



Canadian  
GeoExchange  
Coalition

Coalition  
canadienne  
de l'énergie  
géothermique

# Residential Designers' Course

Kelowna, June 2-4 2011

Fairfiled Inn

1655 - Powick Road, Kelowna, British Columbia V1X-4L1

## Global Quality GeoExchange™ Program®

The Canadian GeoExchange™ Coalition (CGC) is pleased to present its **Canadian GeoExchange™ Coalition Residential Designers' Course**. The course is offered by one of our qualified trainers.

This training is part of an ongoing market transformation initiative started in 2001 by the CGC and aimed at creating a unified and strong Canadian geoechange industry. This training is one of the six training modules developed by the CGC as part of its **CGC Global Quality GeoExchange™ Program®**.

The three-day comprehensive workshop is designed for geoechange developers, architects, manufacturers, distributors, dealers, installers, engineers, plumbers, designers, homeowners, excavators, geologists, contractors involved with HVAC, trenching/drilling, ducting, sheet metal, persons involved with environmental issues or sustainable energy, and individuals who desire a deeper knowledge of this innovative technology. Representatives from public utilities, private utilities, and rural electric cooperatives can also benefit from this training.

Upon successfully passing the examination, you will receive a CGC Residential Designer's Training Certificate which is the pre-requisite to apply for CGC Accreditation for industry professionals. Residential Designer accreditation will help you open new markets and offer your customers an increased level of confidence, knowing their system is designed by a qualified professional who is knowledgeable of Canadian standards, regulations, and geology.

## Instructor — Eric Dickie, BSc., MA

The instructor, Eric Dickie, is President and Director of Delta Geothermal Ltd. Eric has been involved with installations of a variety of geoechange designs – vertical, horizontal, lake or ocean-based, and open loop. He brings that experience to his teaching sessions. The ongoing hands-on projects that Eric keeps active in allow him to provide added credibility and assistance to students when in the teaching mode. Eric is an experienced geoechange trainer and has consistently received positive evaluations.

His past is technically based and includes teaching in the technology education sector, which led him to develop aspects of effective education. His past and present responsibilities allow him to further develop strong problem-solving skills, something that is a necessity in the industry.

His educational background includes a bachelor's degree in math and physics, an education certificate, inter-provincial journeyman's papers in carpentry, a master's degree in educational leadership, and of course his training and ongoing learning to certify him as an instructor in heat management.

As an individual, he believes strongly in the validity of geoechange technologies. He recognizes that one of the potential pitfalls of the industry is a significant increase in demand, leading to unqualified people becoming involved and running the risk of negative development within the industry. He uses his unique set of skills to help move the geoechange industry in a direction that develops trained and accredited geoechange experts, and ultimately leads to the continuation of a successful industry for all.

The Canadian GeoExchange™ Coalition acts as the industry catalyst to unite private and public sector stakeholders, and to expand the market for ground source heat pumps and geoechange™ technology in Canada. As the nexus of information, training, certification, standards and public awareness, our mandate is to work with stakeholders to build the necessary infrastructure to foster the growth of the Canadian geoechange™ industry.

To learn more about the Coalition and its numerous efforts towards a structure market transformation of the Canadian geoechange market, please consult our website at

**[www.geoexchange.ca](http://www.geoexchange.ca)**



# Canadian GeoExchange™ Coalition

## Residential Designers' Course

**Target audience:** Individuals who are involved in the design of residential geoeexchange systems, defined as systems servicing buildings of less than 15,000 square feet or three storeys. Persons or individuals who should take this course usually belong to a trade or technical profession and are authorized or required by law to perform certain duties on a geoeexchange site / project. Depending on the province, this person is a driller, an electrician, a plumber, an HVAC or a refrigeration specialist. In some provinces, the design and installation of a geoeexchange system may require more than one such individual.

The Coalition offers the following six courses:

- ◆ Canadian GeoExchange™ Coalition Drilling, Well Construction and Loop Installation Course
- ◆ Canadian GeoExchange™ Coalition Installers' Course
- ◆ Canadian GeoExchange™ Coalition Residential Designers' Course
- ◆ Canadian GeoExchange™ Coalition Commercial Designers' Course
- ◆ Canadian GeoExchange™ Coalition Municipal Inspectors' Course
- ◆ Canadian GeoExchange™ Coalition Direct Expansion Course

Please note that the Installers' Course is a pre-requisite to both the residential and the commercial designers' courses as well as the DX course.

