

Case Study | UK

Axle Counter Overlay System

Requirements

Between London St Pancras International Station and Farringdon Station, there is a history of flooding through the tunnels that adversely affects the reliability of the existing train detection system. This frequently happened to such an extent that the installation was non-operational for large periods.

As this is a mainline section and is a core route through London, it is vital that this route is highly resilient to any sort of failures. The existing signalling has been designed to facilitate up to 24 trains per hour.

In 2019, Network Rail contracted Siemens Rail Automation to look at how to improve the overall reliability and availability of the railway without removing the existing detection system. Therefore, an alternative approach was required that would not interfere with the existing installation whilst guaranteeing maximum availability under the local conditions given.



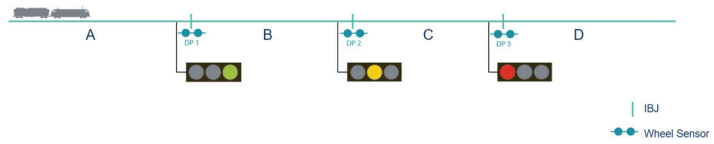
Wheel Sensor RSR123

Solution

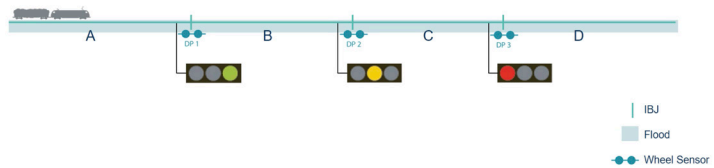
As an appropriately reliable solution, the Frauscher Advanced Counter FAdC was chosen. The FAdC's modular design allowed for the establishment of a decentralised architecture, where four external location cases were installed between the two stations to host the axle counter's indoor equipment.

The system is combined with the Frauscher Wheel Sensor RSR123 which precisely tracks every train axle. This sensor has proven to be extremely resilient to water ingress and other environmental influences. Thanks to its IP68 rated housing, it still works reliably in case of floods.

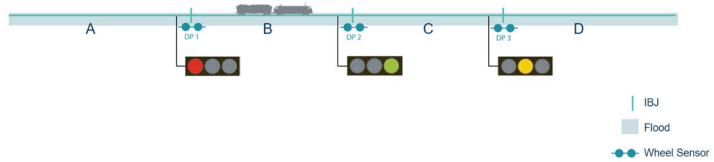
Environmental Condition	Track Circuit	Axle Counters	Impact to Service
Normal	Operational	Operational	Nil



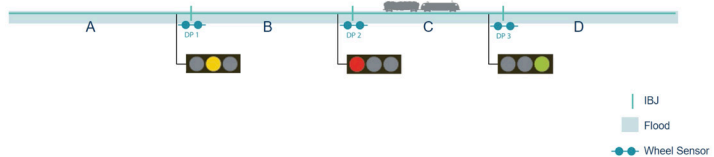
Environmental Condition	Track Circuit	Axle Counters	Impact to Service
Flood	Failure	Operational	Nil



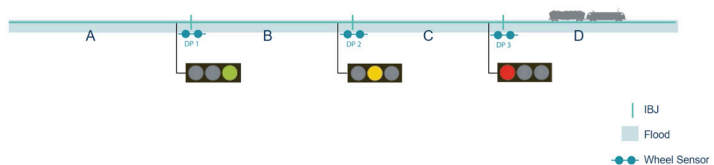
Environmental Condition	Track Circuit	Axle Counters	Impact to Service
Flood	Failure	Operational	Nil



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Flood	Failure	Operational	Nil



Environmental Condition	Track Circuit	Axle Counters	Impact to Service
Flood	Failure	Operational	Nil





Frauscher Advanced Counter FAdC

Benefits

The FAdC and the Frauscher Wheel Sensor RSR123 perfectly meet the requirements of the proposed solution. The FAdC units installed in location cases between the stations are able to communicate with one another via a vital Ethernet interface and also communicate with the higher-ranking system using relay outputs.

With overlay systems, the new track sections need to match the existing track section limits.

Therefore, the system had a specific requirement to install the RSR123 within 0.5 m of the existing train detection system and within close proximity of the neutral section. Any greater larger distance would have had a direct impact on the signalling controls.

The RSR123 was proven to be highly resilient against any interference that is associated with this.

Key Facts

Operator	Network Rail	Wheel Detection	RSR123
Partner	Siemens	Country	UK
Scope of Supply	Trial, components, support	Segment	Main Lines
Scope of project	45 counting heads, 4 FAdC location cases	Application	Train detection
Axle Counting	FAdC, FDS	Project start	2019