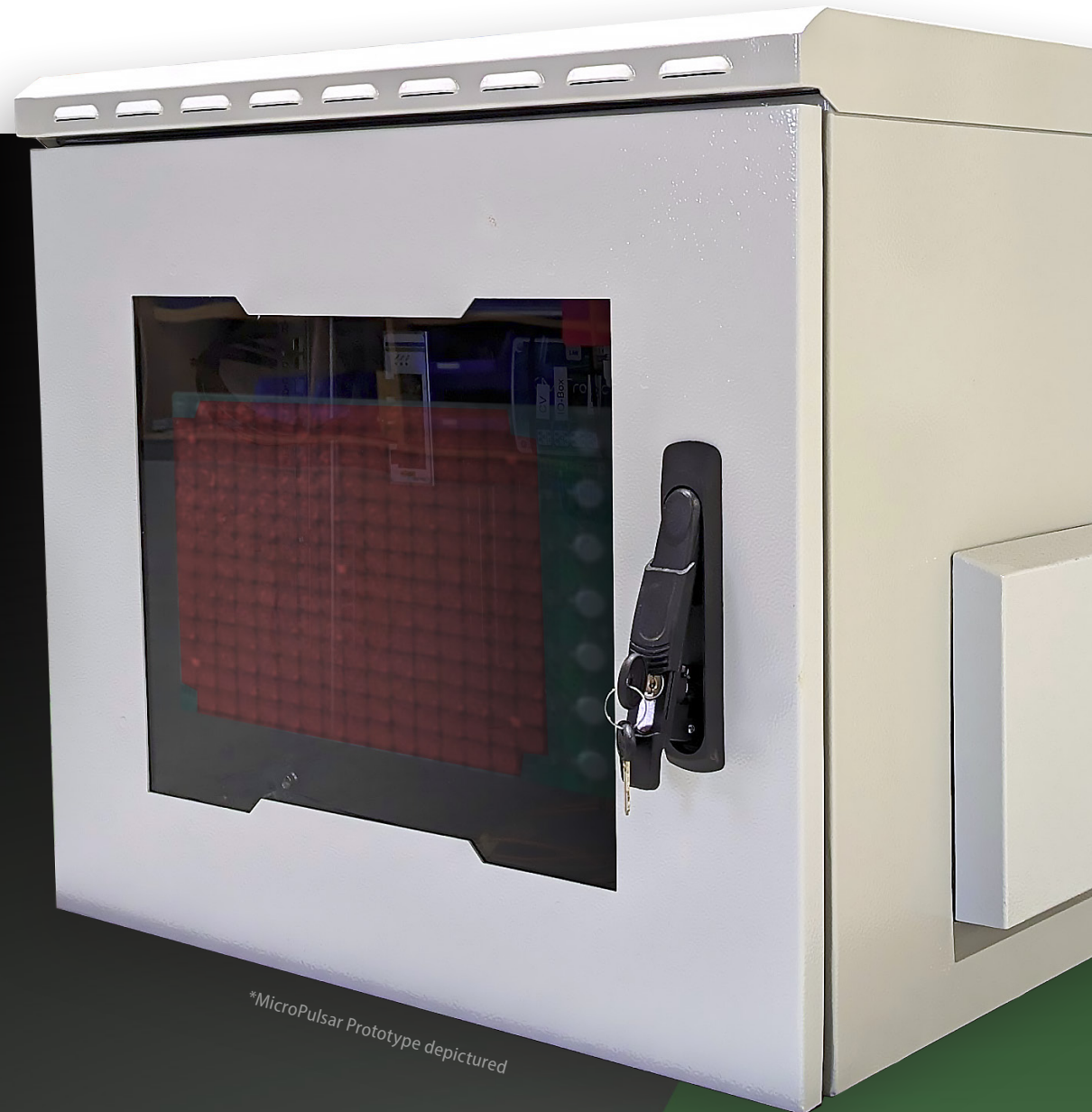




Vossloh RailWatch GmbH

Micro Pulsar

the innovative OCR-Gate



**MicroPulsar Prototype depicted*

The MicroPulsar

The MicroPulsar is our innovative OCR gate solution which, due to its compact size, can be installed almost anywhere next to your infrastructure. Passing freight trains are captured by a high-resolution camera - information such as the UIC wagon numbers, exterior views of the wagons as well as the wagon sequence and are analysed using computer vision and artificial intelligence. The data is then provided to you via our web portal or via an interface directly in your company's own system.

