VALENTIN
software

GeoT*SOL® | Design Software for Heat Pump Systems

Valentin Software has developed intelligent software solutions for planning, design, dynamic simulation and yield calculation of energy supply in buildings for over 25 years.

Our simulation programs help system designers, engineers, consultants, installers, tradesmen and investors to professionally plan and dimension heat pump systems.
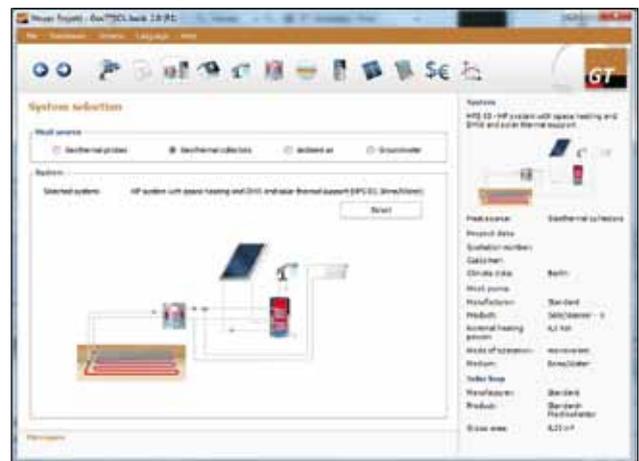
GeoT*SOL®

GeoT*SOL® is a professional, user-friendly specialized tool for the design and planning of heat pump systems.

GeoT*SOL

You can choose between different heat sources and system configurations for your location.

A key feature is the integration of solar thermal systems for domestic hot water or space heating. Requirements, losses and consumption are determined as a result of the dynamic minute-step simulation. These form the basis on which electricity consumption, annual coefficient of performance and costs are calculated, taking into account off-periods and tariffs. With these parameters GeoT*SOL® evaluates the efficiency of the system. Heating price and return are given for the heat pump system and a comparison system.

Heat pump system with heating and domestic hot water with solar thermal support

> **!** Free trial versions and detailed information at www.valentin-software.com

GeoT*SOL® Features

GeoT*SOL® supports the following heat sources

Ground: The heat stored in deeper soil layers is extracted by brine/water heat pumps with geothermal probes. This requires one or more holes drilled vertically into the ground.

Near-surface heat is gained through heat transfer pipes – the geothermal collectors – which are laid horizontally at depths of about 1.5 m. They make use of the heat flow from the surrounding layers of soil.

Ambient air: Air/water heat pumps suck outside air through air channels and then extract the heat.

Groundwater: The groundwater is extracted by a suction well, and after flowing through the heat pump is redirected into the ground via an injection well.

Export of Electricity Consumption Values to PV*SOL®

You can simulate the system with our without a solar thermal system, export all electricity consumption values and import into PV*SOL® as a load profile. This makes it possible to calculate heat pump systems that are directly connected to a PV system.

Climate Data

The MeteoSyn climate database contains around 450 data sets from the German Weather Service for Germany with the averaging period 1981-2010, as well as over 8,000 global data sets, based on meteonorm 7.0 with the averaging period 1986-2005.

You can easily select the climate data via an interactive map. Alternatively, you can select the location from a list.

It is also possible to load other climate data in .wbv format.

More GeoT*SOL® Features

System Types

With GeoT*SOL®, you can simulate five different heat pump system types, from simple systems exclusively for heating support to more complex types with storage and a solar thermal system for domestic hot water and space heating.

The program also has an extensive database of over 1,900 heat pumps from all leading manufacturers.

|	HPS 1	HPS 2	HPS 3	HPS 4	HPS 5
Heating	x	x	x	x	x
Domestic hot water		x	x	x	x
Solar cycle			x	x	
Storage tank		DHW storage tank	DHW storage tank	Combination storage	Heating buffer storage

Simulation Results

The dynamic minute-step simulation over the course of the year gives you the following parameters for the selected heat pump system:

▸ Annual coefficient of performance for the heat pump, the heat pump system and the generator system (heat pump system with solar thermal system) and for comparison purposes the ACOP according to VDI directive 4650

▸ Annual generated energy for the heat pump and solar cycle

▸ Annual useful energy for heating and hot water

▸ If applicable, the solar fraction, i.e. the share of solar energy towards the total generated energy requirement

▸ Annual electrical energy required for the heat pump, source-side pumps and auxiliary heating

▸ Annual losses for the storage tank and solar cycle pipes.

Financial Analysis

The financial analysis provides important arguments for property owners. It is determined by way of the heating price by allocating all costs (including price increases) via annuities to the heat produced. Additional results provided are the net present value and the modified internal rate of return with reinvestment premise. With the help of these results, the heat pump system can be compared with other heating systems, such as gas or oil-fired boilers.
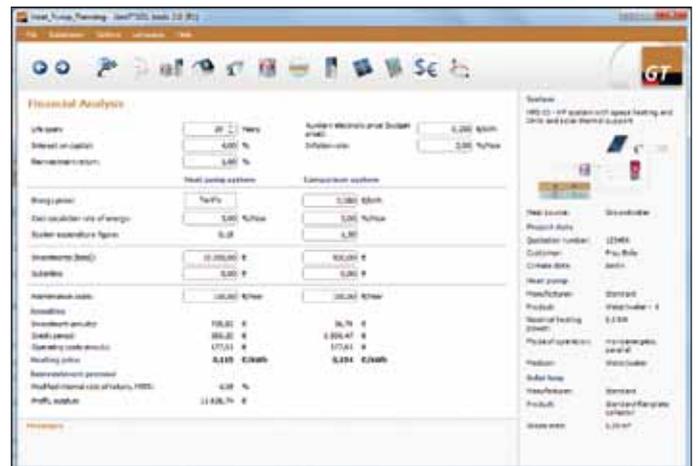
Financial analysis in GeoT*SOL®

All results are summarized in a powerful, configurable project report that you can save as a PDF file and then print out.

Software Maintenance

Software maintenance includes both program and database updates. The program price includes a year's software maintenance from the date of purchase.

! GeoT*SOL® is available in English and German