



**ENERGY CONSERVATION & MANAGEMENT
CENTRAL WORKSHOP
SOUTHERN RAILWAY, PONMALAI, TRICHY, TAMILNADU**



SHYAMADHAR RAM

Chief Workshop
Manager

SACHIN KUMAR

Senior Electrical Engineer &
Energy Manager



Company Profile

2021-22



561 WAGONS



1 STEAM LOCO



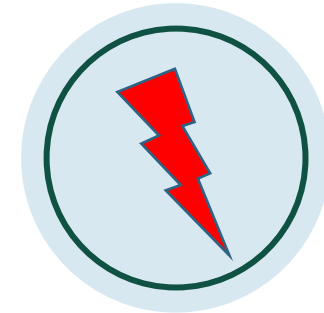
1233 COACHES



44 DIESEL LOCOS



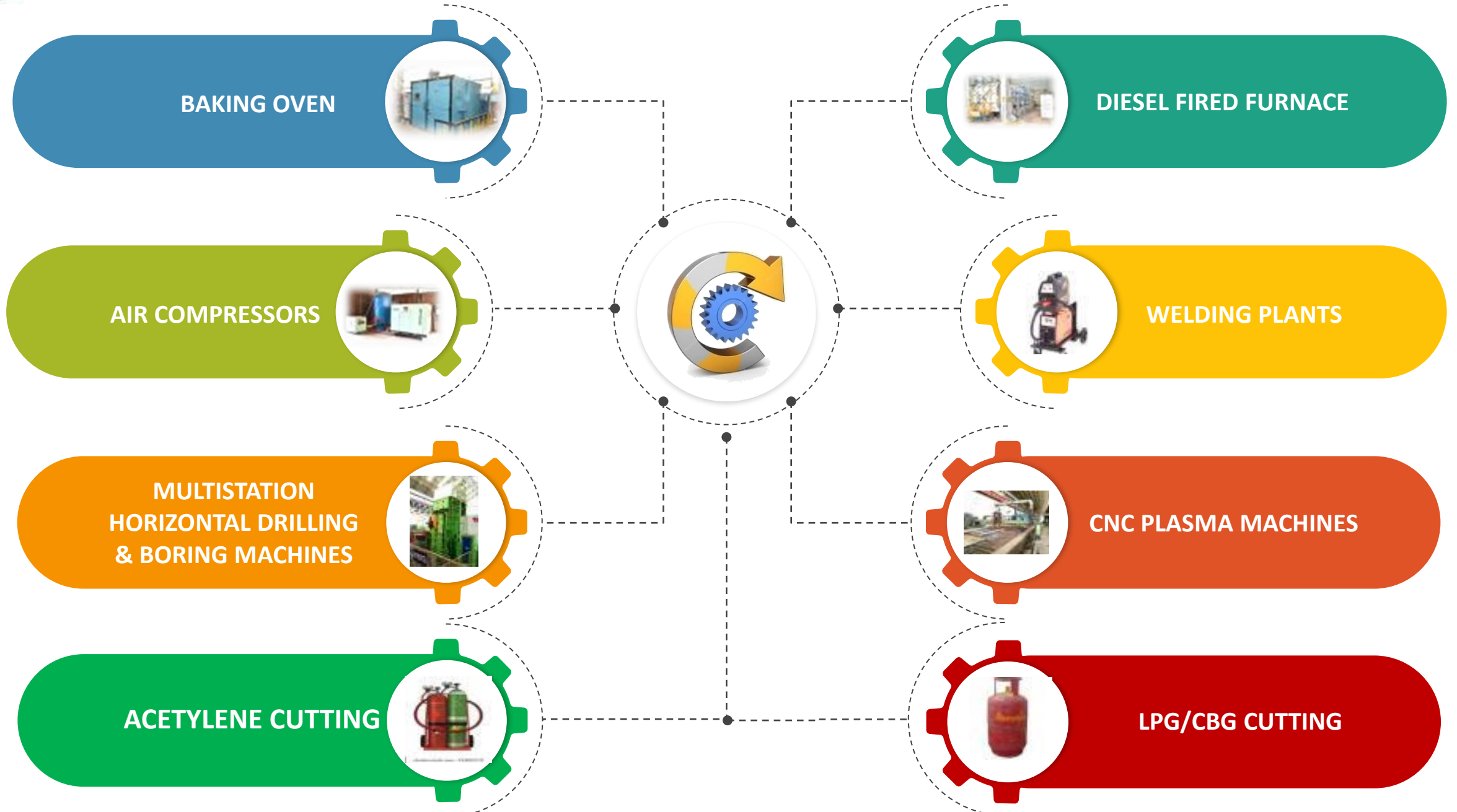
3646 EMPLOYEES



MAXIMUM ENERGY DEMAND 2400 KVA

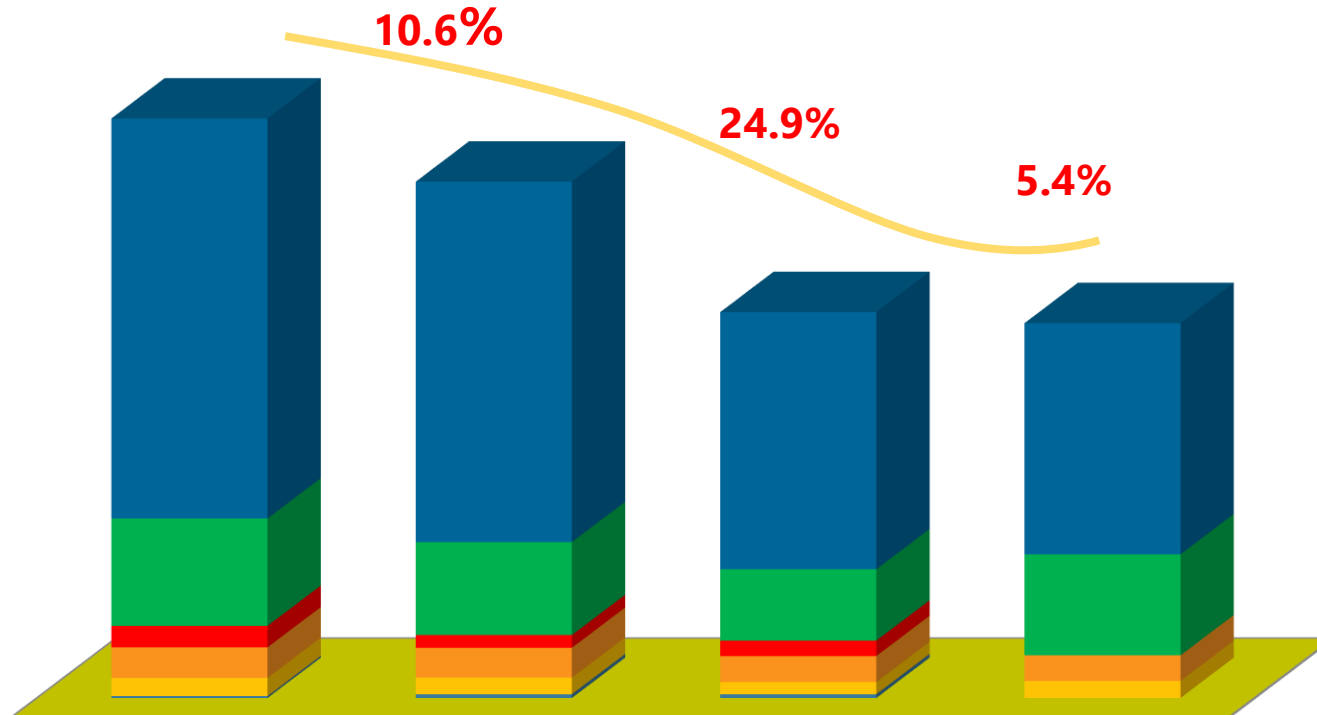


