

# /// <summary> /// Fill the variables / fields in the design template and /// create a preview file /// <returns></returns> public string PreviewPrint() { ReadXML(); IsPreviewNotRTF = true; String sz = GetLLFile(); Print(); return sz; } #region Properties /// <summary> /// Property for the design template /// </summary> public string DesignTemplate

## GeoT\*SOL<sup>®</sup> Exploiting the Earth's Sustainable Energy Supply

Planning programs from Valentin Software

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GT GeoT*SOL basic	GeoT*SOL <sup>®</sup> basic Feature Overview
<u>19</u>	Various heat pump systems (HPS)
1	HPS for domestic hot water (DHW) generation
	HPS with heating support
	May be coupled with solar collectors, extensive solar collector database from T*SOL
	Extensive database of heat pumps from all leading manufacturers
-	Detailed annual simulation of heat sources: ground (probes and collectors) and air
	Parameters for buffer storage of domestic hot water and heating are configurable
	Project data management
<u> </u>	MeteoSyn: database of climate data and locations, 8 ooo locations worldwide
	Minute-step simulation forecasts seasonal performance factor (SPF) and energy generation
\$€	Comparative financial forecast with heat prices, returns and allowances
E	Configurable project reports as printout or file (.pdf, .rtf, and others)
	Software maintenance is included for one year



# Find the right heat pump for every customer

Geothermal energy may not grow on trees, but it is an inexhaustible source of energy that is free for the taking. Heat pumps are used to heat buildings with geothermal energy in an energy efficient and environmentally friendly way. They operate with extraordinary

efficiency and are available in a variety of types. The market for geothermal energy is enormous, but many potential customers are in need of technical consultation. As a planner, architect, installer, or craftsman, you can make a difference in this area.

About Valentin Software

- Developers of planning and simulation software for photovoltaic, solar thermal, and geothermal systems.
- Founded in 1988 by Dr. Gerhard Valentin.
- Products sold in more than 100 countries around the world.

Valentin Software develops intelligent solutions for plan-

ning and dimensioning energy supplies for buildings as well as for performing dynamic simulations and calculating system yields. Our products and services include specialized software for photovoltaics, solar thermal, geothermal, and energy-related consulting as well as the implementation of individual (system) solutions. We can help you optimize your sales activities and deliver profitable, customized systems that will boost customer satisfaction. Our software maintenance ensures that you always have the latest versions of our software. /// <summary> /// Fill the variables / fields in the design template and /// create a preview file /// </summary> /// <returns></returns>

### GeoT\*SOL<sup>®</sup> basic The perfect partner for project design

GeoT\*SOL<sup>®</sup> basic is a professional-grade, easy-to-use tool that is specially designed for planning and dimensioning heat pump systems. The software lets you choose between

Like all products from Valentin Software, GeoT\*SOL® basic is accompanied by an extensive electronic manual. a variety of system types and components, calculate energy usage and costs, and thereby target the highest possible seasonal performance factor (SPF). If required, GeoT\*SOL® basic can also simulate solar heat pump systems.

All heat pump systems can be simulated with the heat sources: ground (probes and collectors), groundwater and air. Referencing the dynamic minute-step simulation of the entire heat pump system over one year, the program then determines the respective SPF. With this parameter and additional results from the minute-step simulation, GeoT\*SOL<sup>®</sup> basic evaluates the economic efficiency of a system by establishing a ratio of heat price to anticipated service life.



The principle behind a heat pump is quite simple. A heat pump extracts heat from a lower-temperature external heat source (ground, air or groundwater) and then uses drive energy to emit that heat at a higher temperature in the form of useful heat.

### It's your choice: heat sources and system types

GeoT\*SOL<sup>®</sup> basic supports the following heat pump configurations:

**Brine/Water** – Brine/water heat pumps with geothermal probes extract heat stored in lower ground layers. 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, which is taken from the layers of soil above and below the collectors. **Air/Water** – Air/water heat pumps suck outside air through air channels and extract the heat contained therein.

**Water/Water** – Water is extracted from the groundwater by an extraction well, the thermal energy is removed from the water and discharged into the building cycle through the water/water heat pump.

**System Types** – With GeoT\*SOL® basic you can simulate five different types of heat pumps, from simple to very complex with a solar thermal system.

Simple: HPS 1		Complex: HPS 4	and HPS 5		
	HPS 1	HPS 2	HPS 3	HPS 4	HPS 5
Heating	х	х	х	х	х
Domestic hot water		х	х	х	х
Solar collector			х	х	
Storage tank		DHW storage tank	DHW storage tank	Combination storage	Heating buffer storage



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### Precision planning puts you one step ahead



Location selection with MeteoSyn climate data generator

By working with the MeteoSyn climate data generator, GeoT\*SOL® basic builds your customers' confidence in the simulation results. MeteoSyn provides location-based climate data for all of our simulation programs. You can select the relevant location on an interactive map. It is also possible to import your own climate datasets (meteonorm).

The dynamic minute-step simulation over the course of the year gives you the

following parameters for the selected heat pump system:

- The seasonal performance factor (SPF) according to EN 15316-4-2 and (for comparison purposes) SPF according to VDI directive 4650.
- Where appropriate the solar fraction, i.e. the amount of collector energy relative to the sum of generated energy.
- The annual required electrical energy addition for the heat pump, auxiliary energy consumers (pumps, fans), and supplemental heating.
- The amount of energy generated by the heat pump and (when appropriate) the solar collector circuit, on an annual basis.
- The annual useful heating energy and energy for domestic hot water.
- Annual losses of the storage tanks and pipes.

### Results that your customers can warm up to

The economic efficiency is an important argument for property owners. It is determined by way of the heat price by allocating investment costs (minus subsidy) and operating and maintenance costs (including anticipated increases in electricity costs) to the generated heat energy over appropriate periods (service life, interest on capital). You can then use the heat price to compare the heat pump to other heating systems, such as gas or oil-fired boilers.

All results are documented in a project report that you can save and forward to your customer as a PDF or RTF file, or print and deliver together with proposal documents. The report contains:

- Cover sheet with desired project data, such as logo and your firm's contact data.
- System schematic and results of the annual simulation (energies, SPF, and heat price).
- Specifications and system components.
- Graphs with output energies and SPF.
- Specifications for model calculation.
- SPF according to VDI directive 4650.
- Financial analysis.







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