

# RAILWATCHER

EDITION 01

NEWSLETTER BY RAILWATCH DIGITAL MONITORING OF FREIGHT WAGONS

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## TAKING A CLOSE LOOK

**BIG DATA** is the raw material of the future: a resource which is abundant and constantly growing. But how can information with added value be extracted from the raw data? And how does Big Data make sense for rail freight transport? You can find out on the following pages!

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## DEAR READERS,

You are holding in your hands the first issue of our new Newsletter – in printed form. This may surprise you, as you have come to know RailWatch as a purely digital company. But that's only half the story. We hail from the rail freight industry and have a passion for rail. It is our ambition to return rail to the top of the competition with other modes of transport. This is precisely why we founded RailWatch a little over three years ago.

Our monitoring system makes your wagons smart because you receive important data on their current condition in real time. Going forward, we would like to inform you regularly about how exactly this works. And whenever questions arise, you can simply contact us via our website, by e-mail or by telephone.

I wish you an inspiring read.

**Your Michael Breuer**

Managing Partner of RailWatch



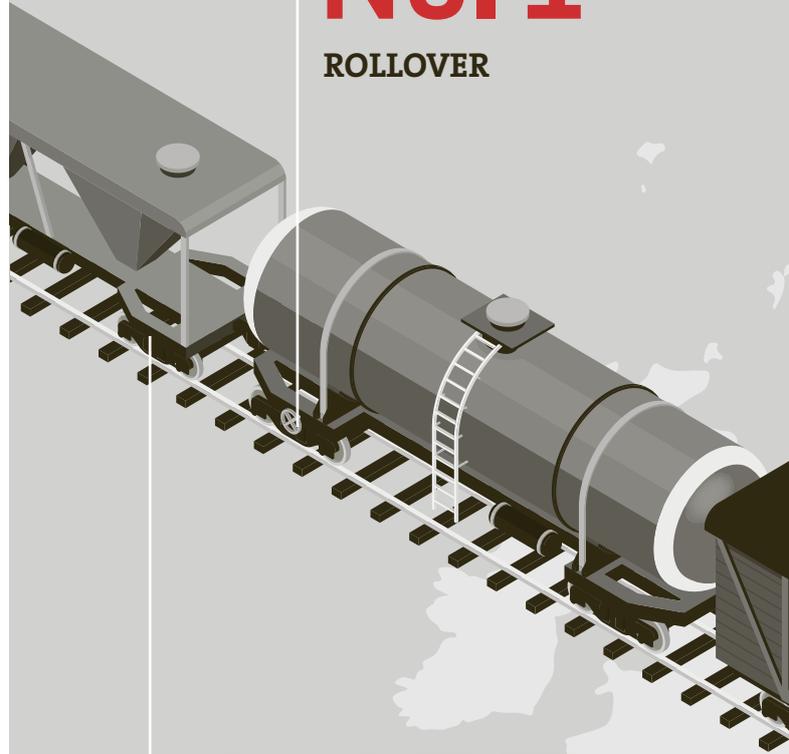
“

It is our ambition to return rail to the top.”

DAMAGE

**No. 1**

**ROLLOVER**



**4.157**

**MILLION AXLES**

have travelled through our installations since January 2018

**THE FLOP-MODEL**

type of wagon registered the most with damage

**Lgs**

2-axle flat wagons for containers, licensed for up to 100 km/h

## ARRIVAL OF THE “JOHN SMITH” TRAIN

After one year of monitoring in and next to the tracks, with millions of axles measured to date, concrete results are emerging. If a model “John Smith” train were to set off on its journey on the basis of the measured data, it would look something like this:

Wheel-flat ticker Bremerhaven

# 2,000

### WHEEL FLATS

were registered on the wheelsets within three months

Soulmate and driving force:

THE LOCO WITH

# 146

PASSES

THE TOP MODEL

wagon type with the most passes:

# Sggnss

4-axle container wagon for containers up to 80 ft, weight of more than 60 t and licensed for more than 120 km/h

