NTNU
Traffic Engineering
Research Centre

Workshop Traffic Management and Control

Weigh In Motion data

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Content

- Introduction
- Field tests 2011-2016. Results and experiences
- Ongoing project WIM ATK
- Future work

The Demand for WIM Data

- Real time data
- Control of heavy vehicles (Traffic safety, competitiveness)
- Historical data
- Road planning, design and construction
- Road maintenance
- Bridge applications
- Cost-benefit analysis / Environmental factors

Some Terms and Definitions

- Static weight: The vehicle has to stop at a weight station
- (Low speed WIM: The vehicle is weighed while driving at 5-15 km/h)
- High speed WIM: The vehicle is weighed while driving at the desired speed
- V2I communication: New technology has made it possible to retrieve weight from sensors on the vehicle

Field tests 2011-2016

- Several field tests of piezo based WIM and Lineas Quarts based WIM where WIM data was compared with static weight
- V2I test where weight data was retrieved directly from sensors in the vehicle

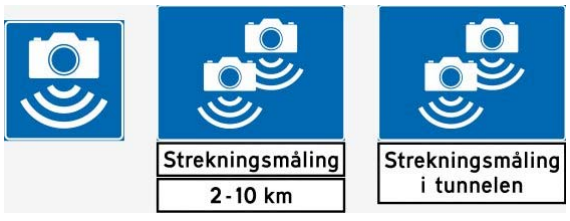
Field tests 2011-2016

Some Conclutions Based on Tests 2011-2016

- Piezo cables have a short lifetime, and requires frequent recalibration
- Lineas Quarts sensors are more expensive, but have a better accuracy and longer expected lifetime
- The same sensor type can give very different results with different dataloggers
- The asphalt and the road are important factors
- Acceleration or breaking will affect the registered weight
- Also the vehicle position affects the registered weight

ATK Systems

- Used for speed enforcement in Norway
- More than 250 units across the whole country
- Operated with piezo electrical cables
- Weight data is collected but not further utilized
- First tests with ATK data in 2016. Promising results.



