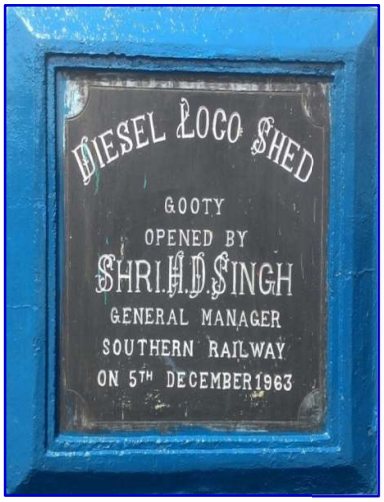
DIESEL LOCO SHED, GOOTY

GUNTAKAL DIVISION

SOUTH CENTRAL RAILWAY

01. BRIEF HISTORY OF DIESEL LOCO SHED



View in 2024

Area of shed:
59.55 acres (2,40,990 Sq meters

Covered area:
4.94 acres (20,000 Sq meters)

The Shed was started on 5th December 1963 further transferred to South Central Railway from Southern Railway on 2nd October 1977 when Guntakal Division was merged into South Central Railway.

02. TYPES OF LOCOMOTIVES




WDG4:14 **WDP4/D:45** **WAG9H:100** **WDG4G/6G:137**

LOCO TYPE	HOLDINGS (as on 31.07.2024)
HHP	59
WAG9H	100
WABTECH	137
TOTAL HOLDING	296

YEAR WISE LOCO HOLDING

Types	19-20	20-21	21-22	22-23	23-24	24-25 (JUL)
ALCO	36	32	30	17	--	--
HHP	160	157	155	176	147	59
WAG9	20	26	30	40	78	100
WABTEC	-	-	-	-	43	137
Total	216	215	215	233	268	296

03. MILESTONES OF DLS/GY

1963 - First Diesel Shed in Southern region

1963 - First Loco 18207, WDM2 commissioned

1970 - First Loco WDM3 (Henschel / Germany) commissioned

1978-79 - Shed won the "Railway Board Shield" for the Best Maintenance

1995 to 2002 - Won GM Efficiency shield

1997 - WDG3 Locomotive was commissioned

1998 - "AEB" was implemented on ALCO Locos and won MR Cash Award

2002 - First WDG3A Loco in Indian Railways inducted with GE make MBCS

2009 - First WDG4 loco no.12239 commissioned

2011 - First WDM3F loco commissioned

2013 - WDP4D Loco commissioned

2018 - First Diesel Shed in SCR to maintain Electric & Diesel Locomotive

2019 - Shed won the "Best Innovation Award"

2021-22 - Shed won the "Best Innovation Award" Zonal level

2022-23 - WDG4G & WDG6G locos commissioned.

2023-24 - a) Shed won efficiency shield award at Zonal level.

b) Shed won 2nd place in the category best Diesel shed maintaining electric locos (Rly Board level).

04. BRIEF HISTORY

1977		Diesel Loco Shed transferred to South Central Railway from Southern Railway.
1990		Expansion of Diesel Shed for 100 Locomotives, Heavy Repair Bay Extension Inaugurated on 28/06/1990 by Sri M.M.L.Sharma, GM/SCR.
2012		Components overhauling shed Renovated and Inaugurated on 25/04/2012 by Sri .N.Asthana, GM/SCR.
2014		Sub-Assemblies Overhauling Shed Inaugurated on 29/04/2014 by *Sri P.K.Srivastava, GM/SCR.*
2017		Expansion of Diesel Shed for 150 locomotive holding, Inaugurated on 08.09.2017 by Sri Vinod kumar Yadav, GM/SCR

1978 & 1979	**Awarded Railway Board Shield for best Shed in Indian Railways**	
1995 to 2002	**Awarded GM Efficiency Shield consecutively for 8 Years**	
1997	**For in House development of Auto Emergency Brake (AEB) DLS/GY Bagged Rs.*10 Lakhs* cash award from Hon'ble Minister of State for Railways, Sri Satpal Maharaj.**	
2019-20	**Shed won the "Best Innovation Award" (Division level)**	
2021-22	**Shed won the "Best Innovation Award" (Zonal Level)**	
2023-24	**Shed won the "Efficiency Shield Award" Diesel Traction Electric loco shed**	

