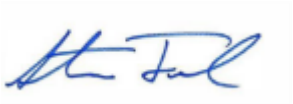
STUDSVIK RESPONDS TO COVID-19 / UGM GOES VIRTUAL

As a global company with people in Asia, Europe, Scandinavia and the Americas, Studsvik's team has witnessed the effects of Covid-19 first-hand. Employees in the USA, Germany, Japan and China worked from home as they followed guidelines to "shelter-in-place." In Sweden, sheltering in place was voluntary but Studsvik decided to follow the conservative guideline with staff working from home. Despite the stay-at-home directives, Studsvik is fully supporting its customers remotely across all regions. In the US and Europe, where travel restrictions are still in place, we're conducting remote GARDEL installations and starting a webinar series highlighting our innovative software development. (See the article below). Oliver Tsaoi, who heads Studsvik Beijing, reports that under current guidelines he can travel from Shanghai to Beijing, and stay in a hotel, provided he has tested negative within seven days prior to travel. Oliver's son has been on the front lines as a resident doctor in the intensive care unit at Cedars Sinai Hospital in Los Angeles.

Studsvik planned to hold its 2020 Users Group Meeting (UGM) in San Diego in October. The UGM is the highlight of the year for Studsvik and its customers. It provides an opportunity for customers to present case studies on their uses of Studsvik's products, network with one another, and interact with Studsvik's subject matter experts. Most companies have prohibited travel for the balance of 2020 and it is unlikely a large number of customers can attend the UGM in person. To ensure the safety of our customers and our staff, Studsvik has decided to cancel the physical UGM and make the event virtual. Our goal is to do our best to deliver as much of the value of the knowledge and interaction that would come from a UGM. The structure and content of the Virtual UGM is under development. Please hold the dates October 6-9, 2020. If you would like to make a presentation during our virtual UGM, please get in touch with Art Wharton, Vice President of Market Development, art.wharton@studsvik.com.



Steven Freel
President & CEO

WEBINAR ON CMS5 CHANGES AND ENHANCEMENTS JUNE 18, 2020

To help customers learn more about the recent changes and enhancements to CMS5, Studsvik will hold an online discussion starting at 2:00 p.m. Eastern Daylight Time, on Thursday, 18 June. Studsvik subject matter experts Joel Rhodes III, Tamer Bahadir, and Rodolfo "Mike" Ferrer will lead the discussion. Erin Wehlage, Director of Business Development, will facilitate the question and answer session. For more information, contact Erin Wehlage at erin.wehlage@studsvik.com.

