camlin rail

Introduction to Camlin Rail

Powering Tomorrow's Journey

CAMLINGROUP.COM/RAIL

Contents

Powering Tomorrow’s Journey

Camlin Group transforms critical energy and rail infrastructures for a resilient and sustainable future. Our deep industry expertise informs our vision, enabling us to innovate solutions for tomorrow’s challenges, today. We push technological boundaries and unlock the potential of data to deliver a vital and measurable impact on the world. With a relentless focus on elevating our customers, we are optimising the essential systems that power and connect us, turning possibilities into progress every day.

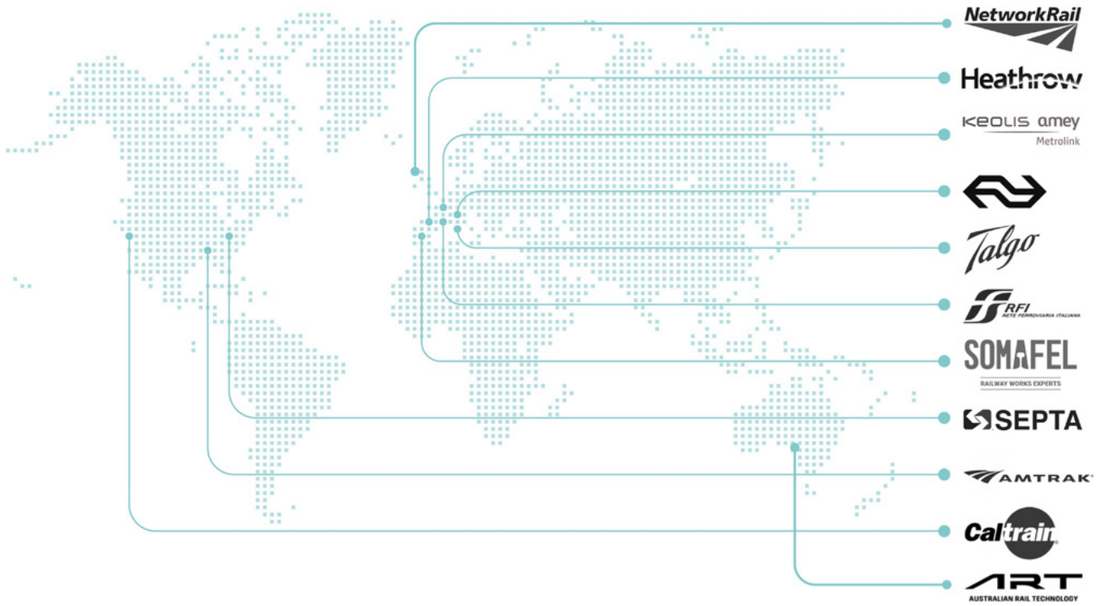
The rail industry faces growing pressures, from ageing infrastructure and net-zero targets to increasing performance demands. Camlin Rail empowers leading fleet and network operators with clarity and control, through intelligent monitoring and predictive solutions that reduce disruption and extend asset life, making the journey possible.

Camlin Rail pioneered the world’s first intelligent 3D pantograph monitoring system.

Paul Fleming,
Managing Director, Camlin Rail

Global solutions with a track record for success

Camlin Rail is proud to have a global track record, successfully deploying our systems across Europe, North America, and Asia to help deliver a safer, more efficient, and more sustainable railway of the future.



camlin rail

Who we work with

"Camlin has designed and installed Railway Signalling Power Auto-reconfigurable Power systems (SIGNET) on the West Coast Main Line covering circa 150 miles since 2004. The innovative system replaced the traditional LV power supply fuse protection systems to provide coordination and basic sectionalisation, which was proving to be expensive and labour-intensive and often resulted in long train delays and lost minutes. SIGNET solves this problem in a cost-effective and controllable manner by automatically restoring power to affected signals and reconfiguring the system to isolate the fault."

Network Rail, Route Asset Manager

"The installation of PanVue will allow us to monitor the state of every single pantograph in TALGO trains in real time, detecting any possible incidence in record time. This solution will bring us much more efficiency in preventive maintenance tasks and an important cost saving due to spare parts replacement."

Talgo, Senior Buyer

"The installation of PanVue and CarVue (Bogie) systems – part of the TrainVue suite of Camlin Rail – allows CAF and the end customer NS to monitor the condition of pantographs and bogies with in-service inspections at full line speed and in real time. PanVue and CarVue (bogie) systems have already been installed to good effect at Hekendorp & Hoofdorp."

