

ARIZONA HEAT PUMP COUNCIL

SPRING 2023

- Master Heat Pump Technician Program
- HVAC System Consultant Series
- Commercial Technician Series
- HVAC Certification Seminars
- Multiple online instructor-led courses available

CONTINUING EDUCATION PROGRAM

CHECK OUT OUR ONLINE CLASSES!



edu.elaz.org
Phone: 602.263.0115
Fax: 602.274.0029

Who We Are

The Arizona Heat Pump Council (HPC) is part of the Electric League of Arizona (ELA) founded in 1960. HPC members are an active group of professionals who are committed to benefitting Arizonans through the use of energy efficient heating, ventilation, air conditioning, and refrigeration (HVACR) products and services. Visit www.ELAZ.org for more information.

Educational Opportunities

Since 1985, Arizona Heat Pump Council has offered a full array of continuing education opportunities for HVACR professionals. Thousands of individuals have chosen HPC courses to enhance their knowledge and skills in the industry.

- All HPC courses qualify for North American Technician Excellence (NATE) Continuing Education Units.
- Many HPC courses qualify for Building Performance Institute (BPI) Continuing Education Units.



Certificate Programs



Master Heat Pump Technician

The Master Heat Pump Technician (MHPT) Program is designed specifically for the technician who is seeking to gain the skills and certification to take them to the next level in their career. Technicians completing this seven-course program with a "B" or better become Master Heat Pump Technicians and earn a patch to proudly display on their uniforms as well as a certificate of completion. All seven courses (HPC 101-107) are offered each semester. We strongly recommend courses be taken in the order they are outlined. A one-time certificate fee is required – **see Course Registration Form to register.**

HVAC System Consultant

The HVAC System Consultant (HSC) Program is specifically designed for the individual in the position of consulting and designing the right system for their customers. The series is designed to give the consultant the knowledge and skills required to properly assess the customer's needs and to help the customer find the best system to meet those needs. Consultants completing the seven-course program receive a certificate of completion. A one-time certificate fee is required – **see Course Registration Form to register.**

Heat Pump Council Membership Benefits

In the Arizona Heat Pump Council referral program, members enjoy all the benefits the ELA has to offer plus some unique opportunities to grow their business and participate in cooperative marketing initiatives with Arizona utilities. This referral program provides consumers with a fast and efficient response to their needs and supplies Council members with quality sales and service referrals. **For more information on membership, contact 602-263-9391 or visit www.elaz.org.**

Heat Pump Council Education Requirements

For existing members to maintain an active status in Heat Pump Council Referral Program, the following requirements apply:

Each company must accrue a minimum of eight continuing education credits (2 classes) during each semester (Spring & Fall). Contractors may select various employees to attend courses based on their specific needs. More than one person may attend the same class to receive credit as long as a passing grade of "C" or better is earned. By emailing, mailing or faxing your registration, you are committing to attend the designated classes and therefore are eligible to participate in the referral program.

Business & Introductory Courses



HPC 126 Refrigeration Fundamentals

Date: January 12, 2023

Time: 6:00pm - 9:30pm

Instructor: Rich Porter

Fees: \$146 Non-Members/\$116 Members/\$81 APS Qualified Contractor Rate

Credits: 4 Continuing Education Credits/3.5 NATE CEUs

Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004



What You Can Expect: This class covers all the fundamentals of refrigeration and is highly recommended to take prior to the popular Refrigeration Theory & System Diagnosis.

Who Should Attend: This is a great class for beginning technicians and non-technical staff but is also highly recommended for anyone wanting to brush up on their refrigeration knowledge.



HPC100L – Lab Refrigeration System Diagnostics

Date: April 4, 2023

Time: 5:00pm - 8:30pm

Instructor: Rich Porter

Fees: \$146 Non-Members/\$116 Members/\$81 APS Qualified Contractor Rate

Credits: 4 Continuing Education Credits/3 NATE CEUs

Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004



Note: This is a hands-on lab and requires the student to bring some diagnostic tools. Meters, temperature clamps, thermometers, manifold gauges and digital Manometers or Magnehelic gauges will be needed for this class.

What You Can Expect: This course is a "Hands-On" lab designed to give the ENTRY level technician a better understanding of where and how to get the readings necessary to properly diagnose any system. This class focuses on the fundamentals needed to work safely and efficiently around all residential/light commercial systems. Special emphasis on voltage, amperage, capacitors, superheat, sub cool, static pressure, and temperature split as well as preventative maintenance procedures are the main focus of this 3-hour lab.