Major Process Equipment





TOE Of Various Energy Sources



2018 - 19
657 TOE

2019-20
579 TOE

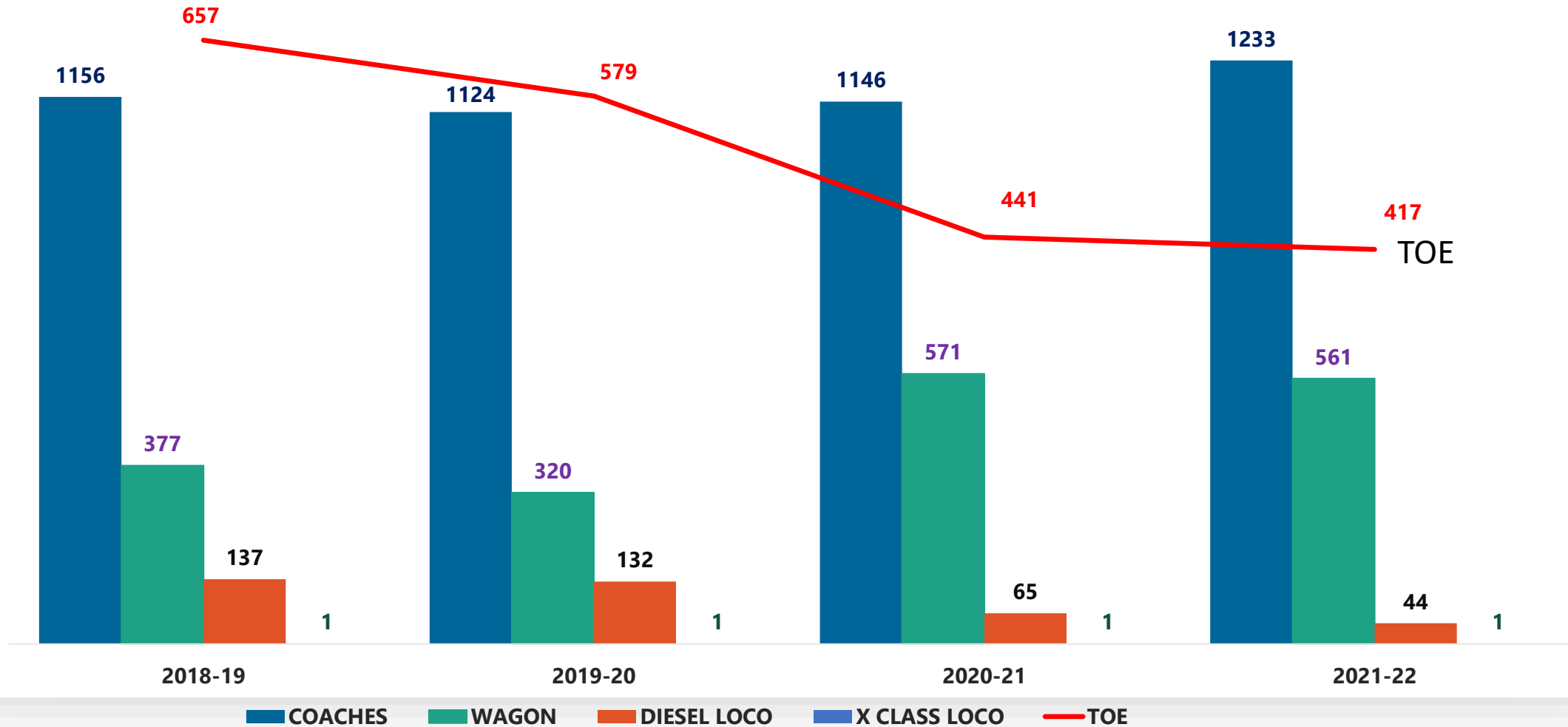
2020-21
441 TOE

2021-22
417 TOE

	2018-19	2019-20	2020-21	2021-22
■ ELECTRCITY	446	402	287	258
■ HSD OIL	119.9	103.8	79.64	112.8
■ FURNANCE OIL	24.01	14.25	17.29	0
■ ACETYLENE	34.1	33.3	29	28.57
■ CUTTING GAS	20.33	18.55	13.61	19.08
■ COKE	2.1	4.2	4.2	0



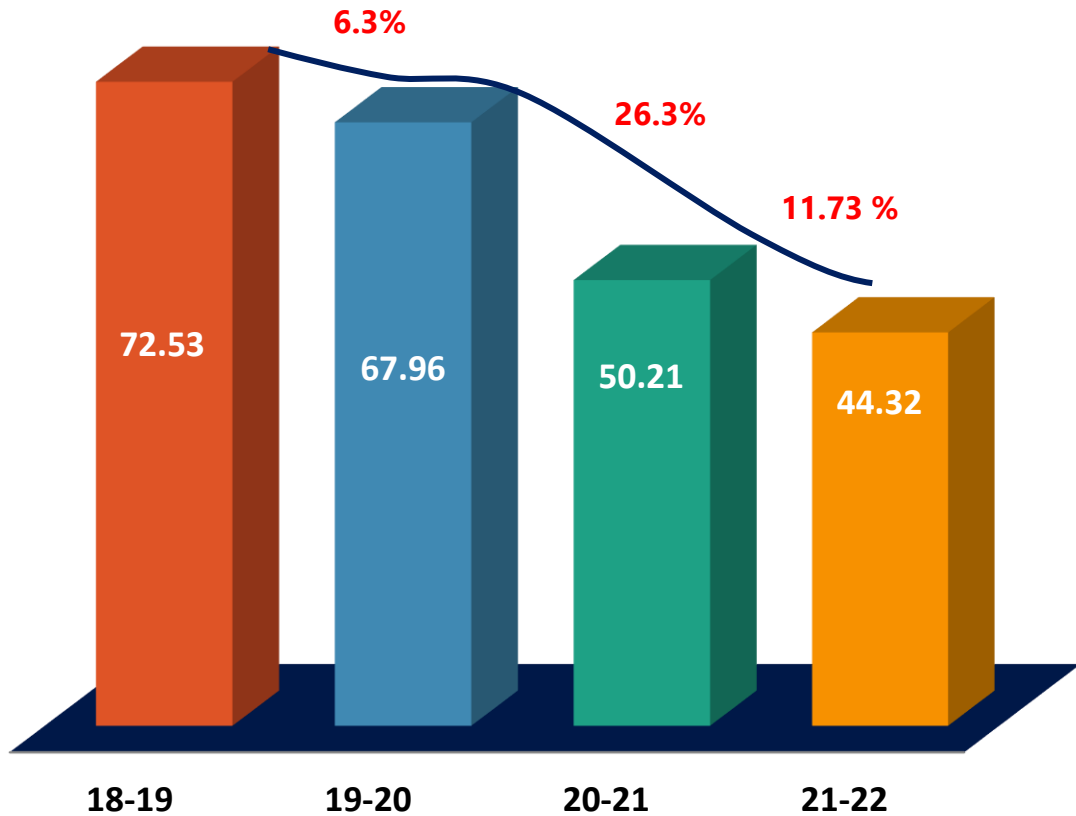
Out Turn Vs Energy Consumption Trend - Last 3 Yrs





