Planning, development and implementation of a Mobile Winter Maintenance Centre

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Overview

- Winter maintenance in City of Copenhagen
- Advantages from a mobile winter maintenance centre
- Available functions in the mobile centre
- Implementation plan
Winter maintenance in City of Copenhagen

- 550 km of streets
- 350 km of cycle lanes
- Winter Maintenance centre
- Tools
  - VejVejr (Road Weather)
  - Vinterman
  - Manual observations
- Limitations
  - Quality control
  - Physical flexibility
Purpose of the Mobile Winter Maintenance Centre

- The maintenance operator can be on the spot in critical situations, and make decisions based on objective measurements
- Repeated logging of pavement surface condition from specific salting routes will give indication of how decomposition of de-icing material is progressing
- Documentation for the surface state is created automatically
Design criteria's for mobile winter maintenance centre

- Same tools available as in existing maintenance centre
- Capability of measuring pavement surface state
- Perform quality control of winter maintenance
Software tools in the Mobile Winter Maintenance Centre

- VejVejr
- Vinterman
- Software for immediate presentation of pavements surface condition
- Software for transmission of surface condition data to Vinterman
Measuring system

- The measuring system shall be able to measure
  - Surface temperature
  - Surface condition
  - Surface grip data
  - Position for measured values.

- All measured data shall continuously be transmitted to Vinterman
Measuring system

Initial choice for the measuring system is Vaisala surface state kit including DSC111 and DST111 and

A dedicated communication program for delivering surface data to the Vinterman server.
Measuring system

Surface condition
Vaisala DST / DSC system

GPS receiver

Vaisala Remote Road Surface
Temperature Sensor DST111

Vaisala Remote Road Surface
State Sensor DSC111

Data transmission

Vaisala Collection and presentation of
data from sensors

To Vinterman server
via network
Communication system

- It shall be possible to receive observations and forecasts in VejVejr
- It shall be possible to receive and transmit management information in Vinterman
- It shall be possible to transmit surface state data to Vinterman server
Communication system

City of Copenhagen
Mobile Winter Maintenance Centre

Blackbox

Screen
Visible from driver seat

Workplace in the car

3G communication

Blackbox

Data collection

Ethernet

Veprom

Ethernet

KVM Matrix switch

Ethernet

Viteman / KK-net

Ethernet

PC1

Ethernet

PC2

Ethernet

PC3
Benefits

- The maintenance operator can be on the spot in critical situations, and make decisions based on objective measurements.
- Repeated logging of grip data from specific salting routes will give indication of how decomposition of de-icing material is progressing.
- Documentation for the surface state is created automatically in Vinterman.
Implementation plan

- At this moment City of Copenhagen are making a decision about type and manufacturer of the vehicle.
- It is planned that installation of sensors and PC-equipment shall take place before summer holidays this year.
- Training and reference measurements shall take place until 1. of October.
- The Mobile Winter Management Centre shall be in regular service from start of winter 2010-2011.