Zurich University
of Applied Sciences

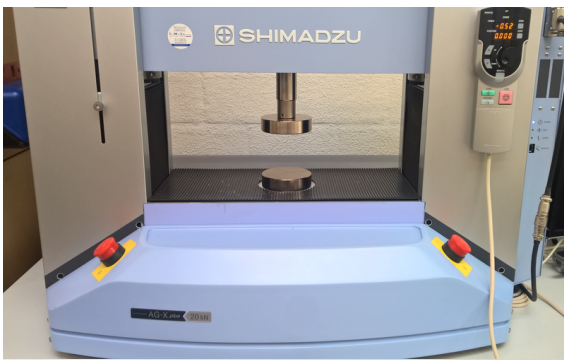
School of
Engineering

IMES Institute of
Mechanical Systems

Uniaxial Testing Machine

The uniaxial testing machine (Shimadzu AG-XD^{plus}) of the Institute of Mechanical Systems (IMES) laboratory is used for the determination of material parameters from experimental data as well as for standard strength tests. Additionally, structural components can be tested.

Setup
The machine is designed for a maximum load of 50 kN. Currently, a load cell for 20 kN is mounted and available. The machine is equipped with an extended frame height of up to 1500 mm to allow for large deformation measurements. Using software, test methods that are controlled via either force or displacement, are created and tested. Sampling rates of up to 5 kHz are possible, while the crosshead speed lies between $5x10^{-4}...10^{3}$ mm/min.



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Tensile Tests

With the wedged clamping jig, forces of up to 20 kN are transmitted to the samples. Specimens of up to 7 mm thickness can be clamped securely on an area of 25x55 mm. The clamps are operated with manual levers.

Compression Tests

A compression cage is used to perform compression tests in a tensile setup, which prevents misaligmment of the axes. It is equiped with plates with 50 mm diameter.

Strain Measurements

Using a video extensometer, the engineering strain on both tensile and compression specimens can be recorded. For this, simple marks are put on the specimens with a pen or similar. The data is fed into the machine as an input signal and recorded in parallel with the force / displacement data.

Four Point Bending Tests (DIN 53293)

A jig for a four point bending test with adjustable support distances can be mounted to the machine to gain force displacement data.

Drum Peel Tests (DIN EN 2243-3)

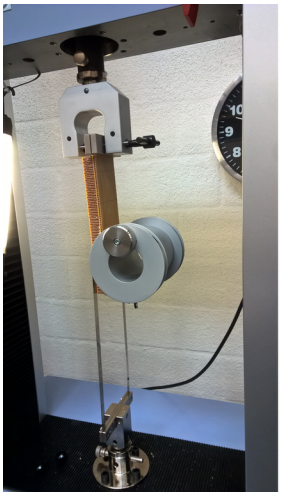
Using this jig, drum peel tests can be performed. These are often used to determine peeling resistances for sandwich panels used in lightweight appications.

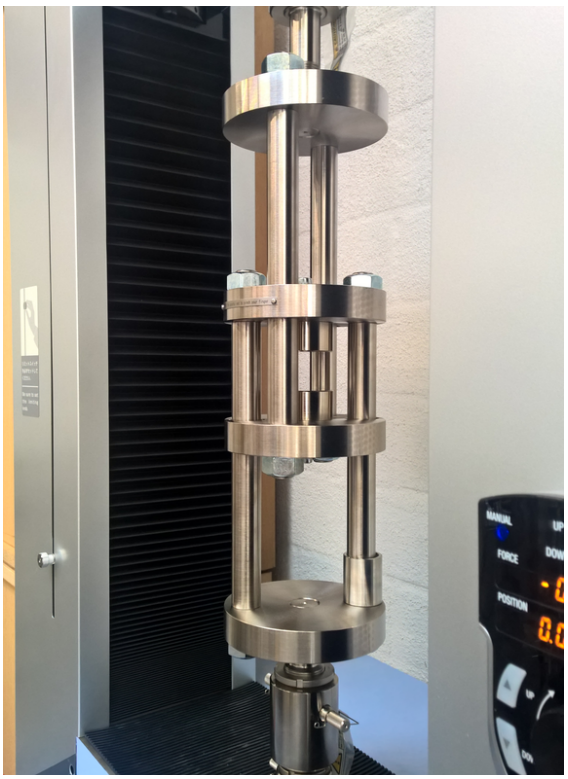
Testing of Structural Components

It is also possible to test existing parts to validate FE analysis results or determine critical situations early in the development process.

Climate Chamber

Some of the above mentioned tests can be performed upon request at temperatures from -70 °C up to +280 °C. Please contact us for further details.





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