05. INFRASTRUCTURE AVAILABLE AT DIESEL LOCO SHED, GOOTY

Description	Details
➢ Area of DLS/GY	59.55 Acres
➢ Total covered area of shed	4.94 Acres
➢ Loco Homing & Berthing capacity	150 Locos, 20 Locos.
➢ No. of lines from shed	08 Lines
➢ No. of EOT Cranes	40T-2 Nos., 30T - 2 Nos., 15 T - EOT Crane – 01 No, 05T – 01No, 3T -3 Nos. and Pillar Cranes - 07 Nos.
➢ Lifting jacks	35T – 03 Sets.
➢ Shed also has a Pit wheel lathe ➢ Drop pit for changing of wheelset without lifting locomotive ➢ ETP plant and incinerator ➢ RO and DM plant of 5000 & 2000 ltrs capacity	

INFRASTRUCTURE UTILIZATION AT DIESEL LOCO SHED, GOOTY

Bay	Capacity (locos)	Current Utilisation	Catwalk	Loco Holding Plan	Infrastructure
1 & 2	4	Light Schedule	YES	WAG9H	Welding plants – 3 Phase 400 Amps – 01 No. Lube oil filling point – 02 Nos. Water filling point – 02 Nos.
3 & 4	6	Light Schedule	YES	WLPL	1) 3 T Cranes - 02 Nos. 2) Welding plants – 3 Phase 400 Amps - 02 Nos. 3) Lube oil filling point – 01 No. 4) Water filling point – 02 Nos.
5	1	Used for wheels and trucks;	NO	WLPL	1) 30/5 T – 02 Cranes 2) Welding plants – 3 Phase 400 Amps - 02 Nos. 3) 35T Electrical synchronized screw jack set - 05 Nos.
6	1	Loco engine block and bogie changing.	NO	WLPL	
7	1	Stabling. Not connected on GTL side	NO	WLPL	1) 15 T - EOT Crane – 01 No.
8 & 9	6	Heavy Schedule	YES	WAG9H/ WLPL	1) 3 T – Crane -01 No. 2) 5 T – Crane – 01 No. 3) Welding plants – 3 Phase 400 Amps – 01 No.
10	1	Loco lifting, Bogie overhauling & Drop pit	NO	WAG9H/ WLPL	1) 40/10 T Cranes - 02 Nos. 2) Welding plants – 3 Phase 400 Amps-02 Nos.
Total	**20**	-	-	-	-

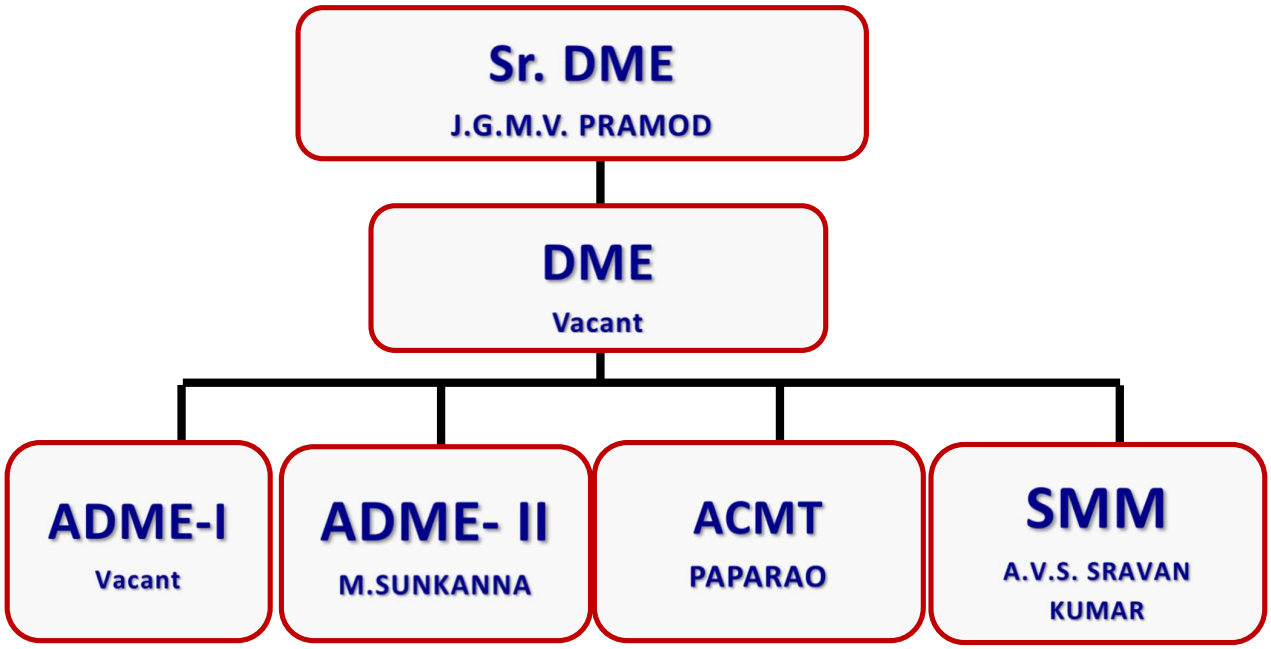
06. INTRODUCTION OF ELECTRICAL LOCOMOTIVES

