



# VAK eTrailer

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Nordic HCT Conference 11.10.2023



topics

## 1. VAK eTrailer

- PROJECT
- TARGET
- HOW IT WORKS
- SYSTEM
- REGULATION
- SAFETY
- DRIVE MODES
- ACHIEVEMENTS
- FUTURE

## 2. VAK eTrailer components

## 3. Testing

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## | VAK eTrailer |

### PROJECT:

- Research and development started at fall 2021
- Cooperation with SAF, Epec, Scania, Valmet Automotive, VTT and Business Finland

### TARGET:

- Reducing the CO2 emissions and 5-10% lower fuel consumption
- More thrust on acceleration and uphill
- More traction on slippery conditions

### HOW IT WORKS

#### Energy recuperating

- Downhill
- Braking
- Deceleration
- Taxiing

#### Assistance

- Take off
- Acceleration
- Uphill
- Flat road if needed



## | VAK eTrailer |

### SYSTEM:

- Electric powered recuperating and assisting SAF TRAKE axle
  - Continuous power 60kW, Max power 120kW
- 15.4 kWh battery unit
  - 7 x 2,2kWh VA battery modules
  - External charging option, TYPE2
- VAK intelligent control system
  - Data connection to truck and trailer systems
    - FMS and Trailer CAN
  - The control system decides the functions according to different signals
- Cooling system
- Drivers display

### REGULATION:

- Fulfils the demand for assisting axle: 50kW for 2 min time
  - Enables choosing a smaller engine at HCT combinations
  - Enables only 1 driven axle on truck at HCT combinations
  - Enables less powered electric or Gas truck at HCT combinations



## | VAK eTrailer |

### SAFETY:

- Assistance/recuperating stopped if
  - EBS is active
  - CAN bus failure
  - Driver pushes emergency stop button
  - Driver shuts down the system from display panel

### DRIVE MODES:

- Automatic
- Prepare to uphill
- Prepare to downhill
- Uphill assistance



## | VAK eTrailer |

### ACHIEVEMENTS:

- Test drives during spring 2023
- First pilot unit on the road at summer 2023
- Fuel saving goal achieved in laboratory and road tests
- Achieved significant improvements to accelerations and hill climbs

### FUTURE

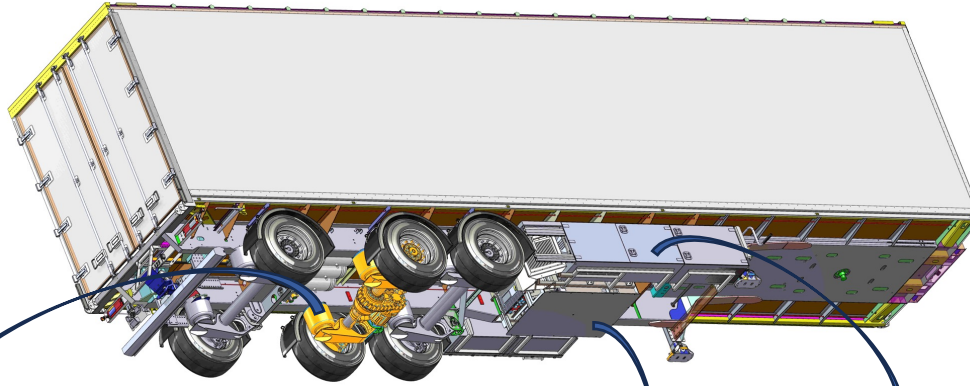
- Continuous improvements to control system
- Next prototypes 2024
- Serial production 2025



## VAK eTrailer components

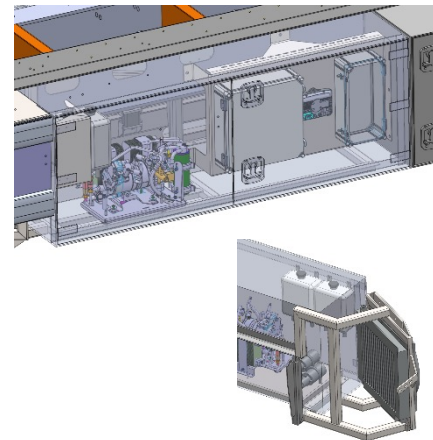
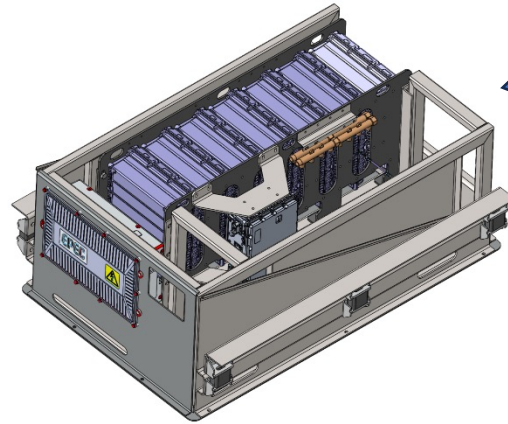
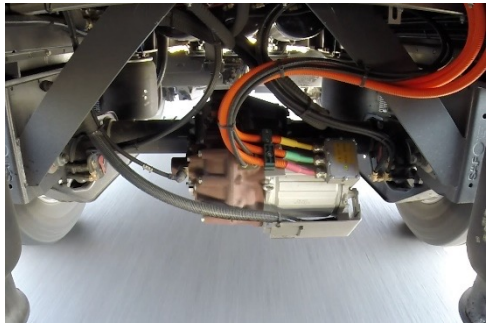


