZATION OF RENEWABLE ENERGY SOURCES

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CURRENT APPROACH:

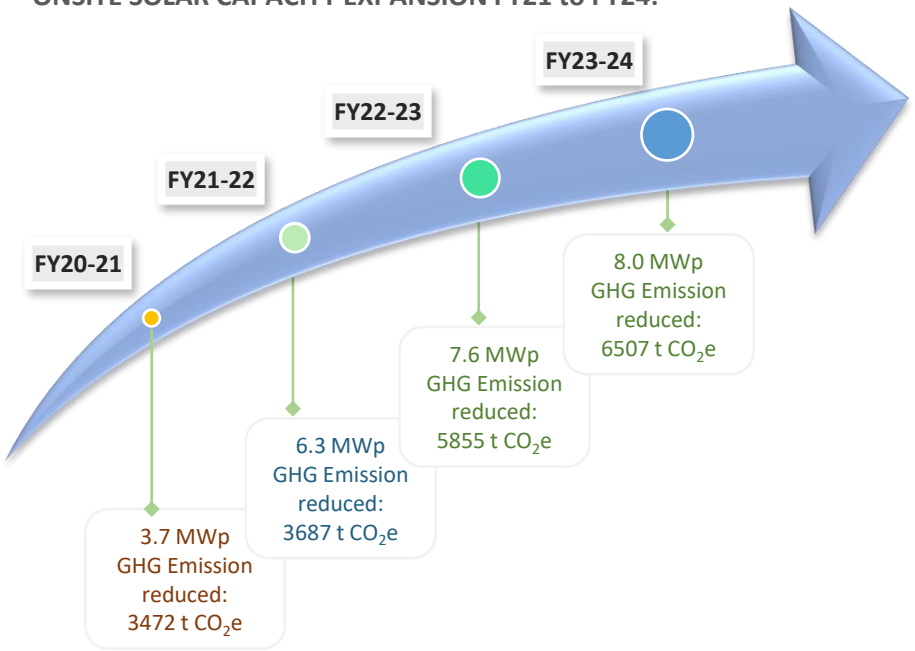
- ❑ Tata Motors – Jamshedpur has Onsite Renewable Energy generation through Solar Power Plant
- ❑ Solar Plants installed through Opex (PPA Mode) - No investment by TML
- ❑ No RPO Obligations

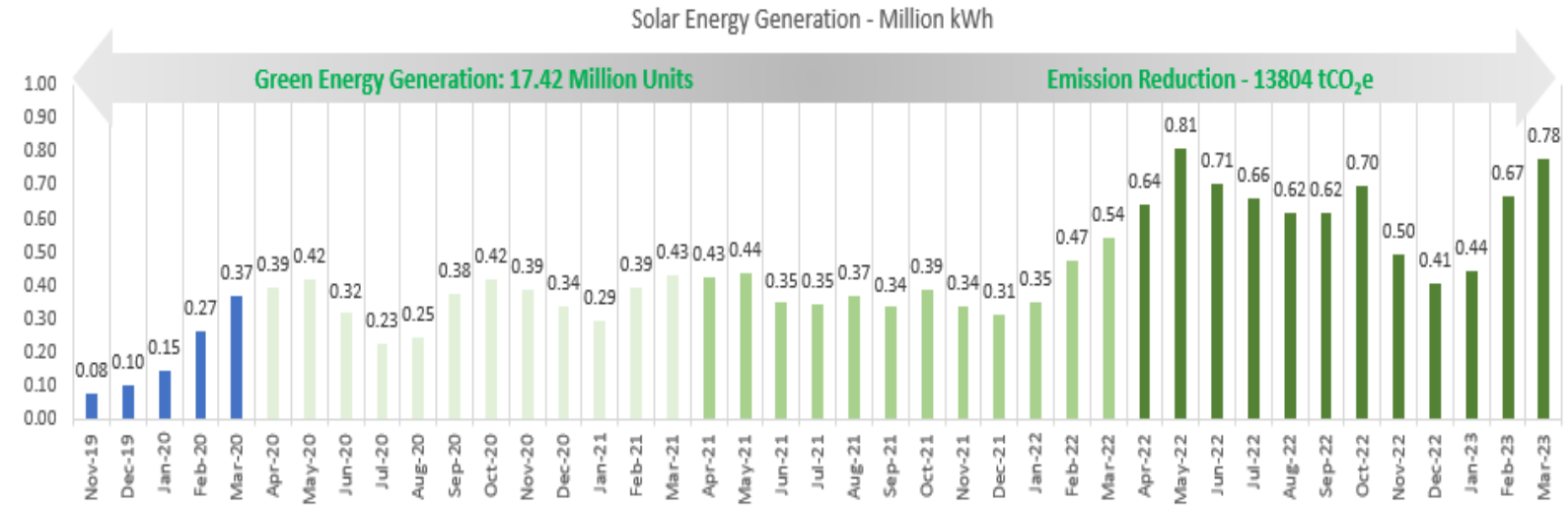
CHALLENGES IN MAXIMIZING RE UTILIZATION:

1) Absence of established and approved process from Regulator for enabling purchase of Open Access Renewable Energy through:
   - Inter-State Transmission System (ISTS)
   - Short / Long Term PPAs (Intra / Inter State)
   - Group Captive RE Installation (Intra / Inter State)

2) JSERC's Notification on Green Tariff - Not Available

ONSITE SOLAR CAPACITY EXPANSION FY21 to FY24:

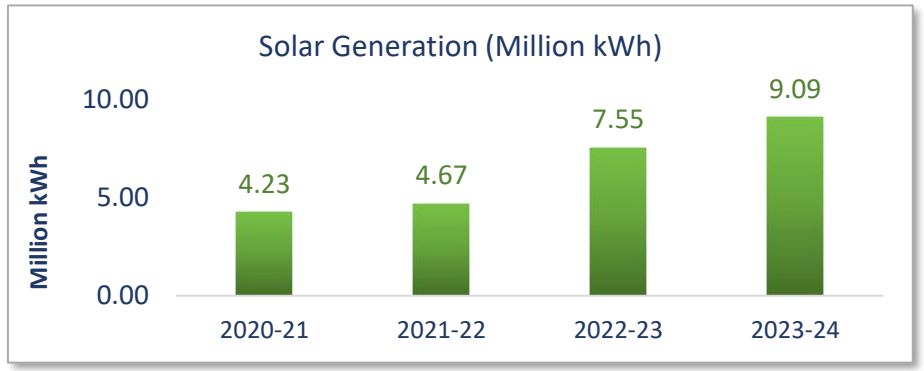




Solar Carport 0.64 MWp at Auto General Office

Solar Plant 0.86 MWp - Engine Office

Solar Plant 0.59 MWp on RBT Shed



Year	Technology	Installed Capacity (MWp)	Consumption (Million kWh)	% of Overall Electrical Energy Consumption
FY 2020-21	Solar PV	3.7	4.23	4.11%
FY 2021-22	Solar PV	6.3	4.67	3.20%
FY 2022-23	Solar PV	7.6	7.55	4.68%
FY 2023-24	Solar PV	8.0	9.09	5.58%

Waste Management & Utilization

01 WASTE MANAGEMENT APPROACH

02 WASTE UTILIZATION FOR CO-PROCESSING

03 KEY ACTIONS FOR WASTE UTILIZATION

8. WASTE UTILIZATION AND MANAGEMENT

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Waste Management Approach

REDUCE
To reduce the amount of waste generation by optimizing conuumption of resources.