- First Electrical Locomotive commenced at DLS/GY from 17th October 2018.
- Diesel Loco Shed, Gooty is the first Diesel Shed in SCR to maintain Electric & Diesel Locomotives.
- This Shed homing 100 WAG9H Locomotives
- Major Maintenance Schedules started from September 2021.

07. INTRODUCTION OF WABTEC LOCOMOTIVES

- New age Diesel Locomotives i.e., WDG4G/6G locomotives have been introduced at DLS/GY. Currently the fleet size is 137 (WDG4G:66 & WDG6G: 71), which will increase to 250 locos by Sept 25. CAMC of these locomotives has been commenced from 01.06.2024.

08. ORGANIZATION CHART



ORGANIZATION AND MANPOWER

Sl. No.	Design	Mech			Elec.			Total			Remarks
		Sac	Act	Vac	Sac	Act	Vac	Sac	Act	Vac	
Direct Maintenance Staff											
1	SSE	37	27	10	22	19	03	59	46	13	-
2	JE	14	20	-04	09	04	06	23	24	-1	-
Total		51	47	04	31	23	08	82	70	12	-
3	Sr. Tech	55	54	01	37	34	03	92	88	04	-
4	Tech-I	117	92	25	76	62	14	193	154	39	-
5	Tech-II	18	23	-05	12	14	-02	30	37	-07	-
6	Tech-III	122	94	28	44	62	-18	166	156	10	-
Total		312	263	49	169	172	-03	481	435	46	-
Khalasis		34	46	-12	16	13	03	50	59	-09	-
Ancillary		34	49	-15	12	14	-02	46	63	-17	-
Grand Total		431	395	36	212	209	03	643	604	39	-
Other than Direct Maintenance Staff											
Supervisors		3	1	2	0	0	0	03	01	02	-
CMS-1 + CMA		9	7	2	0	0	0	09	07	02	-
Ministerial Staff		18	13	08	0	0	0	18	13	08	-
Operating Staff		09	09	0	0	0	0	09	09	00	-
Total		39	30	12	0	0	0	39	30	10	-
Grand Total		470	425	48	212	209	03	682	634	49	-

09. PERFORMANCE OF DIESEL LOCOMOTIVES

S NO	OBJECTIVE		2024-25 Targets	Pro. Targets/ Month	Actual in 2023-24 up to Jun	Actual in 2024-25 up to Jun
1	Punctuality Loss cases		06	01	03	**03**
	Punctuality Loss Incidences on Loco account (Cases/100 Locos)		13.42	3.36	6.00	**6.00**
2	ICMS Failures		81	20	15	**10**
	Asset Reliability (All data as per ICMS) (Failure/loco holding)		0.447	0.11	0.09	**0.05**
4	Ineffective percentage		5.00	5.00	5.27	**5.74**
5	Disposal of Scrap	Ferrous	190MT	47.49	28MT	**55.95MT**
		Non-Ferrous	27MT	6.75	3.4MT	**6.85**

PERFORMANCE OF ELECTRIC LOCOMOTIVES

Sl. No	Action Plan Item		2024-25 Targets	Proportionate Target up to Jun	Actual in 2023-24 up to Jun	Actual in 2024-25 up to Jun
1	No. of accidents on loco accounts.		NIL	NIL	NIL	**NIL**
2	Major Schedules carried out	**POH**	NIL	NIL	NIL	**NIL**
		TOH	20	4	1	**4**
		IOH	NIL	NIL	6	**NIL**
3	Outage Actual		81.20	81.20	65.17	**83.39**
	CRB action plan (4% above target)				3.10	**2.70**
4	Statistical Ineffective %		4.00	4.00	2.40	**2.61**
5	Hourly ineffective %		7.00	7.00	6.90	**7.35**
6	UOR per 100 locos		132.7	33	16	**22**
7	Asset failures on ownership basis (on Loco account) /100 Locos		76	19	23	**29**
8	Unschedule Visit/100 Locos		22	6	3	**6**
9	Unschedule Liftings/100 Locos		1.21	0.3	0	0

10. GOOD WORK DONE

A. PRIMARY VOLTAGE TRANSFORMER CALIBRATION TESTING UNIT

WAG9 locomotive is equipped with primary voltage transformer (PVT) on the roof of the locomotive to monitor the OHE voltage and central electronics will trip the VCB whenever OHE voltage is going out of limits to protect the loco equipment. PVT reduces the catenary voltage approximately 25KV to 200 Volts AC, which is supplied to traction converter electronics (4V, AC) and to U meter on driver console.