Who Should Attend: Especially suited for the ENTRY level technicians. Anyone new to the industry, or with less than 2 years' experienced individuals will benefit the most from this class. Maintenance/warranty repair technicians and anyone who wants to brush up on the BASICS.



HPC 149 HVAC Troubleshooting

Date: March 14, 2023

Time: 6:00pm - 9:30pm

Instructor: Travis Howard

Fees: \$146 Non-Members/\$116 Members/\$81 APS Qualified Contractor Rate

Credits: 4 Continuing Education Credits/3.5 NATE CEUs

Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004



What You Can Expect: This course will discuss proper steps and procedures for effective troubleshooting. We will discuss troubleshooting tool usage, calibration and care. We will review troubleshooting charts for electrical and mechanical heating and cooling.

Who Should Attend: New service technicians and all installation technicians.



HPC 152 Delivering Professional Service

Date: May 2, 2023

Time: 6:00pm - 9:00pm

Instructor: Carl Bartoli

Fees: \$136 Non-Members/\$106 Members/\$74 APS Qualified Contractor Rate

Credits: 4 Continuing Education Credits/3 NATE CEUs

Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004



What You Can Expect: This class is designed to create a professional service technician, who can deliver a consistent level of service that exceeds your customer's expectations and creates a loyal customer. Learn correct invoice writing, how to market repairs or replacements in a positive way, and how quality service can overcome price objections.

Who Should Attend: Principals, supervisors and technicians who want to deliver a higher level of service and create a more professional service technician and provide a professional experience for their customer.

HPC 161 Introduction to Home Performance

Dates: April 10, 2023 Fees: \$136 Non-Members/\$106 Members/\$74 APS Qualified Contractor Rate
Time: 5:30pm - 8:30pm Credits: 4 Continuing Education Credits/3 NATE CEUs/1.5 BPI CEUs
Instructor: Brandon Walton Location: Online

What You Can Expect: This course will bring your knowledge and skills full circle! Learn the basic fundamentals of Home Performance and how they directly relate to the quality of service you provide. Learn why air leakage, duct leakage, static pressure and insulation affect the performance of the HVAC system and directly relates to the Manual J load calculation. In this course you will learn how to calculate ACHS0 (Air Changes per Hour), CAZ testing, Static Pressure Diagnosis, Duct Leakage testing, room pressure diagnosis, Infrared scanning and the importance of proper air sealing insulation techniques. The course will review thermal dynamics, energy modeling, pressure boundaries, and combustion safety testing as well as techniques to promote home performance to your customers. Requirements to qualify and participate in the Home Performance with ENERGY STAR Program® will also be discussed.

Who Should Attend: HVAC Technicians, owners, managers and office staff who wish to further their knowledge and offer quality service.



HPC 164 Low GWP Refrigeration Safety

Dates: April 18 & 20, 2023 Fees: \$174 Non-Members/\$144 Members/\$101 APS Qualified Contractor Rate
Time: 6:00pm - 9:00pm Credits: 4 Continuing Education Credits/3.5 NATE CEUs/3 BPI CEUs
Instructor: Travis Howard Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004

Note: Included with this class is a copy of the ESCO Low GWP Refrigerant Safety training manual.

****Students may opt-in for the ESCO Institute certification exam for an additional fee (proctored and closed book exam).**

What You Can Expect: Refrigerants that were once common are now being phased out and being replaced with more energy efficient, environmentally friendlier refrigerants, known as Low GWP refrigerants. This course will cover refrigerant safety, introduction to Low GWP refrigerants, refrigerant properties and characteristics, working with refrigerant blends, proper installation and service guidelines, flammable refrigerant considerations and review codes and standards for A2L refrigerants.

Who Should Attend: Students and technicians requiring additional training for the safe handling and transportation of these new refrigerants.



HPC200L - HVAC Electrical Workshop (Lecture + Hands-On Lab) **NEW COURSE!**

Dates: April 24, 26 & 28, 2023 Fees: \$348 Non-Members/\$318 Members/\$222 APS Qualified Contractor Rate
Lecture: April 24 & 26, 2023 Credits: 4 Continuing Education Credits
Time: 6:00pm - 9:00pm Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004
Lab: April 28, 2023 Instructor: Travis Howard
Time: 8:00am - 4:30pm

Note: Students will be required to attend the lecture and lab for credit. Students will need to bring tools on day three.

What You Can Expect: Many of the components in an HVAC system are electrically operated. HVAC systems operate using different voltages. This combined lecture + hands-on lab workshop is designed to teach participants about HVAC high and low voltage. You will gain an understanding of the different high voltages used in HVAC, as well as low voltage (24 volts), used to power thermostats, circuit boards, and other control devices to operate the system. The hands-on lab component will allow participants assemble electrical training boards, make them function, troubleshoot, and diagnose faults.

