

VTG Rail UK and Knorr-Bremse are leading the way with the trial of the UK's FIRST digital iWagon

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Britain's largest private freight wagon leasing company, **VTG Rail UK**, and **Knorr-Bremse Rail Systems (UK)**, the market leader of braking systems and other systems for rail vehicles, have today announced the network trial of the UK's FIRST digital freight wagon.

The VTG iWagon is set to revolutionise freight performance on rail by introducing new and significant safety capabilities, creating operational efficiencies and increasing availability. The iWagon is capable of powering future technologies using VTG Connect as the gateway, incorporating 12 digital innovations on initial launch.

The first phase of the nine-wagon trial will be focussing on ground-breaking technology developed in collaboration between VTG and Knorr-Bremse. The first three wagons to be fitted are VTG Rail JPA tank wagons which have been modified at Tarmac's Maintenance Depot at Dunbar in Scotland. The further wagons for trial fitment will be deployed on the Hanson and Mendip Rail fleets. The features on the trial include axle lock detection and Wheel Flat Prevention (WFP) technology – a patented system which monitors wheelset slide and brake condition. Each of the wagons has also been fitted with new wheelsets containing four axle end generators which provide power to the WFP system – these will power further digital innovations on future iWagon trials such as digital real-time maintenance, temperature monitoring,

harmonics frequency monitoring and many more.

The trial wagons went into traffic on 02 October to begin four months of testing on Tarmac's daily return service from their cement plant at Dunbar to their depot at Seaham in County Durham. Initial data from the nine-wagon trial will be available in January 2024 ahead of the first 50 production ready wagons planned for Q2, 2024.

Launching the iWagon at the Rail Freight Group (RFG) annual conference in London today (October 5), VTG Rail UK Managing Director, Colin Denman, said: "The iWagon has been over a decade in development and we are delighted to be at the stage where we can commence country wide trials of the UK's first digitalised freight wagon which will enable real-time data to ensure safer railways and better wagon utilisation.

"The launch of the iWagon is very exciting for VTG Rail UK, Knorr-Bremse and the wider industry. For the first time, we can see how axles perform on the network in real time and see where adhesion issues are occurring. Locked axles, leading to wheel flats and derailment of freight wagons have caused high profile incidents in recent years in the UK.

"Digitisation allows us to prevent wheelset damage and axle locks, in real time ensuring multiple parties are given information quickly allowing appropriate corrective action."

Sanjay Albert, Director of Engineering and Innovation at Knorr-Bremse, also spoke at today's launch. He said: "Working in collaboration with VTG Rail UK is very exciting for us at Knorr-Bremse Rail Systems UK, especially as part of our mission to combine mechatronic expertise with our digital monitoring capability.

"Our patented Wheel Flat Prevention technology increases wheel life and reduces potential deep wheel flats which may result in track damage, or in worst cases, derailment. Our digital monitoring capability will enable valuable insight generation to support our customers achieve efficient operations and maintenance as well as extent to wider industry benefits."

The iWagon technology provides further benefits such as brake condition monitoring which will allow VTG to analyse the performance of a wagon's brake system from their office in Bromsgrove, with the final goal of removing annual brake tests. It will also ensure that a brake system defect is highlighted on the day it occurs and potentially assist Network Rail in identifying low adhesion hot spots on the network.

The new systems have significant advantages but are further enhanced when combined with VTG's current innovation data platform i-Maintenance (wheelset damage prediction software), VTG Connect and wagon / bogie imbalance which will also feature on the iWagon.

VTG Rail UK has been working with key industry partners towards the introduction of various major innovations within the rail freight sector for many years.

VTG Rail UK's Business Improvement Director, Nigel Day, said: "Stopping wheelsets sliding has significant benefits to both VTG UK and the wider performance of UK rail. Adding brake condition and harmonics frequency monitoring will strengthen the case for change and revolutionise the way in which wagons are maintained.

“For instance, one benefit would be the removal of the annual brake test which will allow us to be more flexible around our maintenance regimes and moving towards i-Maintenance. These new regimes bring further benefits in cost reduction and customer service.

“Low level disruption is predominantly caused by small micro slides, which can grow to create a major train performance issue. This can lead to a significant impact on the customer to remove the wagon from service and into a location for wheelset exchange.

“Better wagon reliability and availability, as well as not having to fund the removal and placement of a wagon from the train when a wheelset exchange is required, will be a significant cost saving to our customers and also reduces disruption on the network.”

Chris Swan, Head of Rail at Tarmac, said: “We’re really proud to be part of the network trial of the first digital freight wagon in the UK. Tarmac is one of the biggest users of rail freight in the country and we are committed to using our extensive rail network to deliver essential materials to our customers in a sustainable way. “The digitisation of the rail fleet sector will bring important performance and safety benefits, and so trials like this one with our partners in VTG and Knorr-Bremse are vital for the continued growth of rail freight.”

Photo credit: VTG Rail UK