



RANE BRAKE LINING LTD – PUDUCHERRY

Welcome All Judges And Participants

CII National Award for Excellence in Energy Management 2023



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RANE BRAKE LINING LTD – PUDUCHERRY

Sep 13 - 15, 2023

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RBL Vision and Roadmap

RBL Vision

“To establish global presence and enhance domestic leadership by providing eco-friendly friction solutions”

RBL Milestones



1.1.Rane Brake Lining Limited - Plant Profile



RBL Plant 3 - Puducherry



Started in 1997.
Spread area - 21.27 Acres
Built up area - 1.5 Acres



2W Disc pad - 28.1Lacs/month
PC Disc pad - 3.8Lacs/month
CV Disc pad - 0.12Lacs/month



ISO 9001:2015 , IATF 16949 :2016
ISO 14001:2015 , OSHAS 45001:2018
R90 certification , ISO 27001:2013



Asbestos free disc pads
32% of Energy – Renewable sources
25% Plant area green belt development
1270 Tree saplings Planted



Deming award



Deming Grand prize

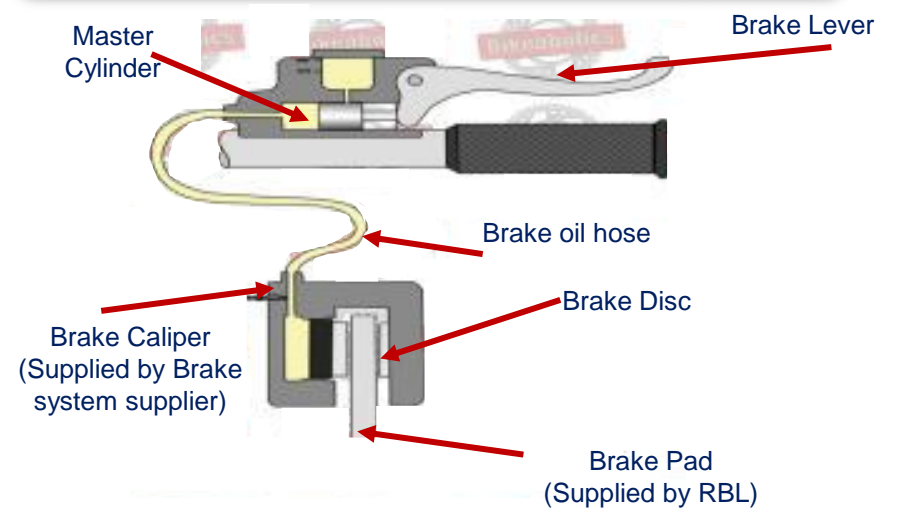


1.2 Products and Applications

Products

		
Two Wheeler disc pad	Passenger Car disc pad	Commercial Vehicle disc pad

TW Brake Pad application-Brake Assembly



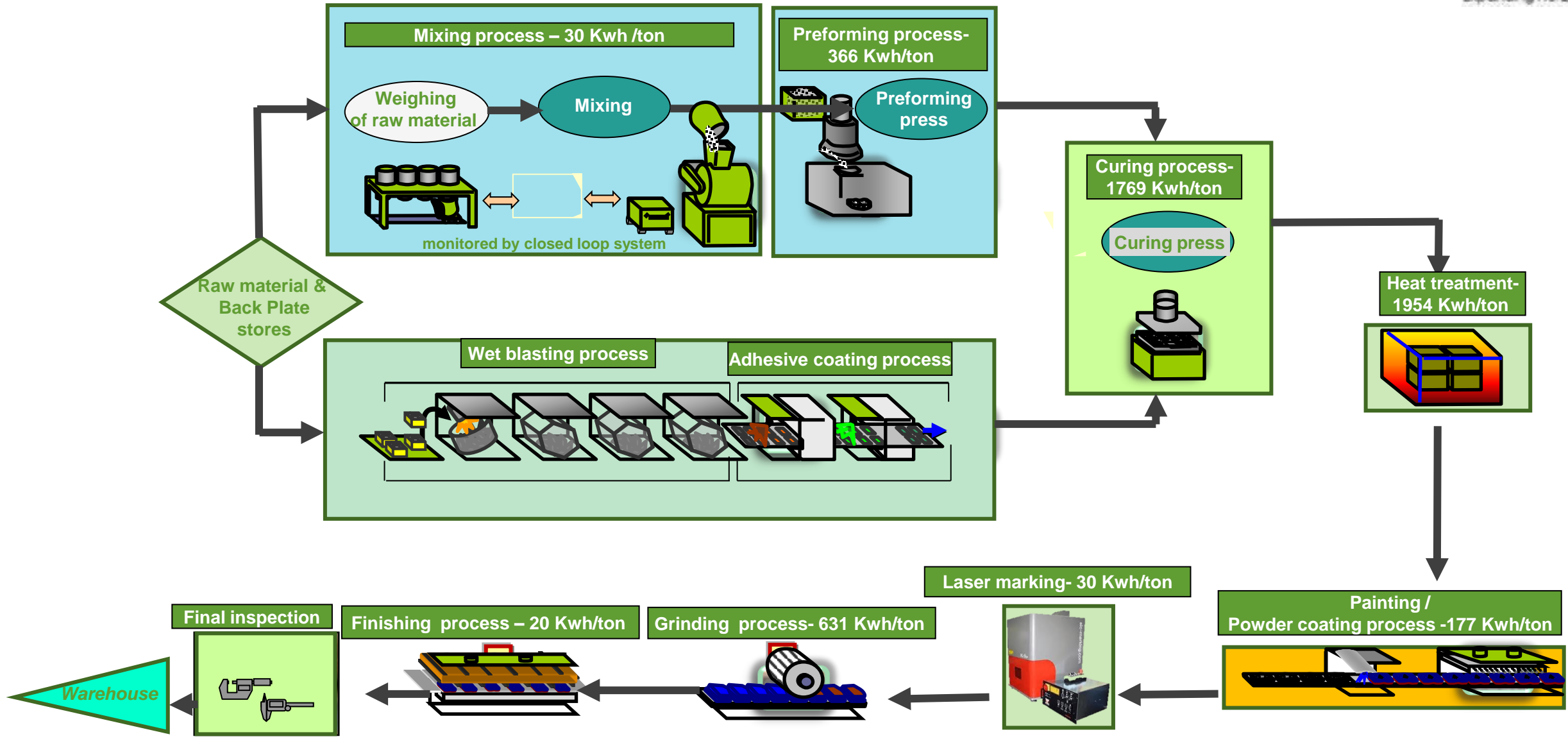
Customers

								
Brembo brakes	Endurance	JJUAN	TVS Motors	Hitachi Astemo	BIPL	MSIL	Mahindra	Juratek

Vehicle models

												
KTM	Bajaj	Piaggio	Yamaha	Suzuki	Royal Enfield	Aprilia	BMW	TVS apache	Maruti Alto	Tata Micro	Trucks	Trucks

2.1. Disc pad manufacturing process flow



Disc pad manufacturing process are high energy intensive

2.3. Technology strength comparing with Competitors

Process Technology

Wet blasting Process



- › Make : Japan .
- › Wet blasting and phosphate coating technology
- › Only friction material company in India using wet blasting technology

Curing press



- › Make : India .
- › JIS standard Grade A press used for curing operation
- › Design developed at Nisshinbo and press indigenously developed
- › Double daylight -high productivity

Laser Marking



- › Make : India .
- › High precision permanent marking
- › Non impact marking with consistent depth.
- › Good field traceability

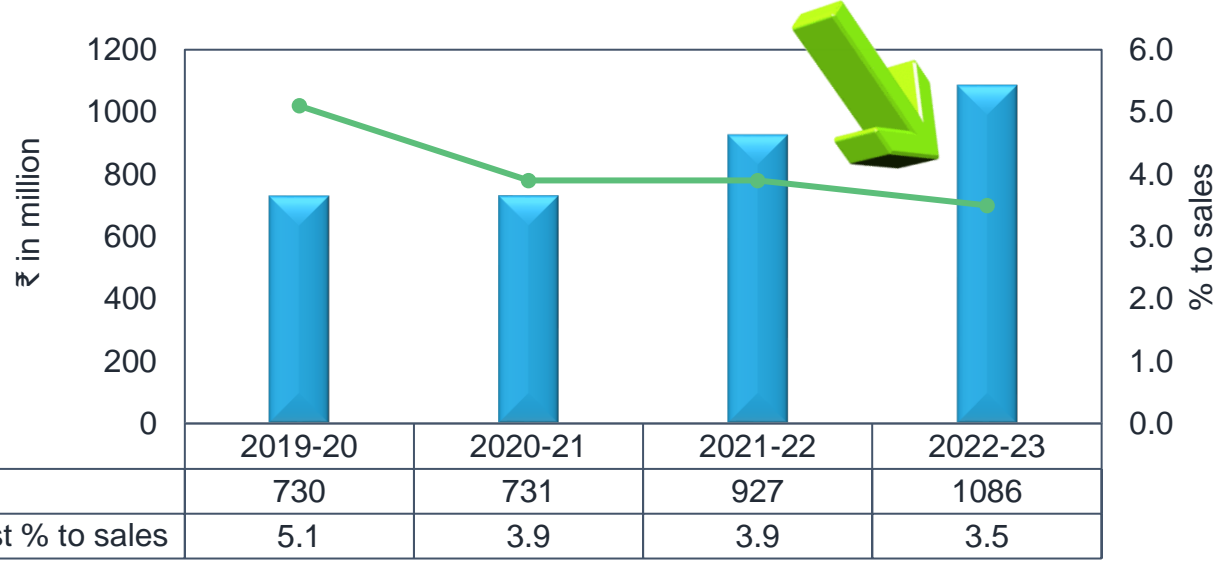
Vision and Dimension



- › Make : India .
- › Vision – Keyence with Optical character recognition
- › Dimension – Gocator sensor - Laser triangulation technology
- › Only friction company in India using Gocator for dimension

3.1. Specific Energy Consumption in last 3 years

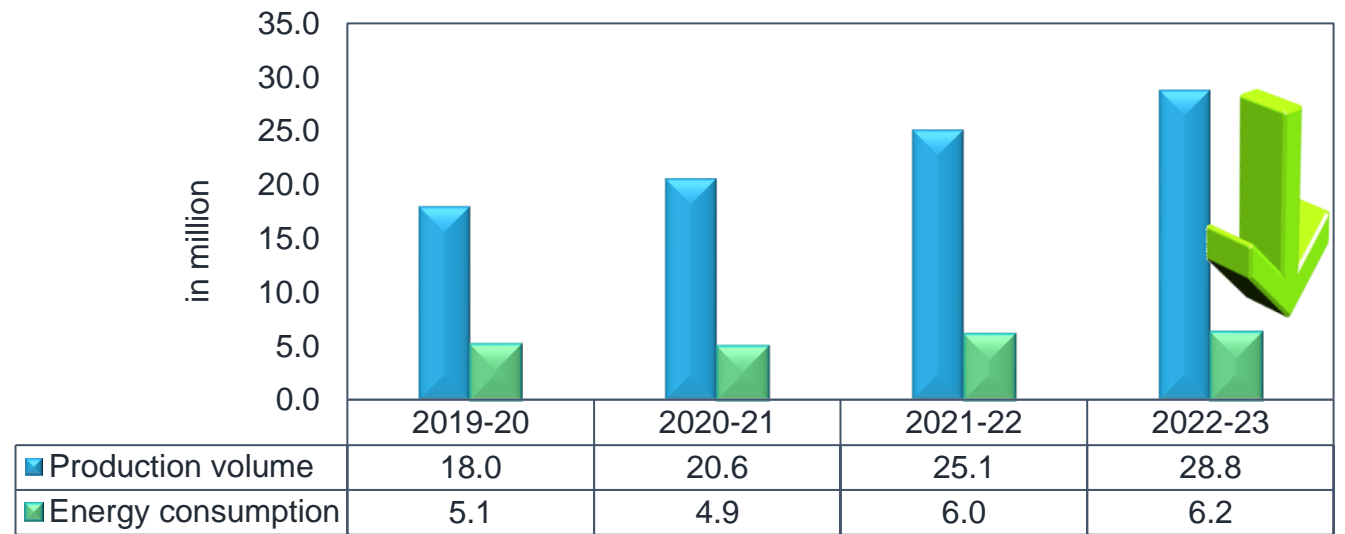
Turnover vs power cost data for last 3 years



