

# ACHIEVEMENTS

# **1. RENOVATED HERITAGE METRE GAUGE LOCOMOTIVE PRESERVED IN FRONT OF DRM'S OFFICE, PALAKKAD**

## **History**

The Metre Gauge Passenger Class Type Locomotive YP-2204 was imported from Germany in 1954. It was used in Guntakal Division of South-Central Railway till 1994. After completion of its service of about 40 years, it was then moved for the Indian Railways' Heritage Steam run around Secunderabad in April 2002. Later, it served its final years to haul excursion trains between Mysuru and Nanjangud in a package including the Bandipur Wild Life Sanctuary, before it reached Divisional Railway Managers' Office, Palakkad to be preserved as Heritage Locomotive. The heritage loco was unveiled by Shri. A.K Harit, DRM/PGT on 04-07-2008. It was decided to renovate the locomotive and quotation was called for the work. The lowest quotation rate for patch work and painting submitted by M/s Kala Ilangovan, Erode was Rs.4,54,300/- which was exorbitant. Hence it was decided to take up the renovation work by Mechanical department. In addition it was decided to replicate the wheel movement of the loco with smoke emission and sound effects. The work was successfully carried out for a total cost of Rs.1,36,000/-. The movement for the wheel was given by a 15HP motor having 1500 rpm which was reduced through a 1:100 reduction gear. The drive for the wheels was given through chain and sprocket arrangement. The renovated loco was dedicated by Shri. Trilok Kothari, DRM/PGT on 15.08.2022 as a part of Azadi Ki Amrut Mahotsav.

## **Renovation carried out by Mechanical Department**

1. Scrapping off old paint.
2. Reconstruction of the boiler outer cover, drivers cab and coal storage tender area which was completely corroded.
3. Application of putty and oil primer for achieving superior surface finishing.
4. Painting the Loco with superior quality enamel paint to its original colour scheme when it was in service.
5. Floating the three prime moving wheels and rotating it by means of 15hp three phase induction motor along with the linkages.
6. Provision of smoke from the boiler chimney by means 1500 watts fogging machine.
7. Recorded locomotive sound synchronized with wheel rotation

## Various phases of renovation

### a. Reconstructed boiler unit



### b. Reconstructed driver cab and coal storage tender area



### C. Wheel floating and assembling the drive for rotation of wheels





d. Application of Putty and primer for surface finishing



e. Painting the Loco to its original colour scheme



f. Final revival of the heritage loco to its past glory





## 2. SENSOR BASED AUDIO INDICATION IN PIT LINE.

MAQ coaching depot had developed a sensor-based audio indication system in all the three pit lines at MAQ. This device alerts the staffs working in pit line through audio indication whenever a rake is backed in Pitlines thereby enhancing the safety of staffs. The system also announces the line on to which the rake is backed. The system also enhances the safety by preventing dead end collision. Generally while backing the rake in pit line, the shunting LP has to rely on the signals of the shunting staffs from the rear which often are not clearly visible necessitating additional staff to repeat the signals from the middle of the formation. This system works as an additional safety measure to shunters when backing the rake in pit line by alerting the shunter when the coach reaches 40 m from dead end. The LP shunter is alerted by means of a sensor placed at the rear of the pit line which gets activated whenever a coach passes the sensor triggering an alarm and announces that the dead end is approaching. This is fabricated at a cost of Rs.25,540/- for all the three pit lines.



## 3. FIXTURE FOR LOADING EXTRA BOGIE in BRN

The bogies for IOH of coaches are being transported through road truck from SRR-PER-SRR. The approximate cost of transporting one bogie is about Rs.11,250/-. In order to reduce the contractual payment the bogies were transported through BRN. A fixture has been designed and manufactured at SRR Depot for loading bogie over bogie which enhanced the capacity to carry six bogies instead of three bogies in one BRN.

- Comparison of cost is shown below.
- Total 78 BRNs has been transported with double stack.
- Savings of Rs.34.20 lakhs was achieved till Sept 2021.
- Anticipated booking from Oct 2021 to March 2022 is 308 bogies with an anticipated additional saving of Rs.22.51 lakhs.

The onetime expense for manufacturing nine numbers of gadgets will be around Rs.1.5 lakhs approximately.



