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Design and construction status report from the LCLS-II High Energy project control system

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The Linac Coherent Light Source (LCLS) facility at the SLAC National Accelerator Laboratory recently completed the installation of an X-Ray free electron laser driven by a new superconducting (SC) accelerator producing electrons with energy of 4 GeV. Now in commissioning, the control system behind the new LCLS-II accelerator is a combination of commercially available off the shelf parts, like PLCs, and custom chassis that are tuned to the 1 MHz accelerator duty cycle. The software stack is built upon the EPICS toolkit. With the addition of the LCLS-II SC accelerator, the control system has expanded to a total of 10 million PVs. SLAC has recently begun construction of the first upgrade to the SC LCLS-II, the LCLS-II-HE project, which will see the electron energy increase from 4 GeV to 8 GeV and the maximum beam power increases from 120 kW to 240 kW. The EPICS control system must also scale as new network, archiving, and 1 MHz beam rate devices are added. The status and plans of the LCLS facility accelerator controls upgrades required for LCLS-II-HE will be discussed.

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