CII's National Award for Excellence in Energy Management 2024

Presented by

K B Arul Ram
V Rajesh

1. Brief Introduction on Company– Godrej Group

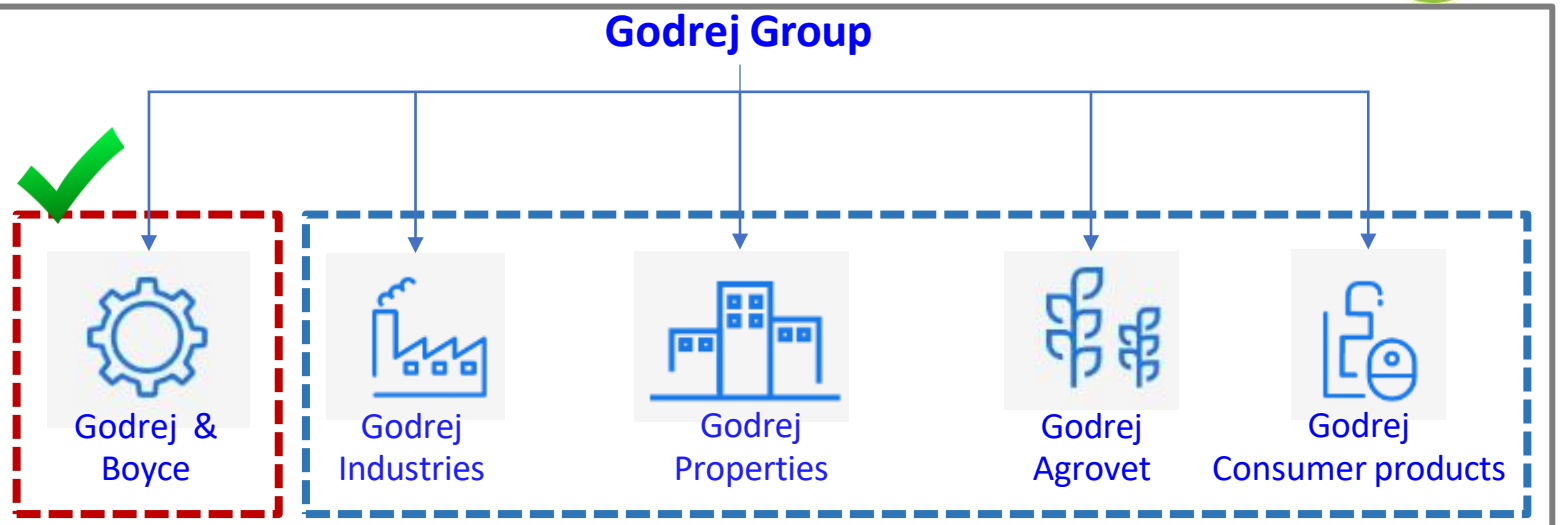
About Godrej Group (127 Year old)

Established: 1897

Revenue : INR 300 Billion

Customer Connect : 1100 million

Head Quarters : Mumbai , India



Godrej Group Founders

Shri Ardeshir Godrej

Shri Pirojsha Godrej

First Generation

Shri. Naoroji P Godrej

Second Generation

Godrej & Boyce

Shri. Jamshyd N Godrej

Chairman & Managing Director

Third Generation

Smt. Nyrika Holkar

Executive Director

Fourth Generation

1. Brief Introduction on Company - About Godrej Storage Solutions (GSS) : Overview

Plant Outline:

- ✓ **Established as part of Industrial business at Mumbai: 1960**
- ✓ **Green Field @ Chennai : 2000**
- ✓ **Head Quarters : Chennai , India**

Plant Profile:

Plant Capacity	75000 T /Annum
Total land Area	101171 SQM
Total Built up Area	36700 SQM

R & D: Innovation Cell

Capability

- Steel Structural Engineering
- Seismic Resistant Storage System

16 Patents

18 Design registration

International codes

RMI RACK MANUFACTURERS INSTITUTE

FEM

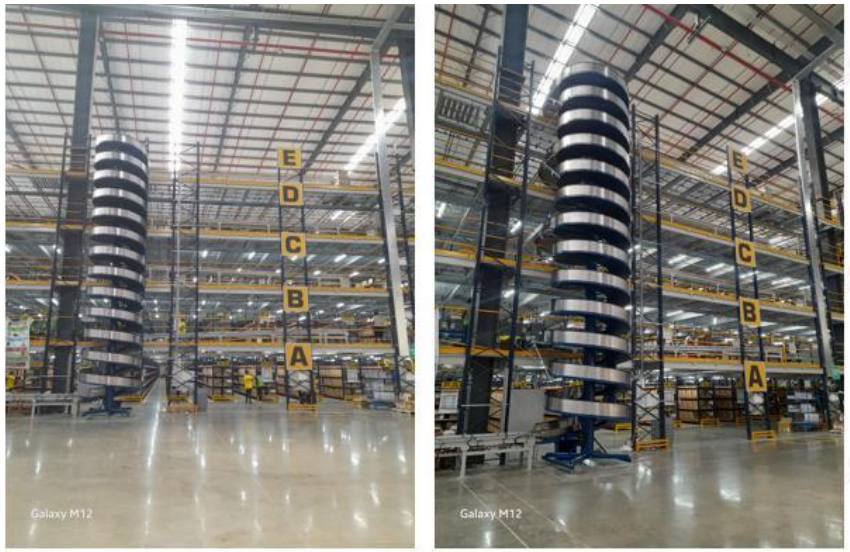
cen AS4084

1.Business Overview : Solution offering & Markets

Racking Solutions

Shelving Solutions

Movement Solutions (Conveyor)



Products:

- Racking & Shelving Storage Solutions
- Movement Solutions (Conveyor)
- Life Cycle Service

