DIGITALES TESTFELD AUTOBAHN

Field of Intelligent Infrastructure

Status: June 2021

Intelligent Slipperiness Forecast

Initial Situation / Motivation

Winter road conditions pose a danger to moving traffic. It is therefore essential to record these conditions reliably and automatically and to initiate countermeasures quickly and economically.

Measure Goal

The measure was intended to develop a method for determining a "section-specific slipperiness forecast" using general weather forecasts and data from the road surface. This forecast is then to be transmitted to a winter maintenance vehicle. The latter compares these forecasts with actual values measured by itself and calculates an optimal spreading density.

Measure Implementation

During the implementation of the measure, weather and road condition data were collected on various sections of the route and blended with forecasts by weather services for a reference point along the route. The section-specific forecast was carried out for sections of 20 m length.

In a further research project, a method for calculating the necessary spreading density was developed. It is based on forecasts of the German Weather Service for individual route points (road weather station locations) and the measurement of the current actual data with the latest technology on board the winter maintenance vehicle.

Pictures: Gritting vehicle of AM Greding (top), sensor mounted on the gritting vehicle (centre) and monitoring on a tablet in the driver's cab (bottom) – Source: BASt

Later it is planned to include the distance-related predictions in the calculation procedure.

Current Status

For both sub-projects, the measurements are completed after two winter periods and final reports were prepared. The results obtained in the projects show a high potential for the introduction of automated systems for monitoring and risk minimisation of winter road conditions. Furthermore, the results show that there is a need for further research to increase the technology readiness level.

Source: Bavarian Street Information System (BAYSIS)

Locations

Both methods were tested in the section of the Greding motorway maintenance depot, among others. Two specially constructed road weather stations were available for this purpose (locations: Sophienberg and Gelbelsee service stations).

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