DIESEL LOCO SHED - MOULA ALI

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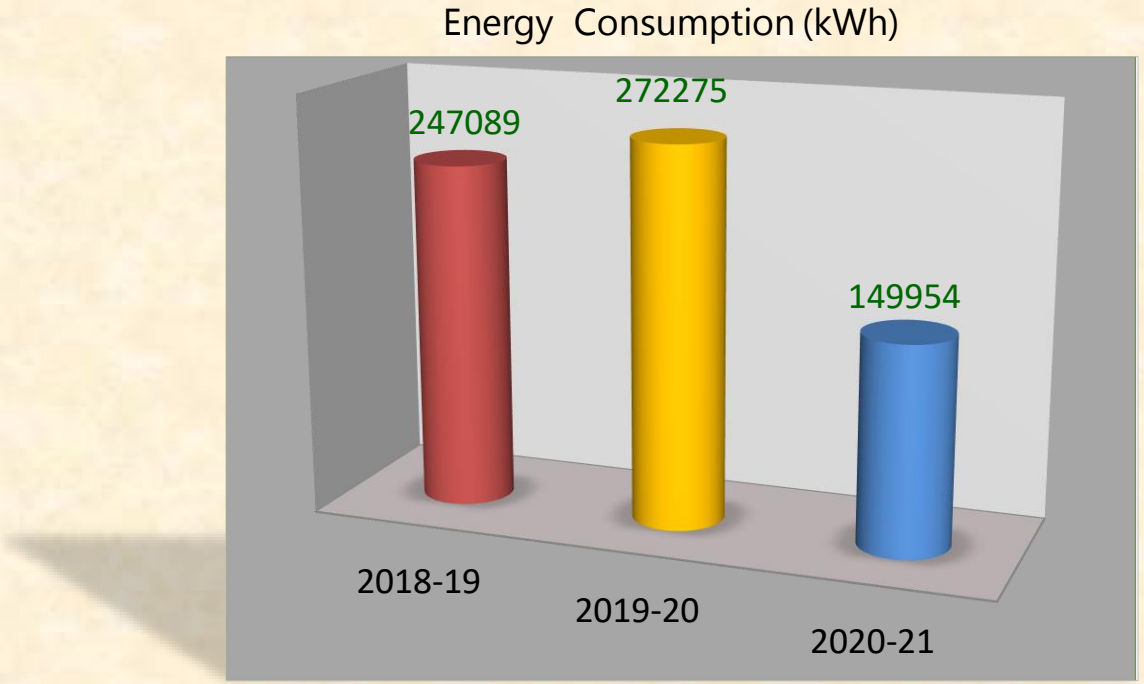
Brief introduction

- Diesel Loco Shed, Moula-Ali was established in the year 1979.
- The core activity of this shed is maintenance of Diesel Electric Locomotives and DEMUs.
- Also Maintains Accident Relief Equipment's viz. SPART, SPMRV and 140 T BD crane.
- This is the first Loco Shed in SCR to achieve 'Lean Six Sigma Certification' by M/s.Anexas in Europe on March 28, 2021.
- 1st Diesel Loco Shed over Indian Railways to acquire Green-Co Gold Rating.
- ISO – EnMS 50001:2018, ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007 & 5 S certifications.

