Road structural elements temperature trends diagnostics using sensory system of own design

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Abstract. A considerable funds is spent for the roads maintenance in large areas during the winter. The road maintenance is significantly affected by the temperature change of the road structure. In remote locations may occur a situation, when it is not clear whether the sanding is actually needed because the lack of information on road conditions. In these cases, the actual road conditions are investigated by a personal inspection or by sending out a gritting vehicle. Here, however, is a risk of unnecessary trip the sanding vehicle. This situation is economically and environmentally unfavorable. The proposed system solves the problem of measuring the temperature profile of the road and the utilization of the predictive model to determine the future development trend of temperature. The system was technically designed as a set of sensors to monitor environmental values such as the temperature of the road, ambient temperature, relative air humidity, solar radiation and atmospheric pressure at the measuring point. An important part of the proposal is prediction model which based on the inputs from sensors and historical measurements can, with some probability, predict temperature trends at the measuring point. The proposed system addresses the economic and environmental aspects of winter road maintenance.