दक्षिण मध्य रेलवे
South Central Railway

# PIONEERING PROGRESS

# Innovations

## *by South Central Railway*

The innovations implemented by the Zone will help to streamline operations, enhance efficiency and and set new standards of performance

South Central Railway

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# INNOVATIONS

*by*

## South Central Railway

# PIONEERING PROGRESS - INNOVATIONS BY SCR

"Driving innovation isn't just about new ideas — it's about fostering a culture where creativity thrives, solutions are scalable, and results speak for themselves."

The innovations implemented by the Zone will help to streamline operations, enhance efficiency and set new standards of performance"

**- Arun Kumar Jain**
General Manager, South Central Railway

Indian Railways is currently in a transformative era, progressing swiftly on the path of latest technological advancements and digitization. From Vande Bharat trains to modernization of Railway stations and initiatives like KAVACH - train protection system, Railways has come a long way in meeting the increasing aspirations of the modern world.

As we are aware, Railways is a large and complex institution consisting of numerous branches and departments that work closely to ensure the smooth functioning of trains, stations and administrative dealings on a daily basis. Seemingly, there is a need for Railways to continuously upgrade its tools and practices, to continue delivering the best performances and ensuring effective management.

In this regard, South Central Railway has been at the forefront in implementation of latest innovations and digital initiatives thereby bringing forth the best working methods. During the recent years, different departments of the zone such as Commercial, Operating, Engineering, Mechanical, Security etc., have come up with diverse innovations and ideas to improve the working and deliver better results.

In this booklet, we will delve into the intricacies of how these modern innovations and digital initiatives undertaken by the zone have helped in easing the working process and ensuring best outcomes.

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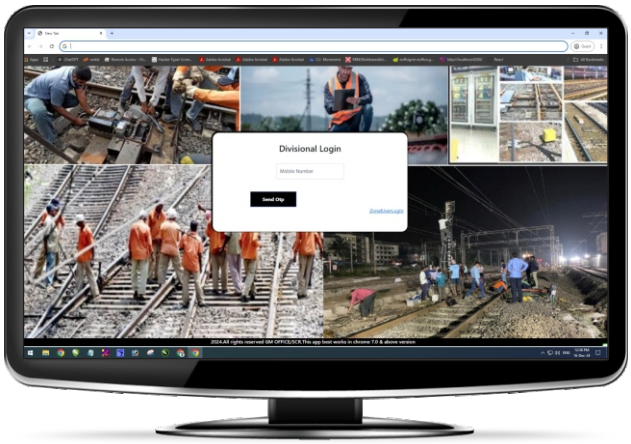
Divisional Login
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HUMAN
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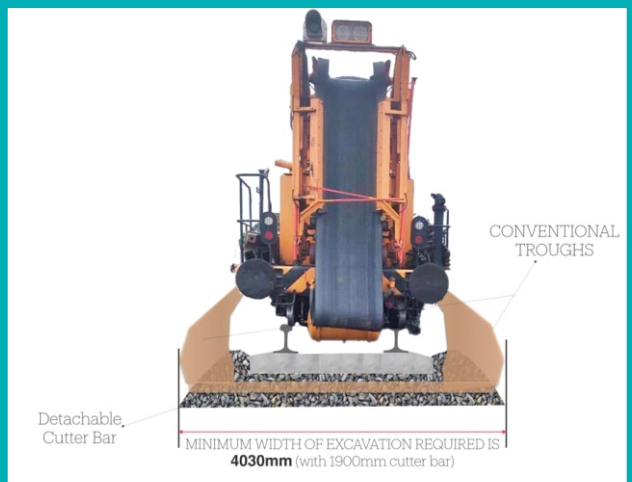
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TROUGHS
Detachable
Cutter Bar
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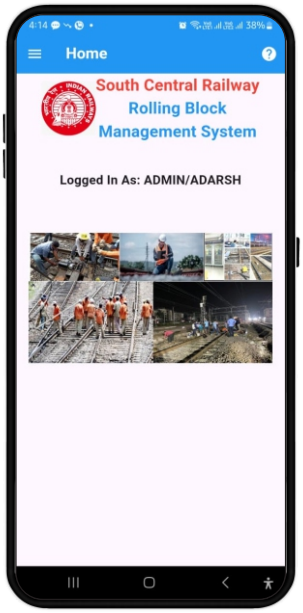
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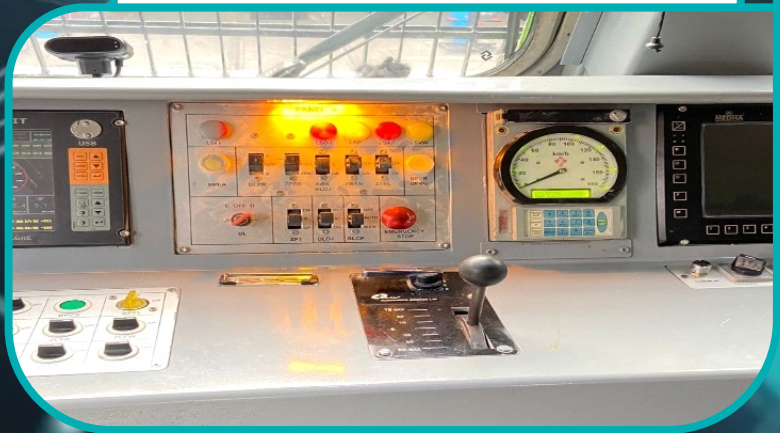


# PROVISION OF LED SIGNAL LAMP TO INDICATE SHUNTING MODE OPERATION

VIJAYAWADA DIVISION

## ISSUE ANALYSIS

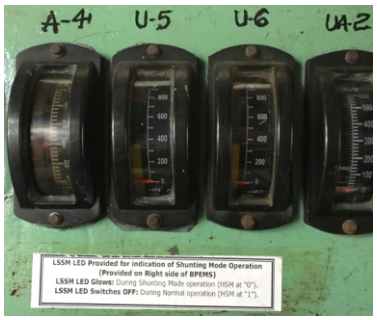
Non-accessibility of HSM switch on the desk of Cab is found to be the major reason, contributing to forgetting of resetting of HSM switch by crew and thereby resulting in loco trouble in the section. Loco Pilots are also unable to trouble shoot due to non-availability of visual indication regarding shunting mode operation.

## INNOVATION OVERVIEW

In order to assist Loco Pilots with visual indication to troubleshoot in case of Loco trouble, Electric Loco Shed/Vijayawada innovatively provided LSSM LED signal lamp on Right side of BPEMS in both Cabs as visual indication lamp for shunting mode operation.

This LSSM lamp on the driver desk helps the Loco Pilot with visual indication aiding him to take suitable action while taking over charge itself.

**Working of LSSM LED signal lamp indication:**


## BENEFITS

- Provides visual aid to the Loco Pilot to identify whether locomotive kept in shunting mode.
- Helps the Loco Pilot to quickly diagnose when speed is not increasing beyond 15 kmph, due to the non-resetting of HSM switch thereby avoiding loco failures and detention in section.

## IMPLEMENTATION IN THE DIVISION AND BEYOND

- This modification is completed in all 99 Conventional locos at ELS, Vijayawada provided with Version-3 MPCS.
- RDSO has issued a letter in August, 2024 advising all Zonal Railways for Provision of LED indication in CAB for operation of Conventional Electric locomotive during shunting mode through spare interlock of HSM switch.

# CREW LONG HOURS MANAGEMENT SYSTEM

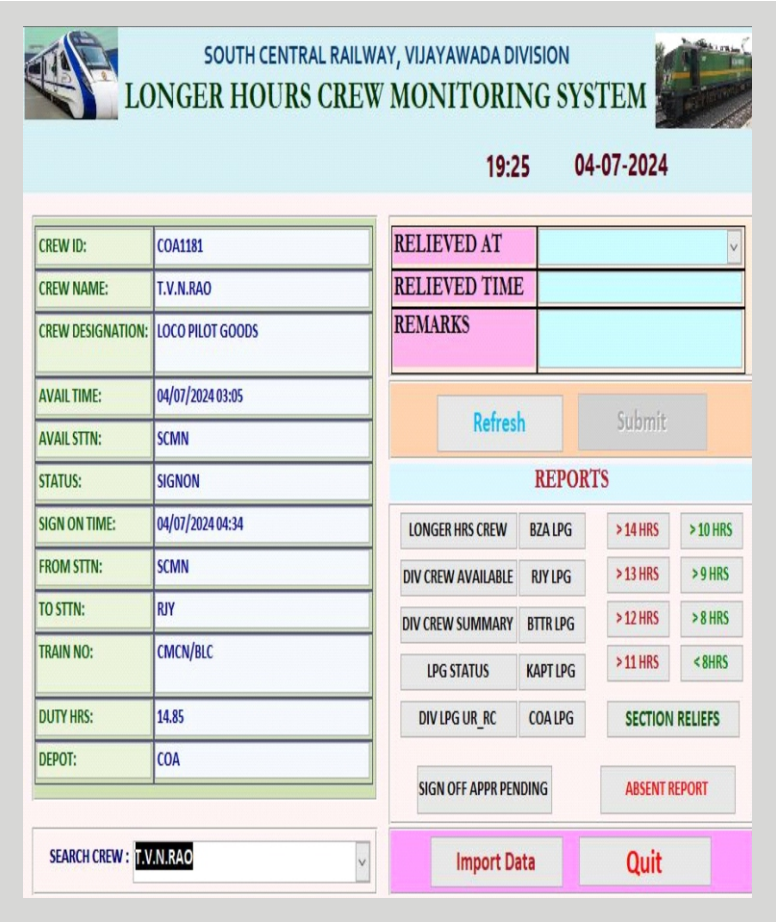
## VIJAYAWADA DIVISION

### ISSUE ANALYSIS

CMS does not have a readymade dashboard to get details of working hours of crew which resulted in a cumbersome exercise for Traction Loco Controllers (TLCs) to maintain the data. It also led to difficulty in monitoring and limiting the working hours of crew.

### INNOVATION OVERVIEW

The Crew Long Hours Management System (CLHMS) application, developed by the Vijayawada Division, allows TLCs to access crew details within minutes duly harnessing the CMS data. The application provides real-time information on depot-wise crew working hours, crew availability at headquarters and outstation.




### BENEFITS

- Advance planning of the crew from the nearest Lobby/Running Room or Rest Room.
- Real-time information on availability of crew in chronological order.
- Improvement in efficiency of TLCs due to availability of real-time crew data and consequent effective crew utilization

### IMPLEMENTATION IN THE DIVISION AND BEYOND

- This has been implemented effectively since December, 2023 in Vijayawada division, which helped in controlling crew working beyond 12 hours compared to the previous periods. This has also helped in improvement of crew utilization and in turn improved the safety of train operations.
- The CLHMS software has been shared to all the other divisions of South Central Railway and neighboring zones of East Coast railway.

# NETWORKING EI MT-PC

## VIJAYAWADA DIVISION

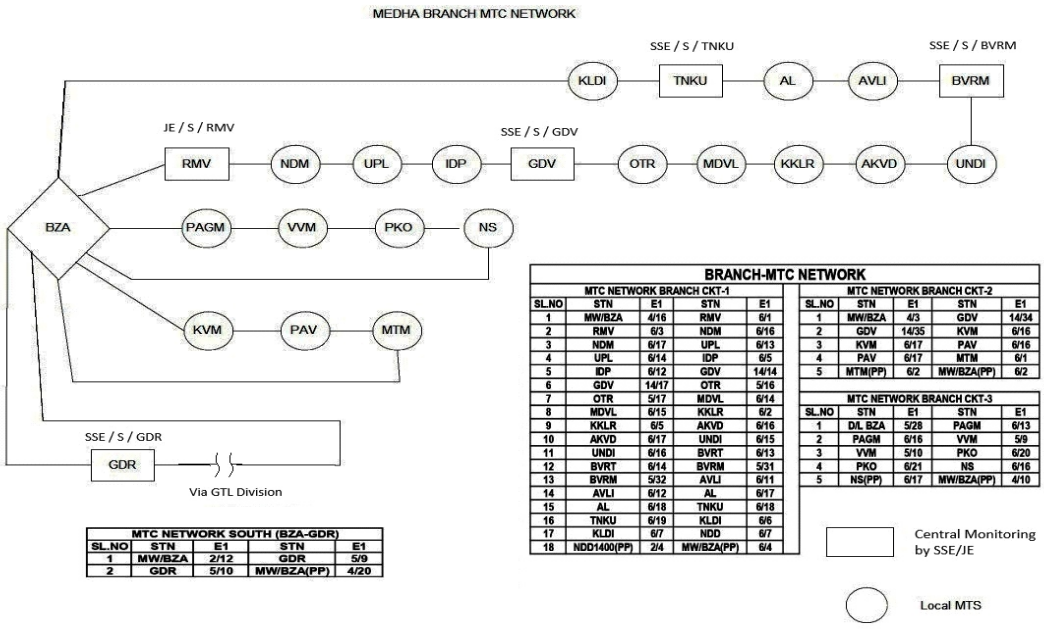
### ISSUE ANALYSIS

- Decentralized Operations: In 3rd line section each station has centralized Electronic Interlocking (EI) with two Goomties. Maintenance Terminal PCs at EI locations are often standalone.
- Delay in Fault Rectification: In case of faults in one of the goomty/central location, field staff must travel to the specific EI location, leading to delays in fault analysis and resolution.
- Communication Gaps: Lack of a centralized system to monitor and share real-time updates across multiple locations and teams.