REUSE
To seek alternate uses of the waste that has been generated or of discarded items or their parts.

RECOVER
To recover the embedded energy in the waste material

RECYCLE
To convert waste into new and usable products or items.

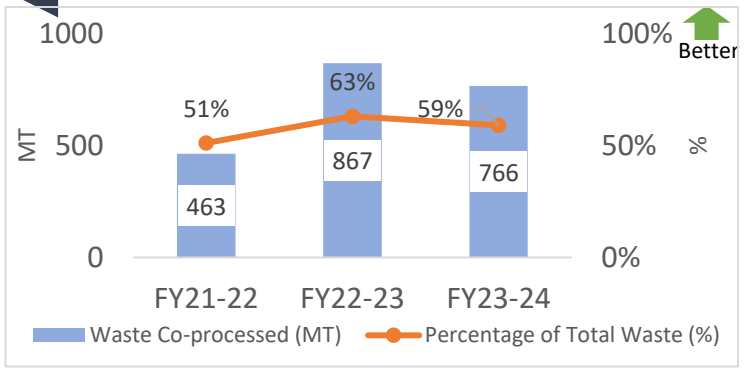
Waste - Quantity and Disposal Pathway

Sl. No.	Type of Waste Generated	Quantity (MT)			Disposal Method
		FY21-22	FY22-23	FY23-24	
1	Paint Sludge	265.58	526.26	449.46	Co-processing
2	Phosphating Sludge	18.14	31.86	29.69	Co-processing
3	ETP Sludge	5.12	31.87	21.34	Co-processing
4	Oil/Paint soaked Jute/gloves	39.99	88.91	63.66	Co-processing
5	Grinding Sludge	134.41	188.44	202.02	Co-processing
6	Oil/Paint soaked Jute/gloves	40.3	49.93	28.05	In House Incineration
7	Paint Sludge	19.9	0.5	0	In House Incineration
8	Electronic Waste	21.79	5.58	16.023	Recycling
9	Lead acid Batteries	27.88	30.32	38.64	Recycling
10	Flush Thinner	16.64	18.92	32.96	Recycling
11	Waste / Used Oil (5.1)	25.48	38.24	38.4	Recycling
12	Discarded containers of Hazardous Wastes	169.3	218.98	234.86	Recycling
13	Copper Harness Cable	24.57	40.16	36.68	Recycling
14	Glass Wool	0	2.46	0	Secured Landfill
15	Resin/Alumina	0	2.24	0	Secured Landfill
16	Waste Cutting Oil	97.76	102.08	99.2	Recycling
	Total	**906.86**	**1376.75**	**1290.983**	

Waste Utilized as Fuel Through Co-processing

Year	Type of Waste	Quantity (MT)	GCV (kcal/kg)	Energy Recovered (Million kcal)	Waste as %age of Total Fuel
FY21-22	Paint Sludge	265.58	6700	1779	3%
FY21-22	Oil/Paint soaked Jute/gloves	39.99	3590	144	0.3%
FY22-23	Paint Sludge	526.26	6700	3526	6%
FY22-23	Oil/Paint soaked Jute/gloves	88.91	3590	319	0.6%
FY23-24	Oil/Paint soaked Jute/gloves	63.66	3590	229	0.4%
FY23-24	Paint Sludge	449.46	6700	3011	5.3%

Waste Co-processed



Key Actions for Waste Utilization

- Re-use of incineration ash and waste Foundry sand to manufacture Paver Blocks: 33200 nos. in FY23-24

Incineration Ash — Paver Blocks

- Reclamation of waste Core and Mold sand for re-use in Foundry: 3041 MT in FY23-24

Waste Core sand — Sand Reclamation Plant — Re-usable sand

- Upgradation of 8 nos. painting Robots to improve paint transfer efficiency in Paint Shop. Annual Propane reduction of 30 MT.
- Re-use of canteen food waste as manure through Organic Waste Converter.
- Reduction of Paint Sludge by migration to 7th generation CED paint

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GHG Inventorization

01 GHG INVENTORIZATION APPROACH

02 KEY LEVERS & ACTIONS FOR GHG EMISSION REDUCTION

03 GHG INTENSITY TREND : FY18 to FY23

04 GHG EMISSION REDUCTION ROADMAP & TARGETS

05 GHG EMISSION INTENSITY COMPARISION WITH PEERS

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9. GHG INVENTORIZATION

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Connecting Aspirations

Scopes Included

GHG inventorisation at Tata Motors – Jamshedpur Plant includes **Scope-1** and **Scope-2** emissions

- HSD (Internal Transport)
- HSD (Engine Testing)
- HSD (R&D)
- LDO (Works Incinerator)
- LDO (DG House)
- LDO (Foundry)
- Propane (Axle)
- Propane (Transmission)
- Propane (Paint Shop)
- Propane (Foundry)
- Propane (Frame Factory)
- Propane (Canteen)

→ **Scope-1 Emission**

- Purchased Electricity (Black Power, Fossil Fuel-based)

→ **Scope-2 Emission**

→ **Total GHG Emission**

KEY LEVERS & ACTIONS FOR GHG EMISSION REDUCTION

1 ENERGY COST REDUCTION
- CD Reduction / Optimization
- PF Rebate Maximization
- Maximization of Load Factor

2 OPERATIONAL EFFICIENCY
- Compressor operation optimization
- Reduce auxiliary energy
- Air pressure redn. : 90 psi to 80-84 psi
- Use of VFDs & Portable Compressors
- Time based Switching
- AC Chiller temperature rationalization
- Timer control in FDVs & Lighting Circuits
- Paint booth balancing & freq. optimization of paint booth exhausters
- Fixed Load Reduction

3 NEW TECHNOLOGY
- LED Lights
- Heat pumps
- HVLS- High volume low speed fans
- Star rated equipment
- BLDC Fans / Motors
- Waste Heat Recovery & Reuse
- **Flux Maxiox on Propane Pipeline**
- Energy Efficient Motors

4 DIGITIZATION / INDUSTRY 4.0
- Real time energy monitoring and feedback
- Energy metering for significant energy uses
- Accurate energy accounting & reporting
- Automated alarms /triggers

5 RENEWABLE ENERGY
- Solar PV on rooftops – 6.3 MWp
- Solar Thermal for Washing Machine
- Light Pipes – Use of Natural Daylight

