



Case Study | IN

Jhansi-Bina Railway Line

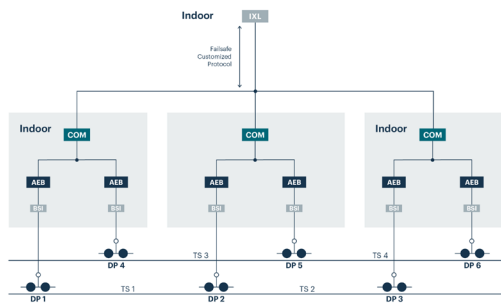
Challenges

The Jhansi-Bina railway line is a strategically important line between two major Indian cities. The line serves as an important hub for transit of goods and passengers, playing a key role in the development of the local economy. Prior to the installation of Frauscher solutions, the line featured analogue axle counters in an absolute block section as well as an intermediate block hut with a DC track circuit in BPAC (Block Proving by Axle Counter) and IBS (Intermediate Block Signalling) applications. The existing system required complex maintenance as the old analogue systems were frequently failing, resulting in a lot of train delays. This in turn led to an increase in downtimes and costs associated with maintenance, prompting the operator to seek an alternative solution.

Solution

To meet the customer's requirements for a safe and reliable track vacancy detection system, the existing system was replaced with our renowned Frauscher Advanced Counter FAdC®, which among other benefits, is known for its easy configuration, flexible system architecture and low maintenance costs. The Frauscher Wheel Sensor RSR180 was also used in this project, due to its ability to withstand harsh weather conditions, including resistance to water ingress (in accordance with the IP68 rating) which made it the ideal choice given local climatic conditions.

Since both BPAC and IBS applications require installation of systems at multiple locations in the block section, a distributed architecture was chosen along with redundant Ethernet based communication. Initially existing copper cables were used as the network media, but these were later replaced by fibre based Ethernet network cables to reduce dependence upon maintenance of aged copper cables.



Distributed architecture

Special features of distributed architecture deployed over the project

- COM redundancy, PSC redundancy & network redundancy with bus architecture for very high availability
- Ability to change over from one network to another seamlessly without manual intervention
- Auto correct function for redundant systems to reduce manual interventions
- Less amount of copper cables due to distributed architecture
- Built-in network diagnostic system with web-based GUI interface that can be accessed via any web browser
- No electronics at the trackside leading to minimal maintenance at the trackside

Project Details

The overall installation features a coverage of 221 counting heads and 148 track sections. The FAdC® indoor electronics were placed in 19 stations and 15 IBH locations, and in total, all 34 are connected over an Ethernet based redundant network for communication. Utilising Frauscher solutions provided the operator with a range of advantages. The wheel sensors were mounted onto the rail with a patented Frauscher Rail Claw which makes the

installation process easy and convenient, since no drilling is required. In turn, this preserves the structural integrity of the rail, saves costs and reduces the dwell time on track for the installation engineers.



Frauscher Wheel Sensor RSR180

Results, objectives and improvements

By eliminating trackside electronics, the vulnerability to environmental factors is significantly reduced and this also leads to a reduction of maintenance activities on the trackside. Such features were particularly useful in this project due to the long block sections having very little access by road to remote sites. Thanks to above mentioned factors, train operations can be maintained regardless of the site-specific challenges and harsh weather conditions. This in turn saves time and financial resources for the operator. Additionally, the distributed architecture used in this project minimises set-up costs and enhances scalability in an efficient and cost-effective way.

Key Facts

Operator	Indian Railways – North Central Railway	Country	India
Partner	NA	Segment	Main Line
Project Start	2017	Application	Absolute Block, Intermediate Block Signalling and Yard
Scope of project	221 counting heads 148 track sections	Axle Counter	FAdC®
Scope of supply	MSDAC and FDS, Installation, Testing and Commissioning	Wheel Sensor	RSR180 GS03