The installation of the MicroPulsar does not require any authorization or work in or above the track. It can be set up next to the track at a maximum distance of 4 m within one day.

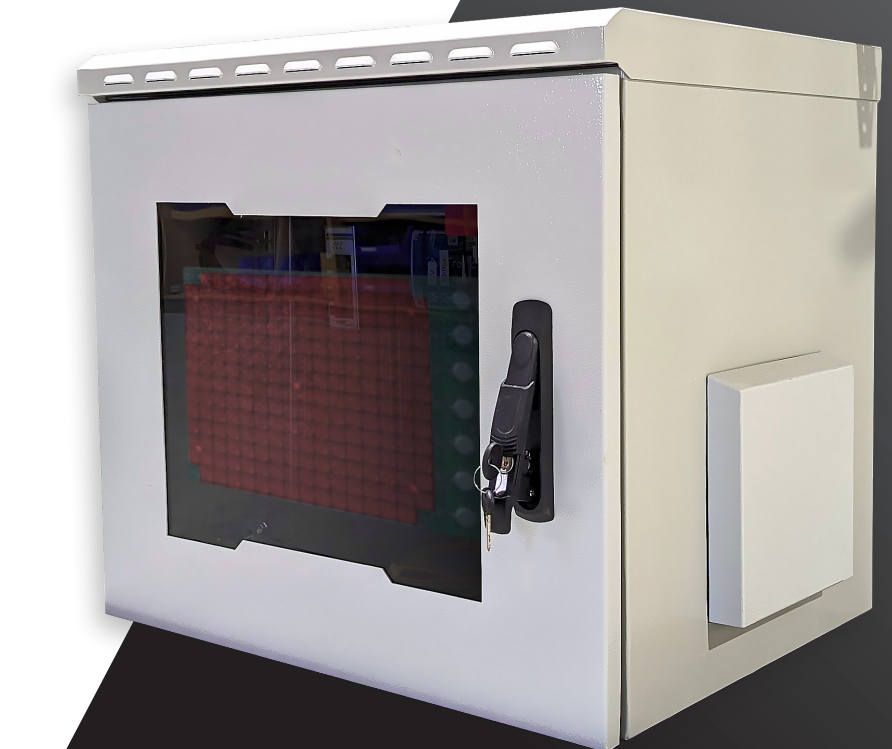
Only a standard 230 V / 16 A mains connection and an internet connection are required for technical operation. If a LAN connection is not available, data can be transmitted via LTE or 5G.

230 V / 16 A

LAN, LTE or 5G

60 cm x 50 cm x 45 cm

Authorisation-free



*MicroPulsar Prototype depicted

Description of the data

Process data

The recorded process data, such as UIC wagon numbers, exterior views of the wagons and the wagon sequence, support you during incoming and outgoing goods inspections and facilitate the internal processes in your area of responsibility. You always have an overview of the incoming and outgoing trains and the order of their wagons when they arrive and depart. This increases your productivity and prevents unexpected downtimes - saving you time and money.

