



# KB SIGNALING

## *News Release*

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**FOR IMMEDIATE RELEASE**

### **KB SIGNALING DEBUTS ANALYTICS SOFTWARE TO HELP RAILROADS REDUCE THE RISK OF BUCKLING-RELATED DERAILMENTS**

*Sensor-Free Rail TempEst™ Application Uses Machine Learning and Existing Signal Infrastructure to Deliver Real-Time Rail Temperature and Force Estimates*

**GRAIN VALLEY, Mo. – Aug. 11, 2025** – A new software application from KB Signaling Inc. (KBS) is helping railroads move beyond forecasts and assumptions – toward real-time, high-resolution rail temperature and measurements of track forces caused by thermal expansion and contraction. This latest pioneering development enhances risk management of derailments while reducing unnecessary slow orders and inspections.

The new application, Rail TempEst™, is now commercially available for the company's Wayside System Data Management Module (WSDMM™) edge computing platform, offering a highly innovative, machine learning-powered approach to monitoring rail temperature and longitudinal tensile or compressive forces using existing signal infrastructure. It requires no rail-mounted sensors or additional field equipment.

With rail buckles and breaks among the leading causes of significant derailments in North America – and temperature-related safety advisories on the rise – the Rail TempEst application gives railroads an improved source of information to monitor critical risk factors. The software is currently being deployed in its first launch implementation with a major U.S. Class I railroad.

"There's nothing else like this on the market," said Aric Weingartner, director of products at KB Signaling. "Other systems require external sensors. Rail TempEst delivers highly localized, real-time data – without the added complexity, cost, or maintenance burden of additional hardware."

In 2023, the U.S. Federal Railroad Administration (FRA) issued Safety Advisory 2023-07 recommending consideration for using real-time infrastructure monitoring technology to reduce

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weather-related derailments. Over a recent 31-month period, 123 such incidents – including 66 derailments – were reported as caused in whole or in part by weather events. The Rail TempEst™ application helps meet this call by turning existing signal systems into real-time monitoring tools.

### **Data-Driven Decision-Making**

Railroads have long relied on weather forecasts and ambient temperature to estimate rail temperature and issue slow orders when conditions indicate possible buckling or rail break risk. But forecasts often lack precision, cover overly broad areas, and don't reflect real-time changes on the ground.

The Rail TempEst solution changes that. By analyzing track circuit data from KB Signaling's widely deployed Electro Code™ (EC5™ or EC6™) track circuits, the software estimates actual rail temperature for each localized section of track. It also calculates longitudinal forces based on target neutral temperature values.

"This gives operators better information to make better decisions," said Jeff Fries, chief technologist at KB Signaling. "Today, they're guessing based on regional forecasts. Now they can act on what's actually happening on a specific stretch of track."

Real-time and historical data are available through a web dashboard, with data and alerts sent via MQTT – a messaging system commonly used in industrial automation – along with SMS or email. Operators can trigger inspections, slow orders, and maintenance based on real conditions, helping reduce operational disruptions and focus resources more effectively. The web-based interface provides track-by-track detail and customizable dashboards.

### **Intelligent Innovation to Help Improve Safety**

The groundbreaking Rail TempEst monitoring solution was developed over three years, validated through multiple beta trials, and is now patent pending. The software uses machine learning algorithms to refine its estimates over time, offering a rare example of continuously improving diagnostic intelligence in a traditionally static environment.

The algorithms run on KB Signaling's WSDMM™ edge computing platform – already in use at more than 3,500 North American sites – and operate independently of any safety-critical signaling systems.

Rail TempEst is the first high-impact application launched on the WSDMM platform, marking a new phase in KB Signaling's analytics and diagnostics roadmap.

"There is a precise, clean separation between Rail TempEst and vital signaling functions," said Fries. "It's designed to inform decisions, not make them. It doesn't control signals, and it can't interfere with core operations. That's fundamental to how we've engineered it."

### **Strategy for Smarter Infrastructure**

As part of the ElectroLogIXS® platform, Rail TempEst™ builds yet again on KB Signaling's commitment to delivering solutions that maximize the value of existing infrastructure. It joins recent launches like the IXC-R20™ solid-state crossing controller and certified third-party applications developed through the WSDMM™ Certified Developer Program.

"This is exactly the kind of meaningful innovation we aim for – technology that delivers real operational impact," said Giampaolo Orrigo, senior product manager, Wayside Intelligence at KB Signaling. "Rail TempEst empowers railroads to manage risk more intelligently and cost-effectively – right now, using the equipment they already have."

Rail TempEst is available today under both perpetual and recurring license models, with support and maintenance agreements that include Tier 1-3 support and quarterly updates. Each software instance supports up to four monitored track circuits and is compatible with VTI-2S or VTI-2E modules running Electro Code™ or EC6™ protocols. Most current signaling locations use EC5™ track circuits, making Rail TempEst retrofittable at tens of thousands of sites across North America and worldwide.

### **About KB Signaling**

KB Signaling develops and supplies unparalleled end-to-end wayside and onboard conventional signaling Control, Command, and Signaling (CCS) platforms and solutions. A trailblazer, we are driven to provide the best solutions for improved safety, performance, and lower overall operating cost for today's transit and freight railway systems and operators in North America and beyond. Our 700 team members have a deep customer commitment that fuels us to deliver solutions for improved rail performance, safety, and overall operating cost. KB Signaling is a member of the Munich, Germany-based Knorr-Bremse, the global market leader in braking systems and a leading supplier of other safety-critical rail and commercial vehicle systems. Follow us on LinkedIn at <https://www.linkedin.com/company/kb-signaling>.

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