|| INTERMODAL TELEMATICS BV – Tank container temperature monitoring

the challenge

Dangerous goods are being manufactured under the highest quality and safety standards. Products are loaded in ISO tanks and transported worldwide via road, rail and sea. Due to the multimodal way of transportation it is impossible to monitor the status of the goods when being transported. When the temperature of (certain) dangerous goods rises, for example Ethylene Oxide, polymerisation and risk of explosion may occur with huge physical damage and possible human consequences.

The challenge:

- Monitor the product status (in this case the temperature) accurately and continuously
- Transmit the product temperature in nearly real time to a central database
- Develop different business rules when the status/temperature of a product exceeds one or more thresholds
- Send automated notifications and alerts when the set thresholds are exceeded
- The hardware on the ISO tank needs to work autonomously (without external power) for several years
- The hardware of the tank needs to be ATEX certified and at the same time low cost
- The machine to machine communication needs to be future proof and capable of communicating via different networks

the innovation

The innovation is a multiple temperature alerting system that allows people to monitor the condition of the goods transported and to take preventive action before accidents may occur.

Therefore we developed both hardware - specifically for ISO tanks and Rail Tank Cars - and software.

The temperature sensor / WT22-Ex:

- is ATEX IIC certified
- has a life time of 10 years
- has an accuracy of 0,3°C
- sends temperature wirelessly to the main gateway (which requires minimum installation time)

The main gateway / CLT20-Ex:

- is ATEX IIC certified
- has a life time of 10 years
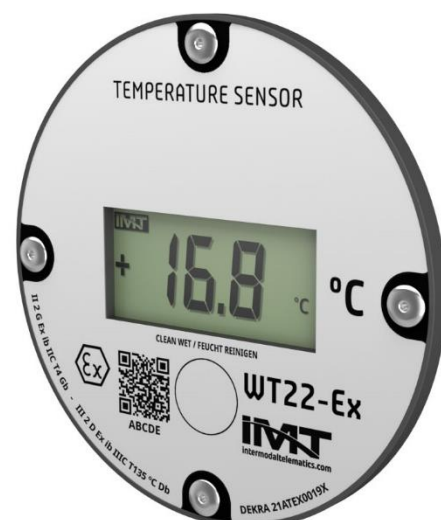
- sends temperature data of multiple sensors in nearly real time to the server via the network available at that moment.

On the software side different products can be created with corresponding thresholds. When implementing data integration of a customer's TMS and IMT's web application, the system knows which product is loaded in which ISO tank. From the moment an ISO tank or RTC is filled with a product; temperature, timestamp and location are sent at pre-set intervals to IMT's web application. Historical data of the condition of the products can be traced at all times. Business rules (soft temperature notification when a certain threshold has been exceeded, hard temperature alert when a next level of threshold has been exceeded, gradient temperature alerts) have been developed to create notifications and alerts that are automatically sent to the customer/people involved so that action can be taken quickly if necessary.

how it was implemented

Our telematics solution has been promoted directly to the tank container operators, tank container leasing companies, rail car leasing companies and shippers/chemical industry. The hardware (temperature sensor and main gateway) is now being installed worldwide by tank container manufacturers and depots. Users/customers use our system after a short training session. Many of the features in our system, for example temperature gradient alerts, have been developed as a result of feedback from customers to help solve the problems that they face and to make the transport of dangerous goods much safer.

result

More than 80.000 assets (ISO tanks and Rail Tank Cars) are equipped with IMT's telematics solution which has become the standard in monitoring the condition of dangerous goods during transport in ISO tanks. Besides the major tank container operators, many chemical companies also use IMT's telematic solution.

conclusion

IMT's telematics solution provides the perfect example that digitisation is an added value in the logistics chain. We are proud to be a game changer in the transport of ISO tanks. The industry should set the standards on how to remotely monitor the condition of dangerous goods during transportation, rather than governmental regulation. Prevention is better than to cure.

Further information can be found at https://www.intermodaltelematics.com/