Who Should Attend: Especially suited for the ENTRY level apprentices. Anyone new to the industry, or with less than 2 years' experienced individuals will benefit the most from this class. Installers and anyone who wants to brush up on the electrical BASICS.

Master Heat Pump Technician Program

HPC 101 Refrigeration Theory & Systems Diagnosis

Session 1: January 17 & 19, 2023 Session 1 Location: SRP Pera Club, 1 E. Continental Drive, Tempe, AZ 85281
Session 2: March 13 & 15, 2023 Session 2 Location: Online
Time: 6:00pm - 9:30pm Fees: \$155 Non-Members/\$125 Members/\$87 APS Qualified Contractor Rate
Instructor: Rich Porter Credits: 4 Continuing Education Credits/7 NATE CEUs/3.5 BPI CEUs

Note: Included with this class is a SuperCool Slide Rule.

What You Can Expect: This course will review mechanical refrigeration theory and system troubleshooting. The four basic components, reversing valves, superheat, sub-cooling, sensible heat, latent heat and BTU's are all reviewed. This course will focus on heat pump operation and diagnosis. If you do not have service experience and/or refrigeration training, **Refrigeration Fundamentals** is a recommended prerequisite.

Who Should Attend: This class is designed for those wanting to master the heat pump refrigerant system. Technicians of all levels will benefit.



HPC 102 Charging, Piping, & Dehydration

Session 1: Jan. 26, 31 & Feb. 2, 2023 Session 1 Location: SRP Pera Club, 1 E. Continental Drive, Tempe, AZ 85281
Session 2: March 22, 27 & 29, 2023 Session 2 Location: Online
Time: 6:00pm - 9:30pm Fees: \$177 Non-Members/\$147 Members/\$103 APS Qualified Contractor Rate
Instructor: Jake Heidt Credits: 4 Continuing Education Credits/10.5 NATE CEUs/5.25 BPI CEUs

What You Can Expect: Did you know factory studies of failed compressors show that a large amount of compressor failures are caused by improper refrigerant levels? This is not a well-known fact in our industry. Refrigerant charge imbalances cause slow degradation of the compressor bearings, valves and motor windings. This results in compressor failures occurring some time after the charge becomes unbalanced, making the connection between refrigerant levels and malfunctions difficult. Improper piping and contaminants are also big offenders.

Who Should Attend: Technicians of all experience levels will benefit from this course.



HPC 103 Electrical Fundamentals for Heat Pumps

Session 1: Feb. 28 & Mar. 2, 2023 Session 1 Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004
Session 2: April 17 & 19, 2023 Session 2 Location: Online
Time: 6:00pm - 9:30pm Fees: \$149 Non-Members/\$119 Members/\$83 APS Qualified Contractor Rate
Instructor: Carl Bartoli Credits: 4 Continuing Education Credits/7 NATE CEUs

What You Can Expect: This class will focus on basic electricity as it pertains to heat pump operations. Topics to be covered include basic electron theory, electromagnetism and PSC motor theory. You will understand how compressors run and start systems work. Having an understanding of capacitor and potential relay operation on an electron level can help the service technician diagnose and avoid malfunctions that are commonly overlooked.

Who Should Attend: Technicians of all experience levels will benefit from this course. Master Heat Pump Technician program.





HPC 104 Control Systems for Heat Pumps

Session 1: March 7 & 9, 2023 Session 1 Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004
 Session 2: April 24 & 26, 2023 Session 2 Location: Online
 Time: 6:00pm - 9:30pm Fees: \$149 Non-Members/\$119 Members/\$83 APS Qualified Contractor Rate
 Instructor: Carl Bartoli Credits: 4 Continuing Education Credits/7 NATE CEUs

What You Can Expect: Participants will attain the knowledge to design an entire electrical system for a residential heat pump. You will also learn the theory of operations and diagnostics of heat pump control circuitry including calibration and testing of common brands of thermostats, cooling and heating anticipation circuits, and commonly used electromechanical and electronic defrost systems.

Who Should Attend: HVAC technicians who want a better working knowledge of heat pump controls.



HPC 105 Customer Service & Selling Skills

Session 1: January 30, 2023 Session 1 Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004
 Session 2: April 12, 2023 Session 2 Location: Online
 Time: 6:00pm - 9:30pm Fees: \$147 Non-Members/\$117 Members/\$82 APS Qualified Contractor Rate
 Instructor: Rich Porter Credits: 4 Continuing Education Credits/3.5 NATE CEUs

What You Can Expect: What is the importance of quality service? How do you provide it? This real-world customer service program will help you develop the techniques to provide top quality service. Win with customers when they are angry or complaining. Listen and learn about what your customer needs. Do you know when to service and when to sell? There comes a time when it is no longer in your customer's best interest to repair the HVACR equipment any longer. Learn how to make your customer's lives better, educate the customer and arouse their interest; provide additional information and benefits, and offer maintenance agreements and/or new equipment.

