Press Release

Berlin, May 5, 2020

Heat pump simulation program GeoT*SOL expanded and adapted to the new VDI guideline 4650

With the revised version 2020 of their program for heat pump systems, GeoT*SOL, Valentin Software is once again expanding the area of application of the design tool. A new system variant with a bivalent heat pump system consisting of a hydraulic switch and separate buffer tanks for domestic hot water and heating represent an application that is often used in practice. By using a hydraulic switch, the heat pump loads the heating buffer tank and supports the heating for domestic hot water. Reheating via a conventional heat generator is mainly responsible for heating domestic hot water, but also supports heating at low temperatures. For this system, as for all previously available system interconnections, the characteristic values can also be calculated according to the latest VDI guideline 4650. The extensive database has been updated and, with over 3,900 products, contains all heat pumps eligible for support according to BAFA (as of January 2020).

The most important plants can be mapped

As before, air heat pumps and those with geothermal probes that extract their heat through drilling down to a depth of 100 meters can be calculated and simulated. And it is also possible to design heat pump systems that use groundwater or geothermal collectors laid horizontally in the ground as a heat source. In addition to the heat performance factor, the program calculates the annual energy yields and makes statements on cost-effectiveness and emission reduction compared to conventional systems. The software presents all of the results graphically. These include the annual course of the relevant temperatures, the useful heat and the electrical energy as well as the weekly heat performance factor.

Systems can be variably parameterized

When designing a system, the user can choose between various predefined system configurations that have proven themselves in practice. In addition to the monovalent and monoenergetic systems with heat pump and solar thermal system, new bivalent systems with additional heat generators have been added. Thus, it is possible to simulate existing systems with condensing boilers, compact heating systems and other boilers, with the addition of a heat pump. New plants with a conventional heat generator as backup can now also be simulated and optimized. In addition to heat pumps, all heat generators can of course also be selected from a comprehensive and up-to-date database of nearly 1,600 products. For the simulation, the operating mode can be selected and parameterized from a large number of possible combinations of monovalent, monoenergetic and bivalent systems with parallel, partially parallel or alternative operation.

Completely redesigned VDI 4650 (2019)

Like the previous version, GeoT*SOL 2020 also determines the seasonal heat performance factor on the basis of minute values. This number indicates the quotient of the delivered heat and the electricity consumption. In addition to the simulation result, the software calculates the seasonal heat performance factor in accordance with the VDI Guideline 4650, which the German Federal Office of Economics and Export Control (BAFA) requires for the approval of grant applications.

Combination with PV*SOL to determine the own consumption of electricity from a PV system

After a simulation of the heat pump system with GeoT*SOL, an interface to PV*SOL, the simulation program for solar electric systems, can be used to determine the power supplied by the PV system directly to the heat pump system. This is done by simulating the PV system in PV*SOL together with the heat pump as an appliance. This makes it possible to precisely determine the degree of self-sufficiency of an existing energy supply for both the power supply and the heat supply of a building.

Further information on GeoT*SOL 2020 is available at:
https://valentin-software.com/en/products/geotsol/

About Valentin Software

Valentin Software GmbH has been in business for 30 years. With the PV*SOL, T*SOL and GeoT*SOL brands for dynamic simulation, design, yield and profitability forecasts for photovoltaic, solar thermal and heat pump systems, the Berlin-based software company has made a name for itself as a world leading provider of innovative design software for sustainable energy supply. Its customers include engineers, system designers, architects, installation technicians, trades and manufacturing companies in the field of electrical, heating and building technology.

Image captions

1_SystemSelection.tif:
System selection in GeoT*SOL 2020

2_SolarLoop.tif:
Solar loop dialog in GeoT*SOL 2020

3_ResultGraphics.tif:
Results graph in GeoT*SOL 2020

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