

Start	End	Training Provider	Session Title	Level	Topic	Room	
6:30 AM - 7:30 AM		REGISTRATION & BREAKFAST			INNOVATION CENTER		
7:30 AM - 9:00 AM	NASRC	Debunking CO2 Myths	1	CO2	Irwindale		
	True Manufacturing	Intro to R-290 Commercial Ice Machines Service & Maintenance	1	Propane	Daylight		
	CAREL	Intro to Case Control	1	CO2	EMF Education		
	BITZER	Advanced Troubleshooting Using the IQ Module	1	CO2	LaVerne		
	Copeland	Managing CO2 Pressures & Oil Management Systems	2	CO2	Sustainability		
	Zero Zone	CO2 Transcritical Systems: High-Pressure Expansion Valve Operation	1	CO2	Sierra Madre		
9:00 AM - 9:30 AM		BREAK			INNOVATION CENTER		
9:30 AM - 11:00 AM	Hillphoenix	Understanding Booster Oil Systems	1	CO2	Irwindale		
	Refrigeration Mentor	Maximizing Earnings as a Refrigeration Service Technician	ALL	Strategy	Daylight		
	BAC	Understanding Adiabatic Cooling	1	CO2	EMF Education		
	Parker Sporlan	CO2 Component & Case Control Overview	1	CO2	LaVerne		
	Kysor Warren	Intro to CO2 System Designs	1	CO2	Sustainability		
	Hussmann	CO2 Evacuation, Charging, & Start-up Procedures	2	CO2	Sierra Madre		
	Copeland*	Live Demo & Training w/ CO2 Booster System	1	CO2	Innovation Center		
11:00 AM - 12:00 PM		LUNCH & EXHIBIT HALL			INNOVATION CENTER		
12:00 PM - 1:30 PM	NASRC	CO2 Rack Troubleshooting 101	1	CO2	Irwindale		
	AHT	R-290 Overview Including Micro Distributed Systems & Plug-In Units	1	Propane	Daylight		
	CAREL	Intro to CO2 Valves & Their Control	1	CO2	EMF Education		
	DORIN	CO2 Transcritical Compressors: Design & Troubleshooting	1	CO2	LaVerne		
	Copeland	E3 Supervisory Controls w/ CO2 Applications & New CC200 Case Control	2	CO2	Sustainability		
	Danfoss	CO2 Transcritical Systems & Controls	2	CO2	Sierra Madre		
1:30 PM - 2:00 PM		BREAK			INNOVATION CENTER		
2:00 PM - 3:30 PM	Kysor Warren	CO2 Installation, Maintenance, & Troubleshooting	2	CO2	Irwindale		
	RMS	Refrigerant Regulations & Compliance - Watchouts & Pitfalls	ALL	Regulations	Daylight		
	NASRC	Understanding the Basics of Case Controllers	1	CO2	EMF Education		
	Parker Sporlan	Micro Thermo CO2 Control Application	2	CO2	LaVerne		
	Hillphoenix	Understanding & Troubleshooting the High-Pressure Control & Flash Gas Bypass Valves	1	CO2	Sustainability		
	Hussmann	Propane Monoblock Install & Maintenance	1	Propane	Sierra Madre		
	Copeland*	Live Demo & Training w/ CO2 Booster System	1	CO2	Innovation Center		
3:30 PM - 5:30 PM		HVACR STUDENT NETWORKING & EXHIBIT HALL			INNOVATION CENTER		

\* Mobile training unit available

**Level 1** Little-to-no expertise on topic    **Level 2** Some prior training and limited field experience on topic    **ALL** All levels