Who Should Attend: This course is geared specifically to the HVAC service technician.



HPC 106 HVAC Code & Safety

Session 1: February 7 & 9, 2023 Session 1 Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004
 Session 2: April 3 & 5, 2023 Session 2 Location: Online
 Time: 6:00pm - 9:30pm Fees: \$251 Non-Members/\$221 Members/\$155 APS Qualified Contractor Rate
 Instructor: Travis Howard Credits: 4 Continuing Education Credits/7 NATE CEUs/2.0 BPI CEUs

***New:** Included in this class is a copy of the current ***2021 International Residential Code**.

What to Expect: This class is designed to make you more comfortable with the International Residential Code. In this interactive class, popular code issues and interpretations will be discussed. Come prepared to discuss your personal experiences with the Code.

Who Should Attend: Principals, supervisors and technicians who want a practical insight on code and safety in the mechanical trade.



HPC 107 Airflow Dynamics

Session 1: Feb. 21 & 23, 2023 Session 1 Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004
 Session 2: May 1 & 3, 2023 Session 2 Location: Online
 Time: 6:00pm - 9:30pm Fees: \$149 Non-Members/\$119 Members/\$83 APS Qualified Contractor Rate
 Instructor: Rich Porter Credits: 4 Continuing Education Credits/7 NATE CEUs/3.5 BPI CEUs

Note: Included in this class is a **Duct Calculator**.

What You Can Expect: Airflow is one of the most critical issues for customer comfort. Many comfort complaints and improper system operation problems are a result of poor air distribution. A thorough understanding of airflow dynamics can enable you to uncover and resolve system problems. This course will help you identify inadequate or excessive airflow issues. It will help you solve hot spot, drafty, noisy and stale air complaints. Frequently airflow problems can be easily solved by a minor adjustment or changing to a better register.

Who Should Attend: Anyone involved in estimating and home sales. Service technicians and installers will definitely benefit from this class.



HVAC System Consultant Series



HPC 105 Customer Service & Selling Skills (See above for specific class information.)



HPC 106 HVAC Code & Safety (See above for specific class information.)



HPC 108 Wake Up To Heat Pumps

Date: May 10, 2023 Fees: \$136 Non-Members/\$106 Members/\$74 APS Qualified Contractor Rate
 Time: 6:00pm - 8:00pm Credits: 4 Continuing Education Credits/2 NATE CEUs
 Instructor: Rich Porter Location: Online

Note: Recommended course for new members.

What to Expect: Wake Up To Heat Pumps is a class designed to educate the student on all the benefits of Heat Pump operation. The hows and whys will be covered in depth, as well as the economical value that these systems provide. Natural Laws, Efficiency, Heat Transfer, and definitions are also covered in this class as well as why this climate is perfect for Heat Pumps.

Who Should Attend: This class is for anyone who wants a better understanding of this viable alternative to the standard electric or gas furnace.



HPC 111 Proper Installation Procedures

Date: March 21 & 23, 2023 Fees: \$192 Non-Members/\$162 Members/\$114 APS Qualified Contractor Rate
 Time: 6:00pm - 9:30pm Credits: 4 Continuing Education Credits/7 NATE CEUs/3.5 BPI CEUs
 Instructor: Rich Porter Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004

Note: Included in this class is a copy of the reviewed **Technicians Guide for Quality Installation**.

What You Can Expect: This course focuses on all the skills required for proper installations of split and package heat pumps. You will learn the tricks of the trade and how to avoid common installation mistakes made in the field. Other topics include: proper trap and condensate design, brazing techniques, refrigerant line design and setup, flex duct installation and application, control wiring fundamentals, thermostat installation and more. Send your installer to this class to make your installation department more profitable as well as reduce post installation service problems.

Who Should Attend: This class is designed primarily for installers and those service technicians that want to gain knowledge of what proper installations should look like.



HPC 115 Manual J

Dates: April 6, 11 & 13, 2023

Time: 6:00pm - 8:00pm

Instructor: Alex Williams

Fees: \$224 Non-Members/\$194 Members/\$136 APS Qualified Contractor Rate

Credits: 4 Continuing Education Credits/9 NATE CEUs/3 BPI CEUs

Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004

Note: Day two will include hands-on training; A laptop with a Manual J/load calculation software is highly recommended.