Energy Consumption Scenario

- Consumption pattern and production data for the last 3 years

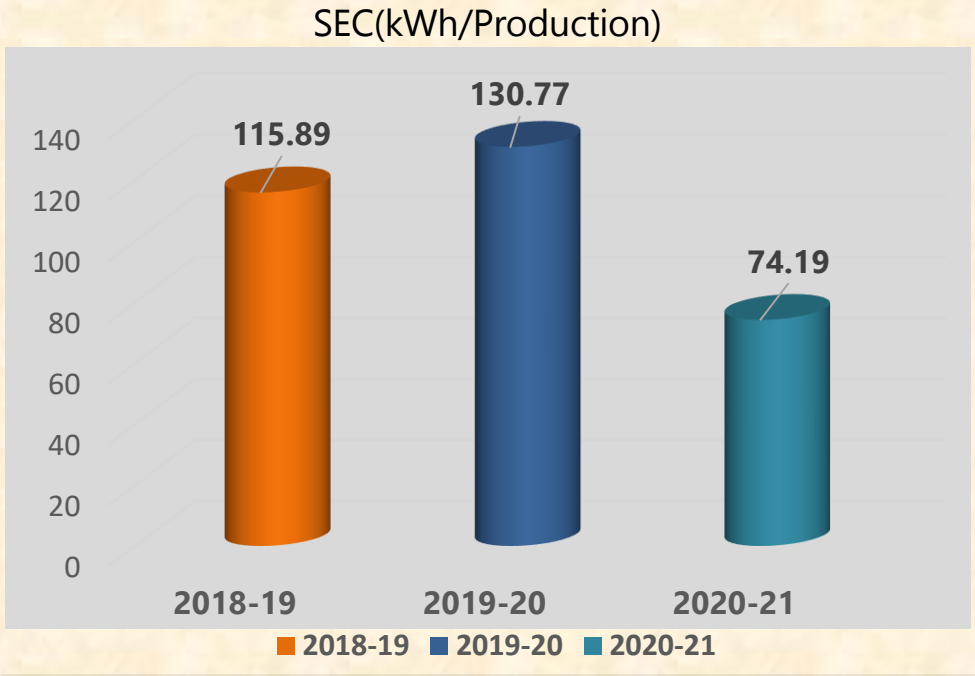
#	Year	Energy Consumption (kWh)	No. of Units Produced	SEC (kWh/Production)
1	2018-19	247089	2132	115.89
2	2019-20	272275	2082	130.77
3	2020-21	149954	2021	74.19



- **Consumption to was reduced by 45% in 2020-21 compared to 2019-20.**

Sp. Energy Consumption in last 3 years

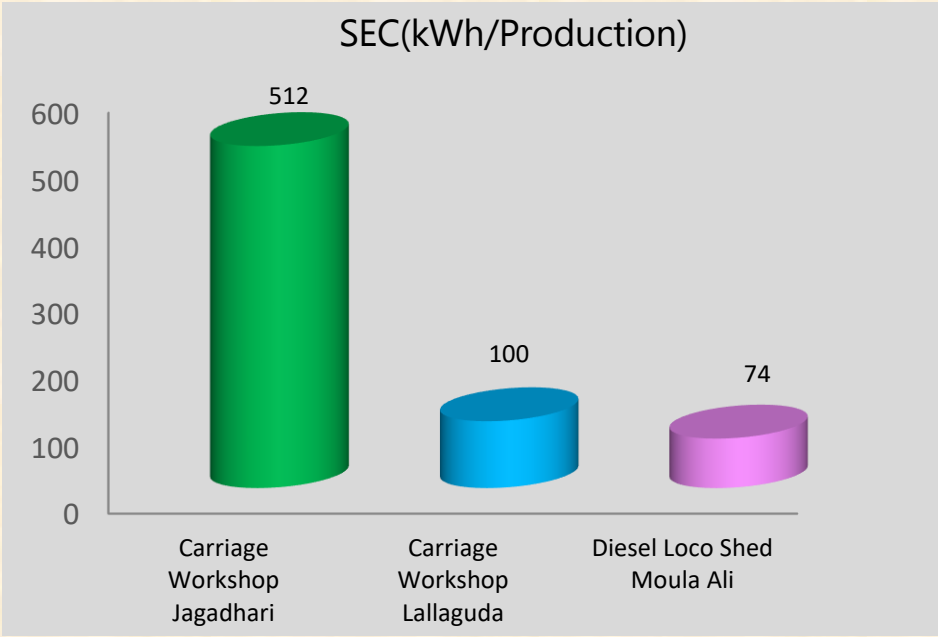
#	FY	SEC (kWh/Production)	% Impr. W.r.t. prev. Yr
1	2018-19	115.89	--
2	2019-20	130.77	-12.83
3	2020-21	74.19	43.26



- **SEC was improved by 43.26% in 2020-21 compared to 2019-20.**

Information on Competitors, National & Global benchmark

S.No	Competitor	SEC	Remarks
1	Carriage Workshop Jagadhari	512	SEC obtained from previous CII Presentations
2	Carriage Workshop Lallaguda	100	
3	Diesel Loco Shed Moula Ali	74	



- **This shed has the best SEC compared to other workshops.**

Information on Competitors, National & Global benchmark

- **Roadmap to Achieve Benchmarking**

- Capacity Building & Training programme for all staffs.
- Internal & External Audits.
- Replacement of Old and inefficient Air compressors.
- Provision of VVVF drives on Traverser & EOT cranes.
- Segregation of essential, non essential, light & machines loads for better monitoring & control.