SAF TRAKe axle



Battery modul

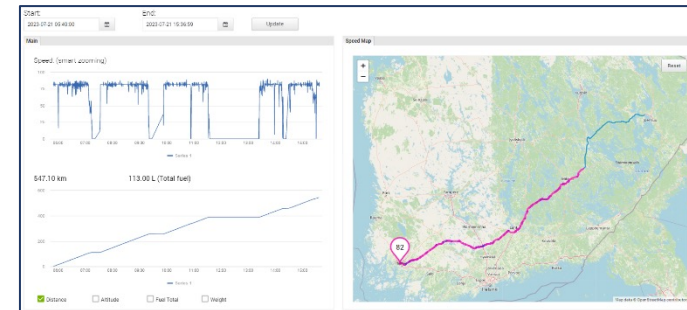
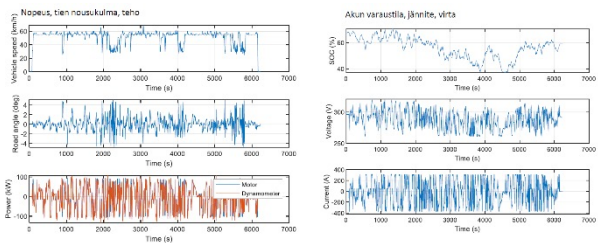
Cooling and control system



