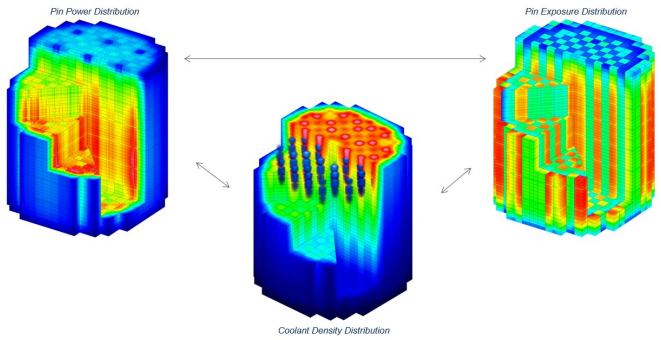
Software to simulate commercial nuclear reactors

7 January 2020, by Sara S Shoemaker



ORNL has established a quality assurance program as part of an effort to highlight software simulation product quality and make the codes more useful to industry. Credit: Benjamin Collins/Oak Ridge National Laboratory, U.S. Dept. of Energy

Nuclear scientists at Oak Ridge National Laboratory have established a Nuclear Quality Assurance-1 program for a software product designed to simulate today's commercial nuclear reactors—removing a significant barrier for industry adoption of the technology.

The suite of tools called VERA, the Virtual Environment for Reactor Applications developed by the Consortium for Advanced Simulation of Light Water Reactors, or CASL, can be used to solve various challenges in nuclear reactor operations and consists of several physics codes related to neutron transport, thermal hydraulics, fuel performance and coolant chemistry.

The goals of the continued work in improving the simulation software are to help industry by boosting the power output from existing reactors and to improve designs and confidence in current and future reactors.

ORNL's Shane Stimpson co-leads MPACT, the component of VERA responsible for modeling power distribution throughout the reactor core.

"When developing these codes, we're listening to industry's needs to provide reactor simulations with broader appeal and value," he said.

Provided by Oak Ridge National Laboratory

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