Specific Electrical Energy Consumption - Kwh/Tonne

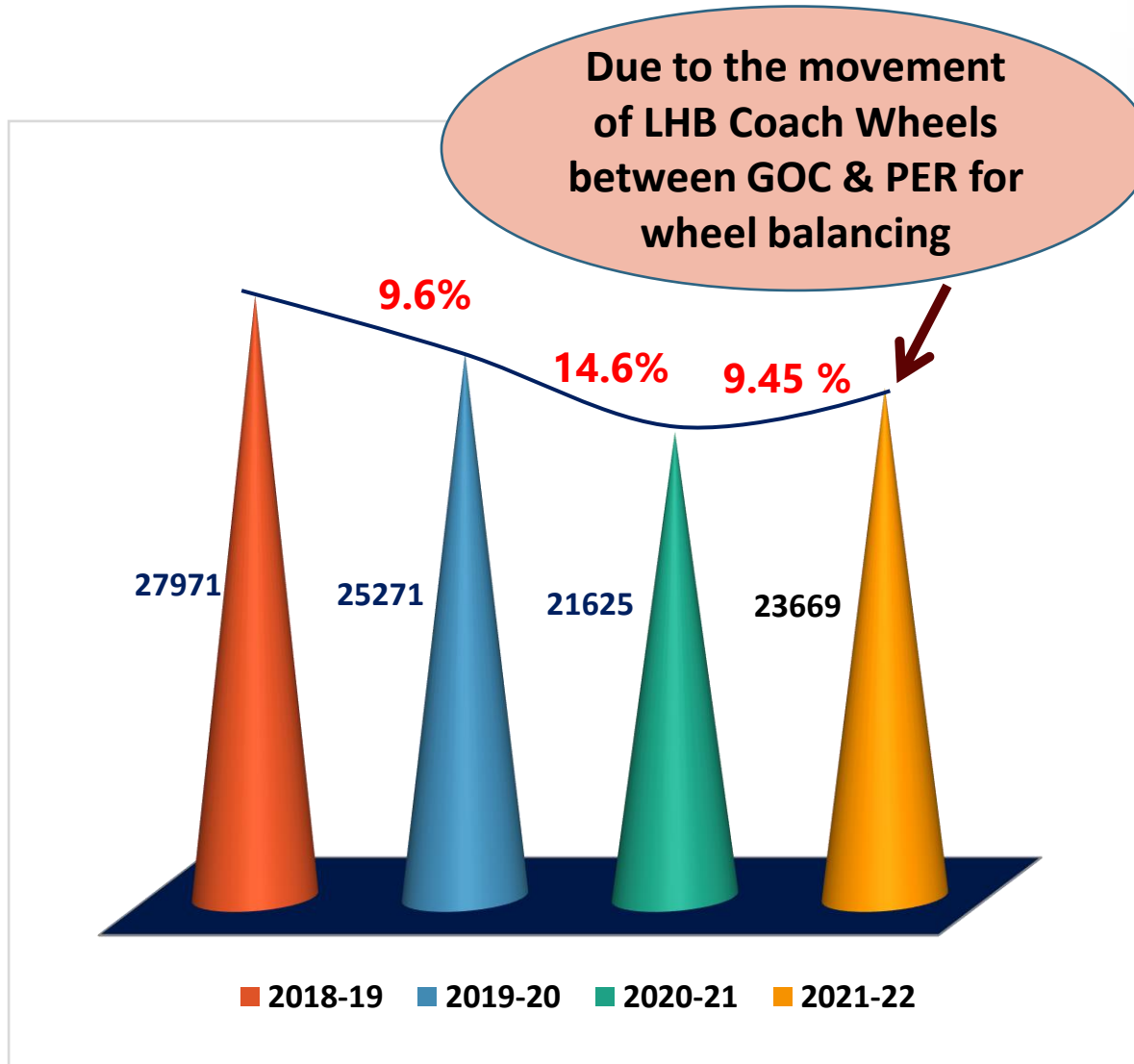
Reduction in Electrical Energy (SEC) is owing to



- Installation of APFC Panels in 03 substations
- Reduction of CMD from 2700 to 2400 KVA.
- Replacement of 3 Nos of 300 CFM Expressor compressor with screw compressor
- Replacement of 154 Nos of conventional welding plants with IGBT based welding plants
- Replacement of 2 Nos of Conventional Resistance type Charger / Discharger with Regenerative type battery chargers
- Provision of Energy meters for 120 Energy Intensive machines & installation of IOT based Energy Management system for Microlevel monitoring
- Replacement of 370 Nos of Conventional ceiling fans with BLDC ceiling fans.
- Replacement of 32 Nos of conventional Air circulators with BLDC Air circulators
- Installation of 448 Nos of Wind driven roof mounted Ventilators.
- Withdrawal of 26 Nos of inefficient oil/Diode based Welding plant and 2 Nos of oven from service.



Specific Thermal Energy Consumption - Kcal/Tonne



Projects implemented for Thermal Energy conservation

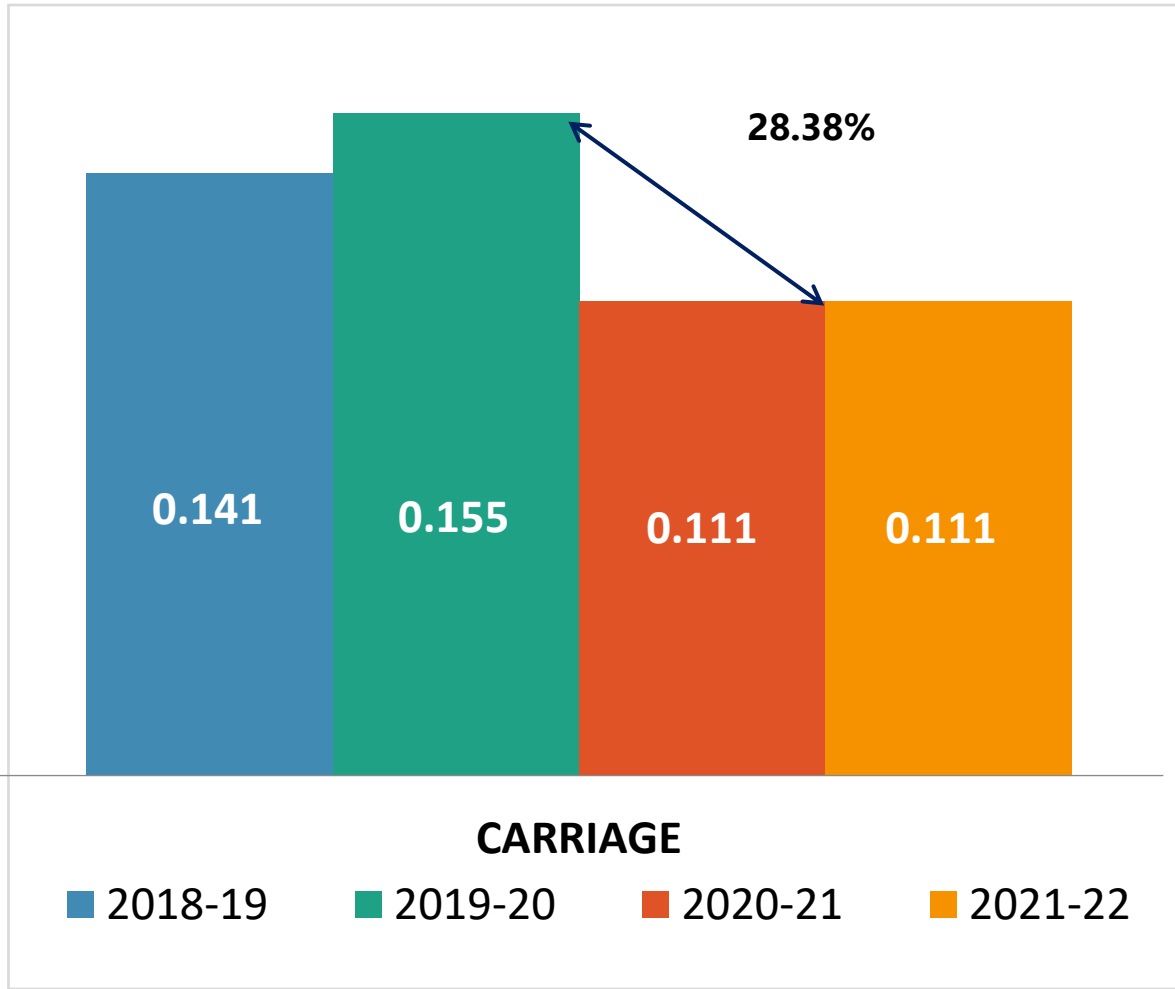
- Conversion of furnace oil fired furnace to HSD oil furnace
- Installation of 1 No. Oxy - hydrogen fuel gas Generator for Metal cutting in place of Acetylene
- Solar Concentrator based Hot Water system.
- Introduction of CBG fuel to replace the Oxy-Acetylene fuel for metal cutting
- Replacement of Diesel operated fork lift with Battery operated fork lift.
- Introduction of alternative cleaning process to save LPG.