Contact the CGC to inquire about what course(s) best fit your needs.

**Pre-requisite:** CGC Installers' Course—pass      **Duration:** 3 full days + examination      **Cost:** CAN\$ 540.00 + applicable taxes

**Outcome:** Upon passing the examination with success, the trainee will receive a **CGC Training Certificate**. The successful trainee can then apply for CGC residential designer accreditation. In addition to training, accreditation also requires the appropriate credentials in the province/territory where the individual is to perform his/her work as well as field experience and/or the appropriate supervision from an experienced installer. Please refer to the CGC Accreditation and Certification Program for further details

**Requirements:**

- ◆ Participants **must** bring a laptop computer to this course, for in-class design practise/use.
- ◆ Participants **must** bring course materials and software supplied by the training organizer listed on the registration confirmation document.

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### Training Overview

#### I: Introduction

Course Specifications  
Geoeexchange Means an Integrated Approach  
Designers & Project Management  
Steps to Designing a Residential Geoeexchange System

#### II: Building Energy Analysis

Building Energy Analysis  
Building Energy Analysis – “Rule of thumb” Practices  
Building Energy Analysis  
Building Energy Analysis – Example

#### III: Loop Types and Selection: Residential Loop Sizing

Loop Sizing in Residential Systems  
Loop Sizing in Residential Systems – Example  
Loop Sizing in Residential Systems  
Supplemental Material for Loop Sizing in Residential Systems  
Selection of Geoeexchange System Type  
Drilling Methods  
What Designers Should Know About Drilling  
Borefield Design (Residential)  
Specification for Heat Exchanger Construction  
Specification for Heat Exchanger Construction – Borehole Grouting  
Specification for Heat Exchanger Construction  
Isolated Open-Loop Groundwater – Well Design  
Introduction to Pond Loops  
Sizing the Pond Loop HX  
Pond Loop HX Layout

#### IV: Commission and Post-Installation

Residential: Final Steps of Installation – “As-Built” Book  
Residential: “As-Built” Book – Final Site Report  
Residential: “As-Built” Book – Post Installation Checklist  
Residential: “As-Built” Book – Labels  
Residential: “As-Built” Book – General Documentation  
Residential: “As-Built” Book – Owner Documentation  
Residential: “As-Built” Book – Summary

#### V: Annex

Degree-Days  
Software  
Example Problems  
Supplementary Materials



# The CGC Global Quality GeoExchange™ Program®

A step by step program schematic from training and accreditation of individuals, qualification of firms and system certification

## STEP 1—TRAINING

- ◆ Training is required for all **individuals** directly involved in the design or installation of a geexchange system.
- ◆ There are **six distinct** training courses available in Canada:
  - ⇒ Training for drillers: **Canadian GeoExchange™ Coalition Drilling, Well Construction and Loop Installation Course**
  - ⇒ Training for installers: **Canadian GeoExchange™ Coalition Installers' Course**
  - ⇒ Training for residential designers: **Canadian GeoExchange™ Coalition Residential Designers' Course**
  - ⇒ Training for commercial designers: **Canadian GeoExchange™ Coalition Commercial Designers' Course**
  - ⇒ Training for municipal inspectors: **Canadian GeoExchange™ Coalition Municipal Inspectors' Course**
  - ⇒ Training for DX installers: **Canadian GeoExchange™ Coalition Direct Expansion Course**
- ◆ Courses details are available on CGC website at [www.geo-exchange.ca](http://www.geo-exchange.ca)

## STEP 2—APPLICATION FOR INDIVIDUALS ACCREDITATION

- ◆ CGC **training certificates or equivalent are required** to apply for accreditation.
- ◆ Please **read carefully** the accreditation application forms (a different application form is available for drillers, installers, residential designers and for commercial designers) for all the rules and conditions pertaining to accreditation
- ◆ For training equivalency and recognition of experience in the geexchange industry, please **read carefully** the **CGC Clarification Statement on CGC Global Quality GeoExchange™ Program®** AND the Installer Training Equivalency Criteria for Accreditation Under the **Global Quality GeoExchange™ Program®** as issued on May 30th, 2007.
- ◆ Every individual interested in participating in CGC Global Quality GeoExchange™ Program® **MUST** apply for accreditation.

