

Only \$550 per day
 \$1100 for 2 Days (1.6 CEUs)
 \$2200 for 4 Days (3.2 CEUs)

Please help our logistics team and register early.
 Cancel up to 14 days in advance without penalty*.

Promo Code: X05

HVAC Workshop

Air Conditioning & Boilers

ACB-AX

This 4-day workshop combines two of our most popular 2-day seminars:
Air Conditioning & Refrigeration and Boiler Operation, Maintenance and Safety

Register for the workshop for complete coverage, or choose the 2-day training you need. See class descriptions inside. ➡

ST.	CITY	SEMINAR DATES	ST.	CITY	SEMINAR DATES	ST.	CITY	SEMINAR DATES	ST.	CITY	SEMINAR DATES
AL	Birmingham	Dec 10-13 '18	HI	Honolulu	Dec 17-20 '18	NJ	Newark	Jan 7-10 '19	TN	Memphis	Dec 17-20 '18
AL	Mobile	Nov 12-15 '18	IA	Des Moines	Feb 4-7 '19	NM	Albuquerque	Jan 14-17 '19	TX	Arlington	Dec 10-13 '18
AZ	Phoenix	Nov 26-29 '18	ID	Boise	Jan 28-31 '19	NV	Reno	Jan 14-17 '19	TX	Austin	Jan 21-24 '19
CA	Burbank	Oct 22-25 '18	IL	Elk Grove Village	Oct 29-Nov 1 '18	NY	Albany	Oct 29-Nov 1 '18	TX	El Paso	Dec 17-20 '18
CA	Fresno	Nov 12-15 '18	IL	Joliet	Jan 7-10 '19	NY	Buffalo	Jan 14-17 '19	TX	Houston	Nov 26-29 '18
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CA	Sacramento	Oct 9-12 '18	MA	Peabody	Nov 26-29 '18	OH	Columbus	Oct 29-Nov 1 '18	WA	Seattle	Feb 18-21 '19
CA	Sacramento	Jan 21-24 '19	MA	Worcester	Dec 10-13 '18	OH	Dayton	Feb 18-21 '19	WA	Tacoma	Jan 7-10 '19
CA	San Diego	Nov 12-15 '18	MD	Baltimore	Nov 26-29 '18	OK	Tulsa	Dec 3-6 '18	WI	Madison	Feb 18-21 '19
CA	San Jose	Feb 18-21 '19	MI	Grand Rapids	Oct 9-12 '18	OR	Portland	Jan 21-24 '19	WI	Milwaukee	Dec 3-6 '18
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CT	Hartford	Nov 12-15 '18	MI	Romulus	Feb 4-7 '19	PA	Harrisburg	Nov 5-8 '18			
DC	Washington	Dec 3-6 '18	MN	Minneapolis	Mar 11-14 '19	PA	Philadelphia	Dec 3-6 '18			
FL	Jacksonville	Jan 14-17 '19	MO	Kansas City	Mar 4-7 '19	PA	Pittsburgh	Jan 14-17 '19			
FL	Orlando	Dec 17-20 '18	NC	Charlotte	Oct 22-25 '18	SC	Columbia	Jan 21-24 '19			
GA	Atlanta	Oct 9-12 '18	NC	Raleigh	Nov 26-29 '18	SC	Greenville	Dec 3-6 '18			
GA	Atlanta	Jan 28-31 '19	NE	Omaha	Dec 17-20 '18	TN	Knoxville	Jan 21-24 '19			
			NH	Manchester	Oct 1-4 '18						

Don't see a date/location that works? Join a live classroom from anywhere with our simulcast option. Dates include:

Oct 29-Nov 1 '18
 Dec 3-6 '18

Understanding Air Conditioning & Refrigeration™



Day 1-2 of our 4-Day workshop. May also be purchased as a 2-day seminar for just \$1100.

Seminar Overview

The goal of this two-day Air Conditioning and Refrigeration course is to provide a broad introduction to air conditioning and refrigeration systems, including everyday operation & important refrigerant safety practices.

Students are taught common practices (and some “tricks-of-the-trade”) for general operation and maintenance of their AC&R systems. They will learn about maintenance schedules and servicing, system diagnostics, troubleshooting, and fine-tuning to gain maximum efficiency. The course also covers an introduction to commercial and industrial chillers, regulatory laws and energy conservation.

Please note that the Air Conditioning & Refrigeration course can also be taken as a 2-day seminar for just \$1100.