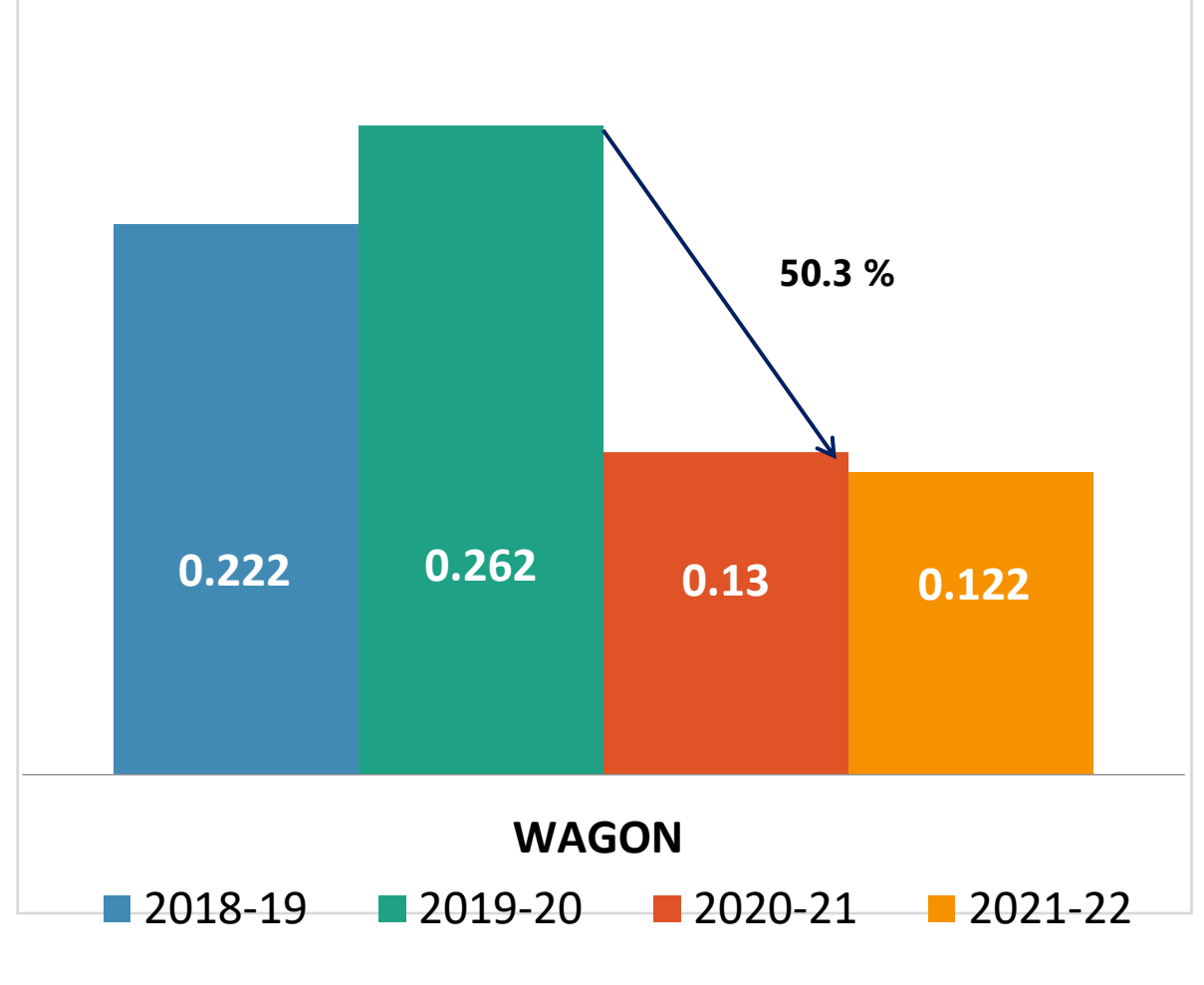
Specific Energy Consumption Of All Major Products