Turnover increased 49 % and Power cost reduced 32%

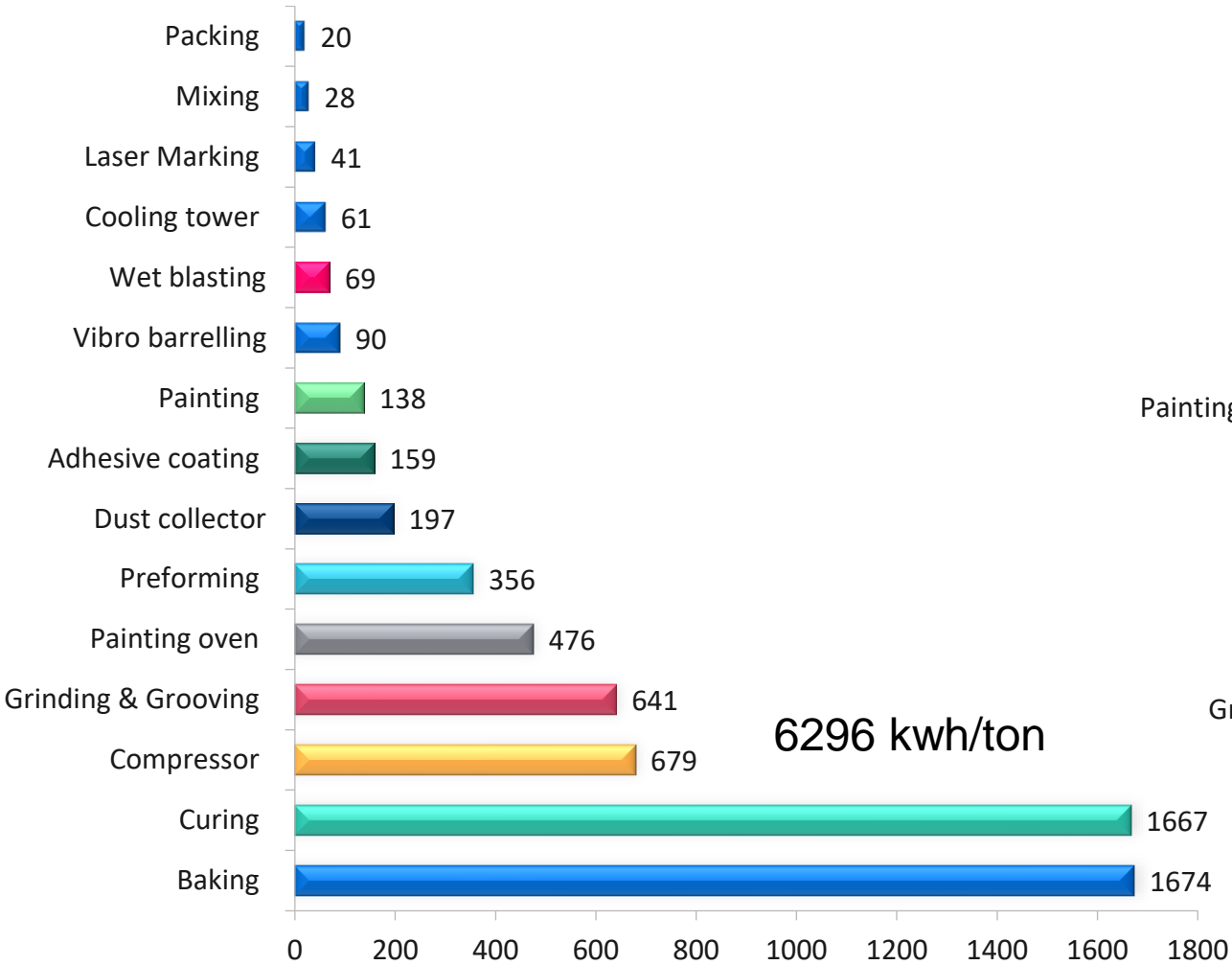
Production volume increased 60% and Energy consumption reduced 38%

Production vs energy consumption data for last 3 years

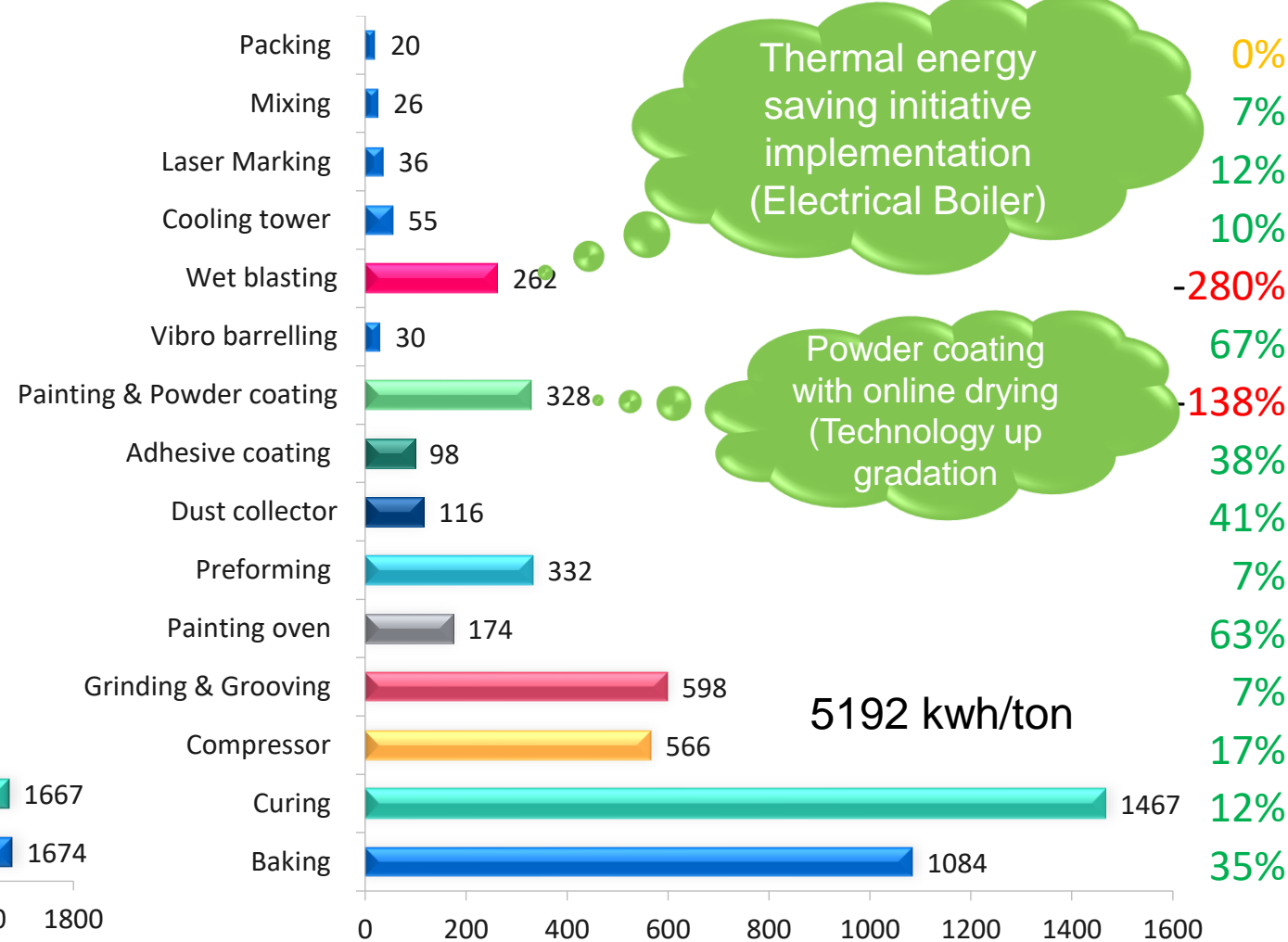


3.2. Specific Energy consumption Process wise 2021-2023

Process wise Specific energy consumption 2019-20



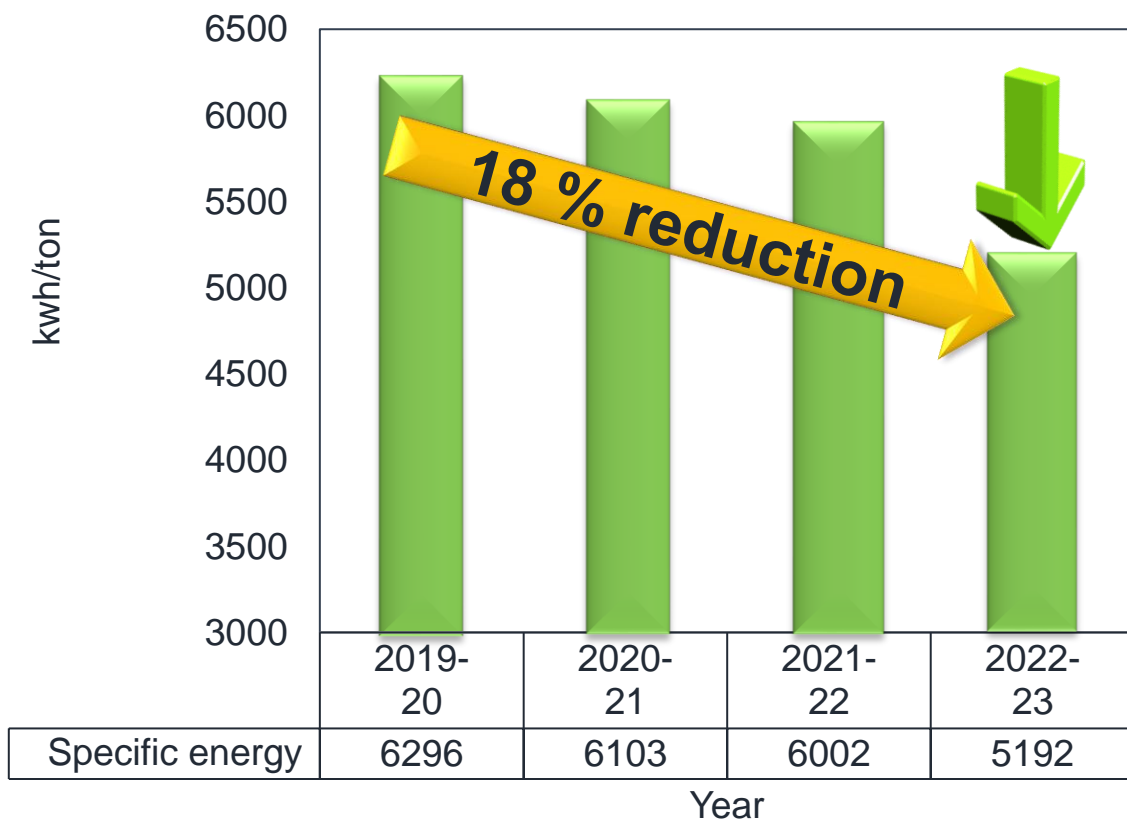
Process wise Specific energy consumption 2022-23



18 % Specific energy consumption reduction (6296 – 5192 kwh/ton)