UIC wagon number

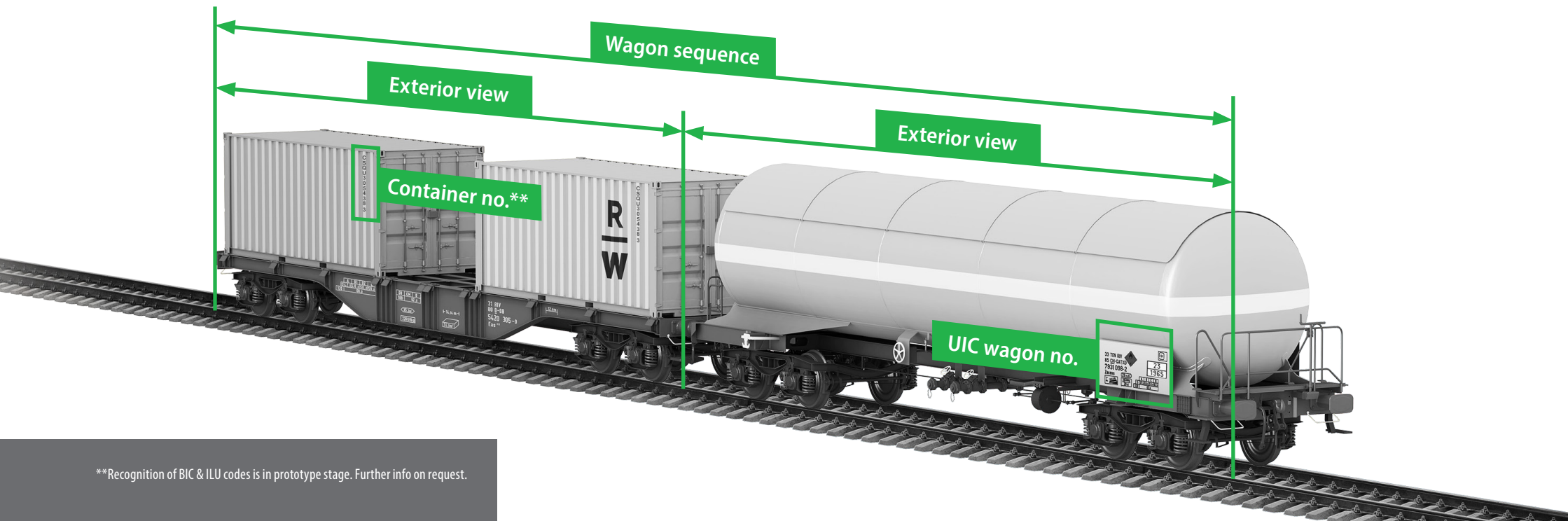
The UIC wagon number is used to identify and assign the respective wagon.

Wagon sequence

The wagon sequence shows you the order of the wagons in the train formation. This simplifies your inbound handling process - you can compare the wagon list with the incoming wagons conveniently from your desk.

Exterior view

The detailed exterior view of the wagon, based on high-resolution images, allows you to check the wagon for external damage. Depending on the wagon type, you can also determine which kind of cargo is on the wagon.



**Recognition of BIC & ILU codes is in prototype stage. Further info on request.

Description of the provision of data

Web-based portal

You will receive access to our web portal with the Traincheck, Fleetcheck and Wagoncheck interfaces. The information is presented to you visually.

Traincheck ▼

Traincheck is a comprehensive overview of your trains with direct display of the respective wagon sequence and high-resolution detailed views of the individual wagons. If required, a tabular wagon list can be downloaded at the touch of a button.

