Ground Loop Design

For systems that "Work By Design, Not By Accident."

Geothermal HVAC Design Software Suite

Design, Simulation & Optimization

- **Vertical Borehole**
- **Horizontal Trench**
- **Surface Water**
- **Hybrid Systems**

for Geothermal Ground Heat Exchangers

Features and Benefits

DESIGN FLEXIBILITY

- Vertical, Horizontal & Surface Water Designs
- Peak / Monthly / 8760 Hourly Simulations
- Fixed Length / Temperature Design Modes
- Fluid Dynamics Simulator for Piping Design Vaults / Manifolds / Automated Pipe Sizing
- Unsurpassed Financial Modeling Tools

ENGINEERING FRIENDLY

- Import / Export Data to Other Industry Tools
- English / Metric Units; Professional Reports
- Peak-Shaving Hybrid Heating/Cooling Controls
- More than 1,000 Pre-Configured Heat Pumps
- Modular Design Tools

PROVEN WORLDWIDE

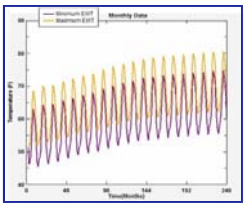
- Available in Multiple Languages
- ASHRAE / IGSHPA / European Standards
- International Pipe Sizes, Fluids and Tables
- Online Training Available

INDUSTRY STANDARD

- Used by 1,000's of Engineering Firms Worldwide
- Integrated into University Curriculum
- Based on Industry Proven Theory
- ASHRAE financial outputs

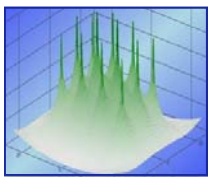
Ground Loop Design™ 2014

Discover the #1 leading commercial GHX software design tool in the world. Ground Loop Design™ software is the choice of design professionals in over 62 countries and is the world's leading software suite for commercial geothermal heat pump and ground heat exchanger system design. GLD2014 enables designers to design the way they want: with power and extreme flexibility.



In development for over 18 years, the new GLD2014 offers a comprehensive toolset that engineers need to quickly design cost-effective and high performance geothermal systems. GLD2014 enables designers to simulate an unlimited variety of loopfield configurations for any and all installation areas. With GLD2014: design with ease, simulate with confidence, ensure turbulent flow while minimizing pumping requirements and optimize the tradeoff between capital costs and operational savings with the complete GSA LifeCycle costing module.

GLD2014 Runs natively on Windows® based systems and is available in standalone or network versions. MAC® and Linux users have the option of using one of many standard emulators.



www.groundloopdesign.com • sales@groundloopdesign.com

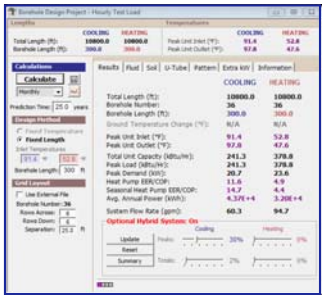
Thermal Dynamics, Inc. • 5115 Industrial St. • Maple Plain, MN 55359 USA

Ph: (763) 479-3638 • Fax: (763) 479-2183 • e-mail: info@groundloopdesign.com

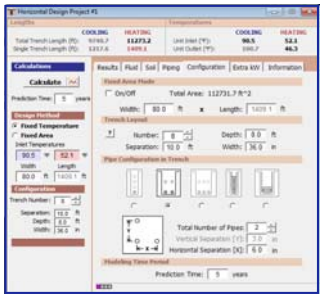
Ground Loop Design

For systems that "Work By Design, Not By Accident."

GLD2014 Design Modules:



Vertical GHX Module

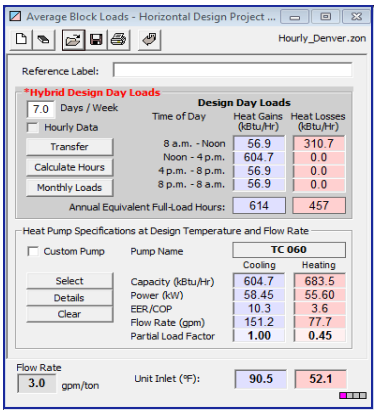


Horizontal GHX Module

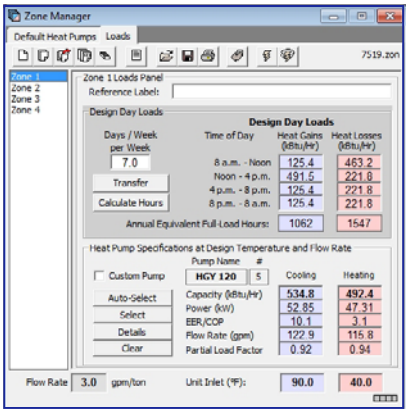
Surface Water GHX Module

GHX Modules

Purpose designed interface for each type of loop design. Vertical Module features Peak, Monthly and Hourly design simulations. Modules can share the same load for design comparison. Both the Horizontal and Vertical GHX Modules feature the new peak-shaving Hybrid Controls. The Horizontal Module features the new fixed area mode.



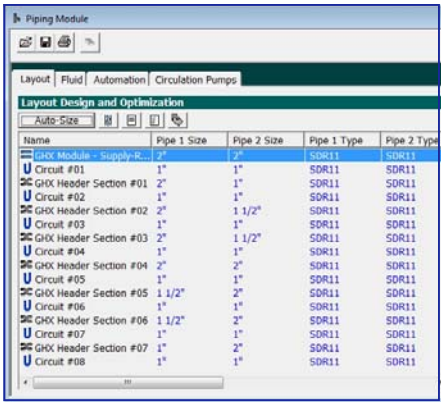
Average Block Load Module



Zone Manager Load Module

Load Modules

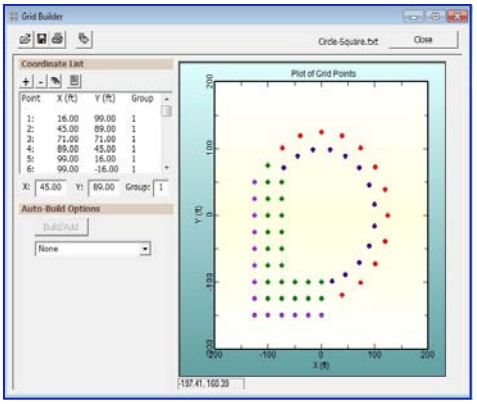
No other program offers the ability to model multiple zones with different loads and equipment as well as to provide a quick design option. GLD2014 features more than 1,000 pre-loaded heat pump which are fully modeled with automatic performance curves and operational data, allowing the designer to concentrate on the ground heat exchanger and fluid temperature design rather than the heat of compression and pump sizing. The Average Block modules allows gold standard monthly and 8760 hourly simulations. The Zone Manager enables multi-zone simulations for the highest level of pump selection accuracy. The new Hybrid Tool dynamically updates the loads values.



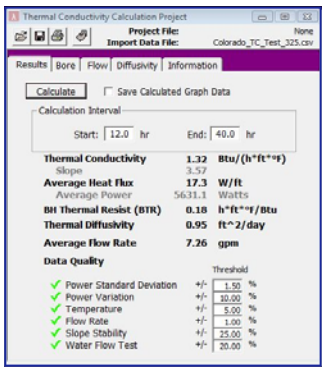
CFD / Piping Module

Productivity Modules

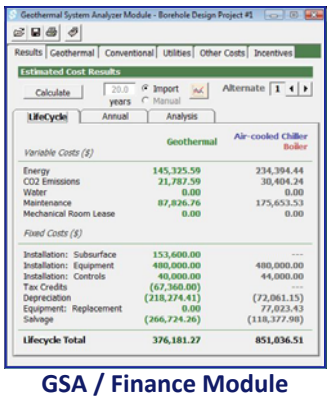
GLD provides numerous design tools that enable the designer to exceed client needs and expectations. With the fluid dynamics module, build the GHX module piping system automatically, including balanced circuits, vaults and manifolds. Now includes international pipe sizes. Use the GSA module, the world's most comprehensive geothermal lifecycle costing tool, to win bids by demonstrating the savings associated with your design. The GridBuilder lets the designer create a loopfield design for any project site. The optional Thermal Conductivity Module is a must for TC testing.



Grid Builder Module



Thermal Conductivity Module



GSA / Finance Module

Ordering Information

- Online: www.groundloopdesign.com
- Phone: 763-479-3683
- Mail: Thermal Dynamics, Inc.
  5115 Industrial Street
  Maple Plain, MN 55359
  U.S.A.

Thermal Dynamics