Pressinformation

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Improving pumps for geothermal energy requirements

Findings from field tests and high-temperature test rig taken into account

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Geothermal power plants and heating networks use natural water resources from deep water and rock strata. In terms of the efficiency of the plants, the drilling costs and the premature wear and replacement of the feed pumps have previously made a considerable impact on the balance sheet. The BINE-Projektinfo brochure "Developing robust pumps for geothermal energy" (03/2016) presents modified submersible centrifugal pumps that are specifically adapted to the requirements of deep geothermal energy. The prototypes for the new pumps are already able to withstand the mineral deposits from the thermal water for longer and provide greater energy efficiency than the previous units.

As part of a field test, faulty pumps were brought up to the surface from southern German geothermal plants, broken down into their individual parts and subjected to systematic troubleshooting. The findings were used to develop modified pumps. These have improved components, such as bearings and seals, an optimised motor and a newly developed high-temperature sensor. In order to test the 36-metre pump prototypes as complete systems, the world's largest high-temperature test rig was designed and constructed. Here the newly developed pumps must prove themselves under realistic pressure and temperature conditions.

The pumps previously used in geothermal systems mainly stemmed from oil production, where other conditions prevail. When extracting hot water, the temperatures are higher, the volume greater, the water contains lime and salts, and the pumps run at varying loads. The development of specific geothermal pumps is being conducted as a research project by Baker Hughes INTEQ GmbH from Celle.

The BINE Projektinfo brochure, which can be obtained free of charge from the BINE Information Service at FIZ Karlsruhe, is available online at www.bine.info or by calling +49 (0)228 92379-0. The brochure cover and an additional image can also be downloaded from the press section in this web portal.

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