



Presenting Team:

Mr. Anand Lapalkar (Deputy General Manager – Tech.Services)

Mr. Rakesh Jha (General Manager – Tech.Services)

BRIEF INTRODUCTION OF COMPANY

Part of USD 113 billion Tata Group, Tata Motors Ltd., a USD 35 billion organization, is among the leading global automobile manufacturer in world, providing integrated smart & e- mobility solution to over 125+ countries, with an over 75000 + employee base



Delivering driving experiences that are 'NEW FOREVER'

Our PV offerings include a whole new generation of passenger cars and utility vehicles that redefine their respective segments with class-leading design, safety, technology and driving dynamics. The entire range is BSVI complaint and exemplifies the IMPACT 2.0 design language



Winning sustainably in PVs

- 5-star Global NCAP rating attained by Altroz in 2020 and Nexon in 2018
- 4-star Global NCAP rating attained by Tiago and Tigor in 2020



Winning proactively in EV s

TML is closely working with other Tata group companies to create an e-mobility ecosystem, Tata UniEVerse. The aim is to leverage their collective strengths and experience to create a viable environment to drive the adoption of EVs in India.

The impact of Covid-19

The pandemic-induced lockdown resulted in the shutting down of production at original equipment manufacturers (OEM). It also led to disruption of the entire value chain of major industries in India, and therefore negatively affected production of auto spare parts in micro, small and medium-sized industries. In addition, the reduction in consumer demand for passenger vehicles contributed to a loss in revenue and a severe liquidity crisis in the sector.

According to the Society of Indian Automobile Manufacturers, the sector registered negative growth in sales of all vehicle categories in FY21 (2.24% decline in sales of passenger vehicles, 13.19% fall in sales of two-wheelers, 20.77% fall in sales of commercial vehicles, and 66.06% fall in sales of three-wheelers).

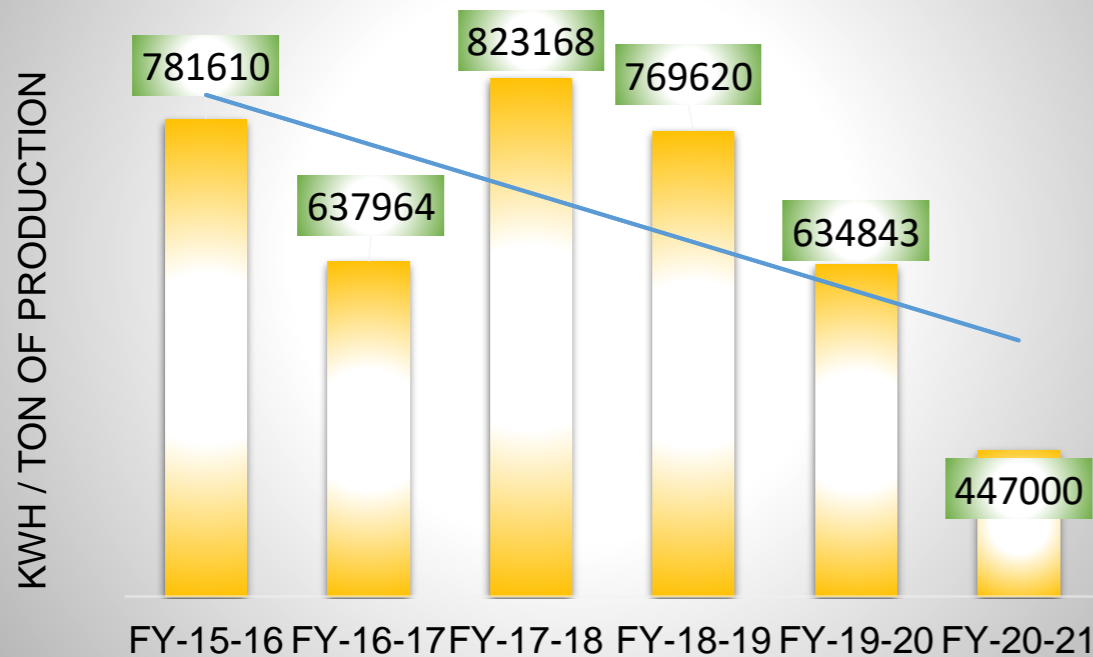
But after the lockdown is over and manufacturing started operations from 18th May 2020 the demand slowly increased and manufacturing activities started with new normal and with all social distancing norms , TATA motors Pune plant ended the year with 48 percent increase production YOY.

Sp. Energy Consumption in last 3 years (FY 2018-21)

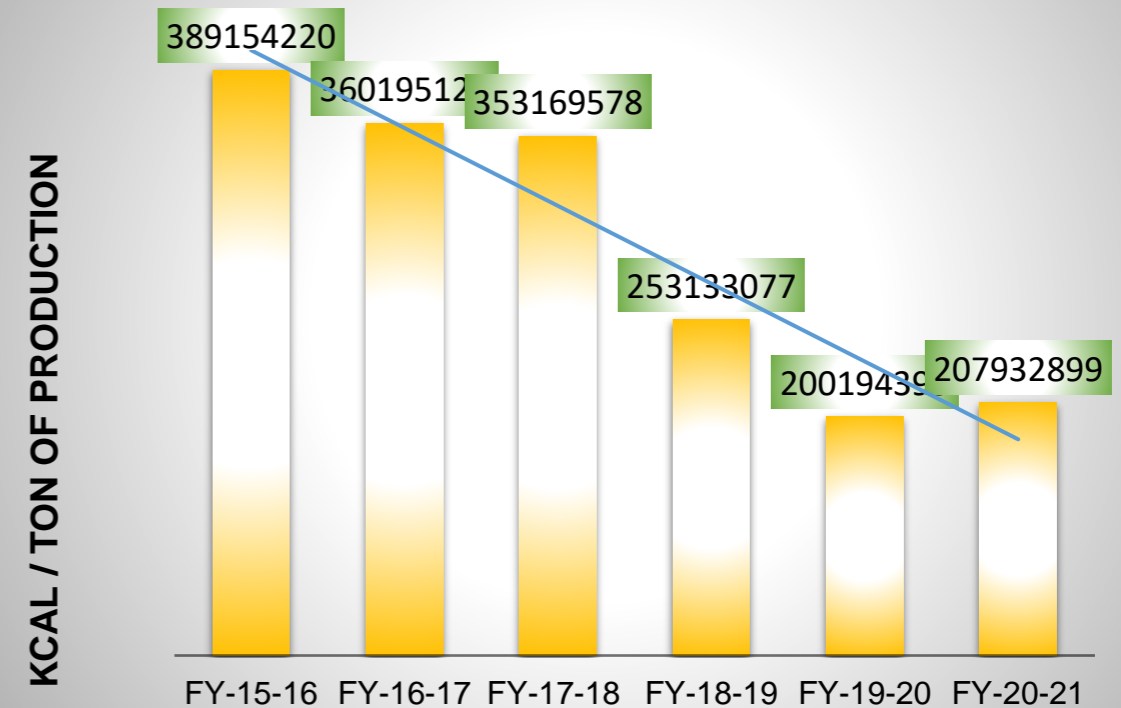
Capacity utilization & Energy performance

Financial Year	Installed Capacity	Eq.Vehicle
2016-17	225000	64763
2017-18	225000	47711
2018-19	225000	53885
2019-20	225000	65451
2020-21	225000	133499

Specific Electrical Energy Consumption
(KWH / 1000 Production)



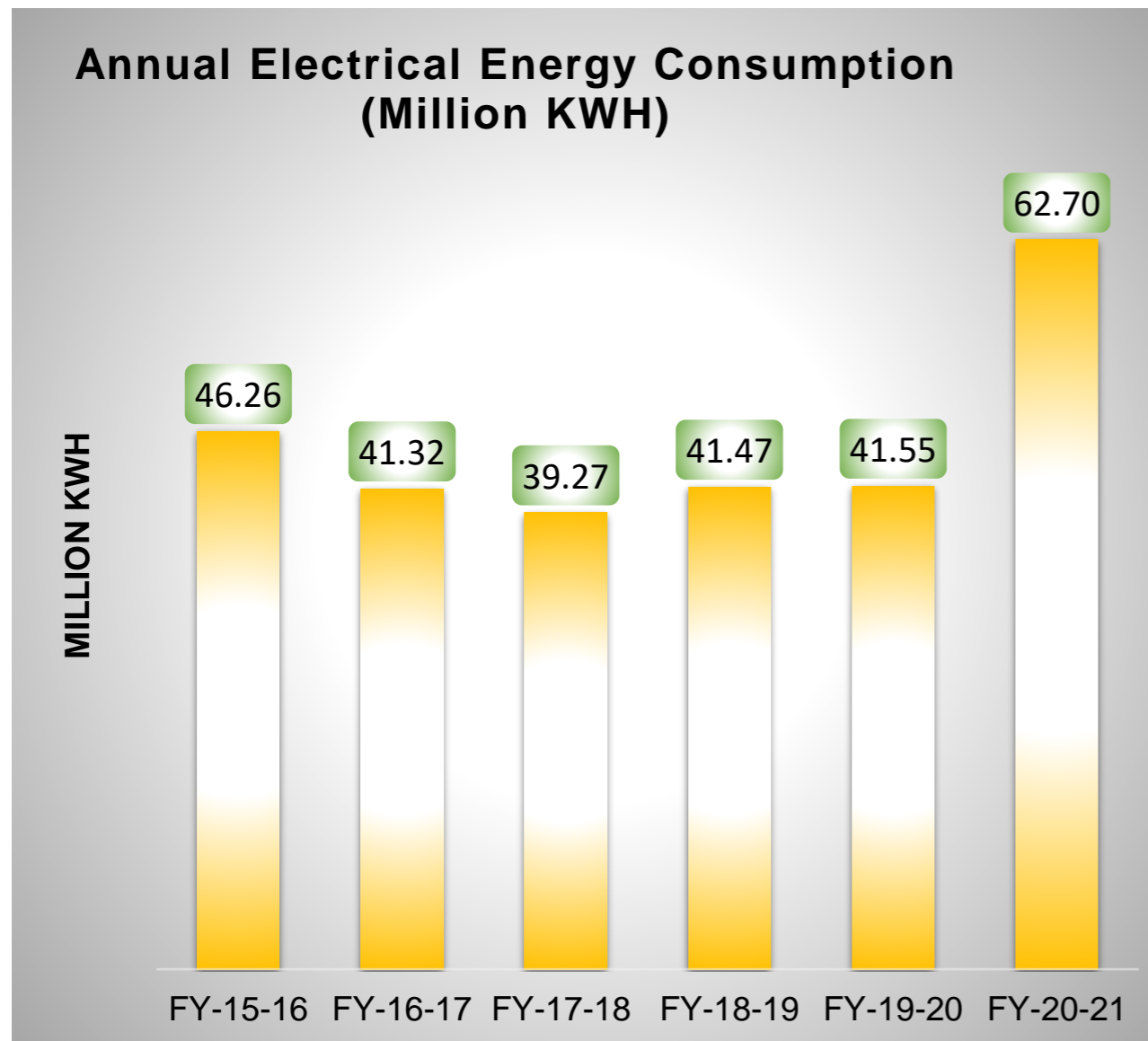
Specific Thermal Energy(Fuel) Consumption
(Kcal / 1000 Production)



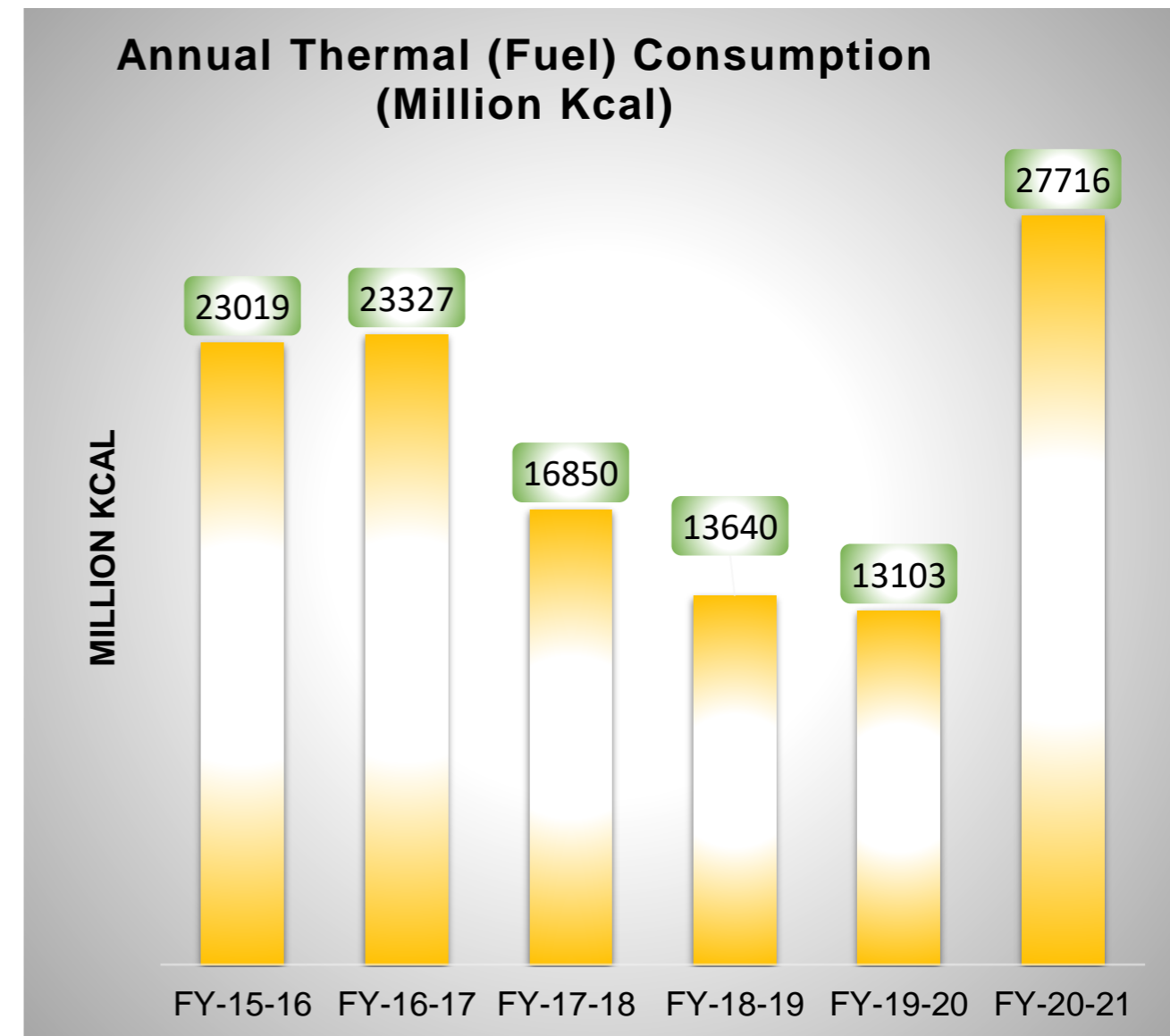
Take Away : Specific energy consumption reduced by 42% w.r.t last 3 years due to various ENCON activities. And specific fuel consumption reduced by 17.8 % with respect to last 3 years.

Energy Consumption Overview

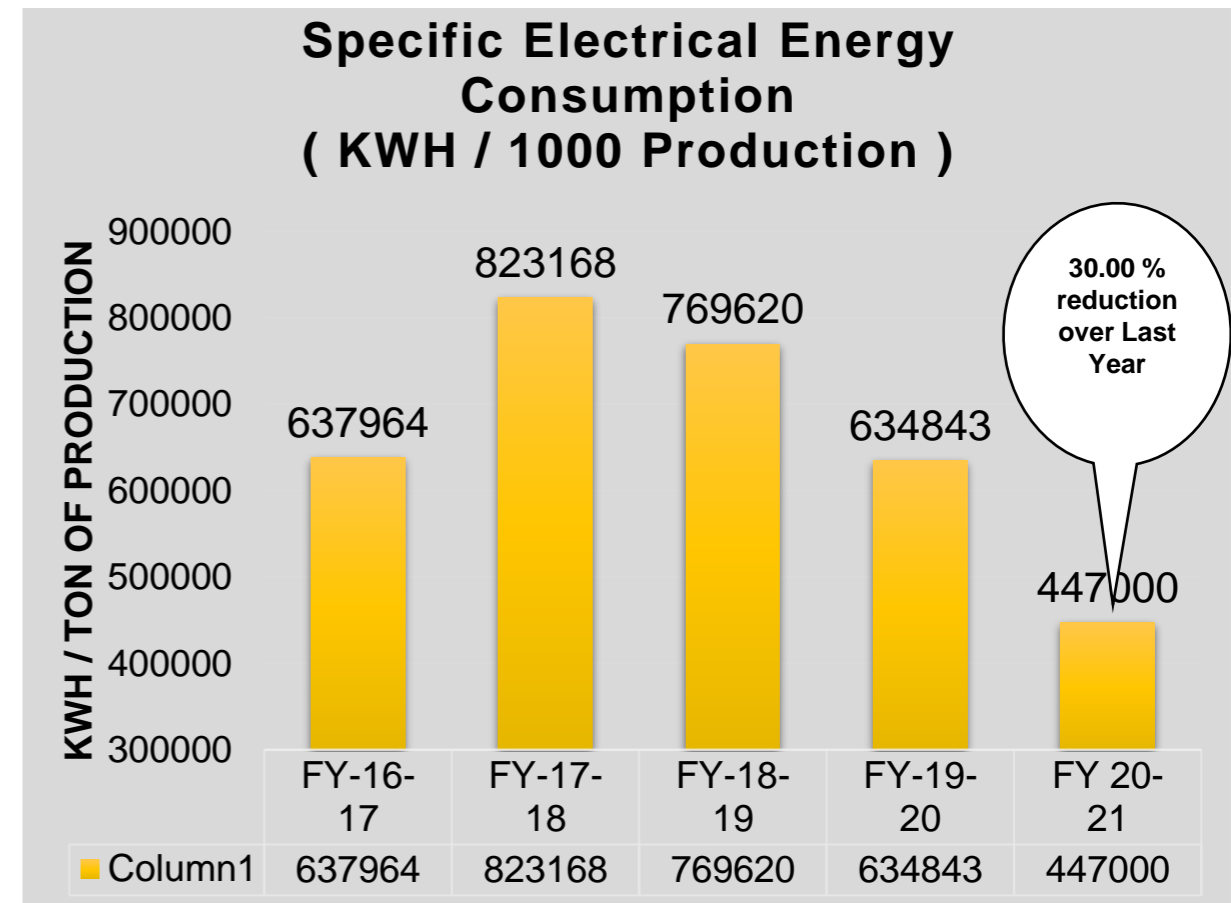
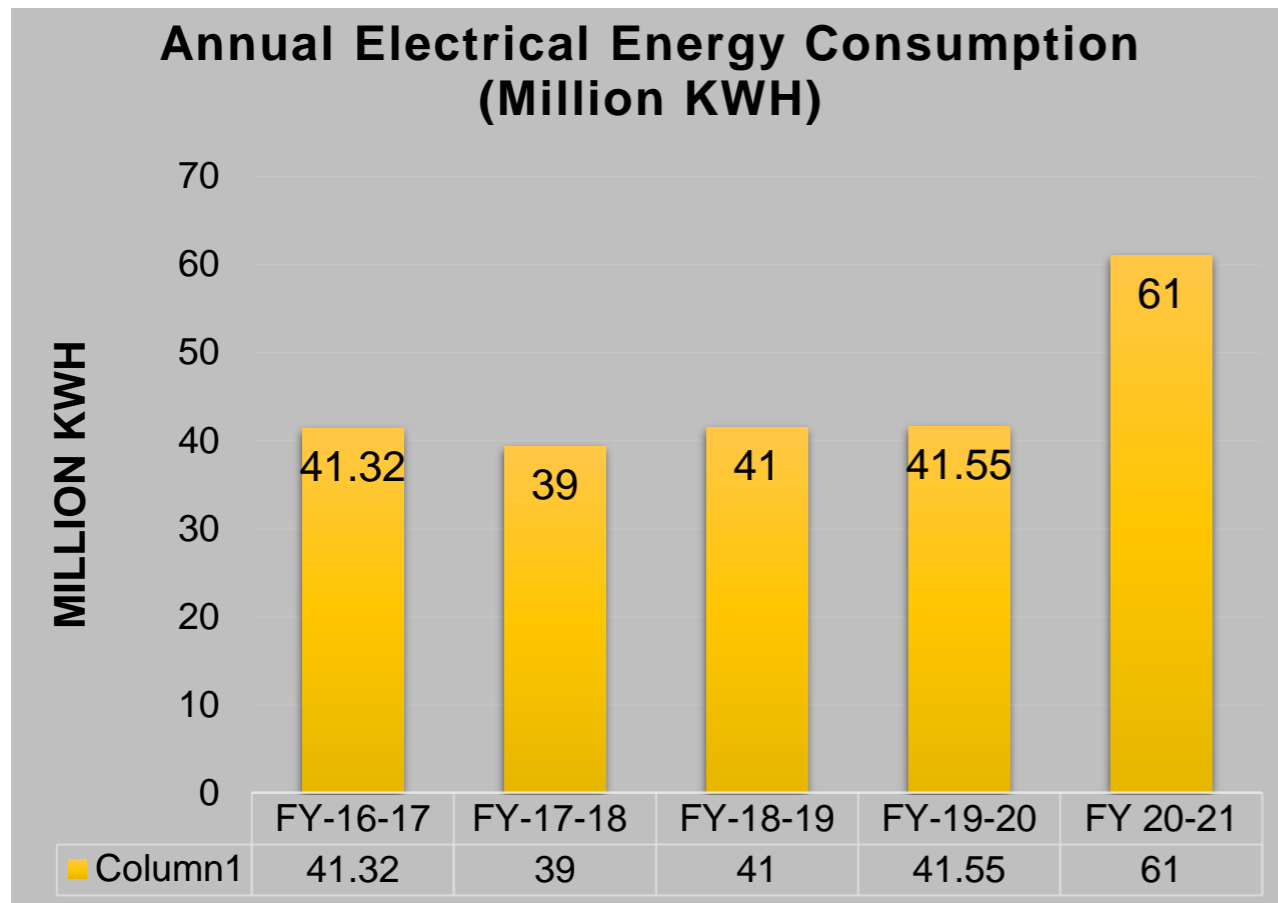
Electrical Energy Consumption