**SEC- CARRIAGE
(TOE/COACH)**



**SEC-WAGON
(TOE/WAGON)**

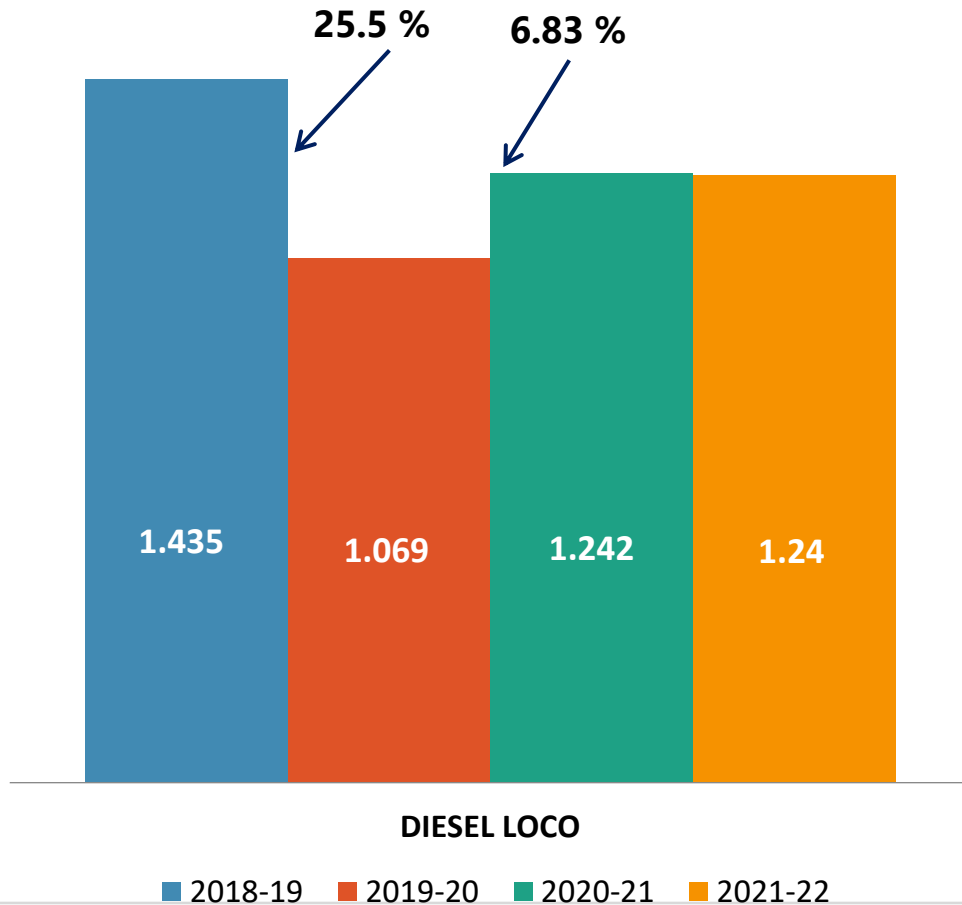




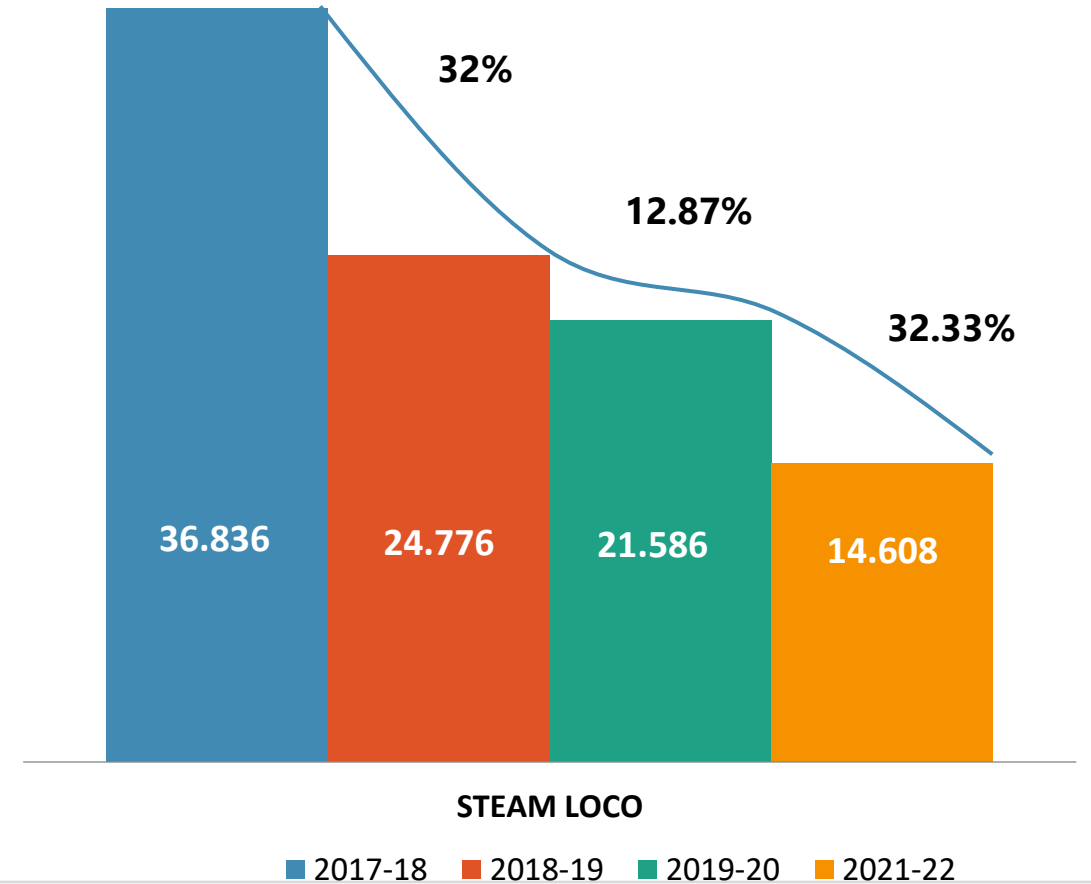
Specific Energy Consumption Of All Major Products



SEC- LOCO (TOE/DIESEL LOCO)

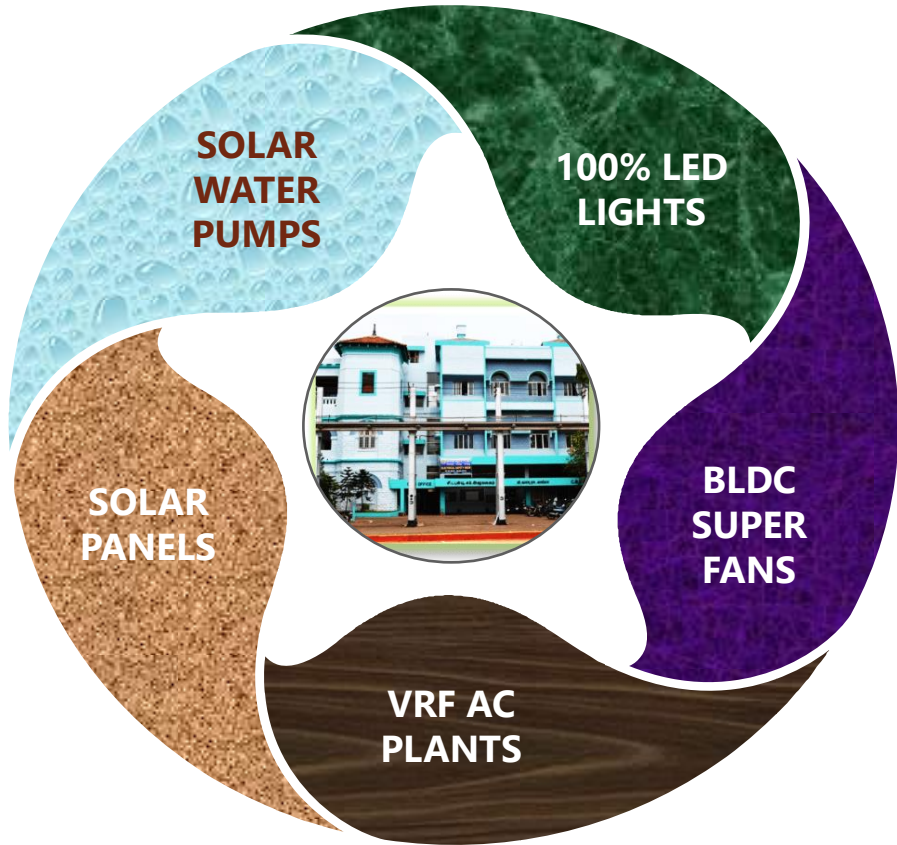


SEC- X CLASS LOCO (TOE/X CLASS LOCO)





National Benchmarking - 5 Star Rated Admin Buliding



EPI required for 5 star rating:

<45 kWh/Sq. m/year

EPI achieved:

32.11 kWh/Sq. m/year

EPI FOR THE YEAR 2021-22:

25.67 kWh/Sq. m/year



Major Encon Projects Planned - 2022-23



S. No	PROJECT	ENERGY SAVINGS	INVESTMENT Rs. IN LAKHS	PILLARS OF GREENCO
1	INSTALLATION OF JALVAYU (AQUA GAS) ON SITE OXYHYDROGEN FUEL GAS GENERATOR, FOR METAL CUTTING IN PLACE OF ACETYLENE (2 Nos.)	0.466 M.Kcal	20.98	Harnessing of Energy available in water (Commissioned on : 27.06.2022)
2	INSTALLATION OF DYNAMIC WHEEL BALANCING MACHINE	588.929 M.Kcal	28.75	To eliminate the transportation of LHB Coach wheels between GOC workshop & Carriage works /PER through lorry. By implementing this Project, 64000 Liters of HSD Oil can be conserved. (Machine commissioned on 29.06.2022)
3	INSTALLATION OF IGBT CONTROLLED BAKING OVENS OF CAPACITY 25 KW (2 Nos.)	59400 KWH	30.82	Improving Process Efficiency (Under Procurement)
4	IOT BASED WATER MANAGMENT SYSTEM	-	39.9	Commissioned On: 02.07.2022
5	100 % WITHDRAWAL OF ACETYLENE AS A FUEL FOR METAL CUTTING	-	8.64	GHG Emission & Energy cost reduction (From the month of July 2022 procurement of Acetylene has been stopped)
6	INSTALLATION OF 500 KW SOLAR PANEL	730000 KWH	294.65	Harnessing of solar power (Tender Under Negotiation for 250 KWp)
7	REPLACEMENT OF CONVENTIONAL AIR CIRCULATORS BY BLDC AIR CIRCULATORS (16 Nos.)	8627 KWH	2.4	Process improvement (Commissioned on 02.06.2022)
8	REPLACEMENT OF CONVENTIONAL FANS BY BLDC FANS (180 Nos.)	16200 KWH	5.382	Improving Energy Efficiency (80 Nos completed)
9	CONVERSION OF COAL/F.O. FIRED BOILER INTO DIESEL FIRED BOILER IN X CLASS LOCO MANUFACTURING	715 M.Kcal	7.00	GHG Emission & Energy cost reduction

Total Electrical Saving : 8,14,227 KWH
Total Thermal saving : 1304.395 M Kcal

Total Investment : 438.522 LAKHS



Consolidated Details of Projects Implemented For last 3 Yrs



YEAR	NO. OF ENERGY SAVING PROJECTS	INVESTMENTS (INR MILLIONS)	ELECTRICAL SAVINGS (MILLION KWH)	THERMAL SAVINGS (MILLION KCal)	SAVINGS (INR MILLION)	IMPACT ON SEC (ELECTRICAL, THERMAL)
2019 - 20	8	15.68	0.537	26.27	4.750	ELECTRICAL & THERMAL
2020 - 21	4	26.56	0.919	-	8.014	ELECTRICAL
2021-22	9	11.94	0.859	6.98	8.779	ELECTRICAL & THERMAL
TOTAL	21	54.18	2.315	33.25	21.543	



Innovative Projects Implemented -2021-22



Usage of Environmental friendly Upgraded Compressed Bio Gas for manual and machine profile cutting of carbon steel plates for replacing Acetylene and BMCG in GOC Workshops.



