

# Little Red Schoolhouse®

---

SEMINARS FOR HYDRONIC/STEAM HVAC &  
PLUMBING SYSTEMS DESIGN AND SERVICE



**Bell & Gossett**  
a xylem brand

SEMINARS »

SEMINAR DETAILS »

HOW TO ENROLL »

# Welcome to the Little Red Schoolhouse®

Since its inception in 1954, Bell & Gossett's Little Red Schoolhouse has offered training for hydronic and steam HVAC and plumbing systems application, design and maintenance. Known as the industry's educator, the Schoolhouse sets itself apart by emphasizing a systems-based concept of teaching, rather than focusing on product features and benefits.

Our training curriculum is created using the core hydronic and steam engineering principles established by Gil Carlson and his Bell & Gossett engineering team back in the 1950s. Training modules are frequently updated to support advancements in equipment design and operation, along with the evolving focus on sustainability, decarbonization and electrification of hydronic systems.

## What sets Schoolhouse training apart?

- No cost to attend training\*
- Student learning environment is technical in nature, with no sales or marketing influences
- Training taught by full-time instructors focused on education
- Training has a long-standing reputation and high degree of credibility among industry professionals
- Accreditation by IACET to provide globally accepted Continuing Education Units (CEU) for all courses
- Course subject matter accessible via multiple media forms, including web-based instruction, recorded webinars and downloadable PDF documents

## Schoolhouse facilities include:

- Classroom style seating for 40 students
- State-of-the-art audio-visual equipment to deliver course content in an effective manner to maximize knowledge retention
- Hands-on, working demonstrations of numerous hydronic systems (including primary-secondary, variable speed and system balance)
- All Little Red Schoolhouse seminars include a tour of Xylem's manufacturing facilities

\*Students are responsible for travel costs to and from Morton Grove, Illinois, as well as all lodging costs during their stay. Shuttle service between hotel and Schoolhouse is provided each day (to Schoolhouse only on Thursday).



## Modern Hydronic Heating Systems: Basic Seminar

3 DAYS - 1.7 CEU CREDITS - 17 HRS

### Course Overview:

This course is designed as an introduction to the basic principles of hydronic heating system design and operation using PowerPoint lecture, work problems and live operation of demonstration displays. Applications discussed include residential and small commercial water-based systems where Rules of Thumb can be used to size and select system components such as heat transfer terminal units, distribution piping, circulating pumps, zone or balance valves, and other required hydronic specialties for proper air management.

### Who should attend?

Wholesalers, installing contractors, building owners, facilities maintenance staff or anyone with a desire to understand basic hydronic system design and operation.

**NOTE:** Consulting engineers and other design professionals considering attending this course must recognize this is an **entry level curriculum**.

### Expected learning outcomes:

- Ability to recognize the advantages a properly designed hydronic system can provide
- Apply Rules of Thumb learned to simplify design steps for a closed loop hydronic system
- Recognize how to assess the projected system load for sizing boilers, pumps, piping, air management expansion tanks and other required specialties for hydronic systems
- Select appropriate piping layout design to support the application and expected system control strategy
- Use Bell & Gossett System Syzer® to complete standard calculations

## Design & Application of Hydronic Commercial Heating Systems

3 DAYS - 1.7 CEU CREDITS - 17 HRS

### Course Overview:

This course is designed to apply advanced principles of hydronic heating system design using PowerPoint lecture, work problems and live operation of demonstration displays. Applications discussed will be larger commercial systems using preselected heat transfer coils as the foundation to perform the suggested steps of control and balance valve sizing, piping layout selection, choosing the appropriate air management components and determination of design flow and head to properly size centrifugal pumps and other required hydronic specialties. A discussion on constant and variable speed pump operation within a closed loop hydronic system will be held to establish logical criteria for choosing the best centrifugal pump based on its intended service.

### Who should attend?

Consulting engineers, design and build contractors, facility managers, hydronic system control professionals or anyone seeking in-depth knowledge of larger commercial hydronic heating system design and operation concepts.

Students attending this course are expected to have successfully completed the *Modern Hydronic Heating Systems: Basic Seminar* or, at a minimum, have thorough practical knowledge and experience with the subject matter covered in that course.

