

RFA-17-14602, Generic Pressurized Water Reactor

GSE Systems has created the generic pressurized water reactor (GPWR), a plant simulator with virtual displays that mimics the look and functionality of the control boards of a Westinghouse three-loop pressurized water reactor in current operation. The GPWR uses the same underlying modeling and simulation platform that is used for the full-scope training simulators at a commercial nuclear power plant and thus behaves identically to a certified plant model. The control boards represent largely analog technology with some digital displays. The GPWR can be run in many configurations, but it is optimized to run on three vertically stacked touchscreen displays, which together form a glasstop with the virtual control boards. Analog gauges and indicators are displayed using near photo realistic mimics, while operators can touch and manipulate controls using gestures to mimic the physical controls on an actual control board.

INL has been involved in development work using GPWR and related simulator platforms and in developing new digital interfaces in support of control room modernization. It is desirable for INL to work more closely with GSE Systems to transfer current lessons learned on simulator and control room development and make this knowledge available for the GPWR user base. Working together will allow GSE Systems and Idaho National Laboratory to ensure that the simulator platform meets current and future needs for research on control room modernization and the design of next-generation control rooms. The technology developed collaboratively as part of this project will prove especially beneficial to translating existing simulator platforms into next-generation control rooms for advanced reactor concepts.