

NEW HV TEST FIELD AT UNIVERSITY OF APPLIED SCIENCE UPPER AUSTRIA

Text: FH-Prof. DI Dr. Peter Zeller | Photo: FH Wels/Austria

As part of an EU-funded project (Inter-reg project AB43), students and scientists are carrying out research to develop a high-voltage battery. The aim is to develop a reliable battery system that can be integrated directly into a medium-voltage DC system, creating high-performance units to store electrical energy, with excellent capacity at peak loads.

For the project, all the dielectric loads have to be investigated, especially those caused by voltage surges and sustained DC loads. Influences such as the climate, contamination and temperature are varied. Associated power electronics must also be

tested for the occurrence of voltage surges.

The University of Applied Sciences Upper Austria has created a 30 kV prototype which has passed initial tests.

As part of the project, two Faraday cages were built. One is equipped with a HIGH-VOLT impulse generator (1 MV, 50 kJ). The other test enclosure contains an AC/DC kit (200 kV AC, 270 kV DC). All necessary precautions have been taken by HIGHVOLT, with a commercially available partial discharge measuring system integrated into the AC/DC system. One feature worth particular mention is that the impulse generator can also be set to impulse currents with 4/10, 8/20 and 10/350 waveforms. All the measuring equipment required for this purpose was also developed and installed by HIGHVOLT.

As well as conducting research, students on the international electrical engineering course (bachelor's and master's degrees) are trained to work with the equipment itself during laboratory exercises, thus learning not only the key physical processes occurring when insulating materials are subjected to high voltages, but also how to handle ultra-modern high-voltage measuring technology.

"The lab is busy around the clock with research and teaching, and is a central, indispensable piece of research equipment for our institution", Dr Peter Zeller commented.

The laboratory was opened in March 2019 at a ceremony attended by 180 representatives from industry and academia.