# Wednesday, May 1

Start	End	Training Provider	Session Title	Level	Topic	Room	
6:30 AM - 7:30 AM		REGISTRATION & BREAKFAST			INNOVATION CENTER		
7:30 AM - 9:00 AM		NASRC	Debunking CO2 Myths	1	CO2	Irwindale	
		True Manufacturing	Intro to R-290 Commercial Ice Machines Service & Maintenance	1	Propane	Daylight	
		CAREL	Intro to Case Control	1	CO2	EMF Education	
		BITZER	Advanced Troubleshooting Using the IQ Module	1	CO2	LaVerne	
		Copeland	Managing CO2 Pressures & Oil Management Systems	2	CO2	Sustainability	
	Zero Zone	CO2 Transcritical Systems: High-Pressure Expansion Valve Operation	1	CO2	Sierra Madre		
9:00 AM - 9:30 AM		BREAK			INNOVATION CENTER		
9:30 AM - 11:00 AM		Hillphoenix	Understanding Booster Oil Systems	1	CO2	Irwindale	
		Refrigeration Mentor	Maximizing Earnings as a Refrigeration Service Technician	ALL	Strategy	Daylight	
		BAC	Understanding Adiabatic Cooling	1	CO2	EMF Education	
		Parker Sporlan	CO2 Component & Case Control Overview	1	CO2	LaVerne	
		Kysor Warren	Intro to CO2 System Designs	1	CO2	Sustainability	
		Hussmann	CO2 Evacuation, Charging, & Start-up Procedures	2	CO2	Sierra Madre	
		Copeland*	Live Demo & Training w/ CO2 Booster System	1	CO2	Innovation Center	
11:00 AM - 12:00 PM		LUNCH & EXHIBIT HALL			INNOVATION CENTER		
12:00 PM - 1:30 PM		NASRC	CO2 Rack Troubleshooting 101	1	CO2	Irwindale	
		AHT	R-290 Overview Including Micro Distributed Systems & Plug-In Units	1	Propane	Daylight	
		CAREL	Intro to CO2 Valves & Their Control	1	CO2	EMF Education	
		DORIN	CO2 Transcritical Compressors: Design & Troubleshooting	1	CO2	LaVerne	
		Copeland	E3 Supervisory Controls w/ CO2 Applications & New CC200 Case Control	2	CO2	Sustainability	
	Danfoss	CO2 Transcritical Systems & Controls	2	CO2	Sierra Madre		
1:30 PM - 2:00 PM		BREAK			INNOVATION CENTER		
2:00 PM - 3:30 PM		Kysor Warren	CO2 Installation, Maintenance, & Troubleshooting	2	CO2	Irwindale	
		RMS	Refrigerant Regulations & Compliance - Watchouts & Pitfalls	ALL	Regulations	Daylight	
		NASRC	Understanding the Basics of Case Controllers	1	CO2	EMF Education	
		Parker Sporlan	Micro Thermo CO2 Control Application	2	CO2	LaVerne	
		Hillphoenix	Understanding & Troubleshooting the High-Pressure Control & Flash Gas Bypass Valves	1	CO2	Sustainability	
		Hussmann	Propane Monoblock Install & Maintenance	1	Propane	Sierra Madre	
	Copeland*	Live Demo & Training w/ CO2 Booster System	1	CO2	Innovation Center		
3:30 PM - 5:30 PM		INDUSTRY NETWORKING & EXHIBIT HALL			INNOVATION CENTER		

\* Mobile training unit available

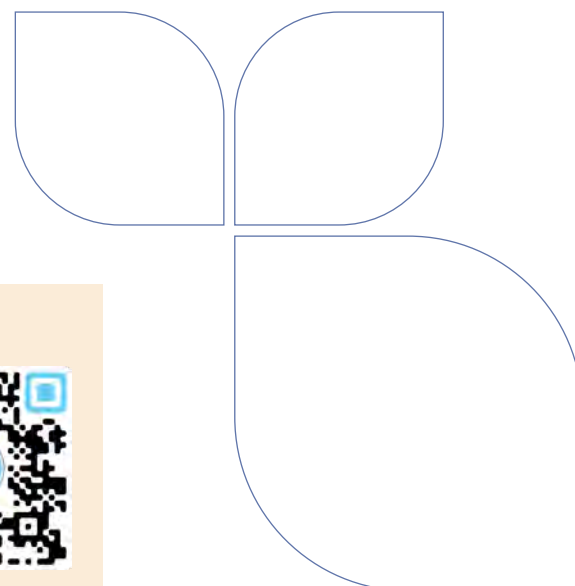
**Level 1** Little-to-no expertise on topic    **Level 2** Some prior training and limited field experience on topic    **ALL** All levels

