

# CatVue

IN-SERVICE CATENARY MONITORING



mail@camlinrail.com

FAIL TO  
MONITOR.  
FAIL TO  
MOVE.



camlin rail

www.camlinrail.com



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IN-SERVICE CATENARY MONITORING

# KEEPING TRAINS RUNNING

The Overhead Catenary System (OCS) is critical, powering trains and helping railways stay operational. Maintaining the OCS is key to keeping your trains on schedule and your passengers moving.

The catenary wire is at continuous operational risk which means failures can happen at any time, leading to delays and disruption. The average delay costs around £1.5million, and can cost an organisation its reputation, too.

## WHY RISK IT?

When inspections are periodic, issues are often missed. When monitoring is irregular and inconsistent, unidentified problems can significantly impact your services and your revenue.

The traditional approach to maintenance is not robust enough to avoid failures. It relies heavily on manual assessments, which are time-consuming and typically can only be carried out at night (during non-operational hours), making them subject to inconsistencies. If not done efficiently, they can result in disruptions to services and costly maintenance routines. And if a problem goes undetected, it can put the railway at risk.



## THE FIRST OF ITS KIND

CatVue is a step change, offering train-borne infrastructure monitoring to assess, predict and prevent catenary failures. As part of Camlin Rail's TrainVue suite of monitoring solutions, CatVue is the only catenary monitoring system to be validated against Network Rail's (Mentor) diagnostic train.

CatVue uses computer vision technology, providing real-time intelligence on the Overhead Line Equipment. This gives you the ability to immediately understand the condition of your assets. So, you can identify issues before they escalate, and schedule maintenance as required.

97.9% height measurements within 20mm

96.7% stagger measurements within 50mm

99.3% height measurements within 25mm

99.4% stagger measurements within 100mm

Standard Deviation of 8.2mm (height) between CatVue & Mentor

Standard Deviation of 33.5 mm (stagger) between CatVue & Mentor

## PROBLEMS SOLVED BY CATVUE



### ARCING

Our algorithm recognizes arcing between overhead cables and contact area.



### LOW INCOMING WIRE

Compare heights of consequent contact wires to ensure smooth transition.



### STAGGER

Measure anomalies in expected tolerances throughout every journey.



### PAN HEIGHT

Senses irregularities and variances of pan height throughout track sections.



### CONTACT FORCE (CONTINUOUS)

Measure force of contact wire with pantograph – and any unexpected changes.



### CONTACT FORCE (IMPACT)

Pantograph collision detection.





## MINIMISE RISKS WITH CATVUE

CatVue provides a proactive approach to catenary monitoring with condition-based maintenance strategies, meaning you can reduce downtime of your trains while working to ensure they're safe and fully operational. It monitors during revenue service, empowering you to continually identify issues before they progress to failures, helping you avoid instances of service disruption and unnecessary expense.