Cascade of CBG cylinders



Manual Gas cutting using CBG with existing Oxy-fuel torch with no modification for manual cutting of carbon steel plates ranging from 10 to 25 mm sizes at Wagon component shop.



Gas cutting using CBG in the existing profile cutting machine with no modification.



First of its kind in INDIA to use upgraded CBG for carbon steel metal cutting.



Innovative Projects Implemented -2021-22



Demonstration for usage of Carbon Neutral Upgraded Compressed Bio Gas for Wheel disc cutting and canteen cooking applications in GOC Workshops.



Cutting of wheel discs using CBG with no modification in cutting torch



Usage of CBG in canteen burners for cooking instead of LPG

Key Benefits of using CBG in replacing Acetylene and Bharat Metal cutting Gas are:

- Carbon Neutral Fuel (3 times lesser Carbon foot print that Bharat Metal Cutting Gas and 4 times lesser than Acetylene)
- Cost of Acetylene is Rs. 588 per Cubic metre whereas Cost of CBG is Rs.88/- per Cubic Metre.
- Very safe fuel compared to Acetylene gas
- Very narrow range of flammability index 4.4 – 16.5 as against 2.5 – 80 for Acetylene
- 100% usage with zero residual gas while sending for refilling
- 100% Greener supply chain due to transportation of cascades in CBG fired vehicle.



Innovative Projects Implemented -2021-22



Solar Thermal Parabolic Concentrator (SCHEFFLER DISH) with SUN Tracking at GOC Workshops



- This project was implemented with an objective to reduce the GHG emission and Electrical energy consumption While supplying hot water for soaking & cleaning of Rolling stock components.
- It substitutes the Electrical Heating loads in component cleaning to a tune of 260 kWh per day and reduces the 214 kg of CO2 emission per day.
- It can generate steam with lesser flow rates for canteen applications also.

Sl	Key features	Capacity
1	Peak Hot Water supply (Energy resilience during sun shine)	5000 lit/day
2	Supply water Temp at user Point	75 -82 Degree C
3	Number of Parabolic Concentrators & Energy receiving points	6
4	Reflecting area of each Parabolic Concentrators	16 sq.m
5	Collector storage Capacity Energy resilience	5,000 Lit
6	Sun Tracking	Automatic, Timer based

**COST OF PROJECT :
24.85 Lakhs**



Innovative Projects Implemented– 2021-22



Afforestation measures- BEEMA BAMBOO Plantation



Planting of 4496 saplings of BEEMA BAMBOO was done during 2021-22 by CWM /GOC, Officers, supervisors and staff in GOC Workshop.

Target for the year 2022-23 is 15000 Nos of Bheema bamboo Saplings

- Each plant releases **35 % more oxygen** than an equivalent stand of trees.
- Due to 4496 plants, **407 T of CO₂** is absorbed every year.

Status: 100 % survival and good growth ensured





Utilisation Of Renewable Energy Sources



Renewable Energy Generation, Utilization and % of Overall Energy Consumption



Year	Technology (Electrical)	Type of Energy	Onsite / Offsite	Installed Capacity (MW)	Generation (Million Kwh)	% of Overall Electrical Energy
FY 2019 -20	Solar PV	Renewable	Onsite	73 KW	0.053943	1.15
FY 2020 - 21	Solar PV	Renewable	Onsite	121 KW	0.1045914	3.14
FY 2021 - 22	Solar PV	Renewable	Onsite	121 KW	0.151819	5.07
	Solar thermal concentrator	Renewable	Onsite	5000 Liters of Hot water per day	0.0456	1.52



Utilisation Of Renewable Energy Sources



Translucent roofing sheets have been provided in sheds on need basis

Roof Mounted Ventilators
installed at GOC Workshop:
697 Nos. up to 2020-21
448 Nos during 2021-22



Estimated Annual Energy Saving :
2,51,427 KWh



Waste Utilization & Management



Co-processing of **accumulated Zero Value Waste (ZVW)** such as **Rexine cloth, "V" belt, FRP items, assorted Vynatile sheets, plywood waste, cushion packing material etc., at Cement factories** to reduce their coal consumption. All old wastes are now disposed off and the reclaimed area [Approx. **1,00,000 Sqft.**] is utilized for afforestation. So far **400 tree saplings** have been planted.



Green House Gas emission reduction-Carbon neutral approach

YEAR	ZERO VALUE WASTE DISPOSED IN MT	REDUCTION OF COAL IN METRIC TONS	REDUCTION OF CO ₂ EMISSION IN METRIC TONS
2018-19	6250	625	340
2019-20	7500	750	399
2020-21	5000	500	266
2021-22	6500	650	346



Waste Utilization & Management



Briquetting of fallen leaves



Kitchen and paper waste used to generate 5 cubic meter of biogas daily.





GHG Inventorisation



GHG emission contribution in MT of CO ₂ equivalent							
YEAR	Electricity	HSD oil	Furnace oil	Coke	Acetylene gas	Cutting gas (LPG)	Total
2018-19	4197.13	343.83	75.25	10.48	46.55	46.08	4719.34
2019-20	3838.45	297.70	41.70	19.02	45.46	42.07	4284.41
2020-21	2732.81	228.10	50.59	19.02	39.31	30.85	3047.64
2021-22	2418.92	302.60	0	0	39.00	42.82	2803.36



9.23 %



28.87 %



8.01 %

Action Plan For Achieving Short Term & Long Term CO₂ Emission Reduction Targets :

1. Adopting smart technologies(IoT based Energy Management System, IGBT based welding plants & Ovens, VFD based Cranes etc.) resulting in reduction of purchased electricity.
2. Switching over to carbon Neutral fuel for process applications like gas cutting & Furnace Operations.
3. Harnessing Renewable Energy (500 KW PV Solar panel) for reducing Purchased Electricity.
4. Substituting waste for reducing carbon foot print.
5. Planting 15000 Nos of saplings of Bheema Bamboo in the year 2022-23.



