

Freemelt delivers the industrial machine, eMELT to UKAEA

Freemelt has received an order from UKAEA (United Kingdom Atomic Energy Authority) for the delivery of an eMELT machine, further strengthening the company's position in the energy sector. The order value is approximately SEK 8 million.

Freemelt has been collaborating with UKAEA since April 2023 and is currently delivering large-scale production tests of 3D printed tungsten tiles for fusion machines, as part of an ongoing proof-of-concept. UKAEA is now advancing to in-house development and production of fusion components through an investment in Freemelt's industrial machine eMELT, which supports both feasibility studies and proof-of-concept. Fusion has great potential as an energy source, and in the coming years, prototype fusion machines and power plants will require significant volumes of advanced components.

"UKAEA's investment in eMELT is an important confirmation that our E-PBF (Electron Beam Powder Bed Fusion) technology meets the demanding requirements in fusion, further strengthening our position in the energy sector," says Daniel Gidlund, CEO of Freemelt.

Fusion has the potential to revolutionize the energy sector. Unlike today's nuclear power, which relies on fission (nuclear splitting), fusion does not produce long-lived radioactive waste. However, for the process to succeed, extremely high temperatures and advanced materials that can withstand the harsh conditions of the fusion environment are essential.

Recent advancements in fusion, both internationally and through Swedish companies like Novatron, have increased interest in the technology. Total investment in the energy sector is expected to rise from USD 300 billion in 2023 to USD 500 billion by 2030, corresponding to an annual growth rate of 7.4%. In the fusion sector, investments reached USD 7.1 billion in 2024, driven by large-scale research projects and increased private investments from companies such as Commonwealth Fusion Systems. Additionally, substantial public funding has supported major research initiatives such as STEP, the UK's prototype fusion power plants, as well as ITER and DEMO (Demonstration Fusion Power Reactor), strengthening fusion as a key strategic energy technology.

Prototype fusion power plants and machines are essential for validating fusion technology before scaling to commercial electricity production, requiring millions of tungsten components. ITER, the world's largest fusion reactor, is predicted to need between 1 and 1.5 million tungsten tiles, while smaller machines under development by private fusion companies will require about 10 percent of ITER's volume.

UKAEA is a leading player in fusion energy research and development, driving several advanced research projects to commercialize fusion as a safe, sustainable, and emission-free energy source. Through collaborations with industry and academia, UKAEA is driving the development of new materials and manufacturing methods required for future fusion power plants.

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About Us

Freemelt develops advanced 3D printers for metal components and aims to become the leading supplier in additive manufacturing (AM) using E-PBF technology, targeting SEK 1 billion in revenue by 2030. The solutions primarily support companies in the defense, energy, and medical technology sectors in Europe and the USA, enabling them to drive innovation and improve production efficiency. Founded in 2017, Freemelt has expanded its product portfolio to include three printer models, with two designed for industrial production and one (Freemelt ONE) targeting research institutes and universities. The modular industrial printers (eMELT) leverage E-PBF technology, delivering significantly higher efficiency compared to other machines on the market while maintaining flexibility in metal selection.

Freemelt generates revenue primarily through the sale of advanced 3D printers at fixed prices, complemented by support and maintenance services, which are expected to account for 25% of total revenue by 2030.

The company is now focused on further industrializing its product and service portfolio and driving commercialization in the European and North American markets. Read more at www.freemelt.com

Attachments

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