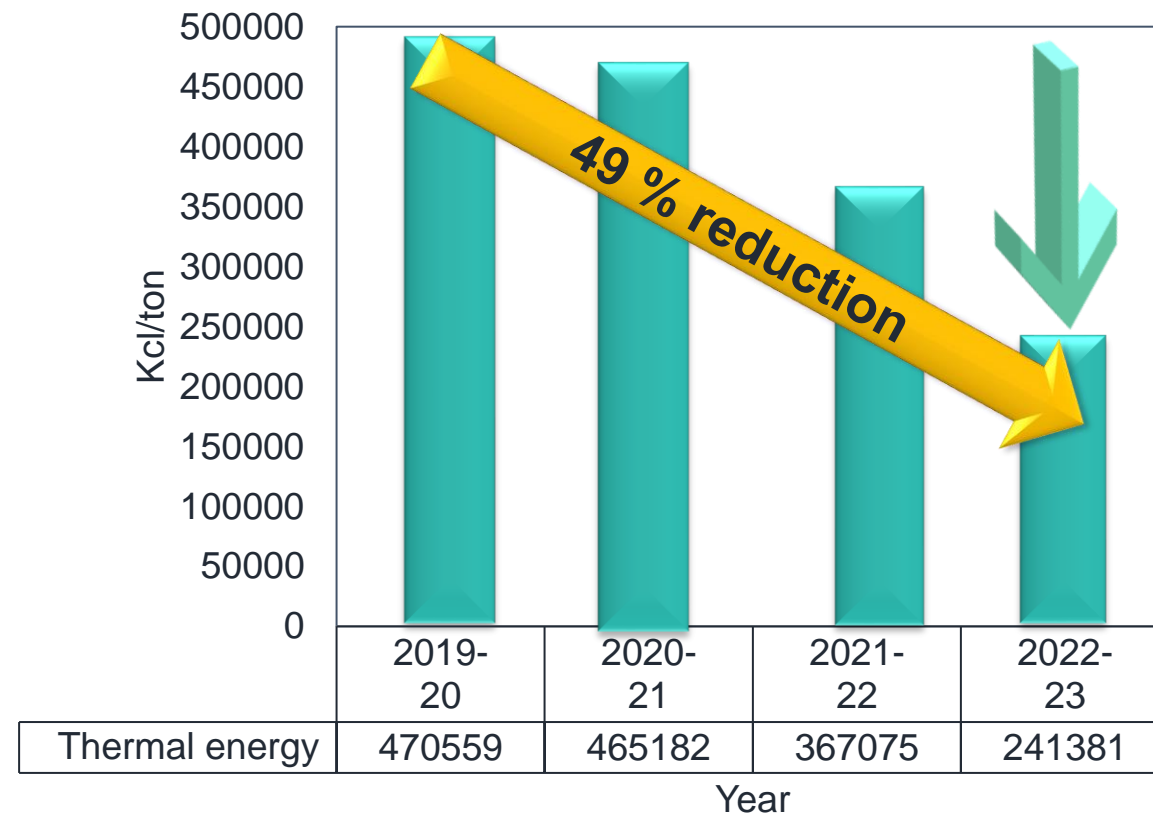
3.3. Specific Energy Consumption in last 3 years

Specific electrical energy consumption



68 energy conservation projects implemented

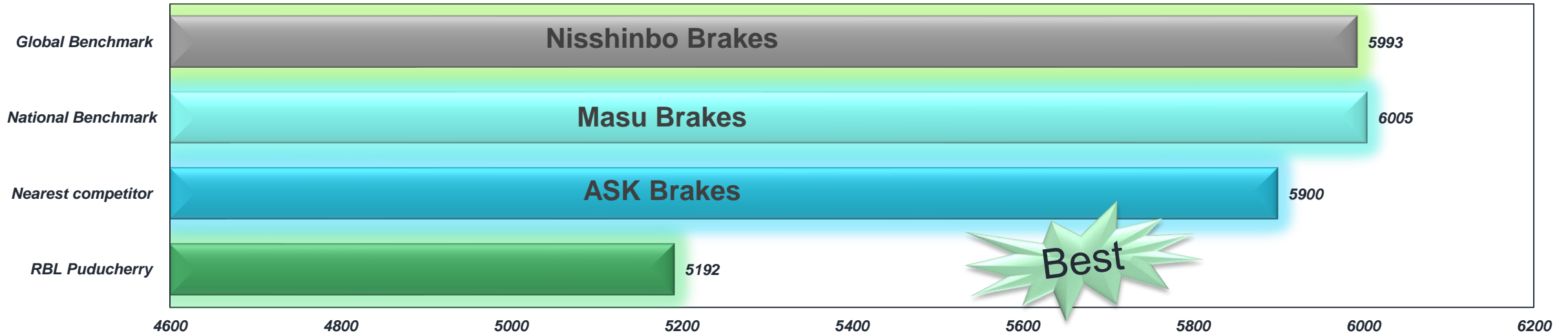
Specific thermal energy consumption



6 Thermal energy conservation projects implemented

4.1. Information on Competitors, National & Global benchmark

SEC in kwh/ton



SEC in kwh/ton	RBL Puducherry	Nearest competitor	National Benchmark	Global Benchmark
	5192	5900	6005	5993

Sustainable benchmark Success Story

- Vision on Energy management system to Continuously improve and efficient use of energy and commitment to environment
- Energy cost focus on conserve energy, waste reduction, alternate technology, Fixed cost reduction & renewable energy usage
- YOY target setting done based on best of best in previous year
- Energy Sustenance Tracking done using IOT based Energy Management system

Target for 2023-24 is 4800 KWh/Ton

4.2 Road map to sustain benchmark



- Steam diesel boiler replaced with electrical boiler
- Baking Oven trolley Conversion A to D (49 nos)
- Auto cleaning compressed air dryer replaced with electrical blower
- Preform press motor size optimization through hydraulic circuit modification
- Wet blasting wet scrubber interlock
- Online adhesive idle interlock (Heater off)
- Compressor VFD installation
- Diesel forklift converted into batteries operated
- IE3 motors instead of old / inefficient motors
- Polypropylene transparent roof sheet
- Turbo Ventilator in store

- 0.4 MW Solar plant expansion
- Grinding Machines combined
- Hydraulic Power pack
- IE4 Motor conversion
- Oven Exhaust heat recovery
- Solar Diesel Hybrid System
- VFD for DDL Curing & baking process
- Compressor heat recovery system
- Baking cycle time reduction
- Curing machine tonnage optimization
- Alternate heating and hydraulic circuit for reducing energy 50% in cure press

- VFD for curing machine main motor in Curing machines
- Smart solution for office and conference hall lighting
- Steam heating for WB equipment in place of Resistive heaters
- Thyristor technology for baking oven heating
- Use Boiler waste heat for Auto cleaning water heating
- Safety door replaced with Safety sensor
- 1.17 MW Solar plant

- Induction heating for Adhesive coating
- LED lighting system for high bay applications.
- VFD for curing machine main motor in Preforming machine
- Smart energy meter implemented
- Wet blasting Boiler Diesel consumption reduction through Waste heat recovery

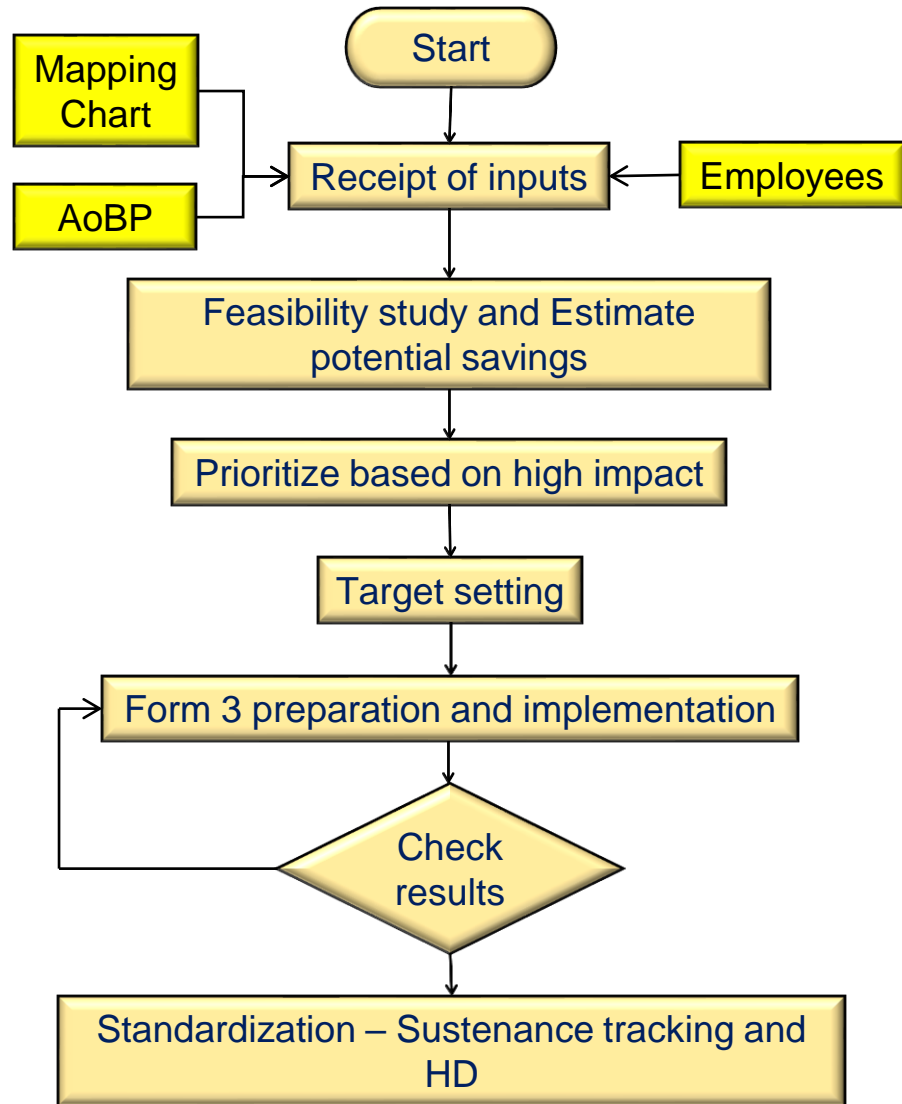
4.3 List of Major Encon project planned in FY 2023-24

S.No	Project Description	Kwh saving million kwh	Saving million INR
1	Elimination of Vibro drying oven by Dry vibro process	0.1	0.5
2	PCDP Baking trolley modification (16 tary to 22 tray) HD planned	0.1	0.5
3	Paint Drying trolley modification (single chamber to 4 chamber) HD planned	0.1	0.6
4	Harmonics filter implementation	0.1	0.4
5	VFD implementation in DDL,SDL,CVDP & LVCP machines	0.1	0.9
6	Preforming machine motor HP optimization from 15 HP to 5 HP	0.0	0.0
7	Solar-Diesel Genset Hybrid System	83Millon kcal	0.9
8	Compressor heat recovery system	0.1	0.9
9	Electrical hot water generator for Auto cleaning and mould cleaning bath	0.0	0.1
10	Solar water heater for canteen	0.0	0.1
11	VFD implementation in Baking oven blower	0.0	0.2
12	Conventional AC replaced with 5 star Energy saver Air conditioner (8 nos)	0.0	0.0
13	Baking oven process cycle time reduction	0.3	2.8
14	Curing process tonnage optimization	0.1	0.8

