



# Geothermal Power plants/ ORC plants



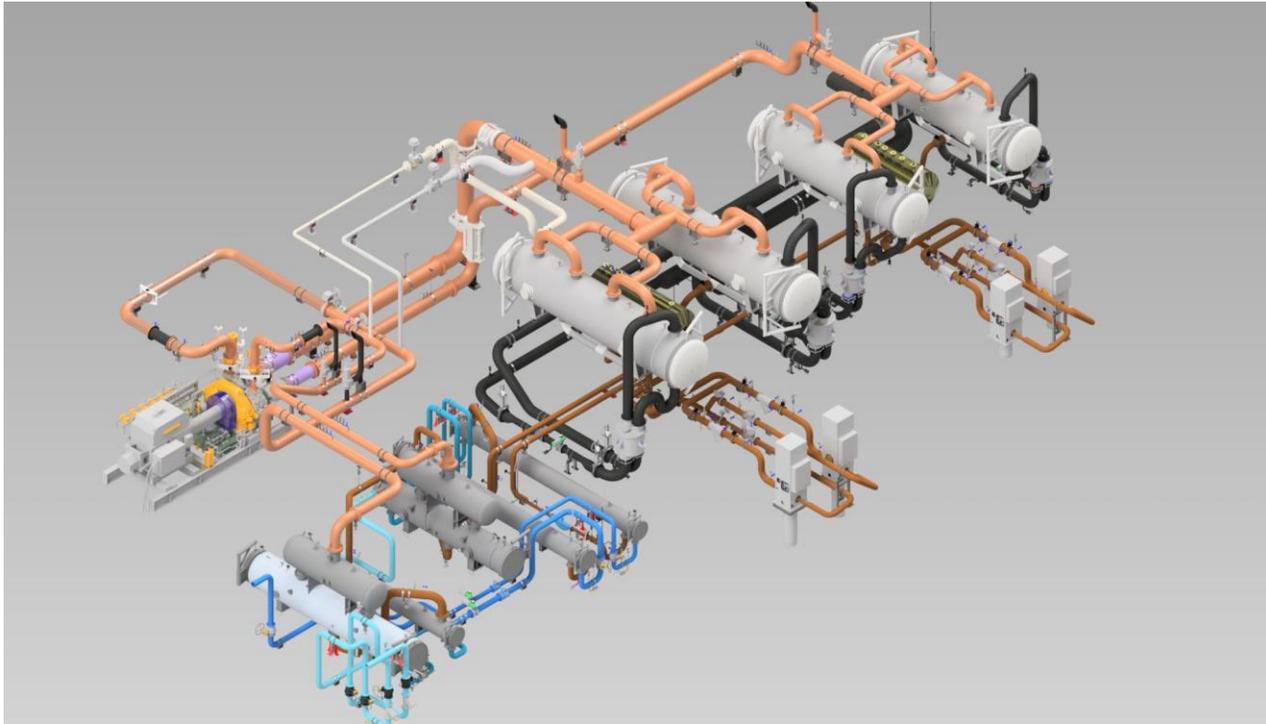
STRABAG  
Umwelttechnik GmbH

**STRABAG**  
TEAMS WORK.

## Competence in plant engineering

As part of the globally operating STRABAG SE, STRABAG Umwelttechnik GmbH is one of the leading companies in the field of environmental technology. Over 30 years experience in planning, realisation, commissioning and long-term support of numerous environmental plants ensure the economic efficiency and operational safety of our built plants. Within the scope of these plant construction activities, we design and realise turnkey geothermal power plants based on the ORC (Organic Rankine Cycle) -Process.

We live from the success of our customers. As one of the leading international companies in the planning and construction of environmental plants, we offer you the security of consistently high quality standards. With innovative technology and the comprehensive know-how of our employees, we reliably turn your goals our own. Fair, transparent and cost-conscious. Together with reliable business partners, we network capacity and competence to realise projects of any dimension. Every plant we build is also a reference for the next one - creative in its idea, efficient in its implementation.



**Cover:** Drilling head, Bruck (Deutschland)  
**Pictures on this page :** 3D Layout,  
re injection pumps Bruck (Germany)

## We plan and realise geothermal power plants and ORC plants for the following heat sources

- Hydrothermal energy from deep geothermal energy
- Petrothermal energy (EGS) from deep geothermal energy
- Process waste heat and waste gases from industrial and power plants

## Our range of services

- General contractor for turnkey plants
- Consulting, planning
- Engineering, delivery and commissioning of partial or complete plants:
  - Thermal water circuit
  - ORC circuit
  - District heating extraction
  - Heating plant
- Long-term support through service contracts
- Operational management



Example geothermal power plant (Source Photo: © Atlas Copco Gas and Process Division)