(ELA will have a limited number of laptops available upon request). Included in this class is a copy of ACCA's Manual J SAE.

What You Can Expect: Learn about the basic principles of heat transfer, R-Values, heat transfer multipliers and important components of thermal envelope design often overlooked. A step-by-step example of single-zone, single-family, or detached calculation for a whole house will be reviewed using an ACCA approved Manual J software program on day two. Attendees will learn the fundamental processes involved in Manual J and be able to identify the data and components that form a load calculation. Sample calculations for multi-zone, variable air-volume systems, multi-zone split-coil systems, and mobile home load will also be discussed.

Who Should Attend: Anyone involved in estimating or in-home sales including technicians, supervisors, and owners looking to increase technical skills.



Advanced Technician Courses

HPC 139 Duct Diagnostics & Repair

Date: May 4, 2023

Time: 5:30pm - 9:30pm

Instructor: Alex Williams

Fees: \$191 Non-Members/\$161 Members/\$113 APS Qualified Contractor Rate

Credits: 4 Continuing Education Credits/4 NATE CEUs/2 BPI CEUs

Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004

Note: Included in this class is a copy of ACCA's Technician's Guide for Duct Diagnostics and Repair.

What You Can Expect: This class will help you understand major duct issues concerning efficiency, comfort, health, and safety. Get practical tips on installation, repair, testing and diagnosing duct systems.

Who Should Attend: This class is designed for the Master Heat Pump Technician, advanced technician, and system designers.



HPC 158 Wi-Fi Controls

Dates: April 25, 2023

Time: 8:00pm - 9:00pm

Instructor: Rich Porter

Fees: \$136 Non-Members/\$106 Members/\$74 APS Qualified Contractor Rate

Credits: 4 Continuing Education Credits/3 NATE CEUs

Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004

What You Can Expect: This class will help take the "WHY" out of Wi-Fi. We will cover the principles of Wi-Fi, wireless, and communicating controls. Special attention will be given on wiring and connecting to the internet. Also covered is the technology needed to operate these "Smart Thermostats". Customers want to be able to monitor and adjust their controls from everywhere as well as being notified if there is any problem. Wi-Fi enabled thermostats do this and so much more.... Give your customers what they are asking for.

Who Should Attend: This class is for anyone who does not feel comfortable with this new technology.



HPC 159 Zone Systems

Dates: April 27, 2023

Time: 6:00pm - 9:00pm

Instructor: Rich Porter

Fees: \$136 Non-Members/\$106 Members/\$74 APS Qualified Contractor Rate

Credits: 4 Continuing Education Credits/3 NATE CEUs/1.5 BPI CEUs

Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004

What You Can Expect: This informative class focuses on the installation, set-up, wiring, and troubleshooting of Zone Systems.

Participants will gain full working knowledge of these systems. Regardless of brand, the technician will be empowered to properly diagnose, by-pass (to provide temporary comfort), and repair these often confusing systems.

Who Should Attend: This class is designed for anyone who wants the understanding to build confidence and professionalism.



HPC 162 HVAC Variable Capacity Systems

Dates: March 28 & 30, 2023

Time: 6:00pm-9:00pm

Instructor: Travis Howard

Fees: \$146 Non-Members/\$116 Members/\$81 APS Qualified Contractor Rate

Credits: 4 Continuing Education Credits/3 NATE CEUs/3 BPI CEUs

Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004

What You Can Expect: This course will discuss variable capacity systems that include equipment with compressors that are 2-Speed, 5-Speed, and Variable Frequency Drives including mini-splits. You will gain an understanding of the differences between a Mini-Split, Multi-Split, and Variable Refrigerant Flow system. We will discuss system operational sequences, system components and controls to help develop proper maintenance and diagnostic procedures used to troubleshoot and isolate common failures with Variable Capacity Systems.

Who Should Attend: Service Managers, service technicians and installation technicians.



HPC 163 Advanced HVAC Troubleshooting

Dates: March 16, 2023

Time: 6:00pm-9:00pm

Instructor: Travis Howard

Fees: \$136 Non-Members/\$106 Members/\$74 APS Qualified Contractor Rate

Credits: 4 Continuing Education Credits/3 NATE CEUs

Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004

What You Can Expect: This course will help the technician develop a systematic approach to HVAC troubleshooting. We will begin developing and working out solutions and methods for diagnosing electrical, mechanical, refrigerant cycles and air flow. We will learn how to diagnose advanced components such as communicating controls and variable frequency drives.

Who Should Attend: Service Technicians and Installation Technicians.



