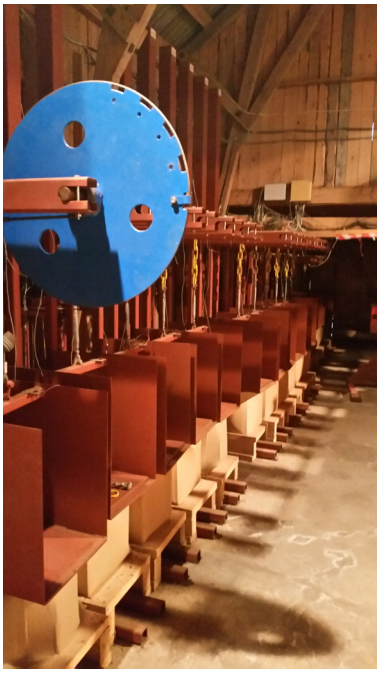
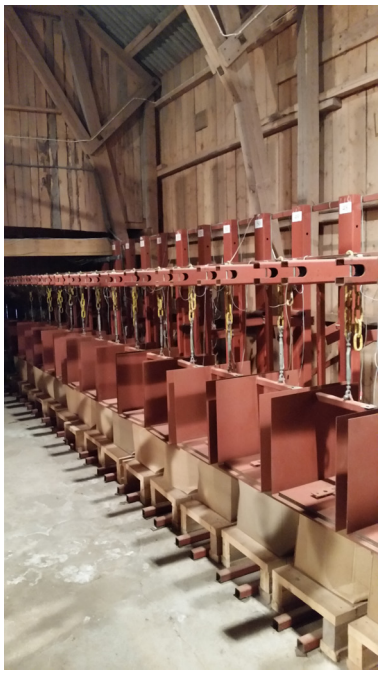
TESTING OF STRUCTURAL ELEMENTS AT LONG DURATION OF LOAD





Loading rigs at a testing of large packagings. These tests were carried out without use of the balance wheels.
The upper image shows a rig with balance wheel mounted.
Photo: S. Ormarsson

A facility for strength testing of structural elements and other products exposed to long duration of load in naturally varying climate is located in Asa, Småland, Sweden, next to SLU's forest research station in Asa.

The facility has 60 loading rigs, including 30 with loading capacity of 50 kN and 30 with a capacity of 30 kN. The climate is of the type "open shelter", i.e. protected from rain, snow, wind and solar, but not heated. The duration of the load can be from minutes to years. The facility was built by the Faculty of Engineering (LTH) at Lund University with the support of EU funds and it is by the number of rigs unique, at least nationally. It has been used by LTH, companies and the Swedish National Testing and Research Institute, SP, in a number of projects for tests of glulam beams, joints and large packages

The rigs are suitable for loading in tension or bending of structural elements with a length up to about 2.4 m. The rigs have also used for compression load tests with loads up to approximately 5 kN. A rig consists of a steel frame, weight box, weights, wire ropes and a balance wheel for upshift of the load, see the photo. During operation, a measurement system records temperature and humidity in the premises, and when applicable, structural deformations and time of failure. The measurement system is currently under renovation.

Staff from Asa Research Station manages inspection and may also in other respects be of assistance in connection with testing. There is also access to weather data from a climate station at the research station. For short-term tests there is a conventional testing machine with a capacity of 200 kN. The plant is administered by the Faculty of Engineering (LTH), which if needed can assist with engineering expertise of measurement technology and research expertise in the field of strength of materials and structural mechanics.

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