Thermal Energy Consumption



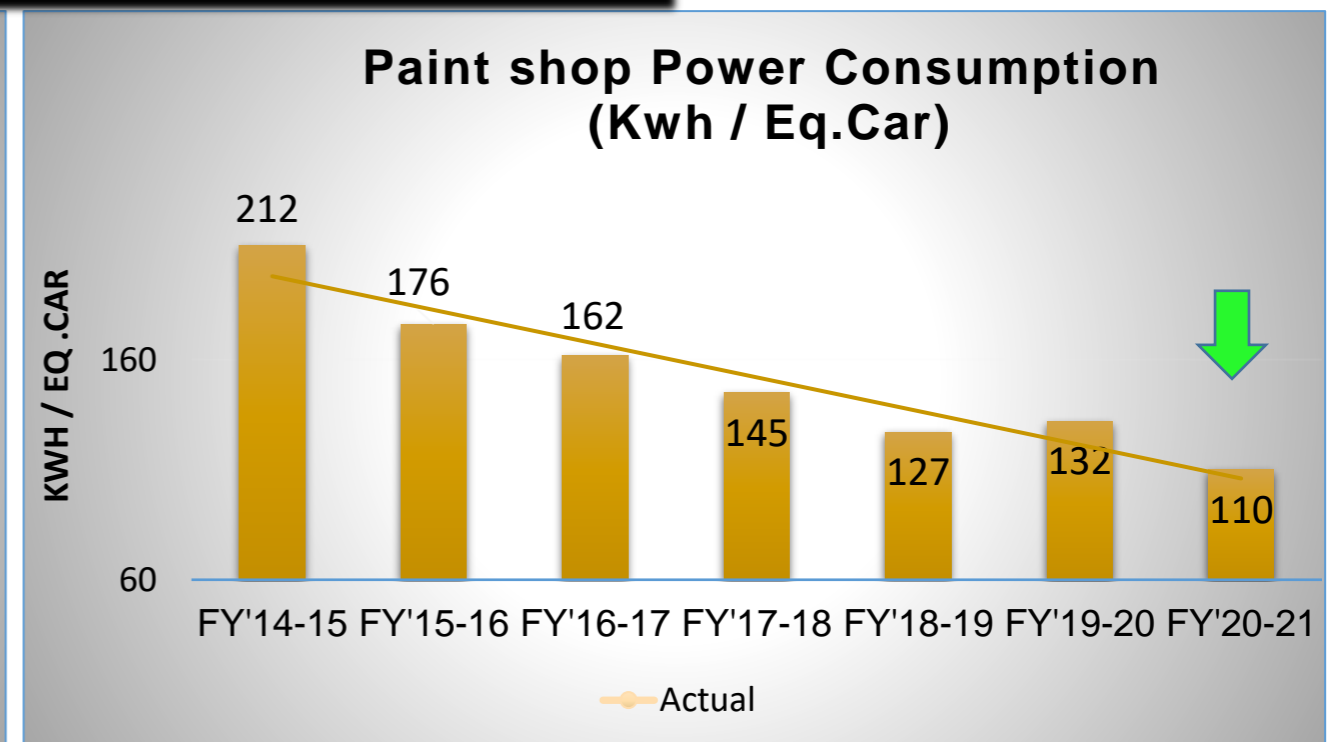
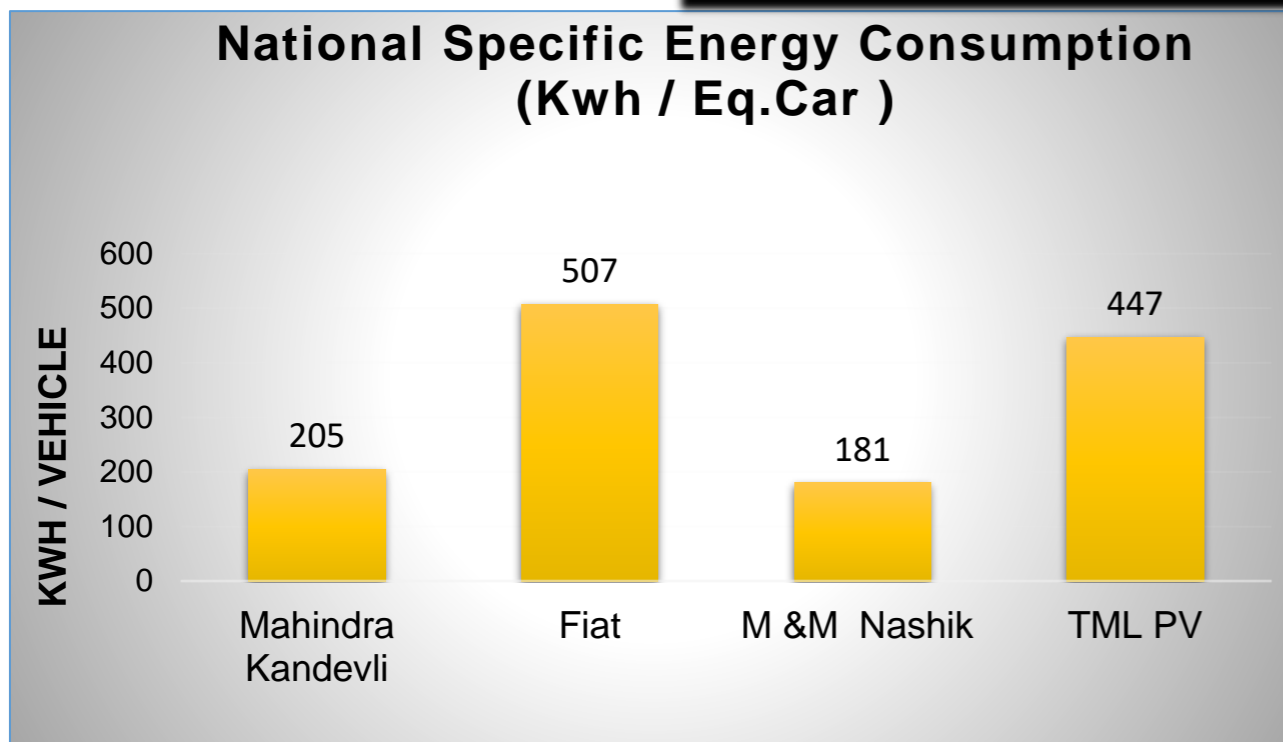
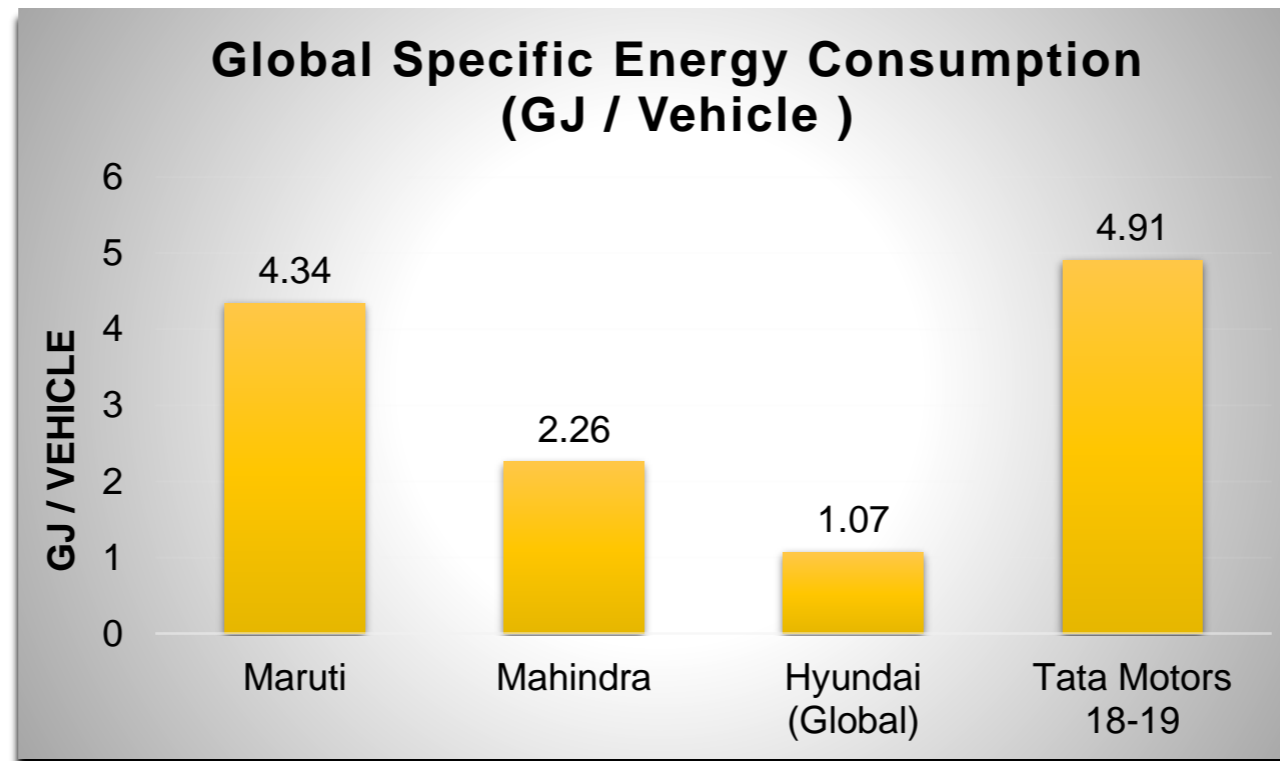
Take Away : Absolute consumption increased due to increase in production by 48%



Financial Year	Installed Capacity	Eq.Vehicle
2016-17	225000	64763
2017-18	225000	47711
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2019-20	225000	65451
2020-21	225000	133499

Take Away : As a result of various Encon initiatives specific Electrical Consumption is reduced by **30%** compared to last year and specific fuel consumption remain flat.

National & Global Benchmarking

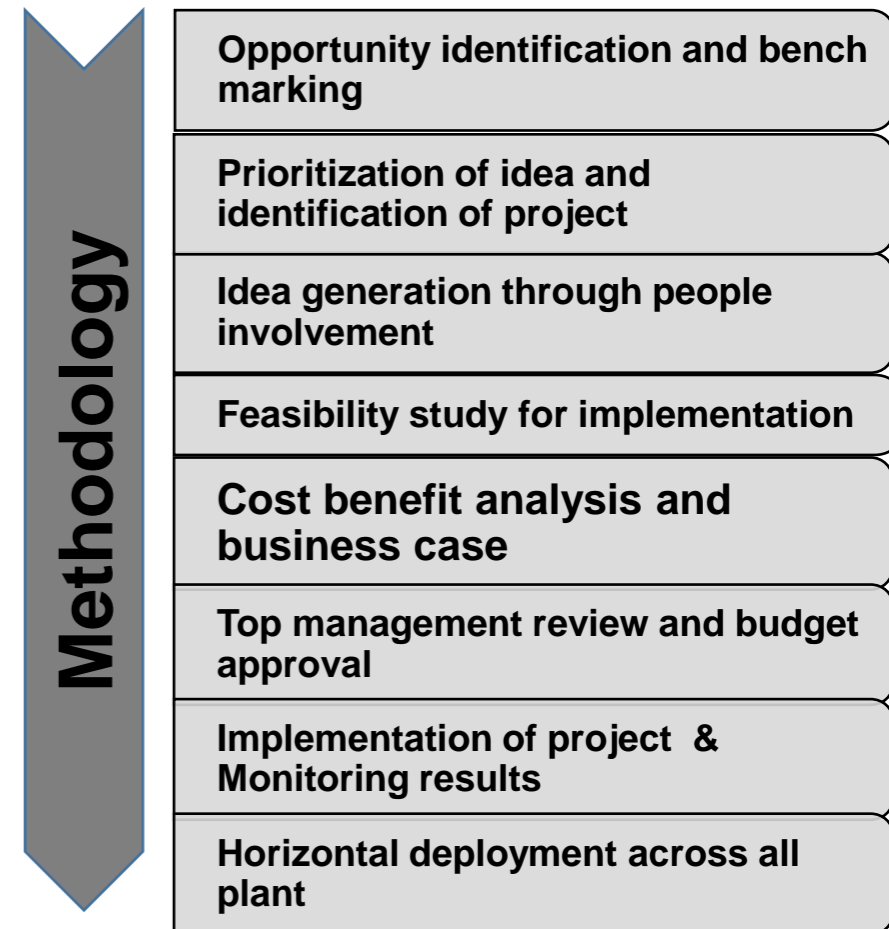
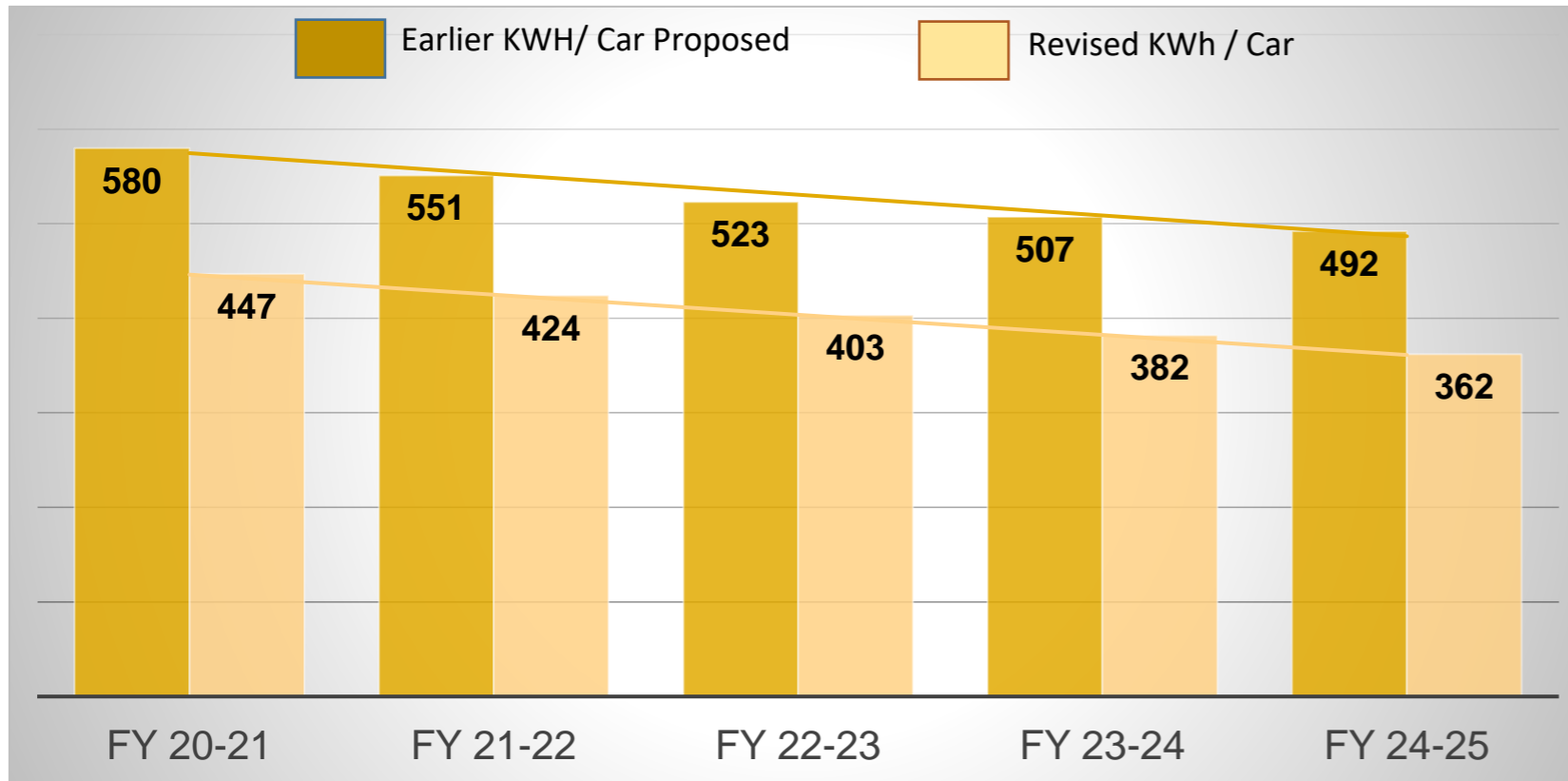


* Source - CII Report 2017-18

Bench marking for energy and focused approach to reduced Paint Shop consumption.

Execution Strategy for VCC Reduction – PVBU Chikhali

Target SEC , if you have any in short term/long term?



