ARGOS™
Core Monitoring System

Background

The ARGOS™ Core Monitoring System (CMS) utilizes live plant data to perform detailed physics calculations, compares these calculations to allowed technical specifications and provides summary reports to plant operators and engineers. The system also provides robust core follow and prediction capabilities.

State-of-the-Art Technology

ARGOS™ is designed as a comprehensive modular system for efficient configurability and enhancement. The graphical user interface (GUI) utilizes Qt® and data storage is implemented with PostgreSQL, HDF5 and XML.

Flexibility

The ARGOS™ CMS is part of the ARCADIA® family of advanced codes. It has therefore been designed for use with the ARTEMIS™ core simulator. The modular design, however, also supports the use of other core simulators, including PRISM.

ARGOS™ is designed to support the monitoring of a wide variety of commercial light-water reactors. It can therefore easily and efficiently accommodate different sources of primary measurement data, addressing the diversity of nuclear plant types and hence providing fleet solutions to our customers.

The GUI can be configured to customer-specific requirements and needs. The state-of-the-art framework technology provides the ability to adjust the information and data display at any moment during run time based on individual preferences and/or online requirements.

The data backbone of ARGOS™ consists of a relational database which stores all the relevant information associated with core monitoring. The database contents can be queried by the ARGOS™ GUI or by external processes, available both as open source as well as commercial products.

More than Four Decades of Field-Proven Experience

AREVA has more than 40 years of global experience in core design and core monitoring for a wide variety of reactor types. The proven accuracy and robust performance of its core simulators enables plant operators to confidently predict both short-term and long-term cycle operating projections.

For instance, moveable and fixed flux mapping can be performed during both steady state and non-steady state conditions due to the accurate time and power dependent Xenon calculations provided by AREVA's core simulators. This allows quicker power ascensions when power distribution measurements are required.

Benefits

- Increase plant capacity factors due to not having to wait for equilibrium Xenon conditions during power ascensions
- Reduce operational costs by reducing Boron processing through optimized power maneuvers
- Improve user efficiency through configurable GUI interface
- Easy retrieval of data from a single repository
- Consistent look and feel independent of core simulator or power reconstruction methodology, enabling cross-utilization of fleet personnel

Capabilities

- Satisfy core surveillance requirements
- Process both fixed and moveable flux trace data
- Perform excore-incore detector calibrations
- Calculate shutdown boron concentrations
- Perform startup estimated critical condition calculations
- Accurately predict scheduled plant maneuvers
- Reduce boron processing through optimized power maneuvers
- Provide reactivity monitoring
- Provide isotopic accounting

