

Hydropulse

Performance Summary



Hydropulsion

COILED TUBING • WELL INTERVENTION • ENHANCED OIL RECOVERY

Scope of work

The objective of this project was to restore the optimal injectivity rate of a geothermal water injection well.

This is an integral part of a geothermal field situated in the Netherlands, located in the southern region of Rotterdam at Aardwarmte Vierpolders. A comprehensive assessment conducted in 2023, utilizing a downhole camera, revealed the root causes behind the well's diminished performance.

Two primary findings were identified:

1. Sandfill obstruction: The Wire Wrapped Screen completion has been impeded by sandfill, resulting in a reduction of reservoir exposure. The current highest usable depth (HUD) stands at 2474m, obstructing 33% of the screen completion.
2. Scaling buildup: The base pipe perforations of the Wire Wrapped Screens have been partially obstructed by scaling, diminishing the fluid flow path to the reservoir.

Through the utilization of the Hydropulsion "Hydropulse" in conjunction with Smape Hybrid Technology "Smape Vista Max 2.0" for real time surface information of the downhole parameters. These findings underscore the detrimental impact on injectivity. Consequently, the primary objective of the Scope of work was to address the issue and remove the infill from the well, followed by an acid cleanout procedure to eliminate the scale from the completion.

Conclusion

The build up of sand was cleared using Concentric Coil Tubing before switching to CT with the Hybrid cable installed. The Hydropulse Fluid Oscillator was the primary jetting tool in the BHA which was ran on Hybrid Coil Tubing scale build up that was choking the well's screens and hindering its ability to inject water.

The full operation successfully removed 94 meters of sand, reaching a final depth of 2566.54 meters. Before cleaning, the well could only inject 130 cubic meters of water per hour (m³/h) even with maximum pressure (59.8 bar at the wellhead). After treatment with acid to dissolve scale, the injection flow rate significantly improved! The well can now handle 205 m³/h at a lower pressure (50 bar at the wellhead). This achievement demonstrates the effectiveness of the Hydropulse Fluid Oscillator.

At a glance:

Client:	SMAPE
Date:	June 2024
Location:	Aardwarmte Vierpolders, Rotterdam
Challenge:	To restore optimal injectivity by cleaning the sand build up and scale from well screens in a geothermal injection well.
Equipment:	Coiled Tubing with Hybrid Cable TEC, Smape Vista Max 2.0, MHA, Centraliser & Hydropulse Fluid Oscillator.
Outcome:	Successfully increased the Water injection volume to the optimum level at a lower wellhead pressure
Benefits:	Effectiveness of chemicals used were enhanced when used with the Hydropulse. Quickly cleaned out Scale in one trip 360° spherical coverage while moving the Hydropulse through the interval allows the pressure waves to penetrate deeper as the debris is removed.