### INNOVATION OVERVIEW

The innovation involves connecting the Electronic Interlocking (EI) Maintenance Terminal PCs through a Local Area Network (LAN) or Wide Area Network (WAN).

- The system enables remote access to maintenance data, logs, and diagnostics from centralized location where it is manned on 24/7 basis or multiple remote locations.
- Integration with higher-level systems such as the Operations Control Centre (OCC) is also possible for real-time updates.




**BRANCH-MTC NETWORK**

MTC NETWORK BRANCH CKT-1

| SL.NO | STN | E1 | STN | E1 |
|---|---|---|---|---|
| 1 | MW/BZA | 4/16 | RMV | 6/1 |
| 2 | RMV | 6/3 | NDM | 6/16 |
| 3 | NDM | 6/17 | UPL | 6/13 |
| 4 | UPL | 6/14 | IDP | 6/5 |
| 5 | IDP | 6/12 | GDV | 14/14 |
| 6 | GDV | 14/17 | OTR | 5/16 |
| 7 | OTR | 5/17 | MDVL | 6/14 |
| 8 | MDVL | 6/15 | KKLR | 6/2 |
| 9 | KKLR | 6/5 | AKVD | 6/16 |
| 10 | AKVD | 6/17 | UNDI | 6/15 |
| 11 | UNDI | 6/16 | BVRT | 6/13 |
| 12 | BVRT | 6/14 | BVRM | 5/31 |
| 13 | BVRM | 5/32 | AVLI | 6/11 |
| 14 | AVLI | 6/12 | AL | 6/17 |
| 15 | AL | 6/18 | TNKU | 6/18 |
| 16 | TNKU | 6/19 | KLDI | 6/6 |
| 17 | KLDI | 6/7 | NDD | 6/7 |
| 18 | NDD1400(PP) | 2/4 | MW/BZA(PP) | 6/4 |

MTC NETWORK BRANCH CKT-2

| SL.NO | STN | E1 | STN | E1 |
|---|---|---|---|---|
| 1 | MW/BZA | 4/3 | GDV | 14/34 |
| 2 | GDV | 14/35 | KVM | 6/16 |
| 3 | KVM | 6/17 | PAV | 6/16 |
| 4 | PAV | 6/17 | MTM | 6/1 |
| 5 | MTM(PP) | 6/2 | MW/BZA(PP) | 6/2 |

MTC NETWORK BRANCH CKT-3

| SL.NO | STN | E1 | STN | E1 |
|---|---|---|---|---|
| 1 | D/L BZA | 5/28 | PAGM | 6/13 |
| 2 | PAGM | 6/16 | VVM | 5/9 |
| 3 | VVM | 5/10 | PKO | 6/20 |
| 4 | PKO | 6/21 | NS | 6/16 |
| 5 | NS(PP) | 6/17 | MW/BZA(PP) | 4/10 |

MTC NETWORK SOUTH (BZA-GDR)

| SL.NO | STN | E1 | STN | E1 |
|---|---|---|---|---|
| 1 | MW/BZA | 2/12 | GDR | 5/9 |
| 2 | GDR | 5/10 | MW/BZA(PP) | 4/20 |

## BENEFITS

**a) Operational Efficiency**

- Remote troubleshooting and fault analysis reduce the need for frequent site visits.
- Faster response to faults ensures minimal downtime in train operations.

**b) Cost Savings:**

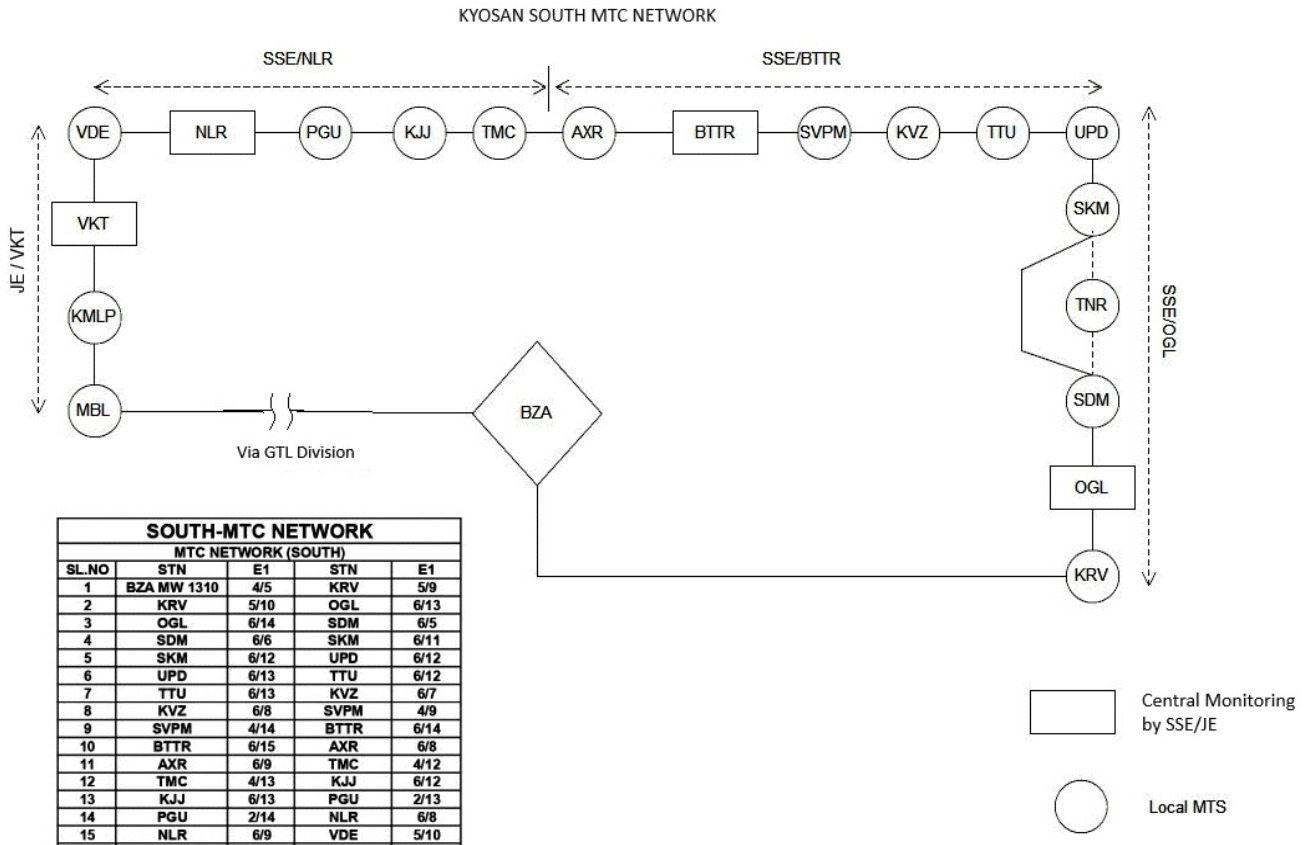
- Significant reduction in travel and manpower costs.
- Optimized utilization of technical staff across multiple locations.

**c) Data Management:**

- Centralized logging of events and maintenance history for analysis.
- Easier generation of compliance reports and predictive maintenance schedules.

## IMPLEMENTATION IN THE DIVISION AND BEYOND

As of now, the system is implemented in Vijayawada Division. EI systems at key stations were networked for centralized monitoring. Maintenance staff in the divisional control office have real-time access to system logs and diagnostics, reducing downtime during emergencies.




**SOUTH-MTC NETWORK**

MTC NETWORK (SOUTH)

| SL.NO | STN | E1 | STN | E1 |
|---|---|---|---|---|
| 1 | BZA MW 1310 | 4/5 | KRV | 5/9 |
| 2 | KRV | 5/10 | OGL | 6/13 |
| 3 | OGL | 6/14 | SDM | 6/5 |
| 4 | SDM | 6/6 | SKM | 6/11 |
| 5 | SKM | 6/12 | UPD | 6/12 |
| 6 | UPD | 6/13 | TTU | 6/12 |
| 7 | TTU | 6/13 | KVZ | 6/7 |
| 8 | KVZ | 6/8 | SVPM | 4/9 |
| 9 | SVPM | 4/14 | BTTR | 6/14 |
| 10 | BTTR | 6/15 | AXR | 6/8 |
| 11 | AXR | 6/9 | TMC | 4/12 |
| 12 | TMC | 4/13 | KJJ | 6/12 |
| 13 | KJJ | 6/13 | PGU | 2/13 |
| 14 | PGU | 2/14 | NLR | 6/8 |
| 15 | NLR | 6/9 | VDE | 5/10 |
| 16 | VDE | 5/11 | VKT | 6/1 |
| 17 | VKT | 6/6 | KMLP | 6/6 |
| 18 | KMLP | 6/7 | MBL | 4/11 |
| 19 | MBL(PP) | 4/15 | BZA DL(PP) | 5/53 |

# FRAUSHER MSDAC-INSIGHTS DIAGNOSTIC PANEL

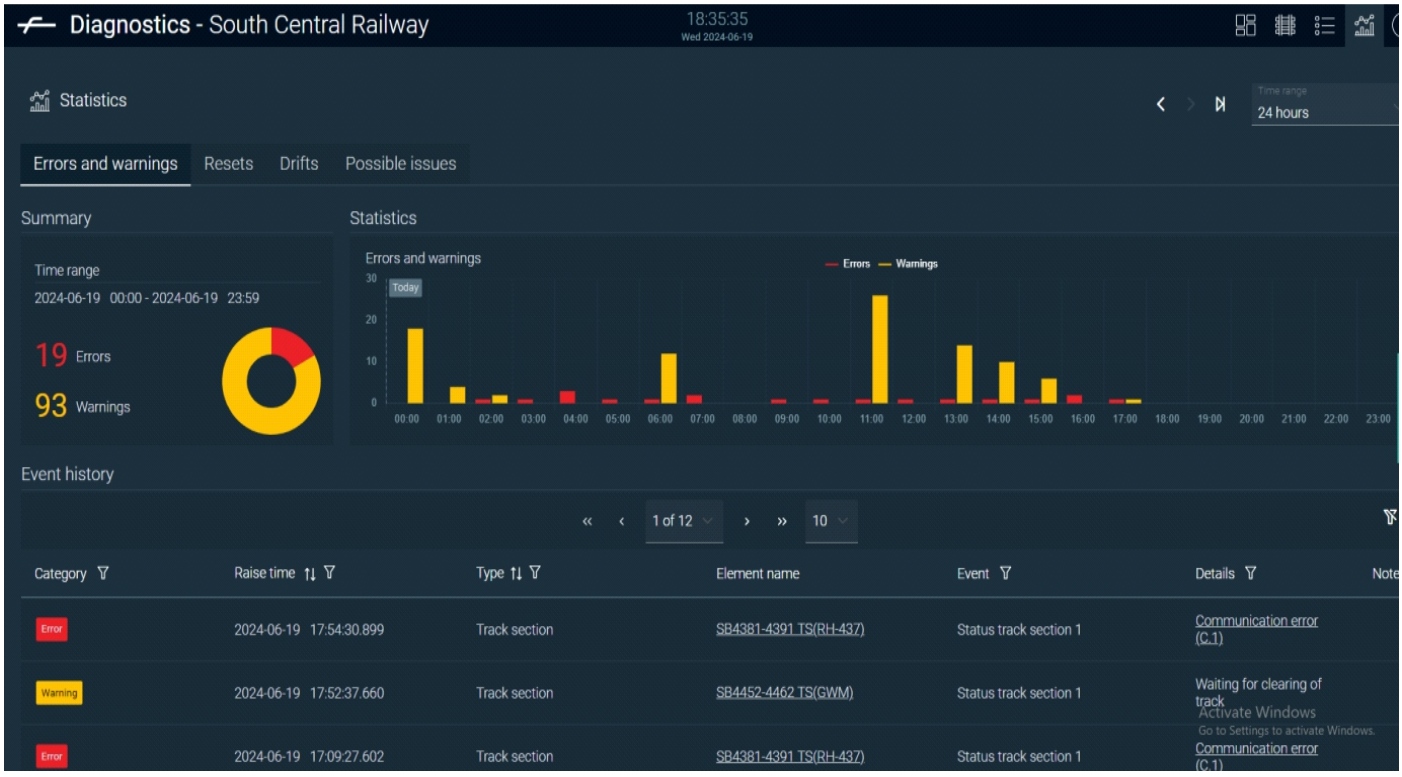
VIJAYAWADA DIVISION

## ISSUE ANALYSIS

- **Limited Visibility into MSDAC Operations:** Frausher Multi-Section Digital Axle Counters (MSDAC) are critical for train detection, but troubleshooting and diagnostics were traditionally challenging due to a lack of comprehensive real-time data insights.
- **Frequent Manual Checks:** Fault analysis often required on-site inspections, delaying fault rectification and increasing maintenance effort.

