

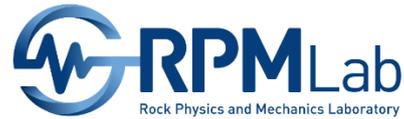
Laboratory to Undertake Climatically Controlled Static Loading and Creep Tests on Rocks

Long-term rock creep testing frames with integrated climatic chambers

Customer: ETH Zürich

Country: Switzerland

Sector: Research / Government



ETH zürich

1. Introduction

Current static loading experiments are often restricted to short durations due to instability, wear and time demands on loading systems, or challenges related to largely uncontrolled environmental conditions (Voigtländer, 2018).

ETH Zürich has acquired a testing system with two MEH 1000E static load testing machines, which are able to independently load two rocks specimens under both Creep Uniaxial Compression (UCS) and Single Edge Notch three-point Bending (SENB) configurations (up to 1000 kN for UCS and 100 kN for SENB tests) with controlled temperature and humidity conditions for a period up to 100 days. These machines were developed in cooperation with this prestigious research centre.

UCS, Double Torsion (DT) and SENB experiments under controlled temperature, surface water, and humidity conditions on Herrnholz granite from Germany will be performed using this new testing equipment.



IBERTEST machines in the Rock Physics and Mechanics Laboratory (ETH Zürich). [Link on the image.](#)

Testing system specifications

- **Rock specimens:**
 - UCS: 50 – 100 mm x 150 – 200 mm (diameter x length).
 - SENB: 80 – 400 mm x 40 – 100 mm x 20 – 100 mm (length x width x thickness).
- **Climate control:**
 - Temperature from -20°C up to 150°C, with variance of 0.1°C.
 - Relative humidity: from 20% to 90%, with variance of 2.5%.
 - Heating and cooling rate: from 0.5°C/hour to 20°C/hour.
- **Load condition:**
 - Load capacity: 1000 kN for UCS test, 100 kN for SENB test.
 - Load control: ± 0.01 kN.
 - Displacement control: ± 0.001 mm.
- **Side window in the climatic chamber is suitable for optional digital image acquisition.**



Visit from Joël Mesot (ETH President) to the laboratory where is installed our testing solution.