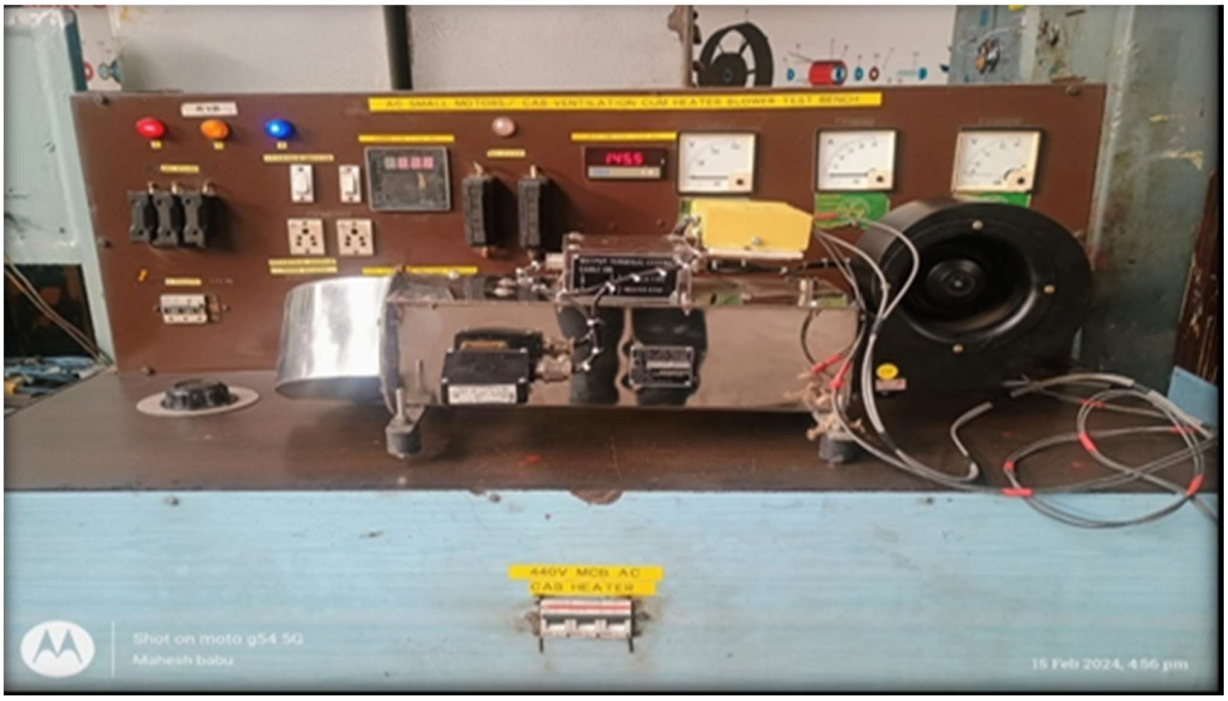
Earlier during major schedule or special repairs, PVT was tested in-position since no test setup is provided either in manual or any other sister shed of SCR zone. Hence, if any PVT is suspected to malfunction, checking its efficacy required to be tested on an alternate locomotive.

However, shed has taken initiative and developed a testing unit for checking the healthiness of PVT with in-house resources. The test stand consists of a) HV Transformer to supply 25V (this device is sourced from VCB testing setup) b) one PT module for converting 25KV to 200V AC c) U meter for the visual indication of 25KV and d) one AC voltmeter for showing the 200V AC output of PVT. (Sl.No. b, c & d are sourced from loco spares)

BENEFITS: By using this test stand the output voltage of PVT at various inputs ranging from 1KV to 25KV can be checked and able to identify the defects on shed floor itself

B. TEST FACILITY FOR CAB VENTILATION CUM HEATER BLOWER

An existing test bench for checking of AC small motors has been modified for testing of Cab ventilation cum Heater Blowers of WAG9 locomotive. Cab ventilation blower works on 110V supply. Modification to test bench involve provision of 220/110V step down transformer and for switching, protection of the blower 10A double pole breaker has been provided. To ensure functioning of heater element, 415V supply is provided with 6A breaker such that switching operation can be accomplished.