## INNOVATION OVERVIEW

- The diagnostic panel is an advanced, user-friendly interface that provides real-time operational insights into the Frausher MSDAC system.
- It integrates data from axle counters and presents detailed diagnostics, such as fault logs, occupancy status, and system health, in a centralized and graphical format.
- The panel allows remote monitoring and analysis, enabling proactive and predictive maintenance.



## BENEFITS

**Enhanced Fault Diagnostics:**

- Immediate identification of faulty sections or components.
- Detailed fault logs help in root cause analysis and preventive measures.

**b) Real-Time Monitoring:**

- Enables remote access to the health status of the MSDAC system.
- Reduces dependency on physical site visits for basic troubleshooting.
- One system failures.

**c) Reduced Downtime:**

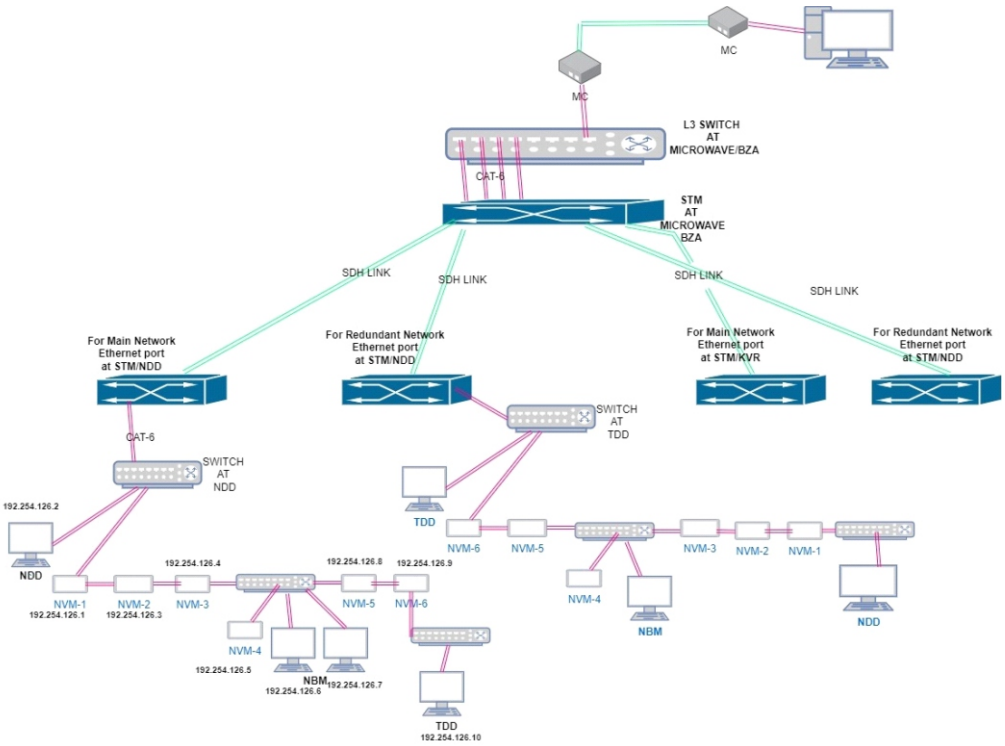
- Faster fault detection and rectification ensure minimal impact on train operations.
- Ensures uninterrupted train movement and passenger safety.

**d) Predictive Maintenance:**

- Historical data and trends assist in predicting potential failures.
- Supports proactive scheduling of maintenance activities.
- Need for calibration of coil

## IMPLEMENTATION IN THE DIVISION AND BEYOND

The diagnostic panel has been installed in key sections of Vijayawada division where Frauscher MSDAC systems are operational, such as high-traffic and critical junctions. Maintenance teams are trained to use the panel for real-time fault monitoring and efficient troubleshooting.



# NETWORKING OF NV MUX AND AUTO SECTION SYSTEMS

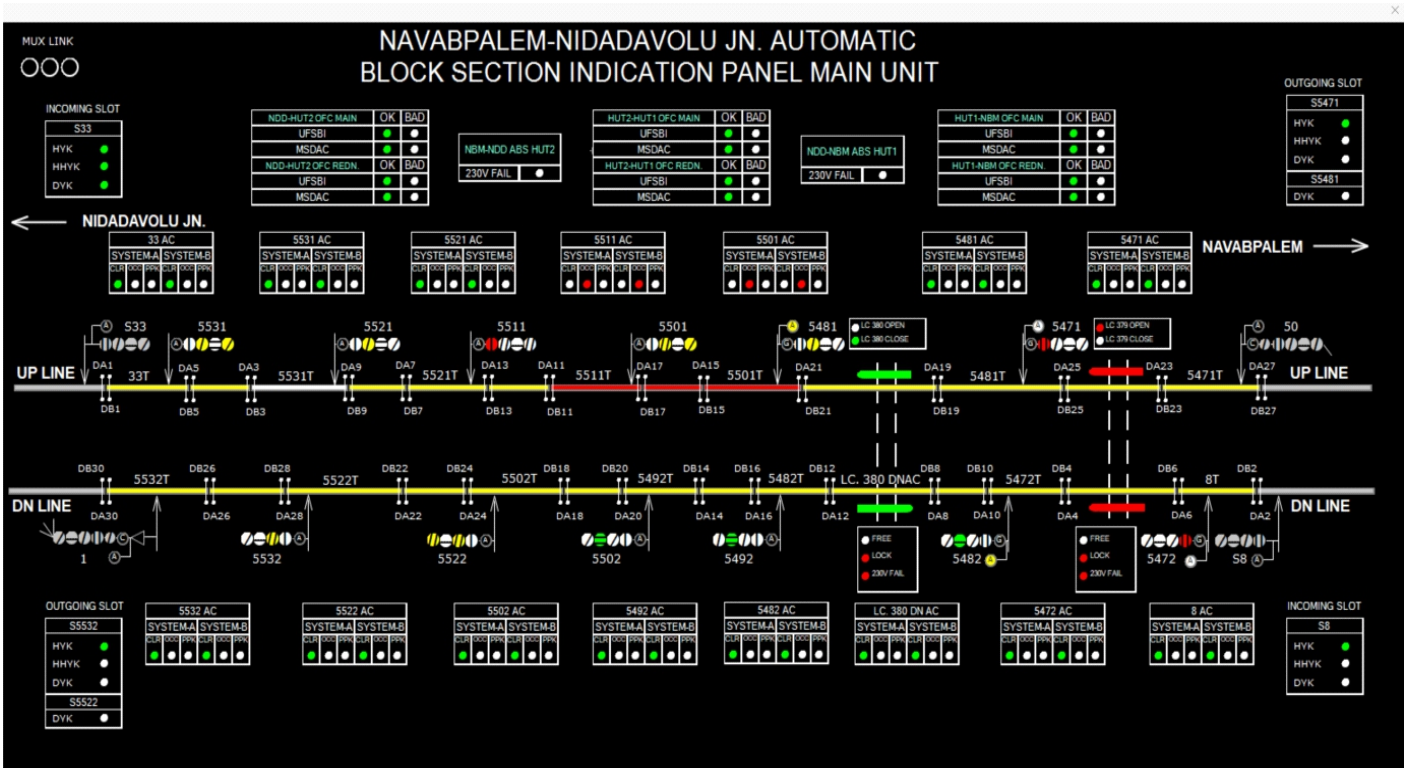
## VIJAYAWADA DIVISION

### ISSUE ANALYSIS

- In Automatic signalling system, the mid-section automatic signalling status is provided in VDU at either side stations using NV MUX (Non vital Multiplexer). In case of any mid-section /Last stop signal failure Station Master will call the concerned station ESM (Electronic Signal Maintainer) for rectification of signals. Only on reaching the station, the ESM comes to know about signals along with corresponding slots availability. Data logger helps to some extent.
- Communication Gaps: Lack of a centralized system to monitor and share real-time updates across multiple locations and teams.

### INNOVATION OVERVIEW

The innovation involves integrating NV MUX of auto section systems and presenting at test room. This will allow for real-time monitoring, diagnostics, and communication between multiple sections, ensuring seamless signal management. This system enhances operational efficiency by providing comprehensive real-time data on a single interface.

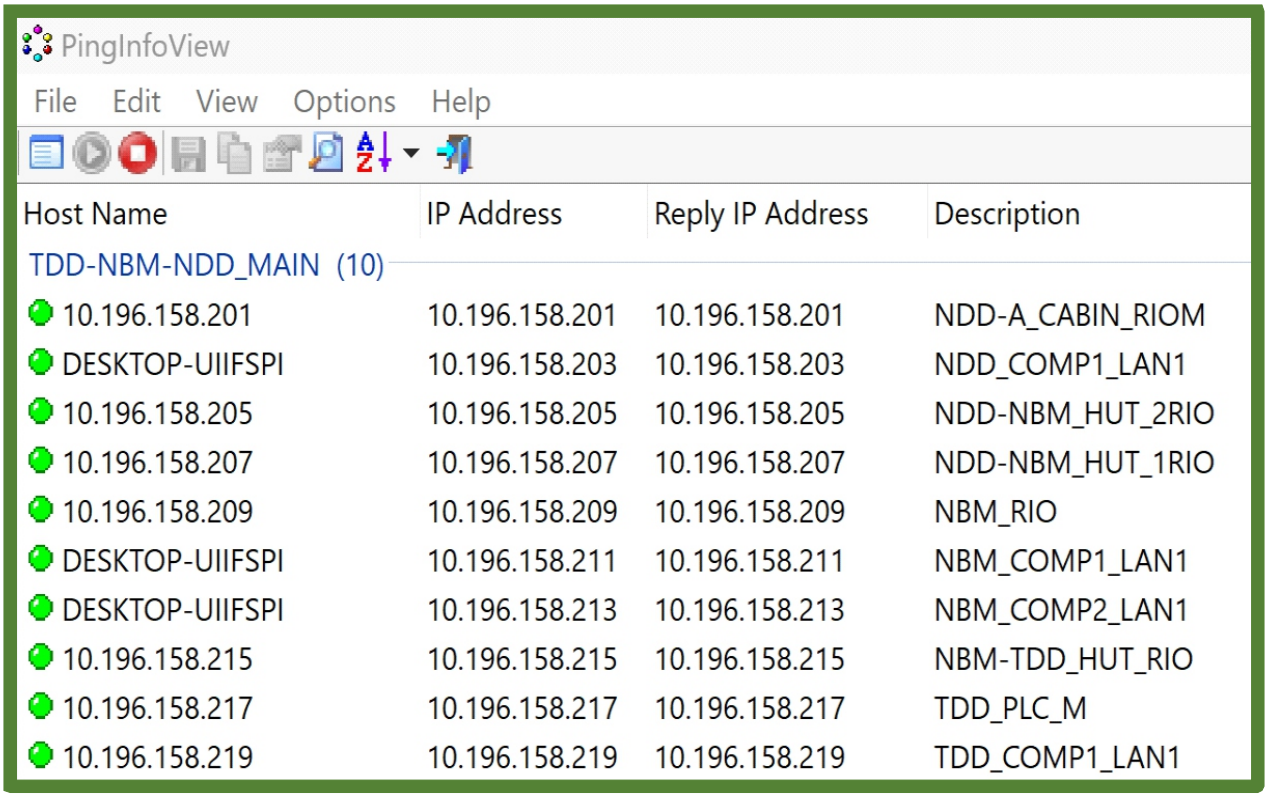


## BENEFITS

1. Centralized monitoring of NV MUX and early identification of fault and rectification. Following critical information can be seen from VDU in test-room:
   - MSDAC Status: Status of System A and System B can be monitored.
   - UFSBI Media Health: Healthiness of the main and redundant communication paths.
   - MSDAC Media Health: Status of the main and redundant communication links.
   - 230V Power Supply Availability: Real-time monitoring of power availability in auto huts.
   - Gate Free and Lock Status: Indication of the gate's operational condition.
   - Signal Slot Status: Slot status for Last Stop Signal (LSS) and Home signals.
2. Predictability of failure restoration time and taking decision to deploy additional supervisor.
3. Enhanced inter connectivity across multiple sections using modern networking protocols.
4. Replicating the status of VDU at station from centralized location.
5. Preventive maintenance.