CAF, Managing Director

ISO Certification

At Camlin, we uphold the highest standard of quality, safety, environmental responsibility, and information security across the business globally.

ISO accredited for the following international standards:

- ISO 9001 (quality management system)
- ISO 14001 (environmental system)
- ISO 27001 (information security management system)
- ISO 45001 (occupational health and safety management system)

Introduction to Camlin Rail

At Camlin Rail, we exist to make every journey safer, more reliable, and ready for the future. We partner with the industry's leading rail operators to solve complex challenges and drive meaningful progress towards the digital railway. By protecting networks and maximising availability, we help railways perform today while building resilience for tomorrow.

Our fleet & infrastructure monitoring solutions are helping rail operators optimise maintenance schedules and maximise fleet availability while enabling staff to work and maintain rolling stock more safely. Our automated reconfigurable power systems maintain supply continuity during extreme fault conditions, enabling railways to keep trains running with less disruption to passenger journeys.

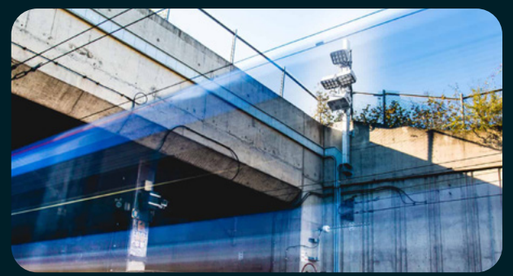
Projects

Heathrow Airport
London, United Kingdom

System: Pantograph Monitoring

Year: 2018

Value added: Increasing in-service fleet capacity

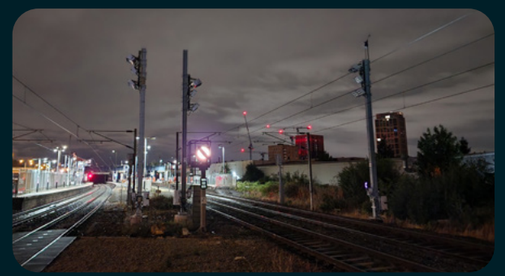


Network Rail
Midland Mainline & Great Western Mainline, UK

System: Pantograph Monitoring

Year: from 2005

Value added: Minimal time disruptions



Septa
Philadelphia, United States

System: Pantograph Monitoring

Year: 2025

Value added: Understand their pantograph's condition across the various fleets for early detection of pantograph damage.

RFI
Salone, Italy

System: Pantograph Monitoring

Year: 2019

Value added: Infrastructure protection

NS
Hekendorp, Netherlands

System: Pantograph, Roof and Bogie Monitoring

Year: 2021 – 2024

Value added: To optimise their fleet maintenance scheduling with in-service monitoring by deploying TrainVue.

Caltrain
San Francisco, United States

System: Pantograph, Roof and Catenary Monitoring

Year: 2025

Value added: Improve fleet availability and maintenance efficiency, with early detection of potential issues

"Driving sustainable efficiencies and performance success for rail networks and operators"