BENEFITS

Earlier this equipment healthiness was being checked on Loco in energised condition due to absence of test bench. With the development of this modified test bench the cab ventilation cum heater blower working condition can be checked during major schedules effectively.

C. COMMISSIONING OF ESD SAFE ELECTRONICS LAB

FACILITIES

- ESD safe flooring, apron, shoe covers, wrist straps
- temperature controlled ESD safe soldering and de-soldering station
- Digital storage oscilloscope (to display and analyze the waveform)

BENEFITS

- Identification of sub-component failures
- Repair of sensitive electronic cards

The installation of all devices and furnishings has been inspected and the inauguration of the Electronics lab was done by PCEE/SCR on 08.06.2023.

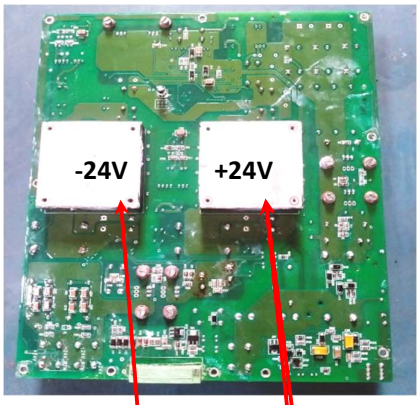
D. CAPACITY DEVELOPMENT TO REPAIR ELECTRONIC POWER SUPPLY UNIT(PSU) – WAG9H

DLS/GY is homing 70 WAG9H Locomotives of M/s BHEL make propulsion system. Each locomotive consists of two Electronic Power Supply Units (PSU) in two Traction converters for powering the control electronics. This PSU unit will convert the 110VDC locomotive battery voltage to +24V and -24V. This PSU is used for powering the 9 IGBT power modules, 3 Drive control Units (DCU) and one Vehicle Control unit (VCU).

Loco No.31970 failed due to power supply unit (PSU) defective. Even though there is no proper internal schematics of PSU circuit the shed has taken initiation to diagnose and repair the PSU to release the locomotive. On dismantling the unit it was found that +24V output is available but -24V is not coming due to chopper circuit is not triggered. On further checking it was detected that the regulator IC which is converting the input power supply 110V to 5V is defective.

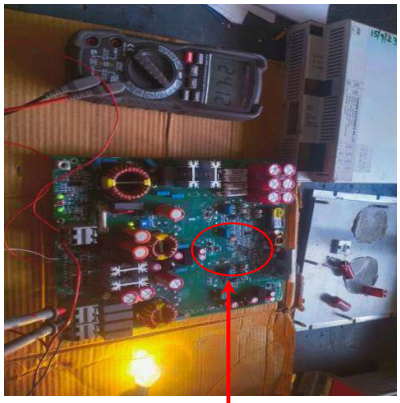
Due to the defective regulator IC the 5V DC which is suppose to trigger the logical IC has failed to further trigger the chopper circuit to get output voltage of -24V. The same IC was rectified and restored 5V DC output at the regulator IC and -24V output voltage at the chopper circuit. The repaired PSU was loaded in the same Locomotive and working normal till now.

Back Side View



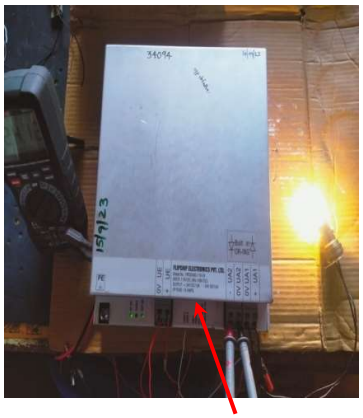
Chopper units

Front Side View



Defective Regulator IC repaired

Assembled PSU



PSU unit in working condition

By utilizing the regulating IC of other defective unit this PSU has brought in to working and resulted saving of Rs 5,54,954/- In lieu of new PSU

E. IN-HOUSE CAPACITY BUILDING TO UNDER TAKE SIDE BUFFER OVERHAULING OF HHP/WAG-9 LOCOS

DLS/GY is homing 130 HHP and 90 WAG-9 (3-PHASE) Locos and each loco has four side buffers. Gooty shed has a practice to check its buffers base bolts, plunger intactness in every schedule. In case of free rotation due to loss of rubber spring stiffness such buffers are dropped, dismantled and new rubber buffer springs are provided inside buffer plunger. Casing base plate is temporarily held with bolt & nut and the entire buffer assembly is pressed in the following hydraulic fixture. After base plate is abutted evenly with buffer casing riveting is being done to hold plunger tightly. Hydraulic press earlier used for spring testing has been remodeled to use for pressing of side buffers and their overhauling.

