

5 - 18 Brief Report of the Work Progress Achieved by Slow Control Group in 2014

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In the past year, through the good effort and effective cooperation of all members in the Slow Control Group, related accelerator control, monitoring and alarm systems are all running well. The major achievements of our works in 2014 are listed as follows:

1)Online test of the new KICK controller. The new KICK controller is tested in Sept. 2014, and it fully achieved the designed function. In this test, the beam bunches were smoothly kicked out of CSRm and kicked into CSRc. During the experiment up to 12 d, no “missed kick” or “inefficient kick” phenomenon was observed, thus, the beam transmission efficiency is improved. Besides, the pre-trigger signal provided for beam diagnostic is also working well. Time resolution of the whole system is upgraded to 2.5 ns compared with the former one. In 2015, this new KICK controller is going to replace the old system which is running since 2007.

2)Build of the SFC electrostatic deflector position detection and monitoring system. This system was built during the HIRFL summer maintains in 2014. With this system, the beam tuning stuff can get a direct and intuitive graphical interface of the SFC-ES position. So it largely reduces the failure time caused by the improper position of the electrostatic deflector. Motion control function and HV control part will be integrated in this system next year.

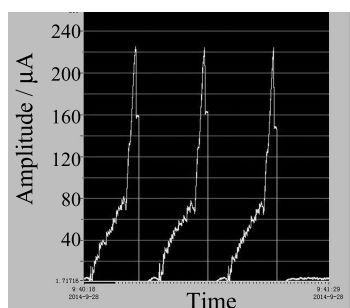


Fig. 1 Snapshot of the fast beam extraction (kicker).

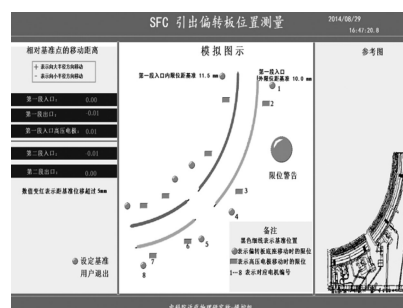


Fig. 2 Interface of the SFC-ES monitor.

3)Motion control upgrade for the SECRAL ion source^[1]. The old step motor system was upgraded to servo motor system for higher control precision. Meanwhile, some control strategy and user interface were optimized according to the demand of the ion source operating people.

4)Design and installation of the control system for HIMM cyclotron and ion source. Under the hard working of all Slow Control Group members, this control system was finished in time. The system is based on DCS, SCADA and DB technology. Supported by this control system, 10 μA beam was successfully extracted from the cyclotron in Aug. 2014.

5)Build of the CSR power line temperature monitor and alarm system^[2]. About 2 500 meter power line temperature sensor was installed in CSR. The installation of this system will increase the operation safety for the HIRFL-CSR.



Fig. 3 Servo system for SECRAL.

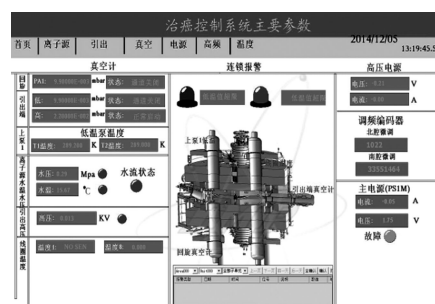


Fig. 4 Interface of the HIMM cyclotron control.

In the coming 2015, all members in Slow Control Group will keep on working hard to guarantee a good maintenance of the HIRFL-CSR operation.

References

- [1] Wenxiong Zhou, Yanyu Wang, Detai Zhou, et al., Nuclear Instruments and Methods in Physics Research A, 728(2013)112.
- [2] Yunjie Li, Yanyu Wang, Detai Zhou, et al., Annual Report, 29(2012)72.