## IMPLEMENTATION IN THE DIVISION AND BEYOND

The system has been Implemented in Narasingapalli – Duvvada and Tadepalligudem – Nidadavolu sections of Vijayawada division. Maintenance staff in the divisional control office have real-time access to VDUs of these sections.




| Host Name | IP Address | Reply IP Address | Description |
|---|---|---|---|
| TDD-NBM-NDD_MAIN (10) | | | |
| 10.196.158.201 | 10.196.158.201 | 10.196.158.201 | NDD-A_CABIN_RIOM |
| DESKTOP-UIIFSPI | 10.196.158.203 | 10.196.158.203 | NDD_COMP1_LAN1 |
| 10.196.158.205 | 10.196.158.205 | 10.196.158.205 | NDD-NBM_HUT_2RIO |
| 10.196.158.207 | 10.196.158.207 | 10.196.158.207 | NDD-NBM_HUT_1RIO |
| 10.196.158.209 | 10.196.158.209 | 10.196.158.209 | NBM_RIO |
| DESKTOP-UIIFSPI | 10.196.158.211 | 10.196.158.211 | NBM_COMP1_LAN1 |
| DESKTOP-UIIFSPI | 10.196.158.213 | 10.196.158.213 | NBM_COMP2_LAN1 |
| 10.196.158.215 | 10.196.158.215 | 10.196.158.215 | NBM-TDD_HUT_RIO |
| 10.196.158.217 | 10.196.158.217 | 10.196.158.217 | TDD_PLC_M |
| 10.196.158.219 | 10.196.158.219 | 10.196.158.219 | TDD_COMP1_LAN1 |

# DEEP SCREENING OF PLATFORM LINE WITH MODIFIED BCM

## VIJAYAWADA DIVISION

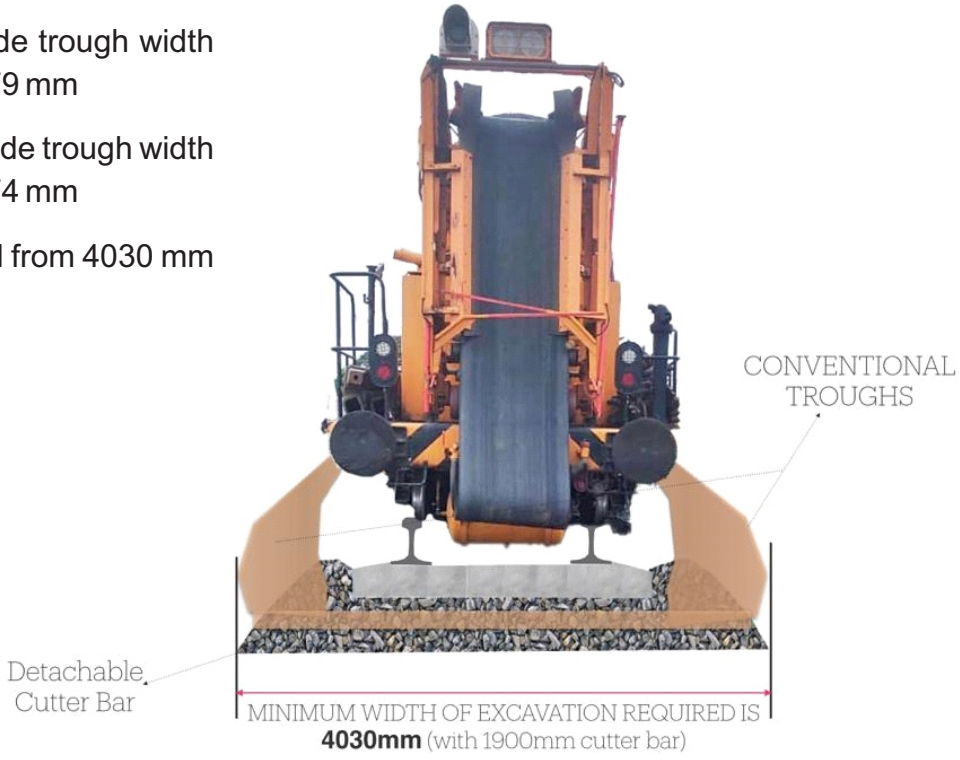
### ISSUE ANALYSIS

- The minimum distance from track centre should be 2015 mm to carry out deep screening with conventional BCM
- But, centre of track from platform coping (as per regular standards is 1680 mm)
- BCM trough cannot be accommodated with standard PF coping
- Hence, it is decided to modify BCMs to use them on platform lines

### INNOVATION OVERVIEW

- Width of excavation plays an important role in deployment of BCM on track
- Width of excavation depends primarily on size of troughs and length of cutter bar
- Minimum width of excavation required through conventional troughs and detachable cutter bar of 1900 mm is 4030 mm.

- **MODIFICATION CARRIED OUT**
- The existing ascending side trough width of 534 mm is modified to 379 mm
- The existing descending side trough width of 534 mm is modified to 374 mm
- Excavtion width is reduced from 4030 mm to 3675 mm

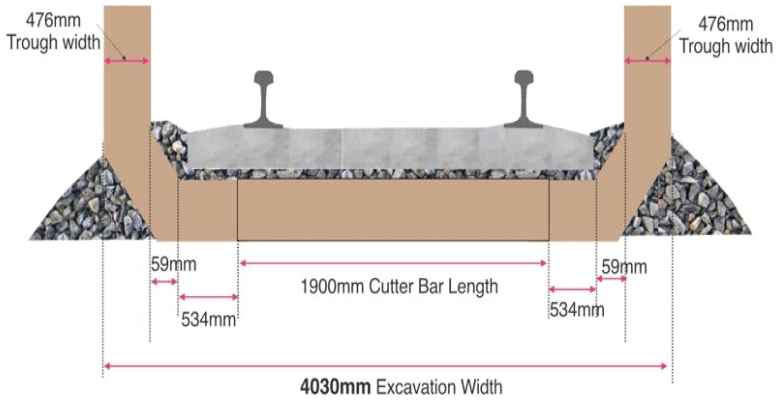


**CALCULATIONS MADE FOR ARRIVING TRACK SLEWS FOR EXECUTION:**

- In Ascending side, centre of track to outer wall of modified trough is 1888 mm and the total slew required considering 20mm extra clearance is 238 mm
- In Descending side, centre of track to outer wall of modified trough is 1787 mm and the total slew required considering 20 mm extra clearance is 137mm

**OPERATION**

- The slew is 0-40 mm while entering into platform line and slew is gradually increased between 40 mm to 220 mm while working to accommodate modified troughs
- Three muck disposal units are attached with modified BCM





## BENEFITS

- The innovation mainly avoids the requirement of manual process of cleaning on platform lines
- It saves the time considerably thus enabling the completion of entire process quickly.
- It minimises disruption to overall railway operations during cleaning operations.

## IMPLEMENTATION IN THE DIVISION AND BEYOND

Deep screening of Platform lines with Modified BCM has been effectively used at 6 platform lines in Vijayawada Division which include –

- Pedana 2 platform lines
- Pedavadlapudi one pf line
- Duggirala one pf line
- Tsunduru one pf line
- Gannavaram one pf line

# SMART WATERLOG ALERT & CONTROL SYSTEM (SWACS)

## HYDERABAD DIVISION

### ISSUE ANALYSIS

The major problem faced by commuters at RUBs is water-logging during rainy season and its prolonged impacts. There is no way to drain out this water other than pumping. Automated Water Pumping system is only solution for this problem.

### INNOVATION OVERVIEW

Hyderabad Division has developed an IOT based Smart Waterlog Alert & Control System aimed at providing a safe and continuous passenger to road users at RUBs throughout the year. The system is one of its kind initiative planned to be utilized at vulnerable RUBs where water stagnation is observed during Monsoon.

Before

After


(Testing of IOT at RUB from HYDERABAD BHAVAN)

### BENEFITS

- Operation of pump can be done from a faraway location by an Authorized person.
- This system is very much useful at the RUBs which are located in Remote Areas i.e., located in outskirts of villages, where the possibility of manual operation of pump during emergency is very less.

### IMPLEMENTATION IN THE DIVISION AND BEYOND

This IOT based solution has been installed at RUB no. 252A (Old LC No: 62) between Mahbubnagar and Manyamkonda Stations in Secunderabad – Dhone section of Hyderabad division from August, 2022

# SUPPLY OF SAFETY LEG GUARDS TO WELDING TEAMS

## HYDERABAD DIVISION

### ISSUE ANALYSIS

Injuries are being caused to Railway Personnel on track while working with Rail Grinding Machines.

### INNOVATION OVERVIEW

Safety Leg Guards for welding teams have been manufactured departmentally by a trolley man of Nizamabad Unit

### BENEFITS

Avoids injuries to Railway Personnel working on track during Rail Grinding

### IMPLEMENTATION IN THE DIVISION AND BEYOND

All the welding teams in Hyderabad Division have been supplied with these innovate safety leg guards

# SMART WATER PUMPING SYSTEM AT SHEEPMANDI PUMP HOUSE

## HYDERABAD DIVISION

### ISSUE ANALYSIS

Sheepmandi Pump House is located in Secunderabad to facilitate water for 6 locations (Pump houses) in Headquarters area. Pumping to these locations was being done manually which involves manpower and unaccountable wastages, expenses

### INNOVATION OVERVIEW

- To mitigate this issue an IoT based Smart Pumping System has been developed by Hyderabad Division
- The system enables energy saving by replacing centrifugal pumps with energy efficient submersible pumps
- Real time monitoring and accountability of water distributed and reducing water wastage or unaccounted for water.
- Remote controlling of valves eliminates the need for manual intervention by valve operators.
- Automation and Integration with IR INYANTRAC Portal.

| | | | |
|---|---|---|---|
| Electrical | Centrifugal Pumps | → | Submersible Pumps |
| | DOL Starter | → | VFD Drive |
| | Valves | → | Valve Actuators |

### BENEFITS

- Identifying the leakages and pilferages to save minimum 10% of water.
- Energy saving by using motor pump controls using VVFD.
- Reducing the manpower by implementing automatic value actuators.

**Monitory Benefits per month:**

- Estimated savings in Manpower : Rs. 2 Lakhs
- Estimated savings in Energy Bill : Rs. 0.3 Lakhs
- Estimated savings in Water Bill : Rs. 10 Lakhs

### IMPLEMENTATION IN THE DIVISION AND BEYOND

It is being used at Sheepmandi Pump House in Secunderabad.

# AUTOMATION OF PIT LIGHTING AT KACHEGUDA

HYDERABAD DIVISION

## ISSUE ANALYSIS

- Kacheguda Pit line-3 and Catwalks 3&4 together having lighting load of 7.5 Kw
- These lights are switched ON from dusk to dawn irrespective of train occupation in pit line.
- It was found that the pit line is not occupied with any train for the total duration of 4 hours per day

## INNOVATION OVERVIEW

- To resolve this issue, Kacheguda Electrical Maintenance depot has implemented automation of lights in pit line 3 and catwalk 3&4 with the help of diffuse-mode-sensor and associated gadgets.
- With this, 4-hour power consumption can be saved with adopting zero human intervention scheme for switching ON & OFF of lighting

## BENEFITS

This initiative is expected to save Rs. 1.25 lakhs per annum in monetary savings and 13,870 units per annum.

## IMPLEMENTATION IN THE DIVISION AND BEYOND

Implemented at Kacheguda Electrical Maintenance depot

# UFSBI-PREVENTIVE MAINTENANCE THROUGH SMART LOGGING REMOTELY

HYDERABAD DIVISION

## ISSUE ANALYSIS

Attending incidences of block is very tedious requiring ESM to reach station and open relay room to diagonize the fault.

## INNOVATION OVERVIEW

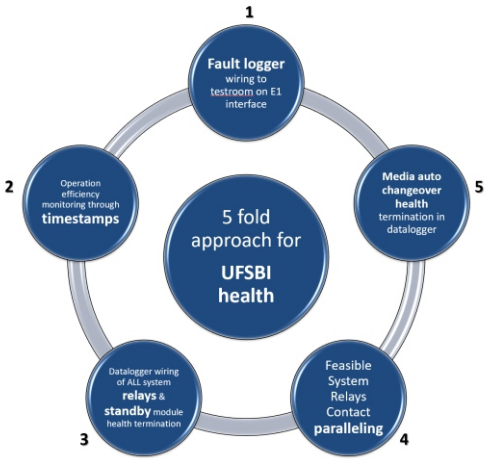
The present set up of Universal Fail Safe Block Interface (UFSBI) system has considerable 'health' information at site, which will be crucial during incidences/faults. This innovation is aimed at conveying this to field staff which will impact towards early restoration.