- Overall Market Share 30%
- Market Leader in India
- Top 3 position in Asia

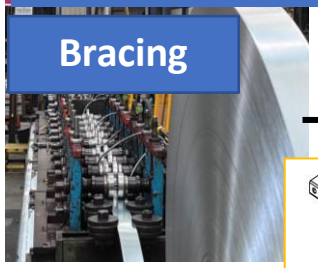
2. Manufacturing Process

Mother coil receipt

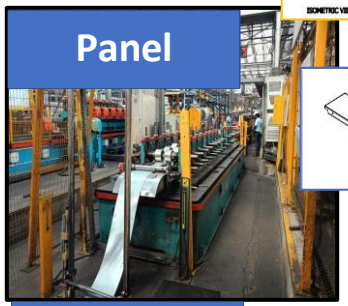
Slitting

Roll Forming

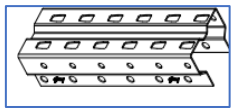
Bracing



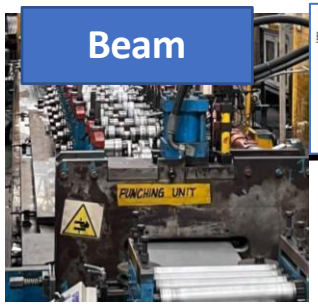
Panel



Upright



Beam



Welding

Powder Coating

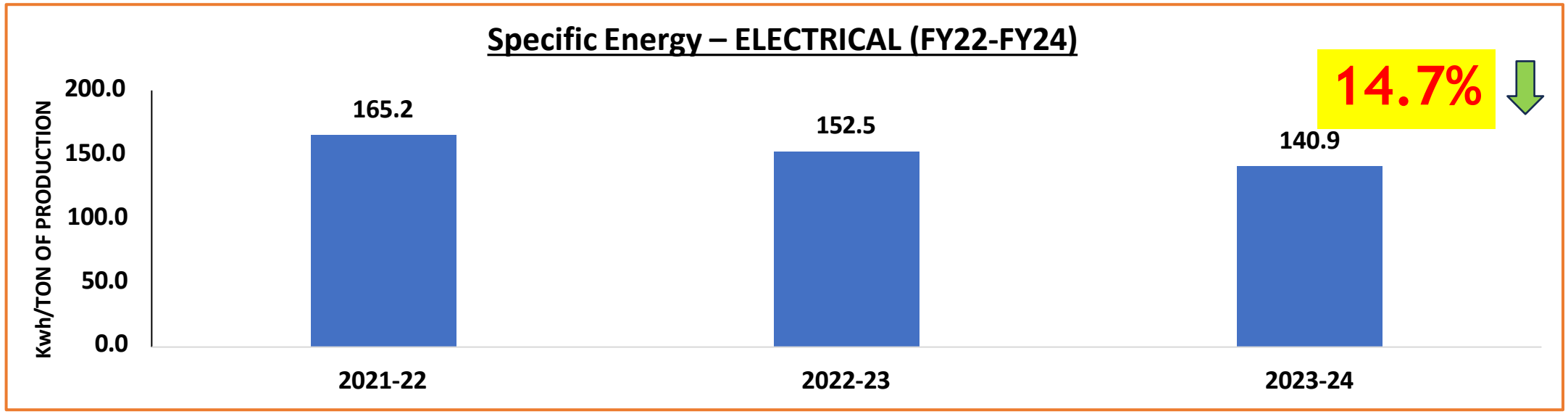
FG & Dispatch

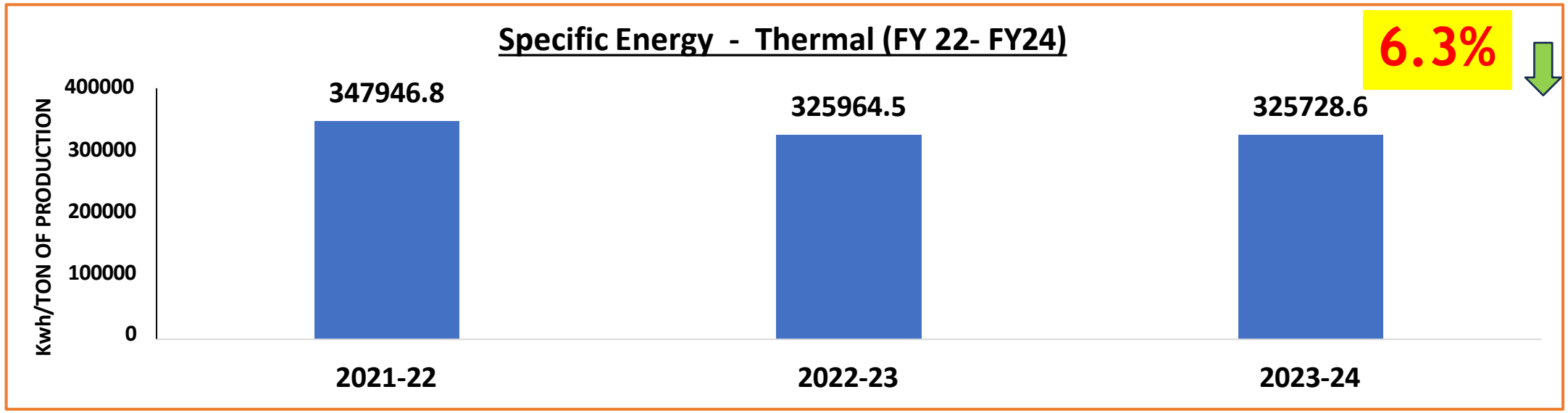
Vendor parts

3. Specific Energy Consumption in Last 3 years (FY 22 to FY 24)

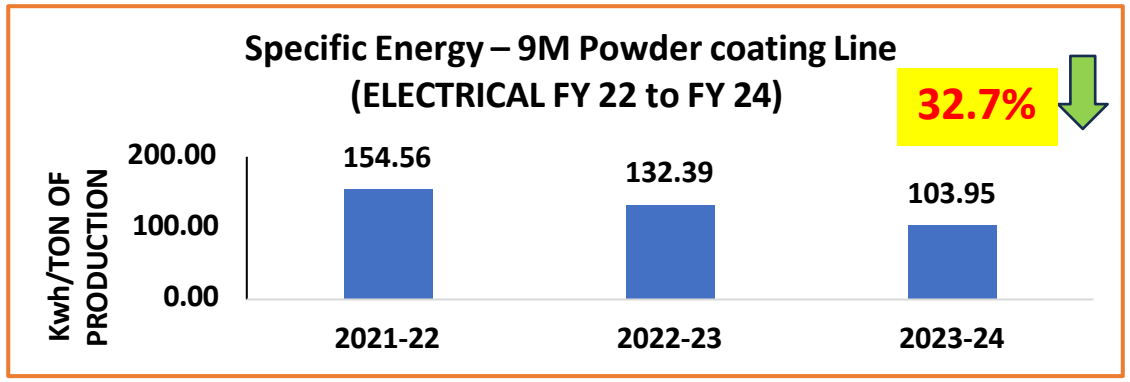
	UNITS	FY 2021-2022	FY 2022-23	FY 2023-24
YEARLY PRODUCTION	Tons	58670	62337	64933
Electrical Energy Consumed	Million kWh	73.28	83.03	82.64
Thermal Energy consumed	Million kcal	205890.2	203196.5	211504.2
Specific Electrical Energy Consumption	Kwh/Tons of Production	165	152	142
Specific Thermal Energy Consumption	Kcal/Tons of Production	350930.8	325964.5	325728.6

