

# GeoAnalyst Residential Design/Application Software

## Overview:

GeoAnalyst is the most comprehensive residential design and application software for geothermal systems on the market today. No other software has as many features. Even more important, the loop sizing portion uses "pure" IGSHPA algorithms, not manufacturer-adjusted loop sizing formulas. The ease of use and user configurability provide users with an accurate system analysis at a low annual maintenance fee, which includes free updates.

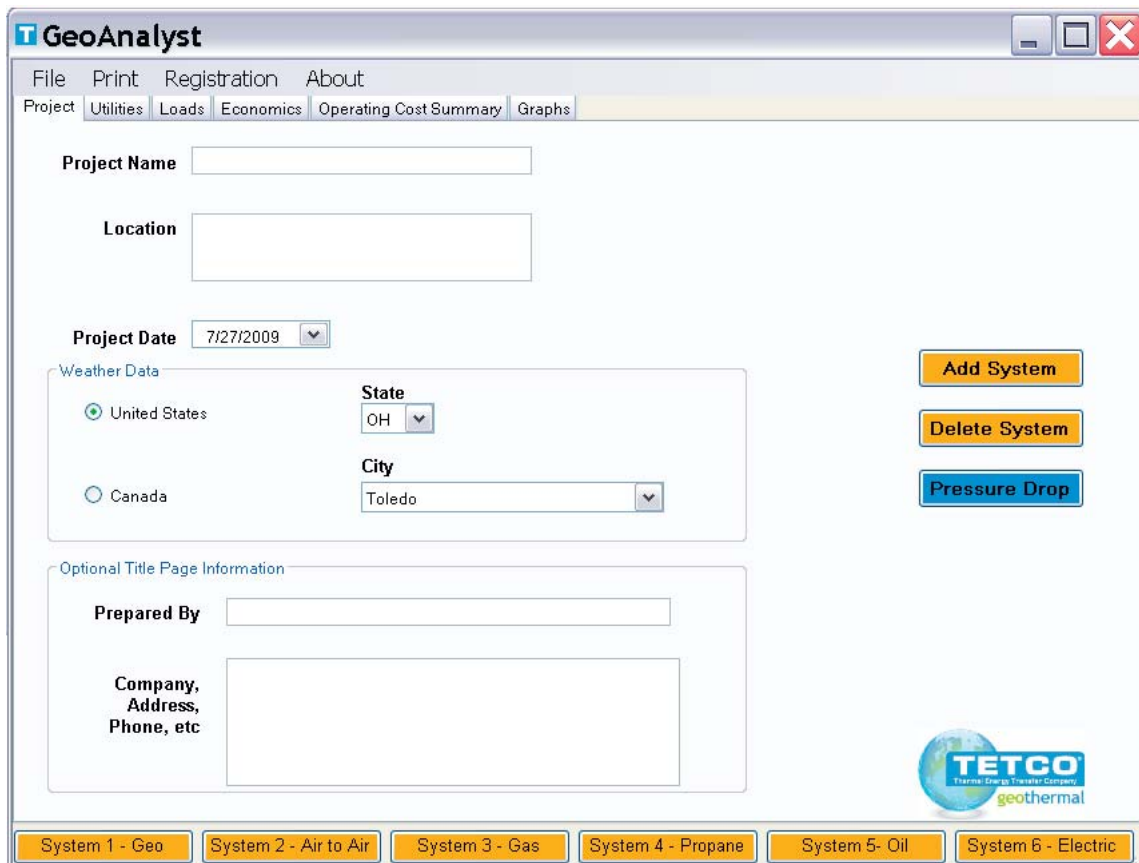
GeoAnalyst is continually updated with new features. Pressure drop calculation/pump sizing was recently added, and a new sales proposal will be included in Fall of 2009. Changes in equipment, enhanced features, and useability upgrades are automatically loaded with the "automatic updates" feature.