camlin rail

TrainVue

Fleet & Infrastructure Monitoring Solutions

Empowering Smart Maintenance

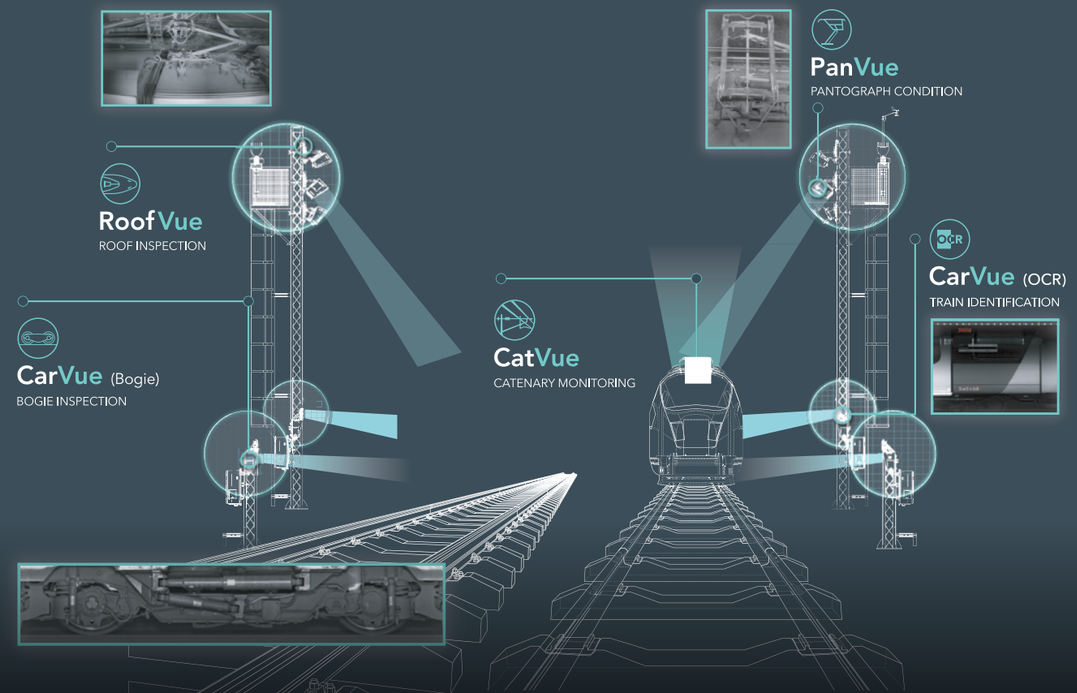
One of the key challenges faced by train operators is the manual inspection of rolling stock to ensure it is in an acceptable condition to enter the operational railway.

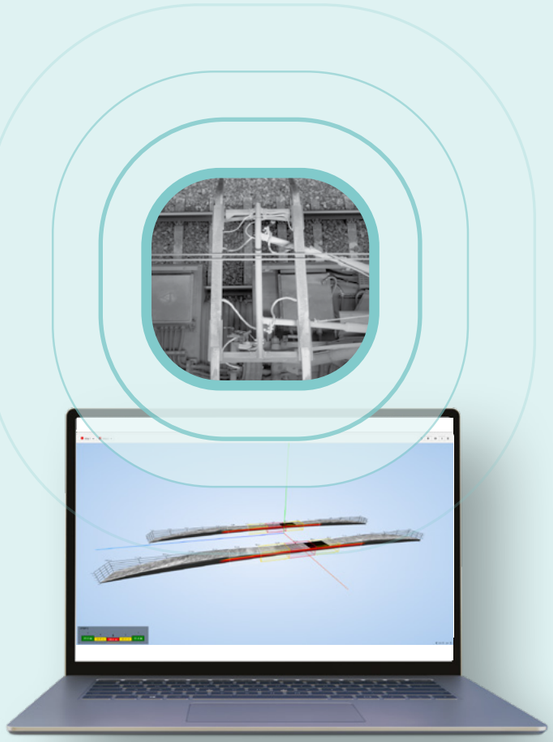
Manual checks are labour-intensive and involve several challenges, namely, the inspections can only be carried out during the hours of darkness, impacting the safety of maintenance teams and the quality and consistency of the inspection and the rolling stock being spread across multiple depots.

TrainVue solves this problem by capturing and analysing images of the rolling stock - at full line speed - and presenting them to the maintenance teams via a secure, web-based user interface. The images are time-stamped and correlated with the train (asset), which allows the railway to keep an extensive digital record of asset condition as well as track and trend the condition of components. This approach enables train operators to maximise the availability of their fleets.

Benefits of TrainVue

- Safer working
- Accurate, repeatable results
- Reduced risk of line teardown
- Maximised fleet availability





PanVue

Automating pantograph monitoring to enable condition-based maintenance.

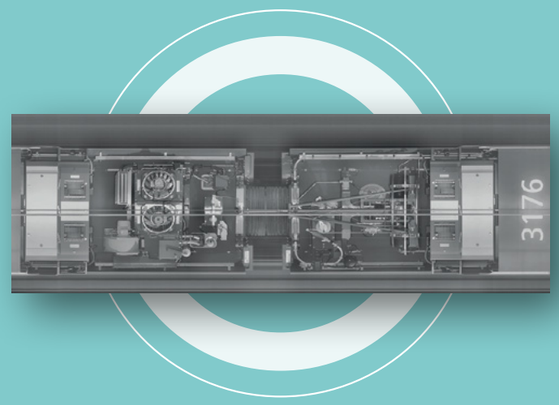
PanVue is an in-service pantograph monitoring module that uses powerful digital signal processing to create an accurate three-dimensional model of the pantograph, including the contract strip and horn structure.