Commercial Technician Courses

HPC 147 Commercial Refrigeration

Dates: May 11, 2023

Time: 5:00pm - 8:00pm

Instructor: Vic Pietkiewicz

Fees: \$136 Non-Members/\$106 Members

Credits: 4 Continuing Education Credits/3.5 NATE CEUs

Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004

What You Can Expect: This course will discuss commercial refrigeration systems, including walk-in refrigerators and freezers.

Operating conditions, refrigerants and refrigerant selection will be reviewed. The focus will be on wiring, defrost control and operating strategies, and we will discuss refrigeration theory as it applies to product cooling. Mechanical and electrical troubleshooting will also be covered.

Who Should Attend: This class is designed for the Master Heat Pump Technician, Commercial Technician, and other advanced level technicians.

Prerequisites: HPC 101 Refrigeration Theory & Systems Diagnosis



HPC 156 Variable Frequency Drives

Date: May 9, 2023
Time: 5:30pm - 9:00pm
Instructor: Bruce Martz

Fees: \$136 Non-Members/\$106 Members/\$74 APS Qualified Contractor Rate
Credits: 4 Continuing Education Credits/3.5 NATE CEUs
Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004



What You Can Expect: An overview of modern AC VFD design and component layout. An overview of AC Induction Motors and how they work with VFDs. How motors in variable fan and pump applications correspond to fan/pump affinity laws, how this saves energy and why VFDs are used for these purposes.

Who Should Attend: Principals, Supervisors and Technicians who want to better understand this and who want to deliver a higher level of service and create a more proficient Technician in the process.

HPC 165 Design & Operation of Commercial Chilled Water Systems

Dates: May 16 & 18, 2023
Time: 5:00pm-8:00pm
Instructor: Vic Pietkiewicz

Fees: \$147 Non-Members/\$117 Members
Credits: 4 Continuing Education Credits/6 NATE CEUs
Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004



What You Can Expect: This two-night class provides an overview of the design & operation of building chilled water systems including piping design systems and equipment.

Who Should Attend: This class is designed for the Master Heat Pump Technician, Commercial Technician, and other advanced level technicians.

HVAC Certification Seminars

HPC 167 - NATE Certification Exam Overview & Testing

Dates: March 31, 2023
Time: 8:00am-4:30pm
Instructor: Rich Porter

Fees: \$477 Non-Members/\$427 Members/\$299 APS Qualified Contractor Rate
Credits: 4 Continuing Education Credits
Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004

Note: We strongly recommend that before taking this course you are certified as an Arizona Heat Pump Council Master Heat Pump Technician or are re-certifying for a NATE Exam you've previously passed in preparation for the exams. Please bring a valid driver's license or state issued ID.

What You Can Expect: This course will provide the student with study knowledge in preparation for the 1.5-hour Core Exam and 2.5-hour Specialty Exam for North American Technician Excellence (NATE) Certification. Topics covered include safety, tools, heat transfer, comfort, basic science, basic electrical, installation, planned maintenance, system components, and design considerations. Sample test questions will be reviewed. The NATE Exams will be administered by the certified proctor directly after the exam overview.

Who Should Attend: This class is designed for the Master Heat Pump Technician, advanced technician, system designers, and other HVAC professionals.

HPC 168 - EPA 608 Certification Exam Overview & Testing **NEW COURSE!**

Dates: May 16, 18 & 23, 2023
Time: 5:00pm-9:00pm
Instructor: Bruce Martz

Fees: \$299 Non-Members/\$269 Members/\$209 APS Qualified Contractor Rate
Credits: 4 Continuing Education Credits
Location: ELA Training Center, 2702 N. 3rd Street, Suite 2035, Phoenix, AZ 85004

Note: Student will be required to bring a laptop and a valid driver's license or state issued ID; Limited laptops available upon request.

What You Can Expect: In order to work with and handle refrigerants in common air conditioners and HVAC units, Section 608 of the Federal Clean Air Act requires anyone who maintains, services, repairs, or disposes of appliances that contain regulated refrigerants to become EPA 608 certified. This class will provide the student with study knowledge in preparation for the EPA 608 certification exams review sample test questions and CORE, Type I, Type II, and Type III exam material. The class includes the online proctored exam

Who Should Attend: Technicians who maintain, service, repair, or dispose of equipment that could release refrigerants into the atmosphere.

Quality Instructors = Quality Education



Bruce Martz

Bruce has been in the HVAC-R industry for over 40 years, most of that in Arizona. He has an MBA, and is a licensed Certified Energy Manager as well as a licensed Certified Demand Side Manager. Bruce has worked for companies such as York, Trane, "Siemens", ABM, and two local contractors, performing various roles from management, sales, and project management. He has been and is active in several of our local industry Trade Associations. For the past five years, he has also been teaching HVAC-R and Business at Gateway Community College as a Resident Faculty Professor.