**Service disruption**



**Cost of unplanned maintenance**



**Loss of reputation**



**Penalties**

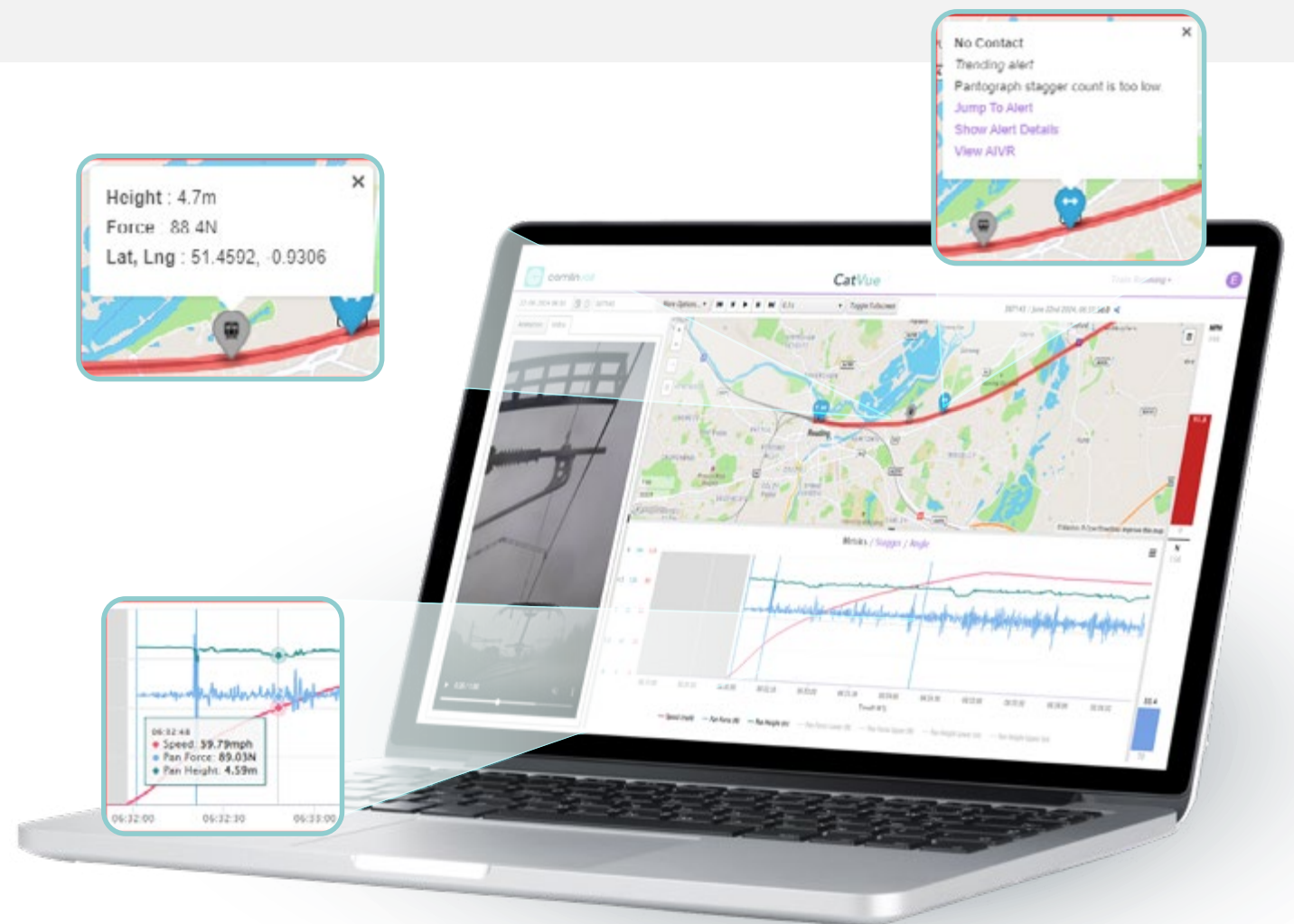
## HOW DOES CATVUE WORK?

CatVue captures images in real-time. The miniature camera is mounted on the train roof directly behind the pantograph, requiring a simple installation. This enables a targeted approach to catenary monitoring by pinpointing emerging faults as they occur.

CatVue records and analyses metrics against machine-learned thresholds, reporting any degradation of the infrastructure

such as deviations in tension, height, or stagger of the catenary, or electrical connection issues. It then flags immediate 'failure alerts' or 'persistent emerging alerts' to maintenance teams, so that they can fix the issues before failures occur.

Alerts can be accessed remotely via the CatVue web-based User Interface.





# REVOLUTIONISING RAIL MAINTENANCE

CatVue offers a proactive and cost-effective approach to rail maintenance. By empowering inspections during revenue service, you no longer need possessions to get a clear picture of the health of your network. This means no line closures due to manual assessments. It also means you can optimise your resource allocation by prioritising maintenance needs based on each asset’s condition, rather than on a fixed schedule.

