CargoMon Systems

Intelligent transport monitoring solutions

CargoMon Systems - Who we are

The intelligent transport monitoring solutions company!

History

- Long year basic research on energy self-sufficient telematics and sensor solutions
- Founded in 2009 as a startup from Technical University in Vienna, Austria
- Started with container and trailer monitoring, in recent years moved towards innovative sensor solutions for the rail freight industry

Portfolio:

- Custom made Telematics and Sensor solutions for Transport Monitoring
- IoT Platform and data analysis
- System Integration
- Research and development for new to marked solutions

That's why we are the ideal partner for you

Because we
- can look back on more than 10 years of experience and maintain long-standing customer relationships
- have equipped tens of thousands of railway wagons, containers and trailers
- constantly research new solutions and develop new-to-the-market equipment
- are always personally available for your concerns and reacting flexibly and quickly to your requirements

Message from the CEO and founder, Stefan Mahlknecht

As an owner-managed company, we are personally available to our customers at all times and will find a tailored solution even for demanding tasks.

We are proud that these customers rely on us:

CargoObserver stands for high quality multi-sensor based transport monitoring solutions

Capabilities

- GNSS based location information and 4G/2G cellular Network
- Multi-sensor based transport monitoring
- Device based geofencing alarm capabilities
- Intelligent data processing within device prevents high data + energy costs
- *6+ years typical battery lifetime for primary batteries and 10+ years for solar cell devices* as result of long lasting R&D
- Intuitive Web platform and application specific Reports

Complete overview of **WHAT** happens to your transport, **WHERE** and **WHEN,** can enable timely intervention and prevent damage or losses

The complete sensor monitoring solution

Basic Tracking:

- GNSS based positioning
- 4G/GSM based worldwide transmission
- Move/Stop reporting
- Geofencing Enter/Exit
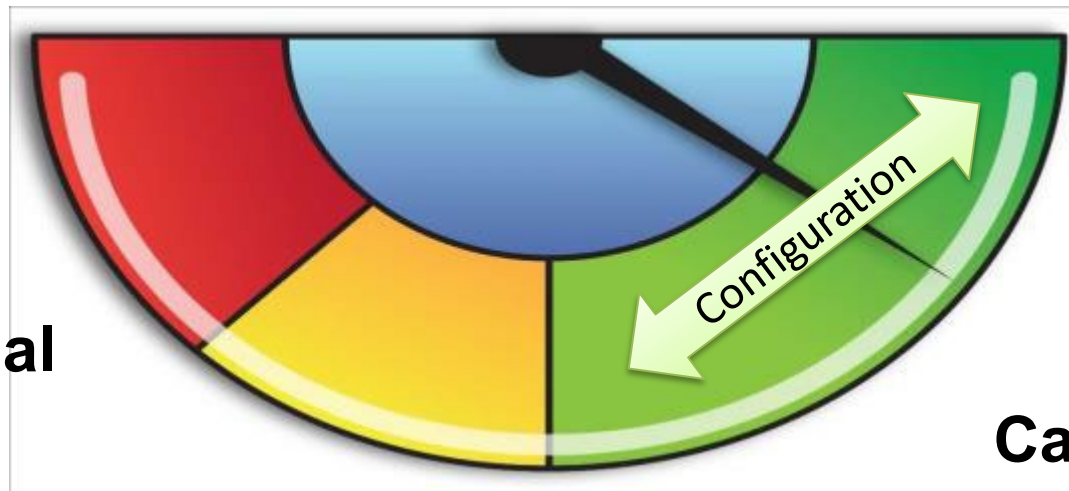- Mileage control (for Railway)

Sensor Extension:

- Temperature / Humidity inside
- Dew Point (i.e. for corrosion monitoring)
- 3-D acceleration measurement
- Container door open/closed
- Loading state or exact weight measurement