GHG Inventorisation



REDUCTION IN GHG EMISSION DUE TO THE IMPLEMENTATION OF PROJECTS

Name and address of the industry: CENTRAL WORKSHOPS, SOUTHERN RAILWAY, GOLDENROCK, TRICHIRAPPALLI				IMR No
Water Act:				
Consent No:	Water Consumption in KLD	Waste Water in KLD	Mode of Treatment: Biological/Chemical	
2108140382053	I. Domestic - 193.997	I. Domestic - 104	Re-used 67 KLD	
Valid up to	ii. Industrial - 71.113	ii. Industrial - 90.1	Re-used 71 KLD	
31-3-2022				
Air Act:				
Consent No:	1. No of Chimney 9	Control equipments - Stacks	Quantity of Emissions:	
2108140382053	2. Fuel Consumption (Qty/month)			
	* Electricity	230834 Units	i. SO ₂ = 11481 m ³ /Month	
Valid up to:	* HSD	10.55 kl	ii. NO _x = 7828 m ³ /Month	
31-3-2022	* LPG/Cutting Gas	1148 Kg	iii. SPM = 1584 m ³ /Month	
	* Acetylene	1852 m ³ /day	iv. Others = --	
Non Hazardous Solid Waste				
Qty generated/month	Quantity stored at Site:		Quantity Disposed	
Hazardous Waste Management & Handling Rules:				
Authorisation No:	Category of waste and Quantity generated/Month	Qty Stored at Site	Quantity Dispose/Month/Year to Authorized facility/recyclers/ TSDF/re-refiners	
1621	S.1 used spend oil	40 MT	30 MT	
	S.2 Residue containing oil	3 MT	1.1 MT	
Valid up to:	I.2.1 Acidic and Alkaline residue	15	0.65 MT	
	35.3 ETP sludge	3	5.5 MT	
Electronic Waste (computers & Others)				
	Quantity generated & Stored at Site		Quantity Disposed	
Number of Lead Acid Batteries: (at office/UPS & DG set)	Quantity generated & Stored at Site	9678 Nos (in 2020)	Number of Batteries disposed per month/Year	9678 Nos (in 2020)


S No	Process	Type of Energy	GHG Protocol
1	Gas cutting, Furnace burning	BMCG, Acetylene, HSD, Coke	Scope I
2	Machine operation and allied services	Electricity	Scope II
3	Internal Transport (Fork lifts and JCB, Tractors, Tippers)	HSD	Scope II
4	External Transport for Product Delivery, Receipt and Waste Disposal) (Lorries)	HSD	Scope III

YEAR	MT of CO ₂ Reduction	SCOPE
2018-19	635.44	I
2019-20	447.85	I & II
2020-21	753.33	I
2021-22	943.18	I & II

**DISPLAY BOARD
AT MAIN
ENTRANCE**



Green Supply Chain Management





Green supply chain policy


The Stores Department in Central Workshop, Southern Railway, Ponmalai is committed to protect the environment by striving for Green supply chain mutually with the vendors in the following areas:

- adhering to environment, health and safety compliance.
- arranging training and capacity building to create awareness and follow environmental practices.
- cultivating plantation and greenery.
- encouraging saving of energy and water.
- reusing recyclable resources.


Date: 03-12-2021



Dy. Chief Materials Manager
 17th Floor, Southern Railway
 Workshop, Ponmalai - 605 004, Chennai - 60



Green supply chain policy



Green Procurement guidelines

Encourage the vendors to

- follow environmentally sound practices in manufacturing.
- supply and increase the availability of environment friendly materials duly following RoHS directives by MOEF.
- avoid the usage of single use plastic for packing purpose.
- reduce waste generation, specific energy and water consumption
- Designing of product to have less hazardous substance at end of life time.
- Allowing the customers to visit the worksites and evaluate the green initiatives taken at their sites.
- Recycle and reduce the material consumption.
- Adopting eco friendly packaging materials.
- adopting proper conservation methods in storage of materials.
- Commitment to review the objectives for continual improvement towards greener environment and to comply with all the applicable legal requirements.


Transport Policy

- The trucks/vehicles less than 15 years old only to be used for transporting materials to the Workshop.
- All the trucks/vehicles transporting the materials to the Workshop, must carry valid Pollution Under Control certificate and valid insurance policy.
- All the trucks/vehicles transporting hazardous materials to the Workshop, must carry the product Material Safety Data Sheet (MSDS) and valid Chemical Abstracts Service (CAS) number.
- All new heavy vehicles to be fitted with speed governors
- RTA norms should be must be followed for driver's competence.
- The transporter must ensure that any pilferage/leakage to be avoided during the transit of the material.

All over the Indian Railways, the procurement procedures are followed as per the directives/guidelines issued by the Railway Board from time to time and also as per the instructions of the vendor approving agencies/Production Units. Hence, for the same material, the suppliers may not be the same for every procurement activity.

However, the procurement officials will encourage all the suppliers to support the green initiatives taken by Central Workshop to improve the environment.

Date: 03-12-2021



Dy. Chief Materials Manager
 17th Floor, Southern Railway
 Workshop, Ponmalai - 605 004, Chennai - 60

Green Procurement guidelines

GreenCO awareness and Vendor greivance Meet

23 Dec 2021 11:30 to 12:30 23 Dec 2021 (GMT+05:30) India Standard Time - Kolkata Time

All day Doesn't repeat

[Event Details](#) [Find a Time](#)

[Join with Google Meet](#)

meet.google.com/csu-meyh-nho Up to 100 guest connections


Add location

Email 5 minutes

Notification 5 minutes

Add notification

Nanda Kumaran Dy CMM GOC



Online Vendor meet conducted on 23.12.2021



Green Supply Chain Management



Initiatives taken in supply chain to reduce Energy consumption

Supplier / vendor audits for >50% of the critical suppliers / vendors

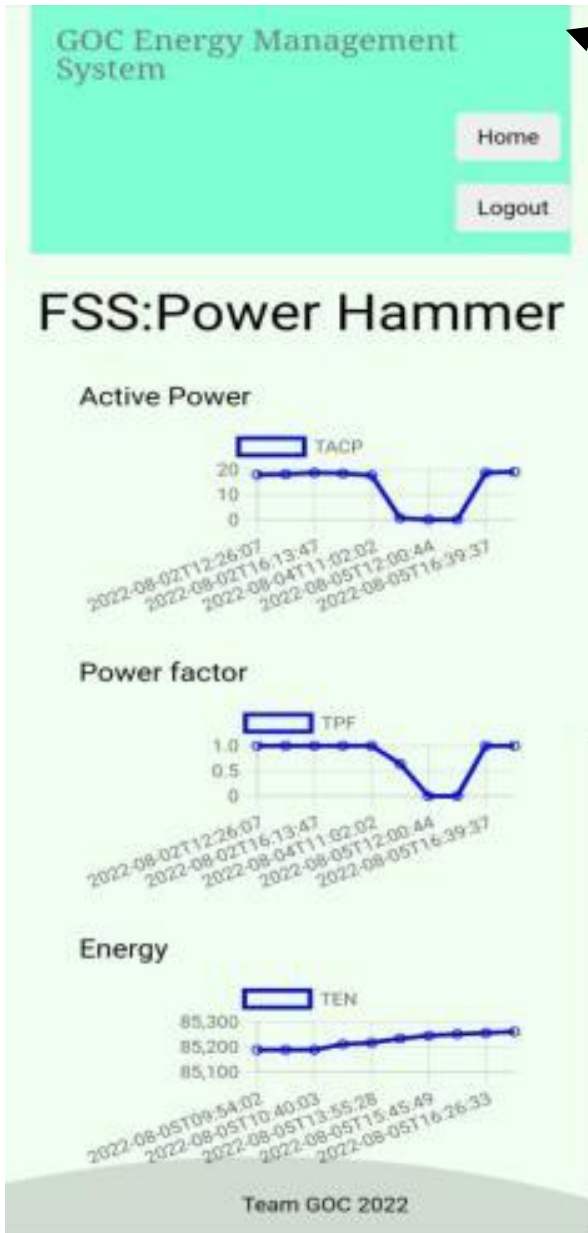
Sl	Vendor Name	Products supplied	audits conducted
1	SIECHEM TECHNOLOGIES PRIVATE LIMITED-PONDICHERRY	Wires & Cables	1
2	AMARA RAJA BATTERIES LTD	Batteries	1
3	EXIDE INDUSTRIES LIMITED	Batteries	1
4	FAIVELEY TRANSPORT RAIL TECHNOLOGIES INDIA LIMITED-HOSUR	Brake control equipment, Pantograph	1
5	MEDHA SERVO DRIVES PRIVATE LIMITED-HYDERABAD	Electronic products	1
6	MYSORE THERMO ELECTRIC PVT LIMITED-BANGALORE	Batteries	1
7	NANDI ELECTRIC COMPANY-BANGALORE	HRC fuses, Terminals	1
8	POLYMER PRODUCTS OF INDIA-BANGALORE	Rubber products	1
9	VIBGYOR PAINTS AND CHEMICALS M.M.NAGAR -CHENNAI	Paints	1
	Total		9

Plan for Expansion of Green Supply Chain

- **Conducting Vendor meets Periodically to encourage the vendors around Trichy so as to supply the materials which are being supplied by vendors from far away places in order to minimize the fuel consumption during transit.**
- **Evaluation of Vendors periodically to make them Energy Efficient.**



Team work, Employee Involvement & Monitoring



Daily monitoring of energy consumption of energy intensive machines through IOT.

