



GREENWOOD TSD

Optimum runway maintenance by continuous bearing capacity measurements with the **Traffic Speed Deflectometer**.

Motivation for TSD measurements

- **Avoid unforeseen runway closure due to**
 - Longitudinal unevenness
 - Rutting
 - Fatigue cracking
 - Pot holes

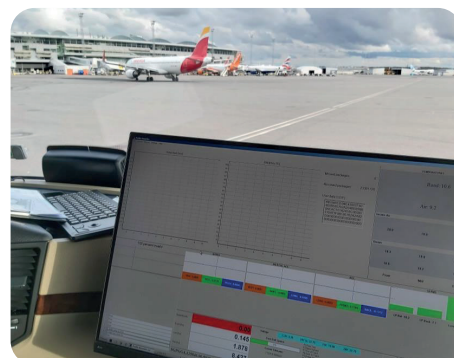


Why measure airfields with a TSD?

- **Speed**
 - Higher productivity
 - Can measure during normal airport operation
- **High spatial resolution**
 - Continuous measurements
 - Highly repeatable
 - Measures on asphalt and on concrete
 - Find small weak areas
 - Full overview of bearing capacity
- **Measures response to moving load**
 - Realistic effect of inertia
 - Realistic effect of viscoelasticity

Measured pavements

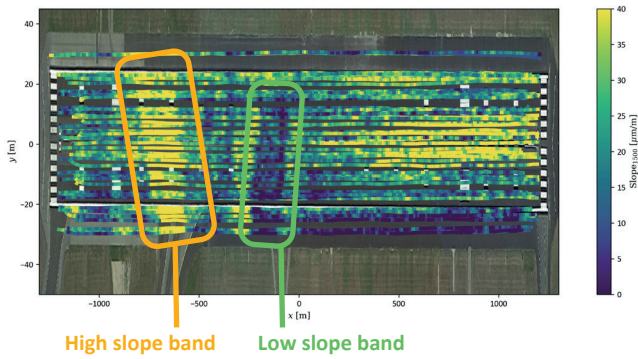
- Runway (Example #1)
- Loop around terminal building (Example #2)
- Parking lot (Example #3)



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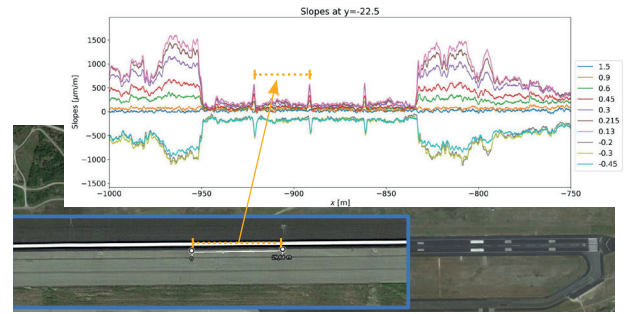
Actual TSD airport measurements

#1. Measuring examples from runway



Slope in 1.5 m

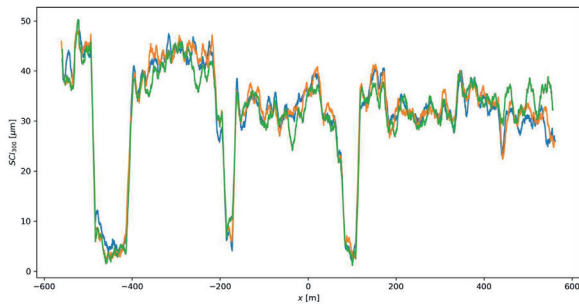
- Finds weaknesses in the lower subgrade layers, related to the subgrade geological features.



Slope spikes on runway

- Finds small weaknesses in the upper asphalt layer.

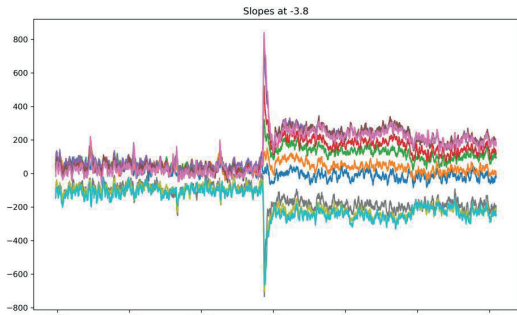
#2. Measuring examples around terminal building



Repeated SCI₃₀₀

- 3 measurement loops around terminal building shows a **very high repeatability**.

#3. Measuring examples from parking lot

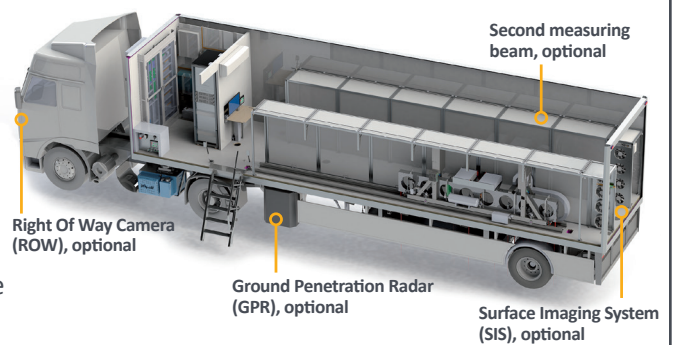


Measurements on concrete

- Finds good and poor load transfer between slabs.
- Transition between original and reinforced pavement is clearly seen.
- Measured on concrete under asphalt.

Traffic Speed Deflectometer (TSD)

- ✓ Allows for remaining life time calculation of runways etc. based on continuous measurements and visco-elastic back calculation of strains
- ✓ High mobility allows for measurements during normal daytime operation of the airport
- ✓ Uses Doppler lasers to measure pavement response
- ✓ Measures at traffic speed 1 – 80 km/h
- ✓ Continuous measurements in the wheel path center line
- ✓ One driver and one operator
- ✓ Highly repeatable measurements



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