6 BENCHMARKING
- Inter Plant Benchmarking
- Process level : Painting / Foundry / Assembly
- External Benchmarking

7 CAPABILITY BUILDING
- EnMS Internal Auditors
- EnMS Lead Auditors
- BEE Certified Energy Manager
- BEE Certified Energy Auditor

CO_2 Reduction

9. GHG INVENTORIZATION

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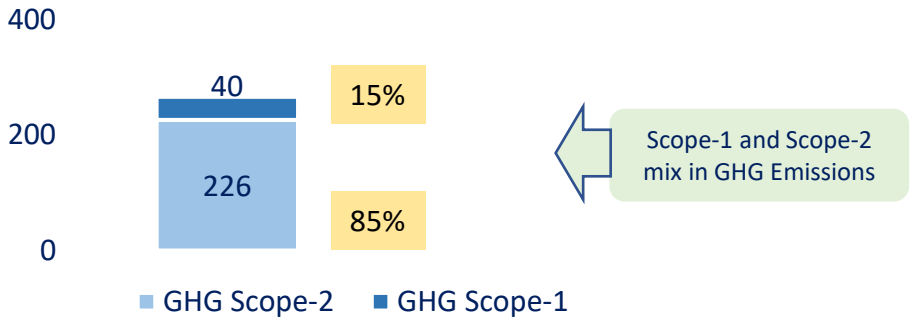
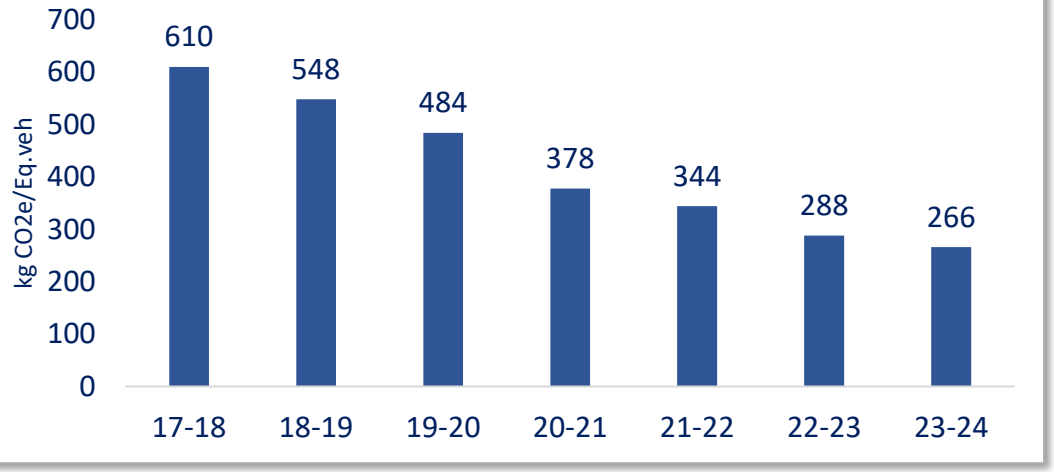
Sp. GHG FY24 (kg CO_2e/Eq. Veh)



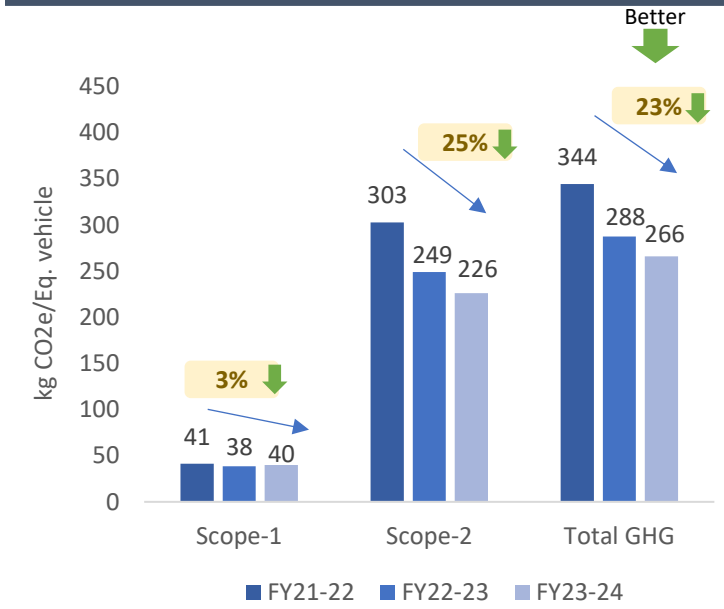
**Scope-1 includes emission due to fuel consumption in internal processes*
**Scope-2 includes emission due to purchased electricity from fossil fuels*

Sp. GHG Emission (kg CO_2e/Eq. Veh)



Specific GHG Emission reduction by 56% over 6 years

GHG Intensity (kg CO_2e/Eq. Vehicle)



Scope-1 Reduction: Key Actions

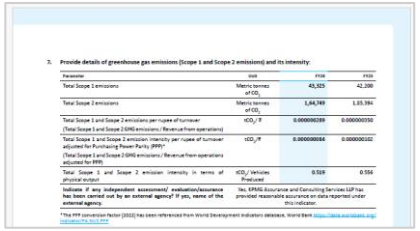
- Eliminated Baking Oven operation through Quick Dry Paint usage in Frame Factory
- Insulation refurbishment of Paint Booth Ovens in Paint Shop
- Batch production in Frame Factory PTCED Oven and Top Coat Baking Ovens
- Use of Flux Maxiox magnetic resonators for propane burners
- Replaced pilot burners by glow plugs in Furnaces

Scope-2 Reduction: Key Actions

- Capacity enhancement of on-site Solar Power Plant to 7.6 MWp
- Heat Pumps for Washing Machines
- Holiday mode in PTED process in Paint & Frame to reduce fixed energy consumption
- Cold Washing in Washing Machines
- HVLS fans in shop floors
- Optimized temp. & cycle time in HT Furnaces
- VFDs in pumps and blowers