## STEP 3—APPLICATION FOR COMPANY QUALIFICATION

- ◆ Companies/contractors, hiring CGC accredited individuals for drilling, installation or design, either as full time employees or as subcontractors, must be qualified under the **CGC Global Quality GeoExchange™ Program®**. For most of the companies/contractors, this will only be a simple formality.
- ◆ However, company qualification is an important step to ensure **quality installation** and **consumer protection**:
  - ⇒ It allows the CGC to verify the credentials of the companies/contractors who will ultimately provide the consumers with a guarantee on their geexchange system.
  - ⇒ It will allow the CGC to screen out of the **CGC Global Quality GeoExchange™ Program®** companies/contractors that have been found guilty of various professional malpractice and/or breach of CGC Code of Conduct.
  - ⇒ Etc.
- ◆ Qualification of companies will allow CGC to recognize the highest quality of workmanship, and highest ethical standard and screen out mushroom companies only interested in short terms gains and benefits.
- ◆ Company/contractor qualification is also an important step in the CGC management of the consumer complaint mechanism.

## STEP 4—APPLICATION FOR SYSTEM CERTIFICATION

- ◆ A **CGC Certified GeoExchange™ System** is a geexchange system on which CGC accredited drillers, installers and designers have been involved.
- ◆ A **CGC Certified GeoExchange™ System** is a geexchange system that follows C-448-02 at a minimum.
- ◆ A **CGC Certified GeoExchange™ System** is a geexchange system that fully satisfies all relevant municipal, provincial and federal regulations.
- ◆ A **CGC Certified GeoExchange™ System** is a geexchange systems that meets CGC Certification Guidelines.
- ◆ A **CGC Certified GeoExchange™ System** is the condition to access utilities programs, as well as provincial and federal grants programs if and when available.



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## REGISTRATION FORM—NO REFUNDS

### Section 1—Registration Details

Date of registration: \_\_\_\_\_

MR  MS FIRST NAME \_\_\_\_\_ LAST NAME \_\_\_\_\_

TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

\_\_\_\_\_

DELIVERY ADDRESS \_\_\_\_\_  
(IF DIFFERENT FROM ABOVE)

CITY \_\_\_\_\_

PROVINCE / STATE \_\_\_\_\_ POSTAL CODE / ZIP CODE \_\_\_\_\_

E-MAIL \_\_\_\_\_

PHONE \_\_\_\_\_ FAX \_\_\_\_\_

BACKGROUND (position, experience, interest) \_\_\_\_\_

\_\_\_\_\_

Have you taken the CGC Installers' course ? \_\_\_\_\_

Do you have allergies to any foods? \_\_\_\_\_

### Section 2—Payment Details

Please use this registration form as your invoice

Early course registration fee is CAN\$ 540.00 + tax = \$604.80 — Before May 13th

Late course registration fee is CAN\$ 640.00 + tax = \$716.80— After May 13th

### Section 3—Method of Payment

*Please note that the delivery of this training session, offered by the Canadian GeoExchange Coalition, is co-managed by Delta Geothermal Ltd. All correspondence regarding the delivery of this course should be addressed directly to Delta Geothermal Ltd.*

VISA  MASTER CARD  CHEQUE (Cheques should be made to the order of Delta Geothermal Ltd.)

(Should you prefer to provide your credit card information over the phone, please call the number below.)

CREDIT CARD NUMBER: \_\_\_\_\_ EXPIRY DATE (MM/YY): \_\_\_\_\_

CARDHOLDER NAME: \_\_\_\_\_

CARD HOLDER'S SIGNATURE: \_\_\_\_\_

Please mail this registration form with your payment to:

Upon reception of payment, final course details will be sent to registered participants.

Delta Geothermal Ltd.,  
15850 Whiskey Cove Road  
Lake Country, BC, V4V 1C4

Please send registration form to the attention of Simonne Dickie at Delta Geothermal Ltd. You may also address your questions and inquiries to:

You may also send by fax to: (604) 648-9452

Simonne Dickie at (250) 766-1445  
[simonne@deltageothermal.com](mailto:simonne@deltageothermal.com)