Daily Energy consumption of GOC Workshop is monitored at Power House and shops contributing for the increase in the Energy consumption will be advised on monthly basis.

September - 2022										September - 2022												
Date	Supply	Reqd	Load	Cur	Power	Daily	Consum	Power	Factor	Max	Min	Average	Power	Factor	Max	Min	Average	Remarks	Shop			
01-09	621.18	-	-	-	621.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
02-09	629.52	0.34	13600	12600	629.52	0.34	12600	12600	1.000	0.992	0.040	14600	-	-	-	-	-	-	-	No power failure		
03-09	629.83	0.36	12000	25800	629.83	0.36	12000	25800	1.000	0.995	0.081	14900	-	-	-	-	-	-	-	-	-	
04-09	630.11	0.39	11600	27200	630.11	0.39	11600	27200	1.000	0.990	0.041	14900	-	-	-	-	-	-	-	-	-	
05-09	630.34	0.28	9200	28100	630.34	0.28	9200	28100	1.000	0.988	0.091	16900	-	-	-	-	-	-	-	-	No power failure	
06-09	630.61	0.33	13000	39600	630.61	0.33	13000	39600	1.000	0.990	0.042	14900	-	-	-	-	-	-	-	-	-	-
07-09	630.91	0.30	12000	72100	630.91	0.30	12000	72100	1.000	0.990	0.042	14900	-	-	-	-	-	-	-	-	-	-
08-09	631.02	0.29	11600	84000	631.02	0.29	11600	84000	1.000	0.990	0.082	16900	-	-	-	-	-	-	-	-	-	-
09-09	631.21	0.29	11600	74000	631.21	0.29	11600	74000	1.000	0.995	0.042	16900	-	-	-	-	-	-	-	-	-	-
10-09	631.47	0.31	70400	103200	631.47	0.31	70400	103200	1.000	0.998	0.042	16900	-	-	-	-	-	-	-	-	-	-
11-09	631.75	0.26	9600	114400	631.75	0.26	9600	114400	1.000	0.988	0.092	16900	-	-	-	-	-	-	-	-	-	No power failure
12-09	632.07	0.28	12000	120600	632.07	0.28	12000	120600	1.000	0.994	0.042	16900	-	-	-	-	-	-	-	-	-	-
13-09	632.36	0.28	12000	142000	632.36	0.28	12000	142000	1.000	0.992	0.042	16900	-	-	-	-	-	-	-	-	-	-
14-09	632.71	0.27	12000	152400	632.71	0.27	12000	152400	1.000	0.995	0.042	16900	-	-	-	-	-	-	-	-	-	-
15-09	633.20	0.29	11600	144000	633.20	0.29	11600	144000	1.000	0.995	0.042	16900	-	-	-	-	-	-	-	-	-	-
16-09	633.61	0.28	12000	171000	633.61	0.28	12000	171000	1.000	0.990	0.042	16900	-	-	-	-	-	-	-	-	-	-
17-09	634.01	0.31	9600	180000	634.01	0.31	9600	180000	1.000	0.988	0.042	16900	-	-	-	-	-	-	-	-	-	No power failure
18-09	634.43	0.31	12000	198000	634.43	0.31	12000	198000	1.000	0.998	0.042	16900	-	-	-	-	-	-	-	-	-	-
19-09	634.99	0.30	13200	203000	634.99	0.30	13200	203000	1.000	0.990	0.042	16900	-	-	-	-	-	-	-	-	-	-
20-09	635.45	0.30	13600	221000	635.45	0.30	13600	221000	1.000	0.990	0.042	16900	-	-	-	-	-	-	-	-	-	-
21-09	635.94	0.32	12000	230000	635.94	0.32	12000	230000	1.000	0.990	0.042	16900	-	-	-	-	-	-	-	-	-	-
22-09	636.45	0.34	9600	241000	636.45	0.34	9600	241000	1.000	0.990	0.042	16900	-	-	-	-	-	-	-	-	-	No power failure
23-09	636.92	0.32	12000	259000	636.92	0.32	12000	259000	1.000	0.990	0.042	16900	-	-	-	-	-	-	-	-	-	-
24-09	637.44	0.32	12000	267000	637.44	0.32	12000	267000	1.000	0.990	0.042	16900	-	-	-	-	-	-	-	-	-	-
25-09	637.92	0.32	12000	287000	637.92	0.32	12000	287000	1.000	0.990	0.042	16900	-	-	-	-	-	-	-	-	-	-
26-09	638.41	0.32	12000	300000	638.41	0.32	12000	300000	1.000	0.990	0.042	16900	-	-	-	-	-	-	-	-	-	-

KAIZEN

- PROVISION OF TIMER FOR RESTRICTION OF WORKING HOURS OF COMPRESSORS, OVEN AND BOSCH TANKS
- DEVELOPMENT OF IOT BASED ONLINE ENERGY MONITORING SYSTEM FOR 48 NOS OF ENERGY INTENSIVE MACHINES AT WHEEL SHOP, DSL POH AND WAGON SHOP TO PAVE THE WAY FOR MICRO LEVEL ENERGY MONITORING
- ELIMINATION OF USAGE OF LPG FOR CLEANING OF BATTERY BOXES OF PASSENGER CARRIAGES DURING POH BY INSTALLING A BOSCH TANK



Team work, Employee Involvement & Monitoring

WEEKLY PERFORMANCE REVIEW MEETING CHAIRED BY CWM/GOC
(CONDUCTED EVERY TUESDAY TO REVIEW THE OUTTURN AND ENERGY PERFORMANCE)



**ENERGY
MANAGEMENT
TRAINING**



EMPLOYEES

**SUPERVISORS
(450 Nos.)**

**OFFICERS
(25 Nos.)**

100 % employees were given training regarding energy efficiency measures in their respective areas of work

All supervisors are trained on Energy Efficiency and Management

25 Supervisors were trained on Internal Audit of Energy Management System.

Awareness and the requirements of Energy Management System-Trained by outside agency



Implementation of ISO 50001 /GREEN Co / IGBC Rating



ALLOCATION OF FUNDS FOR ENERGY CONSERVATION PROJECTS



% INVESTMENT OF ENERGY SAVING PROJECTS ON TOTAL TURNOVER OF THE COMPANY : 0.329



Learning from CII Energy award or any other Award Program



- **BEST PRACTICES FOLLOWED BY OTHER INDUSTRIES FOR ENERGY CONSERVATION**
- **ZERO VALUE SCRAP DISPOSAL TO CEMENT INDUSTRIES**
 - **VRF BASED AC PLANTS**
 - **IOT BASED COMPRESSOR MONITORING**
- **SOLAR THERMAL PARABOLIC CONCENTRATOR**
 - **BLDC CEILING FAN /AIR CIRCULATOR**



Any other relevant Information

ACCOLADES OF GOC WORKSHOP



**CERTIFICATE OF
MERIT FOR THE YEAR
2020 FROM BEE**



CII AWARDS
**EXCELLENT ENERGY
EFFICIENT UNIT
2017 , 2020 & 2021
ENERGY EFFICIENT
UNIT 2018 & 2019**



**RECEIVED ENERGY
EFFICIENCY SHIELD
AWARD FROM
GM/S.RLY DURING
RAILWAY WEEK 2022.**

Thank you

Energy efficiency for a
sustainable future