Public Disclosures - ESG Disclosure Ratings

**Public Disclosures are done at Corporate level*



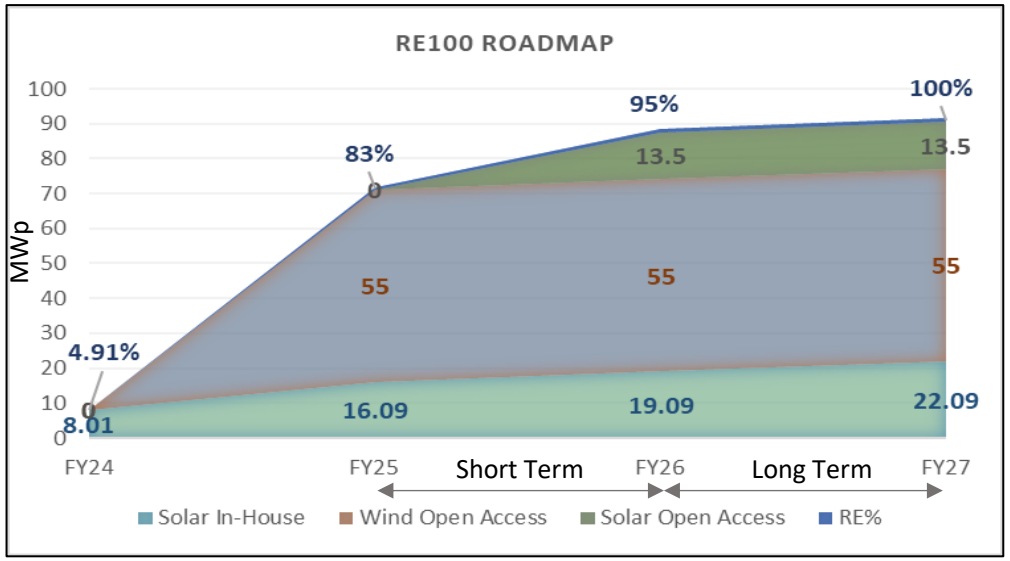
- **Business Responsibility and Sustainability Report (BRSR)** – Published BRSR in Annual Report FY23-24 in compliance to ESG Guidelines of SEBI.

- **Dow Jones Sustainability Index (DJSI)** - Entry into the prestigious DJSI Emerging Markets Index.
- Tata Motors is 1 of 3 Indian Automobile companies and 1 of 8 global automobile companies on the 2022 Index.

- **CDP** – Sustained CDP Climate Change ratings at 'B rating' in 2023.

TATA MOTORS
Connecting Aspirations

GHG Emission Reduction Roadmap – Jamshedpur Plant



WIP or Will be Executed | Regulatory Roadblock

Short Term Target

To achieve 95% renewable energy contribution by FY25-26

Long Term Target

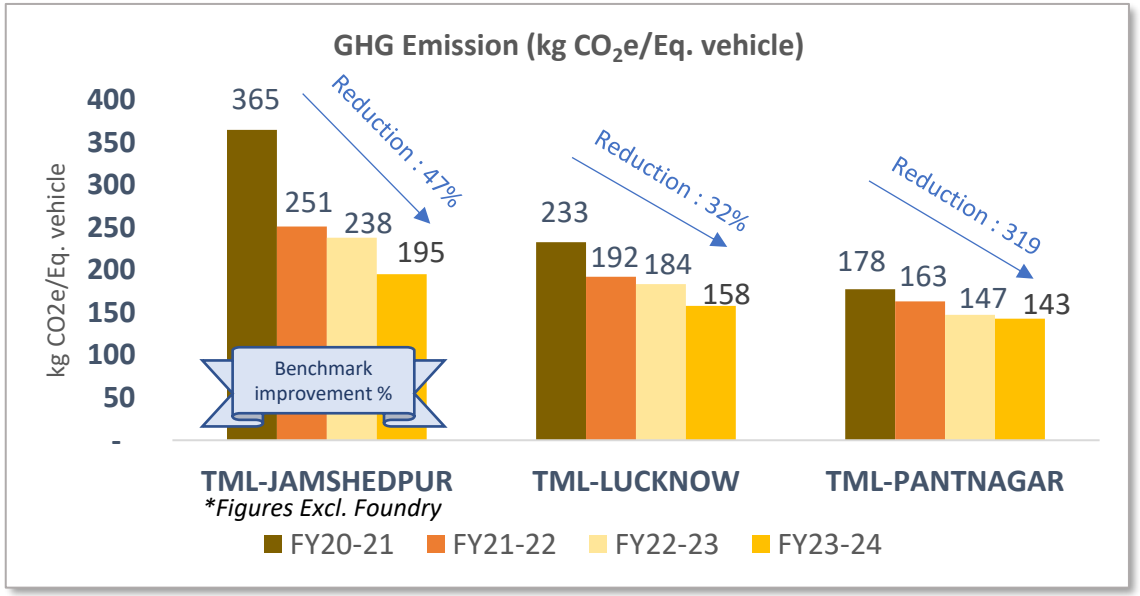
To achieve Net Zero Scope-2 emission by FY29-30 (Internal Target by FY26-27)

Plan for Achieving GHG Emission Reduction by Maximizing RE

Plant	FY2025	FY2026	FY2027
Tata Motors, Jamshedpur	• Planned to increase in-house RE capacity to 16.09 MWp • Solar Open Access: 55 MWp	• Install additional 3 MWp roof-top Solar Plant • Wind Open Access 13.5MWp	• Install additional 3 MWp roof-top Solar Plant

GHG Intensity - Comparison with Other Tata Motors Plants

Comparison with TML Plants excluding Foundry



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Green Supply Chain Management

01 APPROACH TO GREEN SUPPLY CHAIN

02 PROJECTS IMPLEMENTED BY SUPPLY CHAIN PARTNERS

03 OUTCOMES OF SUPPLIERS' GREEN INITIATIVES

10. GREEN SUPPLY CHAIN MANAGEMENT

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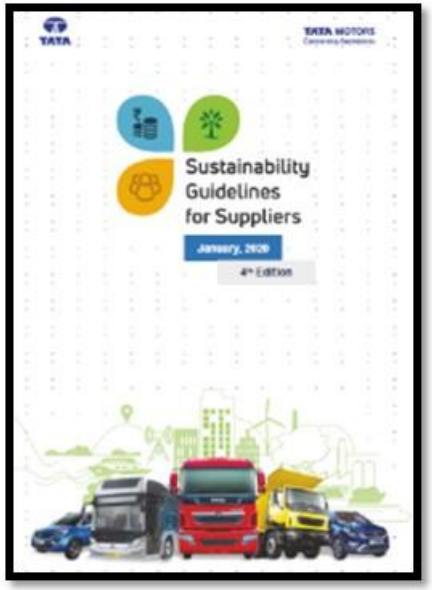
Tata Motors – Environmental Procurement Policy

Key Aspects of Policy

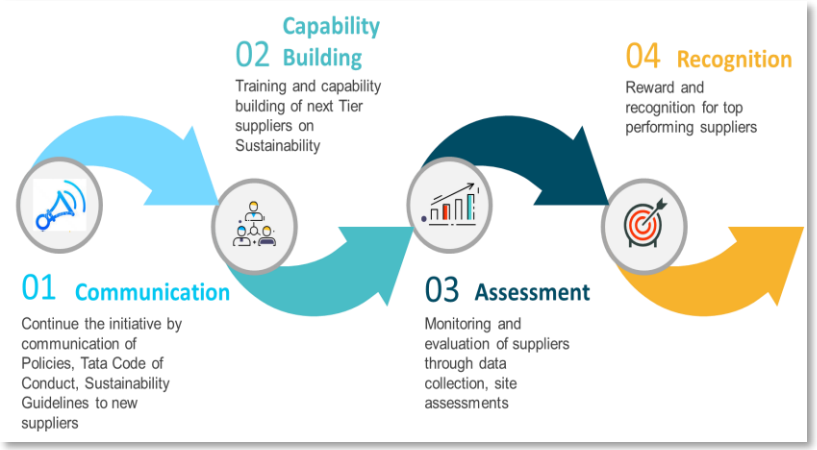
- Evaluation of vendors/ supply chain partners to improve their environmental performance.
- Prioritizing vendors based on "Green Vendors and Green Product" concept.
- Encouraging vendors to adopt & establish "Environment Management System"
- Reduction in carbon footprint and use of hazardous chemicals by vendors by imparting adequate training and awareness programmes