High Energy Efficiency with Smart Devices

CargoMon Systems

Energy Efficiency

Configuration

Conventional Devices

CargoObserver

Basic Functionality

High Update Rate

Server Based Solutions

Short Battery Lifetime

Smart Devices

Report when required

Device Based Solutions

Very Long Battery Lifetime

CargoObserver Product Variants

Product Groups	CargoObserver-Track & Sense	CargoObserver-Track	CargoObserver-Ex	Easytracker
Main Application Fields	Standard ISO Container, Reefer Container, Freight Wagons	Trailer, Swap Body, Containers, Freight Wagons	Tank Wagons or Tank Trailer & Trucks	Container, Pallets, Parcels
Special Features	Smart GPS Tracking, Geofencing and complete Sensor Monitoring 4G IoT / GSM	Smart GPS Tracking, Geofencing, Acceleration Sensor, Rail Mileage 4G IoT / GSM	ATEX and/or IECex compliant Fuel Level Sensor 4G IoT / GSM	Rechargeable, 4G Global Frequencies
Sensors				
Multi- Satellite Positioning	√	√	√	√
Advanced Movement Detection	√	√	√	√
Geofencing	√	√	√	√
3-Axis Acceleration	√	√	√	√
NFC Interface	√	√	√	-
Temperature	√	√	√	-
Compass	o	-	-	-
Bluetooth Low Energy & ITSS2 Ready Sensor Interface	√	-	√ [4]	o
4-20mA / HART Sensor Interface	-	-	√ [3]	
ATEX / IECEX Certified	-	-	√	
Solar Rechargeable Supply	√ [5]	√ [5]	√ [5]	√ [5]
Typical Battery Lifetime	**6-8 Years**	**5-8 Years**	**1-3 Years**	**1-3 Years**
Product Variants	-Track&Sense-XXL -Track&Sense-Solar-XL [5]	-Track-L -Track-XXL -Track-Solar-XL [5]	-Ex-Solar-Sensor [3,5] -Ex-Solar-XL [4,5] -Ex-XXL [4]	Easytracker-Basic

Overview of CargoObserver system solution

GPS Location

GSM / NB 4-G

Server / Cloud

Users
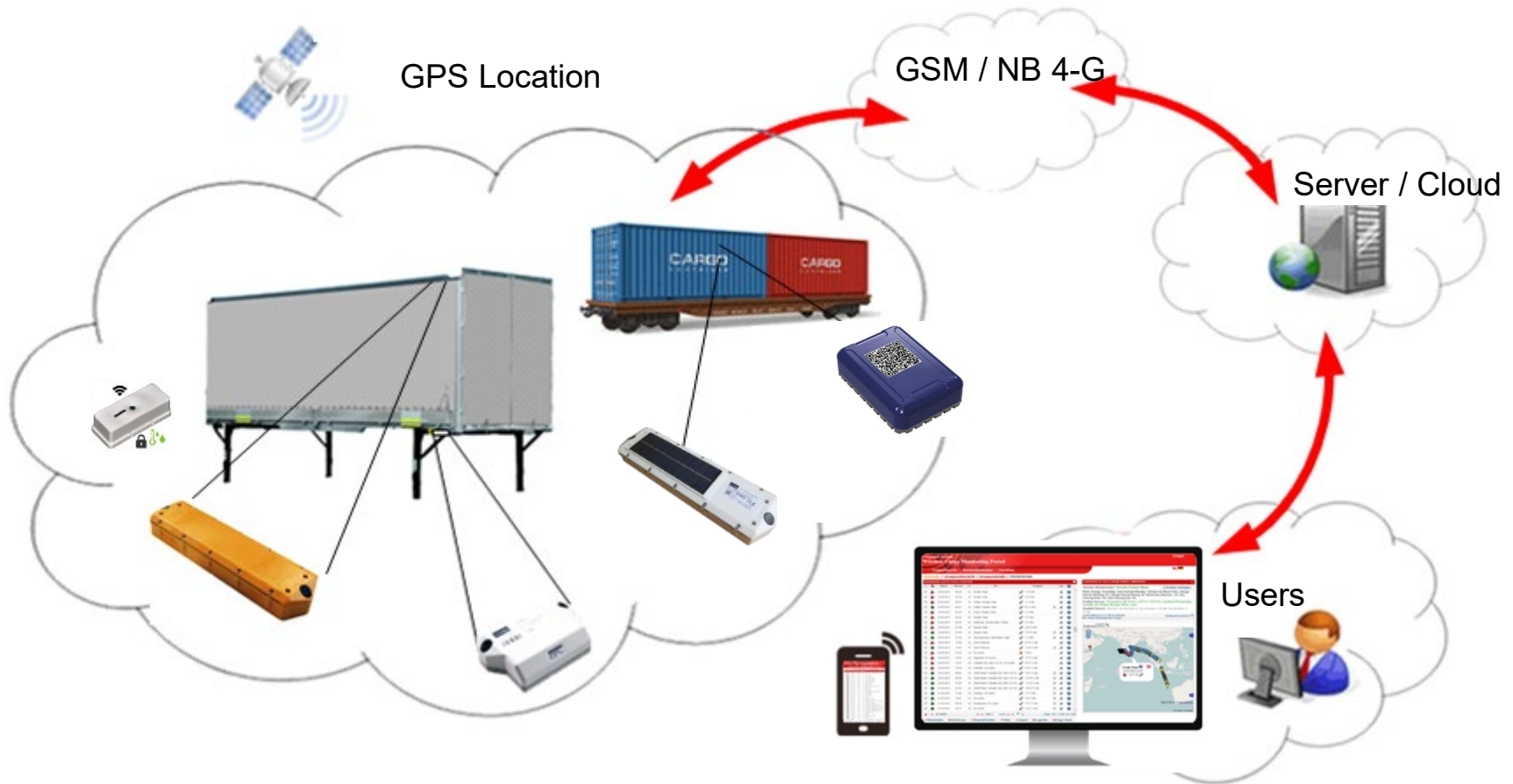
A tailored hardware and software architecture for a cost effective monitoring solution for containers, swap bodies, trailers, rail wagons, pallets and more…

