

Freitag, 21. Februar 2025, 14.00 Uhr
Ortenauhalle Kongress 1
Tiefe Geothermie

Friday, 21 February 2025, 2.00 pm
Ortenauhalle Congress 1
Deep geothermal energy



Improving economics of geothermal projects through low-cost side-track drilling

Verbesserung der Wirtschaftlichkeit von Geothermieprojekten durch kostengünstige Side-Track-Bohrungen

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Derived from the earth's natural heat, geothermal energy is a reliable, sustainable and baseload energy source, which can play a critical role towards achieving a net-zero future. However, large capital costs involved in drilling into the uncertain subsurface structures (up to 50 % - 75 % of total project costs) have a strong impact in the overall project economics. A significant reduction in drilling costs is necessary for scaling-up the use of this sustainable source of energy. Within the project DEPLOI the HEAT (DEmonstrate Production enhancement with LOw cost side-track drilling for HEAT production), a novel drilling technology - Directional Steel Shot Drilling (DSSD) offers an innovative solution for the cost-effective construction of multilateral slim holes. The technology uses high pressure jets containing steel shot particles, which are injected in the mudline and retrieved again at surface.

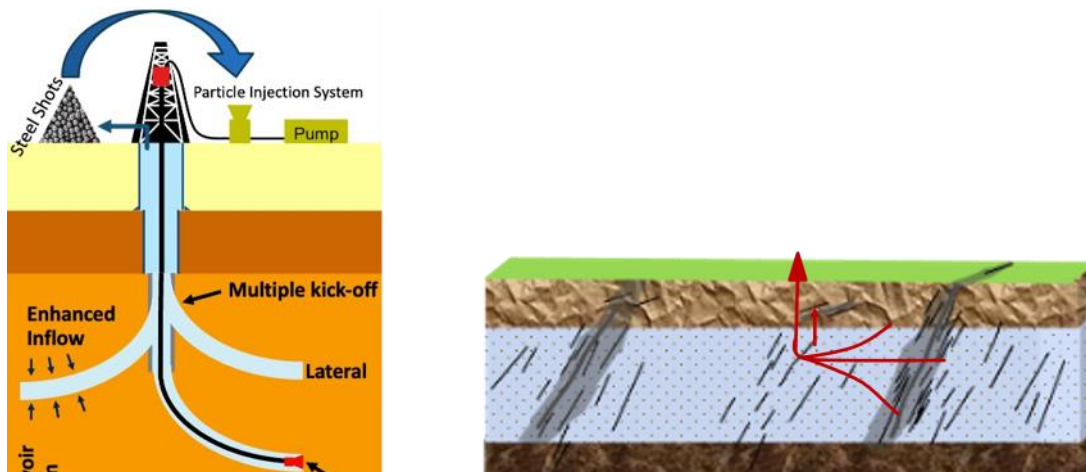


Figure 1: Schematic figure of multi-laterals using DSSD technology (left) and schematic of a fractured reservoir intersected by multi-laterals.

Developed by Canopus Drilling Solutions B.V., DSSD can drill cost effective slim holes in any desired direction from one main hole boosting reservoir connectivity and well productivity. The operational performance of the DSSD technology is tested in the full-scale pilot field trial performed in the underground test site in VersuchsStollen Hagerbach in Switzerland. Its efficiency in increasing geothermal energy production and improving the overall economics of geothermal projects is investigated by a series of stochastic numerical modeling studies performed in the mid-depth fractured limestone reservoirs of the Swiss Molasse basin. Results of the pilot field trial in the Swiss test site as well as the numerical study investigating the production and economic performance of multi-lateral wells will be presented in this paper.