Start	End	Training Provider	Session Title	Level	Topic	Room
6:30 AM	7:30 AM		REGISTRATION & BREAKFAST			INNOVATION CENTER
		Kysor Warren	Intro to CO2 System Designs	1	CO2	Irwindale
		Parker Sporlan	Micro Thermo CO2 Control Application	2	CO2	Daylight
7:30 AM	9:00 AM	Hussmann	CO2 Evacuation, Charging, & Start-up Procedures	2	CO2	EMF Education
		CAREL	Intro to Case Control	1	CO2	LaVerne
		Hillphoenix	Understanding Booster Oil Systems	1	CO2	Sustainability
		Zero Zone	CO2 Transcritical Systems: High-Pressure Expansion Valve Operation	1	CO2	Sierra Madre
7:30 AM	8:00 AM	Various	30-minute hands-on breakout sessions* (sign-up required)	HANDS-ON	Various	Innovation Center
8:15 AM	8:45 AM	Various	30-minute hands-on breakout sessions* (sign-up required)	HANDS-ON	Various	Innovation Center

Start	End	Training Provider	Session Title	Level	Topic	Room
9:00 AM	9:30 AM		BREAK			INNOVATION CENTER
		Hillphoenix	Understanding & Troubleshooting the High-Pressure Control & Flash Gas Bypass Valves	1	CO2	Irwindale
		Refrigeration Mentor	Maximizing Earnings as a Refrigeration Service Technician	ALL	Strategy	Daylight
9:30 AM	11:00 AM	Danfoss	CO2 Transcritical Systems & Controls	2	CO2	EMF Education
		RMS	Refrigerant Regulations & Compliance – Watchouts & Pitfalls	ALL	Regulations	LaVerne
		Kysor Warren	CO2 Installation, Maintenance, & Troubleshooting	2	CO2	Sustainability
		Hussmann	Propane Monoblock Install & Maintenance	1	Propane	Sierra Madre
9:30 AM	10:00 AM	Various	30-minute hands-on breakout sessions* (sign-up required)	HANDS-ON	Various	Innovation Center
10:15 AM	10:45 AM	Various	30-minute hands-on breakout sessions* (sign-up required)	HANDS-ON	Various	Innovation Center

\* Mobile training unit available

**Level 1** Little-to-no expertise on topic    **Level 2** Some prior training and limited field experience on topic    **ALL** All levels    **HANDS-ON** Hands-on breakout session



**\*Hands-On Breakout Sessions**

Sign up for 30-minute hands-on breakout sessions to level up your training! Space is limited and you must sign up at the Info Desk to secure your spot in the trainings. **Scan the QR code for more information** on the hands-on training opportunities and stop by the desk for more information.



## Session Descriptions

### AHT Cooling Systems: R-290 Overview Including Micro Distributed Systems & Plug-In Units

An overview of R-290 history, usage, design, installation, and service of R-290 micro distributed systems and controls. Review service, maintenance, troubleshooting, and controls of R-290 plug-in units.

**Trainers:** James Standeford ■ Propane (R-290) ■ Level 1

📅 **April 30:** 12:00PM | **May 1:** 12:00PM

### Baltimore Aircoil (BAC): Understanding Adiabatic Cooling

This training will help field service technicians understand how Adiabatic Condensers work and their benefits for CO2 systems. We'll also discuss Adiabatic Condenser components, operation, controls, tuning, and maintenance.

**Trainer:** Greg Martell ■ CO2 (R-744) ■ Level 1

📅 **April 30:** 9:30AM | **May 1:** 9:30AM

### BITZER: Advanced Troubleshooting Using the IQ Module

Learn how to use BITZER BEST software to better understand the compressor's operation. The session will cover options and accessories for the IQ module and CO2 compressors, minimum requirements, basic functionality, troubleshooting, and more.

**Trainer:** Miguel Boscan, Greg Krause ■ CO2 (R-744) ■ Level 1

📅 **April 30:** 7:30AM | **May 1:** 7:30AM

### CAREL: Intro to Case Control

This training will provide a basic overview of the CAREL MPXone Medium/Advanced case controller, its associated components, and how they are applied in an actual store. Topics include basic setup and parameter configurations, and the importance of proper installation and its direct impact on controller operation.

**Trainer:** Chris Butler ■ CO2 (R-744) ■ Level 1

📅 **April 30:** 7:30AM | **May 1:** 7:30AM | **May 2:** 7:30AM

### CAREL: Introduction to CO2 Valves & Their Control

An intro to CAREL valves, solenoids, and control methods, including the operation, installation, application, and servicing of CAREL valves and valve drivers and how these interact with a CO2 refrigeration system.