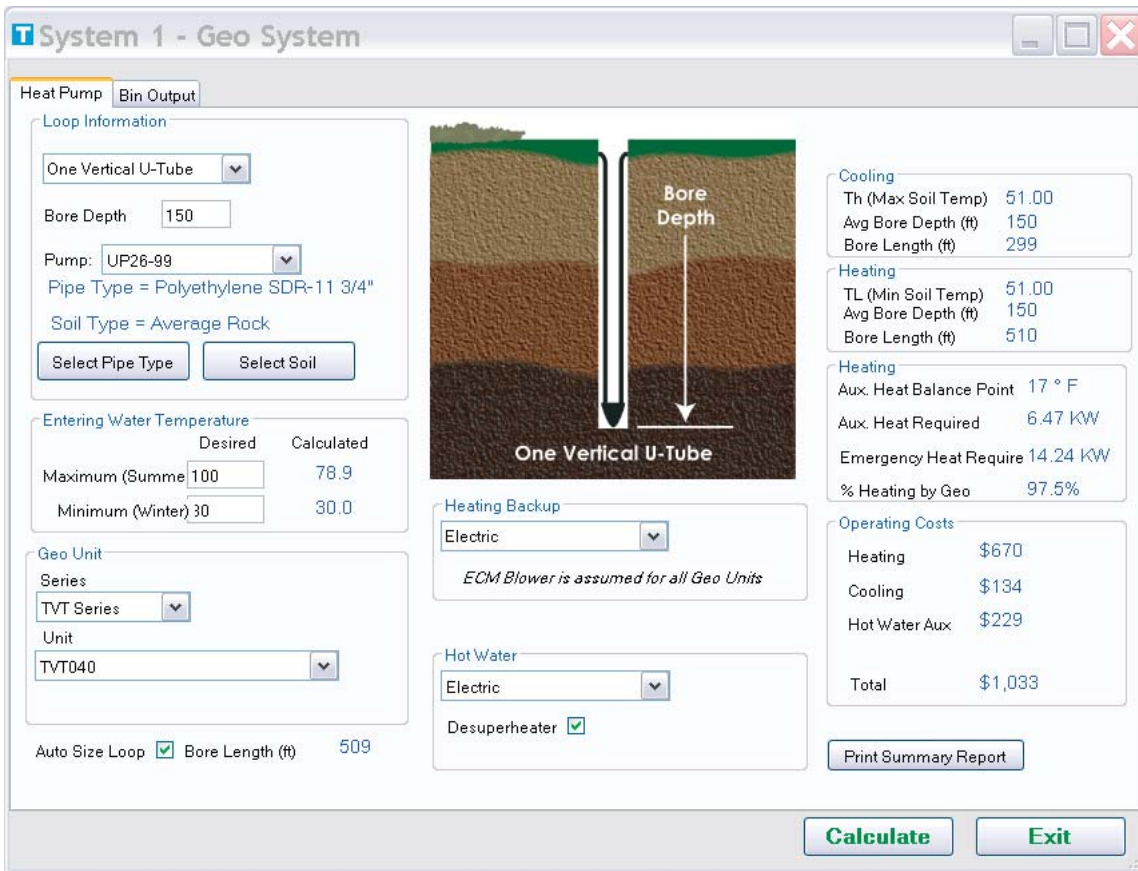
Try GeoAnalyst today. The demo is free, and may be downloaded from the TETCO website ([www.tetco-geo.com](http://www.tetco-geo.com)). If you decide to subscribe to the annual maintenance fee, the cost is \$50 per year for the first computer, and \$15 per year for all additional computers.

## Features:

- Full TETCO product line already loaded
- Ability to compare up to 5 other conventional systems
- Allows the user to save multiple utility files
- I.P. or S.I. utility cost choices (e.g. \$/gallon or \$/liter)
- 14 pre-configured ground loop choices, plus user-defined horizontal loop, and open loop (well water)
- "Auto Size" option for sizing loops based upon minimum/maximum entering water temperature

- Choice of HDPE pipe or user-defined pipe
- Choice of ASHRAE, EPRI, or user-defined soil types
- Includes comparisons for water-to-water heat pumps
- Bin data report and balance point calculation
- Comprehensive system reports for geothermal and conventional selections
- Economic analysis with simple payback, cashflow analysis, and financing options. Has the ability to include rebates/credits, and print graphs.
- Pressure drop calculation module for sizing flow center pumps (central pumps or pump(s) for each unit)
- Calculates loop flushing requirements, antifreeze requirements, and Reynolds number
- Allows report customization with company logo and contact information
- Built-in screen stretching feature that increases font size for easier readability
- Includes the latest conventional equipment for comparisons (up to 19 SEER air conditioners/heat pumps and 95% efficiency furnaces)
- Dual fuel system comparisons for geothermal and air-to-air heat pumps
- "Save as Default" option to use saved local conditions for a new project






GeoAnalyst ground loop sizing and operating cost analysis (shown above) is very intuitive with drop-down menus, and pop-up windows. All pre-configured loops have a picture of the cut-away section to help the designer in understanding the correct inputs. The "Auto Size" option sizes loops based upon the minimum and maximum entering water temperature selected. The designer may also key in the loop length, and allow the software to calculate minimum and maximum loop temperatures.