Jake Heidt

Having had wonderful mentors and management throughout his career, Jake Heidt has developed a passion for the HVACR industry. As a certified NEXSTAR trainer and current Operations Manager, he enjoys training and mentoring technicians in the field and has been doing so for the last 9 years in various capacities. Jake's certifications include, but are not limited to NCI, NATE, Factory Certified, Ultimate Tech Academy completion, and Lennox Build-A-Tech.



Carl Bartoli

Mr. Bartoli has been in the HVACR industry for 35 years and is starting his 30th year with Donley Service as Director of Operations. Carl over sees all departments, air conditioning and plumbing service, installation, solar and call center. Mr. Bartoli takes an active role in training Donley Service's 60 employees, for technical, marketing and customer service.



Travis Howard

Mr. Howard has been working in the HVAC industry in the Phoenix metro area since graduating from Universal Technical Institute (UTI) June 1990. Travis has spent his career in residential and light commercial services. He is NATE certified and has the Heat Pump Master Technician certification through the Arizona Heat Pump Council. As the Training Specialist at Howard Air, he utilizes his experience to provide technical support and training to all service technicians and installers to aid in problem solving and continuing education.



Alex Williams

Alex is co-owner of Ideal Energy and has a passion for residential energy efficient home construction and mechanical design. After starting his career fresh out of college installing solar photovoltaic panels, he found himself analyzing energy usage in similar sized homes and discovered two very similar homes could be using a drastically different amount of energy. He questioned why this could be and through research found the concept of Building Performance. Alex oversees all aspects of Ideal Energy's construction operations, energy efficiency and mechanical design. He holds a BA from ASU in Design Studies with an emphasis on the Built Environment.



Brandon Walton

Brandon Walton is a Building Performance Institute Proctor / Trainer with over 25 years' experience in residential building and Home Performance. He is BPI Certified in EP (Envelope Professional) and BA (Building Analysts) plus works as Project Manager for a local award-winning Top 5 Home Performance Contractor. He has personally retrofitted thousands of homes to the highest performance of efficiency, air tightness, airflow, and super insulation.



Vic Pietkiewicz

Mr. Pietkiewicz has over 45 years of experience in the engineering and construction industry. He is the Owner of Dove Valley Services, LLC a consultant to the construction industry. Previously he owned his own air-conditioning company. Many of his years included creating training programs for mechanical and electrical engineers, managers, estimators, construction workers, and technicians. In addition to holding a technical school certificate in AC Engineering, and a B.Sc. in Engineering Technology (HVAC) he holds three AZ Registrar of Contractors licenses and a Federal EPA license.



Rich Porter

Mr. Porter has been in the service industry for over half his life. He is a NCI CO/Combustion Analyst and is also N.A.T.E. certified in the installation and service of gas furnaces, air conditioners, and heat pumps. Rich is proud to serve on the Professional Advisory Committees for RSI, AAI and UEI. He enjoys working with other industry professionals to help shape curriculums and better prepare students for a career in the HVACR industry.

SPRING 2023 COURSE REGISTRATION

Special Discounts May Apply

The APS Qualified Contractor Discount Rate applies only to contractors participating in the APS Residential Qualified Contractor Program. For more information on how to take advantage of these great training rates and other program benefits, call the APS Energy Answer Line at 602-371-3636.

Student Name: _____ Date: _____

Company: _____ ***E-mail: _____

Position: _____

Mailing Address: _____ City: _____ State: Arizona

Zip: _____ Daytime Phone: _____ ***Fax #: _____

Person/Company responsible for payment: _____

Are you a member of the ELA? ☐ Yes ☐ No Are you an APS Qualified Contractor? ☐ Yes ☐ No

*** We may use this fax number or email address to inform you of similar educational courses. **Email required.**

Cancellation Policy and No-Shows

A full refund will be issued as long as **written notice is received 48 hours** prior to the class starting time. Due to the number of courses held and registrations received, we do not provide written or verbal confirmation. Returned checks are subject to a \$30.00 returned check fee. **All registrations received by mail or fax are confirmed registrations unless cancelled within the proper time frame. Participants are charged the full fee amount if they register but do not attend. There are no refunds for no-shows.**