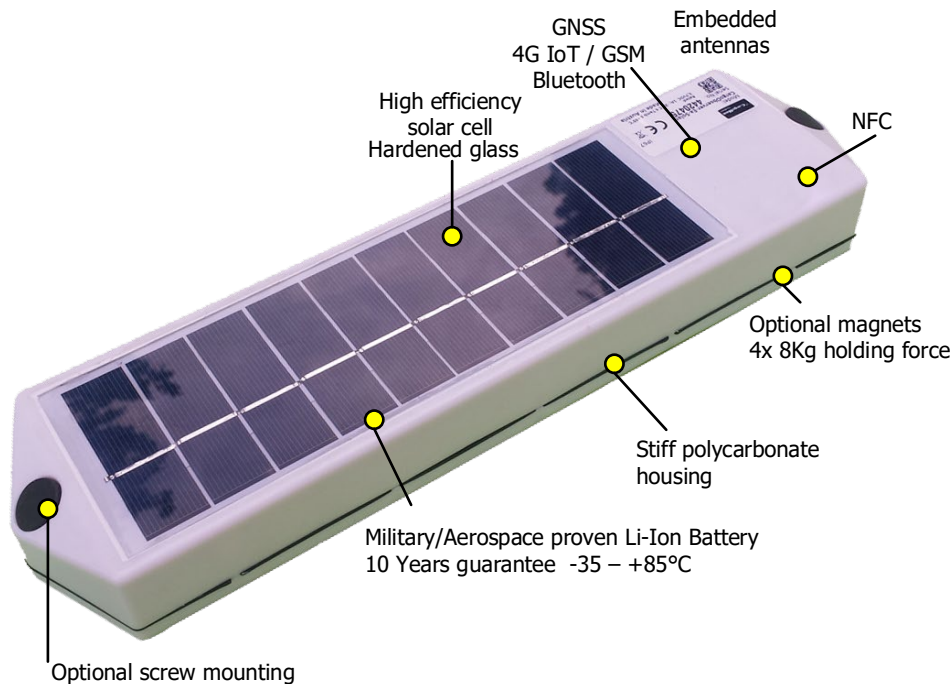# **Why** CargoMon`s Telematic Solutions?

Unique selling propositions

- Complete sensor system (Temperature, Humidity, Door, Intrusion, Shock...)
- Energy self-sufficient power supply for the full life cycle
- Very flexible remote parametrization possible
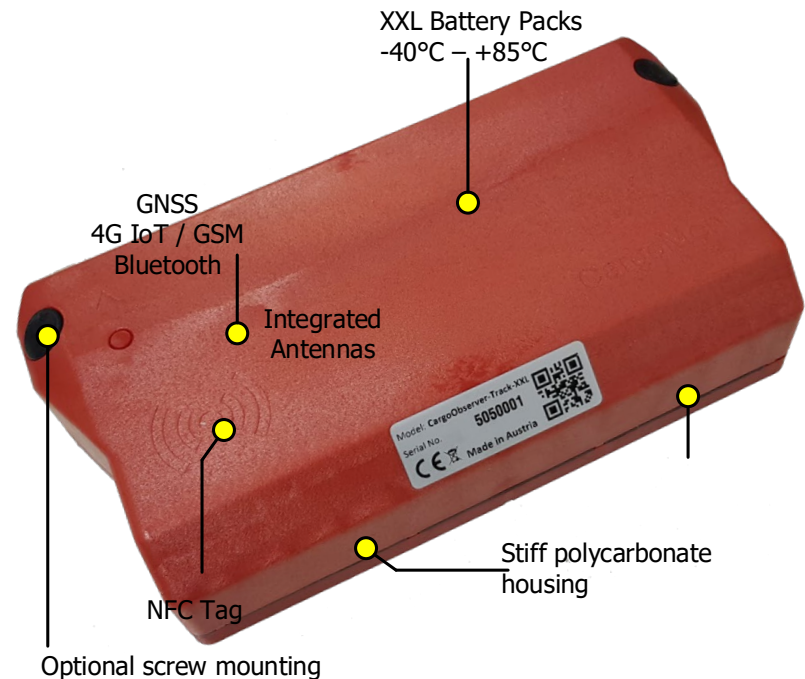- We are quick to adapt to customer specific requirements