The faithful friend  
One wagon returned

# 36x

to Bremerhaven within 3 months

# 59%

### INTERMODAL WAGONS

The wagon type with the most passes

# “THIS DATA CHANGES EVERYTHING”

**CHATTING TO: RAILWATCH FOUNDERS GERALD BINZ AND MICHAEL BREUER ABOUT THE EYE-OPENING MOMENT WHEN CUSTOMERS UNDERSTAND THE IMMENSE POTENTIAL FOR SAVINGS WITH WAGON MONITORING.**

**YOU HAVE SET MILESTONES IN THE INDUSTRY WITH BLG AUTORAIL AND RAILTEC. WHAT WERE THE REASONS FOR STARTING OUT AGAIN WITH A COMPLETELY NEW ENTERPRISE WITH RAILWATCH IN 2015?**

**GERALD BINZ:** Looking back, it was the logical thing to do. From my many years of industry experience, I know what role cost-efficiency plays in the competition with other market players and modes of transport. The maintenance and repair of wagons is undoubtedly one of the biggest cost drivers for a company. However, so far there has been little reliable data on the current condition of the wagons. You have to imagine this: Just like in the early days of the railways, a technical wagon examiner still walks the length of the train with a hammer. If he notices a defect in the wheel profile or the brake blocks, the wagon must be removed from the train, which entails enormous costs. This is where we come in with RailWatch and our freight wagon monitoring system. We want to contribute to cost reduction through automated, forward-looking maintenance, and at the same time drive forward the modernisation and digitisation of the industry.

“When we first got started, there was nothing comparable on the market that we could have used by way of orientation.”

**Gerald Binz** Partner of RailWatch

**MICHAEL BREUER:** The railways are not normally considered to be particularly enthusiastic about innovation. The complex structure of the regulations and authorisation processes makes access particularly difficult for digital start-ups from outside the industry. We have the advantage that, on the one hand, we know the railway market and the requirements of wagon keepers and railway undertakings very well and, on the other hand, we also have the necessary IT know-how.

The minds behind RailWatch: Michael Breuer, Managing Partner of RailWatch, and Gerald Binz (right), Partner of RailWatch, on the Godesburg in Bonn. Both know and respect each other from many years of professional cooperation.

**WHAT WERE THE GREATEST CHALLENGES THAT YOU FACED?**

**GERALD BINZ:** When we first got started, there was nothing comparable on the market that we could have used by way of orientation. The development of the software for data processing alone kept the IT specialists and engineers at RailWatch in suspense for almost three years until it worked reliably. That was some real pioneering work.

**MICHAEL BREUER:** When it came to sensor technology, we initially relied on the commercially available hardware, which promised high detection rates. However, the tests on the track were often disappointing and did not come close to the required hit rate. Since reliable data quality is the linchpin of our business, we had no choice but to take the initiative and develop our own sensors. The good thing about it is that the RailWatch system is now almost a complete in-house development and we have built up all the necessary know-how in our company.

**GERALD BINZ:** Our customers derive concrete actions from the data analysis which directly impact the bottom line. That is why we have always said that we will only enter the market once we have achieved stable data quality. And this is where we are now.

**WHAT ARGUMENTS CONVINCED YOUR POTENTIAL CUSTOMERS THE MOST?**

**GERALD BINZ:** The focus is clearly on the savings enabled by automatic vehicle diagnostics. From the data obtained, the wagon keepers can determine the actual maintenance



“One hundred percent reliable data quality is the linchpin of our business model.”

**Michael Breuer** Managing Partner of RailWatch

requirements as well as the optimal maintenance time for each individual wagon without having to remove it from service. If unscheduled failures can be avoided and maintenance can be planned in advance, this increases the utilisation and availability of the wagon fleet immensely. At the same time, operating costs are significantly reduced. Wagon keepers and RUs can also react promptly to safety-related problems, thus increasing not only availability but also operational safety in the rail network.

**MICHAEL BREUER:** We don't sell "sight unseen". Every customer has the possibility to test our monitoring system in advance and to convince themselves of the data quality and the concrete benefits. For many, it's a genuine eye-opening experience when they see such precise information and photos about wheel profiles, brake blocks, wheel flats and axle loads for the first time. The data changes everything because it opens our eyes to a reality that had previously been hidden. We have worked intensively on pricing and are now entering the market with a flat rate. For example, customers can subscribe to the "brake block check" service for a four-axle wagon at a starting price of €4.99 per month, no matter how often we measure it.