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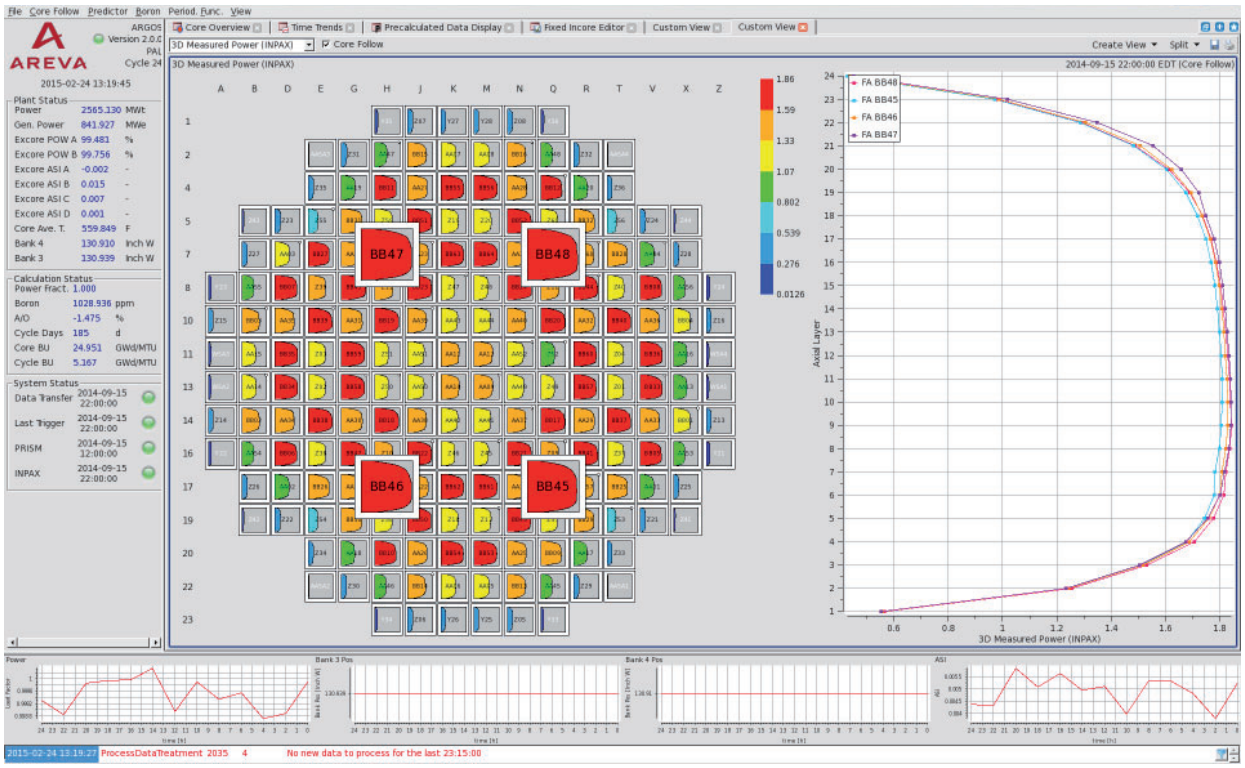
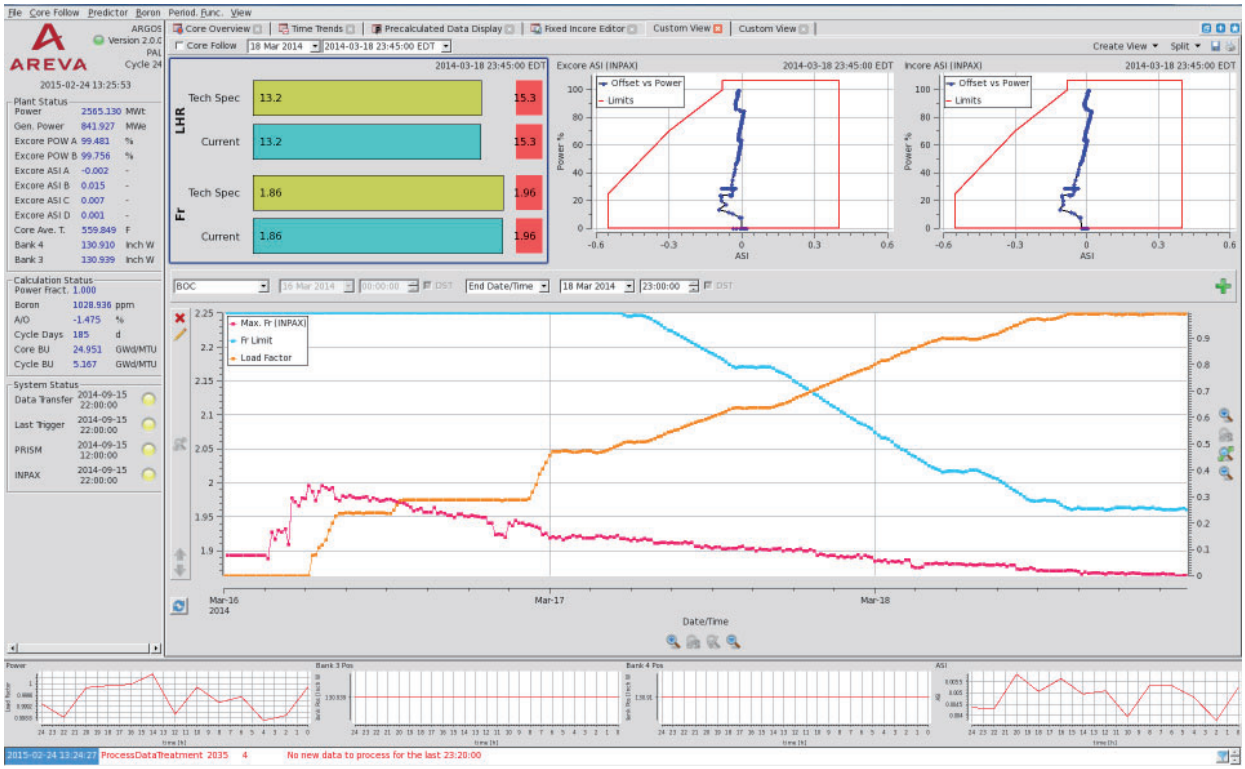
Shown below are examples of the state-of-the-art GUI, which is highly configurable and provides an efficient and powerful tool for supporting plant operation.





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