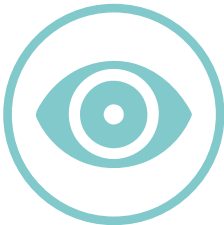
As CatVue video records every time the train is in motion, it gathers actionable data insights that:



**Prevent incidents** with early detection of issues and fewer emergency repairs, mitigating associated costs



**Improve staff safety** with CatVue’s ‘virtual track walk’, meaning staff never need to put boots on ballasts



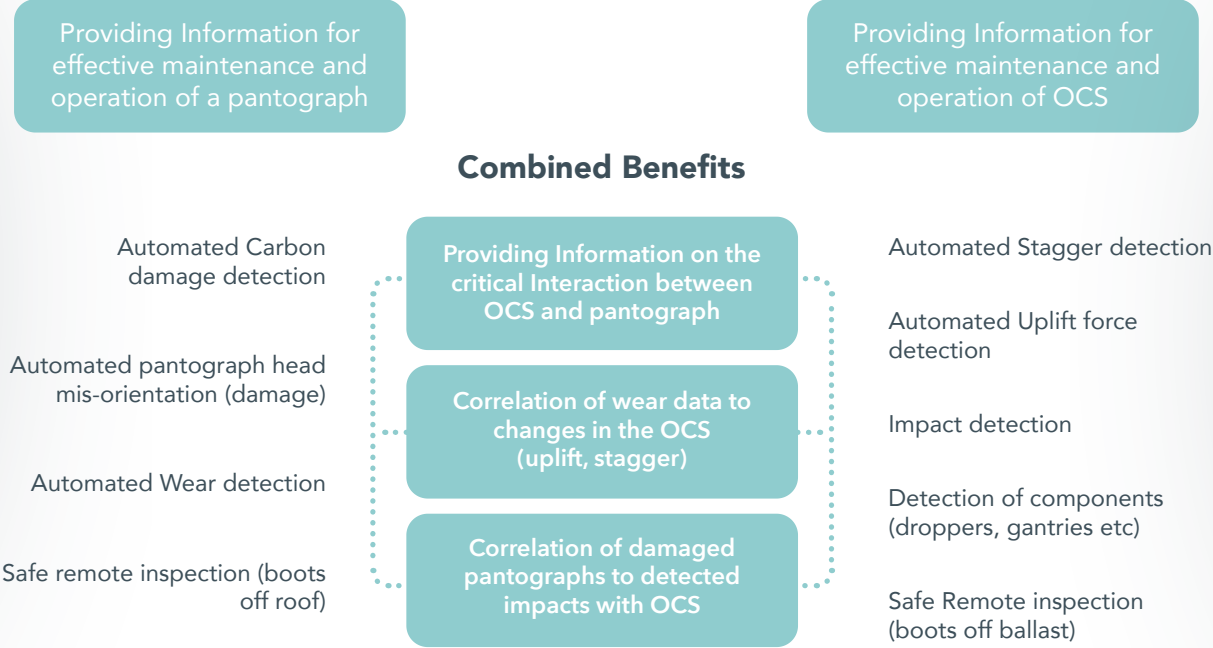
**Increase visibility over issues** with real-time pantograph and catenary interaction monitoring, offering a holistic approach to inspections



# CATENARY AND PANTOGRAPH MONITORING

PanVue is our pantograph monitoring solution, enabling automated 3D pantograph inspection. Alongside PanVue, CatVue offers combined benefits to optimise maintenance routines.

PanVue Benefits



CatVue Benefits

## WHY CHOOSE CAMLIN RAIL?

With facilities in 21 cities across 17 countries, Camlin Group's goal is to optimise the critical infrastructures that communities around the world depend on. As part of this organisation, Camlin Rail continually drives sustainable efficiencies and performance success for railway networks and operators around the world. We're proud of our success, with our monitoring systems across Europe, North America, and Asia helping deliver a safer, more efficient, and more sustainable railway of the future.

### Contact us

Discover how our groundbreaking technology delivers better customer outcomes, keeps staff safe, and helps you realise larger returns for the long term.

