



Contribution ID: 745

Type: **Poster Presentation of 1h45m**

The implement of control and date acquisition system for the 100 T pulsed high magnetic field facility at WHMFC

Monday 28 August 2017 13:15 (1h 45m)

A facility, which will generate 100 T pulsed high magnetic field, is under development recently at Wuhan National High Magnetic Field Center (WHMFC). The pulsed magnet is composed of three coils, and driven by four power supplies of three types. The outer coil is driven by the battery bank of 1620 lead-acid batteries connected in series with the 100 MVA / 100 MJ pulsed generator, The middle and inner coils are respectively energized by 1.6MJ and 18MJ capacitor banks. In order to control synchronous discharging of different types of power supply, an Integration Control and Data Acquisition System (ICDAS) has been developed. The ICDAS is developed based on the NI CompactRIO system, which adopts three-layer structure. The programmable FPGA is used as the lowest level with the characteristics of fast response. The control logic and strategy implemented on FPGA provides timing triggering signals, failure protection and data acquisition. The real-time layer serves to perform data collection, storage and conversion. Human machine interface (HMI), which accepts parameter inputting and displays the experimental results, is achieved on PC layer. A real-time communication system is established based on TCP/IP protocol between the HMI and the existing control subsystems of the power supplies, by which the HMI sends control command to the control subsystems and monitors the status of the subsystems to achieving the coordinated control sequences of the four power supplies. The ICDAS has been put into practice in the 100T facility, and implemented synchronic control and data acquisition of three-type power supplies. A magnetic field of 70 T has been achieved and the discharge experiment of 100 T is planned to be carried out this year according to the work plan of WHMFC.

Submitters Country

China

Primary authors: SHI, Jiangtao (Huazhong University of Science and Technology); HAN, Xiaotao (Wuhan National High Magnetic Field Center, Huazhong University of Science and Technology); XIE, Jianfeng; Ms YIXUAN, Wang (Huazhong University of Science and Technology); Prof. LI, Liang (Huazhong University of Science and Technology)

Presenter: SHI, Jiangtao (Huazhong University of Science and Technology)

Session Classification: Mon-Af-Po1.12

Track Classification: H2 - Power Supplies and Flux Pumps