



Universal Automation Solution

TANKER TRUCK SMART SECURITY SYSTEM

Revision 2023_03



OUR MISSION

Through our automation technology, we invest in your security, prosperity and future



The ultimate solution in
tanker truck security and prevention



Smart product
monitoring and analytics



Minimize cost and
maximize product accountability



Solve problems,
which have existed for decades



TANKER TRUCK SMART SECURITY SYSTEM

The maser tts system is one of a kind packaged solution, which unites several technologies to deliver the ultimate system for smart and secure fuel transportation with real time monitoring.



TTS TANKER TRUCK SMART

The MASER TTS system is one of a kind packaged solution, which unites several technologies to deliver the ultimate system for smart and secure fuel transportation. We have managed to find a secure solution for all tanker truck fuel transportation issues.

The sophisticated software system for data logging, constantly logs, analyses and reports all product parameters, received from the magnetostrictive probes in the tanks. Our algorithms take into account all internal and external factors and variables and export analytical data with 99.8% accuracy.

This means that, at any moment, regardless of the external factors, the petrol fleet management team can account for all fuel products, in all tanker trucks with the accuracy of ± 2 liters per metric ton.

The data logging module records every vehicle and product event or fluctuation with a time and GPS coordinates stamp, taking into account the yaw, pitch and roll axis of the truck by relying on 9 built in MEMS sensors. With MASER's TTS system you always have a detailed record of when, where and what happened to your tanker truck and fuel products during transportation.

The security log cycle starts at the depot, when the fuel entry point electronic seals detect the valves have been opened.

It ends at the petrol station delivery point, where the data logger detects the delivery route end point, the electronic seals of the fuel exit valves are opened and the fuel is unloaded. The electronic seals detect every 2.0 mm displacement of the valve locks at the fuel exit and entry points.

We openly challenge any other solution to prove a higher and sturdier level of accuracy, theft and fraud prevention than what we have accomplished with TTS.

ADDED VALUE

- Real time depot to petrol station product monitoring
- Next-gen fuel entry and exit points Electronic seals
- Centralized management of the network (Trucks and Oil Depots)
- ZERO possibility for undetected theft and fraud
- Easy and cost effective Installation (wireless technology)
- Fully automated predefined and custom analyses of all events
- Autonomous and secured data exchange
- Industry standards certified
- Vehicle GPS tracking
- Graphical and chart Data representation

The MASER logo is located in the top right corner of the image. It consists of the word "MASER" in a bold, white, sans-serif font, set against a dark green rectangular background with a thin red horizontal line at the bottom.The MASER logo is located in the top right corner of the image. It consists of the word "MASER" in a bold, white, sans-serif font, set against a dark green rectangular background with a thin red horizontal line at the bottom.

From the depot to the petrol station, the operator of the tanker truck fleet can monitor all The fuel products' characteristics and parameters. Detailed and secured logs are kept for all Events and actions of the tankertruck and the exit and entry fuel points/valves.

THE DATALOGGER IS THE HEART OF THE SYSTEM



COLLECTS, ANALYZES AND TRANSMITS

Continuous measurement of the product level in the tank.
Calculation of the volume with compensation inclination of the medium and temperature of the product.
Alarms for "suspicious" drops

TECHNICAL FEATURES

GPS to identify the vehicle's position and can be integrated into an already operational fleet control system.
Anti-burglary protection.
Bluetooth for local data download.
GPRS for sending data remotely (optional).

AND FOR THE USER

Software for downloading and displaying data.
Report movements and stops of the truck.
Alarm signal drops.

THE DATALOGGER SYSTEM CAPABILITIES, HW & SW FEATURES



THE DATALOGGER – SYSTEM CAPABILITIES

- Capable of identifying unload of small quantities: (0.1% in a 8000l compartment) – 20l in 7h during travel is real world data coming from trials.
- Up to 5 compartments per tanker, customizable on request.
- Data stored is encrypted end-to-end. There's no way to decode the information without permission.
- The Datalogger Station automates data recovery and transmission to server.
- The Datalogger Manager mobile application allows for manual data download.
- Secure Wi-Fi communication between the Datalogger installed on the tanker and the Station / Application.
- and reported
- Data is stored in the internal memory of the device, no need of expensive mobile communication device and data plans (option available on request for real-time alarm transmission)
- Internal memory holds at least the last 4 days of data, up to 15 days on the expanded memory version
- Support for RS232, RS485, CAN Bus, Digital inputs, 802.15.4 sensors
- Support for wireless electronic seals: 2 per compartment + 1 auxiliary
- Analysis application to inspect data received from the Datalogger and automatically detects relevant events (loads, unloads, seals, etc.).

