



Statens vegvesen

Norwegian
Public Roads Administration



ViaNordica
9 -11 June 2008
Helsinki Finland

Implementation of the New Sanding Method (Fixed Sand) in Norway

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Background

Both traditional and new sanding methods have been tested as a part of the Norwegian Winter Friction Project:

- Traditional methods: dry sand and sand with salt
- New methods: heated sand and **warm wetted sand – fixed sand**



Development of the method



Swedish prototype from 1999



New spreader concept from 2001



Warm-wetted sand (fixed sand) method

The most significant factors in this method are:

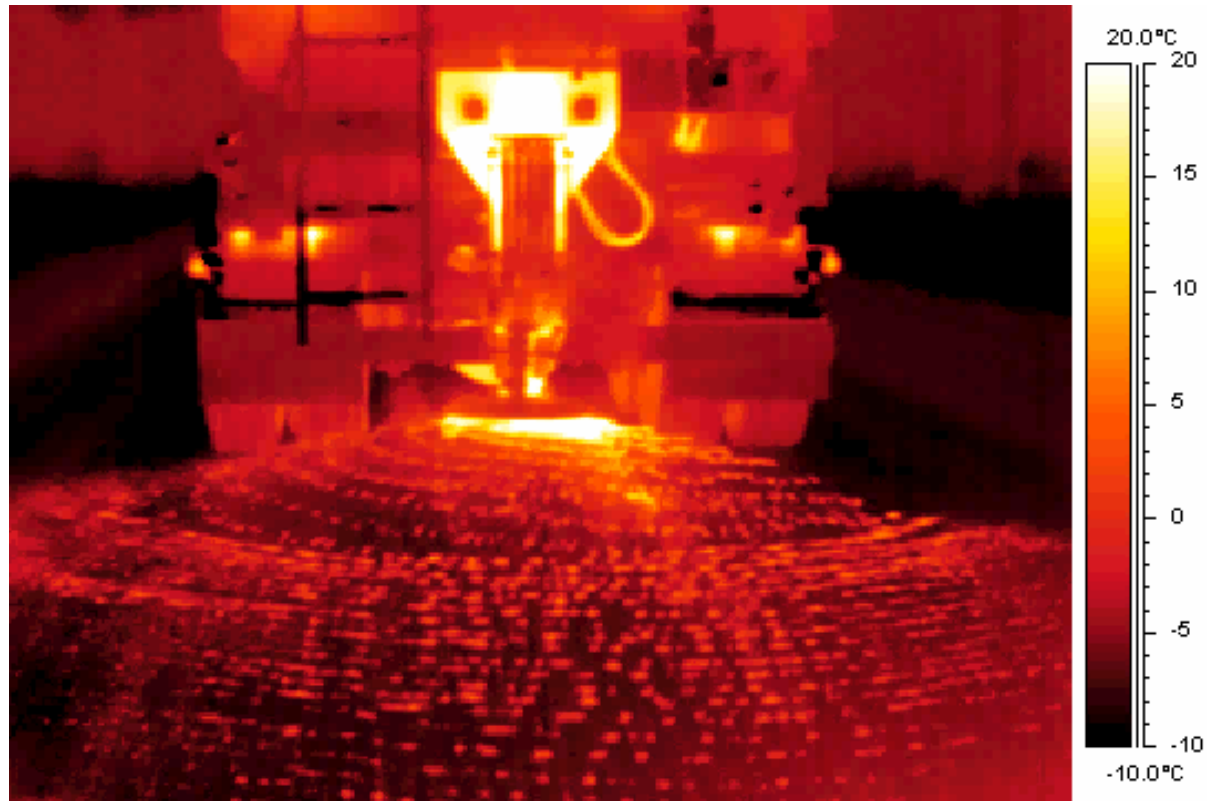
- The water temperature
- The spreading speed (20-25 km/h)
- Spreading width (3 metres)
- Sand quality (0 – 4 mm)

Amount of water and sand:

- The normal dosage of sand used is equivalent to 200 grams/m² as an average
- The amount of water in the mixture of sand and water is approximately 30 percentage by volume



