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Paddington Route | UK

Cutting delays through data-driven maintenance

/ TRAIN DETECTION
/ SMART CONDITION MONITORING

Frauscher recently supported the Paddington, UK project by incorporating Frauscher Insights Diagnostics, a cloud-based monitoring solution that increases data usefulness and availability. By providing faster fault analysis and health messages, Frauscher Insights has helped Network Rail improve reliability, reduce downtime, and reduce delay minutes by up to 80%. It also allows for a shift towards a more proactive maintenance approach.

Operator	Network Rail
Country	United Kingdom
Segment	Main Line
Application	Track vacancy detection
Products	FAdC, RSR123
Project Start	2023
Scope of Delivery	Frauscher Insights Diagnostics

Background

The railway line that runs west from London Paddington station is one of the busiest and most recognized routes in the United Kingdom. In 2024, Frauscher Insights Diagnostics was installed to monitor the 13-mile section between the Paddington and West Drayton stations. It supplements the existing diagnostic features provided by the FAdC axle counting system that was commissioned in December 2021.

In recent years, Network Rail has identified a growing number of infrastructurerelated issues across the project. These have resulted in reduced performance and increased operational costs. To address these challenges, a performance improvement plan and special task force, Project Brunel, were established. Their mission had two parts – halt falling performance statistics, then start to reverse them.

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One way to achieve this was to explore digital technologies that enhance data availability and shorten response times to failures. Building on a strong working relationship with Frauscher, Network Rail chose to implement Frauscher Insights Diagnostics.

Solution

The implementation of Frauscher Insights Diagnostics commenced in August 2023, with a trial installation at one location in London Paddington station. The initial trial was a success and was expanded to cover all twelve locations along the route, with full roll-out completed in March 2024. Network Rail designed the trial to monitor specific success criteria including trends in the Mean Time to Repair (MTTR), utility of the platform in helping maintainers respond to errors, and proactive prompts prior to an asset going into error status. During the trial user feedback was used to guide platform improvements, highlighting the flexibility of the web-based application.

Throughout the trial period, Frauscher worked closely with Network Rail's cyber security experts to gain nationwide approval for Frauscher Insights. The solution underwent a full assessment and was judged to satisfy Network Rail's standards.

Full product acceptance for both the platform and hardware was granted in December 2024.
Frauscher Insights Diagnostics is made possible through just two pieces of equipment, a Network TAP and an Edge Device:

- **Network TAP:** A secure interface that copies and forwards diagnostic messages to the Edge Device. It has a high level of security and protects the vital Frauscher Advanced Counter FAdC system from unauthorized access, a critical component for security.
- **Edge Device:** Processes the data stream and remotely uploads messages from the Network TAP to the Frauscher Insights platform.

Benefits

Frauscher Insights at Paddington has delivered significant improvements across several areas. These individual efficiencies have reduced delay minutes for the project and is estimated to have saved Network Rail hundreds of thousands of pounds.

/ Proactive maintenance capability

Frauscher Insight Diagnostics provides system health and pre-fault monitoring, giving maintainers early warning before issues escalate into failures. These messages present as "Possible Issues" in the user interface. On multiple occasions, this feature alerted the team at Paddington to escalating issues before a failure could occur. Without the early warnings provided by Diagnostics, these failures would have caused service delays.

/ Faster fault analysis

When a failure occurs, maintainers now have direct access to asset identity and diagnostic data, helping them rectify failures much more quickly. While it does not replace testing and fault-finding, it guides the investigation and shortens downtime. With Insights Diagnostics:

- Instant email notifications are sent when a fault occurs, ensuring designated users are informed without delay.
- Response teams immediately know the nature of an error – no need to look for information in other places.
- Corrective action for each error type is suggested by the platform.
- Information about the location of each asset is shown, reducing time to site.

At Paddington, this has resulted in reduced negative impact from the most significant faults. Delay minutes for these major events have been reduced by up to 80%. This can largely be attributed to improved response efficiency, driven by Frauscher Insights.

/ Fault and asset awareness

Regular use of the platform by the staff has promoted a greater overall knowledge of the axle counting system. Over 60 users with a variety of roles within the project have access to Frauscher Insights Diagnostics at Paddington. It makes collaboration between staff members easier, and means no event goes unnoticed. Fault investigation and reporting is improved and trends in performance are easy to identify.

GET IN TOUCH!

Do you have any questions about our solutions? Click on the link below to get in touch with a qualified contact person.
www.frauscher.com/en/contact

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

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