Comprehensive reports like the one on the left provide both operating cost information and technical data. Design conditions, equipment selection, and loop sizing information is provided in the technical data sections. At the bottom of the report, a company logo may be imported to customize the look of the print-outs.

Download a demo from the website today at [www.tetco-geo.com](http://www.tetco-geo.com)!

Enertech Manufacturing is continually working to improve its products. As a result, the design and specifications of each product may change without notice and may not be as described herein. For the most up-to-date information, please visit our website, or contact our Customer Service department at [info@enertechmfg.com](mailto:info@enertechmfg.com). Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely Enertech Manufacturing's opinion or commendation of its products.



**GeoAnalyst® Geothermal System Report**

System 1 - Geo System

Weather Data Location: Toledo OH

7/27/2009

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<p><b>Heating</b></p> <p>Electricity (Tetco): 6136 kWh</p> <p>Electricity (Auxiliary): 563 kWh</p> <p>% by Tetco: 97.5 %</p> <p>Average Efficiency: 3.30 COP</p> <p>Annual Cost: \$670</p>	<p><b>Cooling</b></p> <p>Electricity (Tetco) 1341 kWh</p> <p>Average Efficiency: 19.5 Btu/Watt</p> <p>Annual Cost: \$134</p>	<p><b>Total Annual Operating Costs</b></p> <p>Heating: \$670</p> <p>Cooling: \$134</p> <p>Hot Water: \$229</p> <p><b>Total<sup>1,2,3</sup> \$1,033</b></p>
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<p><b>Hot Water</b></p> <p>Electricity: 2293 kWh</p> <p>% by Tetco: 58.1 %</p> <p>Average Efficiency: 2.36 COP</p> <p>Annual Cost: \$229</p>	<p><b>Design Heating Load:</b> 50000 Btu/hr</p> <p>Indoor Design Temperature: 70 °F</p> <p>Outdoor Design Temperature: 0 °F</p> <p>Heating Electric Rate: 0.10 \$/kwh</p> <p>Hot Water Electric Rate (Htg): 0.10 \$/kwh</p>
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<p><b>Design Cooling Load:</b> 30000 Btu/hr</p> <p>Indoor Design Temperature: 75 °F</p> <p>Outdoor Design Temperature: 90 °F</p> <p>Cooling Electric Rate: 0.10 \$/kwh</p> <p>Hot Water Electric Rate (Clg): 0.10 \$/kwh</p>	<p><b>Tetco Model:</b> TVT040</p> <p><b>Water Heater:</b> Electric</p> <p><b>Auxiliary Heat:</b> 6.47 kW</p>
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<p><b>Loop Type / Soil:</b> One Vertical U-Tube, Polyethylene SDR-11 3/4" / Average Rock</p> <p><b>Bore Depth:</b> 150 ft</p> <p><b>Total Bore required:</b> 509 ft</p> <p><b>Minimum Loop Temp:</b> 30 °F</p> <p><b>Maximum Loop Temp:</b> 79 °F</p> <p><b>Average Heating Loop Temp:</b> 45.9 °F</p> <p><b>Average Cooling Loop Temp:</b> 67.2 °F</p>	<p><b>Deep Earth Temp:</b> 51 °F</p> <p><b>Annual Temperature Swing:</b> 25 °F</p> <p><b>Phase Shift:</b> 36 Days</p> <p><b>Soil Conductivity:</b> 1.4 Btu/hr-ft-F</p> <p><b>Soil Diffusivity:</b> 0.04 ft<sup>2</sup>/hr</p> <p><b>Pipe Conductivity:</b> 0.226 btu/hr-ft-F</p>
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1 Total annual operating costs includes heating, cooling and hot water. Base electric use (electric use other than heating, cooling and hot water) is not included, and will vary depending upon lifestyle. Total annual utilities equals heating, cooling and hot water costs plus base electric use.

2 The operating costs shown above are considered to be an estimate due to the variability of living habits, weather, and system installation.

3 This software uses the latest algorithms from IGSHPA (International Ground Source Heat Pump Association) for ground loop sizing. Operating costs are based upon IGSHPA and ASHRAE (American Society of Heating, Refrigerating, and Air Conditioning Engineers) algorithms. All calculations are based upon Tetco equipment, and may not be comparable for other manufacturer's equipment.

Calculations provided by ...

