

Plans for the FAIR vacuum control system

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Abstract

The planned Facility for Antiproton and Ion Research (FAIR) at the GSI Helmholtzzentrum für Schwerionenforschung, Darmstadt, will consist out of two large scale synchrotrons with a circumference of 1 km each, different storage and cooler rings and a high energy beam transport line adding up to roughly 9 km of vacuum systems. A dedicated system for vacuum control and visualization, embedded in the high level accelerator control is in planning and will be discussed. The vacuum control will be realized as industrial control system based on Siemens SIMATIC PLC and a commercial SCADA (Supervisory Control and Data Acquisition) product in connection with the UNICOS (UNified Industrial COntrol System) framework introduced at CERN for the control of the LHC cryogenics. It will be build as an independent standalone systems and its general functionality does not require any connection to the accelerator control system, in order to be independent from the maintenance of other systems. All devices like valves, pumps, gauges etc. will be connected to the PLC via digital/analogue I/O's. Although there are many different communication protocols available, there is a conclusion to favour this kind of connection to the devices because this is a well known technique, easy to implement, a very robust solution and independent on the future development of bus systems and protocols. For particular vacuum system equipment there is an evaluation necessary, which is being done during the development and test phase that has recently started.