FY 20-21

1. Renewable Energy (Under installation – 86.40 L KWH/Yr.)
2. LED Lighting (Migration to LED – end Jan 21, 1 Cr./Yr. →3 Crs./yr.
3. Compressed Air leakage reduction : target 10% of overall consumption

FY 21-22

1. Waste heat recovery project for Compressor House
2. Electric Pump for Paint Kitchen
3. Compressed Air leakage reduction target 8% of overall consumption

FY 22-23

1. Multistage Rectifier CED Paint shop
2. Compressed Air leakage reduction target 6% of overall consumption

FY 23-24

1. New 1500 CFM compressor with VSD technology
2. New Air dryers of 2500 CFM's with VSD technology

FY 24-25

1. Energy Saving assessment and its implementation with pay by saving mode
2. Waste heat recovery projects in furnace at TA shop

Energy Saving projects implemented in last three years

TML PV Pune (Chikhali) Plant - List of Energy Conservation Efforts during year 2019-20

Sr. No.	Description of Energy Conservation Efforts / Encon Activity	Annual Saving in Lakh KWh	Annual Savings in GJ due to kwh savings	Fuel Savings SCM	Annual savings in GJ due to fuel savings	Annual CO ₂ Reduction in tCO ₂ e	Annual Saving Rs. in Lakhs	Investment Rs. In Lakhs
1	HVLS fans	0.57	205	0	0	46.74	4.6	30
2	Chiller Unit Installation at Paint Shop, PVBU Pune	8.22	2959	0	0	674.04	65.8	42
3	LED highbay lamps (480 nos. in TA & Engine shop)	5.20	1872	0	0	426.40	41.6	0
4	LED street lights (80 nos.)	0.26	94	0	0	21.32	2.1	0
5	LED highmast lamps across PVBU plant (135 fitting - 15 high mast)	2.84	1022	0	0	232.88	22.7	0
6	LED tube lights at TA & Engine shop	1.40	504	0	0	114.80	11.2	0
7	Compressed air leakage reduction	15.00	5400	0	0	1230.00	120.0	0
8	Godrej AC units in J block	8.00	2880	0	0	656.00	64.0	7
9	Compressed air piping modification in engine and TA shop	4.38	1577	0	0	359.16	35.0	0.8
10	Paint Shop optimization by managerial control of Top Coat ASU/Exh booth frequency.	0.85	306	0	0	69.70	6.8	0
11	Paint Shop Topcoat running time optimization.	1.00	360	0	0	82.00	8.0	0
12	Paint Shop Switching off the wax booth exhaust by providing almonard fans in polishing area.	0.75	270	0	0	61.50	6.0	0
13	GMN spindle drives Kept off in B shift in Engine shop	1.08	389	0	0	88.56	8.6	0
14	Ingersoll Henry coolant system to be run on single coolant pump in engine shop	0.90	324	0	0	73.80	7.2	0
15	Use of Gehring machine for 4 cylinder block honing in engine shop	1.00	360	0	0	82.00	8.0	0
16	SC 1 Furnace kept at 760 deg for 2 days a week and 8 days in month in Hard Shop of TA area	0.75	270	0	0	61.50	6.0	0
17	Optimization in running hours of Zest Closure Pump House of Weld shop done	0.82	295	0	0	67.24	6.6	0
18	Paint Shop replaced conventional tube lights with LED tube lights - 1500 Nos.	1.18	426	0	0	96.97	9.5	0
19	Paint Shop Installation of new CED oven.	2.40	864	157894.7	5760	323.14	73.2	0
20	Paint Shop - increased load of Incinerator & optimized running time.	0.00	0	78947.4	2880	161.57	27.0	0
Total - PV Pune(Chikhali) Plant		56.60	20376.94	236842.11	8640.00	4929.32	533.82	79.80

Energy Saving projects implemented in last three years

TML PV Pune (Chikhali) Plant - List of Energy Conservation Efforts during year 2020-2021

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1	Migration from Conventional lighting to LED lighting in complete TCF shop	6.23	2243	0	0	510.86	50.8	Opex based leased rental
2	Migration from Conventional lighting to LED lighting in paint shop	8.00	2880	0	0	656.00	65.3	Opex based leased rental
3	Compressed air reduction in Engine shop from 349CFM to 138 CFM	16.34	5882	0	0	1339.88	133.3	8.0
4	Compressed air reduction in TA shop 357 CFM to 227CFM							
5	Compressed air reduction in X1 BW shop 357CFM to 219 CFM							
6	Compressed air reduction in J block							
7	Compressed air reduction in paint shop from 312 CFM to 205 CFM							
8	Compressed Air leakage reduction in TCF shop from 445CFM to 195CFM							
	Air leakage reduced from 15.63 percent to 8.82 Percent							
9	Installation of HVLS fans	1.07	385	0	0	87.74	8.7	25
Total - PV Pune(Chikhali) Plant		31.64	11390.40	0.00	0.00	2594.48	258.18	33.00

Paint shop – Reduction in compressed air consumption



Shop – Paint Shop

Equipment Details – Compressor

Process Change

Air Pressure required for Operation was 85 PSI in all working condition for ABB Robots. Optimum Air Pressure level is defined after trials with ABB & then Clean Room robots set at 55 PSI during non production hours which was earlier 85 PSI. Godrej INTELLIGENT FLOW CONTROL (IFC) is installed at Compressor Room exclusively for Paint Shop

Details of Energy Saving Achieved



3.1 Lakhs KWh unit



276 TCO2 reduction



Rs. 24.87 Lakhs



6.43 KWh/ Eq. Car

Paint Shop - New Screw Chiller at PTCED



Shop – Paint Shop

Equipment Details – Screw Chiller

Process Change

Earlier centrifugal Chiller was in operation. This Chiller was replaced by energy efficient Screw Chiller.

Details of Energy Saving Achieved



8.22 Lakhs KWh unit



739 TCO2 reduction



Rs. 66.58 Lakhs



15 KWh/ Eq. Car

PVBU Plant – HVLS Fan Installation



Shop – Across All shop in PVBU, Chikhali

Equipment Details – HVLS Fan

Process Change

Earlier 750 mm Almondard air circulator was in use for air circulation purpose inside all shop. 40 nos. of HVLS fan was installed as against 750 Air circulator.

Details of Energy Saving Achieved



4.3 Lakhs KWh unit



387 TCO2 reduction



Rs. 32.65 Lakhs



7.48 KWh/ Eq. Car

VFD Installation Project Across Plant (Qty-110)



Shop – All Shops Across PVBU, Chikhali

Process Change

Most of load across all shops in PVBU plant were operating with less optimization. In Phase 1, 66 nos. of drives were converted on VFD mode for efficient optimization and remaining in phase 2.

Details of Energy Saving Achieved



52Lakhs KWh unit



4700 TCO2 reduction



Rs. 414 Lakhs



102 KWh/ Eq. Car

OPEX Based LED Project at TA & Engine Shop



Shop – TA & Engine Shop

Equipment Details – LED Lights

Process Change

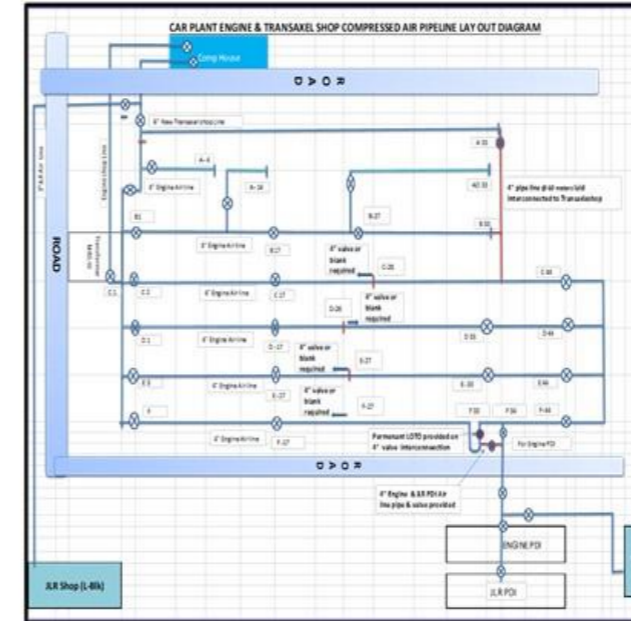
Earlier 3976 nos. of conventional lights were used in TA, Engine Shop, Street light & at High mast. All these were replaced by LED lights. Shop general lux level improved from 60 to 162 Lux, and task lighting Lux improved.

This project implemented on OPEX basis, where investment done by supplier will be paid on monthly basis over span of 3 years with 5 years unconditional warranty.

Details of Energy Saving Achieved



Compressed Air Header Separation at TA & Engine Shop



Shop – TA & Engine Shop

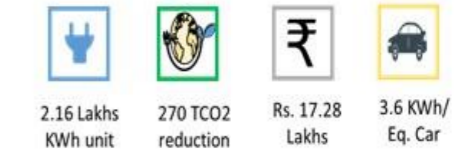
Equipment Details – Compressed air line

Process Change

Earlier TA & Engine shop both were feeding through common compressed air line. This was causing loss of compressed air in one shop if it is not having production activity.

By separation of both shop compressed air line, better control on compressed air line for both shop achieved.

Details of Energy Saving Achieved



Compressed Air Leakage Rectification Across All Shops

Under Ground Compressed air pipeline Pressure Testing Data						
Sr.No	Description	Pressure Hold when valve closed in PSI	Pressure Hold Time	Pressure Drop Observed in PSI	Difference	Remark
1	Press Shop	77	15 Min	76	1	Ok
2	Engine shop	76	15 Min	75	1	Ok
3	X1 Shop	76	15 Min	75	1	Ok
4	TCF Shop	77	15 Min	75	2	Ok
5	JLR shop	76	15 Min	75	1	Ok

Shop – Across all shops

Equipment Details – Compressed air line

Process Change

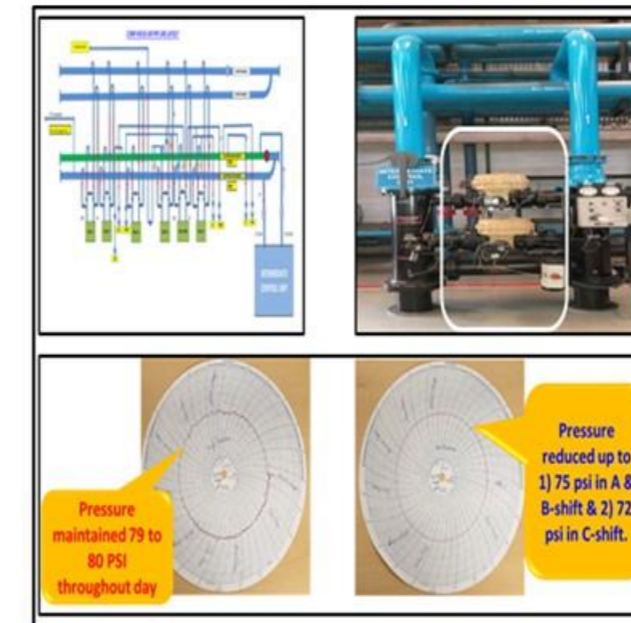
Compressed air leakages were 13.5% across all shops of PVBU, Chikhali Pune plant.

Leakage reduction initiative taken shop wise to reduce it. This achieved leakage reduction from 13.5% to 8.67%

Details of Energy Saving Achieved



Energy Savings IC Unit at Compressor House

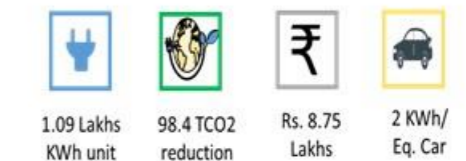


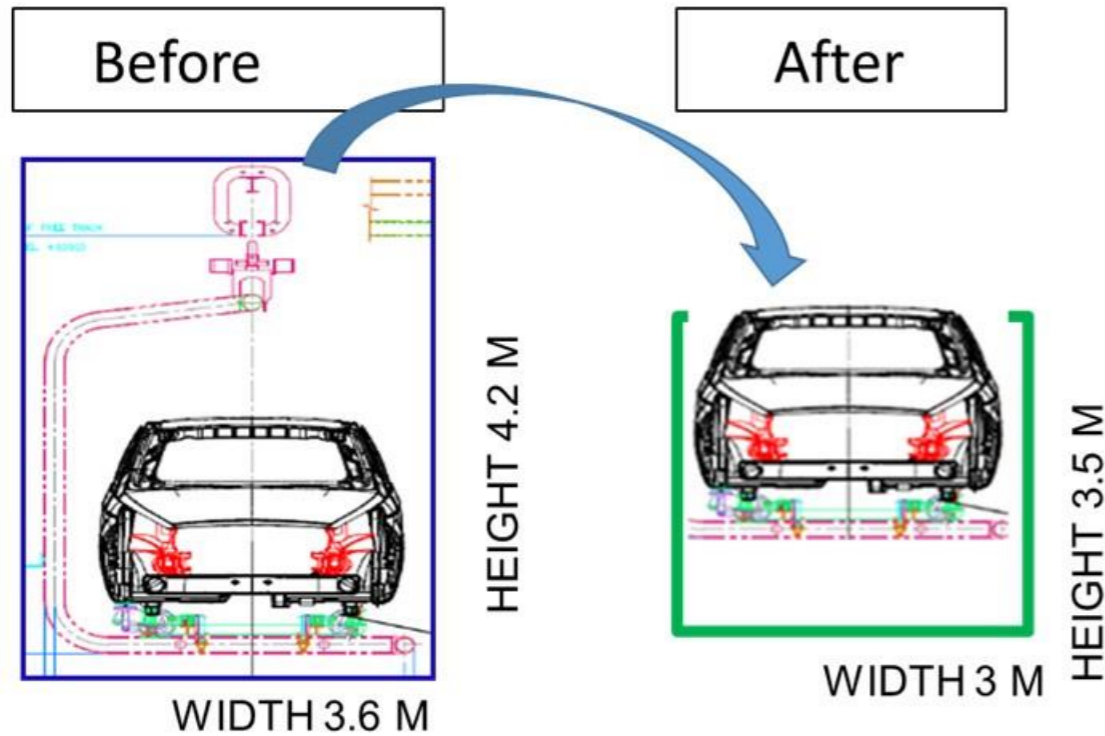
Shop – Compressor House

Process Change

Compressor house was having no facility of Pressure optimization. This was causing pressure variation. Intermediate Control Unit on distribution Header line at PVBU Compressor house installed & commissioned without affecting compressed air services.

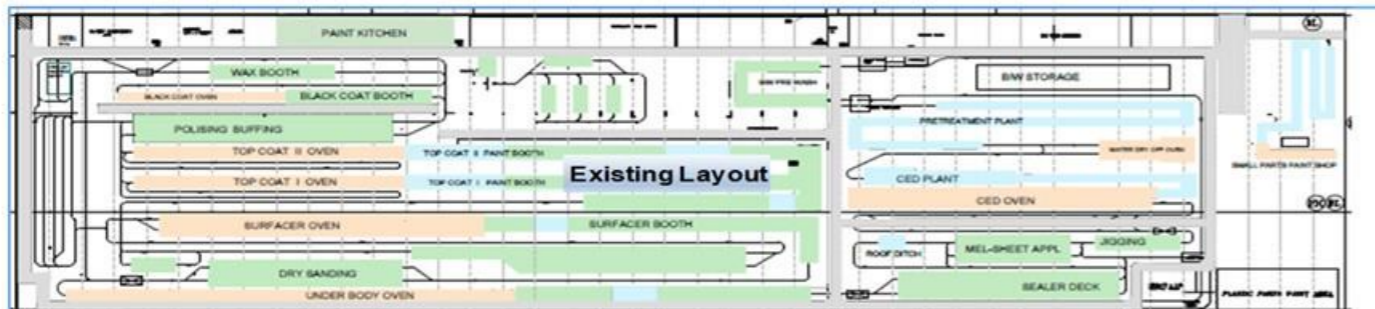
Details of Energy Saving Achieved



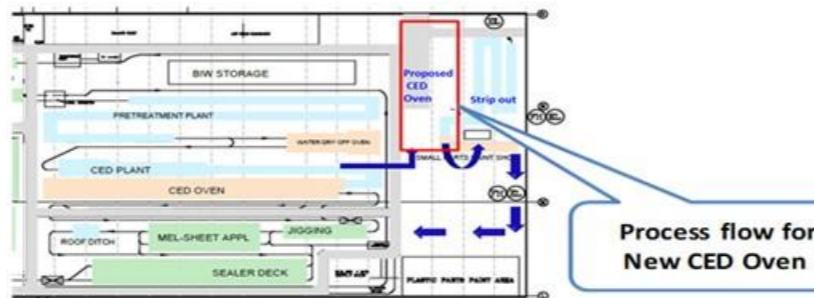


BENEFITS

- Substantial reduction in fuel and power consumption (approx. 40 %) with reduced oven cross section
- Decoupling of PTCED and sealant will improve productivity
- No contamination in CED tank
- Better working environment.
- Adoption of best and efficient paint baking practices inline with all major automotive paint shops



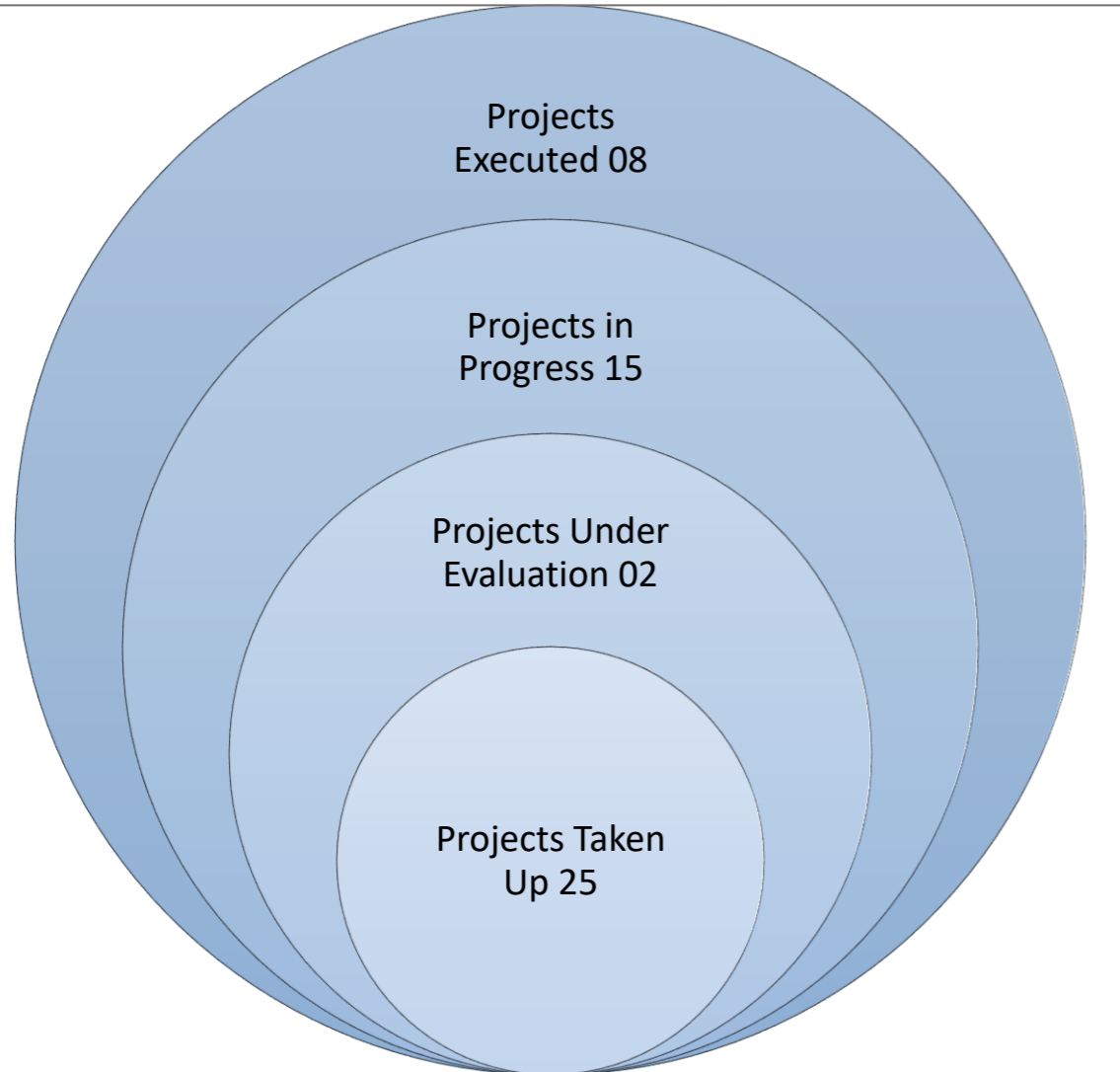
- Option 1:**
CED Oven refurbishment at existing place With Tunnel replacement
- Option 2:**
CED Oven refurbishment at Existing Place with C – Hanger weight reduction proposal
- Option 3:** ✓
New CED Oven at Small part PTCED Area With Fuel efficient technology, Compact in size, With Floor Conveyor & 2 hrs. strip out.