Energy Saving projects implemented in last three years

- Reducing the Energy consumption by focussing on installation of renewable sources, Energy efficient alternatives, latest advance technology for energy monitoring & optimization of consumption.

Following are the some of the major energy saving projects

Encon projects implemented in 2018-19

#	Project Details (For the FY 2018-2019)	Investments (Lakh Rs.)	Savings (Lakh Rs.)	Payback in yrs
1	10 KWp Solar Power Plant	7.00	1.16	6.0
2	LED Fittings	5.78	2.68	2.1

- 20kWp Solar Power Plant contributes 6% total energy consumption of the shed.

Encon projects implemented in 2019-20

#	Project Details (For the FY 2019-2020)	Investments (Lakh Rs.)	Savings (Lakh Rs.)	Payback in yrs
1	LED Fittings	4.91	3.45	1.4
2	Timers	0.10	0.39	0.3
3	Energy savers for AC Units	2.60	1.30	2.0

- LED lighting contributes energy saving of 45000 units during 2020-21.

Energy Saving projects implemented in last three years

Encon projects implemented in 2020-21

#	Project Details (For the FY 2020-2021)	Investments (Lakh Rs.)	Savings (Lakh Rs.)	Payback in yrs
1	Solar Street Lights	4.00	0.31	12.9
2	Natural Day Light Pipes	0.55	0.19	2.9
3	BLDC Ceiling fans	2.60	1.30	2.0
4	Energy saver for Welding machines	0.49	0.36	1.4

- **Super Energy Efficient BLDC fans are contributing energy saving of 15000 units.**

6. Innovative Projects implemented

Innovation Project - 1

Commissioned of 5 Nos. of Day light pipe systems

Description of parameter	Unit	Value
Average consumption of existing street lights per annum	kWh	2190
Average consumption of Solar Street lights per annum	kWh	0
Average Difference consumption per annum	kWh	2190
Percentage of savings	%	100%
Average monetary savings per annum	Rs. in Lakhs	0.20

Innovative Projects implemented

Innovation Project - 1

Commissioned of 20 Nos. Solar Street Lights

Description of parameter	Unit	Value
Average consumption of existing street lights per annum	kWh	3504
Average consumption of Solar Street lights per annum	kWh	0
Average Difference consumption per annum	kWh	3504
Percentage of savings	%	100%
Average monetary savings per annum	Rs in Lakhs	0.32

Utilization of Renewable Energy sources

- 20kWp On Grid Rooftop Solar Power Plant.
- 5 Nos. of Day light pipes were commissioned.
- 20Nos. Of solar street lights were installed.

Technology (Electrical)	Type of Energy	Onsite/ Offsite	Installed Capacity (kWp)	Generation in kWh	% of overall Electrical Energy
Renewable Energy	Solar Energy	Onsite (For Work shop Area)	20	23667	10%

Utilization of Renewable Energy sources

20kWp Solar Power Plant

S.No	Year	Capacity installed (kWp)	Annual Solar Generation (kWh)	Cost Gain (Lakh Rs.)	Investment (Lakh Rs.)
1	2018-2019	20	12120	1.06	20
2	2019-2020	20	23667	2.13	0
3	2020-2021	20	22490	2.02	0

- With the above, we able to generate 0.24 Lakh units per annum
- This contributes 10 % of total energy consumption.
- Reduction of carbon emissions by 30 Metric Tons per annum.

Waste utilization and management

1. Waste Disposal

S. No	Year	Type of waste generated	Quantity of waste generated (Kgs/year)	Disposal method
1	2018-19	Hazardous Waste	3335	Hazardous waste is disposed by M/s Ramky Enviro engineers Ltd.
2	2019-20		460	
3	2020-21		1500	

2. Scrap Disposal

S. No	Year	Type of Scrap generated	Quantity of scrap generated (MT/year)	Disposal method
1	2018-19	Metallic and Non-metallic scrap	125	E - Auction
2	2019-20		255	
3	2020-21		192	

3. Utilization of Waste Water

- Shed has provided with 8 Nos. of Rain Water Harvesting pits for conservation rain water.
- Shed is equipped with ETP (Effluent Treatment Plant) of 5 KL per hour capacity.
- Recycled Water is utilized for gardening and washing of locos, DEMUs and DEMU coaches.

