GeoTHERM
expo & congress

Donnerstag, 26. Februar 2026, 16.30 Uhr
Ortenauhalle Kongress 1
Tiefe Geothermie

Thursday, 26 February 2026, 4.30 pm
Ortenauhalle Congress 1
Deep geothermal energy

Flexible power generation from geothermal energy with minimal investment risk with modular ORC solutions

Flexible Stromerzeugung aus Geothermie mit minimalem Investitionsrisiko dank modularer ORC-Lösungen

Julius Landgraf
Orcan Energy AG

The Organic Rankine Cycle (ORC) enables efficient use of geothermal energy by converting heat into electricity. Modular ORC systems offer a flexible and scalable solution to economically exploit low- to medium-enthalpy geothermal resources—independent of seasonal fluctuations in heat demand.

A major challenge for geothermal plants is aligning heat utilization with actual demand, which often varies daily or seasonally, especially in applications such as district heating or greenhouses. During periods of low heat demand, a significant portion of the available energy goes unused. Orcan's ORC technology not only enables continuous power generation as a conventional power plant but also can also add value by converting excess or fluctuating heat into electricity, ensuring optimal energy use—particularly effective at temperatures between 90°C and 200°C.

A key advantage of Orcan's ORC systems is modularity. Unlike conventional power plants designed for fixed output, modular ORC systems can be flexibly adapted to the available thermal input. This is particularly valuable when developing new geothermal sites, where exact output is often uncertain until after finalizing drilling. Using multiple small modules allows for gradual capacity adjustments, reducing risk.

The modular design also allows for the relocation and reuse of individual ORC modules. This enables initial focus on electricity generation, with modules later removed if direct heat utilization (e.g., district heating or cooling) is implemented. This flexible deployment ensures optimal return on investment and reduced operating costs. Additionally, summer operation can smooth the load curve of the ESP's, extending its service life and improving overall system economics.