Sustainability Guidelines for Suppliers



- Governance
- Legal Compliance
- Tata Code of Conduct
- Management System Certifications
- Environment & Climate Change
- Health & Safety
- Labour & Human Rights
- Transparency & Reporting

Strategy for Expanding the Green Supply Chain



Supplier Evaluation Process

TML-Jamshedpur has systematic approach for evaluation of suppliers before onboarding them as supply chain partner. The suppliers must comply with required criteria as a part of environment management system:

1.3	*	Does the organization follow EMS standard, environmental statutory and regulatory norms? Does the organization have responsibility defined internally?	- Organization follows EMS related regulatory norms and requirements. - Organization has valid consent to establish and operate from Pollution control authority. - Organization has defined responsibility for EMS requirements, waste management and statutory compliance.	*Valid 'Consents to Establish and Operate' from SPCB/PCC *Membership Certificate or payment receipts of CETP for effluent treatment & CHWTSDF for hazardous waste disposal * Records of effluent / sewage disposal to CETP / Local Body STP, etc. * Records of hazardous waste disposal to Common Facility / Regd. Scrap Dealer * 3rd Party Environmental Monitoring Reports (treated effluent/sewage, stack emissions, ambient air quality, ambient noise, etc.) * ISO-14001 (EMS) certificate * Display of compliance to 'Consent' conditions at Main Gate * Legal Notice from SPCB/PCC, Local Bodies, etc. and response
1.3a	*	Does the Organization follows statutory and regulatory norms related to IMDS, Conflict of Mineral and Persistent Organic Pollutant (POP) requirements?	-Organization defined and identified all materials in the product (with Component and Sub components wise) supplied to TML for IMDS submission -Organization listed out the usage & smelters of 3TG (Tin, Tungsten, Tantelum and Gold), described as Conflict Material in the components supplied to TML -Organization listed the Persistent Organic Substance (POP) used in the components supplied to TML (C DecaBDE (FLAME RETARDANT AND ADDITIVE),PFOA - PER FLORO OCTANIC ACID,(SURFACTANT, EMULSIFIER, DISPERSING AGENT),HCBD -HEXA CHLORO BUTADIENE,(DEGREASER, SOLVENT AND CLEANER),SCCP (PLASTICISER, ADDITIVES AND FLAME RETARDANT))	-Submission in IMDS -Declaratrion of 3TG material and submission -Declaration of POP on SRM portal with part number and the POP used.

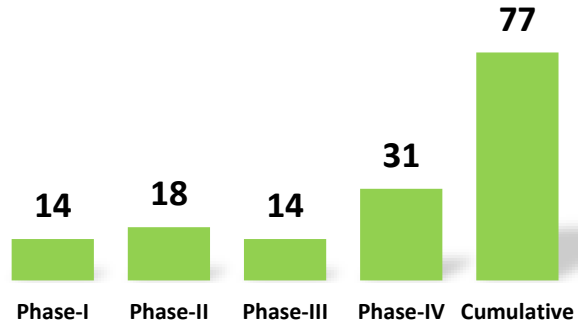
Sustainable Supply Chain – Phase wise Supplier Coverage for Site assessments

Supplier Awareness

Awareness sessions on **Sustainability** were conducted for suppliers

- Environmental Procurement Policy
- Management Systems: ISO 14001, ISO 50001, ISO 45001
- Energy Conservation
- Environment Protection
- Water Conservation
- Rainwater Harvesting
- Climate Change

Phase - wise Supplier Site Assessments Completed at Jamshedpur (Nos.)



TATA MOTORS
Connecting Aspirations

Key Projects Implemented by Supply Chain Vendors (FY21-22 to FY23-24)

Sl. No.	Vendor Name	Project Implemented	Investment made (Rs. Million)	Benefits Achieved
1	ZF CVCS, Jsr	Modification of power connection by connecting of two machines with single power pack	0	Energy Saving 16500 KWh / Year
2	ZF CVCS, Jsr	Automatic running of Coolant circulation pump motor during machine running cycle only.	0	Energy Saving 13200 KWh / Year
3	ZF CVCS, Jsr	Replacement of 3-star AC's with more energy efficient AC's	0.25	Energy Saving 7500 KWh / Year
4	ZF CVCS, Jsr	Water Saving Project - Reuse of RO rejected water in canteen for washing activities	0.12	Water Saving of 35% i.e. 3600 kL / Year
5	Fleetguard Filters Pvt. Ltd.	Implementation of combo ply bags instead of individual poly bags for semi-finished parts.	-	2609 KG Polybag saving/ Annum
6	Fleetguard Filters Pvt. Ltd.	Economic batch running by doing adequate planning to avoid heating loss and startup rejection at M/s FFPL	-	Saving of 19136 KWh /Annum 1872 KG raw material saving/ Annum
7	Fleetguard Filters Pvt. Ltd.	Implementation of hot air cleaning instead of compressed air for component cleaning post leak test at M/s FFPL	0.5	Saving of 906 KWh /Annum operator Safety improved
8	Fleetguard Filters Pvt. Ltd.	Implementation of an enclosed bin cleaning machine for cleaning reusable bins to reduce water consumption at M/s FFPL	0.7	Saving of 286 KL water saving / Annum
9	Fleetguard Filters Pvt. Ltd.	Improvement of capacitor bank (RTPFC- Real Time Power Factor Correction) to maintain the Power factor at M/s FFPL	-	Power factor improved & maintained . Annual saving of 10890 KWh achieved
10	Fleetguard Filters Pvt. Ltd.	Modification of Cooling tower overflow pipeline to reduce the water wastage at M/s FFPL	-	Saving of 29 KL water saving / Annum
11	Fleetguard Filters Pvt. Ltd.	Implementation of NRV and Electrical water shutoff valves in chiller -@5 Blow Molding machine at M/s FFPL	-	Saving of 11.96 KL water saving / Annum
12	Fleetguard Filters Pvt. Ltd.	Implementation of PIR (passive infrared sensor) or Motion detectors in washrooms at M/s FFPL	-	Saving of 4477 KWh /Annum
13	Fleetguard Filters Pvt. Ltd.	Implementation of LDR (Light Dependent Resistor) Utility area at M/s FFPL	-	Saving of 5970 KWh /Annum
14	Fleetguard Filters Pvt. Ltd.	Compressor type chiller unit replace with water cooling type chiller implemented in spot welding machine at M/s FFPL	-	Saving of 21946 KWh /Annum
15	Fleetguard Filters Pvt. Ltd.	100 % 250 W mercury vapor lamp to 22 & 100 W LED lights at Airline, Fabrication line, PPI area and Dispatch area at M/s FFPL	-	Saving of 23469 KWh /Annum
16	Fleetguard Filters Pvt. Ltd.	Installation of 5 nos rain water harvesting - recharge pit installed at M/s FFPL		Saving of 26000 KL /Annum