It is to achieve centralized monitoring of UFSBI instrument for efficient maintenance & troubleshoot by tapping health bits and error codes at testroom.

- Fault logger wiring to testroom–provides the vital information on health of all three CPU's directly to testroom without opening Relay Room.
- Operation monitoring through timestamps – Typical operational period of time recorded & fault configured for abnormal range of operation time.
- Datalogger tap of relays & standby module – Health of DC-DC converters, CPU's & System status are wired to Datalogger and monitored at Testroom.
- Feasible System Relays Contact paralleling – Paralleling of feasible Relay contacts. 1st identified and adopted by HYB DIV.
- Media health termination in datalogger – Hot stand-by Media changeover, Both Modem A & B including Changeover Modem health bits configured for alerts.

## BENEFITS

- Achieve preventive maintenance and notify ESM before a failure occurs without opening the Relay Room.
- Centralized failure analysis with improved direction
- Better preparedness to attend failure
- Better mobilization of material for quick failure restoration
- Big financial saving on account of optimization in effort manpower




## IMPLEMENTATION IN THE DIVISION AND BEYOND

- 1st tested in SCR at Hyderabad Division with OEM support

# LOCO CAB UP-GRADATION ON ELECTRIC LOCOMOTIVE

SECUNDERABAD DIVISION

## ISSUE ANALYSIS

Crew working in the locomotive(especially in Goods service) are experiencing difficulties during long working hours due to High temperature, Excessive Noise, uncomfortable Seating and viewing arrangement in current CAB design.

## INNOVATION OVERVIEW

To provide better comfort and experience to the CREW including good aesthetics and crew friendly features, CAB of loco no 31472 is modified with upgraded material and features.

### 1. THERMAL AND NOISE INSULATION IMPROVEMENT:

One of the major challenges faced by crew in locomotives is high heat and noise in the cab. To achieve thermal and noise insulation, a unique property of Aluminium metal is used.

### 2. FRP BASED REDESIGNED DRIVER DESK

The loco has been fitted with state of the art FRP based redesigned Driver Desk which remains at room temperature even in extreme weather conditions. Cleaning is much easier as dirt and grease don't stick on it. All equipment like CVVRS, SPM, TCAS etc have been brought on one line of sight due to complete redesigning process.

*Before Modification*

*After Modification*

### 3. FABRIC LINED CAB INTERIORS

This cab is also covered with Fabric for more aesthetic look and high finish. All the protruded equipment like AFL PCB, Crew fans, Lights, AC controls have been sealed with this fabric.

### 4. ADDITIONAL DDU AND DIGITAL SPM FOR ALP

In this loco, an additional DDU and digital SPM is provided for ALP. Additional DDU serves as HMI for ALP to read messages, faults and parameters independently from seating position.

### 5. CAUTION ALERT SYSTEM

This loco has a dedicated 10.4" DOS based Display that is used as additional DDU for ALP. This DDU is used for caution order alert systems as well. This system alerts crew for upcoming caution, TSR, PSR, approaching signal, Neutral Section etc.

### 6. IMPROVED CVVRS

The improved system consists of 14 cameras with 02 NVR( Network Video recorder)

### 7. RS COCK ON DRIVER DESK

RS cock is fitted on driver desk in the same horizontal plane which offers many advantages. It allows ALP to operate it without losing sight of track and signals.

### 8. CENTRALIZED OPERATION OF FIRE EXTINGUISHER

In this loco, the operation of both fire extinguishers has been centralized, i.e. crew can operate both the fire extinguishers through any cab. This saves costly time in event of fire and makes it safer for crew as they don't need to re-enter the cab until fire is totally extinguished.

*Before Modification*

*After Modification*

### 9. WATER LESS URINALS

It has been designed in house as per RDSO FRS No RDSO/2023/EL/FRS/0034 (Rev '0'). It has been fitted with electronic speed interlocking and electronic locking. This allows it to be used only when loco is stationary.

### 10. IMPROVED CREW SEATS

Seats provided in any crew friendly cab must be ergonomic so as to allow crew to work without fatigue. Seats that are made as per the science of posture helps in maintaining correct posture for operation. This loco is fitted with inspecting official seats in each cab which is uniquely designed to save cab space as well.

## AWARDS:

This modification has been adjudged FIRST among various electric locomotives modified by zonal railways in Competition of loco cab up-gradation on electric locomotives held at PLW/Patiala.


## IMPLEMENTATION IN THE DIVISION AND BEYOND

All PU's and workshops were asked to develop similar model cabs in-line with this modification. Scheme has been shared to all PU's and Loco workshops.


# GUTTER IN COVER OVER PLATFORM SHELTERS

## SECUNDERABAD DIVISION

### ISSUE ANALYSIS

**Material:** The current gutters used in COPs are made from Galvalume, a material that is prone to rusting over time due to exposure to rainwater and weather conditions.

**Joints:** The gutters are joined using rivets, with an overlap of 125mm. This method has been causing issues with: Leakage of Riveted Joints and Rust Formation

### INNOVATION OVERVIEW

To overcome these issues, the Galvalume gutters in the COPs are being replaced with Stainless Steel (SS) gutters. Here's how the new solution addresses the problems:

- Material Change: Stainless Steel (SS) Gutters are more resistant to rusting compared to Galvalume, making them a more durable choice for outdoor conditions.
- Joint Method: Instead of using rivets, the SS gutters are welded at the joints. The welds have a 50mm overlap on either side, ensuring a strong and leak-proof connection.
- No Leakages: Since the gutters are welded, the risk of leakages at the joints is completely eliminated, as welding creates a continuous, sealed joint that does not allow water penetration.
- Durability: SS gutters provide a longer lifespan due to their higher resistance to rust and corrosion, making them ideal for COPs that are exposed to constant weather elements.

### BENEFITS

- SS gutters are far more resistant to rust and corrosion, especially in areas with high humidity or saltwater exposure.
- SS gutters have a modern, sleek appearance that can improve the visual appeal of a building.
- Stainless steel gutters can last significantly longer than galvanized iron gutters due to their resistance to weather elements and wear.
- Once installed, SS gutters require less maintenance and can withstand extreme weather conditions.

STAINLESS STEEL GUTTER

### IMPLEMENTATION IN THE DIVISION AND BEYOND

The stainless steel gutters have been provided for Cover Over Platforms at Lingampet – Jagityal, Karimnagar, Mahbubabad stations in Secunderabad Division.

# EFFICIENT WORKING OF HOBCM

SECUNDERABAD DIVISION

## ISSUE ANALYSIS

- HOBCM (High Output Ballast Cleaning Machine) is crucial for maintaining railway tracks by cleaning the ballast to ensure proper drainage and stability.
- The proximity of Overhead Electrification (OHE) masts to the track and the presence of guy rods hinder the smooth movement of the waste conveyor during ballast cleaning.
- These results in muck (dirt and debris) falling onto the track, requiring time-consuming and manual clean-up, leading to delays and inefficiency.

## INNOVATION OVERVIEW

Design of the Trolley with Chute: A simple yet effective solution was designed to guide the muck safely away from the track, eliminating the need for manual clean-up.

### Key Features of the Solution

**Trolley Design:**

The trolley carries a chute positioned 3.2 meters above rail level with a downward slope of 45 degrees.

This ensures that the muck is directed away from the track, preventing it from falling onto the track during the cleaning process.

**Support Structure:**

The chute is supported by mild steel (MS) flat frames and 45mm diameter iron pipes, ensuring durability and stability during operation.

**Operation:**

The trolley is manually moved ahead of the HOBCM at locations where the OHE masts are situated.

The disposed muck is then guided through the chute, ensuring that it is thrown safely away from the track and does not affect railway operations.

## BENEFITS

- The innovation saves 4-6 minutes per OHE mast location, significantly reducing the time lost in manual muck removal.
- The overall delay during traffic blocks is reduced, increasing the efficiency of the operation.
- The system ensures that the muck is safely disposed of, without hindering the track's operations or causing potential delays.
- It minimizes disruption to the overall working of the railway system during ballast cleaning operations.
- The innovation aligns with on-going efforts to improve the sustainability of railway operations, reducing delays and optimizing the use of time and resources

## IMPLEMENTATION IN THE DIVISION AND BEYOND

The innovation was successfully applied in Ramagundam section of Secunderabad Division, where 41.78 km of track was deep-screened with HOBCM, demonstrating the effectiveness of the solution.

The process has streamlined ballast cleaning, ensuring faster and more efficient operations.

**Automation Possibilities:**

- Future improvements could focus on automating the movement of the trolley to further reduce manual labor and time spent.

**Wider Implementation:**

- The solution could be extended to other sections and divisions across the Indian Railways network where similar challenges are faced.

# FORTRESS CHECKING MODEL OF THE ANTI-HUMAN TRAFFICKING UNITS

## SECUNDERABAD DIVISION

### ISSUE ANALYSIS

Despite the presence of Anti-Human Trafficking Units (AHTUs), traditional methods like station checks and random train inspections have been ineffective against traffickers exploiting system gaps. There is a need for real-time intelligence and better coordination among RPF, GRP, NGOs, and child welfare authorities. A comprehensive, continuous strategy is required to proactively address these challenges.


### INNOVATION OVERVIEW

To combat this, the Secunderabad Division of South Central Railways (SCR) has implemented the Fortress Checking Model (FCM). This model combines advanced technology, strategic intelligence, and collaboration with law enforcement, NGOs, and legal bodies to proactively address trafficking. FCM enhances the efficiency of Anti-Human Trafficking Units (AHTUs) while ensuring traffickers are apprehended and victims, particularly children, are rescued and supported.

The Fortress Checking Model (FCM) was designed to address these challenges by implementing a proactive, intelligence-driven, and coordinated anti-trafficking strategy within the Secunderabad Division. The key components of the FCM include:

- Tech-Intelligence via PRABAL Software: The software analyzes data from sources like IRCTC IDs, PNRs, mobile numbers, and IP addresses to identify trafficking trends and hotspots, aiding in targeted operations.
- Decoy AHTU Teams: Covert teams validate intelligence by monitoring suspected trafficking activities in real-time. Disguised teams work with uniformed officers and NGOs to conduct spot checks and gather evidence.
- Collaboration with NGOs: AHTU teams work with NGOs during mid-journey checks, ensuring trafficked individuals are promptly identified and rescued. Organizations like Bachpan Bachao Andolan (BBA) provide a victim-centric approach.
- In-Station Hearings: The Child Welfare Committee (CWC) conducts immediate hearings at the station to ensure prompt legal action and victim protection.

## BENEFITS

- Immediate Legal Action: Once trafficking is confirmed, FIRs are registered, and perpetrators are arrested on the spot, ensuring swift legal proceedings.
- Tactical Operations Coordination: The model integrates efforts from RPF, GRP, NGOs, DCPU, and CWC for joint operations, creating a multi-layered defense against trafficking.

సాక్షి

25 మంది పిల్లలను రెస్క్యూ చేసిన ఆర్పీఎఫ్



పిల్లలను రెస్క్యూ చేసిన ఆర్పీఎఫ్ పోలీసులు

10 మంది అక్రమ రవాణాదారుల అరెస్ట్

అడ్డగుట్ట: పిల్లల అక్రమ రవాణాను పూర్తిస్థాయిలో నియంత్రించేందుకు ఆర్పీఎఫ్, జీఆర్పీ పోలీసులు నిరంతరం చేస్తున్న కృషి ద్వారా సత్ఫలితాలు సాధిస్తున్నామని ఆర్పీఎఫ్ సీనియర్ డివిజనల్ సెక్యూరిటీ కమిషనర్ డెబస్మిత సి.బెనర్జీ పేర్కొన్నారు. మంగళవారం సికింద్రాబాద్‌లోని తన కార్యాలయంలో ఏర్పాటు చేసిన సమావేశంలో ఆమె మాట్లాడుతూ ఆపరేషన్ ఆగేన్స్ హ్యూమన్ ట్రాఫికింగ్(ఏఏహెచ్‌టీ) లో భాగంగా సోమవారం ఈస్ట్ కోస్ట్ ఎక్స్‌ప్రెస్‌లో పిల్లల అక్రమ రవాణాకు పాల్పడుతున్న 10 మంది ట్రాఫికర్లను ఆర్పీఎఫ్ పోలీసులు అదుపులోకి తీసుకొని వారి నుంచి 25 మంది పిల్లలను రక్షించినట్లు తెలిపారు. సోమవారం అందిన విశ్వసనీయ సమాచారం మేరకు ఆర్పీఎఫ్, జీఆర్పీ పోలీసులు సంయుక్తంగా విజయవాడ నుంచి వరంగల్ వరకు ఈస్ట్‌కోస్ట్ ఎక్స్‌ప్రెస్‌లోని అన్ని కంపార్ట్‌మెంట్లలో ముమ్మర తనిఖీలు నిర్వహించారు. వెస్ట్ బెంగాల్, ఒడిశా రాష్ట్రాలకు చెందిన 10 మంది హ్యూమన్ ట్రాఫికర్లను అదుపులోకి తీసుకొని వారి నుంచి 25 మంది పిల్లలను రక్షించినట్లు వెల్లడించారు.