Customer Benefit

- Improved asset management due to customized customer relevant reports
- Reduced cycle and down times
- Competitive edge

CargoObserver-Track-Solar-XL / -Track-XXL
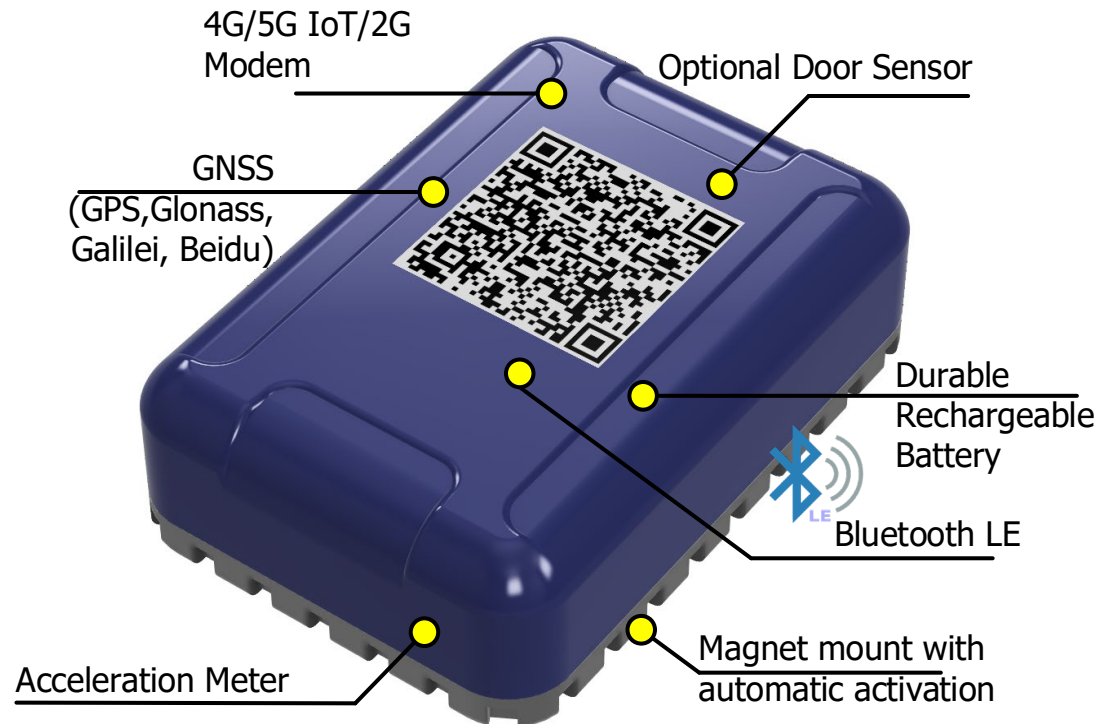## Solar or Primary Battery for any use case

GNSS
4G IoT / GSM
Bluetooth

Embedded antennas

High efficiency solar cell
Hardened glass

NFC

Optional magnets
4x 8Kg holding force

Stiff polycarbonate housing

Military/Aerospace proven Li-Ion Battery
10 Years guarantee -35 − +85°C

Optional screw mounting

XXL Battery Packs
-40°C − +85°C

GNSS
4G IoT / GSM
Bluetooth

Integrated Antennas

Stiff polycarbonate housing

NFC Tag

Optional screw mounting

CargoObserver-Track-Solar-XL

CargoObserver-Track-XXL

Easytracker: for mobile use on containers, pallets and in packages

4G/5G IoT/2G Modem

Optional Door Sensor

GNSS (GPS,Glonass, Galilei, Beidu)

Durable Rechargeable Battery

Bluetooth LE

Acceleration Meter
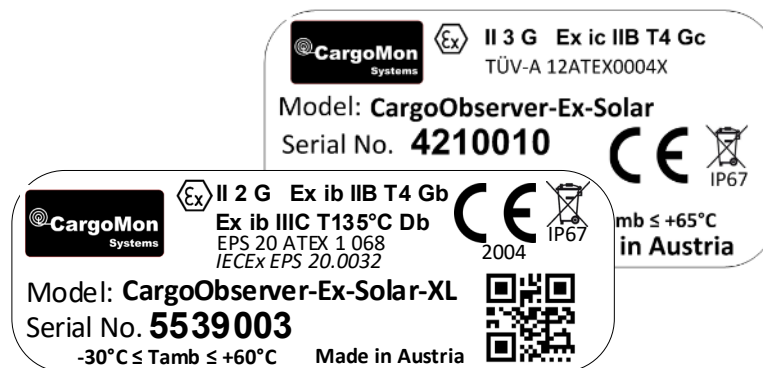
Magnet mount with automatic activation

