MarvelFusion

— Executive Summary

Marvel Fusion pursues a new fusion technology concept to overcome the major hurdles to produce clean energy at large scale. Founded in Munich in 2019, Marvel Fusion's team is working on a new and economically attractive fusion technology which promises a fast-track route to a commercial application. Instead of heating the fuel plasma to very high temperatures, Marvel Fusion is precisely controlling the conversion of the input laser energy into fusion-relevant particles through the design of its nano-structured targets. This process allows for higher efficiency in triggering fusion reactions and greater energy yields. In a future powerplant based on Marvel Fusion's model, electricity will be produced with zero-carbon emissions causing no problematic long-lived waste. These powerplants are particularly suitable for supplying metropolitan areas and energy-intensive industries with a reliable base load. Marvel Fusion combines the agility of a private startup, the expertise of the global research community to jointly advance fusion science, and the experience of leading industry partners to help develop necessary components.

— Technology

Marvel Fusion's new fusion technology comprises in part a novel class of ultra-short, ultra-intense lasers interacting with proprietary nano-structured fuels. The technology is benefitting from converging exponential innovations in laser and material science of which some only reached technological maturity within recent years. The applied laser technology is based on the concept of Donna Strickland and Gérard Mourou, which received the Nobel Prize in Physics in 2018. Marvel Fusion's new approach aims to drastically enhance overall efficiency and therefore accelerate the path to commercial application. Physicists and scientists from the Ludwig-Maximilians-University in Munich, the University of Stanford and the Massachusetts Institute of Technology (MIT) have recently joined forces with Marvel Fusion to bring its fusion concept to fruition. Marvel Fusion has begun experimental campaigns in the US and in Japan, validating essential parts of its novel fusion concept. In its next steps, Marvel Fusion will upgrade existing laser systems (2022-2025) to validate its novel technology and to demonstrate the path to net energy gain.

— Investment

Pre-seeded by BlueYard Capital, Marvel Fusion raised EUR 35 million in its Series A, led by Earlybird with significant contributions from PRIMEPULSE, Tobi Lütke and Fiona MKean's Thistledown Capital, Taavet Hinrikus & Sten Tamviki (OÜ Notorius), Nicolas Berggruen Charitable Trust and Heinz Dürr Invest GmbH among others. Existing investors Hartmut Neven, Albert Wenger, and Chris Hitchen's Possible Ventures also participated in the round. To date, the company has raised EUR 60 million in total funds.

— Industry Support

In parallel to its ongoing experimental and theoretical campaigns, Marvel Fusion is working with Siemens Energy, Thales and TRUMPF to develop the technologies and system components required for a future commercial fusion power plant. Siemens Energy contributes its expertise in the global energy markets, in power plant design and in technology to efficiently convert fusion energy into electricity. TRUMPF and Thales are global leaders in the design, development, and production of industrial scale laser systems.

— Contact

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