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Novatron taps Studsvik's nuclear expertise to guide fusion reactor design

Studsvik has been commissioned by Novatron Fusion Group to calculate how, and to what extent, neutrons activate the materials in Novatron's reactor designs. The process, developed by Studsvik, allows different materials and combinations of materials to be analysed as the design develops. It is the first major assignment under the companies' partnership, which aims to accelerate deployment of the technology.

The neutrons released in a fusion reactor activate the materials surrounding the plasma. How quickly that activity decays determines which materials and design choices will keep operation, maintenance and future decommissioning manageable. Understanding these factors at concept stage allows the design to be adjusted before engineering decisions are locked in.

Studsvik will model neutron transport and material activation in selected reactor configurations, estimate cooling times after shutdown and recommend how much neutron exposure each candidate material can tolerate. The results will inform Novatron's material selection, maintenance planning and design.

The assignment comes as fusion moves from experiments towards pilot plants. Private fusion companies raised a record USD 4.48 billion in the past year, according to the Fusion Industry Association, and 28 of them expect a pilot plant in operation between 2030 and 2035. As designs approach construction and licensing, maintainability and radiation protection are becoming questions for investors and regulators, not only for physicists.

The strategic partnership between Studsvik and Novatron covers material testing, modelling and simulation, decommissioning and waste handling, and support for siting and licensing of an industrial-scale pilot reactor. Further phases could include more detailed calculations and, in time, testing.

The study's technical lead is Dr Marc Breisch of Studsvik in Germany, who was recently elected project lead for shielding materials in the fusion standardisation committees of the German Institute for Standardization (DIN). Studsvik has also tested materials for European and UK fusion programmes, including ITER-related work.

Peter Teske, Interim CEO and CFO of Studsvik, said: "Fusion is an area where we see significant opportunities ahead as the technology takes important steps toward commercial application. We are pleased to collaborate with Novatron and contribute the expertise we have built over decades in nuclear technology and fission, much of which is also applicable to fusion. That expertise will be essential in transforming promising fusion concepts into robust and commercially viable solutions."

Peter Roos, CEO of Novatron Fusion Group, said: “With fusion moving from research to commercial reality at remarkable speed, Studsvik’s deep nuclear expertise contributes to accelerating the development of our technology. By applying their tools and methods, we gain insights that guide our reactor design.”

The cooperation extends beyond the study. Studsvik was a strategic partner of the Nordic Fusion Forum, hosted by Novatron and St1 in Copenhagen on 19 October, where David Oxberry, Managing Director of Fuel, Materials & Waste Technology at Studsvik, took part in a panel on the Nordics and Europe in the global fusion race.

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About Studsvik

Studsvik is an independent nuclear technology company active across the full nuclear lifecycle, from new build development to existing fleet services, operations support and decommissioning. It is a leading supplier of vendor-independent reactor analysis software, and its hot cell laboratories in Nyköping test fuel and materials for fission and fusion applications worldwide. Studsvik also provides radiation protection services and technology for treating radioactive waste, and handles and packages radioisotopes for healthcare and industry. ReFirm is Studsvik’s platform for new nuclear development in Sweden. Founded in 1947 as the centre of Sweden’s national nuclear programme, Studsvik today serves operators, fuel vendors, technology developers and regulators in more than 20 countries, has approximately 500 employees in six countries, and is listed on Nasdaq Stockholm (SVIK).

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