Discussion Topics

- Fundamentals of AC&R
 - Air Conditioning versus Refrigeration
 - Laws of Thermodynamics and Heat Transfer
 - Regulation, Codes and Standards
 - New Energy Efficiency Standards (S.E.E.R.)
 - EPA Section 608 of the Clean Air Act
 - ASHRAE, ASME
 - Technician Licensing, Testing and Certification
- Compression Refrigeration Cycle
 - Saturation, Superheat, and Subcool
 - Basic System Design
 - Follow-the-Heat™
 - Refrigerants
 - CFCs, HCFCs, HFCs, Inorganics
 - Zeotropic and Azeotropic Refrigerant Mixtures
 - Refrigerant Safety Including R-410a
- Refrigerant Oils
 - MO, AB, POE, PAG, PAO Oils and Properties
 - Maintaining Oil Quality in Your AC&R System
- Major AC&R System Components
 - Evaporator
 - Compressor
 - Condenser
 - Metering (Expansion) Device
- Auxiliary System Components
 - Crankcase Heater
 - Suction Accumulator
 - Receiver
 - Filter-Drier
 - Sight Glass with Moisture Indicator
 - Oil Separator
 - Service Valves
 - Muffler
 - Refrigerant Controls
- Refrigeration Systems
 - Air, Water, and Ground-Source Heat Pumps
 - Commercial Refrigeration
 - Other specialty refrigeration systems
- System Diagnostics, Servicing and Troubleshooting
 - Service Tools and Equipment
 - Manifold Gauge Set
 - Recovery Machine
 - Vacuum Pump
 - Micron Gauge
 - Leak Detection Equipment
 - Recovering Refrigerant
 - Charging the AC&R System
 - Diagnosis, Common Failures, and Remedies
 - Energy Conservation and Operating Efficiency

The EPA 608 exam is available to be taken at the conclusion of the class.

Section 608 of the Federal Clean Air Act requires that all persons who maintain, service, repair, or dispose of appliances that contain regulated refrigerants be certified in proper refrigerant handling techniques by passing the EPA 608 Technician Certification exam. For students of the 2 day Air Conditioning and Refrigeration seminar, we offer the exam for free on the second day of the seminar (a \$35 value).

