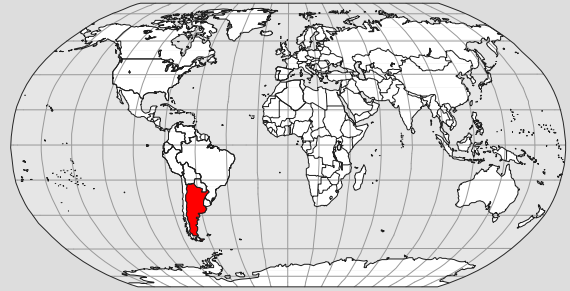
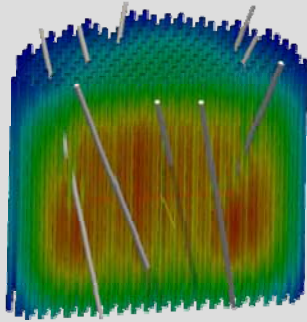


COUPLED CALCULATION SUITE FOR OPERATIONAL TRANSIENT ANALYSIS – ATUCHA II NUCLEAR POWER PLANT Lima, Buenos Aires, Argentina – Nucleoeléctrica Argentina SA



Main Facts

- Atucha II is a Pressurized Heavy Water Reactor, currently under construction.
- It will provide a net power of 700 MWe when connected to the grid.
- It has some particular design features that require highly detailed modelling of the plant, especially the reactor core.

Scope

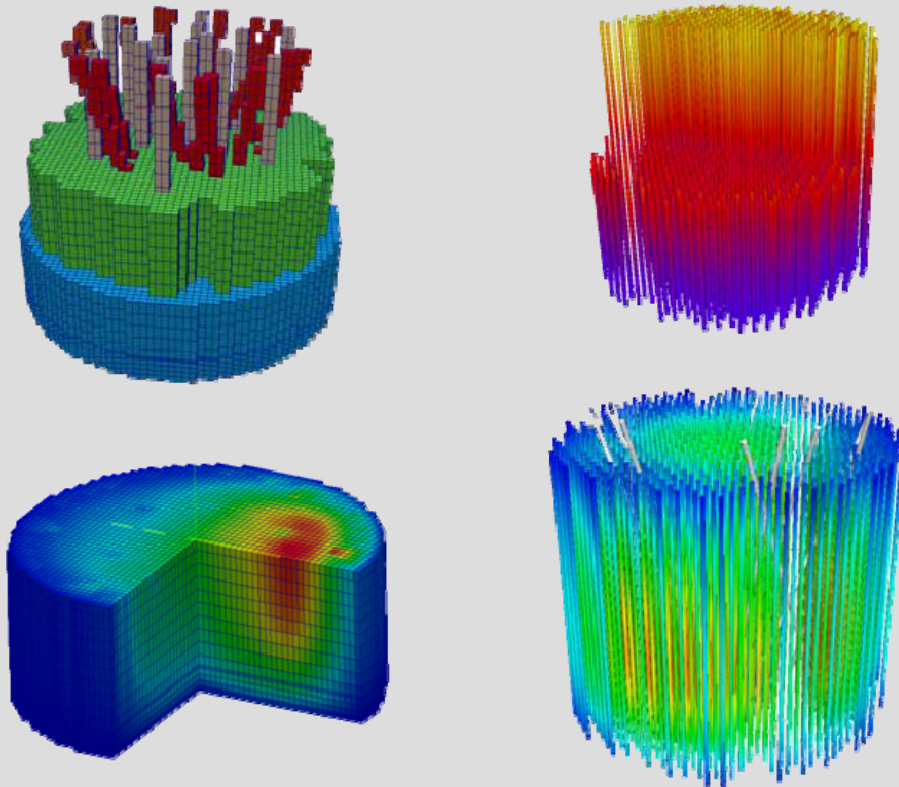
- Development of a coupled calculation suite for Atucha II operational transients.
- The developed tool includes:
 - 3D spatial neutron kinetics
 - Quasi 3D thermal-hydraulics with sub-cooled boiling
 - 1D model of primary and secondary circuits
 - Lumped models for special components (pressurizer, pumps, turbine, etc.)
 - Complete simulation of the reactor control logic, limitations and protections.
- Development of visualization and post processing tools.



Courtesy of Nucleoeléctrica Argentina SA

Highlights

- Verification of the original design of the reactor control system.
 - Power Control.
 - Power Distribution System.
 - Power Limitations.
- Analysis of:
 - Operational Transients (turbine trip, pump trip, depressurization, etc.)
 - Power Ramps.
 - Effects of the refueling on the azimuthal power distribution control.
 - Effects of random noise in neutron detectors on the control logic.
- Optimization of the Control and Limitation logics.
- Development of methods for time-response SPND compensation.
- Experimental Doppler coefficient measurement feasibility.



COUPLED CALCULATION SUITE FOR OPERATIONAL TRANSIENT ANALYSIS – ATUCHA II NUCLEAR POWER PLANT – LIMA, BUENOS AIRES, ARGENTINA – NA-SA

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