

**Studsvik**DECEMBER 2023  
NEWSLETTER

## ***INTRODUCTION***

As 2023 draws to a close, we have a lot to be thankful for. The GARDEL core monitoring and reactivity management team have been tirelessly working for what we asked for several years ago: more customers. The User community is growing, and the Community of Practice is meeting regularly. The 2023 User Group Meeting in Budapest had a full room of engaged participants. The MARLA spent fuel management team has also been hard at work on customer implementations. Meanwhile, we're welcoming new talent into the Methods team, and the release of S5K has seen strong adoption among the CMS5 community. Our team is strong and active succession planning is ongoing to ensure that we remain strong for this pivotal time in industry with new SMR projects, new fuels, 24-month cycles, and the potential for higher burnup and HALEU. The global nuclear energy community seems to be gaining more prominence at ministerial-level events where governments are making commitments to increase the use of nuclear energy. The COP 28 announcement by many countries intending to triple nuclear energy use is good for our profession and good for our communities and environments.

Many of us spend time with families and loved ones during December for the holiday season, On behalf of the Studsvik Scandpower team, I wish you and your families Happy Holidays and wish for some restful and restorative time as we all look toward another strong year of progress in 2024. We're looking forward to continuing to make a positive impact on your daily work, our collective profession, and the world through the enablement of nuclear energy for years to come.

Sincerely,

Art Wharton

*President and CEO of Studsvik Scandpower*



## CODE UPDATES

Studsvik Scandpower continues to release updates for its CMS5 software suite. Highlights of new features and capabilities, as well as minor software corrections available in these new versions, can be found in the Changes and Release Notes documents in the "Software Updates" section of the [Studsvik Support Site](#) (login required).

CMS5 software has been qualified under the Studsvik, Inc. NQA1 1994, 10 CFR 50 Appendix B, 10 CFR 21 Quality Assurance Program and HELIOS2 under ISO-9001.

Current code versions for other Studsvik software include:

CASMO5\_VVER v3.08.00, SIMULATE5\_VVER v2.05.00, SIMULATE5-K\_VVER v2.05.00, SIMULATE-3 v6.24.00, SIMULATE-3K v2.10.00, S5POST v1.00.00, CMSBuilder v2.00.00, CMSView5 v1.0.6, NORDIC v3.03.00

If you would like to receive an update to your software under your current software maintenance agreement, please contact your Studsvik representative.



### **CASMO5 v3.08.00 (December 2023)**

2D lattice physics transport code for PWR and BWR (VVER capability available in a separate version)

#### Key Updates:

- Support of the optional, commercially available cross-section uncertainty library.
- Improved support for control blades in PWRs for unique designs.
- Several fixes for user-reported bugs.



### **HELIOS2 v2.04.01 (September 2023)**

2D general geometry lattice physics transport code

#### Key Updates:

- Improved isotopic weighting factors for fission neutron emission
- Optional reduced burnup chains
- Multithreaded computation
- Linear source Method of Characterization (MoC) solution
- Optional 8-family delayed neutron data



**SIMULATE5 v2.05.00 (October 2023)**

3D steady state nodal simulator code for PWR and BWR

Key Updates:

- New triggers and targets driven by the ex-core detectors are added to the ITC.SRC searches, which allow for performing automatic searches based on the axial offset of both in-core and ex-core detector signals.
- Update implemented to extend the FPDAXL multiplier on the xenon distribution found from ITE.SRC FPDAXL searches to subsequent predictive core calculations.
- Various new edits and error checks are implemented.

**CMSLink5 v1.21.00 (May 2023)**

Linking code between CASMO5 and SIMULATE5/3, SIMULATE5-K/3-K

Key Updates:

- Extended xenon functionalization for improved ITC predictions.
- Supports decompression utility xz.

**SIMULATE5-K v2.05.00 (November 2023)**

3D transient analysis code for PWRs and BWRs

Key Features:

- Implementation of the BWR vessel models.
- Implementation of the BWR steam line models.
- Implementation of the plant control and protection systems.

**SNF v1.08.01 (December 2022)**

3D transient analysis code for PWRs and BWRs

Key Features:

- Implementation of the BWR vessel models.
- Implementation of the BWR steam line models.
- Implementation of the plant control and protection systems.



## **UPCOMING CONFERENCES AND EVENTS**

Studsvik Scandpower staff are planning to attend a variety of industry events throughout 2023 - feel free to contact us and chat about your favorite topics with us!

- **NEI Nuclear Fuel Supply Forum** - January 17, 2024 (Washington, D.C.)
- **Power Plant Simulation Conference** - February 11-15, 2024 (Myrtle Beach, SC)
- **CNA 2024** - February 28 - March 1, 2024 (Ottawa, Canada)
- **ANS Student Conference** - April 4-6, 2024 (University Park, PA)
- **PHYSOR 2024** - April 21-24, 2024 (San Francisco, CA)



## **DID YOU KNOW?**

**Did You Know?** That Studsvik's CMS5 has been generically licensed by the USNRC for PWR steady state core follow and core reload analysis?

**[Studsvik Scandpower CMS5 Topical Report Final SER](#)**

**SSP CMS5 TOPICAL REPORT UPDATE**

## Studsvik Scandpower's generic licensed CMS5 Topical Report (TR) for PWR steady- state cores is getting an update.

The CMS5 steady-state LWR code suite consists of CASMO5 (2D lattice code), CMSLink5 (linking code), and SIMULATE5 (3D advanced nodal code).