#### 4. CONVERSION OF CONDEMNED INSPECTION CAR TO MEETING HALL

Mangalore coaching depot is facing acute shortage of space for conducting meeting, classes etc. In order to tide over the above problem, a condemned inspection car of DRM/PGT No, SR RA 3611 was converted into a meeting hall with the following facilities.

- a) Conference Table with 25 chairs plus one executive chair.
- b) Fully Air conditioned with four split AC.
- c) False ceiling, side panelling and Flooring with wooden compreg sheet.
- d) LED Lighting.
- e) Mini Pantry
- f) Toilet



#### 5. BEAUTIFICATION OF ART/MAQ

ART MAQ had painted the interior of the coaches which have improved the aesthetics of the coaches tremendously. The Tools & equipment are stacked in an orderly manner which makes it easy to access.





## 6. ROOF LEAKAGE DETECTION GADGET.

Roof leakage of coaches is one of the major causes for public complaint during monsoon season. The main hindrance to attend roof leakage is difficulty in identifying the exact location of leakage during maintenance in the absence of rain. To address this issue, one roof leakage detection gadget is developed at MAQ coaching depot. This simple, yet effective gadget helps to identify the roof leakages during Primary Maintenance by showering water over the roof. Total 268 coaches (52-AC, 216-Non-AC) checked for roof leaks. Out of this 106 coaches (32-AC, 74-Non-AC) identified with roof leakage and completely attended.



## 7. MOTORIZED LIGHT WEIGHT TROLLEY

Mangalore coaching depot has developed a motor driven trolley with disc brake for the use in ART during accidents. This trolley is light weight and can be made operational within five minutes. It is driven by a single phase series electric motor of 1.5HP powered by a 5 KVA petrol generator which is available in ART standard list. The speed of the motor is reduced using a reduction gear and the trolley moves at a constant speed of 120m/min. This reduces the fatigue of staffs in carrying the heavy HRE equipments at accident site and also saves time taken for material transportation. The trolley can carry approximately 1000Kg. This trolley is also provided with mechanical hand brake for additional safety. The approximate cost of the trolley excluding the generator is Rs.36, 500 only.



## 8. FOLDABLE LIGHT WEIGHT RAMP

MAQ depot had developed a foldable light weight ramp for the use of differently abled or sick persons while boarding the train. This ramp is provided with wheels which enables a single person to fold and carry the ramp. This ramp enables the wheel chair to be loaded into the coach along with the occupant.



## 9. DEVELOPMENT OF QR CODE FOR M&P ITEMS, ART & 140T CRANE.

SRR depot has developed QR code for all M & P in the depot . By scanning the code, the complete details of the machinery can be obtained including date of commissioning and its history. This enables to monitor the M&P and its details without opening and searching the register. This also enables to monitor the details of the M&P even through online mode. Also the QR code of ART equipments and 140 T crane tutorial video has been pasted at prominent locations in the depot wherein any staff can scan the code and obtain the educative video regarding the working of the equipment. This acts as a self-training module





## 10. WHEEL CHANGING GADGET

Coaching depot SRR developed a wheel changing gadget to enable wheel change of coaches and wagons enroute. This gadget minimises the effort and manpower required to place the wheels on rails from the yard. This consists of a mechanism by which the wheel is mounted on the rail and rotated to align with the bogie. The gadget can be dismantled and carried easily. The gadget can be assembled within 5 minutes



## 11. INCINERATOR FOR BURNING WASTE

Coaching depot/SRR being an IMS certified depot, proper way of waste disposal has been a challenge. In view of this, an incinerator has been designed and fabricated in house with scrap materials by Coaching depot SRR. The incinerator plays a vital role in solid waste disposal and it helps in maintaining the depot premises clean and hygienic. The incinerator has a capacity of 15 Kg and the exhaust chimney stack height is about 28 feet. A 3-inch-thick Refractory inner lining with brick and clay has been provided in the combustion chamber. The height of the combustion chamber is about 6 feet.



## **12. GADGET TO ATTEND SIDE STANCHION AND BEND DOORS IN WAGONS**

A gadget was manufactured by MAQ/C&W/Depot for pressing the stanchion of wagon to facilitate welding/attention. This is accomplished by fixing the gadget to the wagon by hooks. A Brake cylinder is utilised to press the pillar with sole bar. This gadget reduces the time taken to attend the repair as well as the man power required for attention. This gadget can also be used to attend bend doors in wagons.