Dismantled Buffer assembly components

Housing of spring pads, check sleeve, buffer washer, shims inside plunger

Hydraulic Buffer assembling fixture

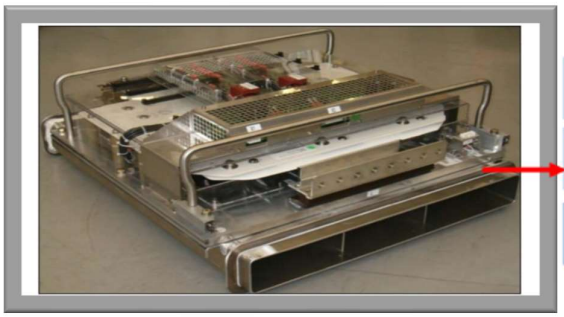
Compressing the buffer pads and base plate in hydraulic press

Riveting of Buffer base plate with casing.

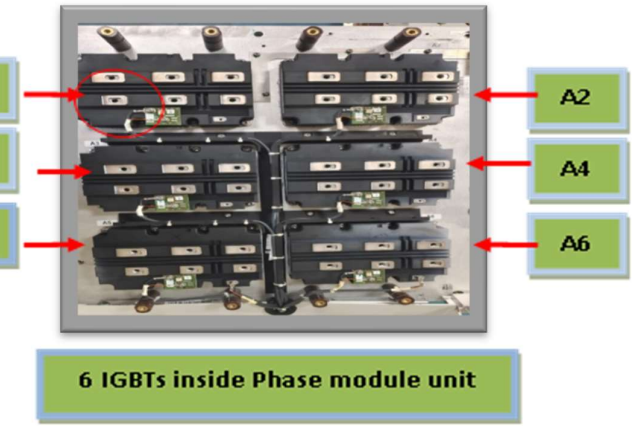
F. CAPACITY TO DIAGNOISE AND REPAIR PHASE MODULES OF M/S SIEMENS MAKE TCC/LCC

DLS/GY is homing 130 HHP locomotives. Out of which 60 Locos are of M/s Siemens make AC-AC traction system. Presently the LCC and TCC of these locomotives are not covered under AMC or warranty whenever there are any defects noticed in the cards or modules the locos are kept under waiting for material.

Even though no technical know-how shared by the OEM the shed has developed capacity to diagnose the internal defects of the expensive modules and cards. The phase module consists of 6 IGBTs and one gate control unit which trigger the IGBTs. This shed has taken initiation to repair these phase modules without any internal schematics. After dismantling the unit it was found that the IGBTs A1 is shorted in phase modules. One of the repaired phase modules is loaded in the locomotive 12743 on 09.12.2023 and working normal till now.



Phase module unit (Siemens)

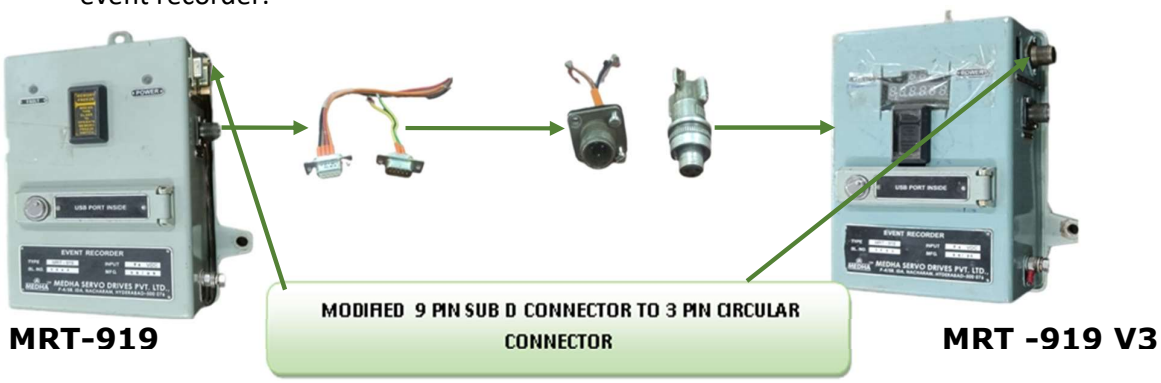


6 IGBTs inside Phase module unit

SL NO	ITEM DESCRIPTION	QTY	PURPOSE OF COMPONENTS	DIAGNOSIS DONE	REPAIR DONE	COST OF NEW ITEM (in RS)	TOTAL (RS)	COST SAVINGS (RS)
1.	Phase Module of Siemens	01	Conversion of DC to AC during motoring and DC to AC during dynamic braking	Diagnosed IGBT A1 is in shorted condition& value is zero Ohmic value	Spare IGBT of other defective module is used and made ready.	29,79,500/-	29,79,500/-	29,79,500/-