డెబస్మిత సి.బెనర్జీ

Date: 10/05/2023, Edition: Hyderabad(Hyderabad District), Page: 8
Source : https://epaper.sakshi.com/


- The implementation of the Fortress Checking Model has had a transformative impact on combating human trafficking, with notable improvements in the number of rescues and trafficker arrests:
- Financial Neutrality: Maximizes existing resources with minimal extra investment.
- Utilization of Existing Manpower: Leverages current RPF personnel, ensuring sustainability.
- Enhanced Efficiency: Increases rescues and arrests, proving its effectiveness in the Secunderabad Division

# RPF rescues 54 child trafficking victims

**DC CORRESPONDENT**
HYDERABAD, APRIL 20

The Railway Protection Force (RPF) Secunderabad has rescued 54 child trafficking victims and detained 13 traffickers in two days. The operation was conducted in collaboration with the NGO Bachpan Bachao and was based on the Intelligence generated from data analysis by the RPF's Cyber Cell.

On April 19, the RPF escorted Train No.17608 Dharbanga Express from its starting point of jurisdiction at Ballarshah and conducted targeted raids from Ballarshah to Kazipet. The operation was carried out by the Anti-Human Trafficking Unit (AHTU) of RPF Secunderabad and involved keeping a close watch on suspected coaches to identify and pinpoint the seat and coach numbers of the traffickers. Further, on April 20, the RPF escorted Train No.11020 Konark Express from its starting point of jurisdiction at Khammam and conducted targeted raids from Khammam to Warangal.

The operation was successful, and 54 child trafficking victims were rescued along with 13 traffickers coming from Uttar Pradesh, Jharkhand, Odisha, Andhra Pradesh & Chhattisgarh. Upon reaching Kazipet and Warangal Railway station, on the arrival RPF inspectors of Warangal & Kazipet co ordinate with GRP, along with Sri. Venkateshwarlu, BBA, state coordinator and Railway child line attended and forwarded to GRP for further legal action.

**12 HELD FOR IPL BETTING RACKET, CASH SEIZED**

Cyberabad police arrested 12 persons for running an IPL 2023 betting racket at Petbasheerabad and seized ₹50 lakh and material.

On getting a tip-off, the special operations team and Petbasheerabad police raided two hotels and caught the accused red-handed.

The kingpin Ayyappa from Andhra Pradesh and four more bookies are absconding. Police found a deposit of ₹3.29 lakh in one of their bank accounts and freeze it. They also seized laptops, mobile phones, live boards used for connecting punters and four vehicles, all worth ₹1.41 crore from them, said DCP (Medchal zone) G. Sandeep.

**AVOID CELLARS AS KITCHEN, HOSTEL OWNERS TOLD**

Kukatpally Housing Board (KPHB) traffic police organised a traffic awareness programme in association with KPHB hostel owners at Sri Bhramaramba Mallikarjuna Swamy kalyana mandapam in Hydernagar under Cyberabad limits here on Thursday.

Speaking on the occasion, joint commissioner (Traffic) S. Srinivas Rao said that no hostel owner is allowed to use cellars for kitchen or cooking purposes. It is because of such illegal and unwarranted uses that hostellers, staff, tenants in the building and visitors were forced to park their vehicles on the roads.

This haphazard parking was leading to traffic congestion in the surroundings, Rao said.

The joint commissioner urged the hostel managements to shift the kitchen from cellular to the terrace of the building if they have space constraints.

Assistant Commissioner of Police (Traffic) Dhanalakshmi, Kukatpally Housing Board traffic inspector Narasimha Rao and others were also present. The awarness programme received overwhelmingly positive response from citizens.

## IMPLEMENTATION IN THE DIVISION AND BEYOND

The Fortress Checking Model introduced by the Secunderabad Division of South Central Railways is a pioneering initiative in combating human trafficking, particularly in safeguarding vulnerable children. By integrating advanced technology, intelligence-driven operations, and multi-agency collaboration, the model has substantially increased the number of rescues and trafficker apprehensions.

# FIRST DIGITALIZED ARMORY MANAGEMENT SYSTEM (ARMS) IN RPF

## SECUNDERABAD DIVISION

### ISSUE ANALYSIS

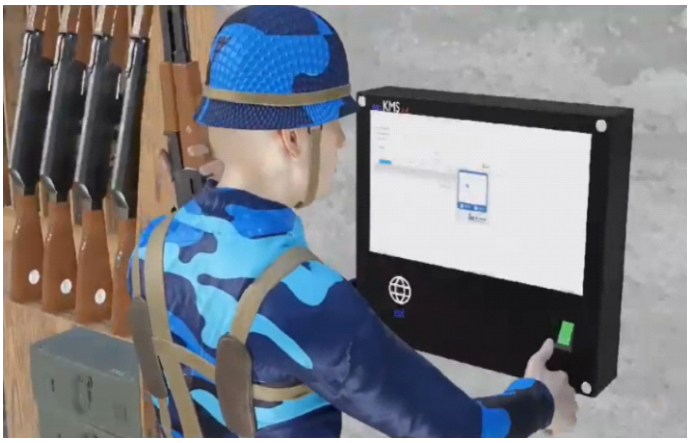
The Divisional Armory, located at D Coy Thana, Boiguda, stores the majority of the RPF Secunderabad Division's weapons, which are issued and returned daily by RPF personnel and train escort companies. However, traditional manual processes present the following challenges:

1. Security Risks & Inaccurate Inventory Management
2. Inefficient Record Keeping
3. Lack of Real-Time Monitoring
4. Maintenance Challenges

### INNOVATION OVERVIEW

The Secunderabad Division of South Central Railway has taken a pioneering step toward enhancing the safety and operational efficiency of its armory by introducing the Armory Management System (ARMS). This innovative system ensures secure and efficient handling of weapons while maintaining a robust digital inventory for real-time monitoring and analysis. The initiative marks a significant advancement in the digitization of armory management within the Railway Protection Force (RPF).

The Armory Management System (ARMS) employs advanced technologies, including biometric authentication and RFID (Radio Frequency Identification), to digitize weapon management. This system ensures precise tracking of weapons and ammunition while streamlining handover and takeover procedures. Installed at the newly constructed Divisional Armory at D Coy Thana, ARMS adopts best practices from police and paramilitary forces to enhance operational efficiency.



*Features:*

**1. Secure RFID & Biometric-Based System**

- RFID technology enables secure and automated weapon tracking.
- Biometric authentication ensures access is limited to authorized personnel.

**2. Digital Inventory Management**

- A centralized digital system maintains accurate records of weapons and ammunition.
- Enables seamless updates and quick data retrieval.

**3. Real-Time Monitoring and Digital Analysis**

- Live tracking ensures real-time status updates for all weapons.
- Automated analysis identifies trends and discrepancies in weapon usage.

**4. Alerts for Scheduled Maintenance of Weapons**

- Automated alerts ensure timely maintenance, enhancing weapon reliability and safety.

## BENEFITS

- Enhanced Security: Reduces risks of unauthorized access or mismanagement, Improved Efficiency: Ensures faster, error-free record-keeping and transactions, Data Transparency: Real-time monitoring and analysis improve accountability & Operational Reliability: Maintenance alerts ensure weapons remain in optimal condition.
- System Capacity: Designed to accommodate expanding weapon and ammunition inventories.
- Security Enhancements: Adaptable to evolving security requirements.

  Fast Transactions, Three-Tier Security, Enhanced Reporting, Individual Login Accounts, Red Alerts, Temporary Weapon Issuance, Multiple Weapon Issuance, Emergency Deposit Feature, Customizable Reports & Lifetime Software License.
- Operational Efficiency: Significantly reduces transaction time and eliminates manual errors.
- Enhanced Safety: Robust security features ensure secure handling and storage of weapons.
- Data Transparency: Real-time monitoring and reporting enhance accountability and operational insights.

## IMPLEMENTATION IN THE DIVISION AND BEYOND

The introduction of the Armory Management System (ARMS) by Secunderabad Division is a transformative step in modernizing weapon management. By integrating advanced technologies like RFID and biometric authentication, ARMS ensures safety, efficiency, and accountability. This initiative sets a benchmark for digitalized armory management within the Railway Protection Force.

# MANLESS LC OPERATION – THROUGH AI BASED TRAIN DETECTION SYSTEM (ON PILOT BASIS)

## SECUNDERABAD DIVISION

### ISSUE ANALYSIS

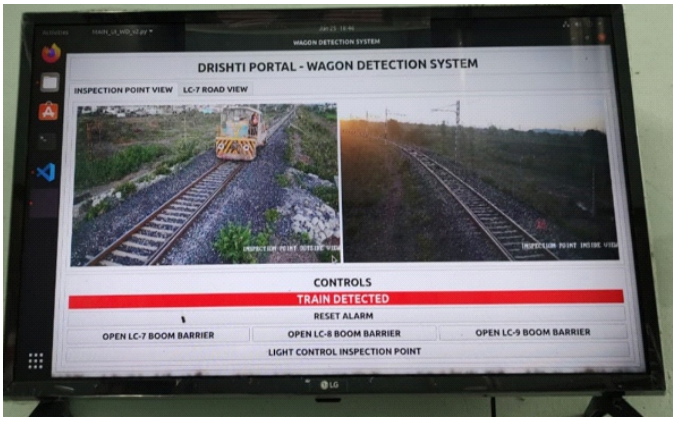
Unmanned Level crossing gates at remote locations due to non-availability of man power.

### INNOVATION OVERVIEW

To overcome the issue and comply Board guidelines, an innovative approach of closing the LC gate through AI based train detection & LC operation system is adopted.

Working Process:

- When the train reaches specific point, AI camera detects the loco & sends signal to control room from that point.
- After the signal is received by the server, beacon will start the voice command for operation of boom barrier.
- By hearing the voice & beacon alert, the operator activates the boom barrier after ensuring no entrapment between two barriers by CCTV.
- Operator observes the Live streaming of the LC's in the monitor.
- Red signal is by default on both sides. When boom barriers are closed, then only green signal will be activated
- Once the train crosses the LC & it is confirmed through CCTV footage, Boom barrier will be opened and the signal turns into red automatically.
- To see the train movement, LC have AI cameras.




## BENEFITS

- Manless gate operation
- Operatable 24X7 by single control room
- Scalable easily for many locations
- Confirmation is through real time visibility & operation
- Digital record for the any kind of operation & incidents near the level crossing

## IMPLEMENTATION IN THE DIVISION AND BEYOND

Currently 3 unmanned Level crossing gates on the UCLG siding line are closed using this technology.

# UNIVERSAL SPM APP

## SECUNDERABAD DIVISION

### ISSUE ANALYSIS

The process of conducting Speed-Meter (SPM) analysis, whether manual or using existing tools, is highly time-consuming, particularly when dealing with different SPM formats, speed restrictions, and signal locations. Additionally, analysing SPM data during stalling, unusual events, or accidents is challenging. Furthermore, analysing loco technical parameters like voltage, current, and energy is cumbersome.

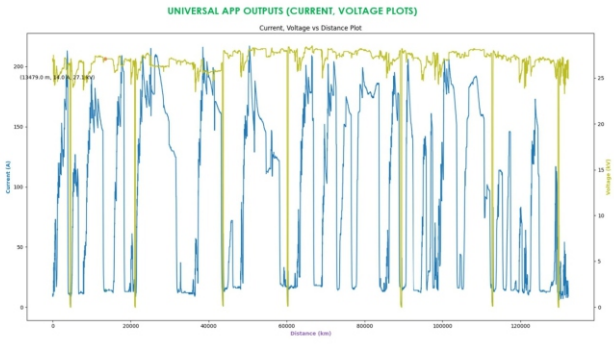
### INNOVATION OVERVIEW

The Universal SPM App developed by Secunderabad Division addresses these challenges by enabling instant detailed analysis of SPM raw data from various formats, reducing the time taken for analysis to under 10 minutes.

