



Indian Railways | IN

Reliable train detection in waterlogging-prone Howrah Yard

/ DATA TRANSMISSION
/ LIFE CYCLE SERVICES

Frauscher delivered a reliable train detection solution for Howrah Yard, which ensured uninterrupted operations despite waterlogging, while reducing maintenance effort and improving availability.

Background

Howrah Yard, located in West Bengal, is one of the busiest and most operationally critical railway yards in India. Serving both Eastern Railway and South Eastern Railway, it handles a dense mix of long-distance and suburban train traffic on a daily basis. With such high train frequency, even minor disruptions can quickly escalate into significant delays, making reliability a top priority for railway operations.

The yard has historically faced recurring challenges with conventional DC/AC track circuits, particularly during monsoon seasons when waterlogging is common. Failure and downtime due to waterlogging was a key challenge faced. These challenges often led to failures in train detection, requiring frequent maintenance interventions and increasing operational complexity for railway teams.

Operator	Indian Railways
Partner	MRT Signals Limited
Country	India
Segment	Main Line
Application	Yard
Project Start	2020
Scope of Service	Train Detection System and Life Cycle Services
Products	FAdC®, Wheel Sensor RSR180

Given the limited maintenance windows in a continuously active yard, Indian Railways required a solution that could deliver consistent performance under difficult environmental conditions while reducing dependency on frequent manual intervention. The goal was not only to improve reliability, but also to simplify maintenance processes and ensure smooth, uninterrupted train movement across the yard.

Solution

/ Reliable, low-maintenance train detection for high-density operations

To address these challenges, Frauscher implemented the Frauscher Advanced Counter FAdC®, a SIL 4 axle counting system, together with the Wheel Sensor RSR180. This solution provides a reliable alternative to conventional track circuits designed to perform consistently in waterlogging-prone areas and on rusty rail sections, ensuring uninterrupted train detection even under challenging conditions.

/ Centralised architecture for simplified integration

A centralised architecture was deployed, covering 171 detection points across 112 track sections, with axle counter cubicles installed in the Central Relay Room. This setup enabled seamless integration with the existing relay-based infrastructure while reducing wiring complexity and improving overall system availability.

The Wheel Sensor RSR180 played a key role in simplifying installation and maintenance. Its clamp-on design eliminates rail drilling, preserving rail integrity and making it especially suitable for older or corroded tracks. The sensor allows quick removal and refitting during rail replacement or restoration work, enabling maintenance teams to carry out activities with minimal operational disruption.

/ Robust performance in challenging environmental conditions

The system is built to operate reliably in outdoor conditions, with no active electronics required in trackside components. This ensures stable performance even in waterlogged environments and reduces the need for additional infrastructure such as earthing. To further support efficient operations, the solution was integrated with remote monitoring through Railnet, enabling real-time system visibility and allowing railway teams to proactively address potential issues before they impact train movement.

/ Long term support through Life Cycle Services

In addition to the installation, Frauscher continues to support the project through a life cycle service approach. An Annual Maintenance Contract (AMC), awarded by Indian Railways in October 2024, ensures ongoing system performance, helping the operator maintain high levels of reliability and availability over time.

The project demonstrates how advanced axle counter technology, combined with smart design and life cycle support, can significantly improve train operations in complex, high-density environments. The system's performance has been formally recognised through a Performance Certificate issued by Eastern Railway, validating the reliability and operational effectiveness of the solution.

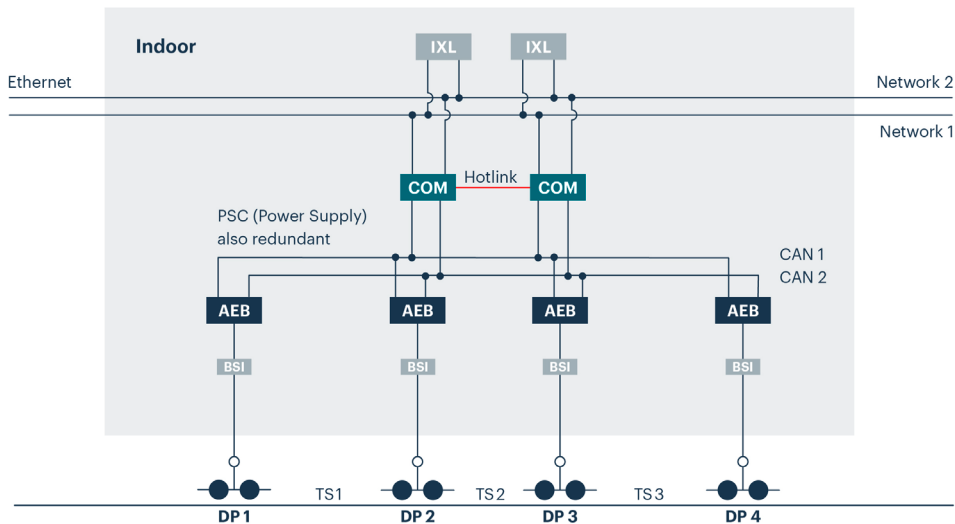


Image 1: Smart True Redundancy Architecture

Benefits

Implementing the Frauscher solution at Howrah Yard resulted in several improvements – from day-to-day operational reliability to long-term maintenance efficiency, giving Indian Railways the confidence to extend the partnership through an ongoing service contract.

Some key benefits include:



Reliable operations in all conditions

Ensures consistent train detection even during waterlogging and in rusty rail sections, minimising operational disruptions.



Reduced maintenance effort

Eliminates frequent failures associated with track circuits, reducing maintenance workload in a high-traffic environment.



Faster maintenance and minimal disruption

Quick sensor removal and refitting supports efficient rail replacement and restoration without affecting operations.



Improved availability and safety

Remote monitoring and proactive maintenance enhance system uptime, ensuring safer and more reliable train movement.



Remote diagnostics & monitoring

Integrated with RailNet, Frauscher Diagnostic System FDS provides real-time remote diagnostics, enabling proactive maintenance and rapid issue solving. A web-based interface eliminated the need for additional software installations.



Future-ready infrastructure

The scalable and reliable system established a foundation for future digital transformation initiatives.



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www.frauscher.com/en/contact



Further references are available at the following link: www.frauscher.com/en/references