THE DATALOGGER – HW & SW FEATURES

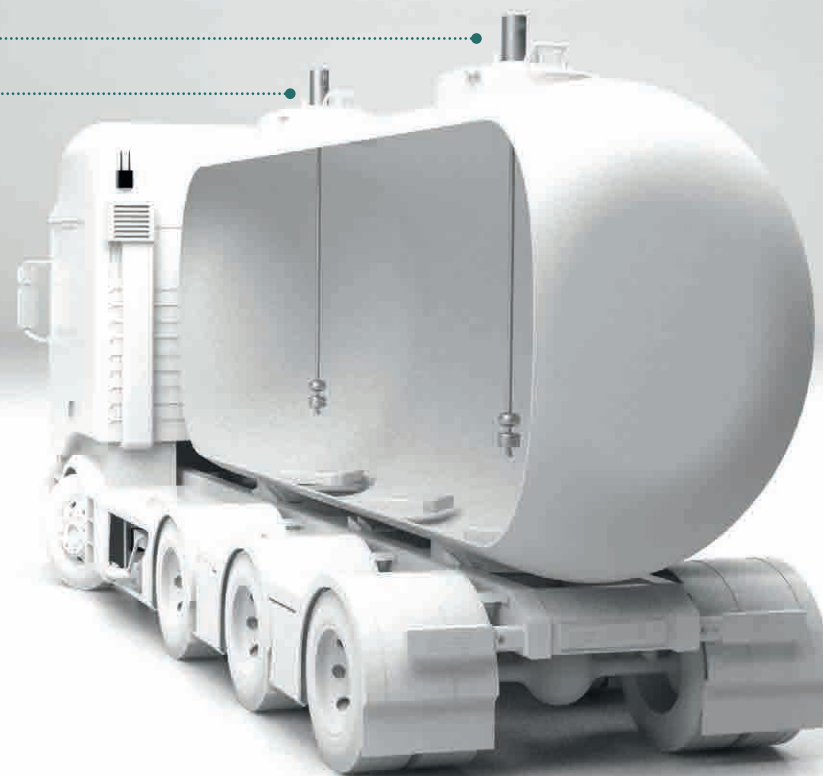
- Electronics and data storage is self-contained and not accessible to minimize undetected tampering
- Assembly may be protected with both electronic and mechanical seals
- System does not require backup battery to ease installation and improve system safety
- Start up time < 1 sec. Truck supply transient are compensated and voluntary. power supply disconnection is detected
- Can be used both standalone or in a server environment
- Cloud based analysis algorithm for cost reduction, better scalability and improved data security
- Analysis software “as a service” option
- Per client customized products database with standard density information and real-time density correction with data coming from the field
- ERP integration on request. Import of data relevant for the analysis and export of tanker path, volume and detected events

