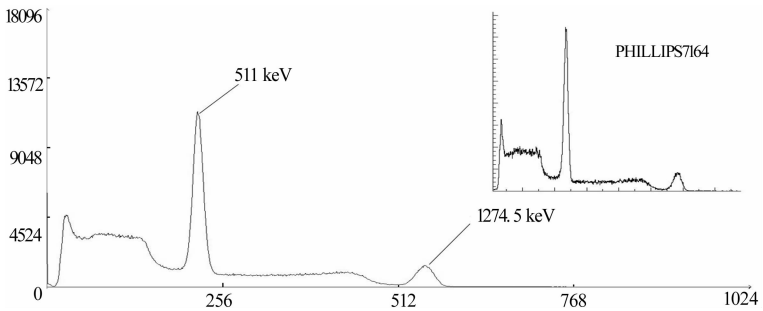

Fig. 2 The appearance design.

References

[1] Nan Gangyang, Wang Yanyu, et al., High Power Laser and Particle Beams, 23(2011)471.
[2] Nan Gangyang, Wang Yanyu, et al., Nuclear Electronics & Detection Technology, 31(2011)1250.
[3] J. Corbet, et al., Linux Device Drivers (2006), China Electric Power Press.

5 - 8 Electro-static Septum Control System for CSRm Beam Injection

Lin Fuyuan, Wang Yanyu, Zhou Detai, Yin Jia, Yu Yanjuan and Zhou Wenxiong

The CSRm injection Electro-Static Septum (ES) is an important equipment to connect the CSRm and beam injection line. According to the difference of the ion mass and energy, the CSRm has two injection modes[1]: multiple multi-turn injection (MMI) and stripping injection (SI) mode. These two modes used two different ES equipment respectively in the past, so it takes lots of time to change corresponding ES equipment to achieve mode changing. Now, in order to improve the switching efficiency of the injection modes, the MMI and SI ES are combined together into single integrated ES equipment. The integrated ES consists of a high voltage electrode (HVE) and an anode frame (AF). Adjusting their position can switch the different injection modes. Step motor was mounted to adjust the position of the HVE and the AF.

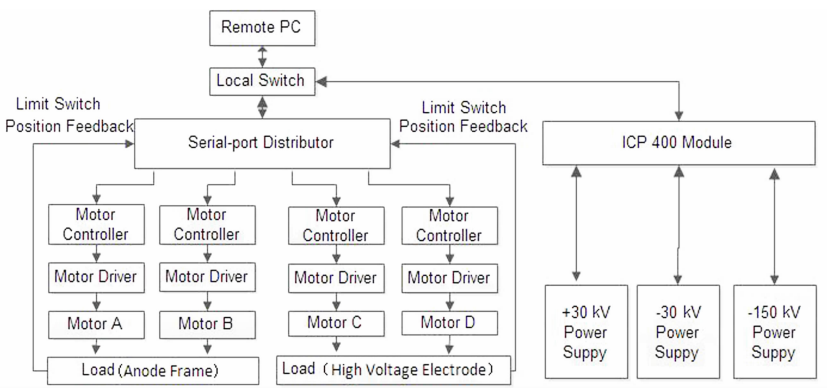

Fig. 1 System framework.

The integrated ES equipment is controlled by four motors. The HVE or AF is driven by two motors respectively in order to improve the control accuracy and stability. The system provides different control strategies: single-movement and unite-movement. Single-movement is a micro-adjustment to meet the precise move of the HVE and the AF. Unite-movement is that motor AB or CD linkage to prevent the HVE and the AF distorted or tilted. Besides, the system interlock can prevent the clash of HVE and the AF,

and the clash of HVE and cutting board, and protect the HV power supplies. System framework is shown in Fig. 1.

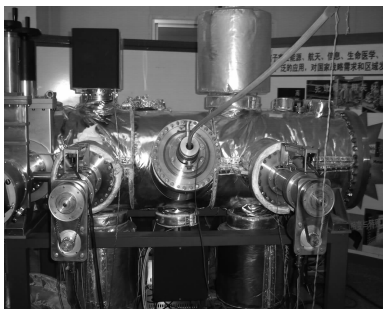

Fig. 2 Field equipment.

In Fig. 1, it can be fund that the system hardware is mainly consists of serial-port distributor, motor controller, motor driver, step motor, ICP400 module and 3 HV power supplies. Serial-port distributor coverts TCP/IP data which comes from the Ethernet to serial data. And then sends the serial data to the motor controller. ICP400 module contains ADC, DAC, relay output and status acquisition. This module can control the three power supplies perfectly. The field equipment picture is shown in Fig. 2.

The control software is designed in VC++ 6.0 environment. The software interface is shown in Fig. 3.

The control system has been installed and tested in the Lab.; the performance is stable and able to control the position of the HVE and the AF precisely. "One key" button of the software was used to switch modes which simplify the operating of the beam adjustment. It reflects the simple, intuitive and easy to operate of the user-friendly design ideas.

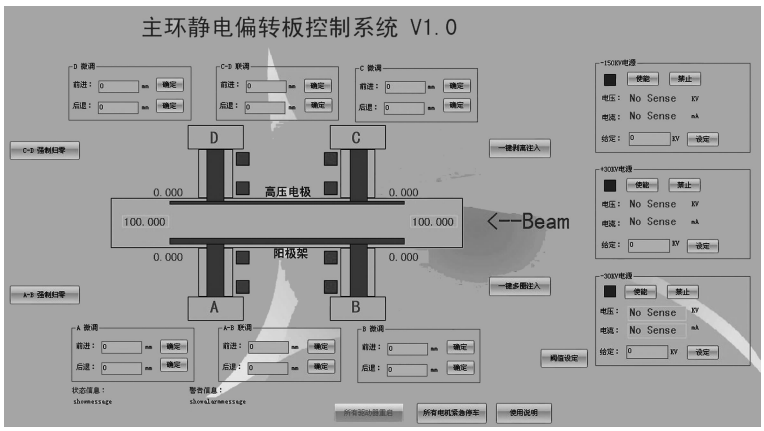

Fig. 3 Control software interface.

Reference

[1] Xia Jiawen, Zhan Wenlong, Yuan Youjin, et al., Atomic Energy Science and Technology, 43(2009).