Reduction in cross sectional area from 15.12 Sq. mtrs to 10.5 Sq. mtrs, which achieved Carrier weight from 550 Kg to 275 Kg. This further contributed to Air volumed reduction by 30% Wt. & Heat load reduction by 50%

Digital Ecosystem - PV

Industry 4.0 Projects



Target Areas

Priority 1	Executed	WIP
Virtual Commissioning	01	-
Digital Performance Monitoring	01	01
Smart Energy Consumption	01	01
Predictive Maintenance	01	02
Andon Analysis	01	01
Total	05	05
Priority 2	Executed	WIP
Real Time Inventory Monitoring	02	-
Lean Supply Chain & Smart Logistics	-	02
Statistical Process Control	01	04
Remote Maintenance & Control	-	02
Image Analytics	-	02
Total	03	10

Three POC's are part of executed projects Additional Twenty two projects taken up covering current concern areas

Summary of Projects Pune

#	DESCRIPTION	KEYPOINTS	Current Status	Proposed Targets	Till Date Status	Capex	Benefits	Target
1	X4 BIW - Smart energy consumption	<ul style="list-style-type: none"> Digitally connect all the smart meters currently being used for Power monitoring. Transfer data centrally on a common server, provide trend monitoring and other visualization of data. 	Working Day X4-9200KWH Non-working Day X4-4400KWH	Working Day X4-8750KWH Non-working Day X4-3520KWH	Current power saving is 3.8 Kwh for one BS robot per day. There are 150 robots on line	10 lacs	Approx Rs. 13.68 lacs per annum	30-Apr-21
2	Press Shop - Digital Performance monitoring	<ul style="list-style-type: none"> Tracking - Tracking Line performance, Production, Equipment Health, Status, and providing visual monitoring Dashboards to create improved capabilities to the business. 	Line 3 Uptime 85%	Line 3 Proposed 90% uptime	DAP Completed Sensor installation on 13.04.21	25 lacs	Approx Rs. 8 Lacs per Annum	15-Jul-21
3	Paint Shop remote monitoring	<ul style="list-style-type: none"> Online monitoring of the machine for uptime, working / idle time Data Acquisition, Trend analysis & generate alert in case of abnormality. 	No Remote Monitoring available	Red. in down time 20% Remote Monitoring	ENBT cards: Installed Cable Laying for MES Connectivity: Completed	15 lacs	Approx Rs. 9.5 lacs Per Annum	10-Aug-21
4	TCF Shop - ANDON Analytics	<ul style="list-style-type: none"> Real-time digital ANDON system to provide real-time analytics of time-loss and ensure reduction in same 	Not Done currently	Red. in Loss Time 50% @line= 15~20 minutes / shift reduction	Dashboard Gone Live	5 lacs	Approx Rs. 23 Lacs for one Month	20-Mar-21
5	Crankshaft Grinding M/c - Predictive Maintenance	<ul style="list-style-type: none"> TML Pune Powertrain shop aims to capture & Monitor all Machine health Parameters by implantation Predictive Maintenance Module for critical Machine 	Landis M/c Current uptime is 75%	Proposed 85% uptime	List of parameters Identified Discussions with supplier: 12.04.21	15 lacs	Approx Rs. 5.0 lacs Per Annum	30-Jul-21
6	Digital version matrix display in TCF	<ul style="list-style-type: none"> Facilitate mistake proofing of operator through identification correct part against the vehicle model by version matrix display Standardized architecture of Pune to be deployed at Sanand 	Rework due to wrong part fitment	Zero wrong part fitment for Hornbill	Dashboard Development: WIP	20 lacs	Approx Rs. 6~8 lacs	15-May-21

PS: Project Description is hyperlinked to the TOR slide

Energy Management System in BIW shop

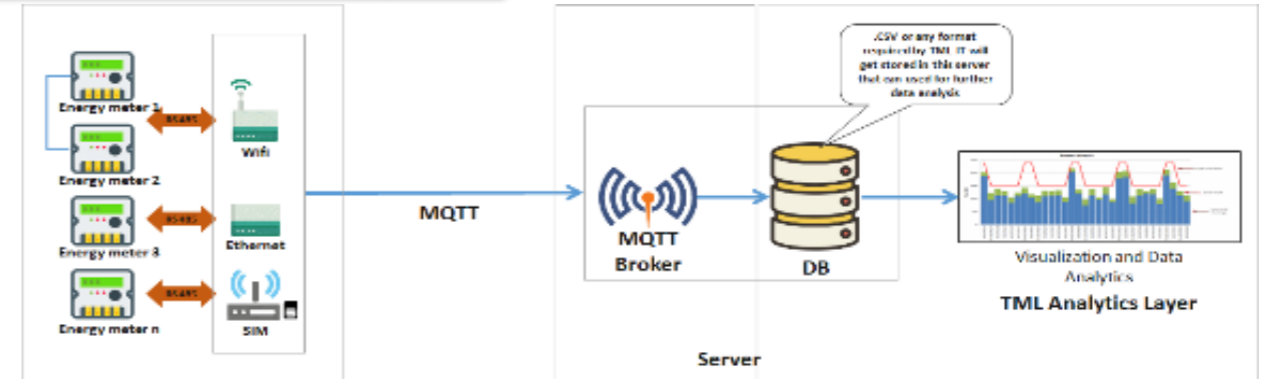
Current State



Manual energy report generation

- Presently energy management system is manual
- All energy meter readings taken manually by member by observing each meter.
- Energy consumption report is made manually after one day.
- For analysis of error in report, has to re-check with concern meters one by one.
- Man dependency and involves manual errors.

Future state Architecture



IOT Edge device will capture energy data from energy meters, to transmit to EMS software through MQTT broker for generation/visualization of energy report

Potential Benefits

- Identifying avenues for Energy Saving of 5 % of Electrical Energy.
- Identifying potential opportunities for reduction in losses in equipment
- Real time wastage tracking with alerts, insights leading to process optimization

Implementation State

Display of energy meter report on PC

HMI Display on Station

- Shift Consumption trend
- Daily Consumption trend
- High energy consumption alerts
- Meter wise & Panel wise consumption trend

Real time energy consumption reports on HMIs and Web based dashboard

Automated energy report generation & alerts to facilitate energy conservation

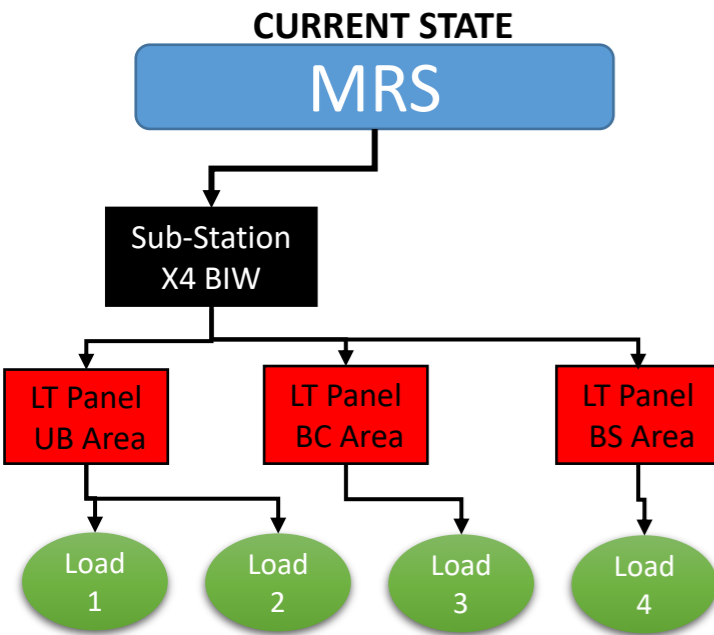
Smart energy consumption

Project Title	Objective	Proposed Timeline		Business Unit
Smart energy consumption	Monitoring and controlling on of Energy to optimize power Cost – X4 BIW	Start	End	PVBU
		21-12-2020	30-04-2021	
Scope	Inclusion	Exclusion		
<ul style="list-style-type: none"> Real time monitoring of power consumption Establishing relation between Production volumes and power consumption 	Power			
Deliverables	Success Criteria			
<ul style="list-style-type: none"> Digitally connect all the smart meters currently being used for Power monitoring. Transfer data centrally on a common server, provide trend monitoring and other visualization of data. Analytics of the power consumption to understand the underlying information Highlighting excess consumption against rated through real-time alerts 	<ul style="list-style-type: none"> Inferences to improve business process Supporting/actionable information for reduction of VCC element costs 			
Estimated tangible benefits (INR CR, Productivity Imp etc..)	Other Improvements / Intangible benefits			
<ul style="list-style-type: none"> 5% reduction in YOY overall Daily power consumption <i>Average Consumption Working day @ X4 BIW: 9200 KWH, Target :8750 KWH</i> 20% reduction in idle power consumption <i>Average consumption Non-Working day@X4 BIW: 4400 KWH, Target: 3520 KWH</i> 	<ul style="list-style-type: none"> Better underlying actionable Information Cost avoidance of waste 			
Estimated Cost	Estimated Man-hrs reqd	Project Team	Project Owner	Project sponsor
<>	<>	Raturaj Dole	Anand Lapalkar	Swapnil Patil



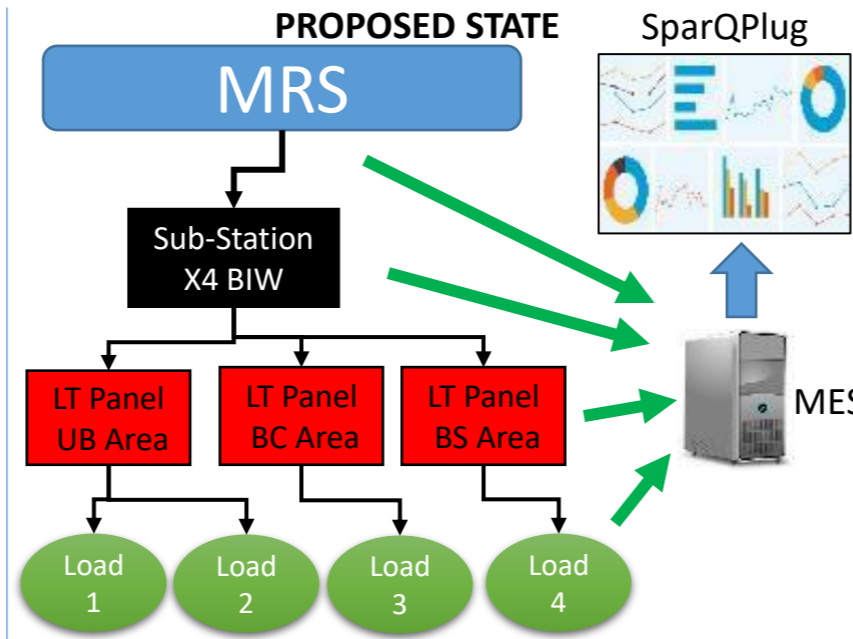
Note – Guidelines for each field are in trailing slide

Smart energy consumption



CHALLENGES:

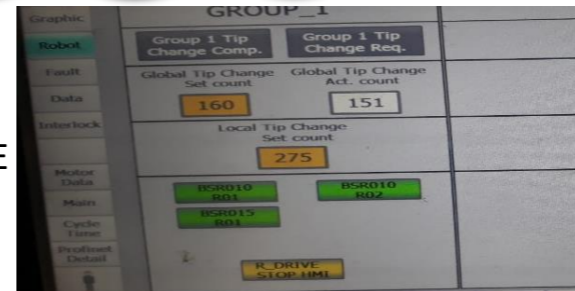
1. For J block , connectivity of MRS, Sub-stations and LT panels to MES is to be done
2. Individual loads (Cells and robots) have digital meters but not connected to MES



ENERGY SAVING MODE

PROPOSED:

1. MRS, Sub-stations, LT panels & finally Load digital meters to be connected to MES Server sequentially
2. The power data to be collected on hourly basis at MES database
3. The data to be analyzed for trend monitoring and further Industry 4.0 modules to SparQplug



BENEFITS & ADVANTAGES

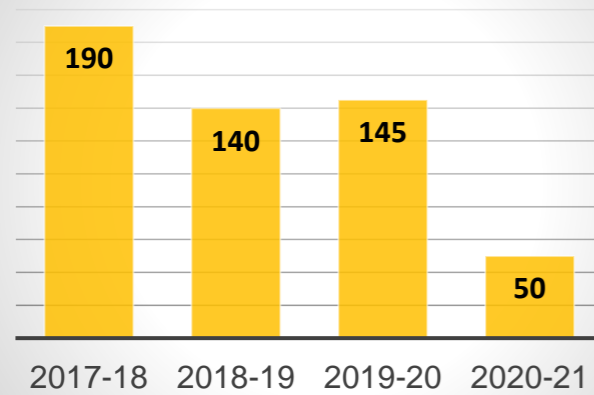
- 5% reduction in YOY overall Daily power consumption
Average Consumption Working day @ X4 BIW: 9200 KWH, Target :8750 KWH
- 20% reduction in idle power consumption
Average consumption Non-Working day@X4 BIW: 4400 KWH, Target: 3520 KWH

SUPPORT REQUIRED

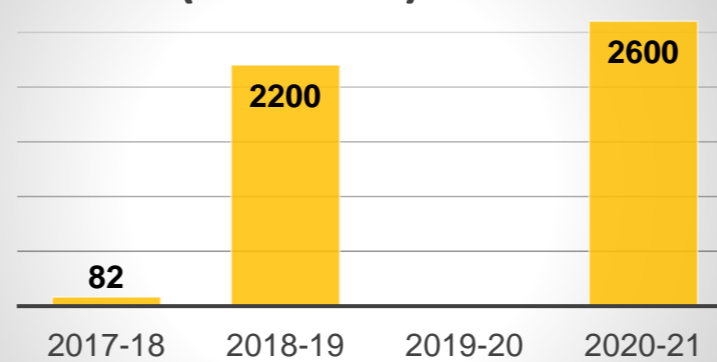
1. Network from each digital meter to switch (MES)
2. Hardware to interface with MES
3. Development at MES to store data
4. Development at MES / IT for SparQplug dashboard development

Energy Saving Summary for Last 3 years

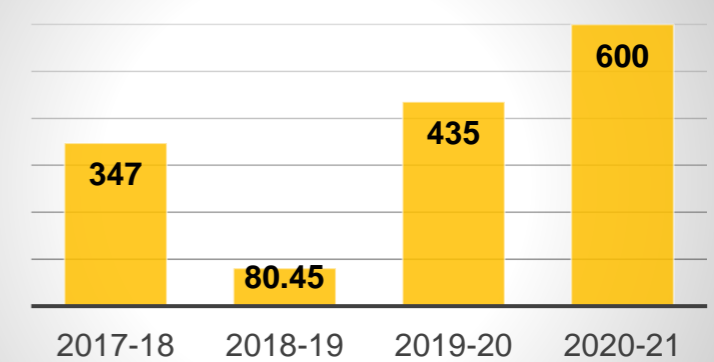
No of Proposals



Investments (Rs.Lakhs)



Savings (Rs. Lakh)





Year	No of Proposals	Investments Lakhs	Savings (Lakhs)	Remark
2017-18	190	82	347	
2018-19	140	2200	80.5	
2019-20	145	0	435	
2020-21	50	2600	600	OPEX -PPA(Solar) -LED
Total	712	4932	1126	

Methodology



- Opportunity identification and bench marking
- Idea generation through people involvement
- Prioritization of idea and identification of project
- Feasibility study for implantation .
- Cost benefit analysis and business case .
- Scope finalization.
- Top management review and budget approval
- Implementation of project
- Monitoring results
- Horizontal deployment



Cumulative Saving of Rs. 685 Lakhs achieved against investment of Rs. 2332 Lakhs in last 3 years with 517 proposals whose payback period varied from 12 months to 36 months.




Energy Saving KAIZENS

Shop/Area : Engine Shop		Date : 025/05/2021	
Line/Station : E Block petrol trim line		Kaizen by- Mr. Sandeep deshमुख, Mr. S.k lokhande Mr. faizan Siddiqui., Hemant Ghule	
Before Kaizen		After Kaizen	
We used compressed air from E Block compressor house in all three shift and also on Sunday working , block closure , and E Block running in only A and B shift. So C shift power required to run compressor was booked on PVBU @ 500 kwh/day		To avoid compressed air losses we installed portable compressor ,and we used this portable compressor in C shift , block closure ,Sunday working and when E Block is not running.	
			
Power debit on engine shop @ 500 kwh/day		Zero power debit as portable compressor installed	

Energy saving KAIZENS on shop floor

Shop/Area : Engine Shop		Date : 13/06/2021	
Line/Station : E Block petrol trim line		Kaizen by- Mr Uday Malgaonkar and team	
Before Kaizen		After Kaizen	
Petrol Trim Line Incoming Supply From P.P.NO 32.2 Column No 27, E2 Before there is no any separate energy meter for petrol trim line		Now installed new separate energy meter for petrol trim line to observed how much energy consumed by petrol trim line. And also we take reading on daily basis.	
			
