Dear Colleagues,

Starting with this e-mail newsletter, Studsvik will actively send customers news about product updates and events; not every day, but when it makes sense to provide updates to you, our customers. At focus groups during our User Group Meetings (UGM) in 2017 and 2018, customers told Studsvik they want better and more current information about the company's products and initiatives. Studsvik listened.

By using the Studsvik Support Site – **https://support.studsvikscandpower.com** – customers now have access to extensive information about all of Studsvik's products. This includes technical papers and presentations from professional conferences and meetings, and presentations from past UGMs.

If there is information that you would like us to include in the newsletter 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.

We hope you find the information helpful and look forward to enhancing our relationship with all of our valued customers.

Best regards,
Steven Freel
Chief Executive Officer

REACTOR SIMULATORS AT THREE U.S. UNIVERSITIES TO RUN ON STUDSVIK SOFTWARE

Under a recent grant from the US Department of Energy, NuScale Power is supplying training simulators of its small modular reactor (SMR) to three US universities – Oregon State University, the University of Idaho, and Texas A&M. Studsvik supplies the reactor core modeling software to NuScale. Core performance in the simulator is modeled by the Studsvik real-time training core product, S3R. The simulators are based on a NuScale plant design with 12 NuScale Power ModulesTM (NPM). The S3R implementation for NuScale differs from conventional LWRs in that multiple reactor core models are active in the same training unit. The multiple cores for the NPMs are a primary design benefit of the NuScale reactor system. Studsvik's CASMO/SIMULATE software provides the cycle-specific core data that underlies the S3R software for each core module. When completed, the simulator facilities will be used for research, education, K-12 outreach and public advocacy regarding nuclear power and SMR technology. The simulators will facilitate research into human factors engineering, human-system interface design, advanced diagnostics, cyber security and plant control room automation.

GARDEL AND CMS5-VVER WORKSHOPS ADDED TO STUDSVIK UGM, DRESDEN, GERMANY, OCT. 8-11

Studsvik has added half-day workshops to its 2019 Users Group Meeting (UGM), scheduled for Oct. 8 to 11, in Dresden Germany. Studsvik will hold the workshops the morning of Friday, Oct. 11. The annual UGM is a forum for users of Studsvik's computer codes to meet and exchange information with one another and Studsvik's experts. Users share information about their applications and experiences with Studsvik's software through informal presentations. Studsvik's code experts present the latest updates on software developments and new products and are available to answer users' questions. Registration for the UGM is available to active users of Studsvik's software without charge. For more information and to register, go to: **www.studsvik.com/ugm2019**.

ADVANCED CMS TRAINING PLANNED FOR OCT. 1-4 IN VASTERAS, SWEDEN

Studsvik will hold an Advanced CMS training course Oct. 1-4 in Vasteras Sweden. The course is open to all users of Studsvik's CMS software and is intended for users of lattice, nodal and spent fuel codes and/or users that need to "move" to the experienced (behind-the-scenes) levels. The course will be conducted in English. There is a nominal fee for the course. For additional information, contact Christian Jonsson, **christian.jonsson@studsvik.com**.

CMS5 MAINTENANCE RELEASE

Studsvik Scandpower has released an update for its CMS5 software suite that includes the following versions:

CASMO5 v3.00.00
2D lattice physics transport code for PWR and BWR

CASMO5 v3.00.00_VVER
2D lattice physics transport code for VVER

CMSLINK5 v1.13.00
Linking code between C5 and S5/S3

SIMULATE v1.17.00
3D advanced nodal core simulator for PWR and BWR

SIMULATE v1.17.00_VVER
3D advanced nodal core simulator for VVER

Highlights of new features and capabilities, and minor software corrections available in these new versions can found in the Changes and Release Notes documents on the Studsvik ZenDesk Help Center: **https://support. studsvikscandpower.com/hc/en-us/articles/115015110327-Latest-CMS-Code-Versions**

This software has been qualified under the Studsvik, Inc. NQA-1 1994, 10 CFR 50 Appendix B, 10 CFR 21 Quality Assurance Program. Current code versions for other Studsvik software include CASMO-4 v2.05.17, SIMULATE-3 v6.20.00, SIMULATE-3K v2.08.00, SNF v1.07.02, and HELIOS-2 v2.02.00.

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

NEW CASMO5 ENDF/B-VIII.0 LIBRARY NOW AVAILABLE

A new, state-of-the-art, 586 group, CASMO5 neutron data library based on the recently released ENDF/B-VIII.0 nuclear data evaluation supplemented with TENDL-2017 is now available from Studsvik.