### 13.DOUBLE STACKING ARRANGEMENT FOR WHEELS

SRR Depot had fabricated a double stacking arrangement for wheels. The space constraints faced by the depot compelled to think over the space management. This resulted in the fabrication of double storied wheel stacking stand and thereby utilizing the vertical storage space. The above stand is fabricated from old released hydrant pipes and old channels from scrap. Loading and unloading of wheels from track is very easy with EOT crane and it is very useful for the depot.



### 14. INSTALLATION OF HABD AT VARIOUS LOCATIONS

Automatic Hot Axle Box Detector installed at PGT, SRR, CLT and MAJN for identifying hot boxes in rolling stocks passed through. The high temperature identified can be verified at the adjacent C&W depot and can prevent further running if the temperature exceeds the limit and thus prevent any untoward incidents.



## 15. GADGET FOR MANUFACTURING WAGON DOOR LOCKING BRACKET

C&W depot MAJN had designed and fabricated a gadget for press moulding of wagon door Locking Bracket of Chainless Cotter for BCN doors. This gadget saves manpower and time spent on moulding of door brackets conventionally done manually by hammering. The door brackets moulded with the gadget is sodesigned that even an unskilled worker can operate it effortlessly. The gadget is completely made out of released materials available in the depot. With the increase in door defects observed in BCN wagons due to mishandling at loading/unloading points, the gadget is a vital tool in wagon maintenance activity. It has been a critical contributing factor in the reduction of wagon door attention time.



## 16. ATTENTION TO ROOF LEAKING IN WAGONS & COACHES

As a part of Monsoon precaution, a special drive was conducted to identify the leakage in wagon roof. As such total 126 wagons were marked sick and roof leakage attended. This helped to reduce rejection of wagons for loading and avoid running of embedded empty wagons on formations certified by MAJN depot. Roof leakage in 46 coaches were also attended during this period.





## 17. BOOKLET TO ATTEND LOCO DERAILMENT

During accidents involving Locos, difficulties were experienced by ART supervisors in ascertaining the location where the jacks are to be placed as there are different types of both Electric and Diesel locos. In order to tide over the problem, ART supervisor and staffs from MAQ & SRR were sent to Electric & Diesel loco sheds to get trained in the above matter. Based on this, a booklet with photographs of the locos and the locations where the jacks are to be placed has been prepared and kept in both ART/MAQ & SRR as a ready reckoner.

Telescopic jack of capacity 60/120 T can be placed at the center of yoke support plate of CBC after the removal of sand pipe and truss beam.



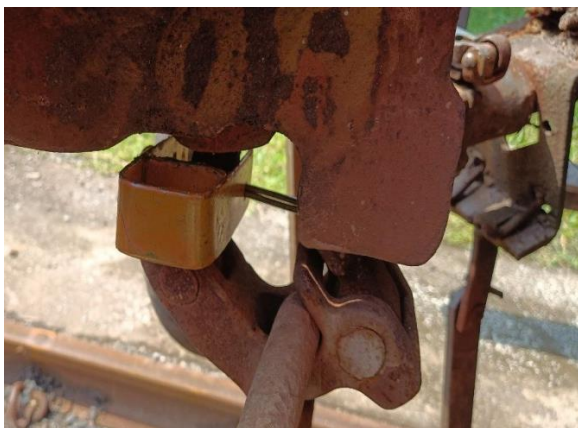
## 18. GADGET FOR CLOSING OF SLIDING DOORS OF COACHES AND WAGONS

A Gadget for closing of sliding doors of coaches and wagons was manufactured by C&W depot/SRR. This gadget facilitates closing of doors in locations where there is no platform by a single person. This gadget reduces the door closing time and also the number of persons required for door attention.



## 19. CBC LOCK LIFTING RESTRICTOR

MAJN has developed a CBC lock lifting restrictor which is very useful while attending to train parting enroute. This gadget when fixed in position over the lock lifter prevents the lifting of the CBC lock even while rotating the operating lever. This gadget helps in taking the parted train after re coupling up to the next C&W point without the risk of further parting.



## 20. AIR HOSE POROSITY TESTING GADGET

MAJN depot developed a gadget to check the porosity of Air hoses. The BP and FP air hoses are tested with 8 Kg/cm<sup>2</sup> to 10 Kg/cm<sup>2</sup> pressure using this gadget before providing in the coach or wagon. This gadget enables to detect even the minute leakage in the air hoses that escapes detection during normal air testing. This can avoid possible brake bindings due to air leakage.