New truck tested in January 2006



Road surface after sanding on snow layer



The lumps are typical



Vertically cut showing one lump in detail



5-6 mm thickness



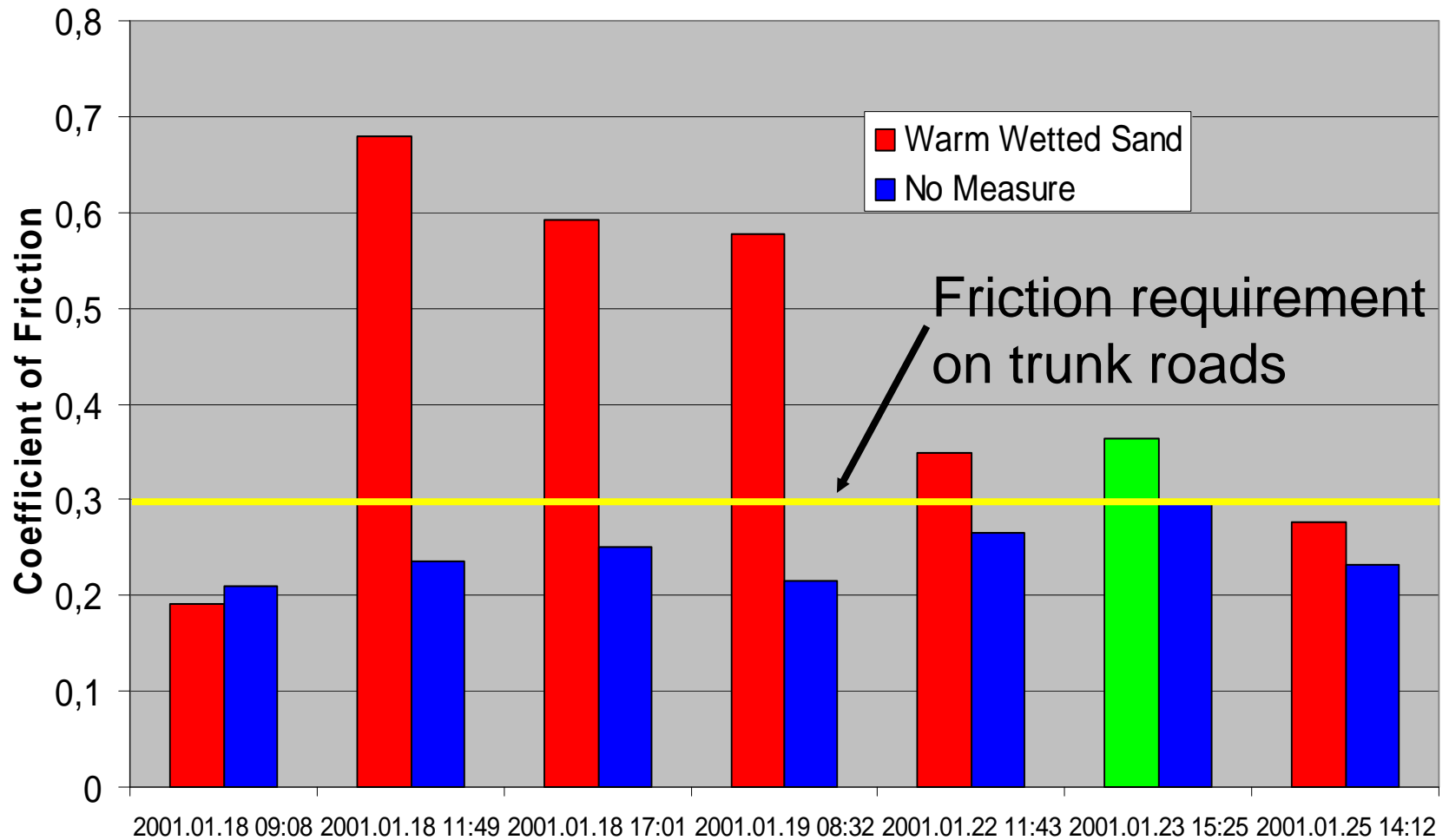
Road surface after sanding on **thin ice**

