INTRODUCTION

On behalf of the Studsvik Scandpower team, please accept my sincere wishes of warmth, rest, and relaxation with your friends and family during the holidays this year. The hard work we put in together in partnership with your teams to advance nuclear energy operations and efficiency makes a positive impact on humanity, our communities, and our families. That is something worth celebrating.

November 8th marked the 75th anniversary of the founding of the Studsvik site in Nyköping Sweden, which makes Studsvik one of the oldest nuclear energy companies in the world. Our long history in nuclear energy materials research and waste management, as extended into Studsvik Scandpower's four-decade history in advanced nuclear software simulation, is a commitment to excellence that we renew every day we interact with our customers.

We're looking forward to seeing many of you at the User Group Meeting in 2023 and have exciting new developments in the speedup of our core products as well as launches of new products and capabilities. We're committed to ensuring that you get unparalleled support from the team at Studsvik Scandpower, so let us know how we can continue to help your operations and improve your day-to-day work!

Art Wharton

Studsvik Scandpower Group President/CEO

CMS5 MAINTENANCE RELEASE

Studsvik Scandpower continues to release updates for its CMS5 software suite. Highlights of new features and capabilities, and 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.

CASMO

HELIOS

HELIOS2 v2.03.03
2D general geometry lattice physics

CASMO5 v3.06.00
2D lattice physics transport code for PWR and BWR (VVER capability available in a separate version)
• Support of the optional JENDL-5 library jendl5.202.586bin (commercially available)
• Reduced S5C case matrix for rapid BWR bundle design iteration
• % FIMA pin-by-pin exposure edits
• Miscellaneous minor bug fixes and code enhancements

CMSLINK5 v1.20.00
Linking code between C5 and S5/S3/S3K/S5K
• Default number of energy groups changed from four to two groups
• Updated to reduce the size of isothermal COLD libraries, where case includes the hot delta gap branches

SIMULATE5 v2.01.00
3D steady state nodal simulator code for PWR and BWR
• Efficiency improvements yields 25-30% faster execution relative to previous release.
• S5ECON PWR and BWR fuel cycle economics analysis optional module now available in S5. Variable cost, energy produced, font-/back-end costs, present-value & capital binding edits available.
• PWR Lithium Pickup optional module now available in S5. Bulk pH-calculation, PWR cladding oxide model, & lithium uptake models available.
• Various improvements to HERMES database edits, see S5 Changes document.
• Updates implemented to save and subsequently use the flux and power distributions to a restart file.
• Updates implemented to support PWR HWR calculations for diagonal dual CEAs and for C-E type offset core that have CEAs on the offset core locations.
transport code
• Linear source MoC option
• Fission source convergence option
• Added non-resonance XS data for Al-27, Cl-35, Cl-37, and Sc-45 to XS library

SNF v1.08.01
Spent Nuclear Fuel analyses
• POOL-file controls and maintenance
• Implemented ISO 10645:2022
• Support of multi-pin for VVERs

Current code versions for other Studsvik software include:
CASMO5_VVER v3.06.00, SIMULATE5_VVER v2.01.00, SIMULATE-3 v6.23.01, SIMULATE-3K v2.10.00, S5POST v1.00.00, CMSView5 v1.0.6, NORDIC v3.02.00

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

PAID SOFTWARE DEVELOPMENT

The creation and development of a nuclear simulation software team under NQA-1, ISO 9001, and 10CFR50 Appendix B quality programs is a specialized capability, and difficult for your organization to create on its own. Participate in the advancement of state-of-the-art production nuclear simulation software through Studsvik Scandpower's offerings for directed and paid software development as your go-to nuclear software house.

Our team has the deepest bench strength in the commercial nuclear industry for nuclear simulation expertise, and can solve the hardest problems faced by your reactor design and operations. Ensure that your specific core design and analysis needs are addressed, and your designs are the most efficient designs possible. Recapture Margin. As your team changes their fuel management strategy for new operational challenges, our team is up to the challenge to do our part to keep LWRs open and provide a success path for advanced non-LWRs. Leave a legacy of modernization. Win the support of your staff with state-of-the-art modeling capabilities.

UPCOMING CONFERENCES/EVENTS

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

March 20-23, 2023 // Budapest, Hungary
Studsvik User Group Meeting

April 30- May 4, 2023 // New Orleans, Louisiana
SimTech Conference

June 11-14, 2023 // Indianapolis, Indiana
ANS Annual Meeting

June 26-28, 2023 // New Orleans, Louisiana
7th Annual Connected Plant Conference

June 27-30, 2023 // Huntington Beach, California
USA Executive Summit

DID YOU KNOW…

Did You Know? That through its 1D axial homogenization model, SIMULATE5 allows the user to input the true axial geometry of a fuel assembly without the SIMULATE-3 limitation of just two segment types in an axial node?

BUDAPEST, HUNGARY SELECTED FOR THE 2023 USERS GROUP MEETING

Join us for the 2023 Studsvik Scandpower Annual User Group Meeting! The UGM will take place from March 20 – 23, 2023 in Budapest, Hungary. The theme for this year's UGM is the advancements of nuclear solutions for today and tomorrow. Topics will cover the current and future state of the Studsvik Scandpower suite of products and services, making today better and looking forward to the future.

