

5 - 1 SSC-LINAC Control System Operator Interface Based on CSS

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EPICS (Experimental Physics and Industrial Control System) consist of a set of software components and tools that can be used by application software designers to create a control system. It uses a distributed architecture, supports a variety of hardware devices, and has been successfully applied to many large-scale experimental physical devices, such as accelerators, radio telescopes. It is necessary to add an SSC-LINAC in order to upgrade the Lanzhou Heavy Ion Research Facility platform. Considering the advantage of EPICS structure, we plan to use this architecture to build SSC-LINAC control system. The overall structure of SSC-LINAC control system is shown in Fig. 1.

Built as Java/Eclipse Rich Client Platform (RCP) products, CSS is a collection of tools including Engine, Data Browser, Alarm Handler and other control system diagnostic tools and operator interfaces. Based on CSS, we are developing SSC-LINAC applications which can control power supply, vacuum, RF, etc. and monitor the status of accelerator equipment.

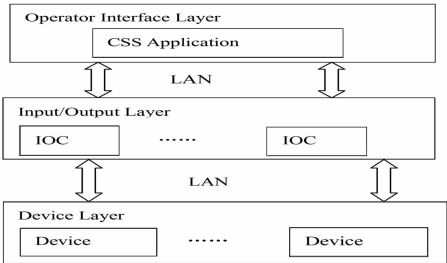


Fig. 1 Overall structure.

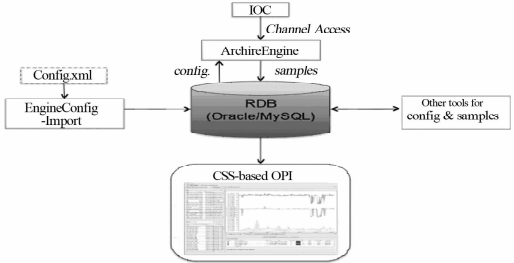


Fig. 2 RDB archive system architecture.

CSS application consists of main control interface and subsystem interface. The main control interface displays the running state of all subsystem and if any subsystem goes wrong, there will be alarm information which is provided by Alarm Server. Subsystem interface provide actual control to adjust beam including the adjusting of power supply parameters, vacuum parameters, RF parameters and so on. Besides, we can access historic data from the database as well as live data using the CSS Data Browser.

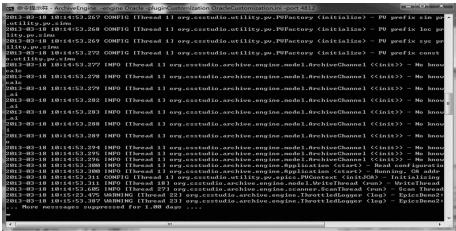


Fig. 3 Archive engine running.

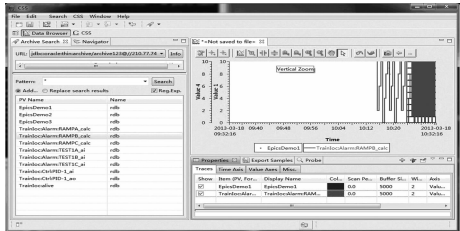


Fig. 4 Archive data browser.

We have set up the eclipse development environment, including Java Development Kit Archive Engine and Archive Config Tool headless applications. As shown in Fig. 1, “RDB Archive System Architecture”. The Archive Engine is the central sampling tool that reads values from PVs and writes them to the Oracle database. The Archive Config Tool can export existing archive engine configurations from the RDB into an XML file format, or import such XML files into the RDB. The XML file format is compatible with the one used by the Channel Archiver, allowing the import of existing archive engine configurations. In EPICS, it is convenient to access PV values via channel access, but historical data can only be stored and queried by archive system. This is the reason why we build archive system first. Fig. 3 is the snapshot when archive engine running. Fig. 4 is an “Archive Data Browser” example.

In Fig. 4, there are two PVs EpicsDemo1 and TrainLocAlarm;RAMPB_calc displayed in data browser. We can clearly see the changes in this platform. Now the Archive Engine is in testing phase, later we will complete the compiling and building of Alarm Server and Alarm Config Tool.