VTI crash test laboratory

– one of the leading laboratories in Europe

VTI's expertise and high quality of tests and equipment make the institute´s crash test facility greatly demanded both nationally and internationally. Approximately 250 crash tests are performed each year at VTI.

VTI's crash test laboratory offers a high level of competence and service. Crash tests at VTI are performed by a team of about ten people with a profound knowledge about different types of testing.

The laboratory´s localisation at a research institute gives excellent opportunities to carry out investigation and development projects. VTI also has a workshop of its own offering technical support for the crash test laboratory.

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WHY CRASH TESTING?

Crash testing is essential for assuring a good function of products before they are applied in real traffic environments.

Examples of equipment and products that have been tested at VTI's crash test laboratory:

- Safety barriers
- Signs and lighting columns
- Child restraints
- Bus seats
- Interiors of trains, airplanes and ships
- Vehicle equipment
- Protective equipment for road works, e.g. TMA
- Vehicle structures in collision with moose.

ACCREDITED LABORATORY

VTI is ISO 9001:2000 quality certified and the crash test laboratory is accredited (Swedac 1132) for performing certified testing. VTI can offer testing in accordance with both European and American standards, e.g. EN 1317 (safety barriers), EN 12767 (roadside furniture), ECE R44 (child restraints) and NCHRPR 350. VTI is also capable, in cooperation with SP, to offer testing for CE mark approval.

CUSTOMERS

The majority of our customers are companies that manufacture road equipment or equipment for different types of vehicles. Research funding organisations are other typical clients.

RESEARCH AND DEVELOPMENT

Research at VTI's crash test laboratory aims at developing methods and techniques for crash testing as well as measurement systems for registration of crash effects on equipment, vehicles and passengers. The knowledge that is elaborated is also applied in the work for further development of testing standards that VTI takes part in.

VTI also develops new standards and test methods in cooperation with clients.

FACILITIES

Indoor test track

The indoor track is mainly used for testing of child restraints, components and equipment in vehicles. Tests are usually performed with the components mounted on different test rigs, but also vehicles are crash tested. The indoor track is 60 m long and has a capacity to accelerate a mid-sized car to 130 km/h.

Outdoor test track

The outdoor test track gives us an opportunity to develop different traffic situations and scenarios where road equipment, such as guardrails and different types of columns can be tested. Further, VTI's outdoor track has a simulated bridge deck that gives us a unique possibility to test guardrails designed for bridges.

On the outdoor track it is also possible to perform vehicle tests. The track is equipped with two different propulsion systems. One that has the capacity to accelerate a mid-sized car to 130 km/h and another that can accelerate a 13 ton vehicle to about 70 km/h on a 95 m track.

The propulsion system for heavy vehicles is unique in Scandinavia.

TECHNICAL EQUIPMENT

Cameras

Several digital high velocity (video) cameras are used for documentation of crash tests, but also 16 mm- and still cameras are used. The video cameras can also be used for documentation of other courses of events, e.g. industrial processes.

Crash dummies

VTI's crash test laboratory uses the following crash dummies: TNO P-series (child dummies), Hybrid II och III (adult dummies).

Measurement system

The measurement system at VTI's crash test laboratory is an advanced system for collection of, e.g. G levels (by means of accelerometers), forces (from force sensors), and vehicle trajectory (by means of gyros).

Mooses II

By means of VTI's moose dummy, Mooses II, the effects of a crash with large animals can be studied.

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