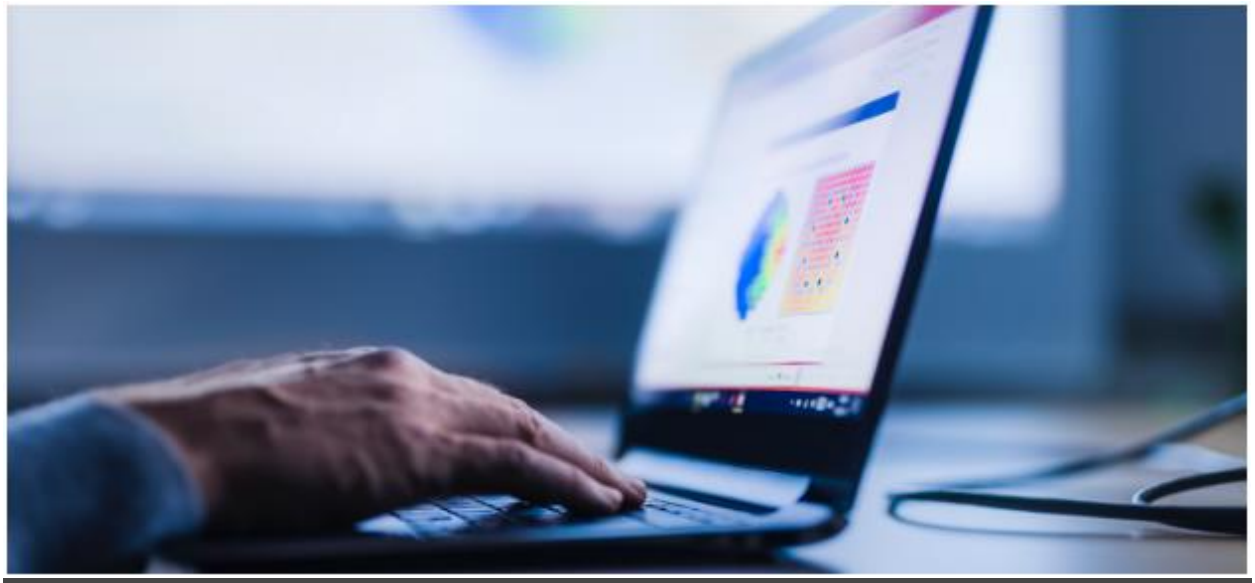
REGISTER HERE

MARLA

MARLA USER SEES REDUCED ENGINEERING TIME FOR FUEL SHUFFLE RE-DESIGN

MARLA combines (BWR & PWR) fuel shuffle design, cask loading campaign planning, and pool reconfiguration and maintenance into a single automated piece of software. Its easy point-and-click graphical interface can reduce the time to plan a refueling shuffle by more than three days. In a time of workforce availability uncertainty and strains on the global supply chain, the ability to quickly redesign a shuffle is more important than ever to maintaining schedule for items on critical path. The optimization algorithm in MARLA ensures operators make the fewest possible fuel and equipment moves to achieve the desired core and pool reconfigurations. Automated regulatory compliance checks eliminate human performance errors in any redesign.

Most users experience an 80 percent reduction in engineering time to design a fuel shuffle and see a decrease of eight hours in shuffle length. The staff at Energy Harbor's Perry Nuclear Plant, a BWR/6, used MARLA twice to re-design a BWR fuel shuffle when the USNRC was determining new requirements that affected the maintenance plan. The fuels staff at Perry was able to complete the shuffle redesigns with MARLA in just a few days, instead of a few weeks, allowing them to stay on critical path. MARLA is actively used by Energy Harbor to plan and optimize its BWR and PWR fuel shuffles, pool reconfigurations, and dry cask loading campaigns.



STUDSVIK ADDS DEPTH, EXPERTISE

Studsvik continues to add to the depth and diversity of experience on its team with the addition of four new members.

Phil Sharpe, PhD, joined Studsvik Scandpower, Inc., in 2019 as the Vice President for Innovation and Special Projects. He is responsible for identifying, leading, and managing innovative technical approaches to business challenges in the nuclear industry. Sharpe previously held roles in engineering management at Kairos Power, and at the Idaho National Laboratory, and GE Hitachi Nuclear Energy. He is active in the American Nuclear Society and the American Association for the Advancement of Science. Sharpe received his PhD and undergraduate degrees in nuclear engineering from North Carolina State University.

Adam Scharf joined Studsvik in 2019 as Systems Designer. He is an application and systems developer with an emphasis on the automation of CMS-based processes. Scharf brings nuclear power plant operating experience from his role as a Nuclear Engineer at Dominion Energy. He was the lead developer for Dominion's Warden software, which is an integrated development environment and analysis framework for the CMS-suite. Scharf also supported the successful application to the USNRC for a generic license for Studsvik's CMS5 code suite for PWRs. He received his degree in nuclear engineering from Purdue University.

Antonio Tahhan joined Studsvik as a Staff Engineer in 2019 following a year of internship with the company. Tahhan received bachelor's and master's degrees in nuclear engineering, with honors, from Idaho State University. He is part of the Engineering Services group in the Idaho office. Currently, Tahhan develops software automation on the S3R product, as well as automation of physics benchmarking and documentation. He is active in the American

Nuclear Society and authored several publications from his graduate research. In addition to his technical skills, Tahhan is fluent in Spanish.

Stephen Luther, who joined Studsvik in May 2020, also brings a wide range of experience utilizing Studsvik's codes in support of an operating nuclear power plant. As a Senior Nuclear Engineer at Studsvik, Luther will organize and conduct CMS/CMS5 training and support and will work closely with customers to solve their problems. Luther previously served as a Senior Staff Nuclear Engineer at the Cooper Nuclear Station in Nebraska. He received his degree in nuclear engineering from the University of Missouri (Rolla), now Missouri S&T.