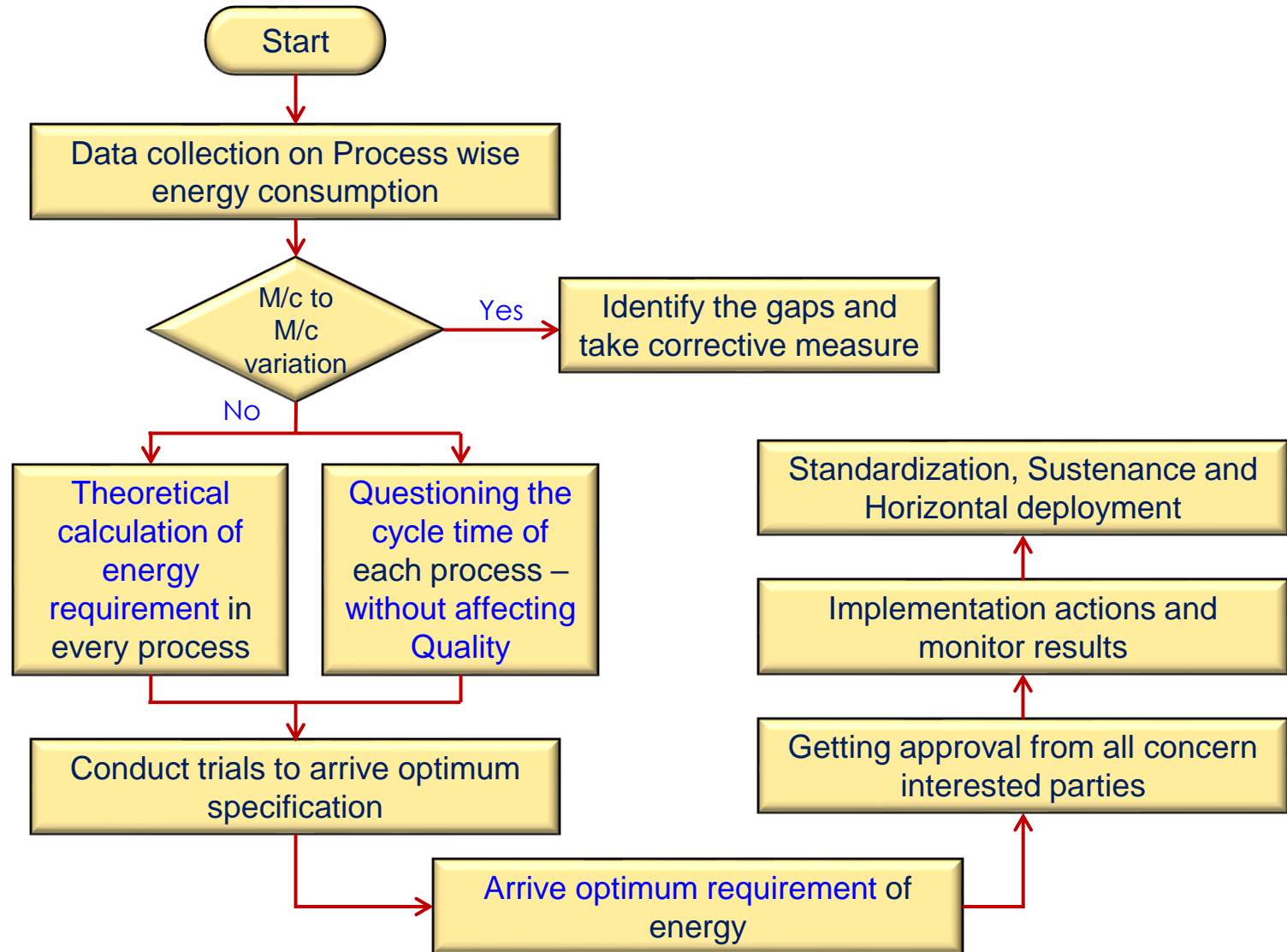
2023-24 : Energy saving projects identified and potential cost saving of ₹ 8.2 Million

5. Approach on Energy saving initiatives

Energy saving initiatives (ESI) - approach



Process optimization projects (POP) - approach



5. Energy Saving projects implemented in last three years

	No of Energy saving projects	Investments (₹ Million)	Electrical savings (Million kWh)	Thermal savings (Million kcl)	Total Savings (₹ Million)	Payback period (in months)
FY 2020-21	19	1.1	0.29	84.76	1.8	6.9
FY 2021-22	18	0.5	0.23	15.71	2.3	2.6
FY 2022-23	37	1.9	0.59	104.70	5.8	4.0

2020-23 : 74 Energy saving projects implemented and cost saving of ₹10 Million achieved in the last 3 years

5.1 List of Major Encon project implemented in FY 2020-21

S.No	Name of energy saving projects	Investments (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million kcl)	Total Savings (INR Million)	Payback period (in months)
1	Waste heat recovery for Diesel boiler	0.02	0.00	84.70	0.87	0.21
2	VFD for Preform machine Main Hydraulic Motor As per HD plan	0.50	0.03		0.19	32.39
3	Energy consumption reduction through implementation of Thyristor control	0.21	0.02		0.16	16.05
4	For DDL Curing Ejection Motor Sequence modification	0.00	0.01		0.08	0.00
5	For Grinding Mc Motor ideal off, DPO713,714,715,718,721,722	0.00	0.01		0.06	0.00
6	For Grinding Mc Motor Sequence modification DPO715	0.00	0.01		0.06	0.00
7	For SDL Curing idle off trough VFD	0.10	0.01		0.05	22.79
8	LED Lighting for Shop floors - 150nos	0.28	0.01		0.04	75.60
	Reduced Power System Losses through Power factor improvement					
15	Vibro barrelling auto cycle off timer provided	0.00	0.00		0.01	2.05
16	Vibro barrelling water consumption reduction	0.00	0.00		0.01	2.05
17	Tube light 40W(Including choke 55W) to led 18W replacement	0.02	0.00		0.01	17.58
18	Wet blasting Water consumption optimization	0.01	0.00		0.01	6.15
19	Cooling tower fan speed control thorough vfd	0.01	0.00		0.01	7.00

2020-21 : 19 Energy saving projects implemented and cost saved ₹1.8 million with investment of ₹1.1million

5.2 List of Major Encon project implemented in FY 2021-22

S.No	Name of energy saving projects	Investments (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million kcl)	Total Savings (INR Million)	Payback period (in months)
1	For DDL Curing idle off trough VFD	0.150	0.053		0.343	5.2
2	For DDL Curing speed reduction trough VFD	0.150	0.014		0.088	20.4
3	Oven trolley interlock	0.005	0.013		0.083	2.0
4	Air leak audit to reduce compressor loading time	0.003	0.012		0.075	1.0
5	Cycle time reaction trough Safety door replaced with Safety sensor (DPO507,508,511,517,518)	0.065	0.010		0.062	12.5
6	Paranol air on/off trough PLC sequence TWDP SDL line	0.010	0.009		0.059	2.0
7	VFD For Grinding Machine Motor Sequence	0.150	0.008		0.055	32.0
8	Conduct Thermography energy audit implement activities	0.019	0.008		0.051	4.5
9	Curing machines Pressure drop reduction	0.050				
			0.006		0.036	16.6
14	Thermal insulation for Boiler steam line	0.025		15.71	0.031	9.6
15	Cycle time reduction trough PLC Sequence for DDL	0.000	0.004		0.025	0
16	Online adhesive booth interlock	0.000	0.003		0.018	0
17	Turn man Cooler fans off when not needed using Motion Sensor	0.000	0.000		0.002	0
18	Auto dampers with VFD for mixing dust collector	0.008	0.000		0.000	0

2021-22 : 18 Energy saving projects implemented and cost saved ₹ 2.3 million with investment of ₹0.5million

5.3 List of Major Encon project implemented in FY 2022-23

S.No	Name of energy saving projects	Investments (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million Kcl)	Total Savings (INR Million)	Payback period (in months)
1	Wet blasting steam diesel boiler replaced with electrical boiler	0.6		292	1.96	3.06
2	Compressor VFD installation	0.3	0.104		0.68	5.33
3	Compressor optimum utilisation trough Air line layout modification (Ring main line & reservoir)	0.05	0.052		0.34	0
4	Adhesive drying oven elimination by utilization of online adhesive drying process	0	0.043		0.28	0
5	RO Plant to wet blasting Pump running time optimization	0.01	0.041		0.27	0.54
6	DDL Curing idle off trough VFD (6 machines)	0.17	0.041		0.27	7.65
7	Pneumatic material lifter replaced with Mini electric rope hoist	0.01	0.038		0.25	0.58
8	Oven trolley Conversion B&C to D (53 nos)	0.02	0.004		0.22	1.10
30	DPO405&407 preform press motor size optimization trough hydraulic circuit modification	0.01	0.027		0.18	0.54
31	Baking oven speed optimization through VFD (3 machines)	0.02	0.026		0.17	1.54
32	DPO719 & 712 Grinding Machines combined Hydraulic Power pack	0.04	0.022		0.14	3.36
33	IE4 Motor conversion for Preform Press (453,454,455,456,457,460,461)	0.03	0.018		0.12	2.56
34	Curing Machine heater on off through SSR	0	0.012		0.08	0
35	Conduct air leak audit and points closure	0.04	0.012		0.08	6.15
36	Power coating machine drying tunnel interlock	0	0.01		0.07	0
37	Paint drying oven trolley capacity increased through design change	0.02	0.011		0.07	2.9

2022-23 : 37 Energy saving projects implemented and cost saved ₹ 5.8 million with investment of ₹1.9million

5.4 Energy saving Initiatives last 3 years (2020-23)

Speed Optimization



- Curing
- Preforming
- Grinding
- Baking oven
- Dust collector
- Compressor speed optimization through Variable frequency drive (VFD)
- Total 66 VFD installed

Heat Optimization



- Thermography Analysis
- Waste heat recovery
- Diesel boiler replaced with electrical boiler
- Thyristor controller for baking and curing process (14 thyristor installed)

Load Optimization



- Delta to Star Conversion
- Motor capacity reduction and elimination
- Wet blasting capacity increased 18 kg to 25 kg
- Compressed air to electrical blower drying and electrical hoist

Efficiency improvement



- Air leak audit
- Temperature monitoring
- Pressure monitoring
- Performance monitoring
- Baking oven trolley modification
- IE 3 Motor conversion
- Online OEE monitoring

Lighting Optimization



- LED lighting (150 Lights installed)
- Transparent Polycarbonate Sheet
- Auto lighting off
- BLDC fan -18 nos
- Usage of energy efficient AC - 12 nos

Effect

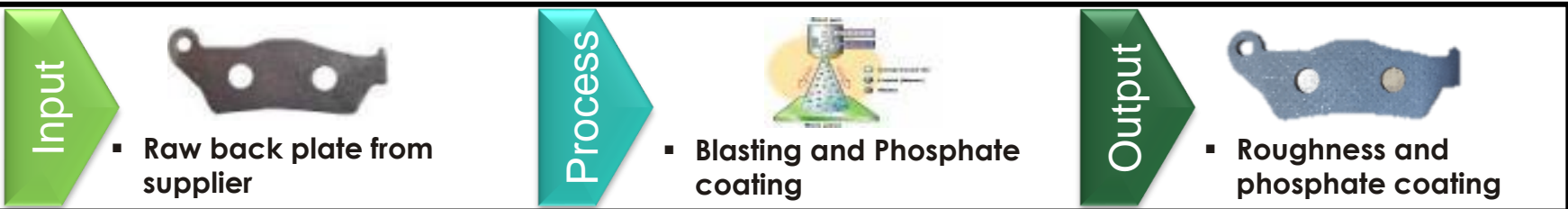
- 74 Energy saving projects implemented
- 1.11 Million kwh saved
- 42KL Diesel saved
- 0.23 million Kcal/ton Specific thermal Energy saved
- 1100 Kwh/ton Specific Energy saved
- Cost saving of ₹10 Million
- 265TCo2 Emission cut down

6. Innovative Projects implemented

6.1 Thermal energy reduction - Wet blasting Process

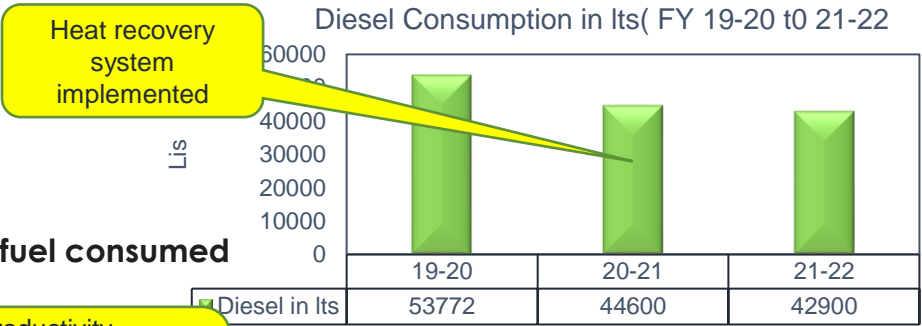
Purpose of the process

- **Blasting :** Removing of Dust, Dirt and oil from the back plate and create roughness
- **Phosphate coating :** Coating of phosphate over the blasted back plates.