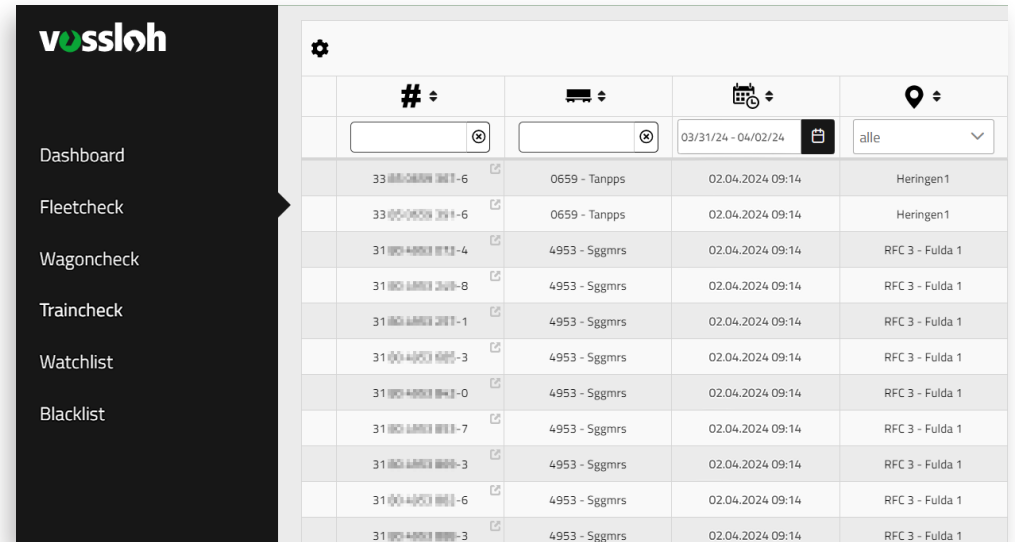


Fleetcheck ▶

With Fleetcheck, you always have an overview of all your wagons, clearly organised in a tabular overview.

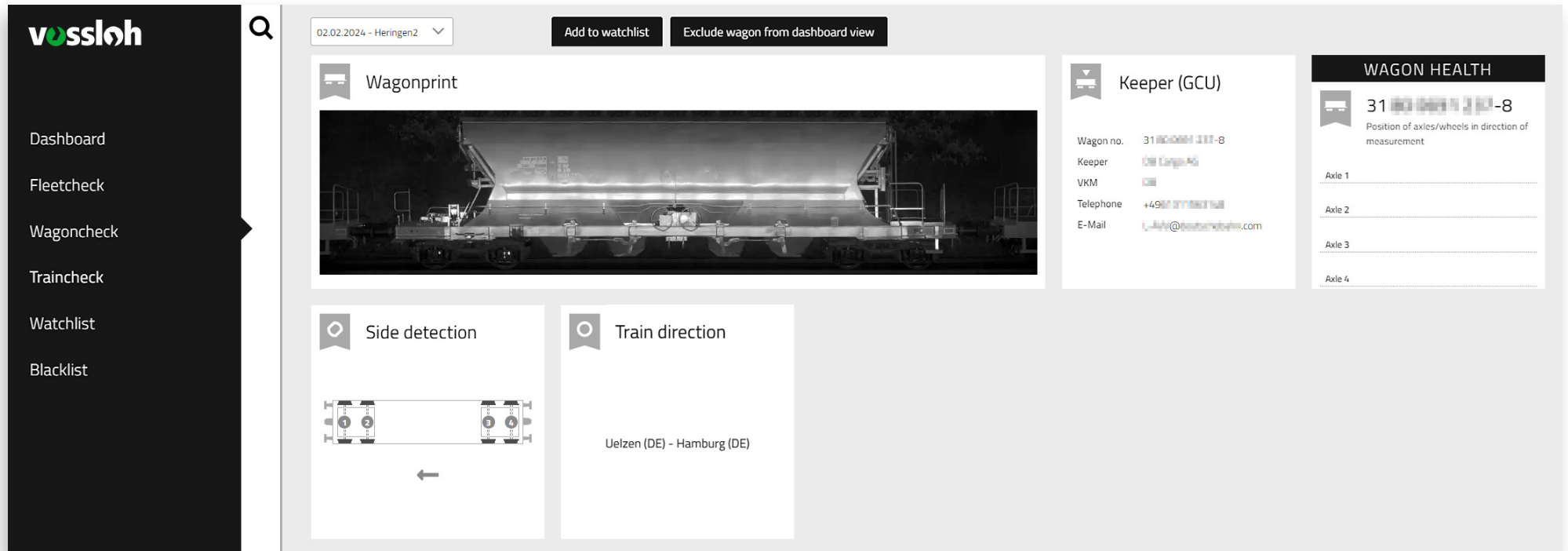
Wagoncheck ▼

If you are interested in a particular wagon, you can see both the current measurements and historical measurements of this wagon in the wagoncheck view.



