

# Mobile Sensor MARWIS Used in Offenburg: Noticeable Reduction of Workload

## Challenge


The road maintenance depot in Offenburg had been looking for a way to automatize some elaborate processes e.g. protocolling tours and obtain road condition data and thus reduce workload.

## Solution

TBO was one of the first users of the mobile sensor MARWIS. It took over tasks which needed to be done manually before (e.g. checking the road conditions) or were not possible before (get accurate data).

## Benefits

TBO evaluates the MARWIS data with a third party software solution mapping the routes, delivering the data and issuing alerts. Thus, they can track the drivers and obtain protocols automatically.



**“MARWIS is a useful decision-making tool and supplies [...] the data center with real time weather data to. [...] I make quick decisions whether to scatter salt or not.”**

*Raphael Lehman, Operations Manager at TBO*

# Technologies used



## LUFFT MARWIS

### Mobile Road Weather Sensor

The first mobile road sensor detecting conditions, friction, temperature, water, ice percentage and more.

# Case Study

At the technical services in Offenburg MARWIS runs with the telematics system from blue-world GmbH. It's mounted on the gritting vehicle and takes over tasks that previously all had to be done manually.



MARWIS ON THE FLEET OF OFFENBURG'S WINTER SERVICE

## MARWIS in Offenburg, DE: noticeable workload reduction

In winter 2015, we equipped our fleet with the first mobile pavement sensor MARWIS to improve our winter service. For this first application in Offenburg, we integrated the innovative sensor into the existing monitoring software "Trace-Mate" from blueworld, based in Cologne, Germany. It displays the MARWIS data in matching colors on a map.

During the daily operations in the first winter, the new achievement proved to be a great support: On the one hand, MARWIS helps us to identify critical spots on the pavements. Thus, we are able to determine the respective salt spread requirements more precisely and selectively and can simultaneously reduce the salt amount which is beneficial for the environment. On the other hand, it automatically provides us with protocols proving that we have fulfilled our winter maintenance tasks.

The first winter with the new tool convinced us to equip our fleet with additional MARWIS devices.

Meanwhile we operate 11 MARWIS units on all kinds of vehicles – from small sweepers and passenger cars to large spreaders. This enables us to cover not only normal roads but also bicycle paths and footpaths. Generally we react as soon as the sensor issues a value below 3 °C. Then, we drive out with the salt spreaders and apply exactly as much de-icing agent as necessary!

Since different vehicle types require different mountings, our own workshop took care of the installation. Our mechanic found solutions to mount the sensors stably, e.g. on the sweeper, but they can still be removed easily. On the Unimog, for example, we attached a small carrying element to which the MARWIS protective housing can be screwed.

### Project progress

1	One MARWIS device for testing	Winter 2015
2	11 MARWIS devices to equip fleet	Winter 2017
3	MARWIS on public transportation (city buses)	Winter 2018



### Equipment of Different Vehicles

TBO's repair shop found a solution  
Unimog with MARWIS mobile sensor



### Equipment of Different Vehicles

TBO's repair shop found a solution  
Sweeper equipped with MARWIS can access  
also footpaths and cycle paths.

### Evaluation of Routes and Data

All on one Screen  
The Technical Services in Offenburg monitor  
the data on a screen in the control center.