It accurately highlights performance at speed restrictions and signal locations and superimposes SPM with gradient data for quick integrated analysis during stalling. The app also provides graphical plotting of crew performance before accidents or unusual events, flags violations automatically, and generates detailed reports on various performance parameters, including loco technical information, for better monitoring and analysis.

**Salient features of the App:**

- The Universal SPM App is developed to instantly process and analyse SPM raw data from multiple formats, reducing manual effort and time.
- It includes features for highlighting performance at critical locations and integrates data superimposition for comprehensive analysis.
- The app also provides graphical and textual representations of performance, automatically flags violations, and generates reports on dynamic performance and technical parameters.
- Additional features allow for real-time extraction and analysis of loco technical information, enhancing the depth of analysis.

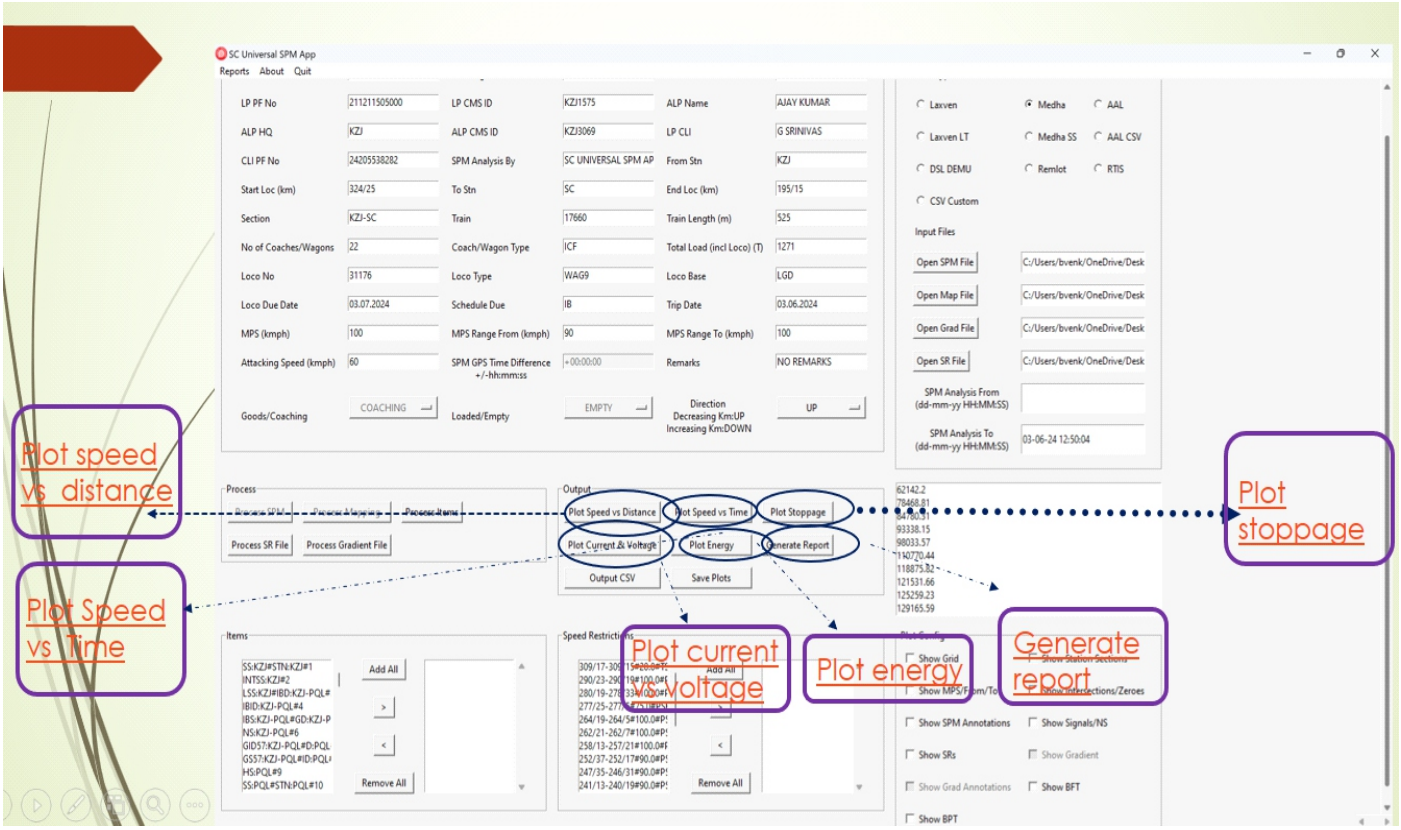



## BENEFITS

- Time Efficiency: Reduces analysis time from hours to minutes, enabling quicker decision-making.
- Accuracy: Improves the accuracy of analysis by automatically flagging issues and providing detailed reports.
- Multiple Dimensional Analysis: Facilitates analysis of running performance in various aspects such as analysis on MPS, Signal, Caution Order, Gradients, During unusuals and the like.
- Comprehensive Analysis: Facilitates integrated and detailed analysis of crew and train performance, enhancing monitoring and problem resolution.
- Ease of Use: Simplifies the analysis process, making it accessible even to users with limited technical expertise

## IMPLEMENTATION IN THE DIVISION AND BEYOND

The App was initially implemented in Secunderabad division. Upon receiving very positive feedback by the CLIs it was then instructed by Headquarters to be implemented across entire South Central Railway. Hence presently it is being utilized by all CLIs of South-Central Railway.




## AWARDS WON

For development and implementation of the Universal SPM App individual cash award of Rs. 5,000/- and Group award of Rs. 15,000/- was announced by the General Manager

# ROLLING BLOCK MANAGEMENT SYSTEM (ROBMS)

GENERAL MANAGER'S OFFICE

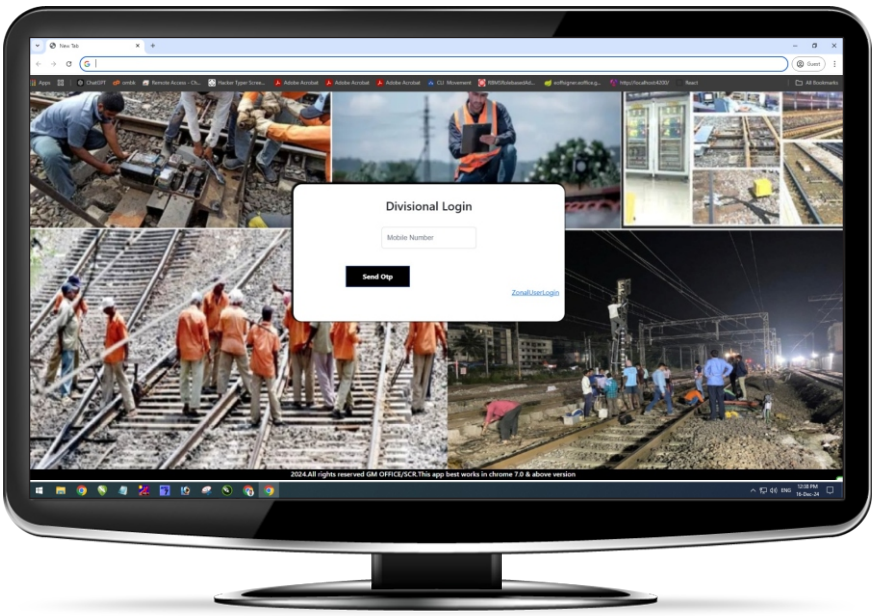
## ISSUE ANALYSIS

- After the introduction of Rolling block program for planning of blocks well in advance, all departments (Engineering, TRD and S&T) are feeding data into a Google spread sheet
- It is strenuous job for controllers for sorting the data, planning of slots for traffic blocks and for granting of blocks as it requires more time to workout block requests

## INNOVATION OVERVIEW

For easing the process of block requests and for planning for traffic blocks, an App on Rolling Block management system has been planned.

- RoBMS App has been developed by GM's Office, SCR for carrying out block requests, blocks approval and availing of blocks.
- This facilitates in processing of Block requests from user departments (such as Engineering, TRD, S&T, Construction, RE, RITES, and RVNL).
- Accessing & viewing of Reports conveniently from anywhere, anytime.
- This APP is user-friendly. It comprises of functions i.e., Block requests to Create, Edit, Approve, Reject & Re-apply Block Requests.
- RoBMS app is developed using latest technologies like Angular, Laravel, MySQL



**Field User (Engg/TRD/S&T)**

- Field users will submit block requisitions to departmental controllers

**Department Controllers (Engg/TRD/S&T)**

- Field users will submit block requisitions to departmental controllers
- Dept. Controllers check block requests, edit and forward to Dept. Admins

**Department Admins (Engg/TRD/S&T)**

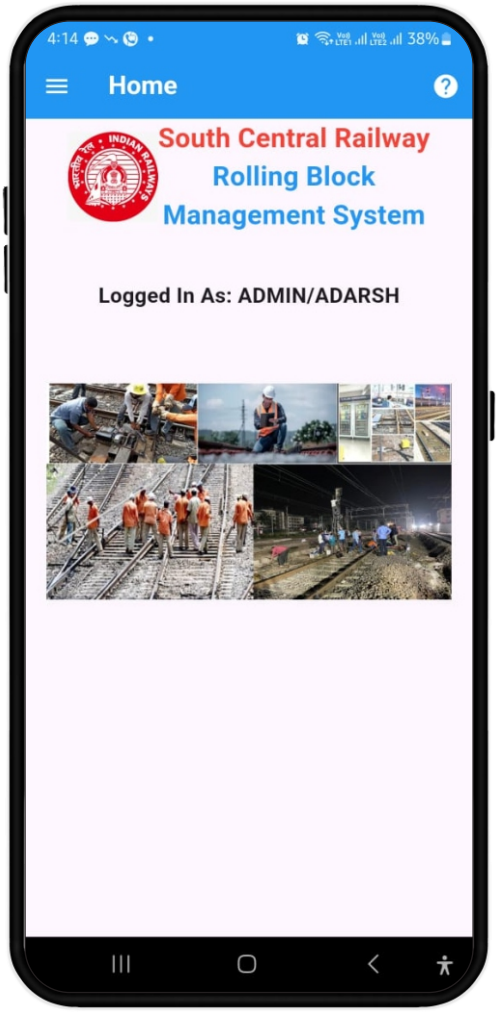
- Dept. admin check block requests, approve and forward to Operating dept.

**Operating Department**

- Entering plan timings
- Approval of Block Requests
- Granting of Blocks

## BENEFITS

- This APP is useful in processing of Block requests, forwarding of Block requests and Granting of Blocks transparently.
- Various Reports regarding blocks planning, Blocks performance, Block bursts, granting of blocks etc., can be taken as and when required
- It saves time and facilitates user departments (Engineering, TRD and S&T) and operating department in processing block requests towards granting.




## IMPLEMENTATION IN THE DIVISION AND BEYOND

This APP has been implemented in All Six Divisions of South central railway i.e., Secunderabad, Hyderabad, Vijayawada, Guntur, Guntakal and Nanded.

# LIVE COACHING TRAINS MONITORING DASHBOARD

## GUNTAKAL DIVISION

### ISSUE ANALYSIS

There is ICMS/PAM application available to monitor the Coaching trains punctuality as per WTT, but user has to check the trains one by one. There is no Dashboard for coaching trains where it shows all the coaching trains running in 1 division at a glance, which will ease the working.

