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GeoTHERM
expo & congress

Donnerstag, 2. Juni 2022 / *Thursday, 2 June 2022*
Kongress 1 - Tiefe Geothermie / *congress 1 - Deep Geothermal Energy*
16.55 - 17.20



Neue technische Entwicklungen bei der Konstruktion von Bohrlochköpfen - Best Practice und Projekte

New Technical Developments in Wellhead Design - Best Practices and Projects

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Forming the interface between the borehole underground and the above-ground geothermal plant API 6A wellhead equipment with shut-off-valves is crucial for operational safety and availability. Challenging and project-specific conditions of deep geothermal applications put high requirements on the equipment which has to be designed for a long, reliable service life and meet highest safety standards.

Based on best practices and experience of more than 40 geothermal projects, the presentation shows how the wellheads and valves have been technically optimized and how the design, material and components can be modified to the special needs in differing geothermal conditions. Modern, proven designs with modular components and safety functions will be presented.

This includes solutions for specific requirements such as large pipe diameters, vertical or horizontal cable conductors, suspension of the downhole pumps, high temperatures and the resistance against corrosion and scaling are addressed. As geothermal water can have various compositions, different solutions will be shown: such as coatings and overlay welding as corrosion protection, increased torques to break scaling layers, high temperature seals, flushing and injection systems and incorporation of high power cost efficient cable connectors as well as sensors ports and control lines.

Furthermore, the difference of the use of gate valves or ball valves at the wellhead as well as the influence of metal-to-metal sealing systems will be analyzed.

Presented examples will be several projects within the German Molasse Basin (including the deepest and most productive German well in Traunreut and the Stadtwerke München project "Süd" with six wells), applications with high salinity as in the Upper Rhine Graben or with high temperature as in Turkey.

Many of these technical innovations have been developed in close cooperation with the engineering partner and operator. Therefore, also best practices in collaboration as important success factor for an optimized and cost-efficient well realisation will be shown – from documentation support for permit authorities, dialogue in the early engineering phase up to installation on site and service contracts. Here, the frame contract with Stadtwerke München regarding regular pump exchange and more will serve as example.