Bearing information through vehicle intelligence

Torbjörn Gustavsson
Problem

- Difficult to decide about the bearing strength
- Roads are closed for a long time
  - Cost a lot of money for the state & industry
  - Cause problem for the road users
- BiFi => a new objective method for the decision about the spring thaw conditions
Combination of data
• FCD => Data about the actual conditions
• Filtering and processing of signals from the FCD => Surface hard or soft
• Combination of FCD and weather modeling gives information for larger areas & possibility to determine the true status of the roads
BiFi Part 1: February 2010 to August 2011.

- Proof of concept; Reference measurements.
- Initial field trials in small scale.
- Larger field trials with version 1 of BiFi hardware mounted in small car fleet.

BiFi Part 2: September 2011 to July 2012

- BiFi system up and running.
- Expand field trials.
- Version 2 of the BiFi hardware.
Västernorrland
• 5 Postal vans

Värmland
• 8 Postal vans
March 12 – April 25 – 2012
8 cars

= Low bearing strength
March 13 – 2012, 8°C
25% indications of High Risk

- Where – which roads/area are affected
- Ratio between High risk ↔ low risk
March 14 - 2012, 5°C
10% indications of High Risk
March 15 - 2012, 5°C
10% indications of High Risk
March 16 - 2012, 6°C
9% indications of High Risk
March 19 - 2012, 3°C
2% indications of High Risk
Thaw status: from frost depth meters

**Results**
- Low
- Medium
- High

Load bearing strength

**Forecast Model Results**
• Energy Balance Model + thaw cycle

• Input
  • RWIS – Air temperature, dewpoint, etc.
  • GIS – Geographical data; topography, shadowing, water, etc.
  • Weather forecast in GRIB-format.
Measurement validation

Reference measurements
• FCD-data gives true information regarding the surface status (where & intensity)

• Combination of FCD and weather model gives:
  – Good information regarding the frost-thaw situation
  – The possibility to cover large areas
  – Valuable input to forecast models
We want new test areas
For more information

Please contact

torbjorn.gustavsson@klimator.se