**[www.camlinrail.com](http://www.camlinrail.com)**

mail@camlinrail.com | +44(0) 2892 626 989

#### Camlin Rail (UK)

31 Ferguson Drive  
Lisburn  
BT28 2EX

#### Camlin Rail (US)

085 Avalon Ridge  
Parkway  
Suite 200 Norcross  
GA 30071

#### Camlin Rail (Italy)

Camlin Italy Srl  
Strada Budellungo, 2  
43123 Parma PR  
Italy

#### Our clients



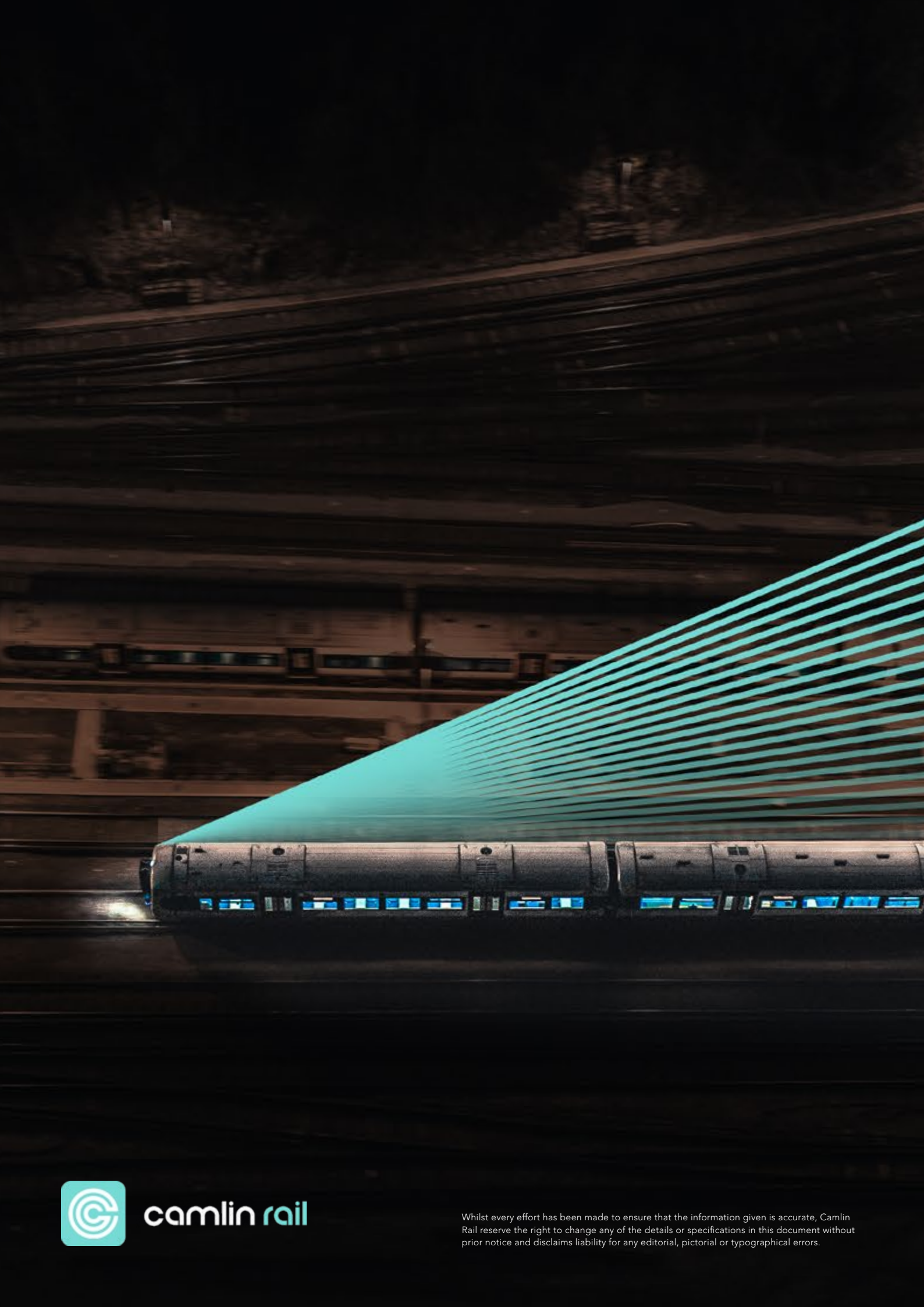
Heathrow

INFRABEL

STADLER







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