THE PROBES ARE THE MEASURING COMPONENTS OF THE SYSTEM

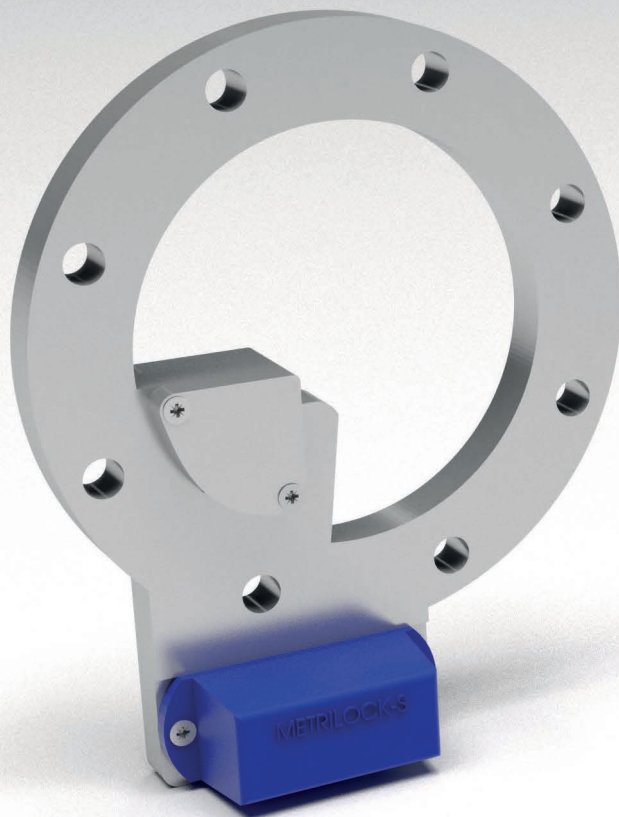


THE MAGNETO
STRICTIVE PROBES

- Strong and reliable sensor with a long life guarantee even in extreme weather conditions.
- Plug and play installation; no maintenance activities necessary (no cleaning, no recalibration, etc.)
- High precision measurements.
- Possibility to install 2 sensor floats (product, water).
- Universal Floats suitable for the different liquids.
- Integrated temperature sensor, connection through flange or threaded fitting
- Possibility to install the probe in a 1" hole
- ATEX certification
- Continuous monitoring of product without loss of data
- 50 years experience in sensor building and continuous technology improvement
- Vibration resistant



