MULTIFUNCTIONAL MEASUREMENT TRAILER FOR ACOUSTICS AND 3D TEXTURE

At the AIT Center for Transport Technologies, a measurement trailer developed in-house is used to investigate tyre-road interaction on the higher and lower level road network. In addition to already installed sensor technology (microphones, RTK-GPS, infrared thermometer), the generous space available means that a large number of additional measuring instruments can be integrated according to customer requirements. Network-wide surveys in flowing traffic as well as on test areas are possible.

BACKGROUND

The measurement trailer is primarily used for questions with a focus on the following parameters:

- Radiation characteristics of the tyre with phase-synchronous recording system
- Rolling noise measurement according to ISO 11819-2 (CPX)
  Road absorption by means of line array of vertically arranged microphones
- 2D (800µm resolution) & 3D (60µm resolution) road texture at 12cm measuring width, measuring speed up to 130 km/h
- Measurement of dynamic tyre forces and moments

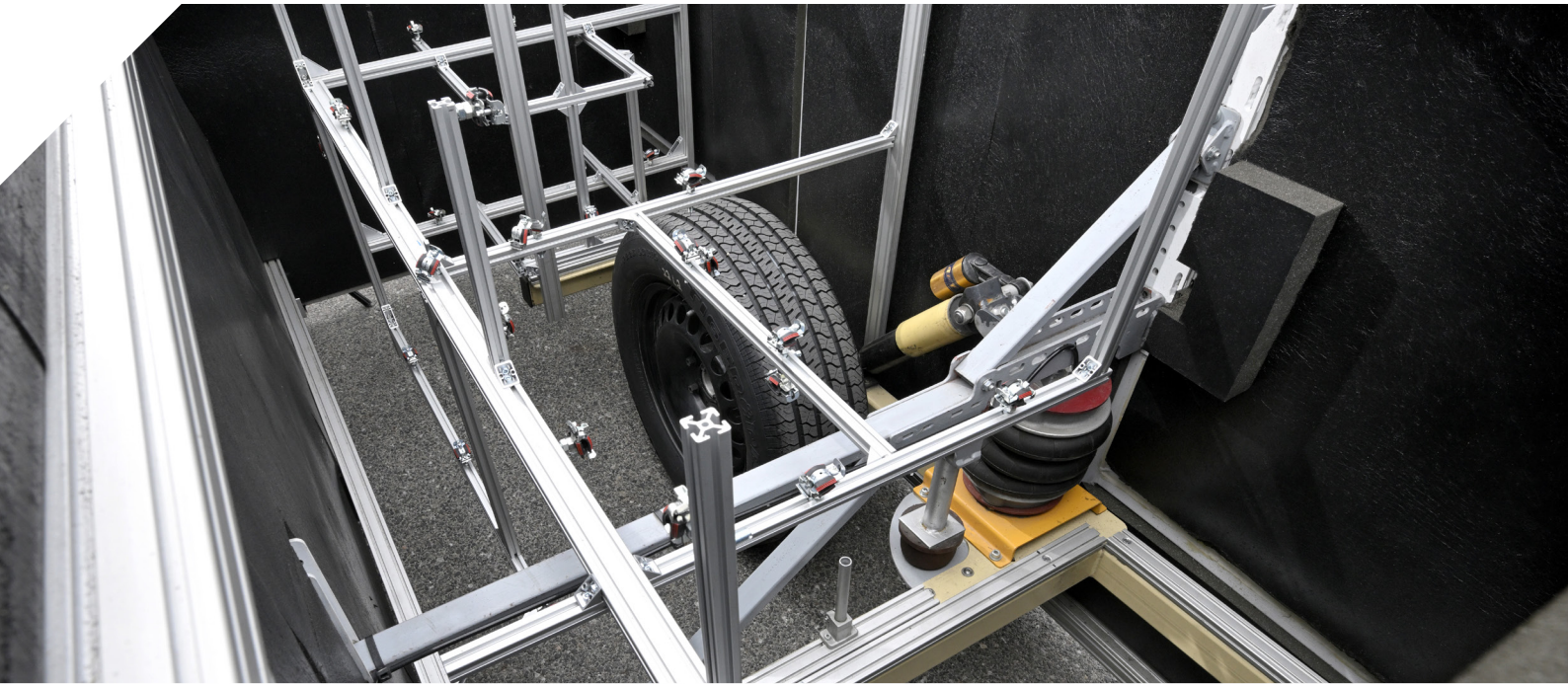
The following auxiliary variables are recorded as standard for more precise analysis:

- Centimetre-precise location detection using RTK GPS
- Air and road temperature
- Tyre pressure and 16-channel tyre temperature (inside and outside, both sides)
- Driving speed
- Inclination and vertical acceleration of the trailer

All collected parameters are synchronised via precise time stamps, which enables extensive multi-modal analyses.

MORE OPTIONS

Alternatively or in addition to all these measurements, additional equipment (e.g.: particle counters) can be mounted in two large chambers lined with acoustic damping material.



Pre-assembled aluminium profiles allow for efficient positioning.

Specially adapted shock absorbers enable a constant working distance between the sensor system and the road surface from 7.5 cm. A controllable pneumatic system raises and lowers the complete trailer housing as required. This protects installed equipment during transfers over long distances.

For visual control, the two illuminated chambers are video-monitored while driving. All instruments are connected to the towing vehicle through a generous cable duct and supplied with up to 1.8 kW of electrical power. The towing vehicle also offers large storage space for additional equipment, a work table and WiFi with internet connection.

Thus, the multifunctional measurement trailer generates highly precise input data for the analysis and modelling of tyre-road interaction.

KEY FEATURES

- Extensive sensor equipment
- Sufficient space for additional measuring instruments
- Simple mounting options
- Power supply for all devices
- Location measurement accurate to centimetres
- Measuring speed up to 130 km/h

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