ST.	CITY	SEMINAR DATES	ST.	CITY	SEMINAR DATES
AK	Anchorage	Jan 7-8 '19	NM	Albuquerque	Jan 14-15 '19
AL	Birmingham	Dec 10-11 '18	NV	Las Vegas	Dec 17-18 '18
AL	Mobile	Nov 12-13 '18	NV	Reno	Jan 14-15 '19
AZ	Phoenix	Nov 26-27 '18	NY	Albany	Oct 29-30 '18
AZ	Tucson	Oct 29-30 '18	NY	Albany	Mar 4-5 '19
CA	Burbank	Oct 22-23 '18	NY	Buffalo	Oct 1-2 '18
CA	Fresno	Nov 12-13 '18	NY	Buffalo	Jan 14-15 '19
CA	Modesto	Jan 7-8 '19	NY	Long Island	Feb 4-5 '19
CA	Oakland	Oct 9-10 '18	NY	Rochester	Dec 3-4 '18
CA	Oakland	Dec 17-18 '18	NY	Syracuse	Jan 21-22 '19
CA	Ontario	Dec 3-4 '18	NY	White Plains	Nov 26-27 '18
CA	Orange County	Jan 7-8 '19	OH	Cincinnati	Jan 14-15 '19
CA	Sacramento	Oct 9-10 '18	OH	Cleveland	Nov 26-27 '18
CA	Sacramento	Jan 21-22 '19	OH	Columbus	Oct 29-30 '18
CA	San Diego	Nov 12-13 '18	OH	Dayton	Feb 18-19 '19
CA	San Jose	Feb 18-19 '19	OK	Tulsa	Dec 3-4 '18
CA	Santa Rosa	Feb 4-5 '19	OR	Portland	Oct 1-2 '18
CO	Denver	Dec 3-4 '18	OR	Portland	Jan 21-22 '19
CT	Hartford	Nov 12-13 '18	PA	Allentown	Nov 12-13 '18
DC	Washington	Dec 3-4 '18	PA	Harrisburg	Nov 5-6 '18
DE	Wilmington	Nov 12-13 '18	PA	Philadelphia	Dec 3-4 '18
FL	Ft. Lauderdale	Feb 11-12 '19	PA	Pittsburgh	Jan 14-15 '19
FL	Jacksonville	Jan 14-15 '19	SC	Columbia	Jan 21-22 '19
FL	Orlando	Dec 17-18 '18	SC	Greenville	Dec 3-4 '18
FL	Tampa	Nov 12-13 '18	SD	Sioux Falls	Oct 15-16 '18
GA	Atlanta	Oct 9-10 '18	TN	Knoxville	Jan 21-22 '19
GA	Atlanta	Jan 28-29 '19	TN	Memphis	Dec 17-18 '18
GA	Marietta	Feb 18-19 '19	TN	Nashville	Dec 10-11 '18
HI	Honolulu	Dec 17-18 '18	TX	Arlington	Dec 10-11 '18
IA	Des Moines	Feb 4-5 '19	TX	Austin	Oct 1-2 '18
ID	Boise	Jan 28-29 '19	TX	Austin	Jan 21-22 '19
IL	Elk Grove Village	Oct 29-30 '18	TX	El Paso	Dec 17-18 '18
IL	Joliet	Jan 7-8 '19	TX	Houston	Nov 26-27 '18
IL	Naperville	Dec 17-18 '18	TX	Lubbock	Jan 21-22 '19
IN	Evansville	Feb 4-5 '19	TX	San Antonio	Nov 12-13 '18
IN	Indianapolis	Jan 14-15 '19	TX	Temple	Feb 4-5 '19
KS	Wichita	Feb 18-19 '19	UT	Salt Lake City	Nov 5-6 '18
KY	Louisville	Oct 1-2 '18	VA	Norfolk	Dec 17-18 '18
KY	Louisville	Jan 14-15 '19	VA	Richmond	Nov 26-27 '18
LA	New Orleans	Oct 22-23 '18	WA	Seattle	Oct 1-2 '18
MA	Peabody	Nov 26-27 '18	WA	Seattle	Feb 18-19 '19
MA	Worcester	Dec 10-11 '18	WA	Tacoma	Jan 7-8 '19
MD	Baltimore	Nov 26-27 '18	WI	Madison	Feb 18-19 '19
ME	Portland	Jan 21-22 '19	WI	Milwaukee	Dec 3-4 '18
MI	Ann Arbor	Jan 14-15 '19			
MI	Grand Rapids	Oct 9-10 '18			
MI	Grand Rapids	Feb 11-12 '19			
MI	Kalamazoo	Jan 21-22 '19			
MI	Romulus	Feb 4-5 '19			
MN	Minneapolis	Mar 11-12 '19			
MO	Kansas City	Mar 4-5 '19			
MO	St. Louis	Nov 26-27 '18			
NC	Charlotte	Oct 22-23 '18			
NC	Greensboro	Nov 5-6 '18			
NC	Raleigh	Nov 26-27 '18			
NE	Omaha	Dec 17-18 '18			
NH	Manchester	Oct 1-2 '18			
NH	Manchester	Jan 28-29 '19			
NJ	Newark	Jan 7-8 '19			

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Oct 29-30 '18
Dec 3-4 '18

Boiler Operation Maintenance & Safety™

▶ **Day 3-4** of our 4-Day workshop.
May also be purchased as a 2-day
seminar for just \$1100.

Seminar Overview

In most facilities, the boiler is the device with the most potential for disaster. This two-day Boiler Operation, Maintenance & Safety course provides students with the practices and procedures to eliminate that potential. It offers a great overview for maintenance technicians, multi-craft tradespeople, building managers, stationary engineers, or anyone seeking to improve their boiler maintenance and operation skills. The goal of this course is to ensure the student gains a comprehensive understanding of commercial, industrial and utility boiler systems. Boiler inspections, operating controls testing and general troubleshooting tips will all be discussed. Overall, this program is designed to help maximize safety, dependability, and efficiency, thus extending boiler life, improving boiler efficiency, saving energy costs for the employer, and establishing a culture of safe work practices among the employees.

Please note that the Boiler Operation, Maintenance & Safety course can also be taken as a 2-day seminar for just \$1100.