No actual measurement of Power consumption possible		Shiftwise power consumption monitoring started with use of Energy Meter	

Kaizen Sheet		Shop/Area : Engine shop	
Line/Station : Engine shop – Cylinder block line – Makino Machines		Date: Feb'20	
Operation	Problem	Measures Taken	Results
Machining of cylinder block and head on makino machines. Total 8 machines	Panel AC and Oil cooling units of makino machines were getting on along with mains power ON. Panel AC-1KW, Oil Cooler – 3KW	Panel AC and Oil cooler units interlocked with machine control ON.	1. Power cost saving of 11520 Rs / Year due to panel AC 2. Power cost saving of 34560 RS / Year due to oil cooler
Panel AC Interlock with Control ON			
			
		Oil cooler 3 KW ,8 Machines. Total Connected Load=24 kw	
Cost saving: 0.46 Lacs / Year			

Kaizen Sheet		Shop/Area : Engine shop	
Line/Station : Engine shop – Washing machines		Date: Implementation started from June'20 onwards	
Operation	Problem	Measures Taken	Results
Washing machines coolant media temperature required for process is 50 deg	Earlier electrical heaters were used to heat coolant media which are being converted into NG heating. NG price is Rs 43 / kg and also NG system requires lot of maintenance	Cold washing media is developed and implemented successfully on 2 machines. Rest 7 machines are WIP. NG supply is stopped for the 2 machines	1. Power cost saving due to change over from electrical to NG system is 34.28 Rs / Eq car 2. NG fuel cost saving due to cold washing media is 21.5 Rs / Eq Car
Electrical Heating	NG heating	Cold Washing media – Strub 1921	
			
Cost saving: 12.9 Lacs / Year			

Innovative Projects implemented

6.2 MWp Solar Car Port Project biggest solar port project executed inside the plant premises.



Solar Car Port Project Features

• Operational Features

1. Plant Capacity – 6.2 MWp
2. Operational period of this agreement - 15 Years
3. Design life span of plant – 25 years
4. Completion of Project execution – 180 days from date of signing Power purchase agreement
5. Once commissioned, it will India's largest Solar Car Port. (Presently Cochin International Air port having largest solar car port of 2.67 MWp)

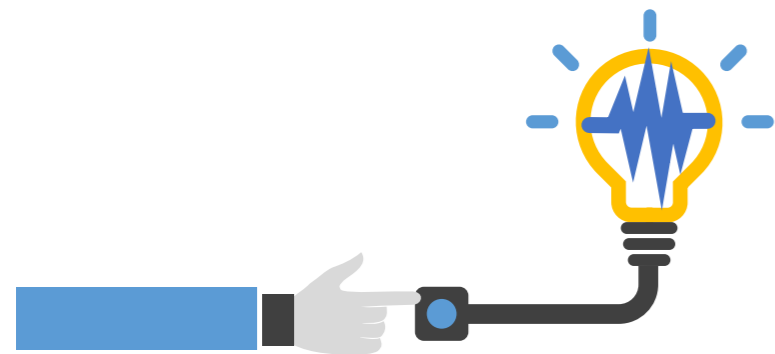
• Procurement of Energy & operational features

1. Highest peak solar panel of 445Wp will be installed which is available in market. (Office block solar panel is having rating of 250Wp)
2. Tariff will be on flat basis for 15 years
3. Offtake guarantee will be 86.4 Lakhs units out of our avg. power consumption of 4.1 Crore / year. In total 5 year, 4.2 Crore KWh units will be generated with avg. 0.7% reduction in panel efficiency/ year.
4. Maximum deemed generation can extend up to 110% of 86.4 Lakhs units
5. Energy generation above 110% of 86.4 Lakhs units will be charged at 50% of PPA rate.
6. On downside, energy generation up to 95 % of 86.4 Lakhs units allowed. Seller will pay the Difference between grid tariff and solar tariff for shortfall below 95% of guarantee to the Power Purchaser.
7. Tata power has given year-wise guaranteed energy generation pattern every year till 15 year of PPA.
8. Further month wise generation charts has been provided based on Global Horizontal Irradiation ("GHI") level
9. 2 nos. of power manager will be installed which will synchronize power generation with plant demand
10. Industrial all risk policy will be taken and maintained by the power Seller throughout the term of this agreement with appropriate insurance
11. Year-wise termination payment schedule fixed in case of contract termination over the period of 15 years. After 15 years, asset will be transferred on 'Zero' notional charges.
12. Power seller will assist for documentation with respect to Civil authority. Rest all Electrical inspectorate office , MSEDCL approval will be done by power seller.
13. Power seller has already given its consents with same terms and conditions of agreement as power purchaser is proposing to transfer its Passenger Vehicle Business to a new company (a subsidiary of the Power Purchaser). The Power Purchaser shall intimate the Seller as and when the business is transferred to the new company

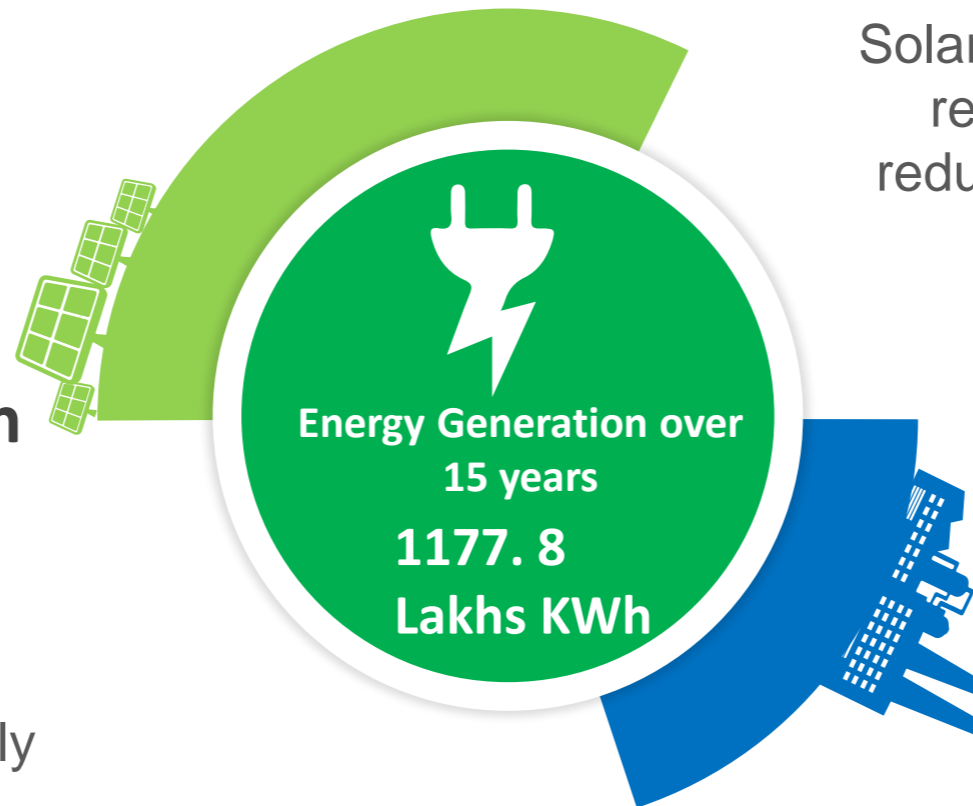
Project Impact

Rs. 50.73 Crores of Energy Saving over 15 years of PPA

TCO2e Reduction
96514 TCO2e



Annual Energy Generation
86.4 Lakhs KWh



Solar Car Port Project will result in 96514 TCO2e reduction over the period of 15 years of PPA.



0 % upfront payment from Tata Motors, Payment will be on monthly basis for per unit KWh Generation



Project BOM

Use of High Quality Product Components

Solar Modules



- High Rating 445Wp Tier-1 Solar PV Modules



- **Reduced risk of failure**



- **Reliability** under **extreme weather** conditions



- Potential Induced **degradation free** modules

Use of **STAAD certified structures**

designed to **withstand high wind-speed conditions**



Scalable Design

- For easy upgrade & **future expansion** requirements

Grid- Tie Solar Inverter



- **IP-65, environmental protection** rating
- Can withstand **extreme weather** conditions



- **High yield** output
- Maximum **efficiency** over **97%**



- **Ground fault monitoring**



- **Anti-islanding** feature
- Internal DC switch enabling **auto shut down** upon loss of utility supply



- **VDE / Golden Sun / IEC** Certified



- **Remote monitoring** system with **Ethernet / technology / Wi Fi**



Project Glimpse

Carport Solar Installation at Tata Motors Limited ,Chikhali Pune



India's Largest Solar Car Port Covering Actual Solar Roof of 30,000 Sq. Mtr

Media Coverage-Offline

Tata Motors, Tata Power Unveil Solar Carport in Pune

PTI **GOING GREEN**

New Delhi: Tata Motors and Tata Power on Friday announced the inauguration of India's largest Solar Carport in Pune, that is estimated to reduce 7,000 tonnes of carbon emissions annually.

The 6.2 MWp solar carport deployed by Tata Power will generate 86.4 lakh kWh of electricity per year and is estimated to reduce 7,000 tonnes of carbon emissions annually and 1.6 lakh tonnes over its lifecycle, a regulatory filing said.

"In line with Tata Group's philosophy to promote green manufacturing, Tata Motors and Tata Power jointly inaugurated India's largest grid-synchronised, behind-the-meter solar carport at the Tata Motors car plant in Chikhali, Pune," said.

Spanning over 30,000 square metres, this carport will not only generate green power, but will also provide covered parking for finished cars in the plant.

"We have always been conscious of the need to conserve energy and are committed to

We have always been conscious of the need to conserve energy and are committed towards achieving 100 per cent renewable energy sources for all our operations. Our partnership with Tata Power to deploy India's largest solar carport at our car plant in Pune is a step in that direction.

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The Economic Times

TaMo opens solar carport at Chikhali unit

PTI

Pune: Automaker Tata Motors has teamed up with Tata Power to inaugurate India's largest solar-powered carport at its plant in Chikhali, which will generate 86.4 lakh kWh of electricity every year.

Tata Motors said the facility, measuring at over 30,000sqm, will also provide protection to its finished cars before they are shipped out to the market. "We have always been conscious of the need to conserve energy. Our partnership with Tata Power to deploy India's largest solar carport at our car plant in Pune is a step in that direction."

The Times of India

टाटा मोटर्स और टाटा पावर ने शुरू किया भारत का सबसे बड़ा सोलर कारपोर्ट

नई दिल्ली | टाटा मोटर्स और टाटा पावर ने मिलकर भारत का सबसे बड़ा ग्रिड-सिंक्रोनाइज्ड, बिहाइंड द मीटर कारपोर्ट शुरू किया है। पुणे के चिखली में टाटा मोटर्स के कार प्लांट में इस सोलर कारपोर्ट को बनाया गया है। टाटा पावर द्वारा तैनात किए गए इस 6.2 एमडब्ल्यूपी क्षमता के सोलर कारपोर्ट में सालाना 86.4 लाख केडब्ल्यूएच बिजली का निर्माण किया जाएगा और अनुमान है कि इससे हर वर्ष जीवनकाल में 1.6 लाख टन कार्बन उत्सर्जन में कमी आएगी।

Dainik Bhaskar



टाटा मोटर्स और टाटा पावर ने पुणे में देश का सबसे बड़ा सोलर कारपोर्ट शुरू करने की घोषणा की है। इससे सालाना 7,000 टन कार्बन उत्सर्जन में कमी आएगी। और कारों को बेटी तुरंत से कंपनी ने कहा कि टाटा पावर द्वारा तैनात किए गए इस 6.2 एमडब्ल्यूपी क्षमता के सोलर कारपोर्ट में सालाना 86.4 लाख केडब्ल्यूएच बिजली का निर्माण किया जाएगा और अनुमान है कि इससे हर वर्ष जीवनकाल में 1.6 लाख टन कार्बन उत्सर्जन में कमी आएगी।

Navbharat

टाटा मोटर्स ने शुरू किया देश का सबसे बड़ा सोलर कारपोर्ट

जमशेदपुर : टाटा मोटर्स कार्बन न्यूट्रल कंपनी बनने की दिशा में काम कर रही है। इस प्रगति की ओर कदम बढ़ाते हुए कंपनी ने शुक्रवार को टाटा पावर को मदद से पुणे के प्लांट में सोलर कारपोर्ट उद्घाटन किया। कंपनी का दावा है कि यह देश की सबसे बड़ी कारपोर्ट है। टाटा मोटर्स दावा करती है कि इस कारपोर्ट की मदद से कंपनी प्रति वर्ष 7,000 टन कार्बन उत्सर्जन को कम करेगी। टाटा मोटर्स के पुणे प्लांट में यह कारपोर्ट 30,000 वर्ग मीटर के क्षेत्र में फैला हुआ है। यह सोलर कारपोर्ट हर साल 86.4 लाख केडब्ल्यूएच बिजली का निर्माण करेगा।

Dainik Jagran

टाटा पावर ने सबसे बड़ा सोलर कारपोर्ट लगाया

नई दिल्ली | टाटा मोटर्स और टाटा पावर ने पुणे में सबसे बड़ा सोलर कारपोर्ट शुरू करने की घोषणा की है। इससे सालाना 7,000 टन कार्बन उत्सर्जन में कमी लगाने में मदद मिलेगी। 6.2 मेगावॉट पावर के कारपोर्ट केडब्ल्यूएच बिजली का निर्माण करेगा।

Hindustan

Tata Motors, Tata Power inaugurate solar carport

Tata Motors and Tata Power on Friday announced the inauguration of India's largest grid-synchronised, behind-the-meter solar carport at the Tata Motors car plant in Chikhali, Pune.

Business Standard

टाटा मोटर्स ने पुण्यात देशातील सर्वात मोठे सौर कारपोर्ट

पुणे : पुणेविकासधीन उद्योगात कारखान्याच्या उच्च वास्तुशिल्प विभागाच्या मार्गदर्शनाखाली टाटा मोटर्स आणि टाटा पावर यांनी पुण्यात भारतातील सर्वात मोठे ग्रीड-सिंक्रोनाइज्ड, बिहाइंड द मीटर सोलर कारपोर्ट उद्घाटन केले आहे. पुणेविकासधीन उद्योगात कारखान्याच्या उच्च वास्तुशिल्प विभागाच्या मार्गदर्शनाखाली टाटा मोटर्स आणि टाटा पावर यांनी पुण्यात भारतातील सर्वात मोठे ग्रीड-सिंक्रोनाइज्ड, बिहाइंड द मीटर सोलर कारपोर्ट उद्घाटन केले आहे। टाटा मोटर्स आणि टाटा पावर यांनी पुणेविकासधीन उद्योगात कारखान्याच्या उच्च वास्तुशिल्प विभागाच्या मार्गदर्शनाखाली टाटा मोटर्स आणि टाटा पावर यांनी पुण्यात भारतातील सर्वात मोठे ग्रीड-सिंक्रोनाइज्ड, बिहाइंड द मीटर सोलर कारपोर्ट उद्घाटन केले आहे।

Pudhari

Tata Motors, Tata Power launch India's largest solar carport

Tata Motors and Tata Power on Friday announced the inauguration of India's largest solar carport in Pune, that is estimated to reduce 7,000 tonnes of carbon emissions annually.

The 6.2 MWp solar carport deployed by Tata Power will generate 86.4 lakh kWh of electricity per year and is estimated to reduce 7,000 tonnes of carbon emissions annually and 1.6 lakh tonnes over its lifecycle, a regulatory filing said.

"In line with Tata Group's philosophy to promote green manufacturing, Tata Motors and Tata Power jointly inaugurated India's largest grid-synchronised, behind-the-meter solar carport at the Tata Motors car plant in Chikhali, Pune," said.

Spanning over 30,000 square metres, this carport will not only generate green power, but will also provide covered parking for finished cars in the plant.

"We have always been conscious of the need to conserve energy. Our partnership with Tata Power to deploy India's largest solar carport at our car plant in Pune is a step in that direction."

Financial Express

'टाटा मोटर्स, टाटा पावर ने पुणे में देश का सबसे बड़ा सोलर कारपोर्ट लगाया'

नई दिल्ली, 18 जून (प.स.): टाटा मोटर्स और टाटा पावर ने पुणे में देश का सबसे बड़ा सोलर कारपोर्ट शुरू करने की घोषणा की है। इससे सालाना 7,000 टन कार्बन उत्सर्जन में कमी लगाने में मदद मिलेगी। 6.2 मेगावॉट पावर के कारपोर्ट केडब्ल्यूएच बिजली का निर्माण करेगा।

टाटा मोटर्स और टाटा पावर ने शुरू किया भारत का सबसे बड़ा सोलर कारपोर्ट

नई दिल्ली | टाटा मोटर्स और टाटा पावर ने मिलकर भारत का सबसे बड़ा ग्रिड-सिंक्रोनाइज्ड, बिहाइंड द मीटर कारपोर्ट शुरू किया है। पुणे के चिखली में टाटा मोटर्स के कार प्लांट में इस सोलर कारपोर्ट को बनाया गया है। टाटा पावर द्वारा तैनात किए गए इस 6.2 एमडब्ल्यूपी क्षमता के सोलर कारपोर्ट में सालाना 86.4 लाख केडब्ल्यूएच बिजली का निर्माण किया जाएगा और अनुमान है कि इससे हर वर्ष जीवनकाल में 1.6 लाख टन कार्बन उत्सर्जन में कमी आएगी।

टाटा मोटर्स और टाटा पावर ने शुरू किया भारत का सबसे बड़ा सोलर कारपोर्ट

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Punjab Kesari

Tata Motors and Tata Power inaugurate solar carport

PUNE: Tata Motors and Tata Power jointly inaugurated India's largest grid-synchronised, behind-the-meter solar carport at the Tata Motors car plant in Chikhali, Pune. The 6.2 MWp solar carport deployed by Tata Power will generate 86.4 lakh kWh of electricity per year and is estimated to reduce 7,000 tonnes of carbon emissions annually and 0.16 million tonnes over its lifecycle.

Spanning 30,000 square metres, this carport will also provide covered parking for finished cars in the plant. Envisioned as part of its net zero carbon goal for 2039, Tata Motors entered into a power purchase agreement (PPA) with Tata Power on August 31, 2020.

Shailesh Chandra, president, Passenger Vehicle Business Unit, Tata Motors, said, "At Tata Motors, we are committed towards achieving 100 per cent renewable energy source for all our operations. Our partnership with Tata Power to deploy India's largest solar carport at our car plant in Pune is a step in that direction."

"As One Tata initiative, we will continue to explore new ways to harness clean resources and offer them to our customers."

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Tata Motors and Tata Power on Friday announced the inauguration of India's largest grid-synchronised, behind-the-meter solar carport at the Tata Motors car plant in Chikhali, Pune.

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Hindustan Times

INDIA'S LARGEST Tata Motors, Tata Power inaugurate solar carport



The 6.2 MWp solar carport will generate 86.4 lakh kWh of electricity per year and is estimated to reduce 7,000 tonnes of carbon emissions annually and 1.6 lakh tonnes over its lifecycle

30,000 sqm facility up at Tata Motors car plant in Pune

OUR BUREAU
Mumbai, June 18

Tata Motors and Tata Power jointly inaugurated India's largest grid-synchronised, behind-the-meter solar carport at the Tata Motors car plant in Chikhali, Pune, on Friday. The 6.2 MWp (mega watt peak) solar carport deployed by Tata Power will generate 86.4 lakh kWh of electricity per year and is estimated to reduce 7,000 tonnes of carbon emissions annually and 1.6 lakh tonnes over its lifecycle.

Spanning over 30,000 square metres, the carport will not only generate green power, but will also provide covered parking for finished cars in the plant.

Net zero carbon goal
Launch of the carport is a part of Tata Motors' net zero carbon goal for 2039. Tata Motors had entered into a Power Purchase Agreement (PPA) with Tata Power on August 31, 2020. Both companies developed this massive carport infrastructure in nine-and-a-half months.

Shailesh Chandra, President, Passenger Vehicle Business Unit, Tata Motors, said, "At Tata Motors, we are committed towards achieving 100 per cent renewable energy source for all our operations. Our partnership with Tata Power to deploy India's largest solar carport at our car plant in Pune is a step in that direction."

Motors, we have consciously anchored sustainability in every aspect of our business by striving for more meaningful ways to reduce our impact on the planet, whilst providing exciting products and sustainable solutions to our customers.

Our partnership with Tata Power to deploy India's largest solar carport at our car plant in Pune is a step in that direction."

Praveer Sinha, CEO & MD, Tata Power, said, "Our partnership is a testament to our collective efforts to lower the carbon footprint and provide innovative

The Hindu Business Line

Media Coverage-Online

Tata Motors and Tata Power set up India's largest solar carport in Pune

BY AUTOCAR PRO NEWS DESK | 18 JUN 2021

Spanning over 30,000 square metres, the carport will generate green power and also provide covered parking for finished cars at the Pune plant.