Water consumption		
Year	Water Consumed	% Improvement
2018-19	10950 KL	--
2019-20	7191 KL	34.32
2020-21	4578 KL	36.33

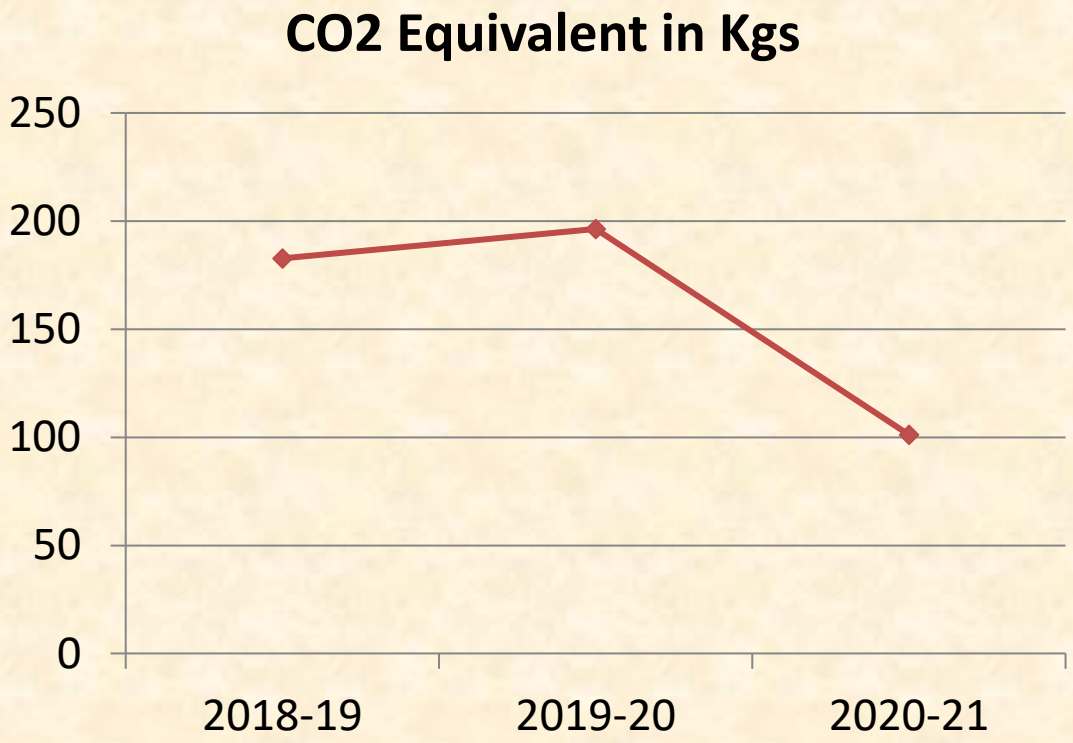
Rain Water Harvesting Pit

Water consumption was reduced by 36.33% by usage of recycled water.

Water Recycling		
Year	ETP Input	ETP Output
2018-19	2425 KL	1940 KL
2019-20	2440 KL	1960 KL
2020-21	2040 KL	1579 KL

GHG Inventorisation

S.No.	Year	Total Kg CO2/Ton of Final Product
1	2018-19	182.7
2	2019-20	196.3
3	2020-21	101.2



Green Supply Chain Management

- Green Purchase Policy.
- E- Tendering
- E-Pass/PTO to staff/employees
- E-Procurement
- E- office 100%
- E- Payment to firms/contractors
- E- Auction of scrap
- E- Awareness towards energy conservation through messages and WhatsApp groups.