G. MODIFICATION OF EVENT RECORDER FOR INTERCHANGEABILITY IN HHP LOCOS

- Each HHP locomotive is provided with event recorder for analysis of data during any unusual occurrences and derailments. The shed has two types of M/s Medha make event recorder MRT- 919 (56 Nos.) and MRT-919 V3 (41 Nos.) and both are not interchangeable.
- To reduce cost of procurement, the shed achieved interchangeability by converting MRT-919 to MRT-919 V3 version by modifying the accessories of the event recorder.
- By achieving this interchangeability the shed has been able to repair 4 defective event recorders and ensure sufficient spares to meet spare requirement for MRT-919 V3 version event recorder.



By achieving this interchangeability the procurement cost of 919 V3 event recorder has been saved

Cost of event recorder of MRT 919 V3(Rs)	Number of Event recorder modified	Total cost of buying new recorder(Rs)	Cost for modification	Savings(Rs)
Rs. 1,82,900/-	04	Rs. 7,31,600/-	Material utilized from defective ones	Rs. 7,31,600/-

H. TRAIL RUN TEST STAND FOR CHECKING TM WHEEL SET ASSEMBLY OF WAG9/HHP LOCOS

Whenever Traction Motor is changed in WAG9/HHP locomotives in drop pit, it is necessary to ensure that the gear case on pinion end side is seated on the RSB tube ring, and there is no abnormality of bearing temperature. So to ensure this, DLS/GY has developed a trail run test stand for wheel set fitted with Traction Motor. This test stand ensures that axle lock cases are avoided in service.

Trail run Test stand

TM wheel Set Assembly

Gear Case Temperature

I. CALIBRATION TEST STAND FOR ALL TYPE OF PRESSURE GAUGES (HHP/WAG9H/ALCO)

Background: Following Test Stand is developed for calibration of pressure gauges with in-house resources

a. Single air pressure gauge : FP (ALCO / HHP), 2) Parking Brake (WAG9H)

b. Differential pressure gauge : AIR Flow Indicators (HHP/ALCO &WAG9H)

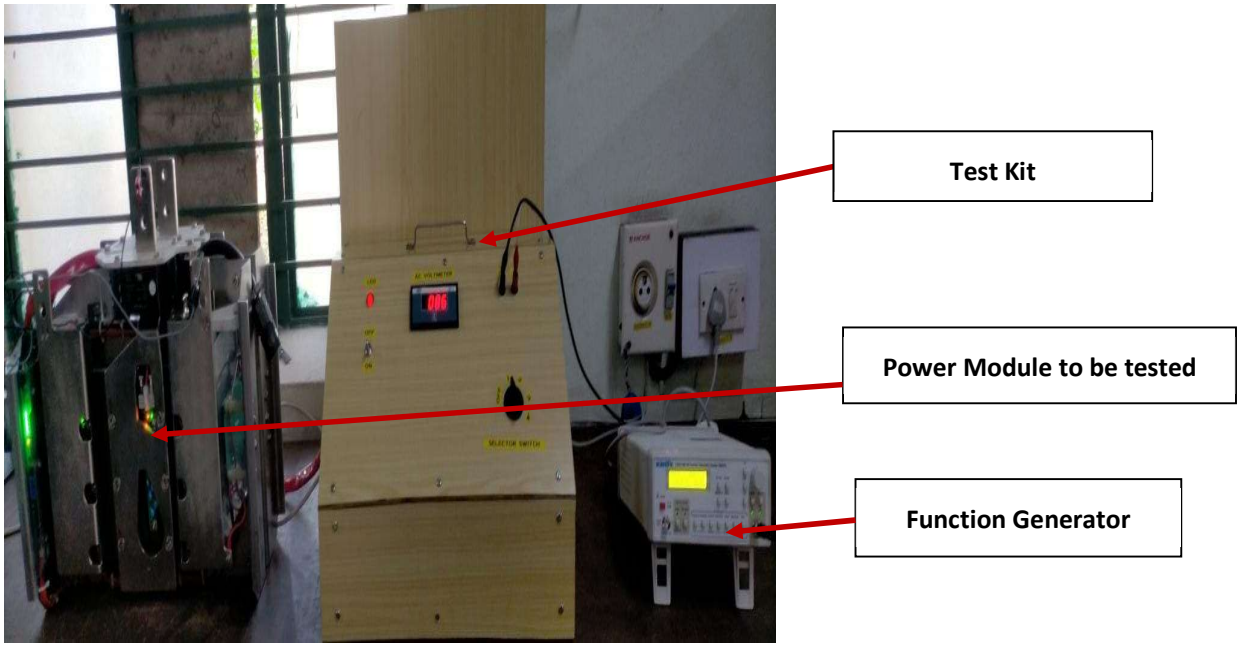
c. Duplex pressure gauge : BP/BC, MR/ER (HHP), BC-1, BC-2 (WAG9H), MR/FP (WAG9H)