The ENDF/B-VIII.0 nuclear data evaluation was released by the Cross Section Evaluation Working Group (CSEWG) on February 2, 2018 and represents the state-of-the-art in nuclear data with the following highlights:

- New CIELO (Collaborative International Evaluated Library Organization) evaluations for 1H, 16O, 56Fe, 235U, 238U and 239Pu, including prompt fission spectra.

- New evaluated data for light nuclides such as 3He, 6Li, 10B, 12C and 13C.

- New evaluated data for structural materials such as 54,56-58Fe, 58-62,64Ni, 59Co, 63,65Cu, 174-182Hf, / and 182-186W.

- Updated evaluated data for minor actinides such as 236mNp, 240Pu, and 241,243Am.

- Revised or reevaluated thermal scattering law for UO2, light water, and graphite.

- New data for fission energy release and radioactive decay data.

All major nuclides present in current-generation LWR fuel, coolant, absorber and structural materials possess new evaluations in the ENDF/B-VIII.0 release. Consequently, this new evaluation may impact the prediction of core parameters such as criticality, temperature coefficients, cycle length, reflector savings, activation and spent fuel characterization. Although the delayed neutron data remains relatively unchanged from the previous release, reactor kinetics predictions may also be indirectly impacted by the new evaluation, primarily due to changes in the fuel temperature (Doppler) coefficient.

The new CASMO5 neutron data library has cross section data for 1095 nuclides/identifiers, which enables CASMO5 to have full-resolution depletion chains for 119 heavy nuclides, 491 fission product nuclides, and 269 burnable absorber nuclides.

Studsvik will present its benchmarking activities with the new ENDF/B-VIII.0 library at the upcoming Users Group Meeting in Dresden, Germany, Oct. 8-11, 2019, and at the upcoming Physor-2020 at the University of Cambridge in the UK.

As the release of a new nuclear data evaluation affords the opportunity to use the best-available data to possibly reduce biases and improve predictions in LWR analysis, this library demonstrates Studsvik's commitment to making available the latest nuclear data to its customers.

STUDSVIK EXPERTS TO PRESENT AT UPCOMING TECHNICAL CONFERENCES

M&C 2019

International Conference on Mathematics and Computational Methods applied to Nuclear Science and Engineering

Aug. 25-29, 2019 | Portland, OR | https://www.mc2019.org/

"Development of a Spatially-Dependent Resonance Self-Shielding Method in CASMO5"

Authors: Rodolfo Ferrer, Joshua Hykes

ICNC 2019

11th International Conference on Criticality Safety

Sept. 15-20, 2019 | Paris, France | https://www.icnc2019.com/

"SIMULATE5 Analysis of a Spent Fuel Pool"

Authors: Joshua Hykes, Tamer Bahadir, David Dean, Rodolfo Ferrer, Dave Knott, Joel Rhodes

GLOBAL / TOP FUEL 2019

International Nuclear Fuel Cycle Conference/Light Water Reactor Fuel Performance Conference

Sept. 22-26, 2019 | Seattle, WA | http://globaltopfuel.ans.org/

"Modeling of Base Irradiation histories of LOCA tests using CMS5 and ENIGMA"

Authors: Gerardo Grandi, Joakim Karlsson

29th AER Symposium on VVER Reactor Physics and Reactor Safety 2019

Oct. 14-18, 2019 | Energoland Mochovce, Nuclear Power Plant Mochovce, Slovakia

http://www.aer-web.com/2019/invitation

"Benchmark Testing of the Helios-2 Code System" – Charles Wemple

"A Model for Impurity and Activation Isotopes in Studsvik's System for SNF Analyses" – Teodosi Simeonov

"Validation of New CASMO5 ENDF/B-VIII.0 Nuclear Data Library with Hexagonal-Lattice Critical Experiments" – Rodolfo Ferrer, Tamer Bahadir

RPHA19

Reactor Physics Asia

Dec. 2-3, 2019 | Osaka, Japan | https://www.rpha19.org/

"BEAVRS Benchmark Evaluations with Studsvik CMS5 Code Package"

Authors: Tamer Bahadir, Masatoshi Yamasaki

Physor 2020 Transition to a Scalable Nuclear Future

Mar. 29-Apr. 2, 2020 | University of Cambridge U.K.

https://www.physor2020.com/

"Generation and Initial Validation of a New CASMO5 ENDF/B-VIII.0 Nuclear Data Library"

"BEAVRS Benchmark Evaluations with CASMO5 and SIMULATE5"

"Advances in Studsvik's System for Spent Fuel Analysis"