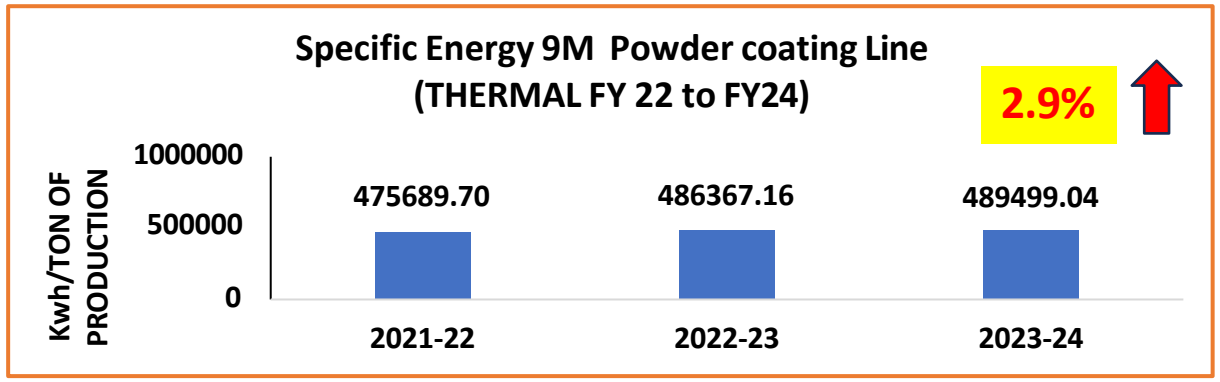
3. Specific Energy Consumption in Last 3 years (FY 22 to FY 24)

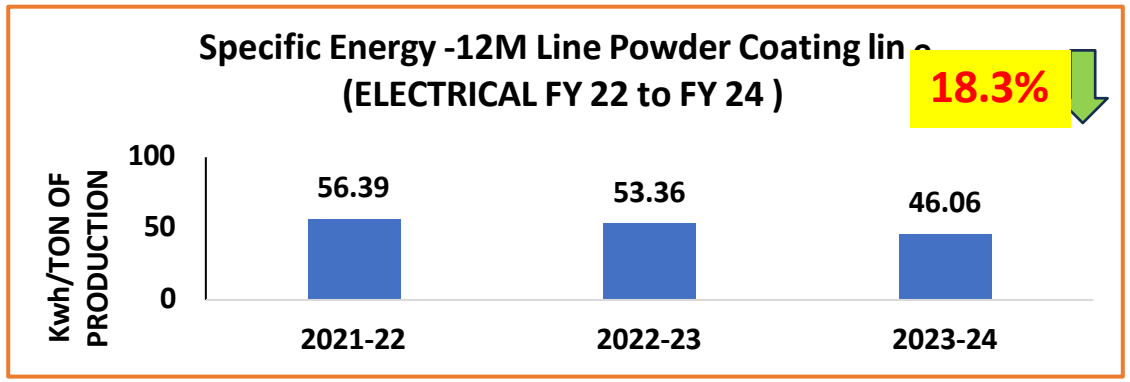


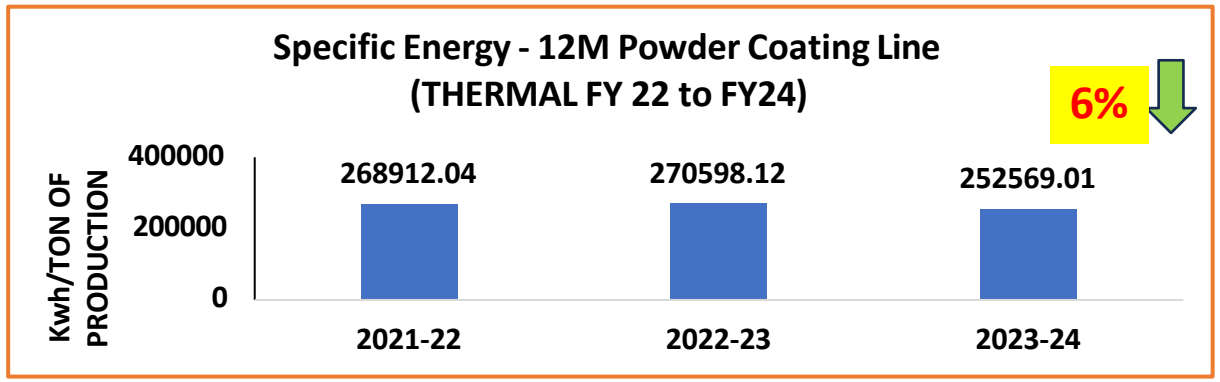


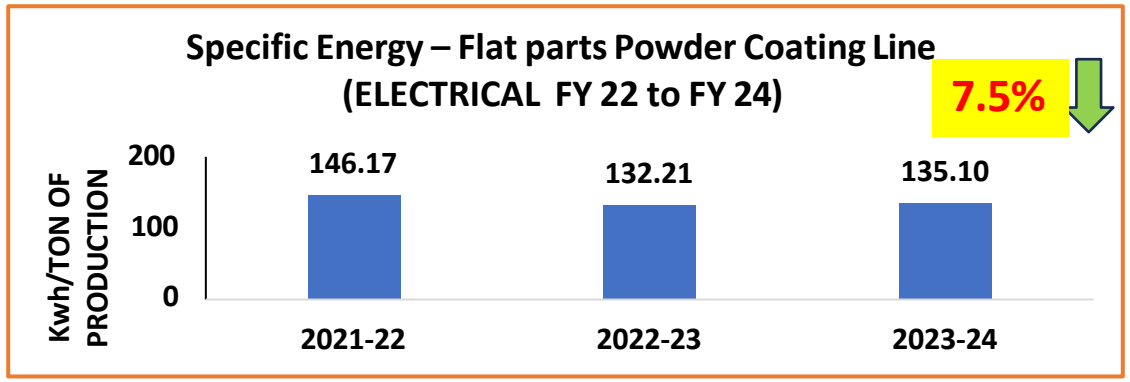
3. Line wise Specific Energy Consumption (FY22 to FY24)

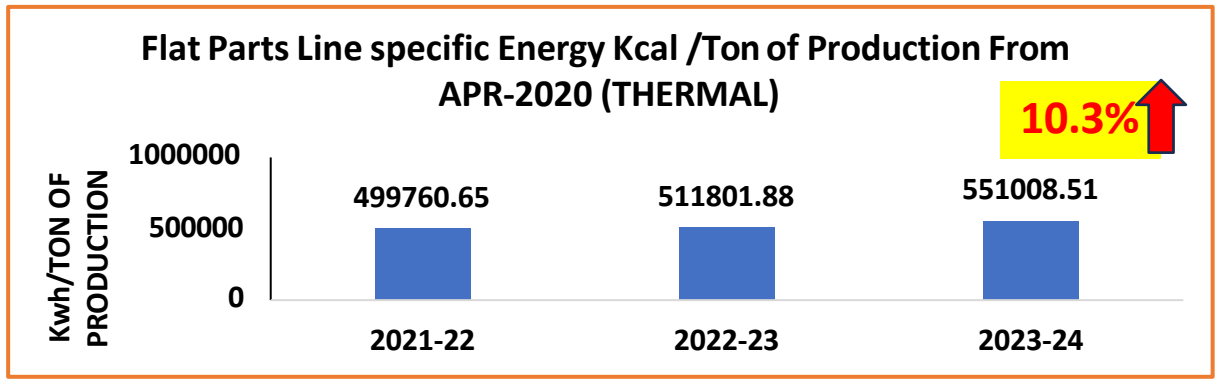












3. Reason For Variations

9m Line(Thermal)

- Oven Temperature of Water dry off oven and Powder Curing Oven increased by 10 degree C for running higher Thickness component in line

