



## Webinar: Next Generation Geothermal Systems

Presenter: **Benoit Deville**, SLB-Geothermal Technology Director

Date & time: Tuesday, May 14<sup>th</sup>, 2024, 15:00 – 16:00

### Abstract:

For the oil and gas industry, the rise of geothermal is not unlike the transition we went through with unconventional resources. This means that, while much of our subsurface knowledge, products, and processes are transferable, there are still a few developments (in tech and approach specifically) that we need to go through before enhanced geothermal systems can become the competitive source of electricity production they're destined to be.

Geothermal energy is thermal energy stored and created through radioactive decay beneath the Earth's crust. It's virtually infinite from a human perspective, estimated to be  $3.15 \times 10^{15}$  TW.h or the equivalent of 20 billion years of energy consumption (based on 2022 rates). Geothermal energy is also extremely low in terms of greenhouse gas (GHG) emissions, has a very small footprint surface-side, and is available 24 hours a day, 365 days a year.

Why has its use been limited thus far and, more importantly, how can it be unlocked to play a larger role in the energy mix?

To date, we've used geothermal heat primarily by extracting high-temperature water or steam from the subsurface. This activity requires very particular geological settings, where the water or steam is trapped in large fractures under caprock, typically in regions of magmatism or at tectonic plate boundaries. An enhanced geothermal system (EGS), on the other hand, uses stimulation to create a vast reservoir or heat exchanger, thereby enabling us to capture heat from the subsurface over an extended (potentially infinite) period of time. All of this is achieved without drilling through a water or steam reservoir, or a region of adequate permeability.

### Bio:



**Benoit** holds two master's degrees in mechanical and systems engineering from EIGSI and Universite de La Rochelle in France, during which he also spent time at Argonne National Laboratory studying and modeling hybrid vehicles and fuel cells. Since 2004, Benoit has held multiple positions at SLB including leading engineering for both the Completions and Artificial Lift business lines combined. During this period, he filed 14 patent applications of which 11 have been granted to date. In 2023, he became the Tech Development Director for the newly created Geothermal business line within the organization and has been leading it ever since.