Sustainability Initiatives at Supplier's Plants

Solar Plant 1.3 MWp at M/s Timken

Solar Plant 15 kWp at M/s ZF India

Bio-Gas Plant, 250 kg/day at M/s Timken

Solar Street Lights at M/s FFPL

Rain Water Harvesting at M/s FFPL

LED Lights at M/s Jost India

Sensor-based taps at M/s FFPL

Solar Street Light at M/s Jamna Auto

Outcomes of Suppliers' Green Initiatives

Energy Consumption reduced 27932 GJ (8%)

Reduced 2466 t CO2e (5%)

Achieved by Top 8 suppliers

Fresh water consumption reduced 23605 kL (28%)

EMS & Other Requirements

01 ENERGY MANAGEMENT SYSTEM

02 CHALLENGES & APPROACH TO ENERGY MANAGEMENT

03 LEVERAGING DIGITAL & CAPABILITY BUILDING

04 NET ZERO COMMITTMENT

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11. EMS SYSTEM AND OTHER REQUIREMENTS

TATA MOTORS
Connecting Aspirations

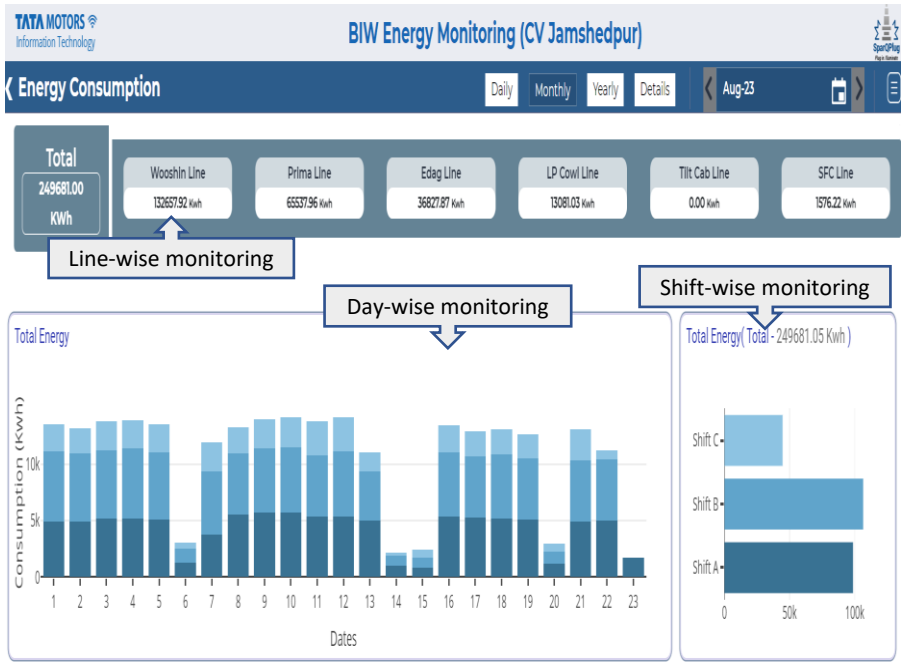
ISO 50001 – Energy Management System

- Standard: ISO 50001 : 2018
- Scope: Manufacturing of M&HCV
- Physical Boundary: TML-Jamshedpur Works
- Continued certification since 2013
- Currently Certified for 2018 version

Digitization Challenges

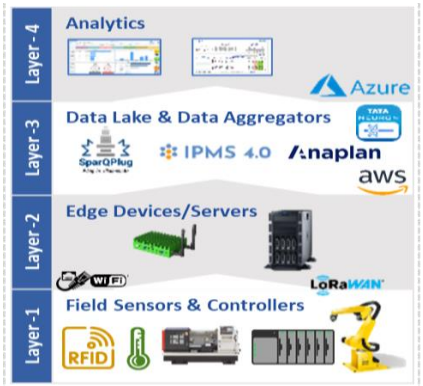
1) Many equipment, by design, did not have the feasibility of energy measurement.
2) High requirement of meters and field devices
3) Moderate level of digitization / industry 4.0 deployment before FY20
4) Development of algorithms for predictive models to establish empirical correlation between energy consumption and the relevant variables

Energy Monitoring Through Online Digital Dashboard



Other Management Systems

4-Layered Digital Architecture

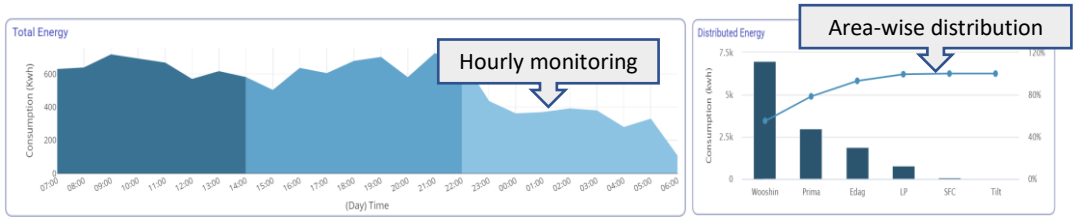


Standardization on 4 Layer Architecture
Leverage cloud infrastructure for agile deployment

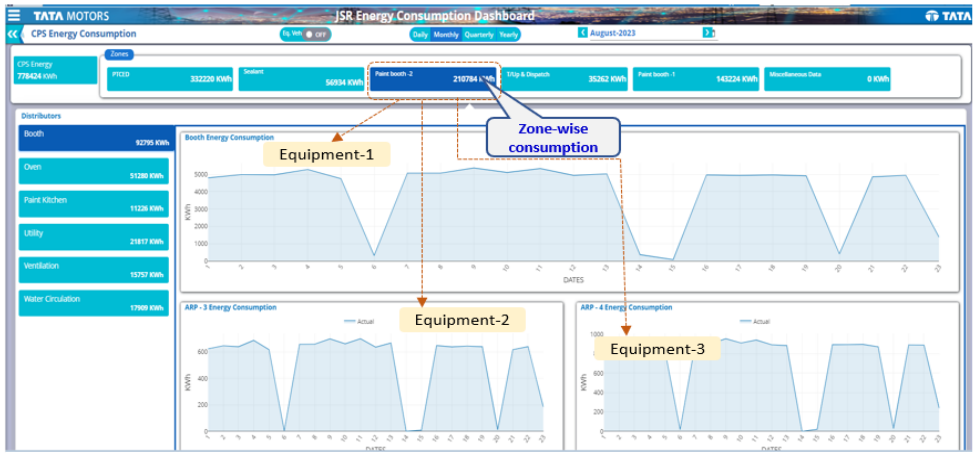
Capability Building Programs (No. of Employees Trained)

