Ansys Enables NuScale Power to Develop Advanced Nuclear Technology

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Ansys solutions instrumental during the development of the first small modular reactor approved by the U.S. Nuclear Regulatory Commission

/ Key Highlights

- NuScale used Ansys to design and validate the engineering and safety of its small modular reactor (SMR) under regulatory requirements
- Ansys simulation demonstrates the soundness of the NuScale Power Module™ (NPM) design and helps enable NuScale to validate the extent to which its reactors can safely shut down and self-cool indefinitely without an external source — a first for light water reactor technology

PITTSBURGH, Nov. 27, 2023 /PRNewswire/ -- Nuclear technology pioneer NuScale Power (NYSE: SMR) integrates Ansys (NASDAQ: ANSS) simulation solutions to help NuScale design the NPM, the first SMR approved by the U.S. Nuclear Regulatory Commission (NRC). Designed with critical insight from Ansys' multiphysics simulation solutions, the NuScale SMR can safely supply carbon-free energy for electrical generation, district heating, water desalinization, commercial-scale hydrogen production, and other process heat applications.

Using Ansys solutions for thermal and structural analyses, NuScale designed a fully passive safety system in which reactors will shut down and self-cool, without any operator or computer action, AC or DC power, or the addition of water — a groundbreaking development. NuScale engineers rely on Ansys solutions to determine velocities and temperatures for conjugate heat transfer and assess thermal stress and dynamic vibration. Informed by past challenges in the nuclear industry, NuScale engineered its design to mitigate or eliminate safety issues.

The NRC's approval of NuScale's design allows utilities to leverage the already approved product when applying for a combined license to build and operate a nuclear power plant. NuScale expects to deploy its SMR technology in the U.S. and Europe by the end of the decade, advancing nuclear energy solutions globally and across industries. The SMR will also benefit other sustainable energy solutions. For example, NuScale's technology can provide the process heat energy at the conditions needed to cost-effectively chemically separate hydrogen from oxygen at scale to create green hydrogen — the cleanest form of hydrogen energy.

"NuScale is revolutionizing the energy industry by creating a power source that is smarter, cleaner, safer, and cost competitive," said Carl Fisher, chief operating officer at NuScale Power. "SMRs must meet NRC requirements for structural integrity and safety, which demand complex, accurate, and reliable calculations with the highest level of quality assurance. The nuclear industry recognizes Ansys as the gold standard for performing simulations, analyses, and component qualifications, which supports a more efficient review of our design by the regulator."

"This is a milestone achievement for NuScale, the nuclear energy sector, and global energy market as a whole," said Walt Hearn, senior vice president of worldwide sales and customer excellence at Ansys. "By implementing Ansys' extensive multiphysics simulation and virtual prototyping, NuScale has made history in developing the first-ever, NRC-approved SMR. Ansys is committed to advancing sustainable energy solutions and this is a remarkable example of how we can leverage the predictive insights of simulation to create a cleaner future."

/ About Ansys

Our Mission: Powering Innovation that Drives Human Advancement™

When visionary companies need to know how their world-changing ideas will perform, they close the gap between design and reality with Ansys simulation. For more than 50 years, Ansys software has enabled innovators across industries to push boundaries by using the predictive power of simulation. From sustainable transportation to advanced semiconductors, from satellite systems to life-saving medical devices, the next great leaps in human advancement will be powered by Ansys.

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