The screenshot shows the Vossloh Fleetcheck dashboard. On the left is a navigation menu with options: Dashboard, Fleetcheck, Wagoncheck, Traincheck, Watchlist, and Blacklist. The main area displays a table with columns for wagon ID, location, date, and status. The table contains 12 rows of data.

| # | Location | Date | Status |
|------------------|---------------|------------------|-----------------|
| 33 80 0000 001-6 | 0659 - Tanpps | 02.04.2024 09:14 | Heringen1 |
| 33 80 0000 001-6 | 0659 - Tanpps | 02.04.2024 09:14 | Heringen1 |
| 31 80 0000 001-4 | 4953 - Sggmrs | 02.04.2024 09:14 | RFC 3 - Fulda 1 |
| 31 80 0000 001-8 | 4953 - Sggmrs | 02.04.2024 09:14 | RFC 3 - Fulda 1 |
| 31 80 0000 001-1 | 4953 - Sggmrs | 02.04.2024 09:14 | RFC 3 - Fulda 1 |
| 31 80 0000 001-3 | 4953 - Sggmrs | 02.04.2024 09:14 | RFC 3 - Fulda 1 |
| 31 80 0000 001-0 | 4953 - Sggmrs | 02.04.2024 09:14 | RFC 3 - Fulda 1 |
| 31 80 0000 001-7 | 4953 - Sggmrs | 02.04.2024 09:14 | RFC 3 - Fulda 1 |
| 31 80 0000 001-3 | 4953 - Sggmrs | 02.04.2024 09:14 | RFC 3 - Fulda 1 |
| 31 80 0000 001-6 | 4953 - Sggmrs | 02.04.2024 09:14 | RFC 3 - Fulda 1 |
| 31 80 0000 001-3 | 4953 - Sggmrs | 02.04.2024 09:14 | RFC 3 - Fulda 1 |
| 31 80 0000 001-3 | 4953 - Sggmrs | 02.04.2024 09:14 | RFC 3 - Fulda 1 |



The screenshot shows the Vossloh Wagoncheck dashboard. On the left is a navigation menu with options: Dashboard, Fleetcheck, Wagoncheck, Traincheck, Watchlist, and Blacklist. The main area displays detailed information for a specific wagon, including a photo, side detection diagram, train direction, and keeper information.

Wagonprint

02.02.2024 - Heringen2

Add to watchlist Exclude wagon from dashboard view

Side detection

Train direction

Uelzen (DE) - Hamburg (DE)

Keeper (GCU)

Wagon no. 31 80 0000 001-8
Keeper GCU Cargo AG
VKM GCU
Telephone +49 51 31 134 111
E-Mail gcu@deutschebahn.com

WAGON HEALTH

31 80 0000 001-8
Position of axles/wheels in direction of measurement

Axle 1
Axle 2
Axle 3
Axle 4

Interface (API)

In addition to our portal, you can also access the data via an interface solution. We offer you the option of using a standard interface (we specify the data fields and structure) or implementing a customized interface solution that integrates the data directly into your system. With both options you have the choice of whether we should actively send you the data as soon as it is available (PUSH) or whether you would prefer to retrieve the data on demand (PULL).

Each interface keeps the required data available for you in a dedicated database. In this way, we minimize latency and achieve the highest possible availability. The data is always provided via a REST API.

If you do not want to retrieve the data yourself (PULL), but would like us to send it to you as soon as it is available (PUSH), we will be happy to add a customised service that forwards the data directly to your system on arrival.



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