Implementation of split friction & experiences in Norway +

17.10.2019

H. Farstad, MD, haavard@viatech.no
ViaTech facts

- ViaTech is a Norwegian Company (mostly owned by the employees) with a comprehensive range of tailor-made products to measure different characteristics of the pavement surface and nearby area.

- Our products are:
  - ViaPPS (Pavement Profiling System)
  - Via3DMapper (Mobile mapping system)
  - ViaIRI+ (Texture Measuring System)
  - ViaPhoto (Photographic Systems)
  - ViaFriction (Friction Measuring Systems)
  - Software for the above

- New products to be launched soon
- Advisors for Authority
Norway

- 5.35 million inhabitants
- 3.8 million cars
- 91,000 km public roads
- 120,000 km private roads (mountain, forest)
- 540 km motorways
- 1,150 road tunnels
- 600 harbours
- 50 airports
- 4,100 km railway
- GDP app. 360 billion € (68,000 € per capita)
Risk of dying in road traffic – Europe

2018

Source: ETSC
Pavement Profile Scanner (ViaPPS)

Delivery to Norwegian Road Authority from 2015 with ZF & Applanix

Range 119 meters
Eye-safe due to laser class 1
POS LV from Applanix

ZF Scanner
Ladybug 5+ & Basler camera
Pavement Profile Scanner (ViaPPS)

Do/calculates the following parameters:

- Longitudinal and transversal profile
- Rut depth, rut area and rut area volume
- Crossfall & Crossfall vs. Requirement
- Curve radius
- Longitudinal deflection/Bumps
- IRI
- MPD
- Width of the lane (input to calculations also)
- Bad joints of the asphalt
- Crack parameters
- Accident investigation
- Tunnel/Bridge profile incl. height
- 3D data to external standard format such as xyzi, las/laz
- Homogeneity
- 360 Photo integration
- Orbit GT integration
- Road surface camera
- Velodyne Lidar
- PAVER integration

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- Side area (Objects etc.)
- +New parameters (like Sightlines, Asphalt mass estimation, etc.)
- AI for automatic detection of objects

→ All in the same run and with automatic reporting!
ViaTunnel – Main Window
Point cloud from ViaPPS–1
Point cloud from ViaPPS-2

One passing with ZF LiDAR
Orbit GT integration
Picture and point cloud together

ViaTech is reseller of Orbit GT software
ViaTech product range ViaFriction®

Over 150 sold
CEN/TS 15901–14
Fixed slip 1–75%
Variable slip

Norway, Sweden, Denmark, Estonia, Lithuania, Germany, Mexico, Poland, Car/Truck OEM’s++
ViaFriction– split friction BIG truck

Take-over session 2016 and filling the “water” tank–6000 L!
ViaFriction – smaller truck

Delivery dec. 2018 to the Polish road authority – GDDKiA

1800 L water tank
Friction system–split friction trailer

New system for Norway since 2017

- Combined winter and summer measurement
- Both wheel paths
- Can measure 50km on one tank of water in summer.
- Has measured more than 25 000 km since Q4–2017
Norway set up

The equipment is not only used for regular survey, but also for approval of new pavements and **accidents**.
Glimpse of PMS2010 – NVDB – Dataflow

PMS = pavement management system, a part of the asset management
NVDB = National road data bank
Repeatability of ViaFriction

- 7 runs of 1000 meter measurement
- Average result has a difference of 0.02 between MAX-MIN

Test done by the Norwegian Road Authority
Split friction measurement—new pavement

Handbook N200 and R610:
- $V = 0–80 \text{ km/h}, \mu > 0,40$
- $V > 80 \text{ km/h}, \mu > 0,50$
Corrective action done and new result is:
\[ \mu = 0.80 \]
“Two measurement wheel gives better monitoring of our roads during wintertime. There can be a big difference in the friction level across the road”

Statement from Norwegian road authority
Pros and cons from experiences in Norway with split friction measurement

Pros:

- We are using split friction on initial measurements (new pavement) and for winter measurements
- Measurement in both wheel tracks makes it easier to detect local bleeding
- In wintertime it can be quite big differences in friction from one wheel track to another
- For general measurement (surveillance) on pavements we are using only one device (the left one)

Cons:

- Increased maintenance costs (both service and measurement tires)
- The calibration is more complex
- The water consumption is 2X in summer

The statement is from Norwegian road authority
ViaFriction Winter

Used by Contractors and Road Authority

Used 24/7

Finds black ice by using a special mode

In total for 2018/19 season, 166 friction devices have been in use
ViaFriction–Split friction winter trailer
Thank you!

Harmonisation Session
Feb. 2019
5X Trailers + Oscar
Appendix
The Master–Oscar

- «OSCAR» owned by the Norwegian road authority is the master for the events (Summer and Winter)
- ViaTech has a frame agreement for maintenance, support and development of Oscar
Bjorli 2019 friction harmonization event

9 ViaFriction and 1 Oscar
ViaCal (SW used for harmonisation)

Calibration of A and B factors vs. a master device Oscar