Testing procedure: Incoming MR pressure is regulated by pressure regulating valve and fed to two Master Gauges 1&2 which will indicate the regulated pressure reading & the same regulated pressure is given to the gauges which are to be tested. Now the master gauge reading is compared with the pressure shown in the test gauges. So by comparing the master gauge, any error shown in the test gauge is adjusted & finally given ready for fitment in locomotive.

J. POWER MODULE (SR/BHEL/UGBT) (DIAGNOSIS) TEST KIT

PURPOSE:

The healthiness of IGBTs in the power module can be ascertained. The voltage across the power module is displayed with a voltmeter after triggering the individual IGBTs by using function generator in place of DCU (in loco). With this test kit the defects in SID, PMI, VMD and IGBTs etc. can be identified and make the power module functional, by changing the sub electronic components.



BENEFITS:

The defect in the IGBT Power module can be identified at sub component level and can be replaced the identified sub component to make the power module functional.

11. INFRASTRUCTURE DEVELOPMENT

SCRAP YARD

Recently shed has facilitate with scrap yard with concrete bins this will ensure correct dumping of ferrous, rubber items and non-ferrous items separately for easy disposal on as is where is basis.

EXTENSION OF OHE FACILITIES AT BAY NO.1,2,3,4,5

EXTENSION OF HEAVY REPAIR BAY (ANNEX)

CREATION OF NS STORES FOR WAG9 MATERIAL

Implementation of E-Platform

- Implementation of E-APR
- Implementation of UDM
- Implementation of HRMS

12. INFRASTRUCTURE AND STAFF WELFARE FACILITIES

STAFF CANTEEN

Recently the shed has commenced staff canteen to meet the day to day requirement of refreshments for the staff working in the shed this canteen also caters the need of staff working in the Box,n Depot.

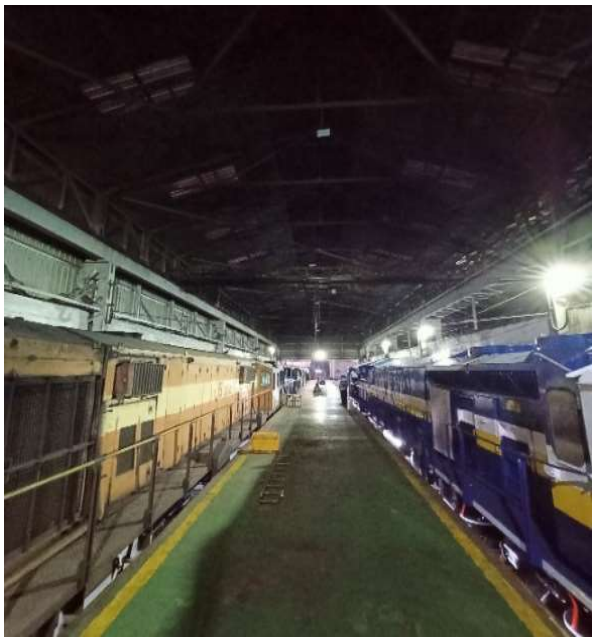
PROVISION OF RO PLANT & WATER COOLERS

- The New DM cum RO Plant of capacity 5000/Lt/Hr supplies DM Water to locos and drinking water to staff.
- Water coolers provided in HSM & UNT

PROVISION OF DRINING WATER FACILITY AT NEW SHED PREMISES

IMPROVEMENT OF LIGHTING IN BAYS

Before **After**



13. GREENARY DEVELOPED AT DIESEL LOCO SHED

Haritha Anatha Plantation Programme-2024

District administration has made a call for "**Haritha Anatha Plantation Programme-2024".** On this occasion Diesel Electric Loco Shed Gooty collected 500 saplings from Forest Department and planted in the premises of Shed


OPPO Reno2 Z