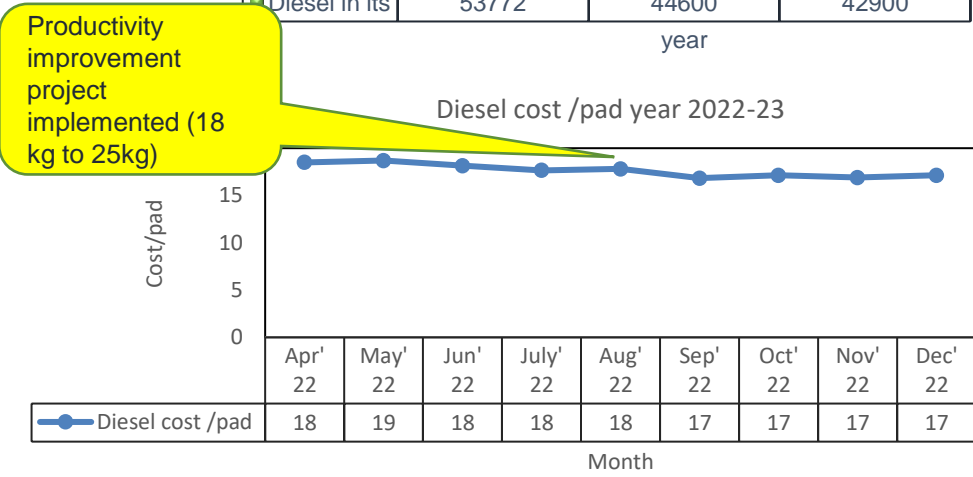
Issue:

- High Diesel consumption
- Diesel boilers are very energy-intensive
- Steep increase in fuel price
- Boiler produce 2.7 kg of CO2 per litre of diesel fuel consumed
- Directly impacts the company profit



Existing :

- Diesel fired boiler capacity 300kg/hr
- Used for water heating and drying
- Process temperature 85 ± 10 °
- Operating Pressure 7kg/cm2 bar
- Existing steam consumption is 150 Kgs/cm2



6.1 Thermal energy reduction - Wet blasting Process

Purpose of the process

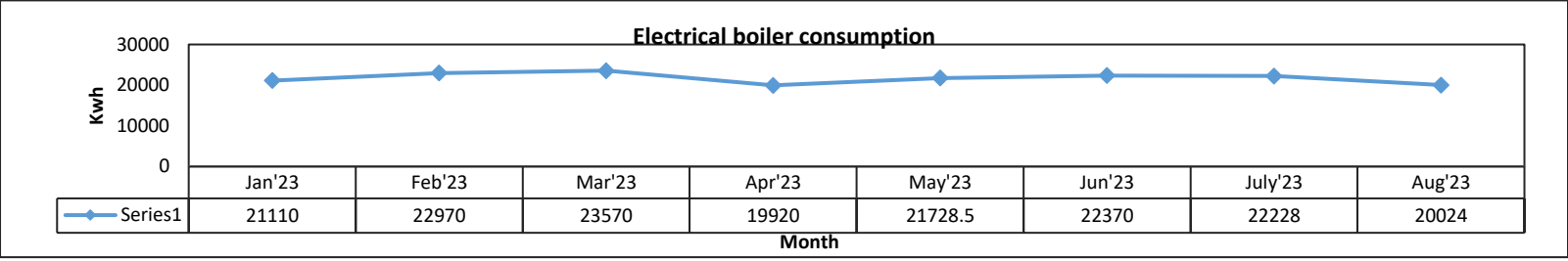
- **Blasting** : Removing of Dust, Dirt and oil from the back plate and create roughness
- **Phosphate coating** : Coating of phosphate over the blasted back plates.

Wet blasting Process



Action :

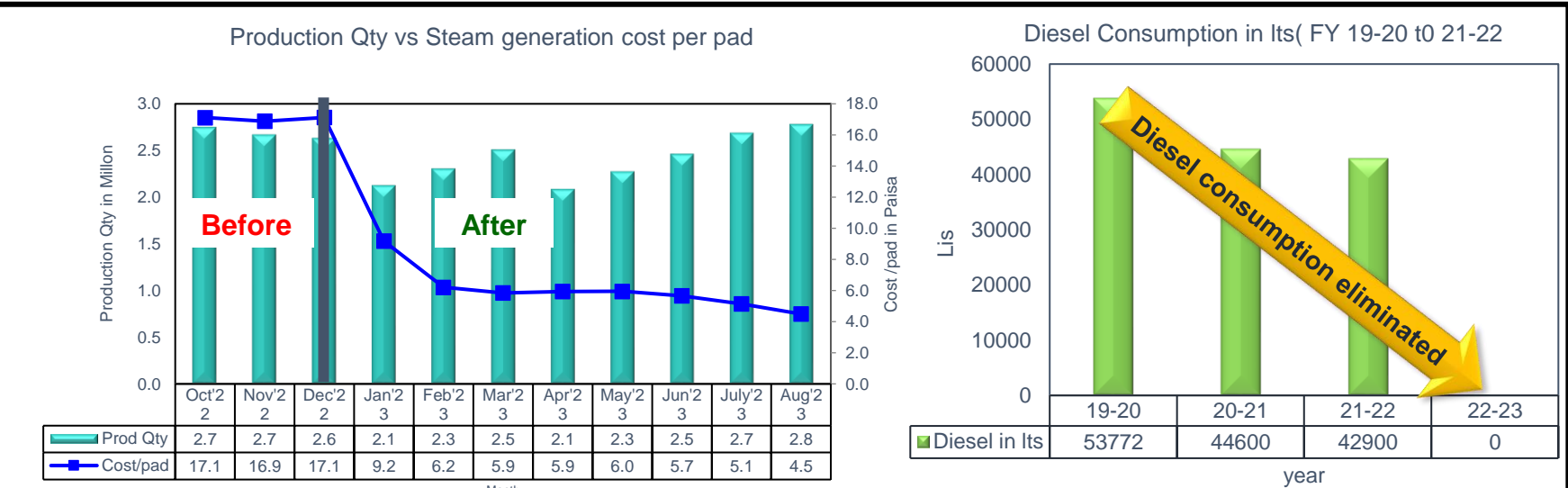
- Calculation of Electrical Boiler Equivalent
- Total Heat Generated Kcal/hr = Boiler Capacity Kg/cm² X Enthalpy of steam Kg/cm² = 2,55,000 kcal/hr
- 850 Kcal/ hr Heat generated by Electrical Power (1 KW = 850 Kcal/hr)
- Calculation of Electrical Boiler Equivalent = $\frac{\text{Total Heat Generated Kcal/hr (2,55,000)}}{\text{Kcal/ hr Heat generated by Electrical Power (850)}} = 190.5 \text{ KW/hr}$
- Existing steam consumption is 150 Kgs/cm²
- Required equivalent electrical steam generator capacity = $150 \times 540 / 850 = 95 \text{ kw/hr}$
- Diesel Boiler (300 kg/hr) converted in to electric Steam Generator (100kw/hr)
- Energy Consumed – 850 kwh/day
- Electrical energy cost/month – Rs 1.37 Lacs
- Total Diesel consumption cost /month – 4600Lts *89 = Rs 4.09 Lacs
- Total Savings per month = Rs2..72 Lacs.



6.1 Thermal energy reduction - Wet blasting Process

Purpose of the process

- **Blasting** : Removing of Dust, Dirt and oil from the back plate and create roughness
- **Phosphate coating** : Coating of phosphate over the blasted back plates.



Result :

- Steam generation cost per pad reduced ₹18 paisa to ₹6 paisa
- Specific thermal energy consumption reduced 4,70,559 kcal/ ton to Zero
- Diesel consumption reduced 53KL to Zero
- Total cost to be saved ₹32.64 lacs/Annum
- Eliminate Thermal energy consumption (Diesel consumption)
- Environmentally friendly and pollution free.
- No fuel Storage requirement.
- 149 Ton Co2 emission cut down

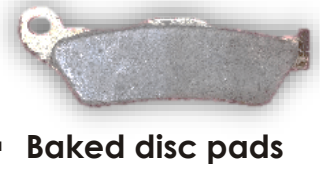


6.2. Baking Energy optimization :

Purpose of the process

- Complete the Polymerization process at designed period of time and temperature

Baking Process

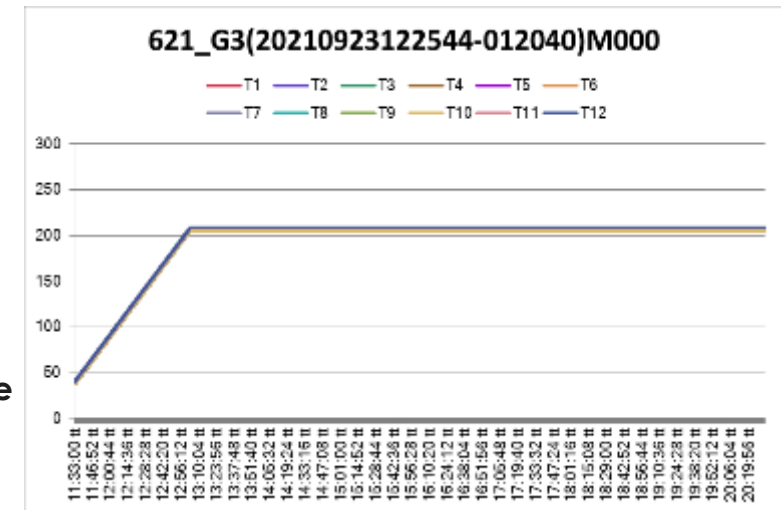
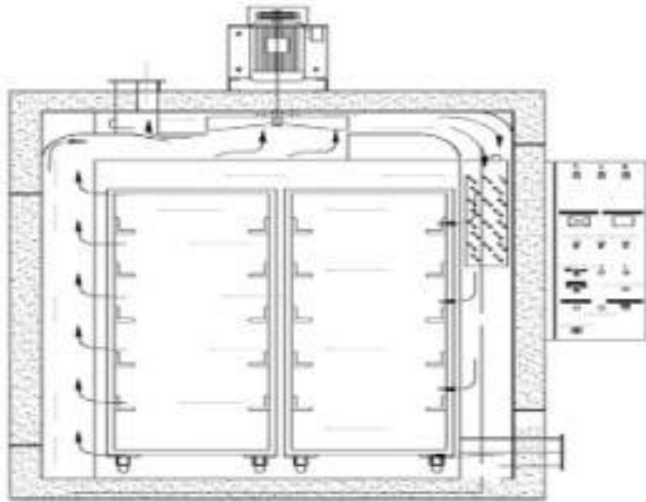


Background :

- Oven process contributes to 32 % of plant energy consumption
- Baking comprises of Heating load and a circulation fan (inductive load)
- Nearly 14 ovens available for baking process with an average consumption of 1.45Lac Kwh per month
- Process conditions :
- Temperature 205 + 7°C
- 90 mins for ramping
- 540 mins for soaking

Observation :

- Temperature is maintaining as per the specification
- Blower motor 15Hp is continuously running to maintain the uniform temperature
- Heating load 32 kw



