



Donnerstag, 29. Februar 2024, 16.40 Uhr
Baden Arena Kongress 1 – Tiefe Geothermie

Thursday, 29 February 2024, 4.40 pm
Baden Arena Congress 1 – Deep Geothermal Energy

Wellhead Design Optimizations – Forecast based on Current Projects



Optimierungen des Bohrlochkopfdesigns – Prognose auf der Grundlage laufender Projekte

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The interface between subsurface installations and above-ground geothermal plants is mandatory to ensure operational safety and availability. In this context, API 6A wellhead equipment with shut-off valves plays a crucial role. The challenging and project-specific conditions of shallow, middle, deep, and ultra-deep geothermal applications place high requirements on the wellhead equipment. It must be designed to deliver long-lasting and reliable performance while meeting the highest safety standards.

This presentation explores the technical optimization of wellheads and valves, based on over 40 years of experience and best practices in geothermal projects. It demonstrates how design, materials, and components can be tailored to meet the individual requirements of different geothermal conditions. The presentation introduces modern, field-proven designs with modular components and integrated safety functions.

Additionally, it presents new developments which are essential for adaption to customer specifications. This includes solutions for specific requirements such as large casing diameters, vertical or horizontal cable penetrators, use of LSP or ESP pumps, high temperatures, and resistance against corrosion and scaling. Because of various compositions of the geothermal well water, different solutions are necessary and will be demonstrated: coatings and overlay welding for corrosion protection, increased torques to break up scaling layers, high-temperature seals, flushing and injection systems and the incorporation of high-power, cost-efficient cable connectors, along with additional ports for fibre optics, temperature sensors, control lines, etc..

The presentation will also include projects with their individual challenges within the German Molasse Basin, the Upper Rhine Graben, Northern Germany as well as projects in Turkey or the Netherlands. Many of these technical innovations have been developed in close cooperation with engineering partners and operators. In particular, the new developments for geothermal wells in urban areas and geothermal energy production for companies' own energy needs require wellheads with reduced height.

Furthermore, the presentation will emphasize the importance of collaboration as a critical success factor for optimized and cost-efficient well realization. It covers aspects from assistance with documentation support for permitting authorities to dialogue in the early engineering phases, up to on-site installation and service contracts. The differences between large-scale greenfield projects, urban-area projects and corporate energy supply will be highlighted.