The camera system captures left and right images, which are then translated into a 3D model disparity image, visualising wear, chipping, and cracks, and sends alerts to fleet maintenance teams, enabling them to prioritise maintenance through condition-based analysis.

RoofVue

Enhancing safety by enabling automated roof inspection.

Camlin Rail's monitoring solution, RoofVue, shifts roof inspection from the depot to the network. Using automated, trackside imaging, it captures high-resolution visuals of roof-mounted components as trains pass, enabling continuous assessment without taking vehicles out of service. This enables operators to carry out maintenance based on condition – protecting critical assets while keeping staff safe and trains running.



RoofVue is a cost-effective solution to support manual and automated inspections. The technology uses high-resolution images of the lower pantograph structure and its mounting area to enable users to manually inspect for damage or foreign objects which can impact performance.

CarVue OCR

Enabling accurate tracking, verification and condition-based maintenance of rolling stock.

CarVue delivers automated train identification and bogie condition monitoring in-service – giving operators clear, reliable visibility of which vehicles are running on the network and what condition they are in. By removing manual identification and inconsistent checks, it supports condition-based monitoring, enables earlier intervention, and reduces operational risk without disrupting service.

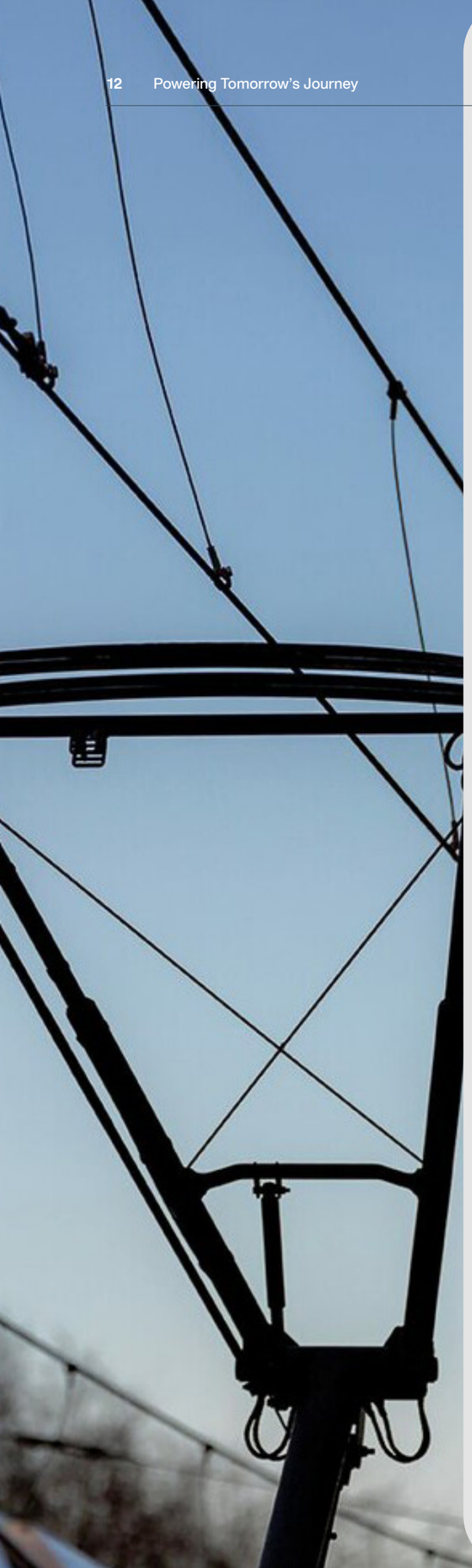
CarVue Optical Character recognition (OCR) captures images as trains pass, automating inspections of carriage conditions, open doors, graffiti, and the bogie area. It also automatically logs carriage numbers, enabling our analysis software Theia to correlate train IDs with the images – and empowering you to track asset performance over time.

camlin rail

CarVue Bogie

Detailed inspection of train bogies, detecting damage and anomalies.

CarVue Bogie uses a high-definition camera to capture images of the bogie while the train is moving at full speed. It then uploads images to our analysis software, Theia, to pinpoint any damage or degradation – alerting maintenance teams so they can plan repairs, prevent failures, and avoid costly disruptions.



CatVue

Assess, predict, and prevent catenary failures.