Drivers display



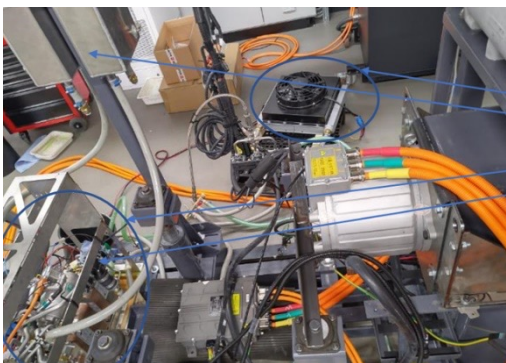
## Testing



Laboratory

Circuit

Road



## Acceleration 0-70 km/h

Without assistance

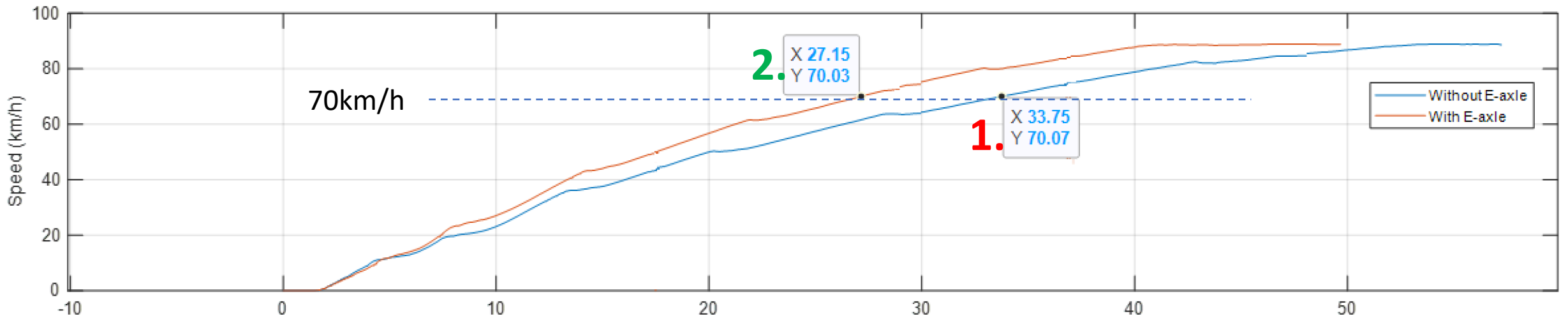
1. 34s

Assistance in use

2. 27s



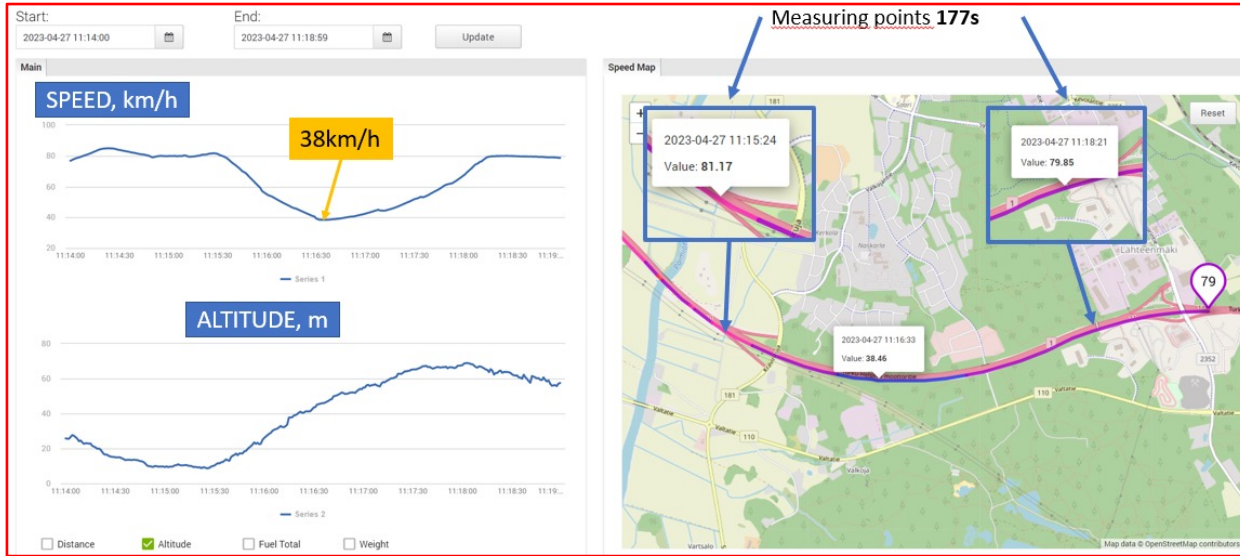
20% quicker acceleration



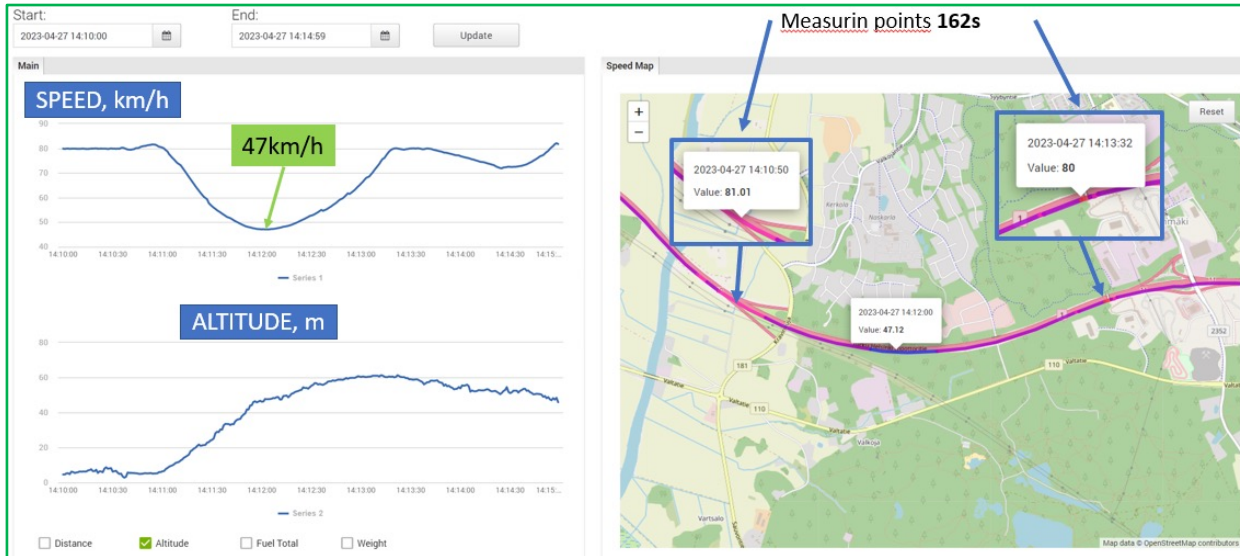


# Uphill drive 76t combination

Assistance OFF



Assistance ON



→ 15 s quicker (8,4%), with assistance ON

→ End speed on top of hill 9km/h quicker

**VAK**

**Thank You!**

