# HIRFL-CSR CONTROL ROOM LAYOUT

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### Abstract

The design consideration of Central Control Room for Heavy Ion Research Facility Lanzhou and Cooler Storage Ring is based on HIRFL-CSR Control System Concept, Architecture[1][2] and Operator environment. The main function of the control room is to operate accelerator through Web-link and display the status of the facility.

### **1 FUNCTION AREA LAYOUT**

The whole area is 480m<sup>2</sup>. It is divided into several function area, main console, large display screen, general discussion area, expert discussion area, visiting platform, experimenter's control room and accessory equipment control room. There are also resting room and locker room for shifts.



Figure 1: Control Room Layout

Following is a view from entrance. Equipment has not been installed up to now.



Figure 2: Control Room View

Because of the Web-link architecture, nowadays control room has less equipment and cables, every thing can be done through Web Browser. It has more room, looks more comfortable. The operators and experimenters will not feel tired during the working time. They have more space to discuss and to get rest.

Control room also equipped with good chairs, tables, sofas and settees. The moveable white boards are for scientists to describe their opinions.

There are several doors for convenience of doing experiments and maintenances.

We are considering building a coffee shop just besides the control room. This will help experimenters spend long and dull experimental time.

#### **2 LIGHTING**

Lightning uses soft and auto-adjusted system. Many lights installed in ceiling, wall and ground to make the whole environment looks more natural and comfortable. There are two sensors to sense day and night, and it can control different lighting intense and number of the lighting lights.



Figure 3: Ceiling and Lighting

Day and Night Sensor can tell light control system when and which light to turn on.

Control room has big windows with automatic window shade. During day time, it has good brightness.

Ground light can indicate the position of the facilities and not influence Display screen.

Good lighting system make the control room looks modern, make the people work there happy and peaceful. It is very important for promoting work efficiency.

#### **3 DISPLAY**

Display equipment adopted in the first stage is LCD monitors and overhead projectors. The PDP technology will be used in the future. The control system user interface is general web browser. User can enter different webpage to control different subsystem and equipment. There are 20 positions for put PCs and LCDs in main console, and 6 for each of experimental and maintenance

consoles. From principle, the HIRFL-CSR facility can be operated through any one PC in the anywhere in the world. The system is very flexible and convenient to operate and display.

### **4 CONSOLES**

The consoles are made looks simple. Monitor can be hided under the tables. 20 positions can be used according to requirement. Same console has 6 position also installed in experimental control room and maintenance control room.

Folded LCD table is operated electrically. The console itself is also a PC install box. The PC main-board, disk driver and other peripherals can be installed inside the console directly. Power supply, network, phone, video and other communication cables went to everywhere in the room. We have tried to consider all the possibilities for latter control system installation.



Figure 4: Main Console

### **5** Door Inhibit System

The main control room is the heart of the HIRFL-CSR. For safety and convenience, we use Finger Print Recognising Door Inhibit System. This system can be connected directly with internet and has its own IP address. It is easy to manage and communicating with Central Database of HIRFL-CSR Control System.

As part of the Security control system, it can help record related information for later use.



Figure 5: Finger Print Recognising Door Inhibit System

## **6 CABLE AND VENTILATION**

We have laid cable channel (power supply, twisted, coaxis, video, phone line, etc.) under ground. The outlets are distributed according to the function areas.

The ventilation system is out from top and sinks to ground. Additional heating system is also installed.

### **7 CONCLUSION**

The Main Control Room of HIRFL-CSR is a modernized control room. It is not only a place to work, but also a place to enjoy the achievement of scientific research, a place to gain the knowledge and a place to increase the confidence to the nature. In this comfortable environment, scientists will have more creative ideas. With the modernized facility in the control room, people will work efficiently.

### **8 REFERENCES**

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- [2] Qiao Weimin, Jing Lan, HIRFL-CSR Control System Progress, 3<sup>rd</sup> CSR-IAC, Sept 26-27, 2002, Lanzhou, P.R. China