



Crash Test Facility

Tasks

This facility has been established to perform vehicle impact tests as part of our activities for developing and testing vehicle occupant restraint systems. The testing facility has a universal impact area with a mobile crash block and pit for filming underneath vehicles. The area is also used for rollover testing inside the building and for performing component or sub-structure tests during vehicle developments.

It is possible to test vehicles with a test weight of up to 8 tonnes at speeds ranging from 4 km/h to 125 km/h.

Additionally tests involving the crash block - for which all of the regulatory frontal barriers are available - the facility can also perform tests simulating rear-end collisions and side impacts. For rear impacts the development vehicle is typically positioned stationary and is impacted by a moving barrier. Similar conditions are used for side impacts, where either the

For development of vehicle structures, we test partial vehicle bodies to develop innovative structural elements for serial production and perform investigations on new materials and concepts. For this work, we can utilise a force-wall, equipped with sensors to measure impact forces and also a special pole, developed in-house, with triaxial sensors to measure impact force. The mobile crash block allows us to measure force in 30-degree frontal impacts and its flexibility also allows us to implement new collision conditions (e.g. the IIHS small overlap barrier).

The crash facility allows rollover tests to be performed indoors, including kerb trip, soil trip, and corkscrew rollovers as well as launched rollovers as described in the US FMVSS 208 legislation. In the outdoor area, embankment rollovers are tested using a natural embankment on an extended area of the crash track.

In conclusion, the testing facility covers all of the collision condi-

Features

- › Hydraulic motor, 800 kW nominal power
- › 160 m runway, 115 m indoor
- › Test speed from 4 to 125 km/h
- › Velocity tolerance + 0.1 km/h
- › Film pits (6 m x 4 m) for underfloor filming of frontal, side and rear impacts as well as car to car tests
- › Mobile block 4,6 x 4,6 x 2 m³, 97 t; anchored in foundation
- › Barrier elements for frontal, 0° and 30° angles, pole and offset tests (including ODB tests)
- › Barrier face load cells for full frontal and offset crash cell dimensions 125 x 125 mm²
full frontal: 128 cells (2 x 1 m²)
offset: 64 cells (1 x 1 m²)
- › Force measurement on pole:
Pole consists of 12 individual elements
150 mm height x 254 mm diameter,
total height 1,80 m
- › Movable barrier for side and rear impacts, car to barrier tests according to international regulations
- › Crash resistant data acquisition system, amplifier, filter and digital memory up to 700 analog channels and 200 events
- › High-Speed video cameras with 1.000 frames/s; colour
- › Illumination system for high speed cameras (200.000 lux, film pit 80.000 lux)
- › 25 places available for car preparation

For the computation of static deformation and intrusion, vehicles are measured on an optical 3D-measurement system before and after the crash test.