6.2. Baking Energy optimization :

Purpose of the process

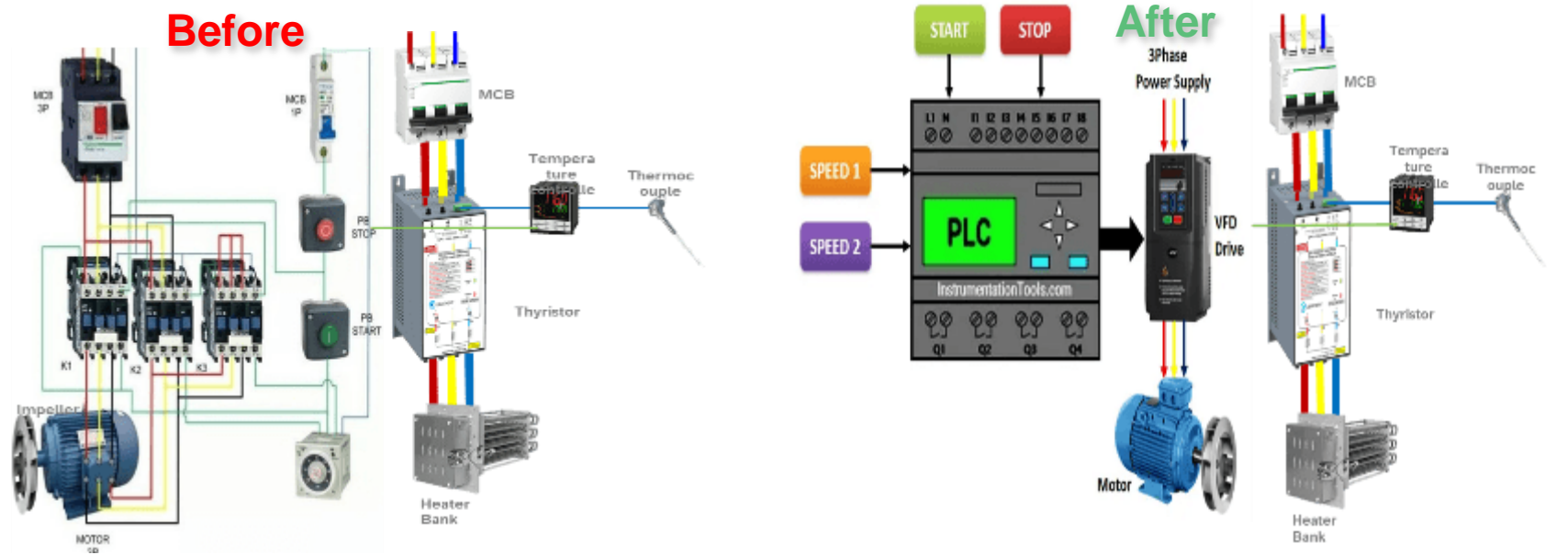
- Complete the Polymerization process at designed period of time and temperature



Description	Energy consumption in Kwh			Net saving from Motor
	Heater	Motor	Total	
Single speed (Before)	68.13	62.12	130.12	22% per oven per batch 1228 kwh /month/machine
Dual Speed (After)	64.70	40.90	105.3	
Saving	(3.43)	21.22	25.65	

Action :

- Reduce the blower speed during soaking period (as the required temperature has reached during ramping) with use of VFD and PLC logic



Result:

- Implementation and Horizontal deployment of the project for 14 baking ovens resulted in energy saving of 1.89 Lac Kwh per annum (₹26.5Lacs per annum) .
- 34 Ton Co2 emission reduced



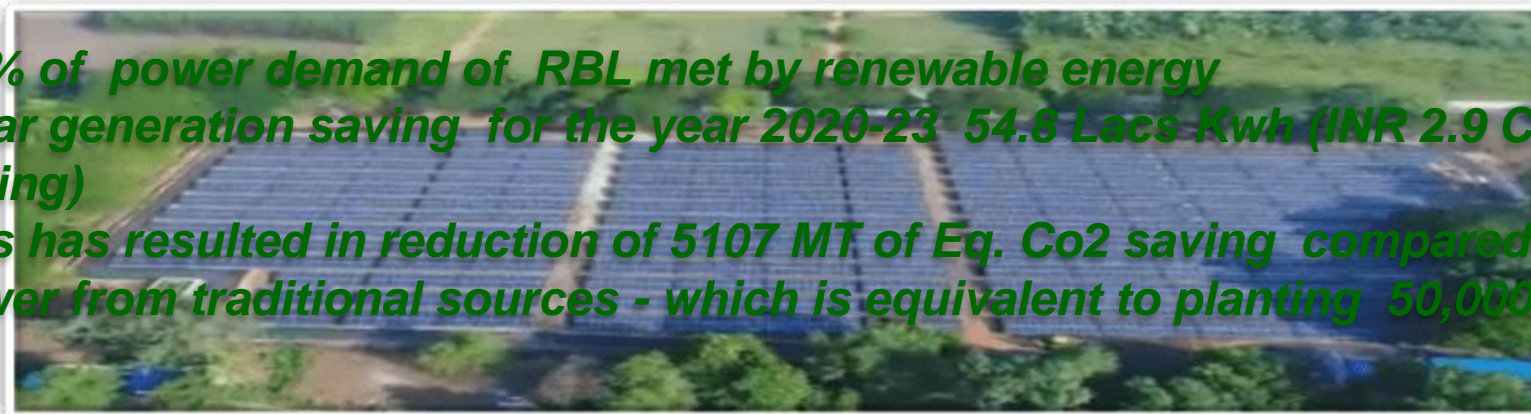
7.Utilisation of Renewable Energy sources

Renewable energy generation, utilisation and % of Overall Energy consumption – Onsite

Year	Technology	Installed Capacity (MW)	Consumption (Million KWh)	% of overall electrical consumption
<i>FY 2020-21</i>	<i>Solar</i>	<i>1.17</i>	<i>1.82</i>	<i>37%</i>
<i>FY 2021-22</i>	<i>Solar</i>	<i>1.17</i>	<i>1.84</i>	<i>31%</i>
<i>FY 2022-23</i>	<i>Solar</i>	<i>1.17</i>	<i>1.82</i>	<i>29%</i>



- **32 % of power demand of RBL met by renewable energy**
- **Solar generation saving for the year 2020-23 54.8 Lacs Kwh (INR 2.9 Cr saving)**
- **This has resulted in reduction of 5107 MT of Eq. Co2 saving compared to power from traditional sources - which is equivalent to planting 50,000 trees**



8. Waste utilization in last three years (FY 2021-23)

Description of waste utilization system/Waste management system

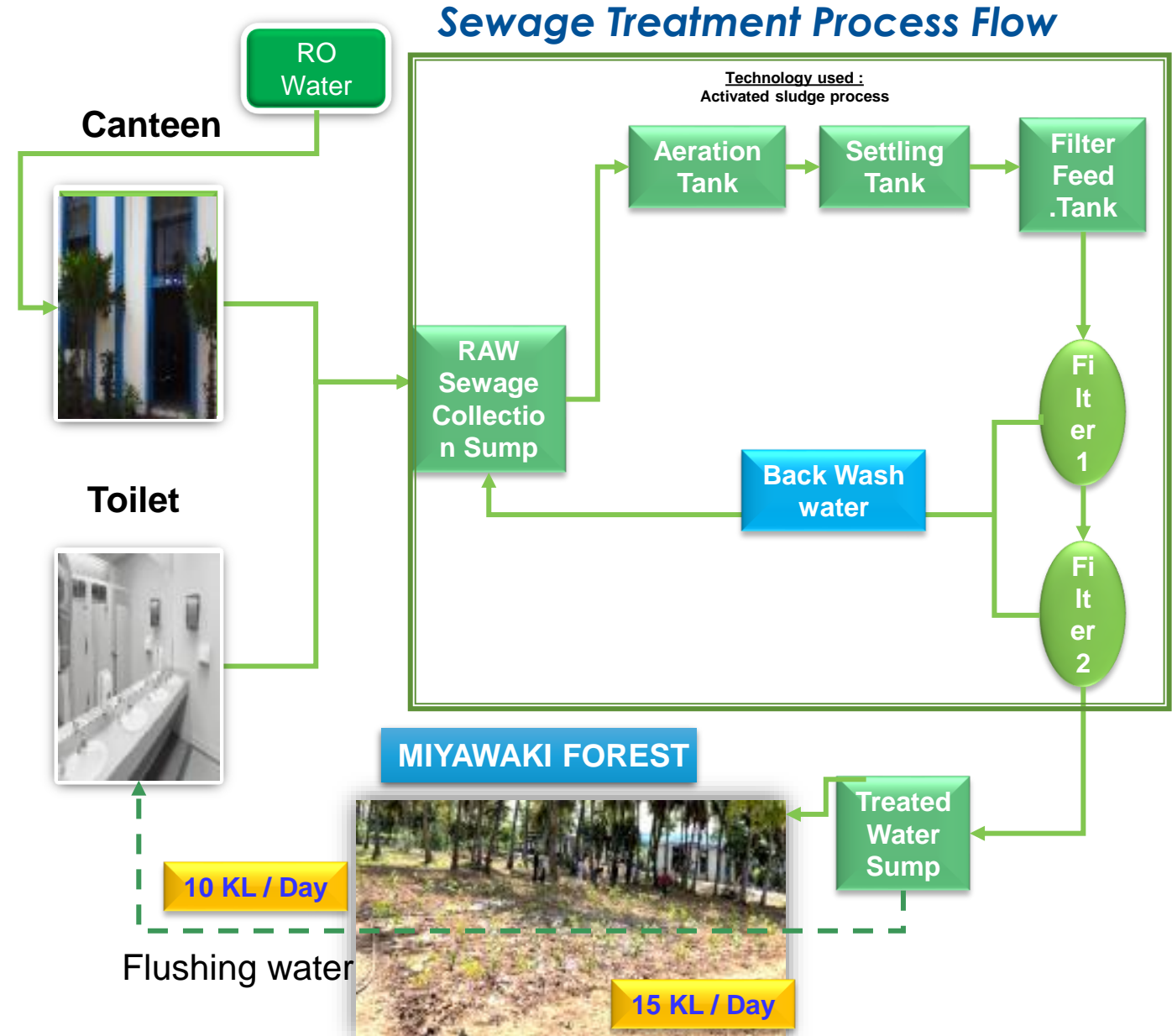
- Have valid authorization of hazardous waste for 5 category
- Continuous reduction of waste through yield improvement projects (Tooling improvement & input weight optimization)
- Zero Waste disposal Through 3R Concept - 536 tones of Grinding dust recycled and 18 tones re used
- Process waste water reused through (ETP) Zero Liquid Discharge plant (ZLD)
- Sewage Treated Water is being used in Miyawaki Forrest Development
- Environment friendly powder coating process implemented with 100% yield and Zero discharge

Waste utilization in last three years (FY 2021-23)

Sl.No	Type of waste generated	Quantity of waste generated (MT/year)			Disposal method
		FY (2020-21)	FY (2021-22)	FY (2022-23)	
1	Spent oil	0.4KL	0.4KL	2.75KL	Re cycle
2	Paint sludge	7.0	6.21	9	Co. Process
3	ETP sludge /Adhesive	7.45	7.35	5.3	Co. Process
4	Oil Soaked	1.68	1.62	1.0	Co. Process
5	Discard containers	5.47	5.28	1.5	Re cycle
6	Grinding Dust	150	187	201	Co. Process/ Re use

8. Waste utilization in last three years (FY 2021-23)

- Have valid authorization of hazardous waste for 5 category
- Continuous reduction of waste through yield improvement projects (Tooling improvement & input weight optimization)
- Zero Waste disposal Through 3R Concept - 536 tones of Grinding dust recycled and 18 tones re used
- Process waste water reused through (ETP) Zero Liquid Discharge plant (ZLD)
- Sewage Treated Water is being used in Miyawaki Forrest Development
- Environment friendly powder coating process implemented with 100% yield and Zero discharge