### Expected learning outcomes:

- Assess applications to make proper heat transfer coil selections
- Recognize importance of proper control valve sizing and selection to manage heat transfer coil output performance, and to understand their influence on circulating pump sizing and operation control strategies
- Comprehend the importance of hydronic proportional flow balance
- Calculate flow and temperature requirements in primary-secondary systems
- Identify the function of system pressurization components and apply the fundamentals of expansion tank sizing
- Use forward-thinking pump selection analysis techniques
- Ability to use Bell & Gossett System Syzer® and ESP-Systemwise® to complete advanced calculations and system component selections

## Large Chilled Water System Design Seminar

3 DAYS - 1.7 CEU CREDITS - 17 HRS

### Course Overview:

This course is structured to guide students in discovering the multiple design solutions for the production and delivery of chilled water in cooling systems using PowerPoint lecture, work problems and live operation of demonstration displays. Applications discussed will be larger commercial systems, with a review of the fundamental design steps for sizing and selecting hydronic system components. Additionally, students will be exposed to Fluid Economizer concepts and a detailed discussion on available variable speed pump control strategies, including how the overall system design influences choosing the right one.

### Who should attend?

Consulting engineers, design & build contractors, facility managers, hydronic system control professionals or anyone seeking in-depth knowledge of larger commercial hydronic chilled water system design and operation concepts.

Students attending this course are expected to have successfully completed the *Modern Hydronic Heating Systems Basics and Design & Application of Hydronic Commercial Heating Systems* seminars or, at a minimum, have thorough practical knowledge and experience with the subject matter covered in those courses.

### Expected learning outcomes:

- Identify and evaluate pumping alternatives for a secondary distribution or variable-primary loop design
- Recognize importance of proper control valve sizing and selection to manage heat transfer coil output performance, and to understand their influence on circulating pump sizing and operation control strategies
- Ability to analyze system requirements and select the correct piping layout for best results
- Awareness of chilled water supply temperature selection and impact on equipment sizing and system efficiency
- Comprehend the difference of operation between *Curve* and *Area* control strategies for variable speed pumping
- Grasp of the influence system design will have on correct variable speed pump control strategy selection
- Appreciation of the benefits of Fluid Economizer for potential energy savings in hydronic chilled water systems
- Ability to use Bell & Gossett System Syzer® and ESP-Systemwise® to complete advanced calculations and system component selections

## Plumbing Systems Design Seminar

3 DAYS - 1.7 CEU CREDITS - 17 HRS

### Course Overview:

This course is intended to guide students through fundamental and advanced principles of plumbing system design using PowerPoint lecture, work problems and live operation of demonstration displays. Applications discussed will be applicable to small and large residential/commercial systems, encompassing multiple potable and wastewater management functions. Featured topics include pressure boosting, water heating, recirculation of heated water and effluent and wastewater management system options.

### Who should attend?

Consulting engineers, plumbing contractors, wholesalers, facility managers or anyone seeking in-depth knowledge of designing a variety of building plumbing system types.

Students attending this course are expected to have successfully completed at least one advanced *Hydronic Heating or Cooling Systems* seminar or, at a minimum, have thorough practical knowledge and experience with the subject matter pertaining to reading pump curves, pipe sizing velocity and friction loss rate considerations, and how to choose constant or variable speed pumps covered in those courses.

### Expected learning outcomes:

- Comprehend terminology and fundamental plumbing design concepts in conjunction with applicable design codes and standards
- Ability to use Hunters Curve and Fixture Count methods for establishing required potable system flow rates
- Confident use of formulas in calculation steps to determine static head, friction losses and required pump flow and head
- Apply design strategies to potable water heating, recirculation and pressure boosting, as well as wastewater pumping systems
- Use ESP-Systemwise® tools to properly size and select pumps and equipment in a variety of design problems
- Analyze and determine correct pump type for intended use



## Steam Systems Design and Application Seminar

3 DAYS - 1.7 CEU CREDITS - 17 HRS

### Course Overview:

Students will discuss fundamental and advanced principles required to obtain a thorough working knowledge of steam system operation, including steam supply methods and subsequent condensate management solutions. This is accomplished using PowerPoint lecture, work problems and live operation of demonstration displays. Applications discussed will be applicable to small and large residential/commercial systems, encompassing both comfort heating and process loads.

### Who should attend?

Consulting engineers, installing and service contractors, facility maintenance staff or anyone engaged in the design, installation or operation of residential and commercial steam systems.