Easytracker is based on CargoObserver Platform, new Modem (Global 4G CAT-1), Power Supply and housing

IECEx + ATEX certified devices for the use in potentially explosive environments

CargoMon Systems

*CargoObserver-Ex: Primary Battery powered*

CargoObserver-Ex-Solar / XL:

CargoObserver-Ex-Solar-Sensor:

II 3 G   Ex ic IIB T4 Gc
TÜV-A 12ATEX0004X
Model: CargoObserver-Ex-Solar
Serial No. **4210010**   CE
IP67

II 2 G   Ex ib IIB T4 Gb
Ex ib IIIC T135°C Db
EPS 20 ATEX 1 068
IECEx EPS 20.0032
Model: **CargoObserver-Ex-Solar-XL**
Serial No. **5539003**
-30°C ≤ Tamb ≤ +60°C   Made in Austria
CE 2004 IP67
...mb ≤ +65°C
...in Austria

The three product variants of the **CargoObserver-Ex family** are all based on the same software platform and only differ in hardware options and power supply type.
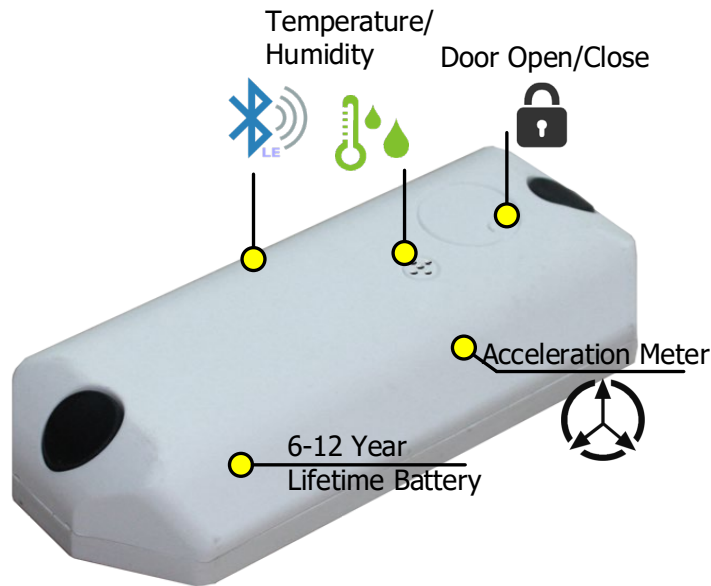
CargoSense – Complete Wagon Monitoring
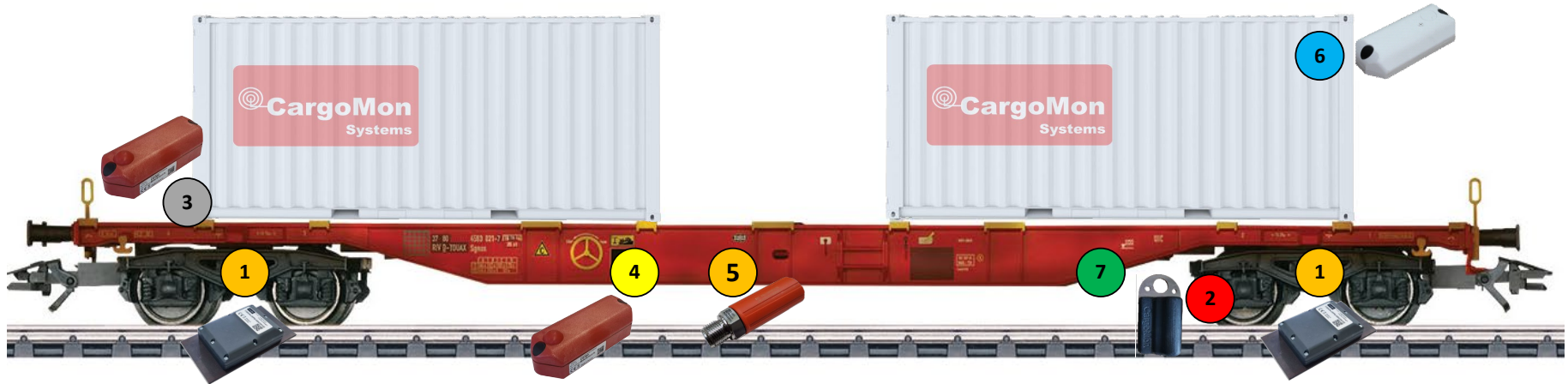
1. Weight Monitoring: Cargosense-PrecisionWeight