#### WHAT ARE YOUR PLANS FOR THE CURRENT YEAR 2019?

**MICHAEL BREUER:** We are now moving from the test stage to live operation. In spring, we will be installing three further systems on the main lines in addition to the existing measurement stations: one in the Elbe Valley, one near Fulda and one near Bielefeld. This gives us a high level of coverage and enables us to capture a large proportion of domestic and European freight traffic.

**GERALD BINZ:** At the same time, we plan to offer our services increasingly to companies in the automotive and mineral oil industries. Especially when it comes to rail loading on the plant premises and at the loading ramp, a lot is still done manually. With automatic wagon identification and status reporting, processes can be accelerated enormously and rendered much more efficient. We are registering a growing interest among the major market players. And why shouldn't owners of truck trailers and containers also benefit from our data?

#### AND IF YOU HAD ONE FREE WISH...?

**MICHAEL BREUER:** Today I can do exactly what I've always dreamed of. I would just like to see the whole industry driving digitisation forward with even more momentum, and companies seizing the opportunity to become more efficient and improve both safety and quality.

**GERALD BINZ:** Over the past three years, we have achieved a technological lead that we will now utilise to occupy a strong market position. I hope that our development will continue to be so positive.



## DATA EXCHANGE MADE EASY

**Freight transport without borders** – Europe is only approaching this goal at a snail’s pace. The TAF TSI represents an important step towards a common European railway system. EU Regulation 1305/2014 on the “Technical Specification for Interoperability of Telematic Applications for Rail Freight Transport” has been in force since the beginning of 2015. It establishes uniform standards and data formats for the electronic exchange of information. The aim is to promote cross-border communication between all players along the supply chain and to render the handling of goods by rail faster, smoother and more cost-efficient.

**Not an easy task:** The TAF TSI requires railway undertakings and infrastructure managers to collect a wide range of data before, during and after a train journey, which is to be transmitted in uniform formats. For example, train formation details must be exchanged between RUs and also sent to the infrastructure manager with whom the path segments have been booked: work which can be significantly reduced with the RailWatch monitoring system. Information about the entire train, including the current wagon sequence, can be recorded either directly at the terminal or as the train passes by and made available in digital format. This saves time and money because once subscribed, this data is included in the RailWatch flat rate.

## BUZZWORD

# BIG DATA

Data is regarded as the gold of the 21st century, and Big Data as the most valuable resource in the digital world. But what exactly is behind the term? Big Data means the explosively growing data volumes, and at the same time the high-tech applications and systems that can process, evaluate and analyse these enormous amounts of data.

### INSIGHT VIA THE “5 V” MODEL

In order to narrow down Big Data more accurately, the 5 V model is often applied. Big Data then uses large data volumes (Volume) from various sources (Variety) to provide information in the shortest possible time (Velocity) and with high data quality (Validity) that makes a measurable contribution to value creation (Value).