### Expected learning outcomes:

- Comprehend the steam cycle, associated terminology and the proper use of Steam Tables for system design
- Ability to explain the fundamental design and operation of 1-pipe and 2-pipe steam systems
- Capability to size and select steam system components utilizing charts, tables, and manufacturer's selection tools
- Grasp common steam boiler controls and their operational purpose
- Properly size and select the correct type of condensate pumping equipment based on system service needs
- Apply good piping practices for steam heat transfer coils, heat exchangers and valve stations to avoid damaging scenarios typically associated with them



## Service & Maintenance of Hydronic System Equipment Seminar

3 DAYS - 1.7 CEU CREDITS - 17 HRS

### Course Overview:

Focus is on providing students a fundamental understanding of closed or open loop hydronic system operation, including identification of the required components that comprise these systems, their functions within the system, proper installation techniques and how to perform routine service and maintenance on them. This will be done using PowerPoint lecture, work problems, live operation of demonstration displays and access to a variety of pump types mounted to "hands-on" service cart workstations equipped with tools and spare parts for student tear down and rebuild. In addition, attendees will have the opportunity to modify a gasketed plate and frame heat exchanger, replace a bladder in a pre-charged full acceptance expansion tank and perform an assortment of other maintenance tasks on hydronic specialties.

### Who should attend?

Mechanical and plumbing service contractors, facility maintenance staff or anyone seeking knowledge on proper care and repair of centrifugal pumps and hydronic components.

Students attending this course are expected to have some practical knowledge and experience with basic pump operation principles, interpreting pump curves and applying field pressure gauge readings on them. Possessing a general understanding of equipment operation such as boilers, chillers and heat exchangers is also suggested.

### Expected learning outcomes:

- Comprehend the basic operation of a hydronic system and the purpose of components within them
- Ensure application of good near pump piping practices and proper pump alignment basics
- Confident verification and application of field data to troubleshoot system issues
- Apply learned service techniques for system equipment upkeep and emergency repair scenarios
- Analyze symptoms and determine corrective action for common system component issues and failures
- Use ESP-Systemwise® tools to confirm installed equipment selections and their ability to adapt to actual field conditions that may vary from initial design

# Seminar Details

## CEU Credit Details

### 3 Days - 1.7 CEU Credits

- Students are required to attend all 3 days; no partial credits will be awarded
- Full participation in class discussions and additional educational activities, as well as completion of all work problems is expected
- Completion and submission of course evaluation document prior to departure on last day
- Students need to provide their own laptop computer or tablet to complete work problems and course evaluation

## Class Schedule:

**Tuesday & Wednesday** ..... 8:30 a.m. to 4 p.m.

**Thursday** ..... 8:30 a.m. to 3 p.m.

Shuttle service between hotel and Schoolhouse is provided each day (**to Schoolhouse only** on Thursday).

**The shuttle leaves promptly at 8:00am each morning.**

For those requiring air travel, flights departing on the last day should be booked no earlier than 5 p.m. to ensure ample time for arrival to O'Hare airport, rental car return and TSA screening clearance.

## Notes for all Classes:

- PDF files of all course presentations will be made available for download **2-3** working days prior to the first day of class using a link provided in the reminder e-mail to all registered students. Those wishing to use hard copies for note taking during the course should **print the files** and bring them to class. Work problems and necessary reference materials will be distributed during class in hard copy form. The Schoolhouse will provide three-ring binders to organize all documents.
- Prior to the first day of class, students should **download the APP version of Bell & Gossett System Syzer®** for iPhone, iPad or Android devices, located under the **Selection Tools** tab on the Bell & Gossett website, from the iTunes App Store or the Google Play Store. Consult your local Bell & Gossett representative for assistance.
- Lunch will be provided each day.
- The Schoolhouse will host a meet & greet social at the hotel on **Tuesday from 5 to 7 p.m.** Appetizers and beverages provided. All students and significant others are welcome.
- All courses include a **plant tour**. The Schoolhouse will provide all necessary PPE, including steel-toe shoes. Personal steel-toe shoes brought by students must have an EH (Electrical Hazard) rating.

# How to Enroll

To register for a seminar, please visit [www.bellgossett.com/LRSH](http://www.bellgossett.com/LRSH) for a calendar listing all in-person Schoolhouse course offerings. Locate and select the desired course title. After reviewing pertinent course information, click the **Register Now** button to begin the registration process.



Bell & Gossett  
**SYSTEM  
SYZER**



DOWNLOAD ON  
THE APP STORE



DOWNLOAD ON  
GOOGLE PLAY



## Little Red Schoolhouse

8200 N. Austin Avenue | Morton Grove, Illinois 60053  
Phone: (847) 966-3700 | [www.bellgossett.com/LRSH](http://www.bellgossett.com/LRSH)

iTunes® and iPad® are registered trademarks of Apple Inc.  
Google Play™ and Android™ are trademarks of Google Inc.  
© 2024 Xylem Inc. BG-LRS 100C March 2024

**xylem**  
Let's Solve Water