

# OPTIMIZING GSHP SYSTEMS

Commercial GSHP system installations are becoming more common as the concern for the environment and the cost of energy are increasing. In some cases, they can even have a lower installed cost. They are taking a greater share of the mechanical system market, as even developers in crowded downtown areas are forcing designers to look at geothermal systems. Designers are often hesitant to consider geothermal systems because they are unfamiliar with them... they are beyond the comfort zone.



By learning how to optimize the design of the system and becoming comfortable with the technology, you as a system designer or installer will feel more comfortable in responding to your clients needs to reduce energy costs and their impact on the environment.

The first goal of this 2-day class is to familiarize you with the terminology and technology used in commercial GeoEx-change applications, provide other options that are available on many of the sites and buildings your clients come to you with, and identify common concerns and solutions before they become issues.

The second goal of the class is to go through the step by step process needed to design a ground heat exchanger (GHX) for a specific building on a specific site. The course will define what information is required before you can use closed loop design software, and the options you have to work with. It will show you the effect of the system you have designed, the equipment you are working with, the fluids you specify, how different options impact installation costs, commissioning considerations, and identification of LEED points commonly missed with a GSHP system. In addition to that you will have the opportunity to meet other people working in this industry who can help you avoid some of the more costly "learning experiences".

**Practical  
GeoExchange  
Solutions**

In association with the Manitoba Geothermal Energy Alliance  
Annual Conference & Trade Show, March 15, 2008

Phone: 303-424-3949 or 204-204-255-5959  
E-mail: [june@majorgeothermal.com](mailto:june@majorgeothermal.com)



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PRESENTED BY THERMAL DYNAMICS INC.

*Designers can often design a ground-source heat pump system that works*

*An effective designer will design a ground-source system that is:*

- *Cost-effective to install*
- *Simple to install*
- *Simple to maintain*
- *Optimizes performance*



*This 2-day course in geothermal system design utilizes the combined experience of 40 years from people with real-world experience. It will provide you with information and methods to optimize and enhance the design of your closed loop GSHP systems.*

**PGS Practical  
GeoExchange  
Solutions**

**Practical GeoExchange Solutions  
303-424-3949, 204-255-5959**

**March 17-18, 2008  
Winnipeg, Manitoba, Canada**

## Commercial GSHP Design

PGS will host a commercial GSHP design course in Winnipeg, Manitoba, March 17-18, 2008. The seminar will be held at the Victoria Inn, concurrent with the Manitoba Geothermal Energy Alliance annual trade show (March 15). This Monday - Tuesday course will focus on the variables engineers, architects and designers need to be aware of to optimize the scope, viability and cost of their project.

The course structure will provide overviews of actual commercial projects, evaluation approach, determine solutions for site and design considerations, and how to test these solutions using commercial loop design software.

## Who Should Attend?

**Professional Engineers & Architects** – You should be familiar the basic operation of water-source heat pumps, fundamentals of loop design theory, monthly/hourly load calculations, load durations vs. ground loop capacity, and hybrid loop systems. Previous GSHP experience and CGC/IGSHPA installer accreditation are strongly advised.

**Heating & Cooling Contractors** – For the advanced, experienced mechanical contractor comfortable with design-build GSHP projects. Must comprehend the difference between peak load calculations, monthly and hourly loads, fluid requirements of water-source heat pumps, and basic loop design theory. Previous GSHP experience and CGC/IGSHPA installer accreditation are strongly advised. **Note: This is not** a fundamentals or introductory course for GSHP systems.

## About the Instructors



**Ed Lohrenz, CGD, Principal**  
**Practical GeoExchange Solutions**  
**GeoXergy Systems Inc. (geoexergy.com)**

Ed Lohrenz has worked in the geothermal industry since the early 1980's as a residential system designer, and installer, and an equipment distributor in Western Canada. In 1984, Ed began exploring integrated geothermal ice rink and ice storage systems and is now recognized as one of the most experienced low-temperature heat pump experts in the industry. Between residential and commercial projects, Mr. Lohrenz has well over ten thousand tons of heat pump capacity operating throughout North America and Asia that he has directly designed or consulted

on. He is an accredited installer and trainer for the International Ground Source Heat Pump Association (IGSHPA), a Certified GeoExchange Designer (CGD), ASHRAE member, and trainer for the Canadian GeoExchange Coalition (CGC). He is founder and president of GeoXergy Systems Inc., a consulting and design firm servicing the GeoExchange industry.



**Terry Proffer, CGD, Principal**  
**Practical GeoExchange Solutions**  
**Major Geothermal (majorgeothermal.com)**

Terry Proffer has been involved in the GSHP industry since 1993. Prior to this time, he spent over 15 years as a geologist in the petroleum industry before entering a second career in the mechanical trades. Mr. Proffer is accredited as an installer and installation trainer by IGSHPA, and a Certified GeoExchange Designer. His residential and commercial experience includes heat load analysis, loop design, thermal conductivity testing, and field installations; his system designs drive forced air, radiant, snowmelt, domestic hot water and industrial process water applications and his expertise is often used for independent peer review of other system designs, design validation and commissioning. Mr. Proffer has designed, consulted or installed on thousands of tons of heat pump capacity throughout the continental U.S, Canada and Asia, and trained over 500 contractors and engineers through IGSHPA, PGS and field training classes. Terry is one of the few practicing Certified GeoExchange Designers in Colorado, is a factory-certified ClimateMaster trainer, and is a member of Rocky Mountain ASHRAE.



## British Columbia Institute of Technology (BCIT)



The British Columbia Institute of Technology (BCIT) recognizes that this technology provides significant economic and environmental benefits for owners of almost any type of building. BCIT's Bachelor of Environmental Engineering Technology Program will offer an expanded version of this course at the BCIT Campus in Burnaby, BC in the spring of 2008, along with additional courses in commissioning and quality control/quality assurance in the installation of geothermal systems.

For additional information about these courses please contact Donna Natale at (604) 432-8316 at BCIT.

## Registration Form

**Date: March 17-18, 2008**  
**Practical GeoExchange Solutions (U.S. office)**  
6285 West 48th Avenue  
Wheat Ridge, CO 80033  
**303-424-3949, fax 303-423-6795**

june@majorgeothermal.com

[www.majorgeothermal.com](http://www.majorgeothermal.com), [www.geoexergy.com](http://www.geoexergy.com)

Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City, State/Prov, Zip: \_\_\_\_\_

Telephone: \_\_\_\_\_

Fax: \_\_\_\_\_

Email: \_\_\_\_\_

*Cost is \$1200 USD. Includes ASHRAE manual "Design of Geothermal Systems for Commercial & Institutional Buildings" (Kavanaugh & Rafferty), continental breakfast, lunch & refreshments for both days.*

**\*\*\* Bring your laptop computer! \*\*\***

☐ Check (payable to Major Geothermal – please enclose with mailed registration)

☐ Credit card – Type: Mastercard ☐ Visa ☐

Credit card #: \_\_\_\_\_

3 Digit security code: \_\_\_\_\_

Expiration date: \_\_\_\_\_

Name on card: \_\_\_\_\_

Signature: \_\_\_\_\_

Upon receipt of registration, an information packet will be forwarded with a venue location map, course schedule and list of items to bring.

Last date to cancel for refund: **February 29, 2008.**

Should sufficient registrations not be received within two weeks of the start date of the class, Practical GeoExchange Solutions reserves the right to cancel the course. All registration fees shall be returned in the event of insufficient registrations.

**Location: Victoria Inn, 1808 Wellington Avenue, Winnipeg, MB**