** _____ Please initial here to indicate you have read, understood, and agreed to this cancellation policy.

Rates:	Non-Member Rate	Member Rate	APS Qualified Contractor Rate
<input type="checkbox"/> HPC 126 Refrigeration Fundamentals	\$146	\$116	\$81
<input type="checkbox"/> Master Heat Pump Technician Cert. Fee	\$50	\$30	
<input type="checkbox"/> HPC100L – Lab Refrigeration System Diagnostics	\$146	\$116	\$81
<input type="checkbox"/> HPC 101 Refrigeration Theory & Systems Diagnosis (In Person)	\$155	\$125	\$87
<input type="checkbox"/> HPC 101 Refrigeration Theory & Systems Diagnosis (Online)	\$155	\$125	\$87
<input type="checkbox"/> HPC 102 Charging, Piping & Dehydration (In Person)	\$177	\$147	\$103
<input type="checkbox"/> HPC 102 Charging, Piping & Dehydration (Online)	\$177	\$147	\$103
<input type="checkbox"/> HPC 103 Electrical Fundamentals for Heat Pumps (In Person)	\$149	\$119	\$83
<input type="checkbox"/> HPC 103 Electrical Fundamentals for Heat Pumps (Online)	\$149	\$119	\$83
<input type="checkbox"/> HPC 104 Control Systems for Heat Pumps (In Person)	\$149	\$119	\$83
<input type="checkbox"/> HPC 104 Control Systems for Heat Pumps (Online)	\$149	\$119	\$83
<input type="checkbox"/> HPC 105 Customer Service & Selling Skills (In Person)	\$147	\$117	\$82
<input type="checkbox"/> HPC 105 Customer Service & Selling Skills (Online)	\$147	\$117	\$82
<input type="checkbox"/> HPC 106 HVAC Code & Safety (In Person)	\$251	\$221	\$155
<input type="checkbox"/> HPC 106 HVAC Code & Safety (Online)	\$251	\$221	\$155
<input type="checkbox"/> HPC 107 Airflow Dynamics (In Person)	\$149	\$119	\$83
<input type="checkbox"/> HPC 107 Airflow Dynamics (Online)	\$149	\$119	\$83
<input type="checkbox"/> HVAC System Consultant Series Cert. Fee	\$50	\$30	
<input type="checkbox"/> HPC 108 Wake Up to Heat Pumps	\$136	\$106	\$74
<input type="checkbox"/> HPC 111 Proper Installation Procedures	\$192	\$162	\$114
<input type="checkbox"/> HPC 115 Manual J	\$224	\$194	\$136
<input type="checkbox"/> HPC 139 Duct Diagnostics & Repair	\$191	\$161	\$113
<input type="checkbox"/> HPC 147 Commercial Refrigeration	\$136	\$106	
<input type="checkbox"/> HPC 149 HVAC Troubleshooting	\$146	\$116	\$81
<input type="checkbox"/> HPC 152 Delivering Professional Service	\$136	\$106	\$74
<input type="checkbox"/> HPC 156 Variable Frequency Drives	\$136	\$106	\$74
<input type="checkbox"/> HPC 158 Wi-Fi Controls	\$136	\$106	\$74
<input type="checkbox"/> HPC 159 Zone Systems	\$136	\$106	\$74
<input type="checkbox"/> HPC 161 Introduction to Home Performance	\$136	\$106	\$74
<input type="checkbox"/> HPC 162 HVAC Variable Capacity Systems	\$146	\$116	\$81
<input type="checkbox"/> HPC 163 Advanced HVAC Troubleshooting	\$136	\$106	\$74
<input type="checkbox"/> HPC 164 Low GWP Refrigerant Safety	\$174	\$144	\$101
<input type="checkbox"/> HPC 165 Design & Operation of Commercial Chilled Water Systems	\$147	\$117	
<input type="checkbox"/> HPC 167 NATE Exam Overview & Testing (includes testing fees)	\$477	\$427	\$299
<input type="checkbox"/> HPC 168 EPA 608 Exam Overview & Testing (includes testing fees)	\$299	\$269	\$209
<input type="checkbox"/> HPC 200L HVAC Electrical Workshop (Lecture + Hands-On Lab)	\$348	\$318	\$222

Method of Payment: Payment must be received prior to the start of class.

Please provide email above to receive credit card receipt.

Total: _____ Check enclosed #: _____ ☐ M/C ☐ Visa

Credit Card #: _____ 3 Digit Code: _____ Exp. Date: _____

Exact Name on Card: _____ Signature: _____

Billing Address if different: _____ City: _____ State: AZ Zip: _____

REGISTER ONLINE AT: <http://edu.elaz.org>

Or mail registration and payment to: Arizona Heat Pump Council, 2702 N. 3rd St, Suite 2020, Phoenix, AZ 85004, or fax to: 602-274-0029 or email to education@elaz.org.

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