The gadget is connected to the air compressor through a flexible hose. A hose from the gadget is connected to the rubber hose for BP and FP and the Palm end of rubber hose for BP and FP is temporarily closed by using dummy. Air pressure of 8 to 10 Kg/Cm<sup>2</sup> is supplied to the gadget.

The rubber hose for BP and FP is fixed on the clamps on either side. When the lever is lowered the rubber hose pipe for BP and FP gets submerged in the water tank and its kept stable under the water and compressed air is applied. If the hose is porous, bubbles will appear.



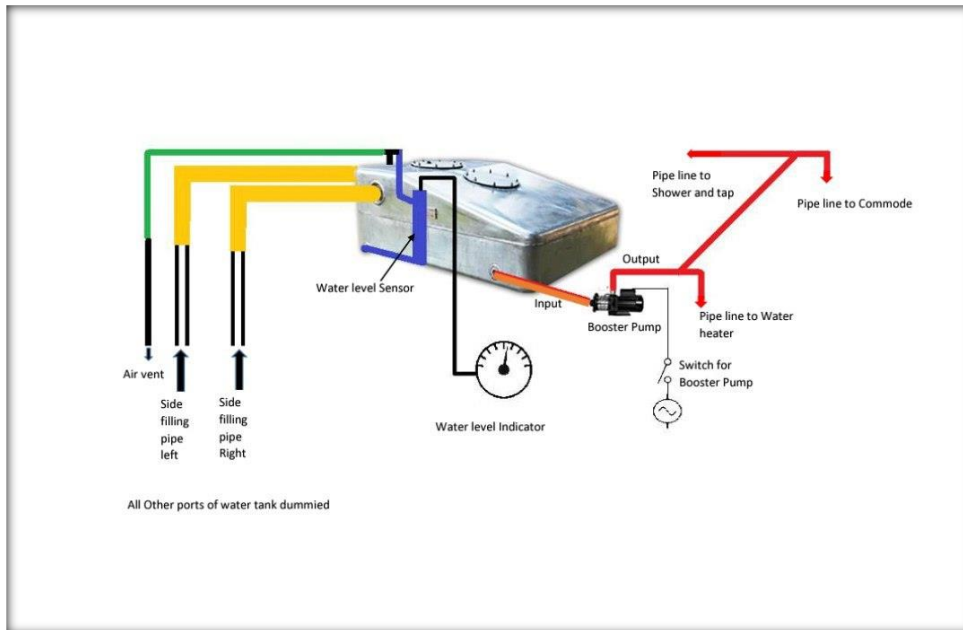


prominent locations in the depot wherein any staff can scan the code and obtain the educative video regarding the working of the equipment. This acts as a self-training module

## **21. PROVISION OF BOOSTER PUMP IN DRM SALOON**

The RA – AC 093065/C (Inspection car of DRM/PGT) has faced a major issue with the low flow rate of water through all the pipe fittings in the lavatory. To tide over the problem, SRR depot took up the challenge and installed a booster pump in the plumbing line. The overhead water tank was grounded and the pipe lines were rerouted to ensure that all the taps receive the output from the booster pump. Utmost care was taken during installation of the booster pump and rerouting of the pipe lines to facilitate easy maintenance. The depot had carried out the work which generally requires work shop attention.

### **Schematic Layout**



**Before**



**After**

## **22. MATERIAL HANDLING TROLLEY FOR TRANSPORTING OIL BARREL**

SRR depot had made an innovative material handling trolley for the transportation of filled oil barrels. This activity generally requires a minimum of three to four men. Using this innovative trolley, a single person can handle a filled oil barrel. This innovative trolley not only reduces the need for a substantial workforce but also significantly minimizes the time required for this task and enhances the efficiency and effectiveness of our entire system.





### 23. SPECIAL SPANNER FOR BOBRN DOOR ATTENTION

MAJN depot designed and developed special spanners of various sizes for the adjustment of eye bolt of BOBRN wagons. It was difficult to adjust the eye bolt and check nut could be with normal spanners as bolts will be tight and leverage cannot be used to turn the eye bolt due to space constraint. This spanner allows the use of leverage for tightening the eye bolt without any hindrance. This has reduced the BOBRN wagon door primary lock attention time considerably.