Discussion Topics

- Boiler Types and Configurations
 - Firetube Boilers
 - Watertube Boilers
 - Cast Iron Boilers
 - High Pressure Boilers
 - Low Pressure Boilers
 - Steam Boilers
 - Hydronic Boilers
- Fundamentals of Combustion and Heat transfer
 - Theory of Combustion
 - Thermodynamics
 - Steam Tables
- Burner Operation and Control
 - Gas Train
 - Oil Train
 - Standard Burner
 - High Turndown Burner
 - Burner Controls
- Boiler Operation and Testing / Standard Operating Procedures
 - Start-Up and Shut-Down
 - Normal Operation
 - Boiler Blowdowns
 - Water Quality Analysis and Treatment
 - Valve Types
 - Safety Valves
 - Low Water Cutoff Controls
- Boiler Room Safety
 - Boiler Accidents
 - Cause and Effect
- Cause and Effect Case Study
 - Safety Valves
 - Confined Spaces
 - Lockout/Tagout
- Operation Standards
 - ASME Codes
 - NFPA Codes
 - NBIC Code
- Controls and Safety Devices for Automatically Fired Boilers
 - Water Level Control
 - Temperature Control
 - Pressure Control
 - Fuel Trains
- Inspection and Maintenance of Commercial and Industrial Boilers
 - Fireside
 - Waterside
 - Burner
 - Auxiliary Equipment
- Boiler and Burner Efficiency
 - Heat Exchanger Efficiency
 - Combustion Efficiency
 - Efficiency Tests
 - Condensate Return
 - Steam Traps
- Troubleshooting
 - Burner
 - Controls
 - Additional

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ABOUT TPC TRAINING

TPC Training is the leader in maintenance, repair, and operator training, including more than 2000 local seminars for maintenance personnel in industrial plants and large facilities. Our two to four day courses are the best way to gain, refresh, and advance essential maintenance skills quickly and apply them in the workplace. Our live training also includes on-site training, tailored to each customer's needs and equipment, and live simulcast courses, available anywhere.

ABOUT OUR INSTRUCTORS

Our team of 60 field-experienced instructors is the backbone of our training seminar schedule, from HVAC certification and maintenance to PLC courses. Together they've logged more than 200,000 hours in the classroom — by far the broadest experience in the industry.

All of our instructors must meet three requirements:

1. Relevant formal education in the topic
2. Documented hands-on work experience in their area
3. Specific experience as a maintenance training instructor

Many of our instructors' credentials extend even further, including experience as authors, speakers, and industry organization board members within their fields of expertise. And they stay current on technology and industry trends through their ongoing education, field visits, and peer review meetings.

Workers leave our seminars ready to apply what they've learned to make an immediate impact at their jobs.

HIGH QUALITY PRESENTATIONS

All of our seminars include a complete, general education on the subject matter, and enough flexibility to give our instructors the room they need to tailor the courses to address students' individual needs, concerns, and experience levels. Our instructors deliver content with hands-on exercises, instructor demonstrations, interactive student quizzes, problem solving exercises, role-playing, lectures, videos, graphics, and case study discussions. This delivery emphasizes practical learning that makes our seminars some of the most high-impact days many of our students experience.

CONTINUING EDUCATION (CEUs)

Upon completion of this seminar, the student will receive a certification of completion with 8 classroom hours (.8 TPC Training CEUs) per day attended. Most employers and many government agencies accept TPC Training CEUs to fulfill their continuing education requirements.

If an attendee needs CEUs to renew a state license, **please contact us before registering at 303-867-5035 to ensure the appropriate state licensing board has approved the seminar.**

If the licensee's state licensing board does not currently accept this training toward license renewal, we are happy to submit an application for approval as long as we have received the request at least one month before the training date.

TESTING

Our optional testing and certification can be used to assess training needs prior to training and to measure training outcomes. It can provide documentation for a qualified electrical worker program or other internal safety or training program.

Please contact us for more testing information at 303-867-5035 or at testing@tpctraining.com

WHAT YOU WILL TAKE HOME

- A TPC Training workbook detailing the material covered in the seminar
- A handy Reference Guide
- A personalized Training Certificate with 0.8 TPC Training Continuing Education Units for each day attended. (3.2 for all four days)
- All the information you need from asking our instructors specific questions about your own equipment

SEMINAR AGENDA

7:30 am	Registration
8:00 am	Class Begins
12:00 -1:00 pm	Lunch (on your own)
4:30 pm	Class Ends

SEMINAR FEE

\$550 Each Day
\$1100 Two Days
\$2200 All Four Days

NO RISK REGISTRATION & MONEY-BACK GUARANTEE

Not sure whether you or your employees will be able to attend an upcoming seminar? You can reserve your space in the class at any time and cancel without penalty. Cancellations made more than 14 days prior to the seminar may be refunded or rescheduled. Cancellations made within 14 days may be rescheduled for any future topic and/or date. If you're not satisfied with the course, we'll promptly refund your payment.

Reduce costs and boost results with on-site training

All of our public seminar topics can also be delivered as on-site training at your facility. For larger teams, on-site training offers the benefits of customized content, reduced travel and downtime, and maximum results.

Learn More at live.tpctraining.com/on-site