Program	FY21 to FY23
Digital Champion	28
Digital Mentor	28
Quality 4.0	10
M.E. 4.0	12
Industry 4.0 Awareness Training	1857
Total	1935

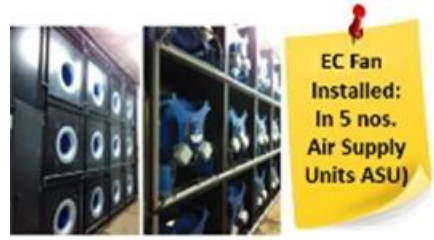
Energy Monitoring Through Online Digital Dashboard



Zone-wise and Equipment Level Energy Monitoring Through Digital Dashboard



Learnings from CII and Other Award Programs



TATA MOTORS
Connecting Aspirations

Net Zero Target Year

2030

RE 100

Tata Motors is a signatory to RE100 and has committed to meet 100% of its power requirements from renewable sources by 2030.

2037

SCIENCE BASED TARGETS

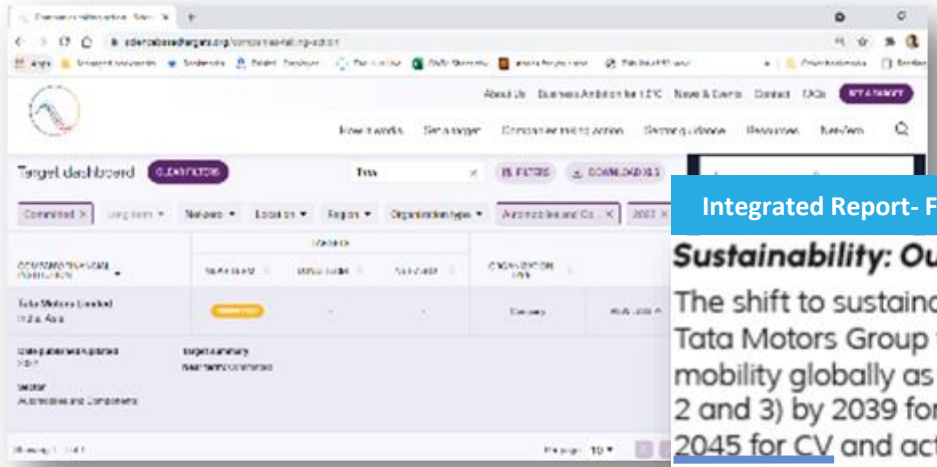
Tata Motors has committed to Science Based Targets Initiative (SBTi) for setting near–term GHG reduction targets.

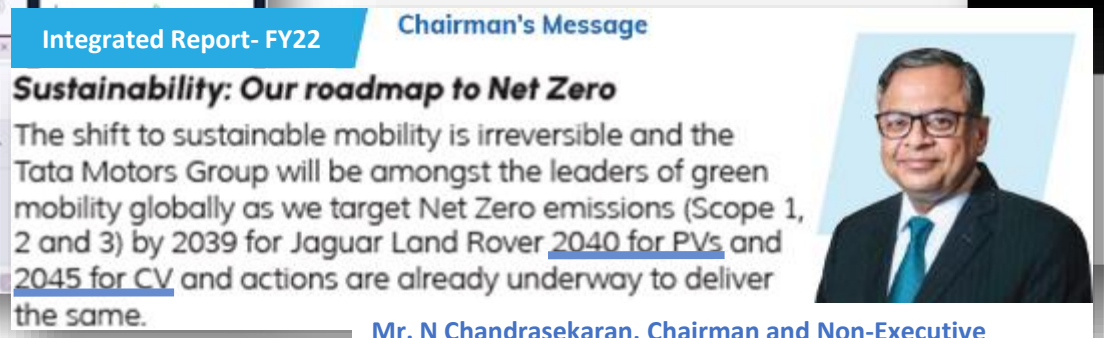
2045 — Target Year

NET ZERO

Tata Motors has committed to Net Zero by 2040 for the Passenger Car business and by 2045 for the Commercial Vehicle business

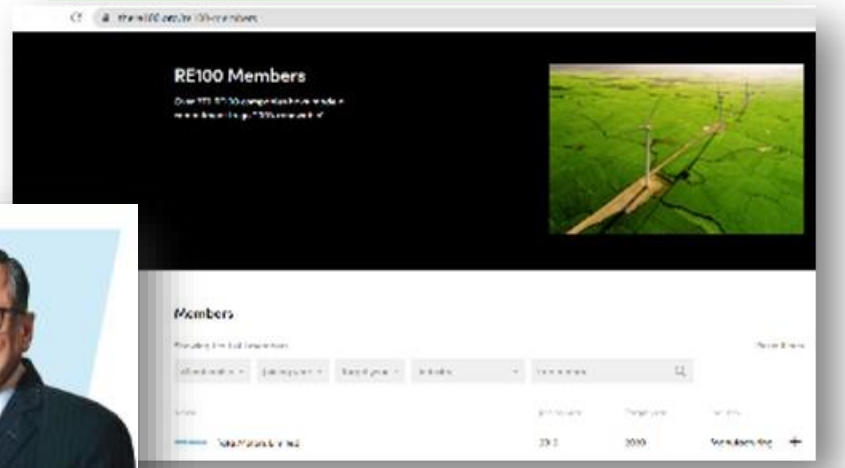
TML has committed to setting Science based Targets for GHG reduction





Mr. N Chandrasekaran, Chairman and Non-Executive Director

Tata Motors is part of the RE-100 committed organisations



TATA MOTORS
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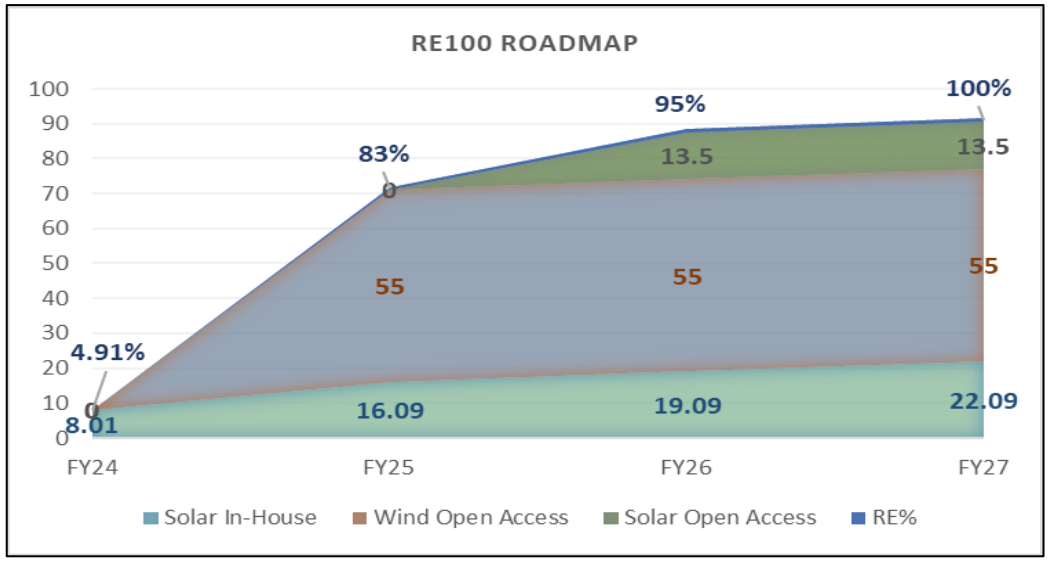
Roadmap for Achieving Net Zero Target