Flat Parts Line(Thermal)

- Fixture loading density decreased from 237fixtures/Ton of product to 274.7 fixtures/Ton(Lower Better)

4. List of Major Encon Project FY 25

1	Installation of VFd for Flat parts line and cut off during idle time	Electricity	Change in process	SSG Chennai	2.50	195000.00	kWh
2	Box beam line Eddy current to VFD converstion	Electricity	Change in process	SSG Chennai	5.00	50000.00	kWh
3	GM upright eddy current o VFD converstion	Electricity	Change in process	SSG Chennai	5.00	50000.00	kWh
4	Main office AC switch on/off control through timer	Electricity	Air Conditioing /Ventilation	SSG Chennai	0.15	30000.00	kWh
5	New gema booth for existing old wagner booth	Electricity	Change in process	SSG Chennai	300.00	150000.00	kWh
6	Introduction of PNG fuel instead of Furnace oil (FO)	Electricity	Thermal	SSG Chennai	130.00	110000	kWh
7	Low Bake Powder for Powder Coating	HSD	Thermal	SSG Chennai			Litres
8	Use of Room temperature chemical	HSD	Thermal	SSG Chennai			Litres

5. Summary Of Projects Implemented from FY22 To FY 24

Year	No of Energy Saving Projects	Investment(INR Million)	Electical Savings (Million kWh)	Thermal savings (Million Kcal)	Total Savings (INR Million)	Payback period (in months)
FY 2021-22	6	0.95	230760	0	2.11	5
FY 2022-23	4	3.1	983760	0	9.04	4
FY 2023-24	5	3.1	684106	0	6.6	7

5. Summary Of Projects Implemented from FY 22 To FY24

Year	Project Title	Project Description	Investment(INR Million)	Electica Savings (Million kWh)	Total Savings (INR Million)	Payback period (in months)
2021-22	Conversation of Flat parts line Pumps	Upgrading 3 Nos Existing Low head High volume pump with High Volume low head pump along with IE3 motor upgrade	0.28	192240	1.78	1.9
2021-24	Installation of HVLS fans	Installation of 7 Nos HVLS fan to replace 35 conventional 3 phase man coolers in shop floor	0.35	135820	1.2	3.4
2022-23	Installation of VFD for 9m line pretreatment pumps	Installation of VFD for 14 Nos pretreatment spray pumps to switch off pumps during carrier movement time	10	420000	3.86	3.13
2022-24	Upgradation of Energy efficient pumps in 9m line pretreatment pumps	Upgrading Existing 14 Nos Low head High volume pump with High Volume low head pump along with IE3 motor upgrade	2.66	264000	2.42	14.6
2023-24	Compressor 1 VFD Installation	Installation of VFD for compressor 1 to control compressor speed to achieve required air pressure instead of loading/unloading of compressor	0.39	223200	2.05	2.3
2023-24	Installation of VFD for FPL pretreatment Pumps – Phase 1	Providing 6 nos VFD for controlling spray pressure in flat parts line pretreatment rinse zones.	0.1	81000	0.74	1.69

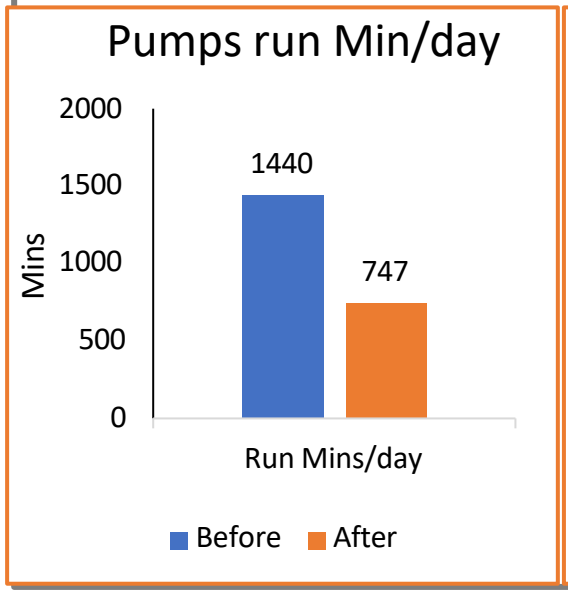
9m Line Pretreatment Energy Reduction (2022-24)

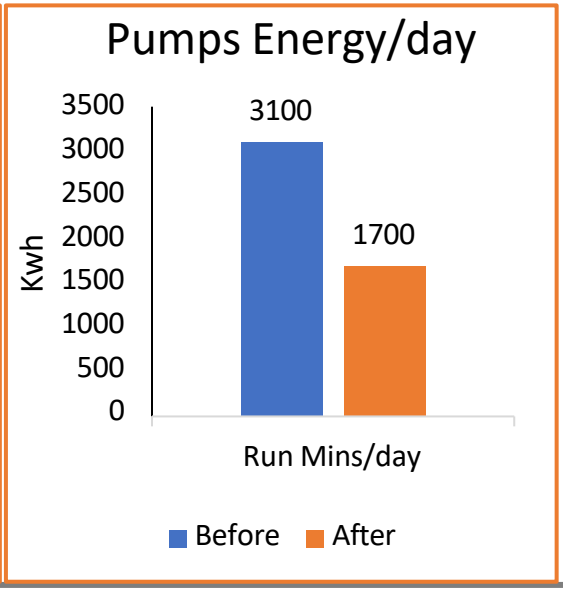
Installation of VFD for Gm line pretreatment pumps

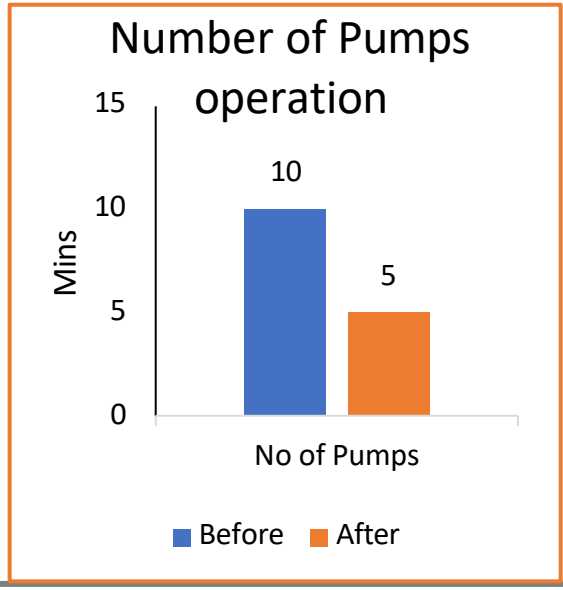
- 9m pretreatment pumps are running continuously for 24 x 6 days week due to its original design to run pump at full speed and opening of spray and by-pass valve to control spray in pretreatment zones.
- 14 Nos VFDs were installed for pumps to switch off pumps during carrier movement time