8 hours after sanding



Testing warm wetted sand, January 2001

AADT = 1200 and 30 % heavy vehicles



Advantages of water sanding

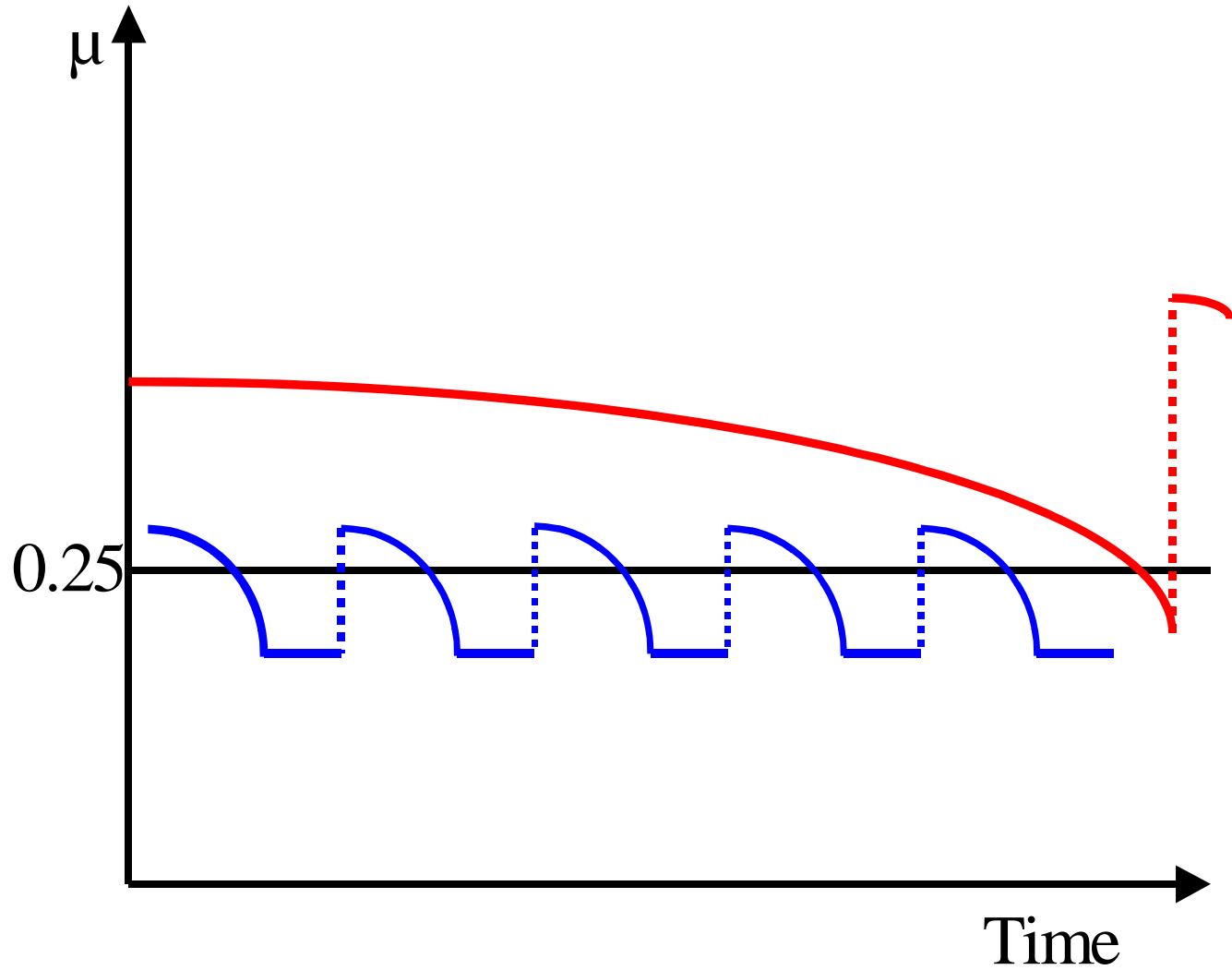
Very effective on snow- and icelayer

- On hard blue ice
- On roads with high percentage of heavy vehicles
- On thin ice or frost on asphalt



Potential of the new method

Friction - time



Potential of the new method

- Wet spreading can be carried out as preventive measures, implying reduced costs
- The only sanding method making it possible to meet with the standard requirements on trunk roads
- Reduced number of actions and less sand consumption
- Improved driving conditions



Existing organization

- 47,300 km of public roads with white winter road strategy
- In average 400,000 metric tons, 8.5 tons sand per km per winter season
- The road network is served by 1200 sand spreaders – until now the majority has been of the trailer type



Implementing hot water sanding

100 spreaders for hot water spreading in 2008

- National roads
- Municipalities
- Air fields



Outlook

- Convince the contractors of the economy in taking the method into use
- Still in a need for improving the operational routines – choosing the best method under the prevailing conditions
- Improvement in the logistics (sand storage and water supply)
- Look into the multiuse of the spreaders



Pre wetting dry salt with hot water



with salt brine

- Tested in Lyngdal three winter seasons (2003/2004 – 2005/2006)



Spreader with heater capacity adapted the amount of liquid for pre wetting salt



Hot water salting

- De-icing:
very effective on
frost and thin ice
- Anti-icing:
equivalent to use
of salt brine
- Contractor report
salt reduction by
combining hot
water and slurry