E-SEAL



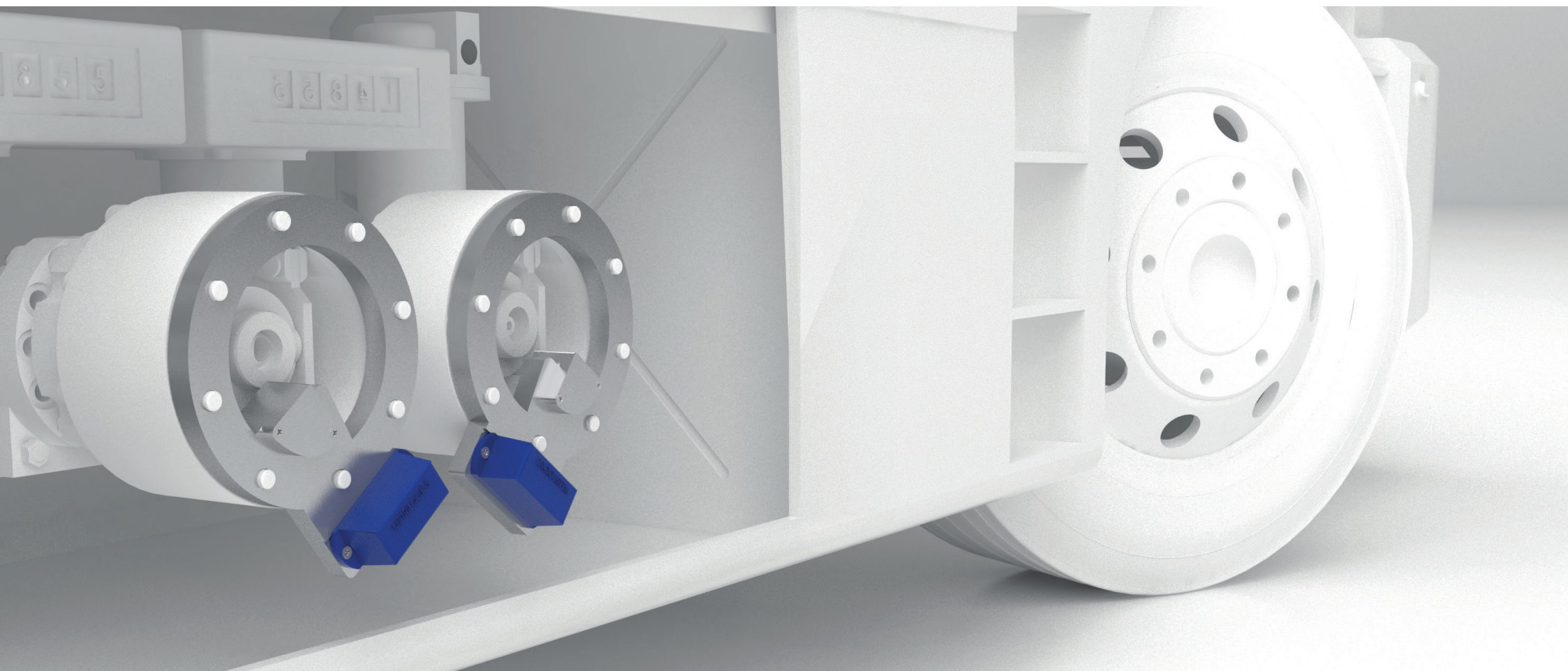
E-SEAL SENSOR FOR

Monitoring of the existence of fuel in discharge tube



**E-SEAL
SENSOR FOR**
securing
the manhole
cover, main caps
door, spout levers

THE E-SEALS ARE DESIGNED TO “FILL IN THE GAP” WHICH HAS EXISTED FOR DECADES IN ELECTRONIC SEALING OF FUEL TRUCKS



E-SEALS MAIN TECHNICAL CHARACTERISTICS

APPLICATION

- Wireless function via 802.15.4 network connection and strong encryption of messages transmitted.
- Information on real time events and periodic updating of every compartment's current status.
- Sensors battery life: 10years.
- Detection of manhole cover openings: 5mm.
- Detection of angle change by 3 deg. or even less (for levers and spout caps).
- Automatic adjustment when the tank is not levelled.
- Minimally invasive/easy installation of sensors (pre numbered sensors per compartment).
- Range covering the entire vehicle, capability of forwarding messages for trailers (using repeater).
- Saving all events per sensor in the absence of communication with the receiver (jamming or receiver power off for a long time) and instant update after communication is restored.

OPERATING PRINCIPLES

- Sealing nodes transmit readings wirelessly to a receiver processing and producing periodic control messages.
- Each sealing node is based on acceleration sensors & 3-axis magnetic field sensors.
- The system is not disrupted by the use of magnets/parasitic magnetic fields.
- To detect access events from the manhole, the system is informed by sealing sensors in the manhole.
- To detect access events from the coupling point with the metal connector of the loading/discharging hose, the system is informed by sealing sensors on the cover or on the lever of the valve.
- Finally, messages are being transmitted by the central unit together with the geographical location (GPS) & in real time via 3G or GPRS to a central server.

E-SEALS

FEATURES

- ATEX approval
- Security is the key design factor
- Wireless range of 1Km typical that is more than 100 meters when attached in big metallic structures
- Maintenance free for 10 years
- Internal battery for 10 years of continuous operation
- Fully enclosed in resin guarantying reliability in very tough operating conditions
- No cabling, very quick to install and setup
- Strong encryption (AES) in wireless data

TECHNICAL SPECIFICATIONS

Dimensions: 78X32X34 (mm)

Operating Conditions: 20oC 70oC (up to +50oC for ATEX approval)

Humidity (RH): 0% - 100

Battery Lifetime: 10 Years

Transmitting Power: 100mW (+20dBm)

Zone-0 ATEX approval

Weight: 80 grams

WHO CAN TAKE ADVANTAGE OF THIS SYSTEM?

OIL AND GAS

Form companies transporting monitored liquids/chemicals, oil/petrol depots, petrol products dealers, petrol products transportation companies, to the operators of small civil gas tanks distributing products in urban environments.

HYGIENE AND ENVIRONMENT

Companies, which specialize in cleaning, draining and disposal of pollutants.

MILITARY USE AND SPECIAL CIVIL CASES

Transport of dangerous liquids and liquid radioactive materials.

If your business model involves the transportation of petrol products, CNG, LPG, hazardous and volatile chemical gasses and liquids , or any other heavily regulated gaseous or liquid substances, TTS will empower you to over comply with the regulatory requirements and at the same time will give you real time product monitoring and peace of mind.

If you need to solve the problem with fraud and theft detection once and for all, TTS is the best solution currently available.



TO RECAP...

- The system can be used in stand alone mode or it can be integrated into any fleet management system.
- Tanker Truck Smart is not only an alarm system.
- TTS is the “real product level watchdog” on your tanker truck
- The product level data is recorded and logged during the entire trip, from depot to petrol station/delivery point.
- Every log entry includes the product parameters (level, temperature, volume), a GPS coordinates stamp, a time stamp and a tank inclination stamp.
- The recorded and logged data can be sent in real time to your company’s centralized management/monitoring system (ERP), or can be sent to a Cloud database, or be securely stored in the D atalogger memory back up unit.
- The data collection and transmission can be configured for real time mode, with direct transmission, or in deferred mode and be transmitted to a back end system when the truck comes back to the base and/or reaches the offloading destination.
- The logged data is securely stored and is available for analysis, evaluation and any other purpose.
- The integrated e-seals technology achieves the highest possible level of theft and fraud detection at the entry and exit points of the fuel.





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