8. Waste utilization and management : Painting process – Powder coating

Purpose of the process

- Coating of paint or powder over the pads and drying for rust prevention

Before – Liquid spray painting



After – Powder coating



Existing : Manual liquid painting process:

- Manual liquid paint is harsh effect on the environment and can be toxic to humans if not handled properly. It is not only flammable but also has solvents and volatile organic compounds that make it hazardous

Action :

- Technology up gradation in Painting process by powder coating process

Result :

- Tribo technology and Parker guns are used for powder coating .
- Auto powder feeding mechanism to maintain uniform coating thickness
- Online powder coating and Baking through IR heating system .
- Product quality improvement - Salt spray hours high .
- Environment friendly process with 100% yield .
- Zero discharge.
- Zero waste generation.
- Over-spray waste powder can be Recycled
- Non-toxic and less flammable

9. GHG Inventorisation

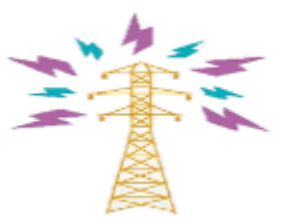
CO2 generation :

Scope 1



Fuel consumption

Scope 2

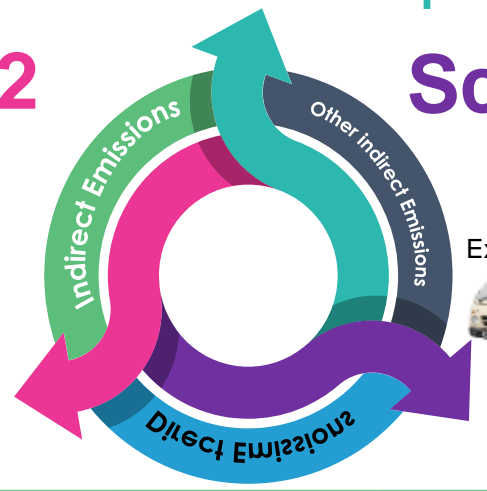


Purchase of electricity

Scope 3



Other Indirect Emissions



- Public disclosure is done through Annual Sustainability Report at RBL
- Daily emission data updated to LED display for public view in front of the factory gate



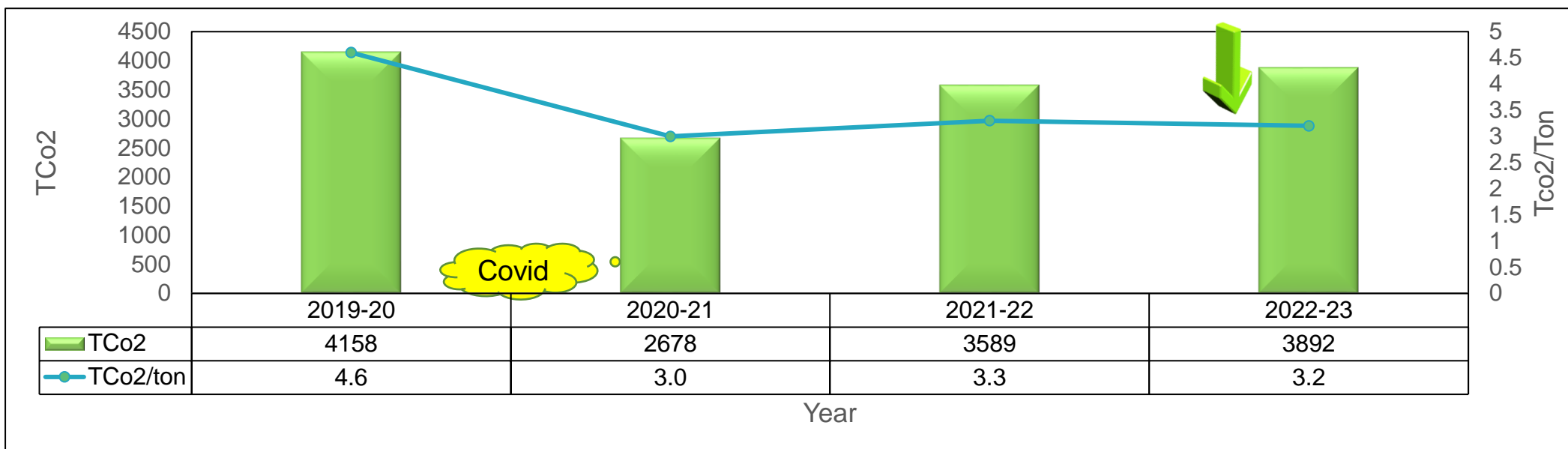
CO2 reduction projects :

- 55 KL Diesel consumption reduction Through
 - Re use of waste heat energy in Wet blasting
 - Replacement Electrical steam generator instead of Diesel
 - Diesel forklift replaced with battery operated forklift
- RBL generates and use of 32 % Renewable energy which does not contribute to CO2 emissions
- 1.1 million Kwh saved through 74 Energy saving projects
- Miyawaki method to create urban forests 2000sq ft (600 sampling)
- Replace unnecessary business trips with video calls (Google meet and Microsoft team)
- Milky van transport concept for material delivery & collection to reduce the number of vehicle trip
- Environment friendly powder coating process implemented with 100% yield and Zero discharge
- 600 nos of Village Lighting Converted in Fully LED
- Zero Waste disposal Through 3R Concept - 536 tones of Grinding dust recycled and re used

2020-23: 85 Co2 reduction projects has been implemented

9. GHG Inventorisation

Absolute Emission & Emissions intensity



Reduction of GHG emission 38 %

Short term actions:

- *Projects implementation on energy conservation*
- *Elimination of Vibro drying oven by Dry vibro process*
- *Replacement of BSIII vehicle to BS IV vehicle used for employee transportation*
- *Compressor heat recovery system for wet blasting process*

Long term actions:

- *Solar-Diesel Genset Hybrid System*
- *Paint recovery system implemented to reduce the paint sludge generated during color changing process*
- *Usage of reusable plastic crates instead of carton for packing*
- *Planned to install additional 0.40 MW solar plant*

10. Green Supply Chain

Sustainable Green Supply Chain Management & Procurement Policy

Sustainable Green Supply Chain Management & Procurement Policy

Rane Brake Lining Limited is committed to follow responsible business practices by contributing to environmental protection and enhancing people performance by green procurement & services while ensuring business growth for its supply chain.

Objective:
To enhance sustainability performance and minimize Environmental, Social & Financial risks within RBL's supply chain, procurement & services.

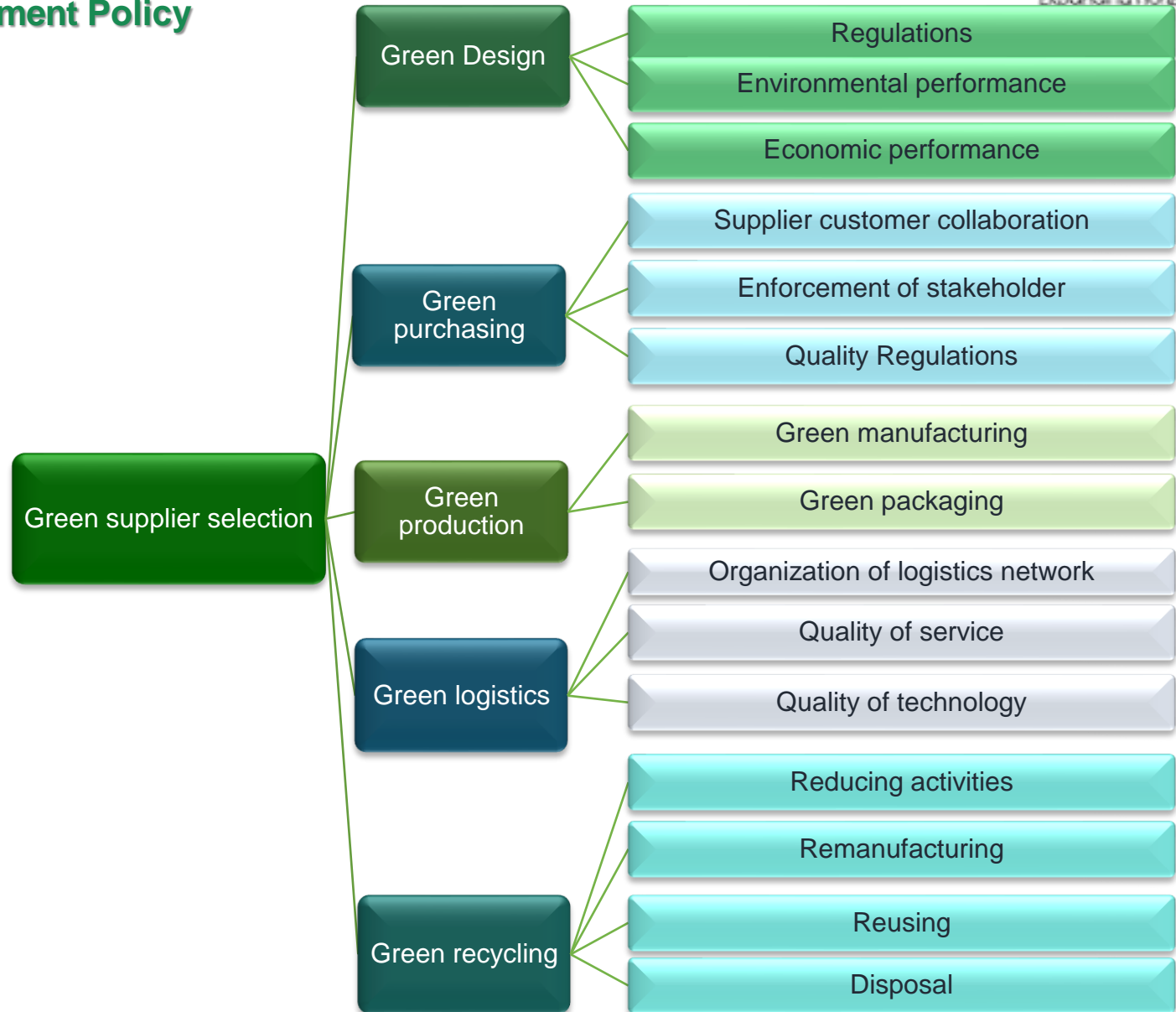
Duty:
Green Supply Chain:
RBL shall engage with the supply chain partners including suppliers, logistics & service providers to:

- Strengthen compliance of all relevant statutory provisions and conform to RBL's Code of Conduct
- Identify & address business and ESG (Environmental, Social & Governance) risks
- Develop management systems related to Sustainability, Quality, Environment, Safety and Energy
- Monitor, evaluate sustainability performance and identify improvement opportunities
- Reduce environmental footprint by means of material, energy & water conservation
- Encourage logistics optimization and waste reduction using 3 R (Reduce, Recycle & Reuse)
- Move towards zero waste usage for packaging
- Promote a safe and healthy workplace for the employees
- Ensure eco-friendly product manufacturing in accordance with the RoHS (Restriction of Hazardous Substances) directive
- Promote sustainability awareness and assessments at supply chain through IT enabled processes
- Enhance sustainability within their own supply chain
- Encourage suppliers to develop and publish their own sustainability report
- Facilitate reward and recognition

Procurement:

- Comply with all relevant statutory provisions pertaining to procurement
- Establish sustainable performance indicators for equipment, products & services
- Open Door framework for all the existing and potential suppliers by maintaining highest level of ethical standards & transparency in dealing
- Minimize the environmental, social and costs impact associated with the life cycle of goods & services
- Procurement of recycled/part recycled products to optimize resource consumption
- Procure energy efficient equipment by defining specifications in tender & contracts
- Co create innovation to maximize value for both supplier and end user

We shall promote sustainable practices with all our stakeholders.