2. Axle Monitoring (Flat spot, Bearing, Hot Wheel): CargoSense-Axle

3. BLE Tag Container Identification and Load Detection CargoSense-TagScanner

4. Handbreak Sensor: CargoSense-Distance

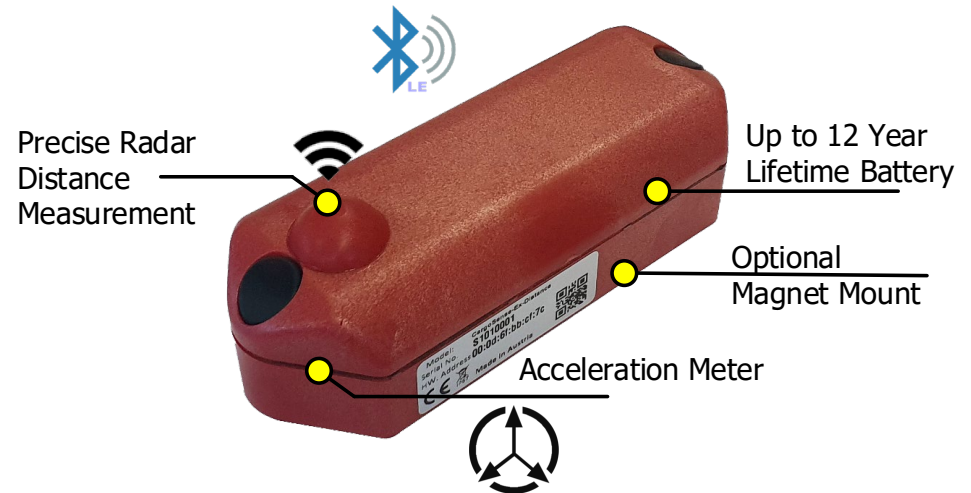5. Weigth/Overlaod Display: CargoSense-Display

6. Inside Container Multisensor : CargoSense-Multisense (Temp/Humi, Door)

7. Break System Pressure Monitoring: CargoSense-AirPressure

Wireless Sensors allow for new opportunities

Precise Radar Distance Measurement

Up to 12 Year Lifetime Battery

Optional Magnet Mount

Acceleration Meter

CargoSense-Distance

Temperature/ Humidity

Door Open/Close

Acceleration Meter

6-12 Year Lifetime Battery

CargoSense-Multisense

<u>Applications:</u>
- Loading state
- Weight Information
- Door Status
- Status Handbreak …
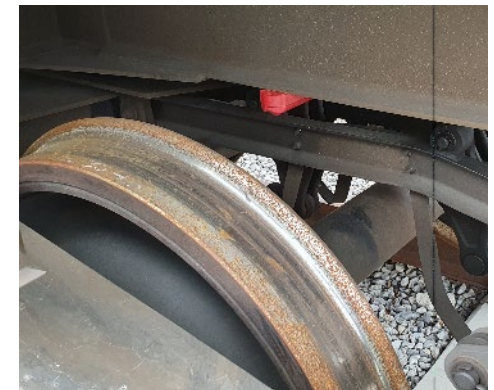
Innovative Sensor Technology for the digitized freight wagon of tomorrow

CargoSense	-Multisense	-Distance -TagScanner	-PrecisionWeight	-Axle	-AirPressure	-Display
Special Features	Temperature, Humidity, Door	Load state sensor	1-2% Precision Weight measurement	Flat spot detection and bearing faults	Airpessure on Breaking System	Display Load State weight on Wagons
Sensors						
Strain Gauge Sensor	-	-	√	-	-	-
3-Axis Acceleration	√	√	√	√	-	-
Distance Sensor	-	√	-	-	-	-
Temperature	√	-	√	√	-	-
Humidity, Dew Point	√	-	-	-	-	-
Air Pressure	-	-	-	-	√	-
Kontactless Door Sensor	√	-	-	-	-	-
BLE Tag Scanner	o	√	o	-	-	-
Bluetooth Low Energy & ITSS2 Ready Interface	√	√	√	√	√	√
Lifetime 6 up to 12 Years	√	√	√	√	√	√