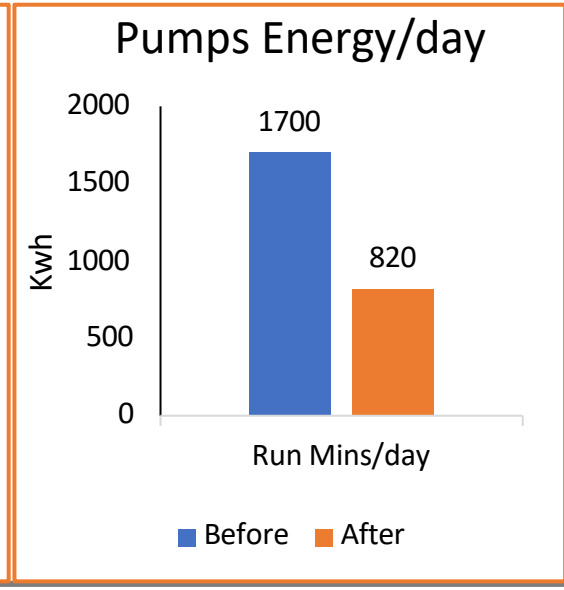
Upgradation of Energy efficient pumps in Gm line pretreatment pumps

- 9m pretreatment pumps installed are having High head output and low-pressure output. Also 2 pumps are operated per zones(5 Process)
- 14 Nos low head and High pressure pumps are replaced with upgrading motor from IE1 to IE3. Results in reduction of pumps from 2 pumps/process to 1 pump/process.









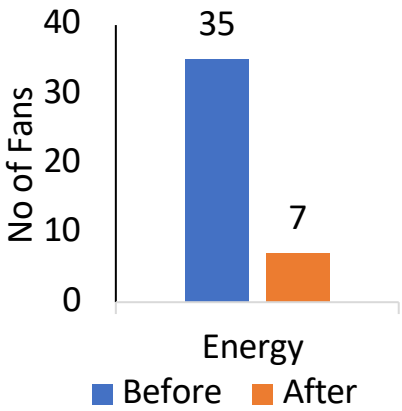
Man Cooler Energy Reduction (2021-24)

Installation of HVLS fans

- In factory zone man coolers used are conventional 3 phase man cooler with 0.55 KW motor. In many locations no of fans used is more due to area covered by conventional fan is small

- 7 locations are identifier across factory to install HVLS fan so single man cooler with be sufficient for people working single area

Before : Man cooler	After – HVLS Fan
	

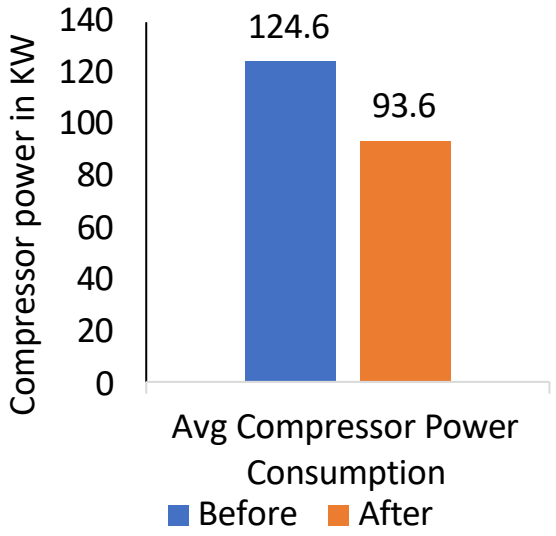


Flat Parts Line Energy Reduction

Compressor 1 VFD Installation (2023-24)

- Total of 2 compressors of 750 CFM will be in operation for 24 x 6 days. One compressor will be in always in loading condition other will be in loading and unloading condition based on load requirement

- VFD installed in compressor to modulate compressor based on air requirement instead of loading and unloading.

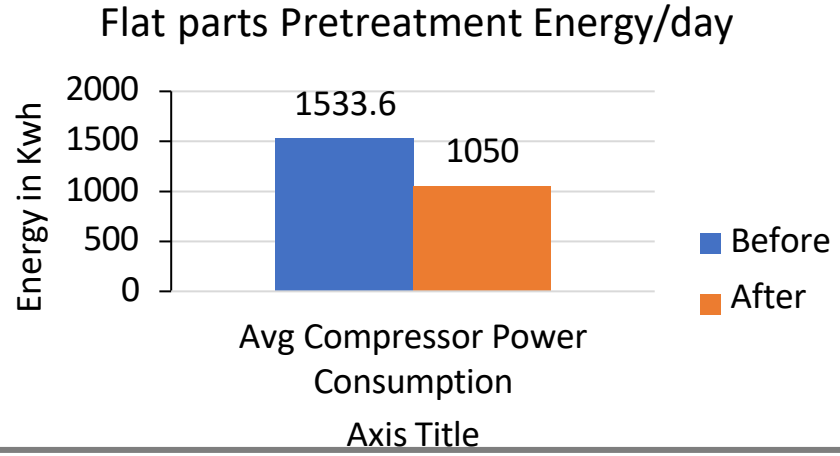


Upgradation of Energy efficient pumps in Flat parts line pretreatment pumps(3 Nos) - Phase 2 (2021-22)

- Flat parts pretreatment pumps installed are having High head output and low-pressure output.
- 3 Nos low head and High pressure pumps are replaced with upgrading motor from IE1 to IE3.(Remaining Pumps change in Phase 1)

Installation of VFD for Flat parts Pretreatment -Phase 1 (2023-24)

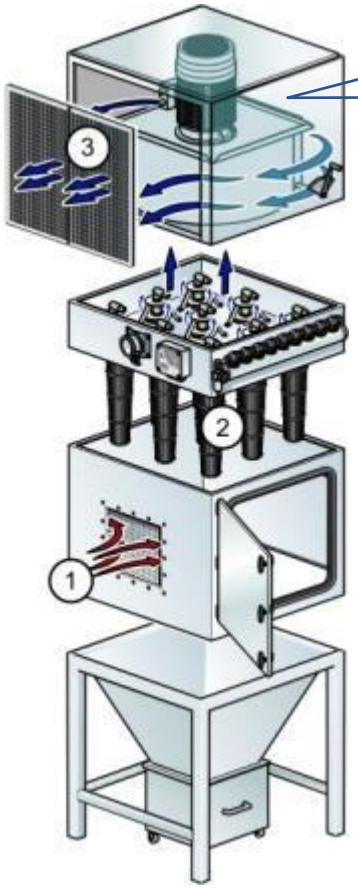
- In Flat parts line pretreatment Valves use to adjust zone spray pressure in rinse zones.
- VFD installed for 6 Nos rinse zones to control pressure by adjusting VFD frequency



