Structural Research Laboratory

Permanent testing machines:

- A 600 kN hydraulic universal testing machine with electronic control.
- A 500 kN dynamic loading frame with electronic control for performing fatigue and fracture mechanics tests. PC controlled.
- A 400 kN tensile testing machine for testing timber.
- A 250 kN testing machine for testing up to 3.8 m long laterally loaded columns (up to 50 kN in lateral load).
- 250 kN dynamic loading frame with electronic control for performing fatigue and fracture mechanics tests. Can be controlled by a special microcomputer.
- A 200 kN bending test machine for testing 4 m long beams.
- A 50 kN dynamic loading frame for performing fatigue and fracture mechanics tests of small test specimens. Frequencies up to 150 Hz.
- A 25 kN dynamic loading frame with electronic control for performing fatigue and fracture mechanics tests. PC controlled.

Additional equipment

Furthermore, the laboratory has two strongfloors. One is 8 x 17 = 136 m² and one is 5 x 14 = 70 m² on which loading arrangements can be set up. Forces up to 1000 kN can be applied.

The laboratory has a number of actuators for producing statical loads (max. 1000 kN) and corresponding load cells for electronic recording of the load.

For producing larger dynamic (time-varying) loads the laboratory has 2 load cylinders of 63 kN and 250 kN, respectively, with corresponding load cells. These are, together with the test machine mentioned under item 5 above, included in a HYDROPULS plant consisting of hydraulic equipment with cooler, control unit, microcomputer, and valve blocks. The plant facilitates the generation of ordinary deterministic signals and generated data for stochastic analyses.

To create minor dynamic loads (up to 1780 N) the laboratory has an electrodynamic vibration table with control system for sinusoidal loads.

For response measurement (displacements, accelerations, strains, etc.) the laboratory has mechanical and electronical (inductive) displacement transducers with measurement amplifiers, mechanical and piezoelectrical accelerometers and strain-gauge equipment.

For data acquisition from static experiments the laboratory has three 60 channel data acquisition units (scanners) each controlled by a PC, and for data acquisition from dynamic experiments one 8 channel unit, two 12 channel units and a 24 channel unit for simultaneous measurements also controlled by a PC. Several PCs are provided with data acquisition cards. Measuring tape recorders can also be used for data recording, and one 14 channel and three 4 channel FM tape recorders are available.

Two frequency analysers are available for modal analysis and other dynamic tests.

Furthermore, a number of measuring and recording tools as well as auxiliary equipment, such as storage oscilloscopes, function generator, filters, phase meter, calibration equipment, x-y recorder and oscillographs.
For wind measuring there are two wind velocity meters and two wind direction meters.

Also available are equipment for measuring acoustic emission.