SSP's Topical Report TR SSP-14-P01/028-TR for Generic Application of the Studsvik Scandpower core management System to PWR's, was reviewed and approved by the USNRC on Sept. 15, 2017. Since that time, the nuclear industry is making strides in moving towards advanced fuels, higher fuel burnup (higher density fuel), and higher enriched fuels.



We're re-engaging the USNRC to update the TR to explicitly approve:

- **Increased enrichment limit to 10 wt%**
- **Increased max. burnup limit to be limited by the vendor fuel product**
- **Acknowledgement that the current CMS5 methods described in (TR SSP-14-P01/028-TR) can be applied to certain PWR SMRs that are within scope**

The SSP methodology today already supports these requests and there are no methodological limitations in CMS5 with respect to enrichment or higher burnup. SSP believes that the revised SER would greatly benefit the current PWR industry, and the nascent PWR SMR industry, without compromising safety by providing easy to use, modern calculational methods while simultaneously helping to streamline the licensing process.



## **UPCOMING WEBINAR**

Are you a **CMSBuilder** user? Do you support **BWRs**? Studsvik is planning a webinar covering a CMSBuilder demonstration and BWR applications for the Fall of 2023.

CMSBuilder simplifies core model development and execution with our highly flexible GUI interface and automation routines. Come learn about BWR applications at the upcoming webinar!

More information on the webinar will be shared in the near future.

## **NEW HIRES**

### **Studsvik Scandpower expands team!**



**Tung Nguyen** joined the Studsvik Scandpower, Inc. - MARLA team as a Senior Nuclear Engineer in September 2023. Tung is in the position of developing and maintaining the MARLA code, in addition to providing customer support as appropriate. Tung has years of expertise in nuclear reactor core design and analysis, additionally to code development for PWRs and advanced reactors. He earned a bachelor's degree in Nuclear Engineering from the University of Dalat in Vietnam and a Ph.D. in Nuclear Engineering from the Ulsan National Institute of Science and Technology in South Korea.



**Mark Donovan** joined Studsvik Scandpower in October of 2023 as Business Unit Controller. Mark is responsible for managing the financial consolidation of several business entities operating out of Sweden, Germany, China and USA. Mark is joining us with over 25 years of financial experience in the transportation and manufacturing industries. He has received a Bachelor's Degree from State University of New York at Oswego, and a Master's Degree from Binghamton University.

## ***STUDSVIK ANNUAL CUSTOMER FEEDBACK SURVEY***

Studsvik Scandpower is working to more actively engage with our customers and understand their preferences and needs as it relates to the products and services provided by Studsvik Scandpower. Please click the link below to complete a short survey.

Link to survey: [\*\*Studsvik 2023 Customer Feedback Survey\*\*](#)

We look forward to seeing your responses and working to adjust our priorities to best fulfill the brand promise of state-of-the-art nuclear fuel lifecycle software and support for the global nuclear energy fleet. Please respond by **January 15, 2024**.



## ***UGM 2024 ANNOUNCEMENT***

### **Save-the-date: 2024 Studsvik User Group Meeting**

The 2024 Studsvik Scandpower International Users Group Meeting (UGM) will be held in Miami, Florida!

We're looking forward to welcoming you July 29 – August 1, 2024 at the Hyatt Regency Miami to find out what's been going on with all of the state-of-the-art Studsvik codes and applications.

More information will be shared in 2024. Check the UGM website for the latest information.

**[Studsvik UGM 2024 Website](#)**

## ***PUBLICATIONS***



**Studsvik attended the M&C 2023 conference in August in Niagara Falls, Canada.**

The International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering (M&C 2023) is part of a series of topical meetings organized by the Mathematics and Computation Division of the American Nuclear Society. M&C conferences, held every two years, represent a series of international forums organized to bring together worldwide expertise related to nuclear science and technology including mathematical and computational methods, numerical analysis, computer codes, computer architectures, and benchmarks for computationally solving problems.

The following papers were presented by the Studsvik Scandpower team at M&C 2023.

- J. Hykes and R. Ferrer, “Radial Power Profiles in Gadolinium-Bearing Fuel Pellets in CMS5.”
- W. Dawn and T. Bahadir, “Development and Benchmarking of Transient Nodal Code SIMULATE5-K Neutron Kinetics Solver for VVERs and Hexagonal Geometries.”
- E. Georgieva and T. Bahadir, “VVER-440 ‘FULLCORE’ and VVER-440 ‘FULLCORE’ Extended Numerical Benchmark Evaluations with Studsvik’s CMS5 Codes.”
- R. Ferrer, et al., “Extension of Reactivity Decrement Uncertainty to Advanced PWR Fuels via Stochastic Sampling and Sensitivity-Based Verification.”



**Studsvik Scandpower President and CEO, W.A. “Art” Wharton III featured in the September issue of the American Nuclear Society Nuclear Newswire**

The article highlighted accident tolerant fuels focus for driving nuclear forward. “Let’s work together as an industry to meet our obligations to society and future generations by making these fuel innovations a reality. We are on the cusp of a fuel performance revolution so long as the right cooperative teams are formed to make it a reality.”

Read the full article here: [\*\*"Advancing fuel production and performance for the next generation of reactors"\*\*](#)



**"Atomic Blender" YouTube channel featured Studsvik Scandpower President and CEO, W.A. “Art” Wharton III.**

Art was featured in an episode of the "Atomic Blender" YouTube channel in November discussing the future of nuclear energy and other important topics.

Watch the episode here: ["Meet the CEO Taking Nuclear Power to the Next Level"](#)

## *HAPPY HOLIDAYS*



Happy Holidays from all of our Studsvik offices around the world. We wish you and your families a safe and happy holiday season and a Happy New Year!

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