o Optional / or future
√ Supported by default

IoT Device Management Platform
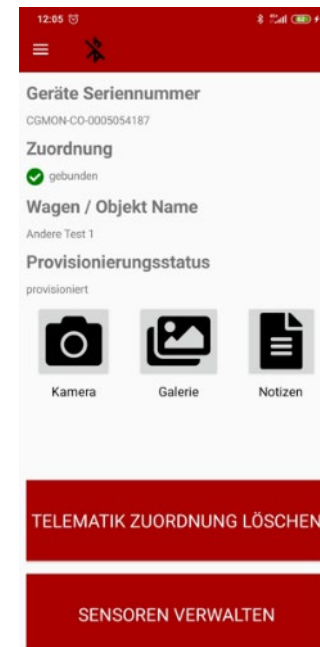

www.cargomon.com
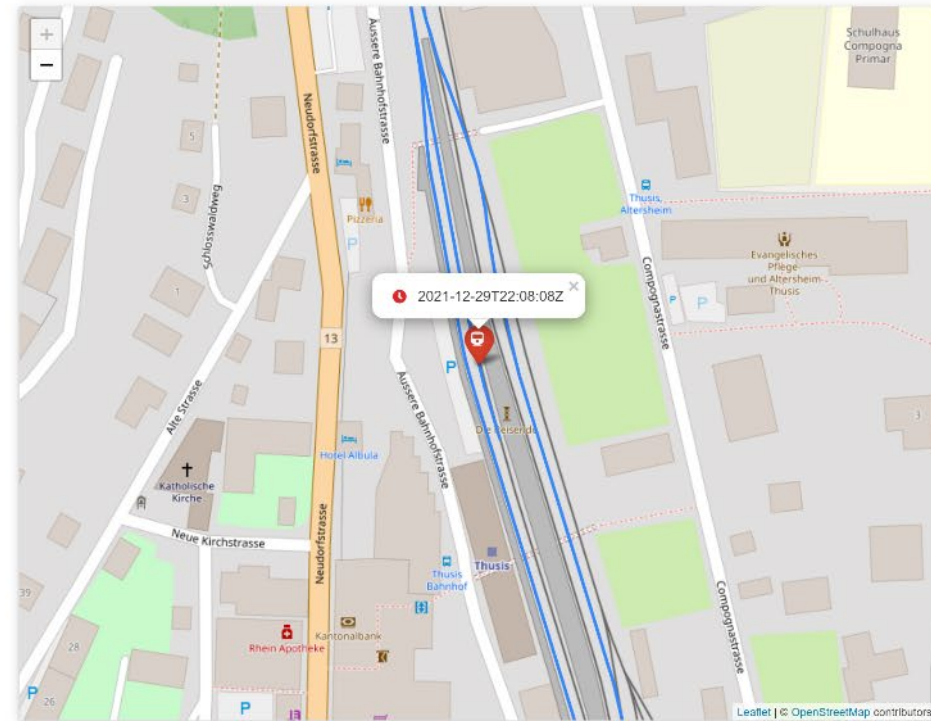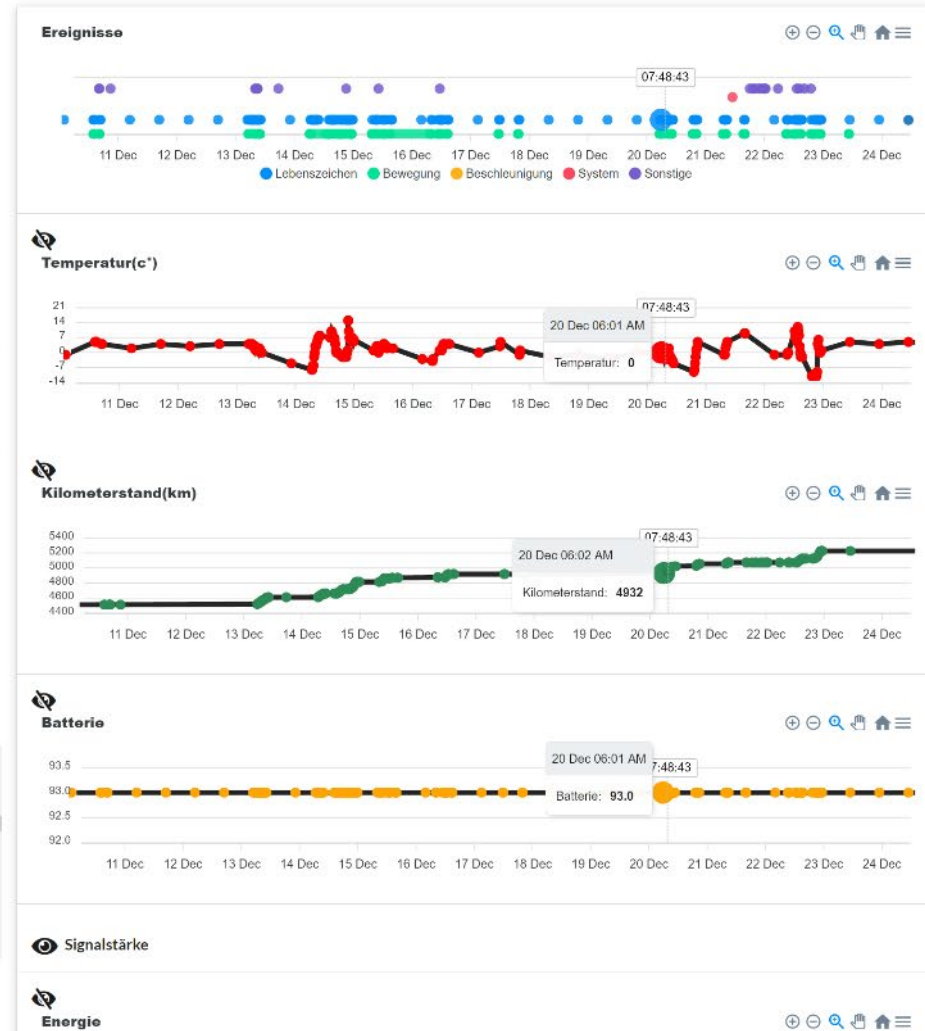
IoT Management APP
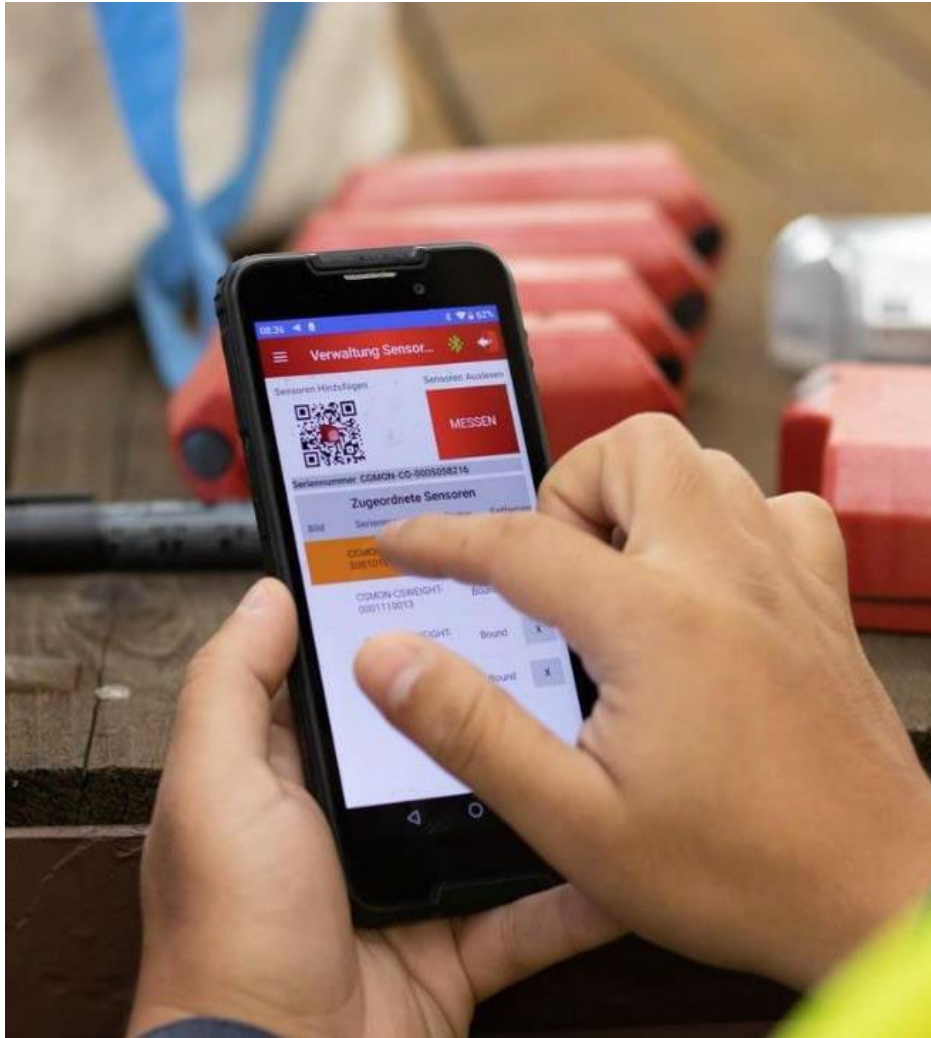
App Advantages

- Quick commissioning
- direct BLE connection to Telematics Unit and all of its sensor locally
- Installation mode with real time connection for:
  - link quality check
  - sensor reading
  - sensor calibration

Advantages and Facts

Benefits

- Improved security
- Better transparency for customers
- Alarming and data collection for whole transport chain
- Precise damage allocation
- Fast downtime detection – improved response time
- Cost efficiency – transport chain optimization

Approved system

- 10 years in-field operation experience
- Unique 6+ years life cycle
- Tuned for reliability and efficiency
- Simple mounting variants
- Perfectly customizable
- Continuous research for novel sensors

Innovative Technology "made in Austria"