Upgraded of Monitor and Operation System for the MLF-GCS based on EPICS and CSS

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This paper reports on upgrading of the monitor and operation (MO) system for a general control system (GCS) of the Materials and Life science experimental Facility (MLF) at J-PARC. The MLF-GCS consists of programmable logic controllers (PLCs), operator interfaces (OPIs) for integral control and interlock systems, shared servers, and so on. It is controlling various components of the pulsed spallation neutron source such as a mercury target and hydrogen moderators. The MO system is used for monitoring, alarm notification and remote control from the MLF control room. The GCS has been working well as expected, but current MO system which consists of the OPIs and data servers based on iFix has some problems in view of sustainable maintenance because of its poor flexibility of supported OS and software version compatibility.

To overcome the problems, we upgraded the MO system to be operated using the framework of EPICS [1], the OPI of Control System Studio (CSS) [2] and the server software of Postgre SQL. This improves versatility of the MO system, enabling to run on various platforms such as Windows, Linux and Mac OS. At first, we made a prototype MO system, which processed 100 points of data and 5 operation screens and verified that the MO system functions correctly. [3] Then we made full spec MO system which processes the data point of 7000 and operation screens of 130. It was operated in parallel with the current system to evaluate its performance with real data such as data transmission speed from PLCs, control functions from OPI, storage capability of servers and long-term reliability. As results, the new MO system achieved the communication speed of 2 Hz and its operability compatible to the current system. Now, we are operating and debugging it in comparison with the current system during the operating period as a preparation for the system replacement at the end of 2014.

References

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[2] http://controlsystemstudio.org/
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