ATK signs

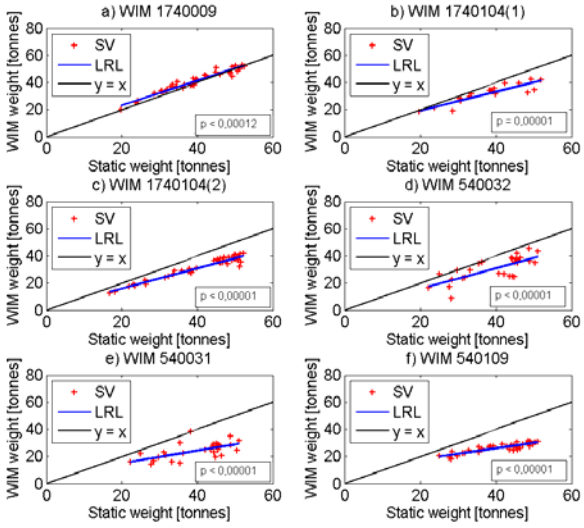
ATK Units

- Consist out of a camera unit and two piezo electrical cables

Piezo electrical cables PATK E18 Dørdal

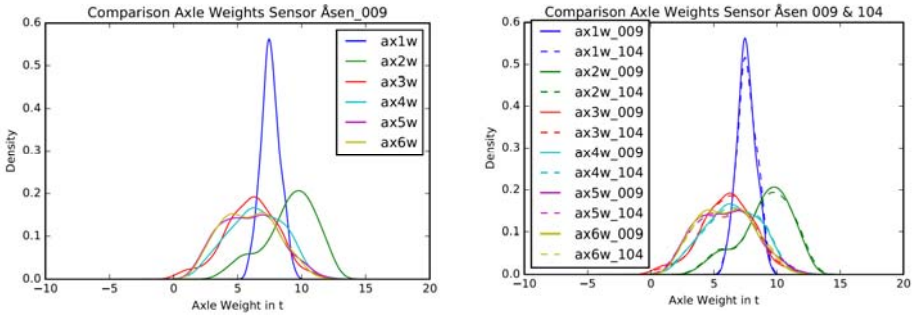
Camera unit PATK E18 Dørdal

First Results 2016



Quality Indicators

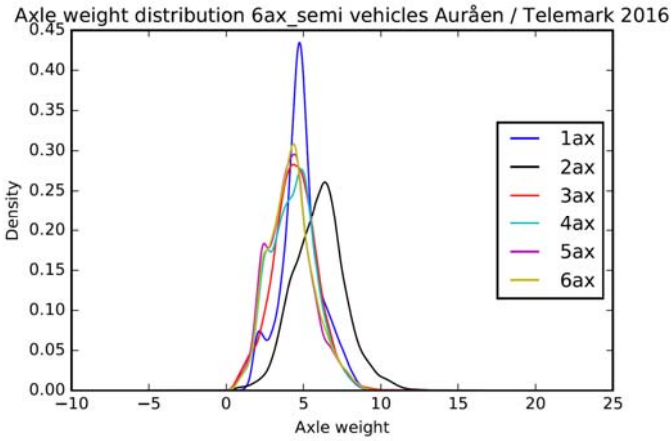
- Relative stable weight of the1st axle of 6 axle vehicles
- Used as a quality indicator for a ATK unit



Axle weight distributions for 6 axle vehicles on SATK E6 Åsen / Nord-Trøndelag

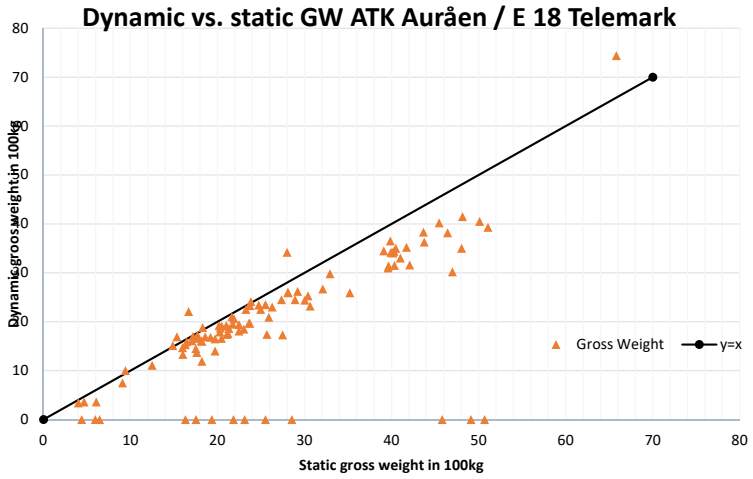
Field Test 2017

- Axle weight distribution of 6ax semi trailer at PATK Auråen E18 Telemark



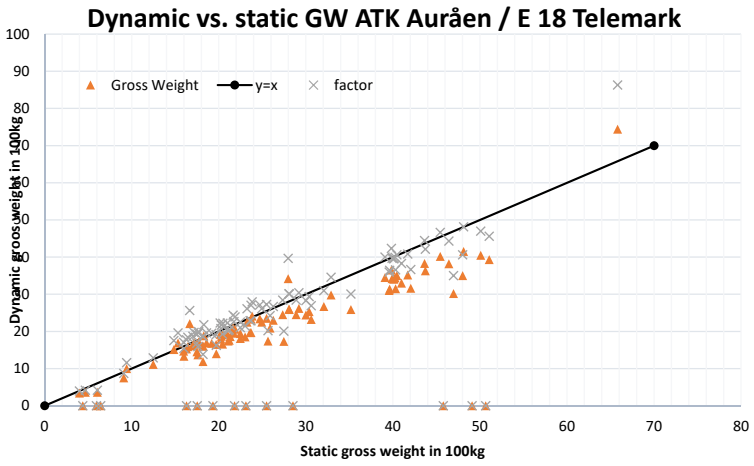
Field Test 2017

- Comparison of static gross weights and ATK data



Field Test 2017

- Comparison of static gross weights and ATK data. Calibration factor (1,15)



Next Steps

- Identification of different vehicle classes and their axle and gross weights to adjust calibration method
- Develop different calibration method for different vehicle classes
- Further statistical analytics and field tests in different parts of the country
- Gaining information about weight statistics from as many ATK points as possible
- V2I – communication for calibration

Thank you for Your attention!

Questions ?

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