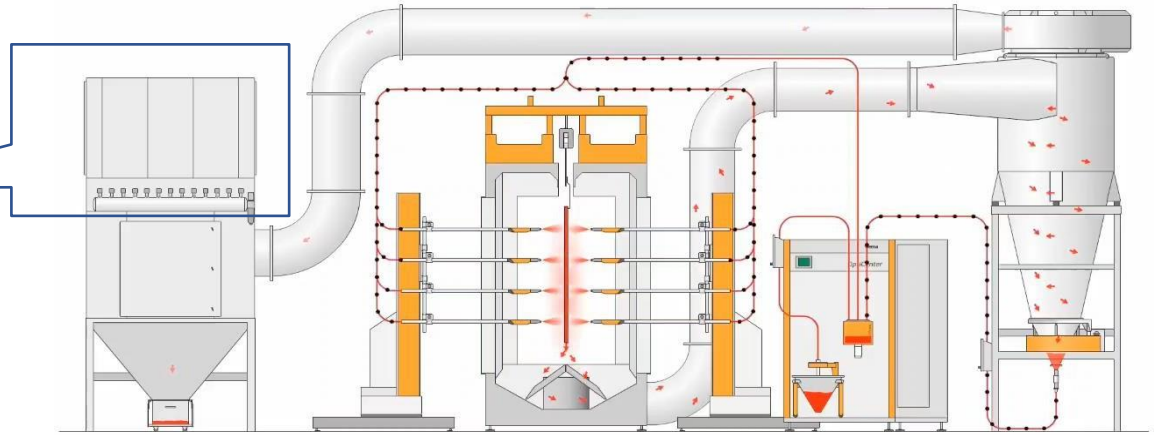
6. Innovative Projects Implemented from FY22 To FY 24

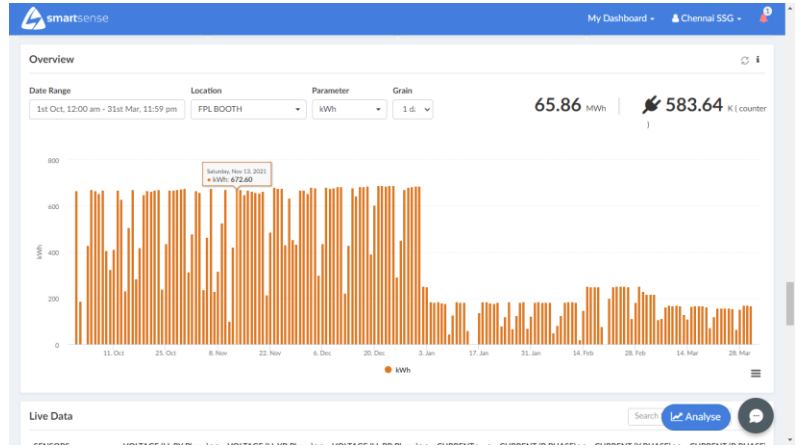
Year	Project Title	Project Description	Investment(INR Million)	Electica Savings (Million kWh)	Total Savings (INR Million)	Payback period (in months)
2022-23	Installation of VFD for Flat parts Line booth after filter blower	Removing of exiting suction control through damper to control suction through adjusting motor speed	0.14	158400	1.45	1.22
2022-23	Installation of VFD for 12m Line booth after filter blowers	Removing of exiting suction control through damper to control suction through adjusting motor speed	0.44	225360	2.07	2.5

6.Installation of VFD for Flat parts Line booth after filter blower



Filter Center





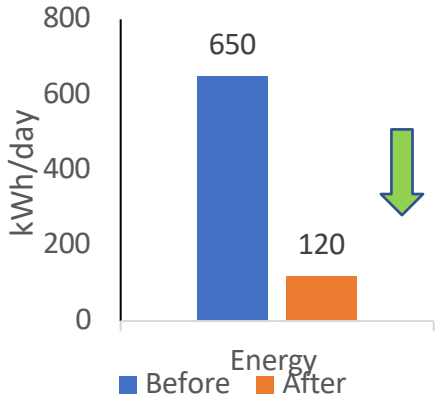
Reduction in consumption – 1,58,400 KWH/Annum

Before:

Motor Driven at constant speed with star delta contactor

After:

Motor driven at lower speed with VFD keeping damper full open



Savings

7a – Utilization of Renewable Energy sources

Green India KPI	Goal 2031-32	FY 24	FY 25	FY26	FY 27	FY 28
EP100 (MVA/kWh)	60%	6%	12%	18%	24%	305
Sp. Water (KL/MVA)*	-25%	-2.5%	-5%	-7.5%	-10%	-12.5%
Water Positivity	2X	0.15	0.4	0.75	1	1.25
Sp. Haz. Waste (MT/MVA)*	25%	-2.5%	-5%	-7.5%	-10%	-12.5%
Zero Waster to land fill	Zero waste to landfill	Zero				
Carbon Intensity	60%	3%	7%	10%	15%	20%
Renewable energy	**40%**	3%	10%	15%	17.5%	20%
Green Supply chain	80% of value	45%	50%	55%	60%	65%

7a – Utilization of Renewable Energy sources

50 kWp Solar PV Rooftop Solar at Admin

200 kWp Solar PV Rooftop Solar at Warehouse

Year	Source	Installed capacity (In MW)	Capacity addition (MW) after FY 2021	Total Generation (million kWh)	% Share w.r.t Overall Energy Consumption
FY 2021-22	Solar	0.25	0	0.236	0.7%
FY 2022-23	Solar	0.25	0	0.155	0.5%
FY 2023-24	Solar	0.25	0	0.25	1%

