



Join Us for this Upcoming Seminar

# Hydronics Training Tuesday, October 8, 2019

Ferguson HVAC  
10205 10th Ave N  
Plymouth, MN 55441

**Attend One Session or Both!**

Morning Session – Water Quality  
*Water Quality and Separation*

7:30 a.m. Registration  
8:00 a.m. Program  
12:00 p.m. Program Ends/Lunch

See detailed session description below.

Afternoon Session – Design Considerations  
*Balancing Valves, Heat Migration, Zone Control*

12:00 p.m. Registration/Lunch  
1:00 p.m. Program  
5:00 p.m. Program Ends

See detailed session description below.



**About the Instructor: Bob “Hot Rod” Rohr**

Bob is the Training and Education Manager for Caleffi Hydronic Solutions and is known for training programs filled with expertise and quick wit. He is a regular presenter and trainer for trade groups and associations over his 30+ year career. A regular contributor to Mechanical Business magazine, and several online discussion rooms, Bob carries a Master Plumbing, Mechanical and Gas Fitters license in Missouri.

\$69.00 per person, per session for MHCA Members  
(Price includes the program, handouts, and lunch.)

\$109.00 for non-MHCA Members per person, per session  
(Join MHCA and save \$40.00 per person)

Program hosted and lunch sponsored by:



Space is limited to 40 attendees per session. Register today by completing the form below!  
Be sure to indicate which session – morning or afternoon – you will attend.  
A lunch is included with both session.



# Hydronics Training

## Session Descriptions

### Morning Session – Water Quality

Water is the essential fluid in all hydronic systems. Its quality affects the system's efficiency, reliability, life expectancy, and the effectiveness of any chemical additives.

There is a "physical" aspect to water quality, and a "chemical" aspect. The physical aspect involves procedures for ridding systems of gasses and solid impurities. The devices involved include dirt separators, air vents and magnetic separators. Problems can also develop within hydronic systems when water quality is ignored. This session lays out procedures for converting raw water into high quality water. Emphasis is placed on demineralization for preparing water for use in hydronic systems.

The session also includes procedures to address "chemical" aspects of water, including testing, flushing, washing, demineralizing, and final adjustments of water quality.

The objective is to ensure that the water within the system can provide optimal performance over many years of operation.

### Afternoon Session – Design Considerations

This session focuses on hydronic designs. The goal is to designs that are flexible, reliable, simple to build and highly energy efficient. The program covers balancing, heat migration, and zone control.

A hydronic system can be installed with the latest heat sources, heat emitters and other hardware, but without proper balancing, it is unlikely to deliver optimal comfort and energy efficiency.

In addition, an understanding of how heat moves and what factors enhance (or inhibit) that movement is vitally important. Conduction, convection and radiation all play roles, as do material selections and the placement of those materials within a system. The ability to estimate heat transfer rates using basic formulas is also important when designing systems.

Finally, zoning is a preeminent benefit of hydronic heating and cooling and when properly applied, it provides unsurpassed comfort control, flexibility and energy conservation. To take full advantage of these benefits, designers must understand several principles that let zoned systems quickly adapt to constantly changing interior and exterior conditions.



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### Registration Form

**ATTENDEE INFORMATION**

**(COPY FORM FOR ADDITIONAL ATTENDEES)**

**BE CERTAIN TO SELECT SESSION(S) FOR EACH ATTENDEE**

**Session**

(Circle One)

Name: (first) \_\_\_\_\_ (last) \_\_\_\_\_

AM    PM

Name: (first) \_\_\_\_\_ (last) \_\_\_\_\_

AM    PM

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

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

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip \_\_\_\_\_

Phone: (\_\_\_\_\_) \_\_\_\_\_ Fax: (\_\_\_\_\_) \_\_\_\_\_

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

**REGISTRATION FEE**

	<b><u>Member</u></b>	<b><u>Non-Member</u></b>
Attendee	\$69.00 pp, per session	\$109.00 pp, per session
# Attendees	_____	_____
<b>Total</b>	<b>\$ _____</b>	<b>\$ _____</b>

**JOIN MHCA FOR \$395.00 AND SAVE  
\$40.00 PER PERSON ON THIS PROGRAM  
AND OUR UPCOMING PROGRAMS !!**

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**Check:** Payable to "MHCA"

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Minnesota Heating and Cooling Association  
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