High-level Agenda:

- Monday, March 20, 2023 – Welcome Cocktail Reception at Hotel
- Tuesday, March 21, 2023 – Day #1 UGM - (Optional) evening social event – boat and dinner cruise
- Wednesday, March 22, 2023 – Day #2 UGM - (Optional) evening social event – tbd
- Thursday, March 23, 2023 - (Optional) Workshops – VVER & GARDEL for VVER

Detailed presentations and topics will include:

- CASMO5 Product Update
- SIMULATE5 Product Update
- Benchmarks for High Burnup using CMS5
- HELIOS-2 Product Update
- OL3 EPR Calculations & Startup Results
- CMSbuilder product update
- VVER1000 and 440 Results
- S3R product update
- S5K product update
- S5Chem new product development
- S5K for VVER
- MARLA product update
- SNF product update
- GARDEL product update
- and more!

Link to Register: **Register here**

STUDSVIK SCANDPOWER EXPANDS TEAM

Neil Parham joined the Studsvik Scandpower Methods Development Team in the Wilmington office in September 2022. Neil joins the GARDEL development team to support BWR development and deployment. Neil comes with over 15 years of experience at GEH and GNF working on BWRs. Neil brings substantial BWR experience from licensing, safety analyses, and BWR systems code development. He holds Bachelor's and Master's degrees in Nuclear Engineering from Texas A&M University.

Yavor Dinkov joined the Studsvik Scandpower Technical Team in August 2022 as a Senior Nuclear Engineer. Yavor worked most recently as a Simulator Expert for the Olkiluoto 3 Project in Finland. Yavor also has extensive career experience in VVER Engineering and Simulation, both as a consultant and in support of the Kozluduy NPP. Yavor has received a Ph. D. in Fluid Mechanics from the Technical University of Sofia. Yavor will work in the Engineering Services Group, primarily in support of S3R, S3R-HEX, and Coupled Code Transient Analysis. S3R-HEX will be presented at the March 2023 UGM in Budapest.

Mason Krei joined Studsvik Scandpower in August 2022 as a Senior Software Engineer for Energy Integration Applications. He works under the guidance of Phil Sharpe with the Innovation and Applications group and is based in the Idaho Falls office. After graduating with a Bachelor of Science from Idaho State University, Mason worked for over a decade at Curtiss-Wright Nuclear (previously Scientech) developing nuclear power plant monitoring, control, and simulation software and data acquisition systems. His proudest accomplishment from that time was his role as a principal engineer for the first commercial nuclear digital control system at D.C. Cook Nuclear

in Michigan. His prior experience with embedded systems and state-of-charge indication will be utilized for Studsvik Scandpower's new partnership with BlackStarTech.

Dan Vargas joined as the Studsvik Scandpower Business Controller at the end of November, 2022. He reports to the President/CEO of Studsvik Scandpower and is based out of Pittsburgh, Pennsylvania. Before Joining Studsvik, Dan held various roles in project management, engineering, and finance at Westinghouse Electric Company, most recently as the Director of Finance for the Westinghouse Operating Plant Business. Dan holds a Bachelor's Degree in Industrial & Operations Engineering from the University of Michigan, a Masters Degree in Industrial Engineering from the University of Pittsburgh, and a Master of Business Administration from the University of Pittsburgh. Dan is well suited to join the team as we look toward investing in meeting customer unmet preferences and needs with enhanced capabilities and new products and services in the upcoming years.

STUDSVIK WEBINAR PRESENTATIONS AVAILABLE

Studsvik Scandpower hosted virtual webinar's demonstrating the following software codes:

- Spent Nuclear Fuel (SNF) Pool Feature - September 2022
- Core Management System 5 (CMS5) New Features and Updates - November 2022

To access the webinar videos and presentations, visit the **"Studsvik Scandpower Support Site"**.

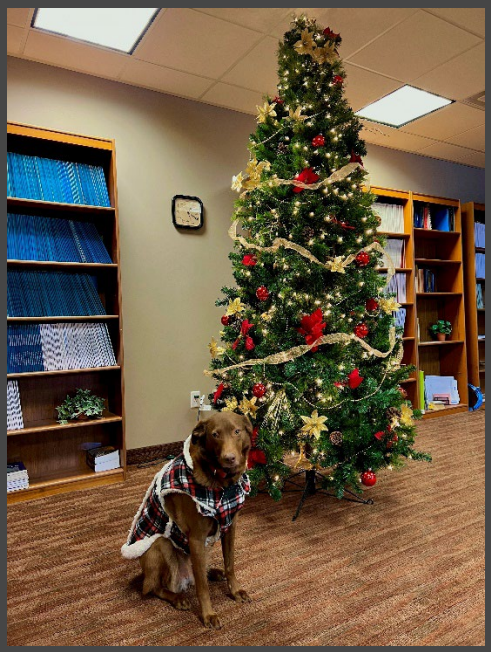
STUDSVIK ANNUAL CUSTOMER FEEDBACK SURVEY REMINDER

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: **HERE**

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 13, 2023.**

IDAHO FALLS OFFICE MASCOT



One of One of the newer additions to our Idaho Falls office is Annie! Annie is a seven year-old lab-mix who lives with William when she's not in the office. Since her start date this past June, Annie has become the office mascot. She is always ready to greet visitors to our office and has no trouble letting her coworkers know when she needs more attention. While she hasn't solved many engineering problems herself yet, her helpful distractions are often noted when it comes to brainstorming.

Welcome to the team, Annie!

If there is information that you would like us to include in Studsvik announcements or add to the Support Site, please send an e-mail to cms-info@studsvik.com. You can also opt-out of receiving the newsletter by sending an e-mail to the same address.