### INNOVATION OVERVIEW

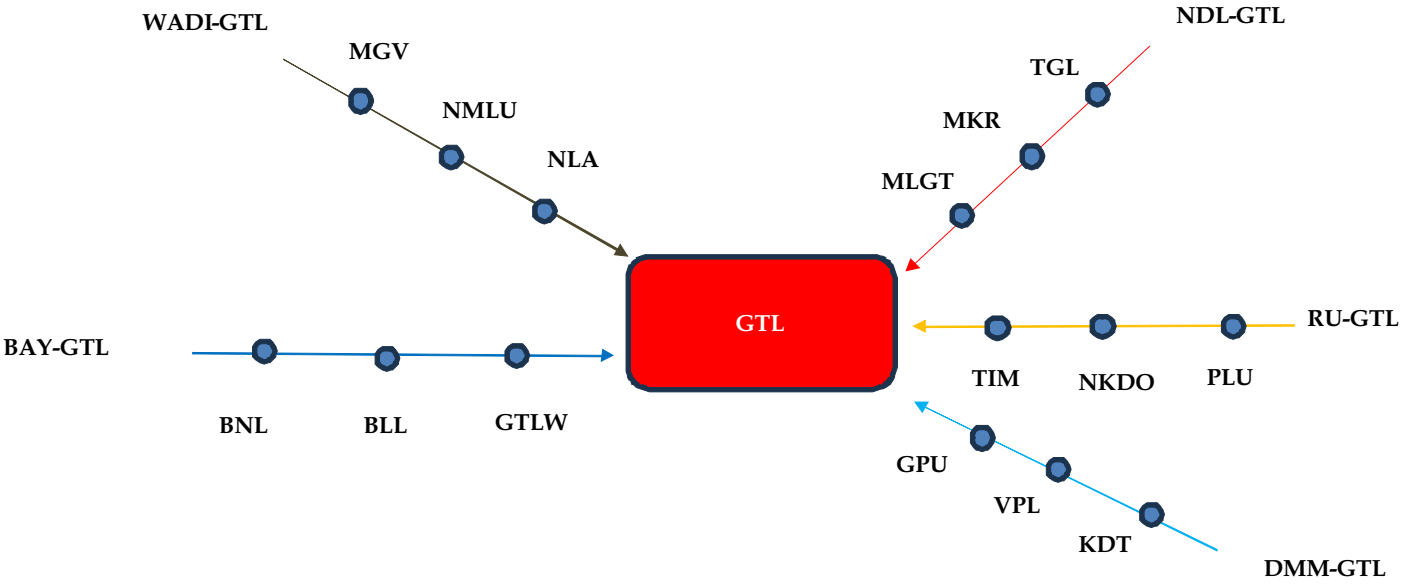
The Live Coaching Trains Monitoring Dashboard has been designed on Google sheets to handle the above problem. Live data of COA application is pulled and fetched in the sheet with the help of same console application which is developed in ".Net framework", this console application runs in every 5 minutes and update the Google sheet with raw data of COA.

Below sheet is designed to handle the raw data and give the live position of all coaching trains at glance along with the late or running before with respect to WTT timing.

| LAST UPDATED : | | | 20-12-24 14:11 | | LIVE DATA : COACHING TRAINS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| S.No. | Train No. | TRAIN NAME | Entry I/C Station | T/O AT I/C BT/LATE MIN | CURR LOC | STATUS | CURR TIME | Exit I/C Station | CURR /(H/O) AT I/C BT/LATE MIN | NLT OR LATE |
| 1 | 16614 | CBE-RJT EXPRESS | DMM | 35 | TIM | Arr | 14:03 20-12 | WADI | -6 | -41 |
| 2 | 06727 | MASS-TPTY MEMU PASS | RU | -41 | RU | Arr | 13:41 20-12 | TPTY | -41 | 0 |
| 3 | 07656 | TPTY-GTL PASSENGER | TPTY | -52 | DMM | Arr | 14:05 20-12 | GTL | -25 | 27 |
| 4 | 07657 | TPTY-UBL PASSENGER | TPTY | | GTL | Arr | 14:01 20-12 | BAY | -56 | -56 |
| 5 | 06728 | TPTY-MASS MEMU PASS | TPTY | -1 | RU | Arr | 13:59 20-12 | RU | 6 | 7 |
| 6 | 22157 | CSMT-MS SF EXP | WADI | 13 | GTL | Arr | 13:54 20-12 | RU | 22 | 9 |
| 7 | 16339 | CSMT-NCJ EXP | WADI | 19 | NCU | Arr | 14:06 20-12 | KPD | 9 | -10 |
| 8 | 07337 | UBL-GTL PASSENGER | BAY | -6 | GTLW | Dep | 14:03 20-12 | GTL | -22 | -16 |
| 9 | 07658 | UBL-TPTY PASSENGER | BAY | 12 | PLU | Dep | 13:53 20-12 | TPTY | -5 | -17 |
| 10 | 17254 | AWB-GNT EXP | DHNE | -14 | DHNE | Dep | 13:27 20-12 | NDL | 8 | 22 |
| 11 | 12789 | KCG-MAQ EXP | DHNE | 14 | GPY | Dep | 14:07 20-12 | RU | 9 | -5 |
| 12 | 07289 | DHNE-GY DMU | DHNE | 0 | MYL | Dep | 13:51 20-12 | GY | -14 | -14 |
| 13 | 22832 | SSPN HWH SF EXP | DMM | -1 | MADU | Dep | 14:03 20-12 | NDL | | |
| 14 | 20701 | SC-TPTY VANDE BHARAT | GDR | | RU | Dep | 13:59 20-12 | TPTY | 17 | 17 |
| 15 | 07285 | RU-NDL DMU | RU | -3 | MRM | Dep | 14:03 20-12 | NDL | -5 | -2 |
| 16 | 17408 | MQ-TPTY PAMANI EXP | KPD | 4 | PTT | Dep | 14:02 20-12 | TPTY | -3 | -7 |
| 17 | 22158 | MS-CSMT MUMBAI SF EXP | RU | 12 | NKDO | Dep | 14:04 20-12 | WADI | 17 | 5 |
| 18 | 16853 | TPTY-VM EXP | TPTY | 0 | MNPT | Dep | 14:07 20-12 | KPD | 7 | 7 |
| 19 | 16779 | TPTY-RMM EXP | TPTY | -3 | BUM | Dep | 13:54 20-12 | KPD | 3 | 6 |
| 20 | 09419 | ADI-TPJ TOD SPL | WADI | -50 | MRM | Dep | 13:40 20-12 | RU | -140 | -90 |
| 21 | 11013 | LTT-CBE COIMBATORE EXP | WADI | 35 | VPL | Dep | 14:02 20-12 | DMM | -10 | -45 |
| 22 | 16381 | PUNE-KANYAKUMARI EXP | WADI | 20 | HAQ | Dep | 14:08 20-12 | KPD | -9 | -29 |
| 23 | 01437 | SUR-TPTY SPL | WADI | -105 | YDLP | Dep | 14:02 20-12 | TPTY | -163 | -58 |

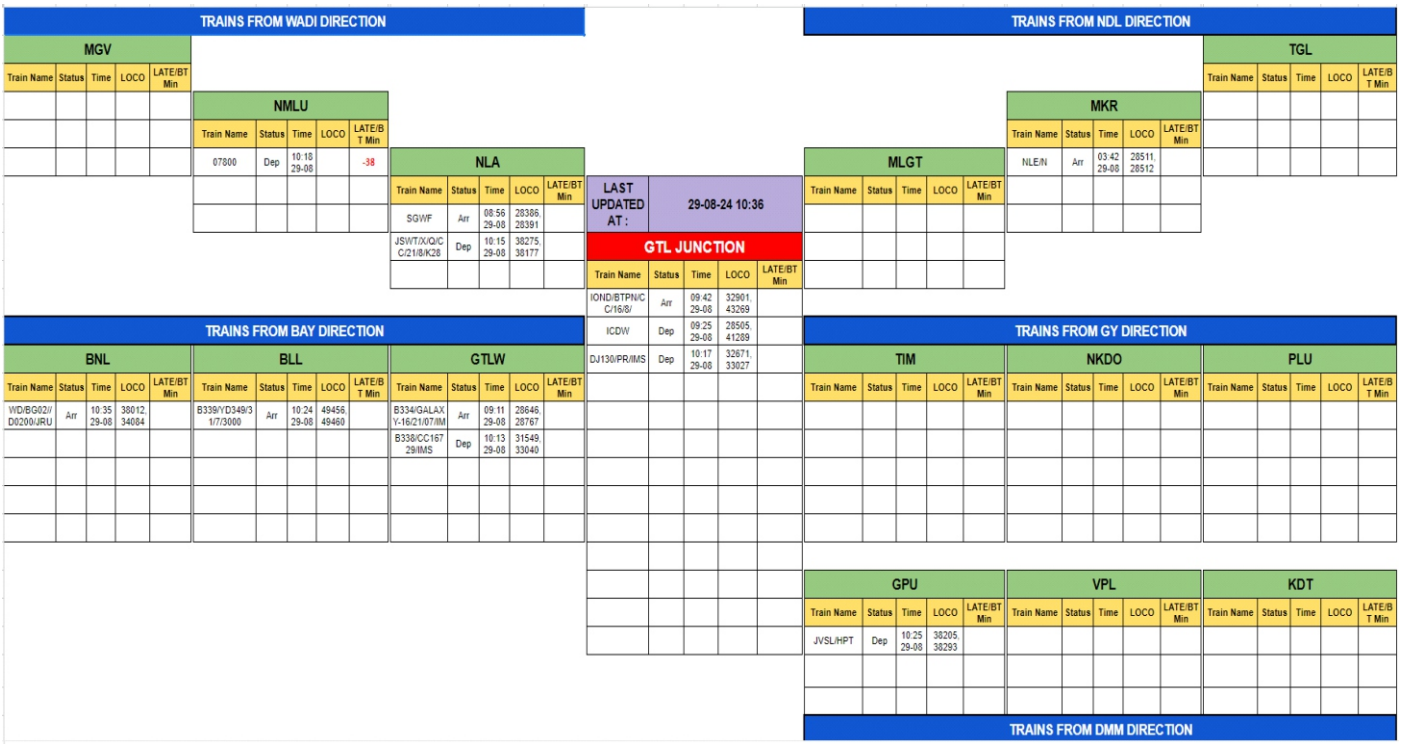
## BENEFITS

- All coaching trains at a glance once trains enter the division from any interchange points.
- Real time monitoring by Officers, Punctuality Deputy, LTM clerks.
- Easily accessible anywhere from any device with internet connectivity.




## IMPLEMENTATION IN THE DIVISIONS AND BEYOND

Currently being utilized by Guntakal division and can also be implemented by all the divisions for coaching trains data at a glance.



# DEVELOPMENT OF IN-HOUSE HYDRAULIC LIFTING STAND

GUNTAKAL DIVISION

## ISSUE ANALYSIS

During Major schedule attention of Conventional WAG-7 Locomotives, centre pivot pin checking and DPT testing is a schedule item and during every IOH schedule attention, 'After Cooler' needs to be dismounted for cleaning and gasket changing. Due to heaviness of both items, more man power used to be deployed for carrying out the works.

## INNOVATION OVERVIEW

- To tackle the above issue, in-house Hydraulic Lifting Stand has been developed which facilitates in dropping and re-fixing of centre pivot pin.
- In addition to this, the lifting stand is also useful for dropping heavy items like after cooler, draft gear, which eliminates the use of more manpower and dependency on fork lift for carrying out the work.

## BENEFITS

- Multipurpose utilization of single bench just by changing mounting arrangement
- 6 Man days per month is being saved by implementation of the proposed system saving an approx. cost of Rs. 15,000/-
- Reduce the time for attention.
- Reduce the man power by half.

## IMPLEMENTATION IN THE DIVISION AND BEYOND

- Currently, implemented in Guntakal Division of SCR

# CLOSING OF WATER LOGGED RUBS DURING MONSOON BY SLIDING BOOM WITH LOCKING ARRANGEMENTS

## GUNTAKAL DIVISION

### ISSUE ANALYSIS

- Previously arrangement for closing of RUBs was made by providing Lifting Barrier with pedestal and Counter weights.
- Though barrier is available people are trespassing through the side gaps of Height Gauge.
- No locking arrangement for lifting barrier in existing system.
- Hard for installation & maintenance.

### INNOVATION OVERVIEW

To resolve the issue, Guntakal Division has developed Customized sliding boom with locking arrangements.

### ADVANTAGE

- A simple sliding boom to avoid Trespassing.
- Cost effective solution (saving around 03lakhs/rub) made of class-II water pipes & released lifting barriers.

### IMPLEMENTATION IN THE DIVISION AND BEYOND

- Presently being utilized by Guntakal Division.

*Before*

*After*


*After*

# IMPROVEMENT OF TRACK STRUCTURE AT WEAK FORMATION BY PROVIDING BALLAST SIDE DRAINS ARRANGEMENTS

GUNTAKAL DIVISION

## ISSUE ANALYSIS

In Kalluru – Gooty section at KM: 256DN weak formation exists due to black cotton soil. Consequently, maintenance became harder due to shrinkage of soil in monsoons/summer.

## INNOVATION OVERVIEW

To overcome this issue, ballast side drains have been provided by the division at the location

## BENEFITS

- Improve of track structure.
- Removal of Caution order.
- Easy maintenance of track.
- Improvement in TQI value

(March-24 TRC Run TQI Value: 83.72)

(June-24 TRC Run TQI Value: 100.92) (Improvement:20.54%)

## IMPLEMENTATION IN THE DIVISION AND BEYOND

- Kalluru – Gooty section of Guntakal Division.


Scanning...
28
17.1
78.1
1.4
0.6
16.1
18.2
6.6
23.9
451
9.5
WAG
2.17
13.5
13
57%
90%

# दक्षिण मध्य रेलवे
# South Central Railway