



Bård Nonstad, Norwegian Public Roads Administration

USE OF WARM-WETTED SANDING ON WALKWAYS AND CYCLE PATHS







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- What is warm wetted sanding?
- The warm wetted sanding method in Norway
- The test in Kongsvinger
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Photo: Inge Bolme

Background for the method

- The warm wetted sand method is a swedish invention
- We bought the first spreader (prototype) back in 1999
- The prototype was further developed by us (in-house production)
- Today there are 4 suplliers:





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Warm wetted sanding- The method

How to make it:

- Special spreader: Hot water (90-95 celsius degrees)
- Special sand (With fine graded material)
- Cold surface



The spreader



Special spreader with :

- Insulated water tanks
- Heating unit



The spreader



Special spreader with :

- Insulated water tanks
- Heating unit
- The water is sprayed into the sand by a nozzle (30 % water)



The spreader



Special spreader with :

- Insulated water tanks
- Heating unit
- The water is sprayed into the sand by a nozzle (30 % water)
- Capacity from 20-35 km of sanding
- The spreader can be used for other methods



The sanding material

- Need fine graded material
- Amount: 150-200 g/m²
- 30 % of water is added





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The surface



- Ice or hard packed snow
- Minus degrees in the road
- Only little percipitation





The effect of warm wetted sand

- Increase of the friction level by 0,20-0,30
- Durability: 2000 vehicles (Depending on the weather, surface..)



Photo: Stein Åsheim. Statens vegvesen



The warm wetted sanding method in Norway

- Around 300 spreaders in total
- In areas where the method is useable we request 1-3 spreaders and we pay more than traditionel method



Photo: Per Ingar Haug

1000000 900000 800000 Pues 700000 600000 500000 400000 300000 200000 100000 0 2010/2011 2011/12 2012/13 2014/15 2018/19 2013/14 2015/16 2016/17 2017/18 Winter season

Amount of sand used on county and national roads*

Warm wetted sand Dry sand

*60 000 km road network



Even in airports they are using the method...





Photo: Per Ingar Haug



USE OF WARM-WETTED SANDING ON WALKWAYS AND CYCLE PATHS

Previous test by VTI: Warm-wetted sanding on walkways and cycle paths

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Tested in Umeå during two winters

Positive:

- + Higher friction and durability
- + Lower sand consumption



Figur 1 Varmsandningsutrustningen som användes för halkbekämpning på gång- och cykelvägarna i Umeå under försöken.

Negative:

- Equipment is expensive
- Problems with spreader/sand



The test area and equipment

- The procject is a part of the R and D project «Bevegelse»
- The test area is in Kongsvinger city
- Instruction for use is made: One section is treated with the method and a reference section is treated with dry sand.
- Follow up with friction measurement and interviews.





The test area and equipment

- The spreader is a development of a normal Falköping TC-16 for tractor
 - It has a insulated tank (400 I) for warm water storage
 - No heater because of cost
 - Need to heat water before the action





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30.03.2020 The results so far..



Updated at 11:13. Long term forecast for Forecast as Kongsvinger (Innlandet) * Add to My places lana. PDF I Overview Landslide risk \sim O Hour by hour ▲• Yellow severity 🛅 Long term Long term forecast N Weather radar Friday 14 February Saturday Sunday Monday Tuesday Wednesday Thursday Saturday Sunday Statistics 8 February 9 February 12–18 10 February 11 February 12 February 13 February 13–19 15 February 16 February 12-18 13-19 13-19 13-19 13-19 13-19 13-19 Maps **,**, RELEVANT PLACES **2°** 3° **6° 4° 4**° 2° 1° **4°** 5° Kongsvinger Bjorli 0 mm 3.2 mm 0 mm Kongsvinger 1-1

kommune Trondheim Rindal

Rather certain Somewhat uncertain Uncertain

From the paper:

Winter festival without snow.

KONGSVINGER NORGES STØRSTE REUNION VINTERFESTIVALEN

Vinterfestival uten snø: - Men folkefest blir det!



KLARE FOR FEST: Paraplyen er et nødvendig hjelpemiddel i disse dager for Uno Arnesen og Marvel Sørensen i Byen Vår. Uten snø blir det heller ingen aking under Vinterfestivalen kommende søndag. – Men det er bare å møte opp i Herdahlsparken, folkefest skal det bli uansett! lover arrangørene. Foto: PER HÅKON PETTERSEN

Av Per Håkon Pettersen

27. januar 2020, kl. 21:11 🗸

KONGSVINGER: Uten snø og kuldegrader blir det umulig å ake nedover Øvrebyen til helga. Men Byen Vår sørger for at det blir festival og folkefest likevel.

The results so far..

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- Have to come back to that..
- We have seen that the spreading speed is affecting the spreading pattern

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preading peed	5 km/h	10 km/h	15 km/h
istance etween bows	0 cm	10 cm	20 cm

Photo: Inge Bolme

No winter- No conclusions



• We need slippery roads and cold conditions!



Thank you for your attention!

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