Plant	FY2025	FY2026	FY2027
Tata Motors, Jamshedpur	• Planned to increase in-house RE capacity to 16.09 MWp • Solar Open Access: 55 MWp	• Install additional 3 MWp roof-top Solar Plant • Wind Open Access 13.5MWp	• Install additional 3 MWp roof-top Solar Plant

RE Capacity Enhancement Plan



Encons/Energy Efficiency/New Technology Measures to Support Net Zero Target

2024-25

- ❑ 7th Generation CED system in Paint Shop.
- ❑ VFDs for Frame Line-3 FDV units.
- ❑ Cold Washing in Axle Shop washing machines
- ❑ Utilization of optimized cooling tower in Engine Factory.
- ❑ Digitalization - Online dashboard for propane monitoring of all manufacturing areas.
- ❑ Flux Maxiox for ATH in CPS
- ❑ Timer-based control of HVLS Fans in New Trim Line
- ❑ Waste Heat Recovery system for Axle Compressor House

2025-26

- Fitch Fuel Catalyst for ED oven in Paint Shop
- Heat Pump for Hot Water Generator in Paint Shop
- HVLS Fans in HT-Axle
- IRIS Power Line Quality Improved Filter
- Cold Washing in washing machines at Engine Factory
- Digitalization - AI/ML based analytics
- Waste Heat Recovery for CCHF Furnace in Axle
- Waste Heat Recovery system for AIF Compressor House

2026-27

- HVLS Fans in HT-Transmission
- Energy efficient motors for Line-3 FDVs.
- Insulation refurbishment of ED oven in Paint Shop.
- Hydroxy generator for Topcoat Oven in Paint Shop
- Energy efficient IE4 motors for ASUs in Paint Shop
- Waste Heat Recovery system for Topcoat Oven in Paint Shop, Compressors, Engine Test Bed

2027-28

- Frigi-Tech lubricant for improving chiller plant efficiency in Paint Shop
- Energy Efficient IE4 Motors for rating 30 kW and above
- Insulation refurbishment of Sealant oven in Paint Shop.
- Heat Pump for Hot Water Generator in Frame Factory.
- Concentrated Solar Thermal (CST) system for Hot Water Generator in Paint Shop

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AWARDS & ACKNOWLEDGEMENTS

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BEE NECA Award 2023

Tata Motors – Jamshedpur Plant has been awarded the First Prize in the National Energy Conservation Awards (NECA) 2023 in the Automobile sector by the Hon'ble President of India on 14th Dec 2023.

CII – National Award for Excellence in Energy Management 2023

Tata Motors – Jamshedpur Plant has been awarded as Energy Efficient Unit in the 24th National Award for Excellence in Energy Management 2023 in the Automobile sector conducted by CII, Hyderabad on 14th Sep 2023

CERTIFICATION AND RECOGNITION

TATA MOTORS
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ISO 50001

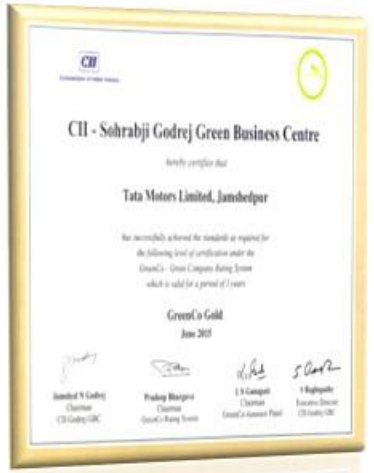
ISO 14001

ISO 45001

IATF 16949

SA 8000

GREEN CO - GOLD



1st PRIZE, BEE NECA: 2023

INSAAN – PAR EXCELLENCE AWARD FOR ENVIRONMENTAL INITIATIVES : 2022

CII-ENERGY EFFICIENT UNIT : 2019

CII-EAST REGION 4.75 / 5 STAR RATING : 2019

CII-ENERGY EFFICIENT UNIT : 2018

AWARDS RECEIVED BY TATA MOTORS - JAMSHEDPUR

TATA MOTORS
Connecting Aspirations

CII-National Award for Excellence in Energy Management

2023 - **Energy Efficient Unit** Award
2021 - **Excellent Energy Efficient Unit** Award
2020 - **Energy Efficient Unit** Award
2019 - **Energy Efficient Unit** Award
2018 - **Energy Efficient Unit** Award
2016 - **Excellent Energy Efficient Unit** Award
2015 - **Excellent Energy Efficient Unit** Award
2014 - **Energy Efficient Unit** Award
2012 - **Energy Efficient Unit** Award

BEE-National Energy Conservation Award

2023 – **'1st Prize'** in Automobile Manufacturing Category
2020 – **'1st Prize'** in Automobile Manufacturing Category
2017 – **'1st Prize'** in Automobile Manufacturing Category

Jharkhand State Pollution Control Board (JSPCB) Award

2018 – **'1st Prize'** for Best Environmental Initiatives
2017 – **'2nd Prize'** for Best Environmental Initiatives
2016 – **'1st Prize'** for Best Environmental Initiatives

CII-Eastern Region : ENCON Award

2022 – **Winner** Award in Energy Intensive Group, 5/5 Star
2020 – **4.75/5 Energy Star** Award
2019 – **4.75/5 Energy Star** Award
2018 – **4.5/5 Energy Star** Award
2015 – **Winner** Award in Energy Intensive Group, 5/5 Star
2013 – **1st Prize** in Energy Efficiency

Shrishti – Good Green Governance Award

2017 – **Winner** in Manufacturing Non-process category
2016 – **Winner** in Manufacturing Non-process category
2015 – **Winner** in Manufacturing Non-process category
2014 – **Winner** in Manufacturing Non-process category
2013 – **Winner** in Manufacturing Non-process category
2012 – **Winner** in Manufacturing Non-process category
2011 – **Winner** in Manufacturing Non-process category

GreenCo Award

2016 – **GreenCo Best Practices** Award for innovative project on Water Conservation
2015 – **GreenCo 'Gold'** Rating

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Thank You

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