Trains powered by overhead electric wires require a continuous connection between the contact wire and the pantograph. Loss of contact damages the equipment, which can lead to dewirement failures. CatVue uses computer vision technology to reduce the incidence of overhead line equipment (OLE) failures by providing immediate intelligence on the condition of OLE and facilitating better management of the critical interface between conductor wire and pantograph.

CatVue is our ground-breaking in-service catenary inspection solution, transforming maintenance schedules and enabling continuous monitoring through a compact, roof-mounted camera behind the pantograph, recording in real-time to analyse and identify failures or emerging threshold events.

CatVue keeps rail networks running smoothly, preventing incidents and enhancing safety by unlocking the visibility needed to keep trains and passengers always moving forward.

Signet

Signet was one of Camlin Rail's industry-first innovations, revolutionising uptime for railway operators. It is an automated, reconfigurable signalling power system which reduces the impact of faults on service continuity for railway network operators.

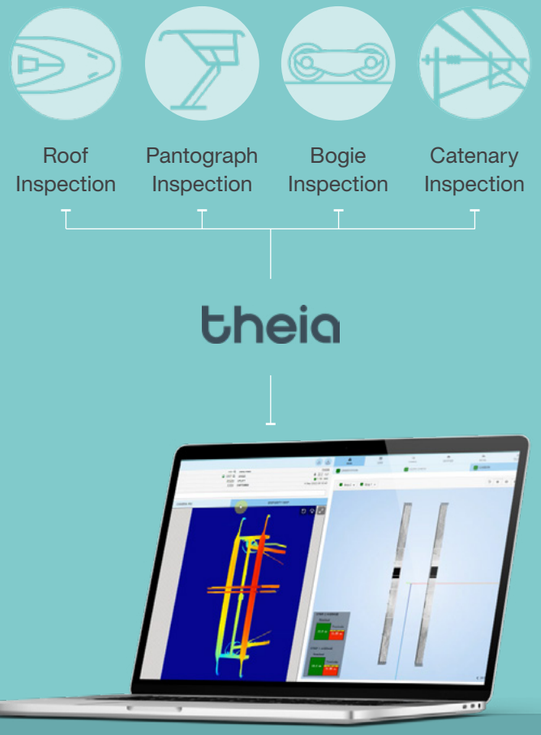
It enables rail operators to maintain supply during extreme fault conditions by switching the circuit open in order to protect the power system. Once the fault has been repaired, Signet allows power to be restored to the network, returning to its original configuration.

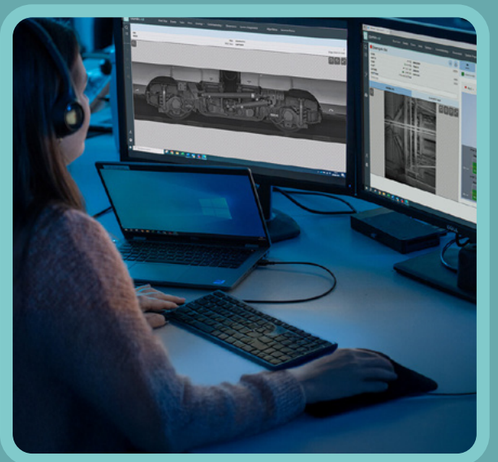
Theia

Theia is Camlin Rail's next-generation analysis platform that empowers operators and infrastructure owners to keep fleet assets in prime condition by automating in-service inspection of rolling stock.

Key features of Theia:

- Intuitive data analytics tools and dashboards for asset insights
- Data-driven maintenance strategies
- Supports integration with maintenance platforms





Theia: One Solution, Multiple Consumers

Theia enables all railway stakeholders to review their issues simultaneously. Including:

Maintainers to discover early damage detection and maintenance scheduling.

Fleet owners to understand the health of their fleet.

Infrastructure owners to understand the risk to infrastructure, identify locations of faults and detect early damage.

"Accurate data is the foundation of smarter railway operations. At Camlin Rail, we harness precision analytics to empower operators with real-time insights, enabling proactive decisions and improved asset performance"

Philip Heaney,
Technical Director, Camlin Rail

camlin rail

Group Headquarters

Group Headquarters
31 Ferguson Drive
Knockmore Hill Industrial Park
Lisburn BT28 2EX
Northern Ireland

North America Headquarters

5085 Avalon Ridge Pkwy
Suite 200
Peachtree Corners
Georgia 30071
USA

Italy Parma Office

Strada Budellungo 2
43123 Parma
Italy

mail@camlingroup.com