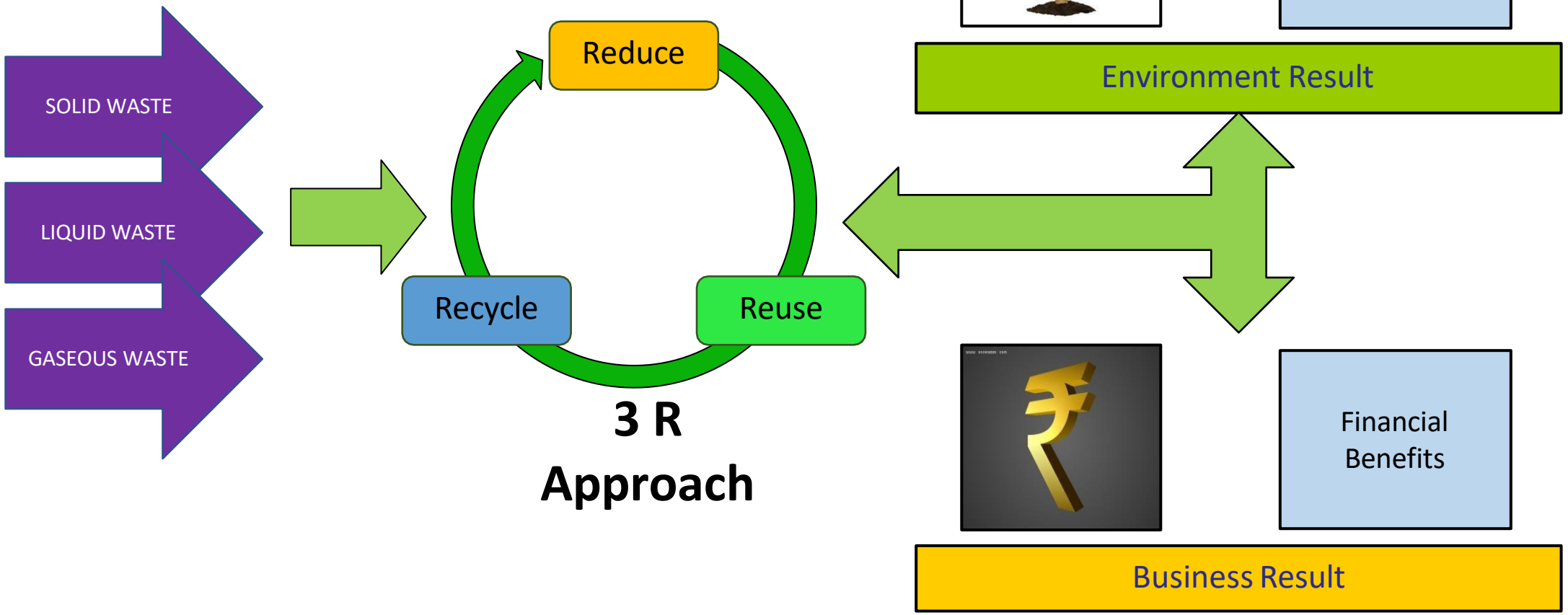
8 – GHG Inventorisation

	Monitoring Area	Scope	GHG CALCULATION METHOD	MONITORING MECHNISM	Responsibility
Scope 1	HSD consumption	100% used inside factory	Consumption in Lts*emission factor	Monthly	Maintenance
Scope 2	Electricity Purchased	100% used inside factory	Consumption in kWh * Emission factor	Monthly	Maintenance
Scope 3	Inbond logistics	From supplier to Our factory	Total Travel in KM* emission factor specific to tonnage of vehicle	Monthly	Material
	Outbond logistics	From factory to Central warehouse	Total Travel in KM* emission factor specific to tonnage of vehicle and travel mode	Trip wise monthly	Logistics and distribution
	Buisness travel	To and fro	Total Travel in KM* emission factor specific to travel mode	Monthly	Finance
	Employee commute	All employee	Total Travel in KM* emission factor specific to travel mode	Monthly	HRD
	Waste Transportation	From factory to scrap vendor	Total Travel in KM* weight of material *emission factor specific to tonnage of vehicle and travel mode.	Monthly	Green Cell

8 – GHG Inventorisation

YEAR	ELECTRICITY (kWh)	DIESEL (L)	FO (KG)	Scope 1 (MTCO2)	Scope 2 (MTCO2)	Total CO2 (MTCO2)	PRODUCTION (SQM)	SPECIFIC CO2 EMISSION (toCO2/TOn)	% REDUCTION
2021-22	9495980	420317	1480931	7976.62	6306.56	14291.09	61480	0.234	
2022-23	9304933	435021	1476163.2	7816.14	6334,8	14150.95	65077.48	0.217	4%
2023-24	8721288	432300	1460000	7347.18	6075	13422.78	70000	0.191	15%

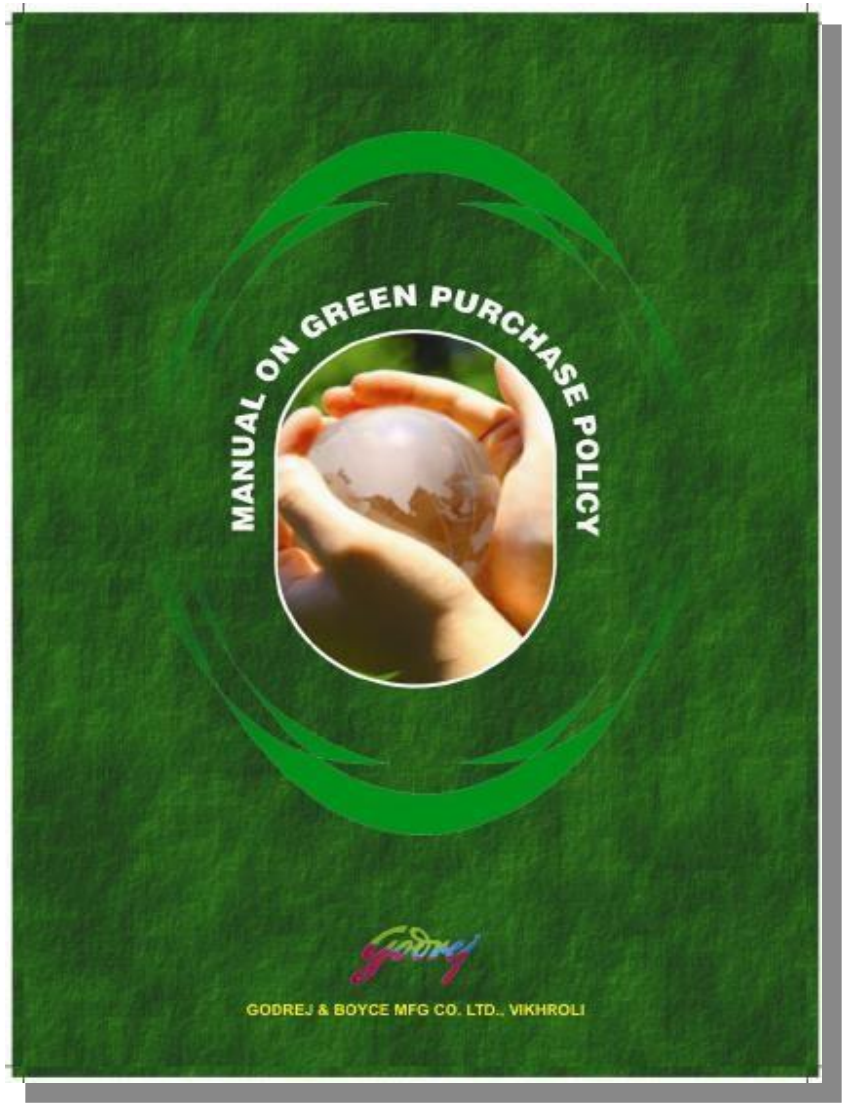
9. Waste Management System



9. Waste Management System

Types of Hazardous waste	Unit	Mode of disposal	Mechanism of Disposal	Generated and Disposed		
				Fy 22	Fy 23	FY24
Chemical Sludge	Tons	Landfill	Authorized recycler Form 10	34.7	34.7	27.98
Empty Chemical Containers	Nos	Sold	Authorized Vendor	1146	1228	1140
Phosphating sludge	Tons	Landfill	Authorized recycler Form 10	nil	12	11.5
Waste oil	Kgs	Recycle	Authorized recycler Form 10	800	800	800
TDC Ash	Tons	Landfill	Authorized recycler Form 10	10.5	6.13	10
Spent carbon	Tons	Landfill	Authorized recycler Form 10	2.2	2.18	1.09
Discarded oil barrels	Nos	Sold	Authorized Vendor	80	60	60
E waste	Kgs	Sold	Authorized Vendor	1300	500	600

10. Green Supply chain Management



OVERVIEW OF GREEN SUPPLY CHAIN MANAGEMENT

Supply chain management is the coordination and management of all activities involved in delivering a finished product to the end-user or customer and their associated information flows.

