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The photon beamline vacuum control system at European XFEL

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The European XFEL is a free electron laser (FEL) facility located in northern Germany. It is a non-profit company, that was built in collaboration with 12 countries and started operation in 2017.
The 3,4 km long underground facility starts at DESY (Deutsches Elektronen Synchrotron) in Hamburg and provides up to 27.000 ultrashort X-ray pulses per second to the experimental hall in Schenefeld in the state of Schleswig-Holstein, where the pulses are distributed to three beamlines.

To ensure the stable FEL beam transportation to the experiments it is essential to have a reliable control system. This presentation provides an overview focusing on the photon beamline vacuum control system developed at European XFEL that includes PLC based vacuum interlocks and pressure monitoring to protect the vacuum system from uncontrolled pressure increases in the case of vacuum leaks and around gas injection sections. It also provides the long term logging of pressure data and the in-house developed SCADA system Karabo. Furthermore, this talk gives an overlook about the PLC-controlled mobile pumping stations, which are used after maintenance work to evacuate vacuum sections and provide a multiplicity of options for recommissioning.

Summary

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