

**Central Pennsylvania Chapter – CSI
In conjunction with ASHRAE Central PA Chapter
42st Annual Exhibitor’s Show Seminar Series
*Presents***



Stephen Kavanaugh, PhD, Fellow ASHRAE

Steve Kavanaugh is professor emeritus of mechanical engineering at the University of Alabama-Tuscaloosa. He is a past chair of ASHRAE Technical Committee 6.8 Geothermal Energy, and past chair of TC 9.4 Applied Heat Pumps and Heat Recovery. He is also a Fellow of the American Society of Mechanical Engineers.

Kavanaugh is the author of several ASHRAE publications including: Geothermal Heating and Cooling: Design of Ground Source Heat Pump Systems (2014); HVAC Simplified (2006); and Ground Source Heat Pumps: Design of Geothermal Systems for Commercial and Institutional Buildings (1997). He also received the ASHRAE Technical Achievement Award in 2001.

Description:

**Short Course:
Design of Affordable and Efficient Commercial Ground Source Heat Pump Systems**

Course Length: 3 hours

This course describes the best design practices of ground source heat pump systems to achieve maximum customer benefit. The course examines the economic analysis of ground source vs. more traditional systems and what is necessary to design an effective and efficient ground source system. The course covers energy analysis, equipment selection, drilling technologies, testing requirements, hydronic system design and system controls. Participants will learn all that is necessary for the design and installation of a successful ground source heat pump system.

Date: Wednesday, March 15, 2017

Qualifies for 3 PDHs/LUs or .3 CEUs
and it is recognized by AIA

Time: 8:00 am to 11:30 am (Approx)

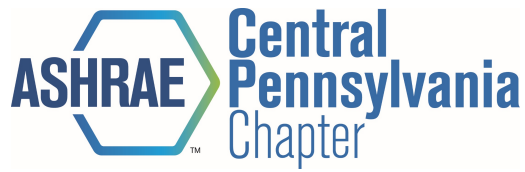
**Location: Radisson Hotel
1150 Camp Hill Bypass
Camp Hill, PA.**



Cost: \$100

Pre-registration and payment for the 2017 Short Course is required by March 10, 2017

Please register and pay online at: <http://cenpenn.ashraechapters.org>, follow link



Course Learning Objectives:

1. Understand GSHP nomenclature, system types, and appropriateness of various options.
2. Become acquainted with equipment options and methods of calculating system performance.
3. Learn the procedures for ground-coupled (closed-loop) heat exchanger and piping design.
4. Become familiar with GSHP system costs and field measured performance data.
5. Gain knowledge of available ASHRAE resources to improve and expedite GSHP design.

This seminar is presented in conjunction with ASHRAE Central PA Chapter and CSI Central PA Chapter's 42nd Exhibitor's Show that opens 11:00 a.m. at the same location.

Pre-registration and payment for the 2017 Short Course is required by March 10th
Please register online at: <http://cenpenn.ashraechapters.org>

As a last resort, complete and mail the form below:



Name: _____

Address: _____

_____ Phone _____

Email: _____

Return with check for \$100 (made out to 'ASHRAE Central PA Chapter') to:

Gannett Fleming, Inc
Attn: Bryan Edwards, P.E.
209 Senate Ave, W 500
Camp Hill, PA 17011

Phone: 717-514-9848
Email: bedwards@gfnet.com

Please register and pay online at: <http://cenpenn.ashraechapters.org>, follow link