10.Suppliers end Encon project implemented in FY 2020-23

S.No	Supplier Name	Name of energy saving projects	Investments (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million kWh)	Total Savings (INR Million)	Payback period (in months)
1	Weldone technocrats	Compressor optimization based on air demand using VFD	0.2	0.03		0.18	13.33
2	Admach auto india ltd	Conventional light to LED	0.05	0.02		0.12	5.00
3	Admach auto india ltd	Drilling m/c spindle motor to be switched off after cycle completion.	0.2	0.01		0.06	40.00
4	Industrial turnings	Compressor cooling fan motor cut-off based on temperature	0.01	0.01		0.06	2.00
5	premier engineering works	Conventional light to LED	0.06	0.01		0.06	12.00
6	Esterkote pvt limited	Boiler heat recovery system using heat exchanger	0.03	0.01	50	0.06	6.00



Boiler heat recovery



Power press sequence modification



LED Lighting

2020-23 : 13 Energy saving projects implemented and cost saved ₹ 5.68 million with investment of ₹1.5 million

10. Green Supply Chain – Bench mark supplier visit & Trainings at Supplier Place - Glimpses

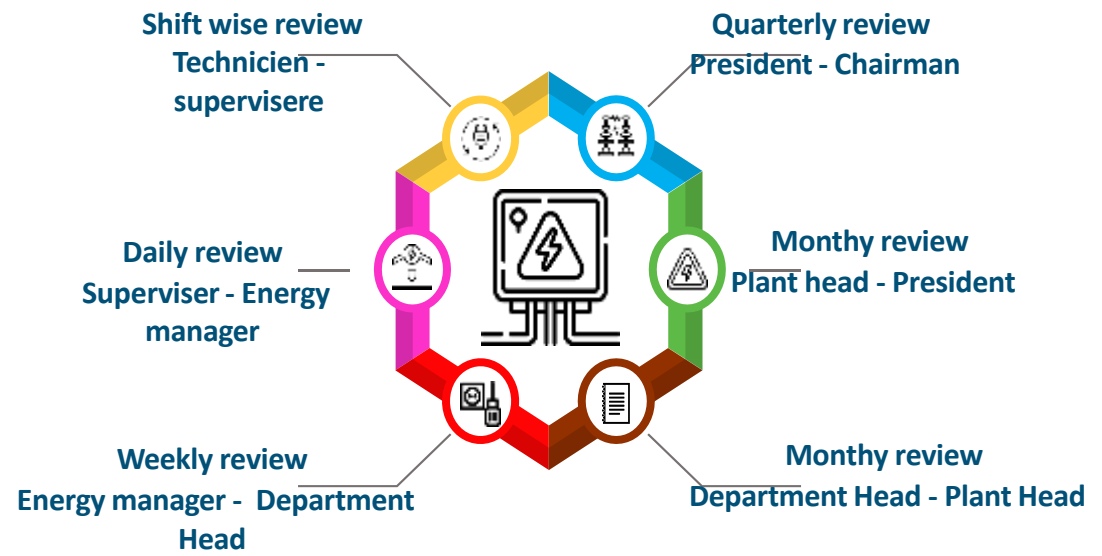


11. EMS system and other requirements

Sustenance Tracking through Energy monitoring system use of IoT



Review system:



- Monthly best suggestor award . Yearly Suggestion rocker award.
- Suggestions are reviewed by Top management through RPS

Implementation of ISO 50001 / Green Co / IGBC rating

S.no	Description	Certification	Planned on	Status
1	ISO 50001	Nil	2023-24	Study completed . Work under progress.
2	Green co	Nil	2023-24	Study completed . Work under progress

Learnings from CII Energy Award or Any Other Award Program

- Learned about Heat pump
- Learned about heat recovery system
- Learned best practices from other automobile companies

12.NET ZERO commitments

Energy Management Vision :

To Continuously improve efficient use of energy and energy sources for cost optimization and commitment to environment.

What we mean ?

➤ Improve efficiency

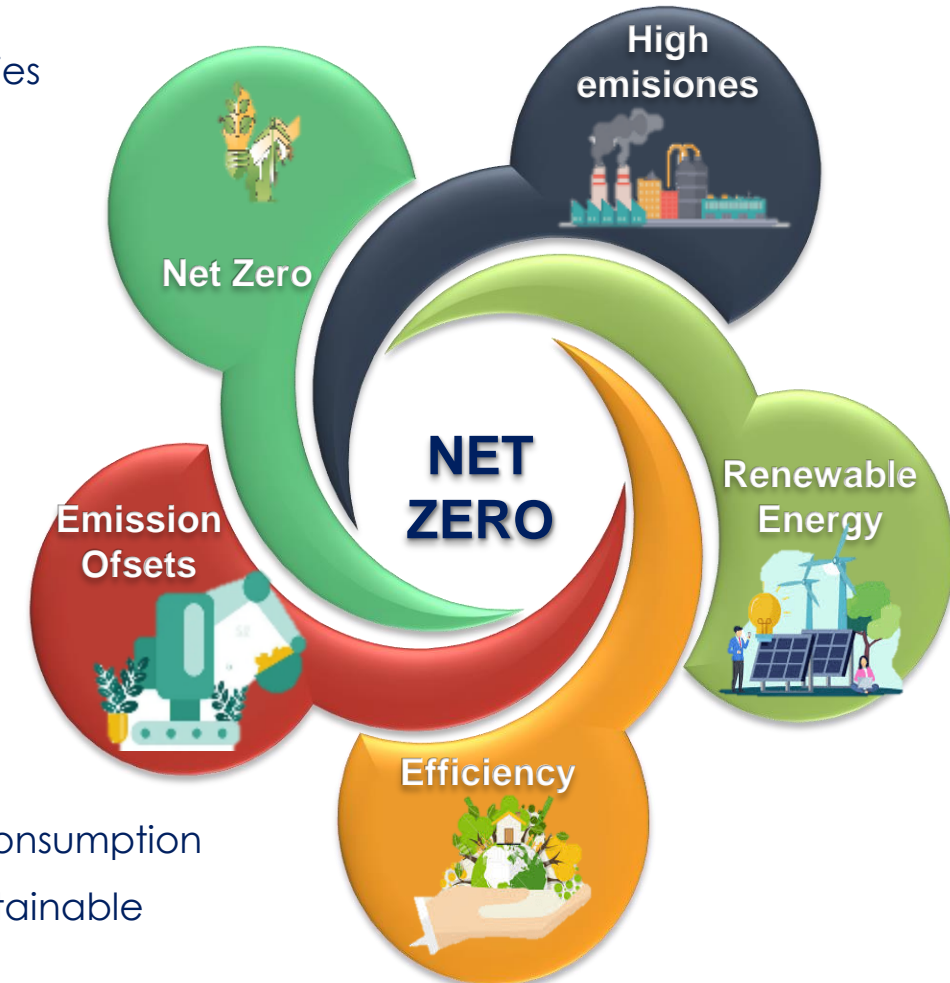
- ❖ Continuous focus on Energy saving and Energy waste reduction opportunities
- ❖ Sustainable results on Specific Energy consumption

➤ Energy Sources

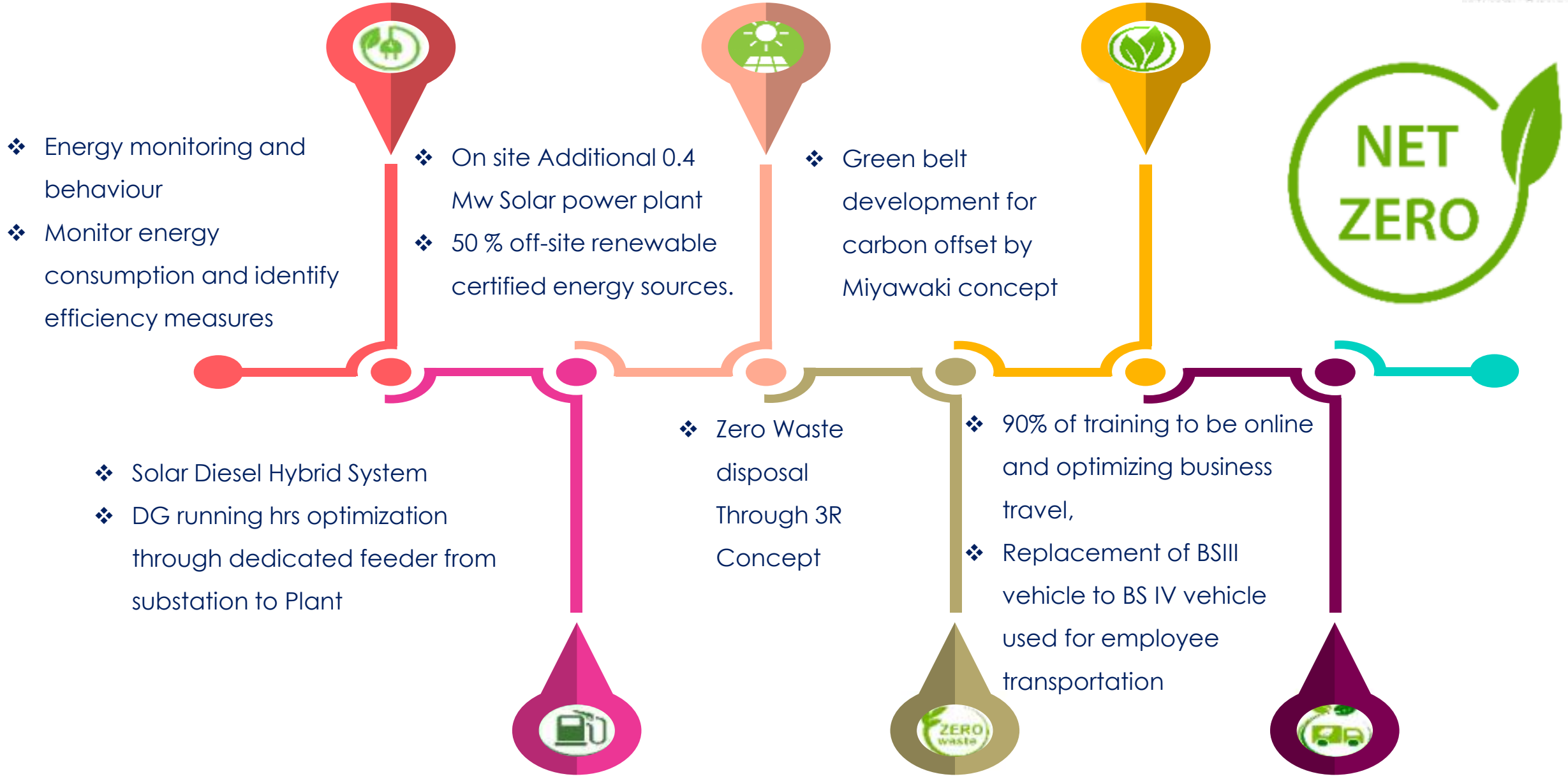
- ❖ Optimize use of Renewable and other sources to get optimum cost

➤ Commitment to environment

- ❖ Enhancing use of renewable energy sources so as to reduce impact on environment
- ❖ India is on a transformational journey and as part of its contribution to conservation, is looking at net zero emissions by 2070. By 2030, 50% of the country's electricity requirements are expected to be met by renewable energy sources.
- ❖ In line with this, Rane Group initially set a limit of 65% for renewable energy consumption and has now increased it to 75% as part of their ongoing commitment to sustainable practices.



12.Road map towards Net Zero



13. Awards & acknowledgement

Won Gold award for Excellence in Manufacturing and Bronze Award for Excellence in sustainable business 2022



Won "Energy Efficient Unit" Award in 23rd CII National Excellence in Energy Management – 2022



QCC 1st prize : ACMA National level - 2022



QCC 1st prize: ACMA National level - 2023



We received consecutively three times ACMA National Winner Award

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Thank You