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## **DeepU: Pioneering the Future of Geothermal Drilling and Deployment**

*Major technology companies like Meta (Facebook) and Google's interest in geothermal energy underscores the pivotal role of novel geothermal technologies in achieving a low-carbon future. The DeepU project is at the forefront of geothermal innovation and points to advancing laser-based deep geothermal drilling technologies.*

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Since the launch of the DeepU project (Deep U-tube closed loop heat exchanger), the novel drilling technology poised to revolutionise the geothermal sector and push the boundaries of geothermal utilisation, government policies, investments and interests from global players have changed. Recently, two technology giants, Meta and Google, have announced their investment in innovative geothermal projects. The Tech firms' decision was triggered by an urgent need for extensive and continuous electricity provision for the booming data centres, fed by the growing interest in artificial intelligence tools. These data centres forecast to double their consumption in a few years. As for them, advanced geothermal technologies have the potential to play a crucial role in the future of energy sustainability by providing low-carbon, renewable, widely distributed and continuous generation of energy.

The advanced laser drilling technology developed and demonstrated in DeepU aims to increase the accessibility of deep geothermal resources. Its approach involves drilling long U-tubes to a deep depth (>4 km) to create viable closed-loop exchangers for low-carbon natural heat extraction and its power conversion. DeepU's innovative design exploits the synergetic effects of laser and cryogenic gas to optimise the drilling process and reduce drilling costs, increasing the penetration rates and avoiding wear of the drilling head as it is a non-contact method.

The project has already achieved a significant milestone: a prototype drill head which combines a powerful laser system with a new drill string design. The performed tests successfully demonstrated the effectiveness of the method and the drilling assembly at the laboratory scale. The project team is now developing the combination of non-contact laser drilling with cryogenic gas to cool and remove the cuttings while advancing the knowledge of petrological and physical drilling effects and of deep heat exchanger performance, costs and implications.

“The renewed interest in geothermal energy from global players such as Meta and Google confirms our commitment to bringing innovation and concrete solutions to this field,” says Luc Pockelé, DeepU Project Coordinator. “We continue to focus on developing drilling technologies that make geothermal energy a more accessible, environmentally friendly and competitive energy source.”

DeepU has been funded by the European Commission under the EIC Pathfinder programme (G.A. 101046937) as part of Horizon Europe. Eng. Luc Pockelé coordinates the project from the RED srl in collaboration with partners from four countries: the University of Padua (IT), Prevent GmbH (DE), Fraunhofer IAPT (DE), GeoServ (IRL), The Wroclaw University of Science and Technology (PL), and the Consiglio Nazionale delle Ricerche IGG (IT). The project will run until February 2025.

For further information, check the official website, [www.deepu.eu](http://www.deepu.eu) and do not hesitate to get in touch with the DeepU team at [info@deepu.eu](mailto:info@deepu.eu)