



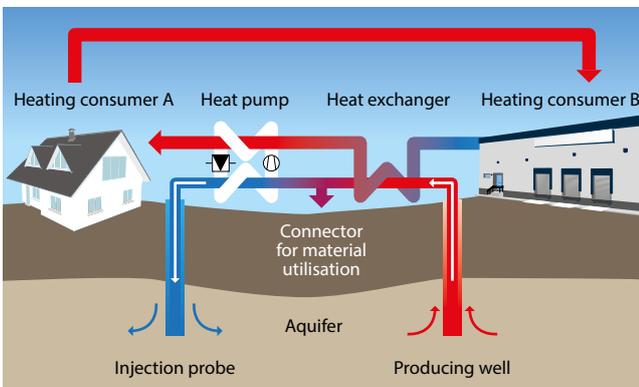
# SPECTRUM safeguards the environment by using geothermal heat.

Use as a heat pump in the industrial sector utilising geothermal heat at its source.

## An impressively wide spectrum

The SPECTRUM from ENGIE Refrigeration has a wide range of uses and is extremely well suited to being used as an environmentally friendly heat pump in a local heating network which uses geothermal energy: The thermal output in this sector is approx. 310 kilowatts (kW), approx. 380 kW or approx. 470 kW at temperatures above 60°C and for example

geothermal heat of 0°C. These are maximum values which can be achieved when implementing the models. One additional advantage: Thanks to the open flash economiser that the SPECTRUM uses, the chilling and heating performance can continuously be regulated by up to approx. 20% of the nominal power.



Utilising geothermal energy means: Making use of geothermal heat, surface or groundwater in order to produce thermal energy with the help of heat pumps such as SPECTRUM for example.

## Connecting with heat

In a **local heating network** multiple buildings, a residential or industrial area or borough are connected. Heat pumps extract near-surface geothermal energy from the ground up to a depth of 400m and use it to cover the demand for heating. The SPECTRUM's range of performance as well as its continuous speed regulation and Smart Grid compatibility makes it an ideal system in decentralised energy generation.

By the way: Today, even an **outside pool** does not have to be an energy guzzler any more. The SPECTRUM can use geothermal heat to heat the pool whilst additionally heating the water for the shower area.



### The characteristics of a specialist in efficiency

The SPECTRUM's high performance core is an open flash economiser that facilitates a higher refrigeration performance compared to conventional chillers with a speed-controlled screw compressor - even if it uses a subcooler economiser. Equipment operators profit from higher Seasonal Energy Efficiency Ratio (SEER) values in the refrigeration segment, and higher Seasonal Coefficient of Performance (SCOP) values when used as a heat pump.

In addition, the SPECTRUM also offers a SIMATIC S7 control unit that corresponds with the most current industry standard and is also compatible over the long-term, expandable on a modular basis, scalable, vibration-resistant and maintenance-free.

The SPECTRUM lives up to its name as it can always be adjusted to the customer's requirements or application and can cover a wide utilisation and temperature spectrum. There is also the option of dividing the condenser and thus adapting the available heat to the application regardless of the required chiller performance.

### SPECTRUM'S benefits

- Optimal primary energy utilisation whilst simultaneously using the side that heats and refrigerates
- Minimal energy costs in comparison to separate systems for heating and refrigerating
- Lower investment costs for the necessary infrastructure compared to separate systems for heating and refrigerating
- Cost savings by adapting to the actual cooling and heating required
- Reduced space needed for the technical building installation
- Lower maintenance requirements
- Funding possibilities through government programs



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