Projects implemented

S.No	Description	Capacity installed	Cost Gain (Lakh Rs.)	Investment (Lakh Rs.)
1	Solar Plant	20 kWp	1.06	20.0
2	Day light pipe	5 Nos.	0.20	0.6
3	Solar Street lights	20 Nos.	0.55	4.0

Green Supply Chain Management

Projects implemented

S.No	Description	Capacity installed	Cost Gain (Lakh Rs.)	Investment (Lakh Rs.)
1	Solar Plant	20 kWp	1.06	20.0
2	Day light pipe	5 Nos.	0.20	0.6
3	Solar Street lights	20 Nos.	0.55	4.0

Action Plan to expanding the "Green Supply Chain" activities.

- Provision of more SPV panels on the available roof tops of shops/shed building under PPA.
- Provision of additional 10 No.s solar street lights.
- Commissioning of additional 5 No.s Day light pipe systems.

Teamwork, Employee Involvement & Monitoring

- Daily Energy monitoring at Supervisor of Electrical level Department.
- Monthly consumption report of each shop /service buildings for comparison with last month and last year same period consumption.
- Energy Conservation Week Celebrations every year – Conducting Awareness programs like seminars, oath and painting competitions.
- Formation of Energy Management Cell.
- Awareness campaign against Man-Made Wastages.
- Counselling at shop/floor levels by Energy Management Cell Team.
- Individual Staff/Officer awareness in Offices/Halls and Workshop area.
- Conducting mass tree plantation drives to improve greenery.

Teamwork, Employee Involvement & Monitoring

Implementation of ISO 50001/GreenCo/ IGBC Rating

- ✓ Received ISO 50001 Certification in the month of Feb –18
- ✓ Diesel Loco Shed, was also the first to achieve Integrated Management System (IMS), 5S, Energy Management Systems and Green Co 'Gold' certifications.

BUREAU VERITAS
Certification

DIESEL LOCO SHED, MOULA-ALI
HYDERABAD DIVISION
SOUTH CENTRAL RAILWAY
HYDERABAD – 500 040, TELANGANA, INDIA.

Bureau Veritas (India) Pvt. Ltd. (Certification Business) certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

Standard

ISO 50001:2011

Scope of certification

MAINTENANCE AND REPAIR SERVICES OF DIESEL LOCOMOTIVES, DIESEL ELECTRICAL MULTIPLE UNITS

Original cycle start date: **22 February 2018**
Expiry date of previous cycle: **NA**
Certification Audit date: **26 January 2018**
Certification cycle start date: **22 February 2018**
Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: **21 February 2021**
Certificate No. **IND 18.1009/N** Version : **1** Revision date: **22 February 2018**

Certification Authority
Ramesh KOREGAVE
Director, CERTIFICATION
South Asia Region

NABCB
EnM003

Local office: *Bureau Veritas (India) Private Limited (Certification Business) 72 Business Park, Marol Industrial Area, MIDC Cross Road 'C', Andheri (East), Mumbai – 400 093, India.*

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organization. To check this certificate validity please call **+91 22 6274 2000.**

Implementation of ISO 50001/GreenCo/ IGBC Rating

- ✓ Diesel Loco Shed, Moula-Ali, Hyderabad Division has earned the distinction of being the first Loco Shed in South Central Railway to achieve **the 'Lean Six Sigma Certification'** awarded by M/s Anexas, Europe on 26th January, 2021.

Implementation of ISO 50001/GreenCo/ IGBC Rating

Diesel Loco Shed Received Green Co Gold Rating in the month of March - 2018

CII - Sohrabji Godrej Green Business Centre

hereby certifies that

Diesel Loco Shed, Moula- Ali

Hyderabad Division, South Central Railway

has successfully achieved the standards as required for the following level of certification under the GreenCo - Green Company Rating System which is valid for a period of 3 years

GreenCo Gold

March 2018

Jamshyd N Godrej	Pradeep Bhargava	L S Ganapati	K S Venkatagiri
Chairman	Chairman	Chairman	Executive Director
CII-Godrej GBC	GreenCo Rating System	GreenCo Assessor Panel	CII-Godrej GBC

Long Term Vision on EE

- Long Term Target of Energy Efficiency
- Provision of Solar Power Plant on available roof top of shed/ shops building
- Provision of more no of Day light pipe
- Implementation of SMART Energy Management System.
- Provision of more number solar street lighting.
- Provision of Energy efficient Pumps
- Use of IoT Technology for Electrical Energy Monitoring and Controlling.

Feel free to contact:
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