# The ORC process

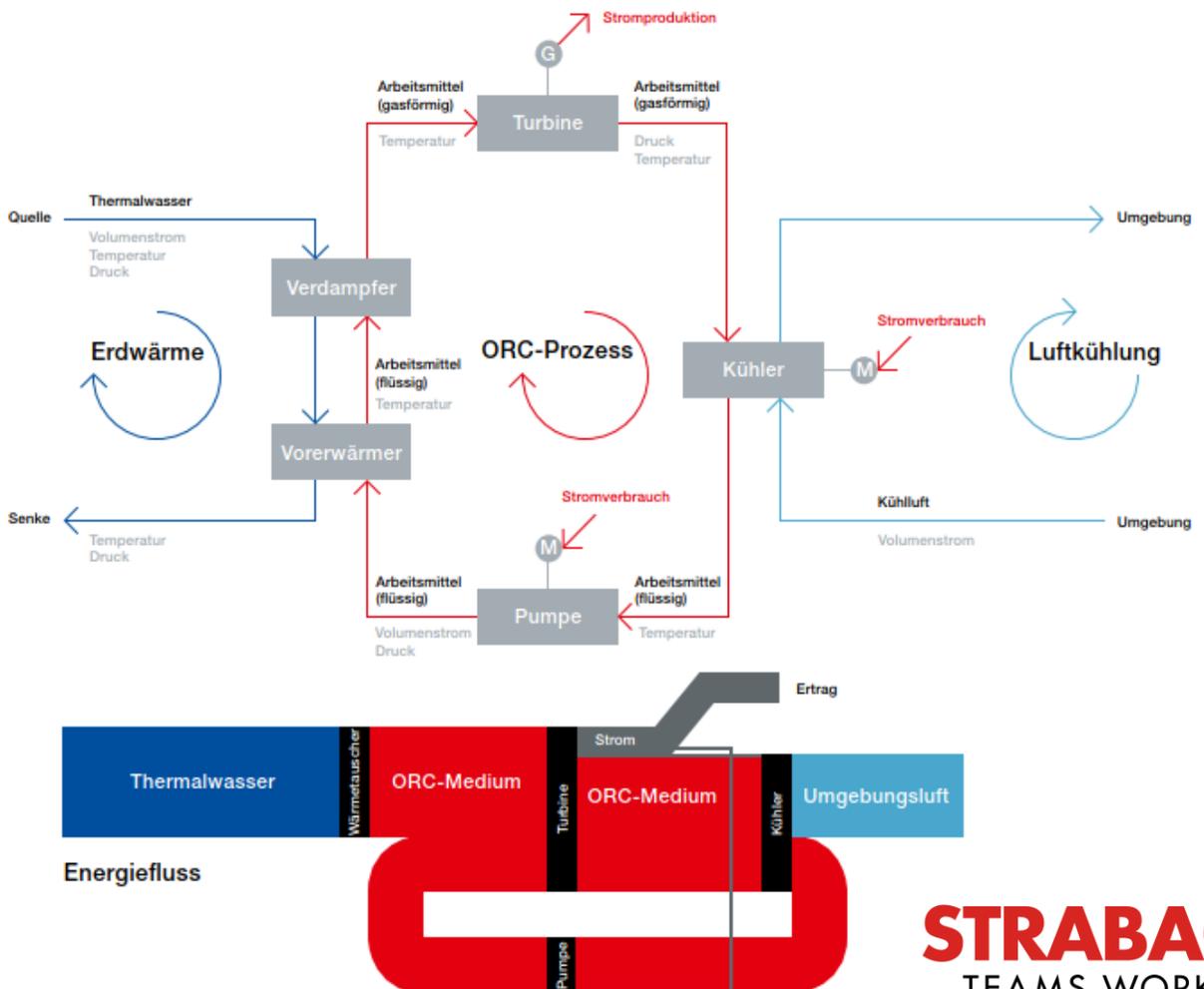
When generating electricity from hot thermal water, STRABAG relies on the proven ORC process (Organic Rankine Cycle), which consists of two separate, self-contained circuits.

## 1. thermal water circuit

Geothermal energy is supplied in the form of hot thermal water from underground (spring) with a pump to the surface and transferred to the other circuit in the power plant, before the cooled water is pumped back into the subsoil through the re-injection bore (sink)..

## 2. ORC circuit

In the ORC circuit, the secondary circuit, a liquid working fluid circulates, which already evaporates at low temperatures, e.g. refrigerants or liquefied hydrocarbons. After evaporation of the working fluid in the heat exchanger, it subsequently expands in the turbine. The mechanical energy generated by the expansion, which is transferred by means of the generator located on the turbine shaft, is converted into electricity and fed into the power grid (yield). The gaseous working fluid is cooled in the cooler with ambient air, liquefies and is available again for the ORC process.



# The STRABAG geothermal power plant

Our geothermal power plants are tailor-made solutions and are characterised by the following features:

- optimised single- or multi-stage ORC processes with high energy yield and efficiency
- Manufacturer-independent use of technically suitable turbines, preferably radial turbines, from renowned and proven manufacturers
- Very high availabilities due to corresponding redundancies and a design in high industrial / power plant standard
- Consistent and custom-fit solutions, from concept to construction and commissioning to long-term operation, based on our own planning and engineering resources (everything from a single source).
- Great flexibility with regard to necessary or desired maintenance / services after completion

Whether combined power plant (electricity + heat) or only heating plant: during conception, design and engineering, we focus on a plant configuration that is optimised in terms of functionality and configuration.

For the STRABAG geothermal power plants, we combine our plant engineering know-how of our specialised engineering teams with the comprehensive construction engineering and contractor expertise of a leading construction company.

From this strong position and with our own ORC technology, we can assume responsibility for turnkey geothermal power plants as a general contractor at a fixed price. This includes the assumption of process / procedure guarantees, the material warranty and a completion guarantee (deadline).



Pictures on this page (from left to right): heat exchangers, turbine Bruck (Germany)

## The STRABAG portfolio for geothermal projects

Beyond the construction of geothermal power plants, the STRABAG Group also offers solutions for other aspects and problems of geothermal projects:

- Own project developments up to participation or complete takeovers of geothermal projects as investor
- Drilling site construction & coordination
- Sinking of drillings
- Construction of district heating routes and networks

In geothermal projects developed in-house or taken over, STRABAG relies on the expertise and experience of the group company Züblin Spezialtiefbau GmbH, especially for advanced deep drilling projects.

The range of services offered by Züblin Spezialtiefbau GmbH includes complete turnkey solutions, which comprise the engineering and approval planning as well as the execution of deep drillings for hydrothermal direct utilisation.



Deep geothermal drilling, Mehrnbach (Austria)



# Clear Vision – Clean Energy



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