

City of Waiblingen, Germany trusts in Mobile Road Weather Sensor from Lufft

Challenge

The city of Waiblingen in Southern Germany needed a more comprehensive way to monitor their winter maintenance routes to fill the gaps between stationary monitoring systems.

Solution

After the launch of the innovative, completely mobile pavement sensor MARWIS in 2016, they were one of the first users of the new technology and have applied it successfully ever since.

Benefits

MARWIS issues up to 100 measurement per second. Thus, users obtain gapless data of the driven routes. It covers 8 parameters at once and delivers all needed data to keep pavements safe to drive on.



“ We are able to react a lot faster than before and send out gritting vehicles to the right spots. ”

Achim Wieler, Operations Manager - Road Maintenance Depot of Waiblingen

Technologies used



LUFFT MARWIS



Mobile Road Weather Sensor

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



LUFFT VIEWMONDO



Management Software

Flexible software, that evaluates road weather data from both mobile and stationary road weather info systems.

Case Study

One of the first users was the southern German city of Waiblingen. The road maintenance depot is, amongst others, responsible for winter maintenance. They decided to use the mobile sensor system with the monitoring software ViewMondo to improve processes.



MOBILE ADVANCED ROAD WEATHER INFORMATION SENSOR

MARWIS turns vehicles into driving weather stations. It's capable of detecting many critical road weather parameters simultaneously and can be installed with a distance of 1 - 2 meters above the surface. The smart sensor delivers information on temperature, waterfilm height, dew point, road condition (dry, moist, wet, snow, ice), ice percentage, relative humidity and friction with a frequency of up to 100 times per second and a max. output rate of 10 Hz.

Thus, it's an important decision support with regard to preventive gritting. Due to the open protocols, MARWIS can be easily integrated into existing winter maintenance monitoring networks.

Winter service and road maintenance managed better with MARWIS

In particular, the road temperature, water film height and friction are important to the winter service in order to organize and plan the day efficiently. The delivered road surface data exactly shows if deicing is necessary, how much de-icer is required and how long the road is safe. It also identifies critical spots, also called microclimates.

In Waiblingen, a patrol car is the first one to go en route. It delivers feedback on the road conditions by means of the sensor measurements and helps to decide whether a winter maintenance

fleet needs to follow and treat the roads.

"We try to optimize the actually quite complex winter service process by means of preventive measures. Thereby we were able to save 15 - 20% of our costs so far" explains depot team manager Achim Wieler. "Our first driver of the day performs a tour to check the road conditions. He now has the chance to quickly notice a need for de-icing. Through this, we are able to react much faster than before and send out gritting vehicles to the right spots".

Project specification



LUFFT MARWIS



Physical Data

- Size: 110 x 200 x 100 (hxwxd)
- Weight: 1.7 kg



Temperature

- Range: -40 ... 60 °C
- Resolution: 0.1 °C



Friction

- Range: 0 ... 1 (smooth ... dry)
- Rate: 10 Hz



Waterfilm Height

- Range: 0 ... 6,000 µm
- Resolution: 0,1 µm
- Rate: 100 Hz



Ice Percentage

- Range: 0 ... 100%
- Rate: 10 Hz



Road Condition

Dry, damp, wet, ice, snow, ice+water, chemically wet