

K 2010, Hall 6, Stand B 28

October 28, 2010

Geothermal Energy Used Even More Efficiently

- Direct Evaporation Technology with VESTAMID® Polyamide 12 Pipes

Geothermal energy is the most efficient form of heating. It generates 45 percent less CO₂ than oil-based heating and 33 percent less than gas. What is more, the new direct heat exchanger technology using propane increases the efficiency of this heating system by a further 10 percent as no brine needs to be pumped. Essen, Germany-based Evonik Industries delivers the plastic for the tubes required for this technology, which are driven some 100 meters deep into the ground. The material used is VESTAMID®, a polyamide 12 that provides a high barrier to permeation from propane which, unlike steel, can be processed from the reel and does not require corrosion protection.

The conventional process for generating geothermal energy uses a water-glycol brine for the heat exchange that is pumped using polyethylene tubes. The new direct heat exchanger process instead uses the refrigerant R290 (propane), which is available in the tubes as a gas and a liquid during the two phases. Because of the difference in temperature—at depths of 100 meters it is around 4°C to 5°C warmer than close to the surface—the propane circulates exclusively due to the physical effect of the evaporation and condensation. This makes a pump unnecessary, which saves energy and consequently increases the heat generation efficiency by 10 percent. Polyethylene tubes cannot be used for this method, however, as they are permeable to propane gas.

The alternatives are steel pipes, or pipes made of polyamide 12. The advantage of the latter is that they do not corrode and can be wound on rolls so that no on-site welding is required when the pipes are being laid. Tubes made of VESTAMID® modified especially for this application also have a rough inner surface that is indispensable for the development of falling film in the heat exchanger.

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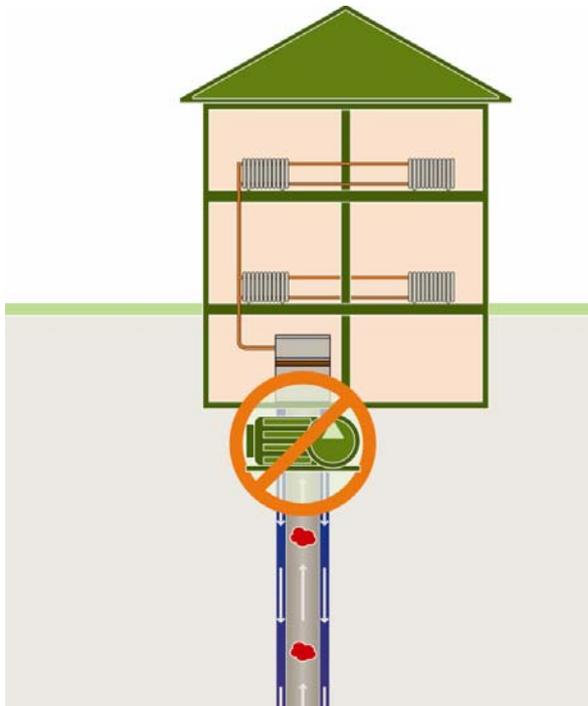
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Registered Office is Essen
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Caption:
Direct heat exchanger technology using VESTAMID® polyamide 12 tubes improves the efficiency of geothermal energy production by a further 10 percent.

For more information

Detailed press releases on the comprehensive range of products and solutions offered by Evonik's business units are included in this press kit.

Electronic documents and photos can be downloaded at www.evonik.com/plastics.

Exceptional solutions in plastics are no exception for us

Working together with its customers and partners, Evonik develops products and system solutions for and with plastics. We thus have a range of services that satisfies market and application requirements.

Evonik is present in all major growth markets around the globe. Its customized products and solutions include raw materials, sophisticated additives and paints, engineering plastics, high-performance polymers, and semi-finished products. They are virtually exactly what is needed for tomorrow's efficient, sustainable, and environmentally friendly ideas.

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About Evonik

Evonik Industries is the creative industrial group from Germany. In our core business of specialty chemicals, we are a global leader. In addition, Evonik is an expert in power generation from hard coal and renewable energies, and one of the largest private residential real estate companies in Germany. Our company's performance is shaped by creativity, specialization, continuous self-renewal, and reliability.

Evonik is active in over 100 countries around the world. In its fiscal year 2009 about 39,000 employees generated sales of about €13.1 billion and an operating profit (EBITDA) of about €2.0 billion.

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