Every stage of a product's life cycle, from cradle to grave, will influence a supply chain's environment burden, from resource extraction, to manufacturing, use and final recycling or disposal. By adding" Green" to this definition of Supply chain management(SCM), green supply chain management (GSCM) could be defined as "green procurement+ green manufacturing + green distribution+ green Reverse logistics". GSCM aims to eliminate or minimize waste along the entire span of supply chain.

1. GREEN PROCUREMENT:

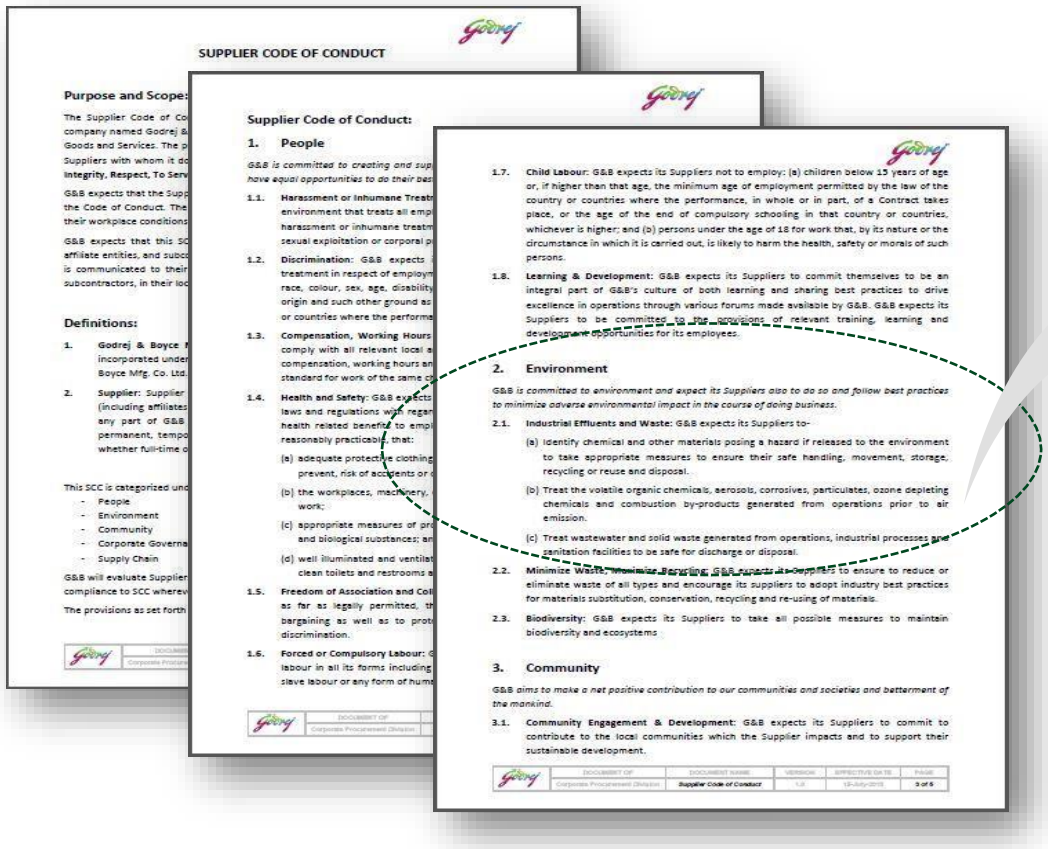
Green procurement is defined as an environmentally responsible purchasing consisting of involvement in activities that include the reduction, reuse and recycling of materials in the process of purchasing. Green procurement aims at minimizing environmental impact.

3Rs in procurement process: reduce, reuse or recycle - paper, parts container (plastic box / bag) & order via email (paperless)
Supplier selection is also an integral part of the Green procurement activity.
Purchase of materials or parts should be only from "Green Partners". suppliers who acquire ISO14000, OHSAS18000 and / or RoHS directives should be considered. The green Partner should satisfy environmental quality standards and pass an audit process in following regulations for the environment-related substances.
suppliers who control hazardous substances in company's Standard lists and obtain green certificate achievements should be considered.

10. Green Supply chain Management

Incorporation of environmental expectations in Supplier code of Conduct

All new suppliers have to sign Supplier Code of conduct as Green criteria for supplier registration



2. Environment

G&B is committed to environment and expect its Suppliers also to do so and follow best practices to minimize adverse environmental impact in the course of doing business.

2.1. Industrial Effluents and Waste: G&B expects its Suppliers to-

(a) Identify chemical and other materials posing a hazard if released to the environment to take appropriate measures to ensure their safe handling, movement, storage, recycling or reuse and disposal.

(b) Treat the volatile organic chemicals, aerosols, corrosives, particulates, ozone depleting chemicals and combustion by-products generated from operations prior to air emission.

(c) Treat wastewater and solid waste generated from operations, industrial processes and sanitation facilities to be safe for discharge or disposal.

2.2. Minimize Waste, Maximize Recycling: G&B expects its Suppliers to ensure to reduce or eliminate waste of all types and encourage its suppliers to adopt industry best practices for materials substitution, conservation, recycling and re-using of materials.

2.3. Biodiversity: G&B expects its Suppliers to take all possible measures to maintain biodiversity and ecosystems

11. EMS System and other Requirements

Greenco Silver Rating Award

2nd Runner up Best Energy conservation Business (FY23)

1st Runner up Best Energy conservation Business (FY24)


TÜV NORD

CERTIFICATE

Management system as per
ISO 50001 : 2018

The Certification Body TÜV INDIA hereby confirms as a result of the audit, assessment and certification decision according to ISO/IEC 17021-1:2015, that the organization

GODREJ & BOYCE MANUFACTURING COMPANY LIMITED
No. 01, SIDCO Industrial Estate,
Ambattur, Chennai - 600 098, Tamil Nadu,
India

operates a management system in accordance with the requirements of ISO 50001 : 2018 and will be assessed for conformity within the 3 year term of validity of the certificate.

Scope -

Design, Manufacture and Installation of Material Storage Facilities like Storage Racks, Storage Shelves, Storage Pallets, Shop Floor Storage Products for Industrial & Institutional Requirement.

Certificate Registration No. IND 784 23384180
Audit Report No. Q 12615/2023

Valid from 08.07.2023
Valid until 07.07.2026
Initial certification 08.07.2023

Certification Body
at TÜV INDIA PVT. LTD.

Mumbai, 08.07.2023

TUV India Pvt. Ltd., 801, Raheja Plaza – 1, L.B.S. Marg, Ghatkopar (W), Mumbai - 400 086, India

12. Net Zero Commitment

- Godrej is the first signatory to CII initiative “ Mission on Sustainable Growth”
- Commitment to reduce resource intensity & emissions, discharge & waste generation year on year.

Thank You

K B Arul Ram
Head Manufacturing Excellence
Godrej Storage Solutions
Chennai