

# GEMex - Hydraulic fracture experiments for benchmarking Enhanced Geothermal System (EGS) design codes

The GEMex research project (<http://www.gemex-h2020.eu/>) promotes the development and use of EGS. Within this framework, series of hydraulic fracturing laboratory tests were carried out on granite and marble samples from Las Minas (Mexico) at the Institute of Geotechnical Engineering in cooperation with the Institute of Applied Geophysics and Geothermal Energy. For a successful EGS design, it is fundamental to understand the propagation of fracture under different stress conditions. Codes for designing stimulation techniques and predicting fracture growth and propagation exist for several decades. However, verification of the constitutive relationships and model assumptions of these codes against real field data are generally lacking. This is due to the nature of the dataset obtained through field experiments, where obtaining accurate information of all subsurface parameters and conditions is impossible. Therefore, well-controlled laboratory-scale experiments are irreplaceable for producing reliable data sets, which can be utilized as benchmark to verify different numerical hydraulic stimulation design tools. Figure 1 shows the experimental setup at the Institute for Geotechnical Engineering at RWTH Aachen. With the data obtained experimentally, various design tools are validated within the framework of GEMex.

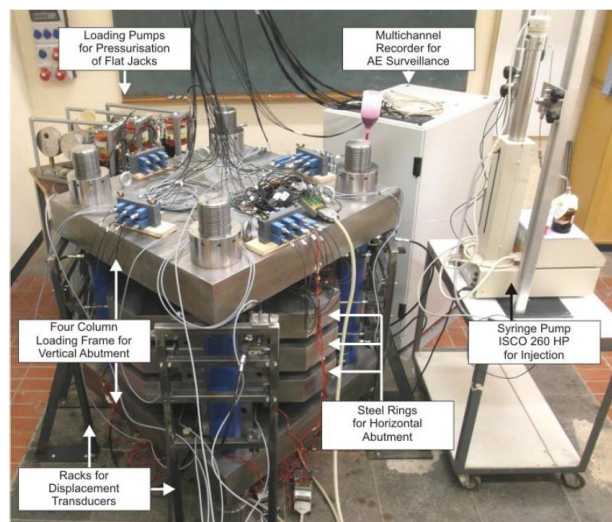


Figure 1: Triaxial setup of Hydraulic fracturing experiments in order to generate hydraulic fracturing datasets under controlled conditions in laboratory-scale