Tata Motors and Tata Power today jointly inaugurated India's largest grid-synchronized, behind-the-meter solar carport at the Tata Motors' passenger vehicle plant in Chikhali, Pune.

The 6.2 MWp solar carport, deployed by Tata Power, will generate 86.4 lakh kWh of electricity per year and is estimated to reduce 7,000 tons of carbon emissions annually and 1.6 lakh tonnes over its lifecycle. Spanning over 30,000 square metres, this carport will not only generate green power, but will also provide covered parking for finished cars in the plant.

Envisioned as part of its net-zero carbon goal for 2039, Tata Motors had entered into a Power Purchase Agreement (PPA) with Tata Power on August 31, 2020. Despite the challenges of the pandemic, both companies successfully managed to develop the massive carport infrastructure in a record time of 9.5 months.

Autocar Professional

Tata Motors' Pune car plant opens solar carport deployed by Tata Power

The 6.2 MWp solar carport deployed by Tata Power will generate 86.4 lakh kWh of electricity per year and is estimated to reduce 7,000 tonnes of carbon emissions annually and 1.6 lakh tonnes over its lifecycle.

ETAuto | June 18, 2021, 13:47 IST



New Delhi: Tata Motors and Tata Power on Friday inaugurated synchronized, behind-the-meter solar carport at the Tata Motors Chikhali, Pune.

ETAuto

Tata Motors, Tata Power inaugurate India's largest solar carport

The 6.2 MW solar carport deployed by Tata Power will generate 86.4 lakh kWh of electricity per year and is estimated to reduce 7,000 tons of carbon emissions annually and 1.6 lakh tons over its lifecycle.

TIMESOFINDIA.COM | June 18, 2021, 07:36 IST



Tata Motors and Tata Power inaugurated India's largest grid-synchronized, behind-the-meter solar carport at its facility in Chikhali, Pune.

The initiative is taken in line with the Tata Group's philosophy to promote green manufacturing.

The 6.2 MW solar carport deployed by Tata Power will generate 86.4 lakh kWh of electricity per year and is estimated to reduce 7,000 tons of carbon emissions annually and 1.6 lakh tons over its lifecycle.

ET Energyworld

Tata Motors, Tata Power jointly inaugurate solar carport in Pune

The 6.2 MWp solar carport deployed by Tata Power will generate 86.4 lakh kWh of electricity per year and is estimated to reduce 7,000 tons of carbon emissions annually and 1.6 lakh tons over its lifecycle, a regulatory filing said.

PTI | JUNE 18, 2021 10:17 AM IST



Tata Motors and Tata Power on Friday announced the inauguration of India's largest Solar Carport in Pune, that is estimated to reduce 7,000 tons of carbon emissions annually.

The 6.2 MWp solar carport deployed by Tata Power will generate 86.4 lakh kWh of electricity per year and is estimated to reduce 7,000 tons of carbon emissions annually and 1.6 lakh tons over its lifecycle, a regulatory filing said.

"In line with Tata Group's philosophy to promote green manufacturing, Tata Motors and Tata Power jointly inaugurated India's largest grid-synchronized behind-the-meter solar carport at the Tata Motors car plant in Chikhali, Pune," it added.

Spanning over 30,000 square metres, this carport will not only generate green power, but will also provide covered parking for finished cars in the plant.

"We have always been conscious of the need to conserve energy and are committed towards achieving 100 per cent renewable energy sources for all our operations. Our partnership with Tata Power to deploy India's largest solar carport at our car plant in Pune is a step in the right direction," said Shailesh Chandra, President, Passenger Vehicle Business Unit, Tata Motors.

Moneycontrol

Tata Motors' new 30,000 sq mt solar port in Pune also works as a car shed: View images



Cars produced in the plant will be parked under these solar panels

2 min read · Updated: 18 Jun 2021, 02:25 PM IST

Livemint, Edited By Danny Cyril D Cruze

The company claims that the new facility will further the company's vision of net-zero carbon goal for 2039

Tata Motors and Tata Power jointly inaugurated India's largest grid-synchronized, behind-the-meter solar carport at the Tata Motors car plant in Chikhali, Pune. The 6.2 MWp solar carport deployed by Tata Power will generate 86.4 lakh kWh of electricity per year. The company claims that it is estimated to reduce 7,000 tons of carbon emissions annually and 1.6 lakh tons over its lifecycle.

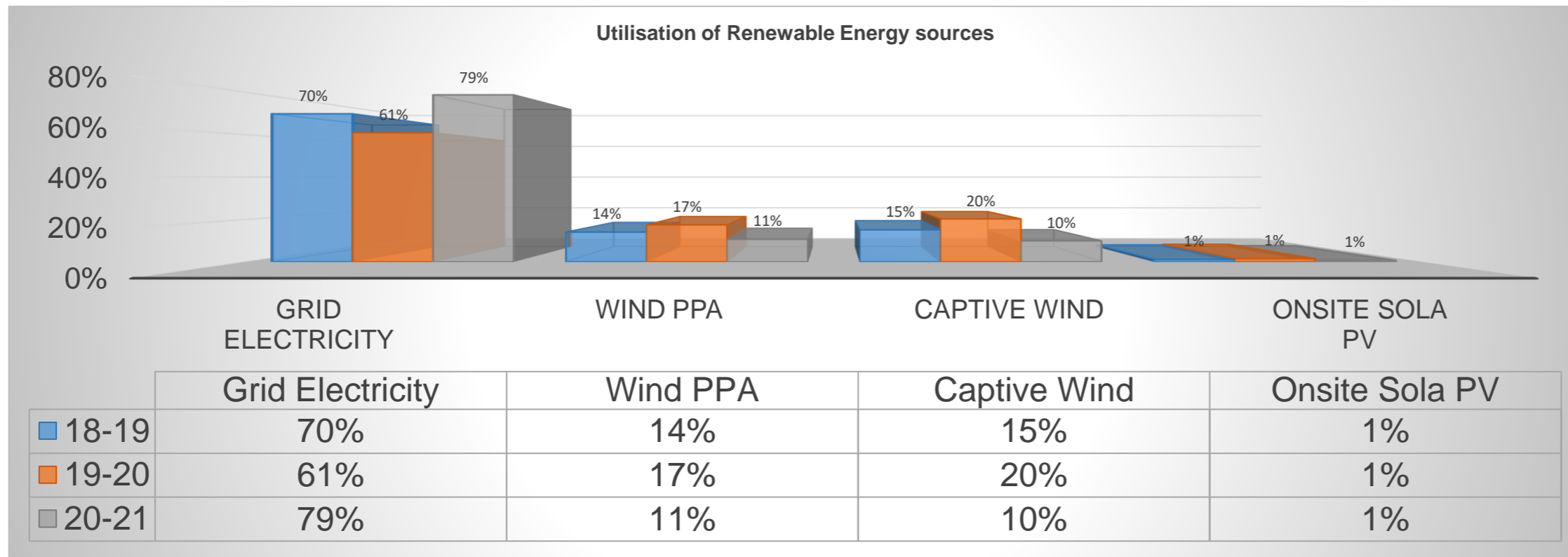
According to a statement released by Tata Motors, the new facility spans over 30,000 square metres. The carport will also provide covered parking for finished cars in the plant.

Mint

Glimpse of Project Launch

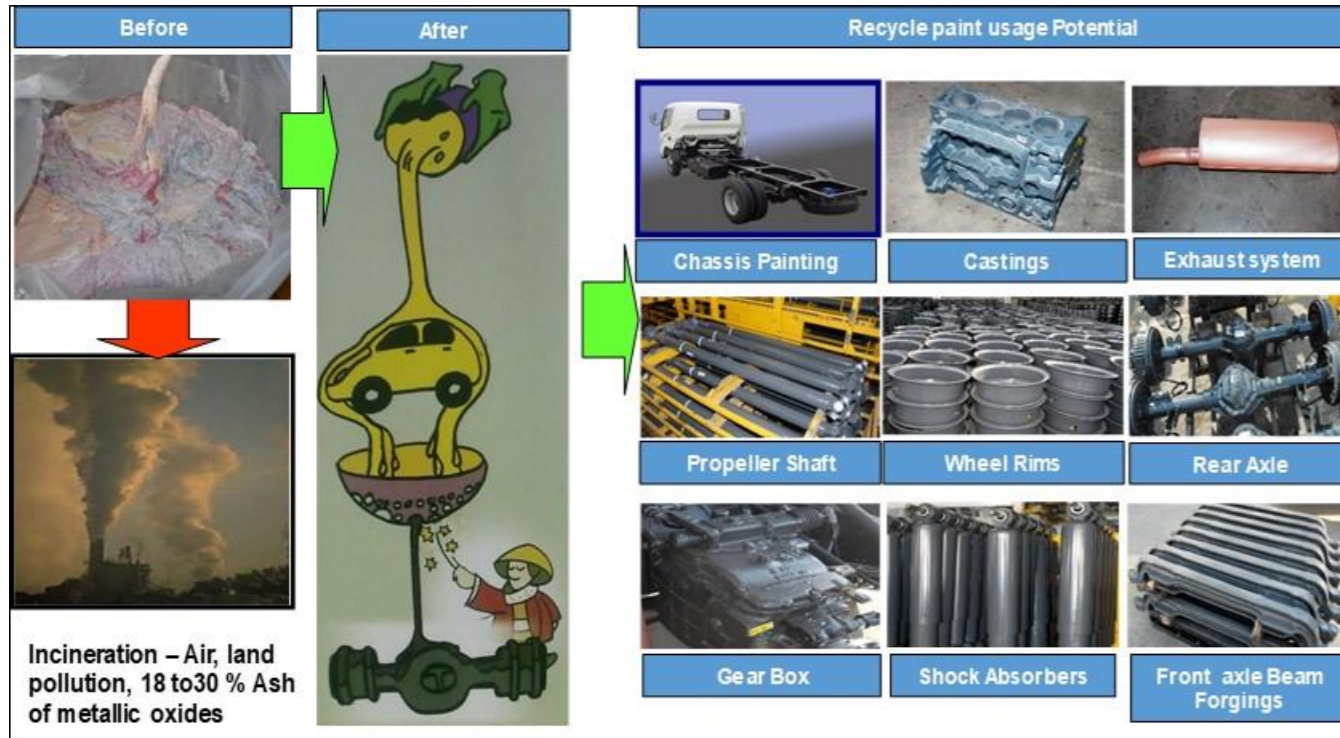


Utilisation of Renewable Energy sources

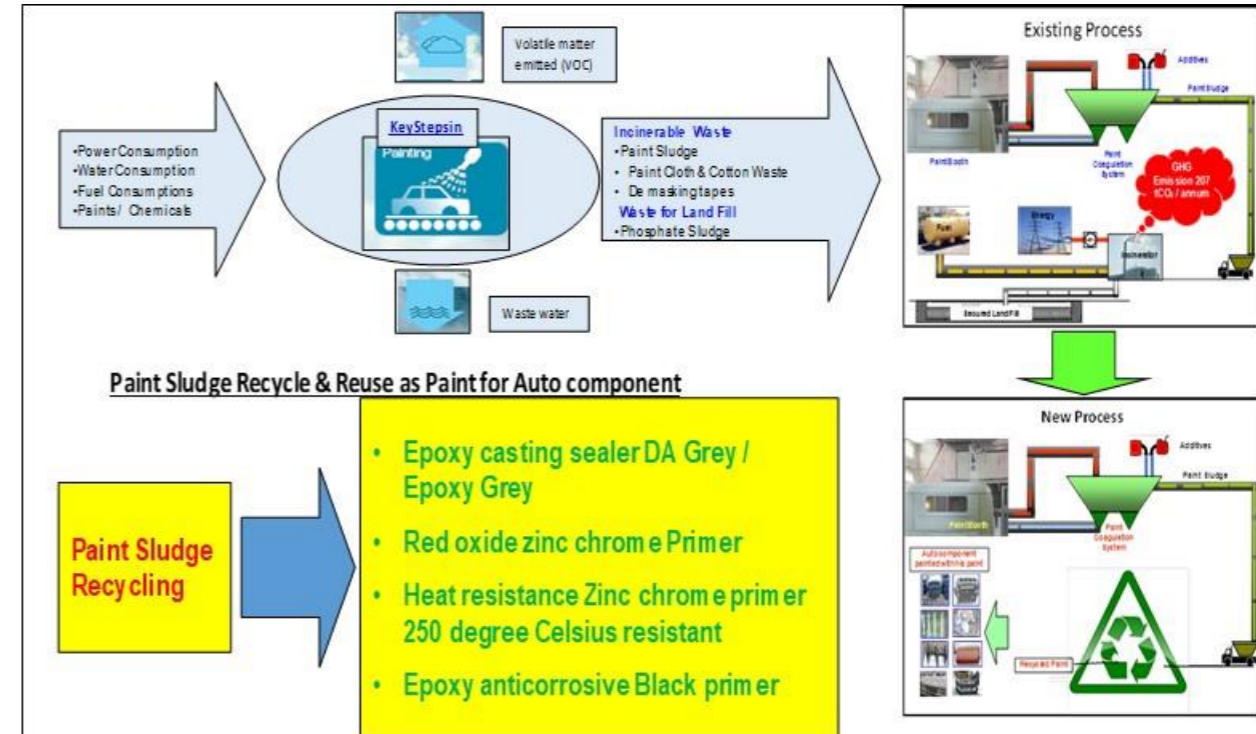


Year	Technology (electrical)	Type of Energy		Installed Capacity (MW)		Generation (million kWh)	% of overall electrical energy
		Wind (Offsite)	Solar (Onsite)	Wind (Offsite)	Solar (Onsite)		
FY 2018-19	Renewable	1,20,46,977	4,49,041	37	0.5	12.50	30%
FY 2019-20		1,56,09,701	6,00,640			16.21	39%
FY 2020-21		1,28,35,081	4,50,000			13.29	21%

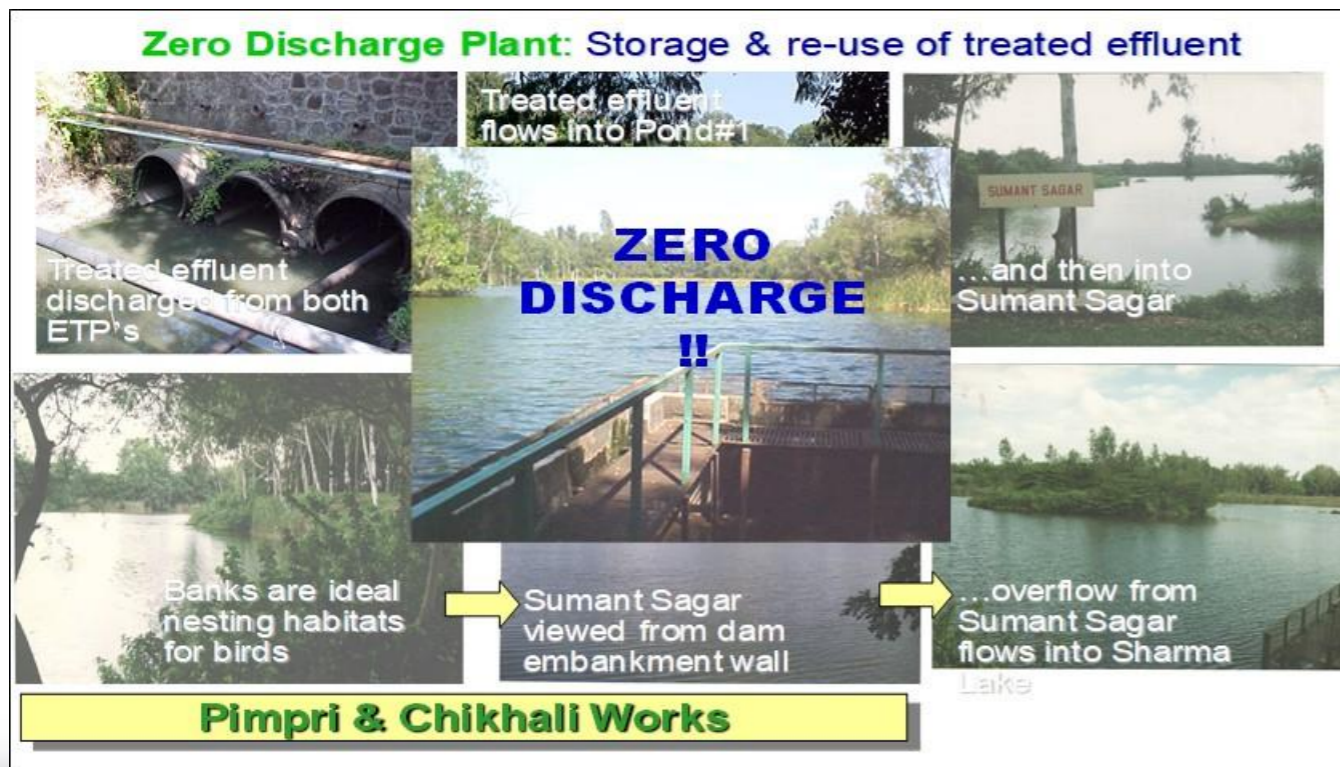
Paint Sludge recycling and usage potential



Paint Shop Hazardous Waste Process Mapping



Zero Discharge Plant

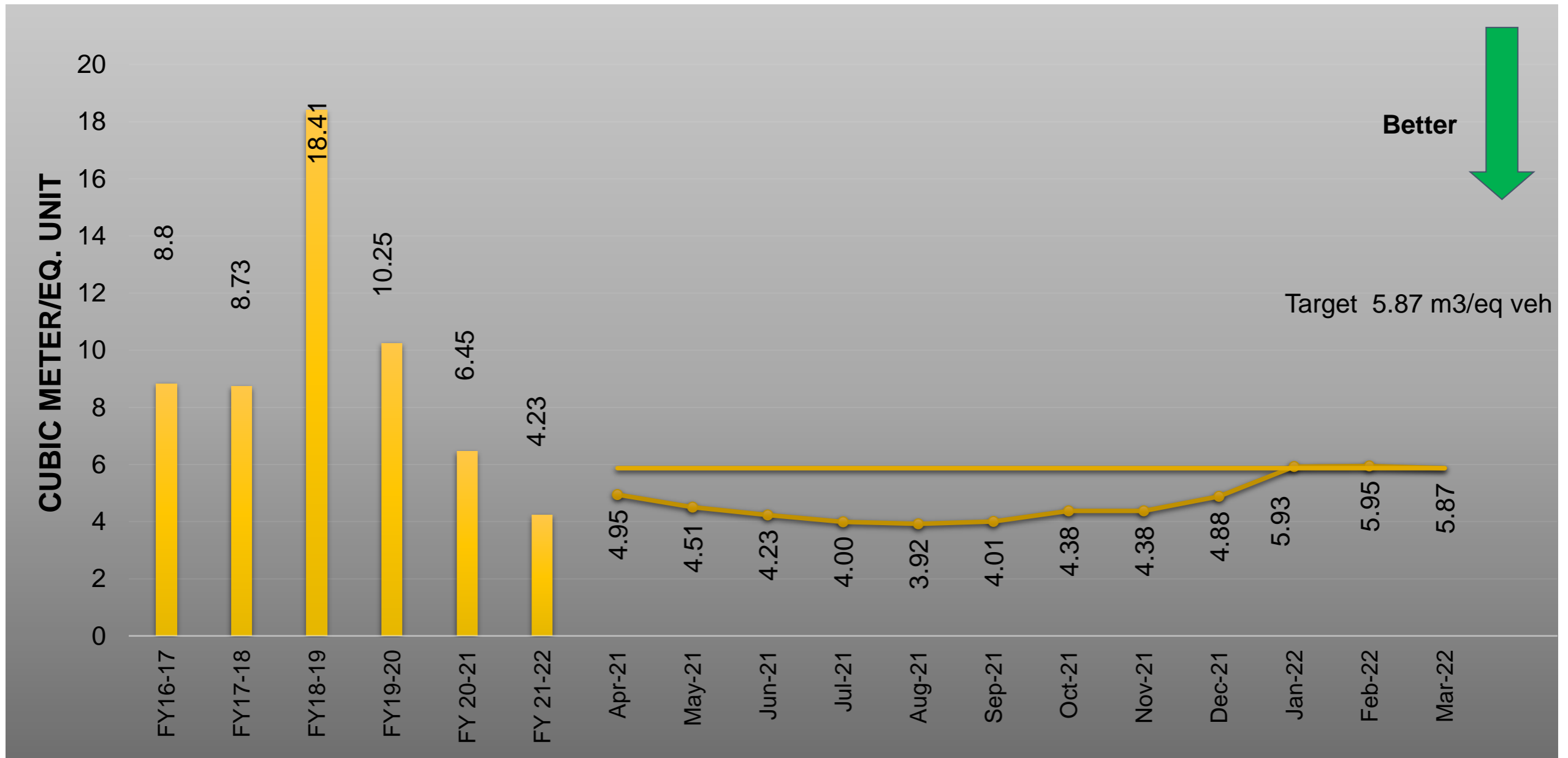


Green Spots at Plant



Glide Path for Hazardous Waste Reduction 21-22

Target – 5.87cum/Eq. Unit (5% Reduction 6.18 wrt 20-21)



Driving Net Zero Carbon Emission Assessment across TML PVBU Plants

TATA GROUP DIRECTIONS	
Base line for Net Carbon zero plan	<ul style="list-style-type: none"> • 15%reduction in absolute CO2e emissions (Scope 1 + 2) from a [2020] baseline by 2025 • 35% reduction in absolute CO2e emissions (Scope 1 + 2) from a [2020] baseline by 2030 • Net zero CO2e emissions (Scope 1+2+3) before 2039
Projection of Energy Consumption	Derived from Vehicle Production Plan till FY 29-30 and KWh/ vehicle
Option available	<ul style="list-style-type: none"> • Exploring within plant solar roof top installation • Exploring group captive or Open access power purchase • Use of MSEDCL green power purchase with additional rate • Encon Projects implementation
External Factors involved	<ul style="list-style-type: none"> • Vehicle Production • Govt Regulations

Driving Net Zero Carbon Emission Details

What is meant by net zero carbon emissions?
Net zero refers to the balance between the amount of **greenhouse gas** produced and the amount removed from the atmosphere. We reach **net zero** when the amount we add is no more than the amount taken away.