### COST-SAVING WITH DATA

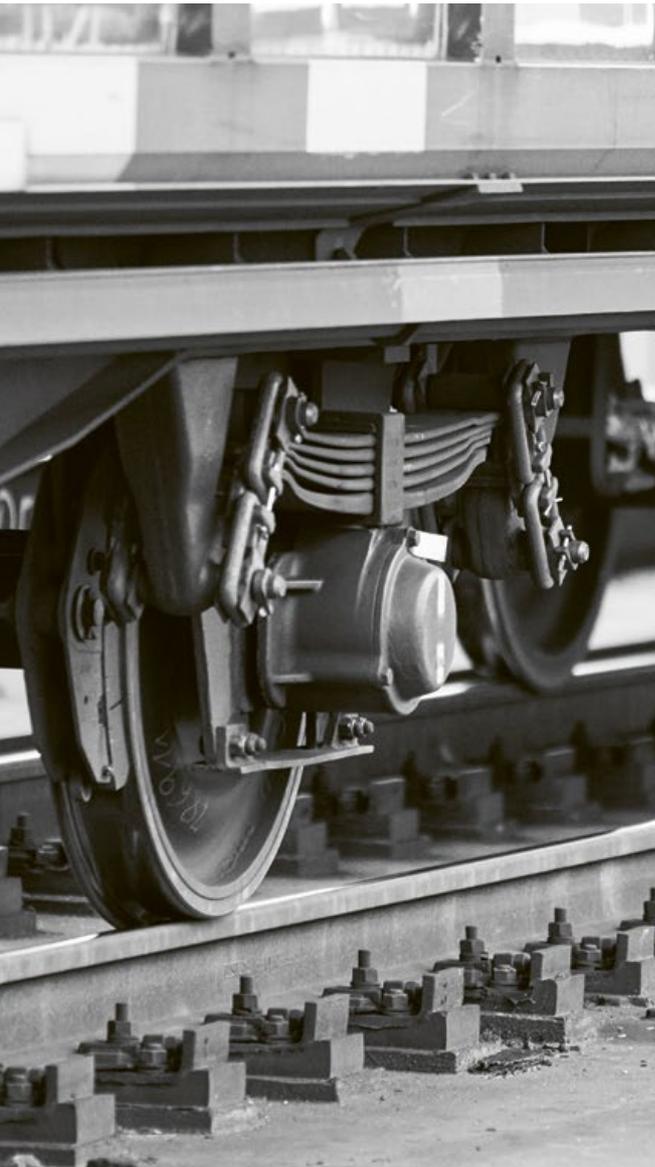
A definition that also accurately describes RailWatch’s business model: During train passage, our measuring stations collect huge amounts of data, which are transferred to the RailWatch cloud on a daily basis. A large amount of information is recorded – from the wheel flange thickness and height, through the sinusoidal hunting characteristics, to the axle loads. In addition, there is general logistic information like place and time of the passage as well as the order of the wagons. All system modules are TÜV-certified and are also continuously validated, to ensure consistently high data quality. The added value for wagon keepers or infrastructure managers is derived from the customer-specific processing of the diverse data for a more plannable maintenance and optimised supply chain.

# CLEAR SIGNAL FOR A TURNAROUND

Small area, large effect: The wheel-rail interface plays a decisive role in the running safety of freight wagons, but it is also particularly susceptible to wear.

Wheelsets are subject to additional stresses if they are regularly used on tracks with many right or left turns, so that a heavily one-sided wear arises. This is clearly shown by the measurements from our wheel scan facility near Bremerhaven. The data for the condition of the wheelsets is recorded via laser each time the vehicle passes by, allowing wear trends to be determined and made available via the customer portal. If the wear is too far advanced, there is no way around a repair. However, if you have information about wheel wear early on, you can take

countermeasures and initiate a turnaround, where the wagon is turned by 180 degrees and then travels through the curves the other way around. This preserves the more heavily worn sides. An effective early warning system: The wagons remain in use longer and the wagon keepers can plan the next maintenance in advance without downtimes.



## PUTTING THE BRAKES ON COSTS

**Deadline 13 December 2020:** With the timetable change 2020/2021, a general operating ban for noisy freight wagons will come into force. From this time onwards, all existing freight wagons used in Germany must comply with the same strict noise limits that apply to new vehicles in accordance with the European Noise Protection Directive. To this end, the approximately 180,000 freight wagons in Germany are gradually being equipped with low-noise braking technologies.

Whether K or LL brake pads: No matter how indisputable the noise reduction is compared to conventional cast iron brake pads, composite brakes have one serious disadvantage: they are considerably more expensive to purchase and maintain. The higher wear on the wheel profiles primarily has a negative effect on the equivalent conicity, i.e. the position of the wheel in the rail-wheel contact. This may lead to unstable vehicle operation. The LL application guideline therefore prescribes short inspection intervals – normally after 50,000 kilometres.

While manual measurements often end with a nasty surprise, continuous monitoring enables wagon owners to keep track of the status of the wheel profiles via the RailWatch customer portal anytime and anywhere. This enables them to plan the appropriate time for brake replacement and/or wheel re-profiling with foresight. An electronic measurement during train passage is not only efficient and cost-effective: damaging braking incidents can also be directly detected for the particular wagon.

# FIND THE MISTAKE!