CNPO TO USE S3R FOR SIMULATORS

China Nuclear Power Operation Technology Corporation, Ltd., (CNPO) is set to be the first nuclear operator in China to use Studsvik's S3R real time simulation software. It will implement S3R in an engineering simulator for validation of nuclear power plant instrument and control (I&C) system designs. CNPO selected S3R for the software's fidelity for real-time nuclear core simulation. This marks the entrance of S3R into the 100-plus nuclear simulator market in China.

OPEN-100 PURSUES OPEN SOURCE NUCLEAR DESIGN

Studsvik is working with the Energy Impact Center and several other contributors on the OPEN-100 nuclear power plant open-source project **www.open100.com**. Aiming to re-think the rapid deployment of nuclear energy using existing and well-known technology without prohibitive costs, OPEN-100 provides a framework to develop realistic clean energy alternatives to fossil fuels. Studsvik's CMS5 core management system, driven by the industry-leading CASMO5 and SIMULATE5 core analysis engines, undergirds the OPEN-100 core design and enables rapid examination of design variations and fuel cycle performance. Providing access to accurate results from advanced tools like CMS5 allows the OPEN-100 development community to take the fastest pathway to overcome design, licensing, and construction hurdles. Uncertainties can be managed with actual physics rather than overly conservative assumptions, translating into justifiable savings in cost and time as the OPEN-100 concept matures. Supported by voluntary effort, Studsvik's activity in OPEN-100 demonstrates the company's commitment to solving the real-world challenges facing nuclear power in new and innovative ways.

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):
https://support.studsvikscandpower.com/hc/en-us

This software has been qualified under the Studsvik, Inc., NQA1 1994, 10 CFR 50 Appendix B, 10 CFR 21 Quality Assurance Program.

CASMO5 v3.02.00
2D lattice physics transport code for PWR and BWR

CMSLINK5 v1.14.01
Linking code between C5 and S5/S3/S3K

CASMO5 v3.02.00_VVER
2D lattice physics transport code for VVER

Current code versions for other Studsvik software include: SIMULATE5 v1.19.00, SIMULATE-3 v6.21.00 and SNF v1.07.04. A new version of SIMULATE-3K (v2.09.00) will be available in June 2020.

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

STUDSVIK PRESENTATIONS AVAILABLE FROM PHYSOR 2020 AND ANS SUMMER MEETINGS

Several Studsvik experts were scheduled to present at the PHYSOR 2020 conference (International Conference on the Physics of Reactors). Like all who planned to attend, they were disappointed that the biennial conference was canceled and that they did not have the opportunity to interact with their peers. Copies of the papers they planned to present were published as part of the conference proceedings and are available under the pertinent product category on the Studsvik Support Site.

- "Generation and Initial Validation of a New CASMO5 ENDF/B-VIII.0 Nuclear Data Library" Rodolfo Ferrer, Joel Rhodes
- "BEAVRS Benchmark Evaluations with CASMO5 and SIMULATE5" Tamer Bahadir
- "Application of Studsvik's CMS5 Code System to Accident-Tolerant Fuel Core Design and Analysis" Gerardo Grandi, Rodolfo Ferrer, Tamer Bahadir

- “Advances in Studsvik’s System for Spent Fuel Analysis” Teodosi Simeonov, Charles Wemple
- “Compression of Pinwise Nuclide Concentrations” Joshua Hykes

The annual American Nuclear Society summer meeting, scheduled for June 7-11, 2020, is going virtual. Registration is available at http://ansannual.org. Studsvik will post the following papers to its Support Site after the meeting:

- “Verification of Predicted Energy Deposition Using CASMO5 Coupled Neutron-Gamma Transport Solutions for Selected VERA Benchmark Problems” Rodolfo Ferrer, Joshua Hykes and Charles Wemple
- “Stability Analysis of CMFD Acceleration and Linear Prolongation for Weighted Linear Difference Schemes” Rodolfo Ferrer