Net Zero Targets Across Different Companies

Tata Steel India	Tata Steel Europe	Tata Power	Tata Chemicals	Tata Motors Ltd	JLR	Tata Consulting Services	Tata Consumer Products
2045	2045	2040	2050	2039	2039	2030	2039



Scope 1,2 & 3

Scope 1,2 & 3 Emissions Details

Scope 1 - Direct Greenhouse Gas Emissions come from sources that are owned or controlled by the reporting entity. This could be the emissions that are directly created by manufacturing goods, for example, factory fumes. This does **not** account for the combustion of biomass.

Scope 2 - Scope 2 accounts for Greenhouse Gas Emissions from the generation of purchased electricity, steam, and heating/ cooling. These emissions physically occur at the facility where electricity, steam and cooling or heating are generated. But as a user of the energy, the consuming party is still responsible for the Greenhouse Gas Emissions that are being created.

Scope 3 - Emissions are emissions from sources that are not owned and not directly controlled by the reporting company. However, they are related to the company's activities. This is usually considered to be the supply chain of the company, so emissions caused by vendors within the supply chain, outsourced activities, and employee travel and commute comes under this category.

Scope 3 CO2 Emission Reduction Plan

These emission involves CO2 generated before (Upstream) or After (Downstream) our Production operations

Ways to Reduce Scope 3 CO2 Emission

Reduction of GHG emissions from purchase of goods

- Engage Key suppliers on improving their own CO2 footprint
- Change in incoming material With lower CO2 content
- Use of Recycled material included in input
- Reduce Production Waste
- Favour more sustainable vendor

Reduction of GHG emissions from transportation

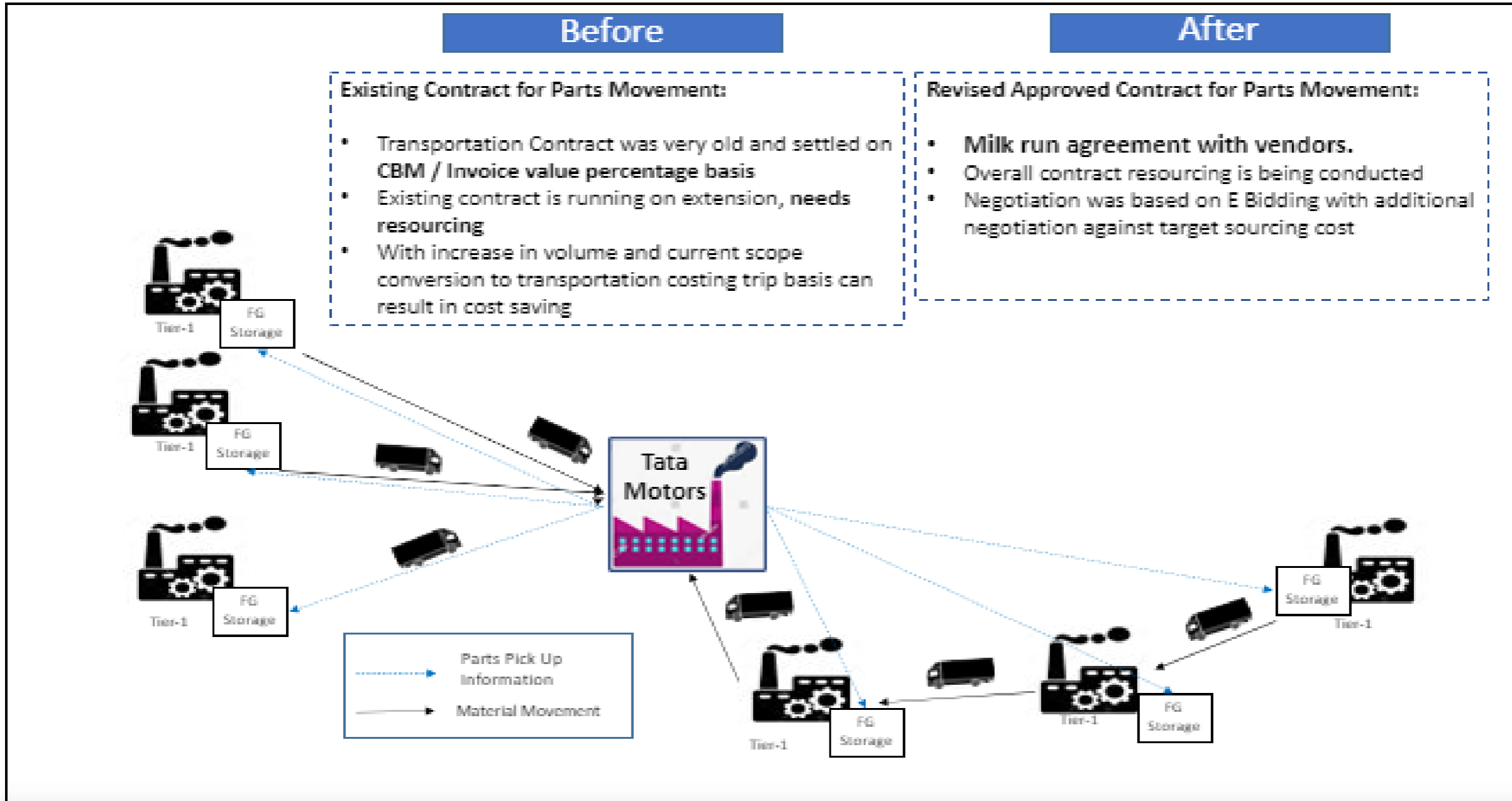
- Reduction of Distance travelled For Transportation of material
- Increasing loading rate of vehicle
- Changing mode of transport with Energy efficient transport or Changing Fuel type
- Reducing weight of material being transported

Reduction of GHG emissions from use of material

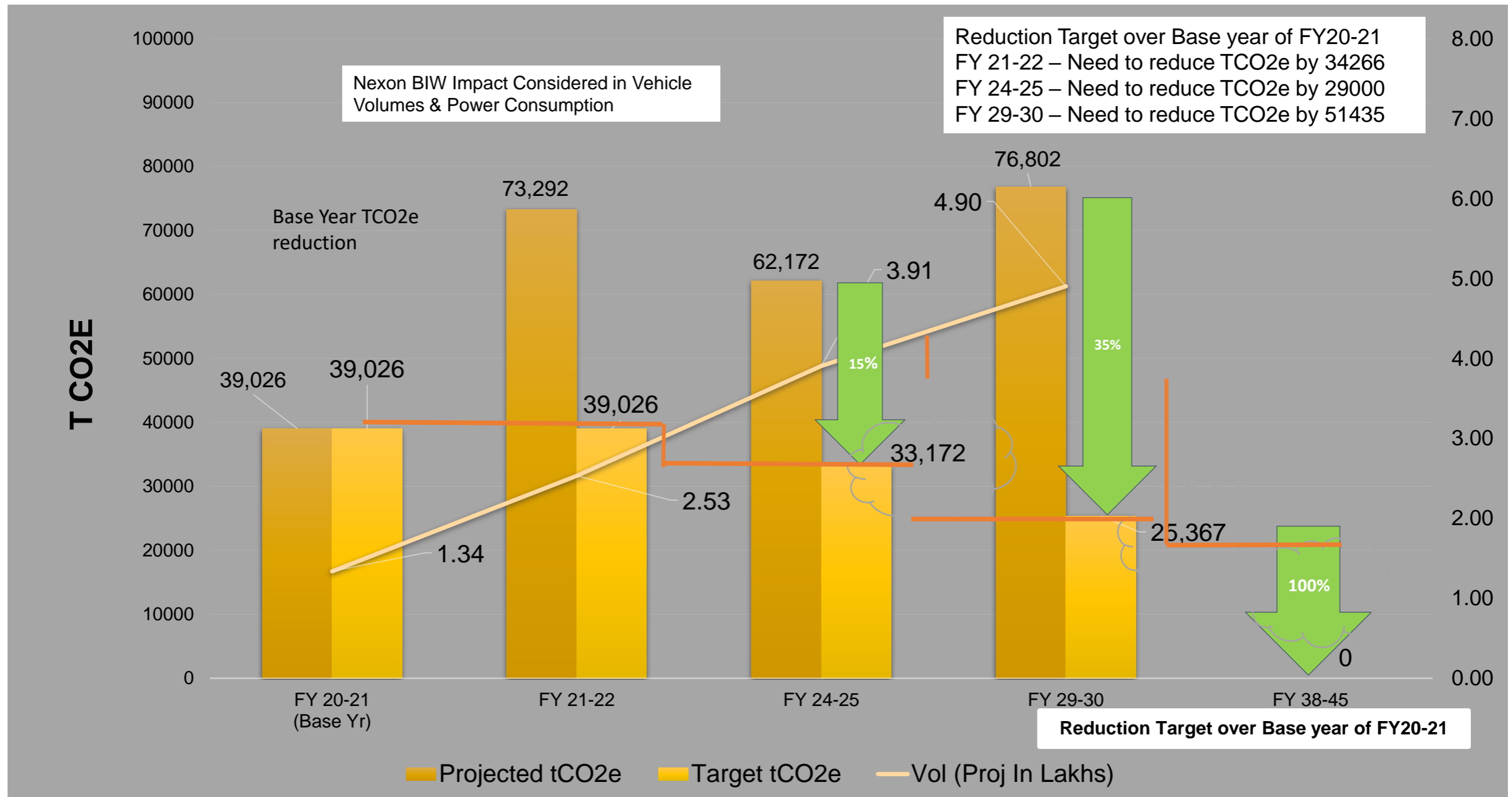
- Reduce consumption of Raw Material through an increase in Lifetime of manufactured products
- Reduce energy consumption Generated during use of product Throughout its lifetime

Scope 3 CO2 Emission Reduction Current Practice

Transportation of BIW & Non BIW Parts movement from PCMC & PMC supplier from TML Plant Pune

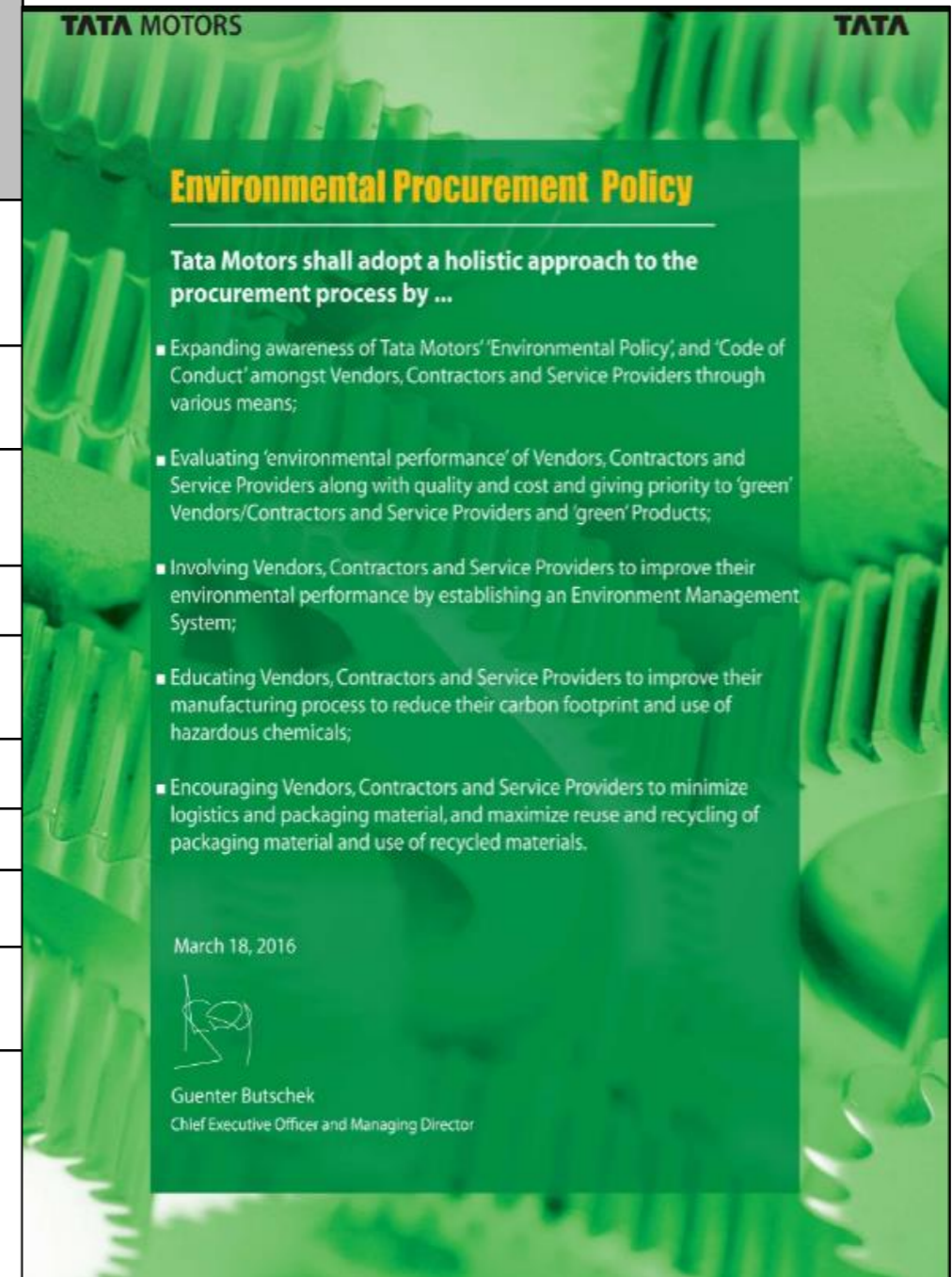


PV Chikhali - GHG Reduction target as per Alingana



Absolute GHG Reduction Glide path – FY24-25:15% Reduction, FY29-30:35% Reduction, FY38-45:100% Reduction

Sr. No.	Projects Implemented	Investment (Rs In Cr)	Benefits (Rs. 10.09 Cr)
1	Reduction of Ocean transit time & Port turnaround time for JLR imported shipments resulted in inventory carrying cost	Nil	5.5
2	Altroz pallet cost saving due to in house ICA family pallets modification	0.5	1.25
3	Transportation cost saving through trolley modification from J to K Block	0.5	0.51
4	Packaging improvement in Nexon BIW parts	Nil	0.27
5	Harrier engine Freight cost optimization from RJV to Pune	Nil	0.23
6	Freight cost optimization for Harrier projects	Nil	0.8
7	Export shipment cost optimization	Nil	0.43
8	Employee transport optimization	Nil	1.0
9	Cost optimization for material transportation from CCD (Console Centre Delhi)	Nil	0.1
11	Plastic waste reduction initiatives (8 Ton reduction / year), Reuse of Plastic (600 Kg / year)	Nil	Plastic weight reduction of 8030 Kg/ Year. 2. Reuse of 594 Kg / year of plastic



Environmental Procurement Policy commits to Expand awareness and evaluate by involving, Educating and Encouraging stake holders



Environmental Procurement Policy commits to Expand awareness and evaluate by involving, Educating and Encouraging stake holders

Key Initiatives

- Workshop with supplier partners to enhance awareness & efficiency (Project SRT – Flow management)
- Usage of recyclable containers / pallets for auto parts.
- Minimizing use of plastic in packaging, Regulatory compliance for plastic 50 microns.
- Milkrun for cluster supplier thereby reducing GHG emmition.
- Optimization of number of trips by 50% by pallet modification. (FIAL).

