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/// <summary>
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/// create a preview file
/// </summary>
/// <returns></returns>
public string PreviewPrint()
{
    ReadXML();
    IsPreviewNotRTF = true;
    String sz = GetLLFile();
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    return sz;
}

#region Properties

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# GeoT\***SOL** | Exploiting the Earth's Sustainable Energy Supply

Planning programs from Valentin Software

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## GeoT\*SOL basic Feature Overview



Various heat pump systems (HPS)



HPS for domestic hot water (DHW) generation



HPS with heating support



May be coupled with solar collectors,  
solar collector database from T\*SOL



Extensive database of heat pumps from  
all leading manufacturers



Adapted simulation for both types of heat source:  
ground or air



Parameters for buffer storage of domestic hot water  
and heating are configurable



Project data management



MeteoSyn: database of climate data and locations,  
2000 locations worldwide



Minute-step simulation forecasts annual coefficient of  
performance (ACOP) and energy generation



Economic efficiency: calculates the heat price



Configurable project reports as printout or file  
(.pdf, .rtf, and others)

## 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.

Valentin Software develops intelligent solutions for planning 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. Economical service packages ensure that you always have the latest versions of our software.

### *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 70 countries around the world.*
- American subsidiary since 2009 (California).*

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# GeoT\*SOL basic

## The perfect partner for project planning

GeoT\*SOL 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 a variety of system types and components, calculate energy usage and costs, and thereby target the highest possible ACOP. If required, GeoT\*SOL basic can also simulate solar heat pump systems.

*Like all products from Valentin Software, GeoT\*SOL is accompanied by an extensive electronic manual.*

All heat pump systems can be simulated either with an air/water or brine/water heat pump. In the latter case, GeoT\*SOL basic also calculates the required number and depth of geothermal probes. Referencing the dynamic minute-step simulation of the entire heat pump system over one year, the program then determines the respective ACOP. With this parameter and additional results from the minute-step simulation, GeoT\*SOL 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 (the ground or the air) 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 basic supports the following heat pump configurations:

**Brine/Water** – Brine/water heat pumps with ground probes extract heat stored in lower ground layers. This requires a hole drilled vertically into the ground, which can be performed in a very small space. Depending on the customer's heat requirement, one or several probes are used.

**Air/Water** – Air/water heat pumps suck outside air through special channels and extract the heat contained therein. This heat is transferred to the water-operated heating system.

**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	x	x	x	x	x	
Domestic hot water		x	x	x	x	
Solar collector			x	x		
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 load other climate datasets in "try" and "wbv" formats.

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

following parameters for the selected heat pump system:

- The annual coefficient of performance (ACOP) according to EN 15316-4-2 and (for comparison purposes) ACOP 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.

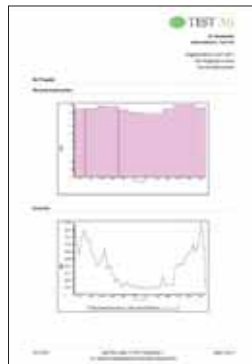
## Results that your customers can warm up to

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:

- Page 1: Cover sheet with desired project data, such as logo and your firm's contact data.
- Page 2: System schematic and results of the annual simulation (energies, ACOP, and heat price).
- Page 3: Specifications and system components.
- Page 4: The heat pump's monthly coefficients of performance and power consumption over the course of the year.
- Page 5: Specifications for model calculation.



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## **Valentin Software, Inc.**

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