

Fuel and Loading Pattern Design

CMSBuilder is a graphical fuel management and loading pattern design suite that provides core design engineers with a sophisticated interface to simplify assembly design, fuel shuffling and loading pattern evaluation.

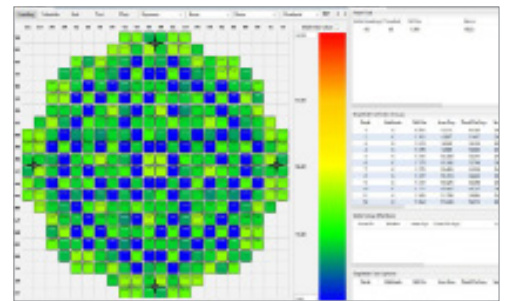
Maximize Core Design Efficiency

In today's environment of constrained engineering resources, efficient navigation from scoping calculations to a final core design and loading pattern is crucial. Whether an organization is confirming a fuel vendor's proposed design or designing the core themselves, it is essential to answer the hard questions:

- **Does the fuel and core design proposed really meet the energy generation and thermal margin requirements?**
- **Could the loading pattern be improved? How can this be done efficiently and accurately?**

CMSBuilder meets these challenges with an intuitive graphical interface seamlessly coupled to Studsvik's industry-leading core analysis neutronic system (CMS5).

CMSBuilder allows engineers to explore deeper into the core design space than would otherwise be possible due to its high degree of automation and visualization.



Improved Core Designs

Studsvik's CMS5 code system has been applied in core design studies for virtually every PWR fuel and core design in existence today. Whether the fuel is high- or low-enriched, uranium or MOX, or contains industry standard discrete or integrated burnable poisons, when coupled with the CMS5 system, CMSBuilder can be used to improve the core design process.

By allowing users to focus on using their design expertise instead of input creation and output extraction, CMSBuilder unlocks the power of the CMS5 system for engineers. Hand accounting and self-maintained spreadsheets will become a thing of the past, improving users' confidence in the accuracy and fidelity of their design patterns while increasing the pace of design iterations in today's challenging environment.

“ CMSBuilder simplifies core model development and execution with a highly flexible GUI interface. ”

Accuracy

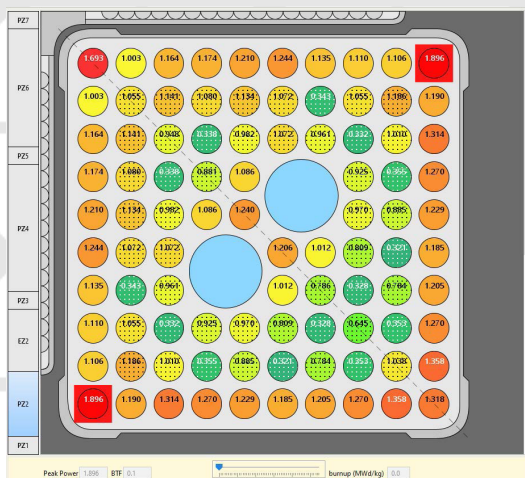
Leveraging the power of CASMO5 and SIMULATE5, Studsvik's industry-leading nuclear reactor analysis software, CMSBuilder provides robust core design evaluation utilizing the same 3D core models used in the other areas of the plant.

CMSBuilder's integration of the CMS5 suite means that the final core design can be immediately handed to other engineers for downstream analysis.

Feature Rich

CMSBuilder contains an impressive array of intelligent automation for the most widely used core design and analysis applications:

- Point-and-click core shuffling
- User-controlled depletion schedule
- User-defined coastdown options
- Easy import of real fuel history for accurate core designs
- Spent fuel pool detailing fuel available for reinsertion
- Autoloader for initial pattern generation
- Library of potential candidate patterns can be saved for later analysis
- Rapid creation of new assembly designs from existing library segments
- "Real-time" viewing of SIMULATE5 results
- Configurable input/output display maps
- Production of standardized model input
- Loose coupling to CMS5 system allowing effortless updates to new versions
- Cross platform



Applications

CMSBuilder can assist core design engineers with a variety of tasks, giving organizations the power to perform their own independent fuel design analyses:

- Design of the core loading pattern and control rod pattern for future cycles.
- Assess a fuel vendor-proposed core design to confirm that it meets requirements or to achieve a more efficient design.
- Perform fuel bid evaluations to compare fuel design proposals from multiple fuel vendors using the same point of reference.
- Explore various fuel designs with respect to batch feed size - what is the impact on cycle length, thermal margin? Can those requirements be met with fewer bundles using a better core design?
- Run hypothetical scenarios, modifying fuel or core designs to explore dramatically different loading patterns than previously used. The ability to quickly explore a wide range of core designs can lead to a better core design that still meets safety margins.

Requirements

CMSBuilder is available for all standard computing platforms running most modern operating systems. Linux and Windows are typical environments for CMSBuilder.

Unparalleled Customer Support

Studsvik's technical support is built on putting the needs of its customers first.

- 24-hour response time
- Easy ticketing system
- On-line support portal
- Access to technical documentation
- Active and growing user communities of practice

For further information please contact:

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