Energy Conservation Team

	Shop Champions	Power	Fuel	IMC	Tools	PTP	Rejection	Freight. (TPLP)
TCF	Vikas Kattimani	Ganesh Kapse	NA	Ritesh Rajput	Ritesh Rajput	Ritesh Rajput	Dinesh	NA
PAINT	Arjun Mahajan	D. Bhamere	Davinder Singh	Arjun Mahajan	Mukesh Inamdar	NA	Abhay Nahar	NA
WELD	Vikas / Prashant	Balasaheb Landge	NA	Vankatesh Kulkarni	Vikas Dhake	Surendra Shinde	Ajit Patil	NA
PRESS	Sunil Memane	Shrikant & Mali	NA	Mukund Jeodevkar	Shrikant Patil	Mahesh Tambe	Vijay Sagare	NA
ENGINE	Paresh Zende	Paresh Zende	Vaibhav Karandikar	Atul Patil	Sanjay Shejul	Atul Patil	Vaibhav Sawant	NA
T/A	Nilesh Tilak	Nilesh Tilak	Jaysankar	Deepak Mujumule	Suyog Mashelkar	Suyog Mashelkar	Hemant Mahamuni	NA
OTHERS	D. Suresh & Rahul & Deepak	D. Suresh	Suhas Kulkarni	Milind Shah	Deepak Barate	Deepak Barate	Milind Shah	Shirish Athavle

Shop wise and component wise teams created to drive VCC reduction

Energy Conservation Week Celebration :

• PAINT SHOP



• ENGINE SHOP



• PAINT SHOP



• TA SHOP



• TCF SHOP



• PRESS SHOP



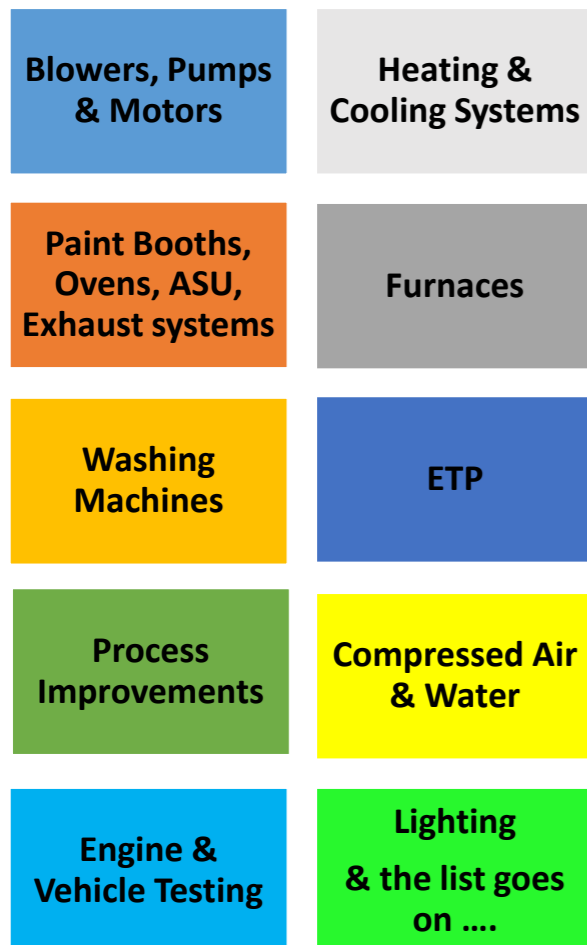
• Q5 BIW SHOP



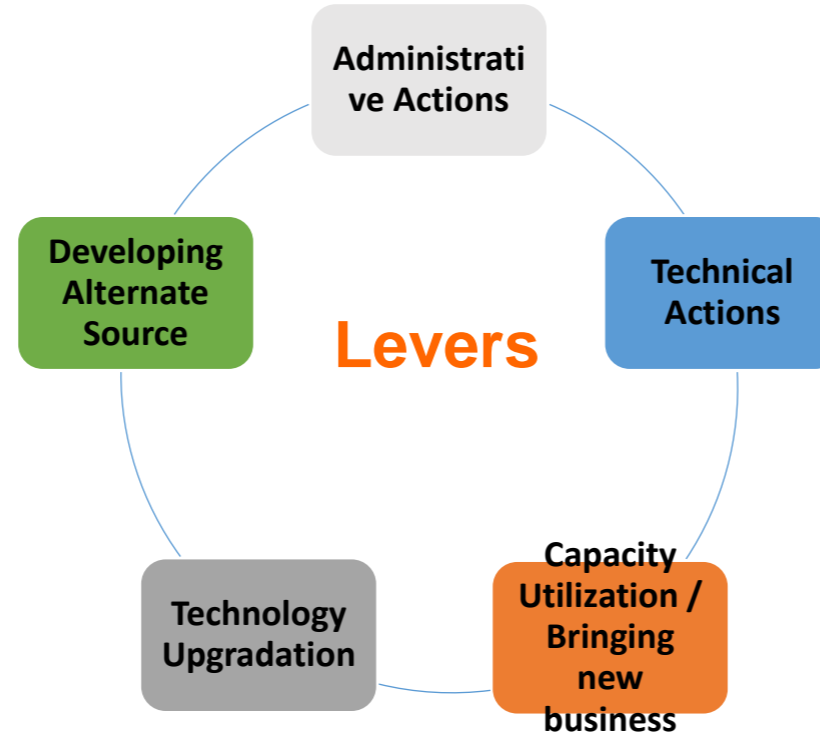
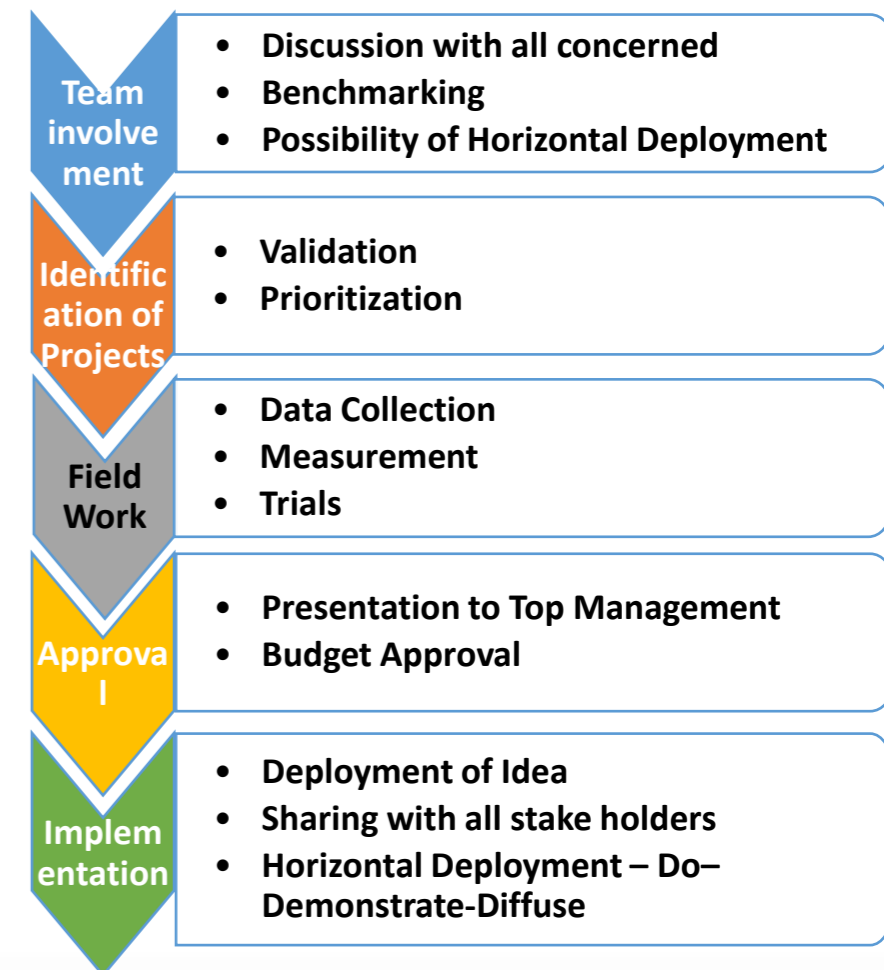
Approach



Area of Conservation



Methodology



Rewards & Recognition



Energy Conservation team

- Mr. Jairaj Bhosale (Paint)
- Mr. Paresh Zende (Engine)
- Mr. Jeevan Deshpande (UV)
- Mr. Vikas Dhake (BIW)
- Mr. Nilesh Tilak (TA)
- Mr. Vitthal Patil (Compressor)

being appreciated by VP Operations for idea implementation May 2019



SHE and Sustainability Overall Performance - Pune PVBU - RUNNER

SHE and Sustainability Environment Performance - Pune PVBU - WINNER

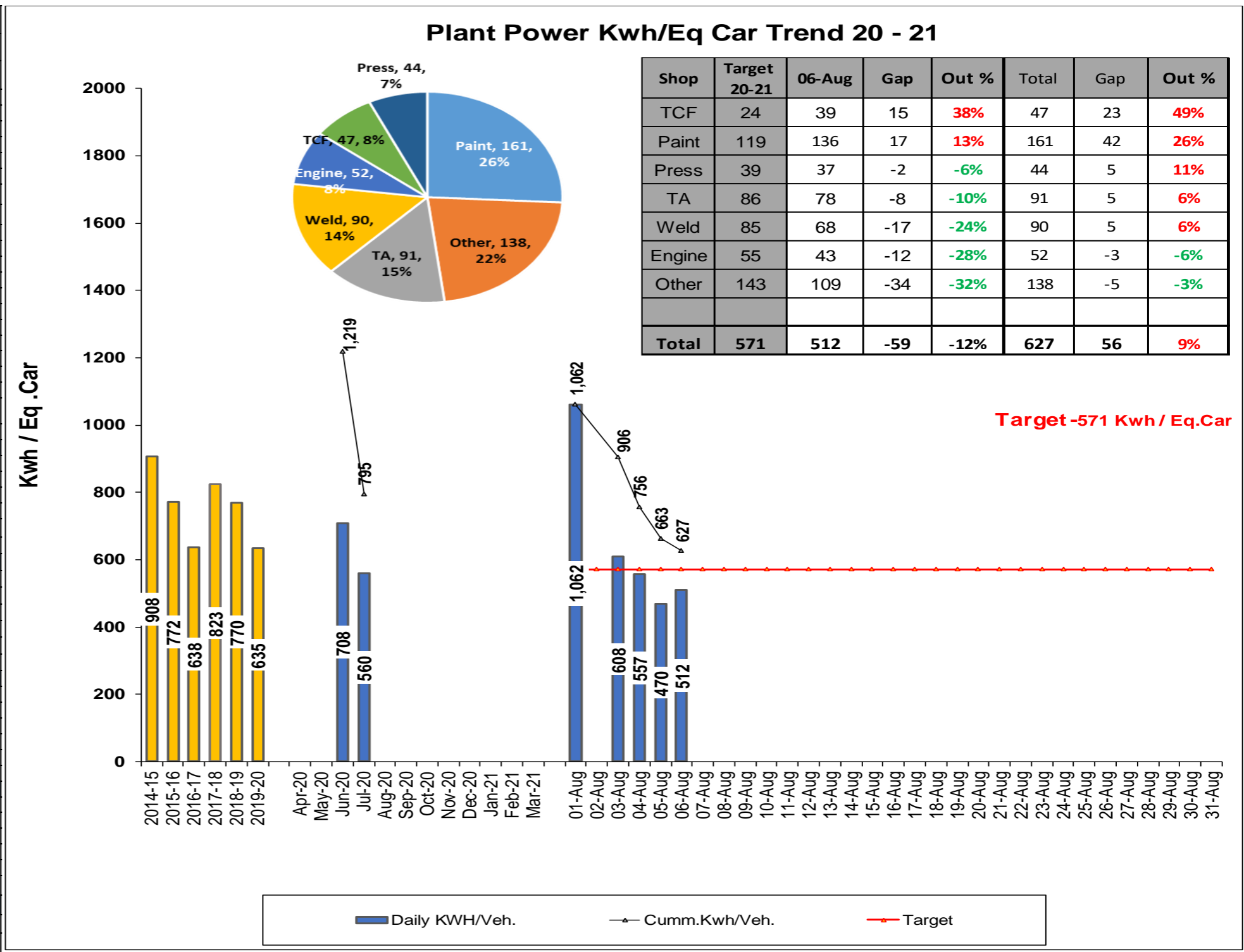


Energy Conservation

Industry

Plant Level Daily Monitoring

DATE	Eq. Prod	CONSUMPTION		
		DAY TOTAL	CONS / VEH	
			MONTH LY	DAILY
2014-15			908	
2015-16			772	
2016-17			638	
2017-18			823	
2018-19			770	
2019-20			635	
Apr-20				
May-20				
Jun-20			708	1219
Jul-20			560	795
Aug-20				
Sep-20				
Oct-20				
Nov-20				
Dec-20				
Jan-21				
Feb-21				
Mar-21				
01-Aug	155	164588	1,062	1062
02-Aug		58491		#N/A
03-Aug	278	169104	608	906
04-Aug	325	181168	557	756
05-Aug	369	173477	470	663
06-Aug	354	181145	512	627
07-Aug				
08-Aug				
09-Aug				#N/A
10-Aug				
11-Aug				
12-Aug				
13-Aug				
14-Aug				
15-Aug				
16-Aug				#N/A
17-Aug				
18-Aug				
19-Aug				
20-Aug				
21-Aug				
22-Aug				
23-Aug				#N/A
24-Aug				
25-Aug				
26-Aug				
27-Aug				
28-Aug				
29-Aug				
30-Aug				#N/A
31-Aug				
Total	1481	927974		



• Daily energy consumption monitoring done on basis of Eq. Production of Vehicle. This data is compared in forms of Specific KWh per Car.

Department wise Power Monitoring

DATE	ENGINE	NEW TCF	OLD TCF	OTHERS	PAINT	PRESS	TRANSAXLE	WELD-LWB	WELD-MAIN	WELD-X1	ERC (Tool Room)	Q5 +X451 WELD PVBU	PVBU TOTAL	5.5%ADD IN PVBU TOTAL
	M1+M2+M7+M8 +M9+M3(35%)	NEW TCF SHOP-CENTRAL KITCHEN (800)	R1	LPG ETP+L.T.+6.6SECI +6.6SECI+ Office Block	P1+P2+P3+RECT 1+RECT2+RECT3 +P4+P5+P6+P7+ P8	N4+N5	M3(65%)+M6+M 10+M4+M5	LWB	N1+N2+N3	N6+N7+N8+N9			PVBU	5.5%ADD IN PVBU TOTAL
W_D Target	12449	0	3257	24125	14350	9518	16870	85	1743	8673	604	4323	95998	101278
W_D AVG AUG-19	14103	2	3690	27329	16256	10782	19111	97	1975	9825	684	4898	108752	114386
N_WD Target	3193	0	764	10145	7707	1346	5747	92	682	3952	434	2501	36027	38009
N_WD AUG-19	3617	0	866	11492	8731	1525	6511	105	772	4477	491	2833	40813	44155
01-Aug-19	14862	0	3580	29545	23080	10480	19176	119	1940	9620	836	7185	120422	127046
02-Aug-19	16939	110	3940	31961	25464	11380	19472	110	1860	10070	749	5725	127780	134808
03-Aug-19	17092	0	3530	30629	22612	9910	20234	54	1640	9540	397	5546	121185	127850
04-Aug-19	5305	0	830	15115	8203	1150	17977	48	1070	3990	347	2871	56906	60036
05-Aug-19	3254	0	1040	15153	7743	2110	6355	44	960	4190	643	2890	44382	46823
06-Aug-19	3249	0	870	14744	6641	3100	3733	46	980	4070	800	2873	41106	43367
07-Aug-19	3211	0	850	14346	7927	2620	3495	110	860	3800	844	2798	40861	43108
08-Aug-19	3117	0	810	10998	7420	2030	2642	110	810	4140	852	2998	35927	37903
09-Aug-19	3104	0	780	11168	7291	1700	2862	90	710	4620	862	2200	35387	37333
10-Aug-19	3349	0	780	13125	7682	1220	7956	34	730	4750	801	3152	43579	45976
11-Aug-19	3355	0	700	10891	8300	1210	7912	13	740	4340	326	3054	40841	43087
12-Aug-19	14596	10	3650	29156	15839	12740	19350	81	1920	9250	813	5035	112440	118624
13-Aug-19	14619	0	3890	26969	11204	12400	19259	90	2880	10130	811	5066	107318	113220
14-Aug-19	14268	0	3570	26737	15049	9080	18357	84	1100	10140	759	4751	103895	109609
15-Aug-19	3585	0	810	10274	7626	1040	4933	130	840	4210	16	3028	36492	38499
16-Aug-19	3654	0	800	12601	8731	2140	7836	170	810	4310	929	3045	45026	47502
17-Aug-19	12928	0	3650	26455	22934	8910	19476	131	2000	9780	354	4739	111357	117482
18-Aug-19	13991	0	3540	23253	11347	8320	18484	103	1640	9710	344	4611	95343	100587
19-Aug-19	14643	0	3680	25000	16225	8800	19649	150	1580	9600	830	4422	104579	110331
20-Aug-19	14968	0	3900	25029	19831	9270	19954	140	1460	10130	871	4334	109887	115931
21-Aug-19	14241	0	4090	25387	16824	8740	18355	140	1470	9800	853	4265	104165	109894
22-Aug-19	14681	0	3900	24673	19332	9360	16989	79	1430	9180	848	4137	104609	110362
23-Aug-19	15363	0	3620	26112	9407	6670	18724	62	1460	9150	806	4042	95416	100664
24-Aug-19	13205	0	3560	25832	16748	8040	18092	73	1410	8160	755	3642	99517	104990
25-Aug-19	3695	0	1010	10468	8330	1150	6693	42	610	5070	400	2412	39880	42073
26-Aug-19														
27-Aug-19														
28-Aug-19														
29-Aug-19														
30-Aug-19														
31-Aug-19														
Total	245274	120	61380	515621	331790	153570	337966	2253	32910	181750	16846	98821	1978301	2087107

- Each Department is tracked against their BOB achieved through RYG status. Weekly review taken by Plant Head

Implementation of ISO 50001 / 14001



CII Awards function we come to know ADDTECH solutions , we have interacted with them and now we have planned 4 such modifications in our Air supply plants, this will give us substantial energy savings.

Before

After

Old blower

ASU Area After Blower Removal

New EC fan Suction Side

New EC fan discharge Side



Other than above we have reduced our compressed air leakage from 13.6 % to 8.67 % last year with the feedback from CII judges and our target is to reach to industry bench mark in coming year,

Journey towards Energy Efficiency Excellence



Leadership Vision, Policy and Plant Specific Promise

Safety & Health Policy

We are committed to ensuring the safety of our employees, contractors and visitors. Safety is an influential role in upgrading our business and partners.

Our business conduct is in accordance with the safety standards of its operations and structure.

SUSTAINABILITY POLICY

OUR PHILOSOPHY

Affirmative Action Policy

Tata Motors believes in social equality and fairness. The company adheres to the principles of equality irrespective of caste, whether it is within the organisation. The company is also committed to initiatives to ensure an economically disadvantaged community.

Environmental Procurement Policy

Tata Motors shall adopt a holistic approach to the procurement process by ...

Climate Change Policy

Tata Motors is committed to ...

- Leading the automobile sector in reducing House Gas emissions from its products by adopting eco friendly technologies.
- Developing products powered by renewable energy, higher recyclable and recoverable materials.
- Promoting fuel blends sourced from renewable energy.
- Maximizing use of renewable energy.

Environmental Policy

Tata Motors reaffirms its commitment to minimise the adverse impact of its products, operations and services on the environment.

Towards this end, it shall strive to:

- Establish sound environmental objectives and targets and a process of reviewing them.
- Comply with all applicable legal/regulatory and other Environmental requirements.
- Reduce the emission levels of vehicles in full compliance of the regulatory norms and proactively work with the Industry, Government, other related industries and agencies to bring in international best practices.
- Use of environmentally sustainable technologies and practices for prevention of pollution and the continual improvement in environmental performance.
- Conserve natural resources and energy by minimizing their consumption and wastage.
- Minimise waste generation, enhance recovery and recycling of material and develop Eco-friendly waste disposal practices.
- Building awareness of our work force, customers and vendors on Environment issues.

This policy has been communicated to all our employees and shall be made available to the public/stakeholders on request.

VISION

By FY 2024, we will become the most aspirational Indian auto brand, consistently winning by

- delivering superior financial returns
- driving sustainable mobility solutions
- exceeding customer expectations, and
- creating a highly engaged work force

Pyramid of Policy

The foundation of connecting and cascading the top-level strategies to the individual targets through the performance.

MISSION: We innovate mobility solutions with passion to enhance the quality of life of communities.

VALUES: Integrity • Teamwork • Accountability • Customer Centricity

VISION: By FY2024, we will become the most aspirational Indian auto brand, consistently winning by

OBJECTIVES: BSC, PV, CV and EV Strategic Initiatives

STRATEGIC GAME PLAN: Loop

Tata Motors Leadership has committed to intergrate environmental, social and ethical principles in its business and innovate sustainable mobility solutions with passion to enhance quality of life of communities.

Q & A

Any Questions ?