**Trainer:** Chris Butler ■ CO2 (R-744) ■ Level 1

📅 **April 30:** 12:00PM | **May 1:** 12:00PM

### Copeland: Managing CO2 Pressures & Oil Management Systems

Topics include an overview of the CO2 booster system, the differing operating pressure dynamics and the importance of compressor superheat; gas cooler/condenser types, their impact on system efficiencies for high and low ambient and the importance of stabilized flash tank pressures; high-pressure valve control logic for sub- and supercritical modes and its impact on system stability; and oil management systems.

**Trainer:** Andre Patenaude ■ CO2 (R-744) ■ Level 2

📅 **April 30:** 7:30AM | **May 1:** 7:30AM

### Copeland\*: Live Demo & Training w/ CO2 Booster System

An overview of CO2 basics, R-744 cylinders, and handling with an emphasis on transcritical booster systems. Topics include subcritical and transcritical modes of operation with a hands-on system mapping exercise, charging procedures, logging into E3, and basic troubleshooting.

**Trainer:** Alain Mongrain ■ CO2 (R-744) ■ Level 1

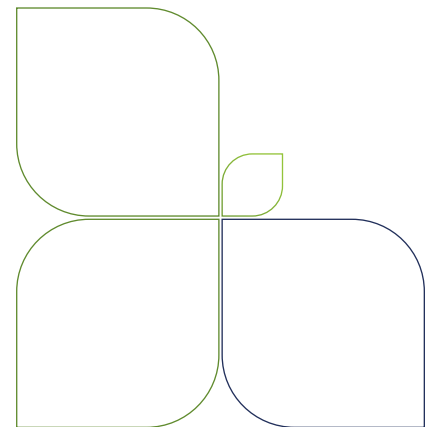
📅 **April 30:** 9:30AM; 2:00PM | **May 1:** 9:30AM; 2:00PM

### Copeland\*: E3 Supervisory Controls w/ CO2 Applications & New CC200 Case Control

An overview of the new E3 supervisory control with native CO2 applications compared to E2. The session will cover specific CO2 features that simplify start-up and troubleshooting, the new CC200 case control's simplified setup and flexibility, and how both E3 and CC200 can leverage the new intuitive HMI via tablet, laptop, or mobile phone.

**Trainer:** Mike Hill, Brent Cheshire ■ CO2 (R-744) ■ Level 2

📅 **April 30:** 12:00PM | **May 1:** 12:00PM



**Danfoss: CO2 Transcritical Systems & Controls**

This session will cover CO2 properties, standard transcritical booster systems, EEVs, parallel compressor systems, and cover the use of Multi-Ejector Solutions in various applications.

**Trainer:** Ernie Lynch ■ CO2 (R-744) ■ Level 2

📅 **April 30:** 12:00PM | **May 1:** 12:00PM | **May 2:** 9:30AM

**DORIN: CO2 Transcritical Compressors: Design & Troubleshooting**

This session will review the necessary design criteria for a transcritical CO2 compressor and the many challenges CO2 imposes from a compressor perspective. Topics include Dorin's accelerated life testing, rigorous laboratory qualification and acceptance criteria, and troubleshooting for common issues in the field. Includes a CO2 compressor teardown that explains what to look for in a field service call.

**Trainers:** Nabih Hussein ■ CO2 (R-744) ■ Level 1

📅 **April 30:** 12:00PM | **May 1:** 12:00PM

**Hillphoenix: Understanding Booster Oil Systems**

This training prepares field service technicians for troubleshooting Booster oil issues by explaining how these systems work.

Topics include oil type use, resolving some of the most frequent oil alarms, and how often preventive maintenance should be performed.

**Trainer:** Paul Binette ■ CO2 (R-744) ■ Level 1

📅 **April 30:** 9:30AM | **May 1:** 9:30AM | **May 2:** 7:30AM

**Hillphoenix: Understanding & Troubleshooting the High-Pressure Control & Flash Gas Bypass Valves**

This training will explain how the high-pressure control and flash gas bypass valves operate and are controlled per specs. Topics include troubleshooting the HPCV, FGBV, and the controller when issues arise at 2:00AM.

**Trainer:** Paul Binette ■ CO2 (R-744) ■ Level 1

📅 **April 30:** 2:00PM | **May 1:** 2:00PM | **May 2:** 9:30AM

**Hussmann: CO2 Evacuation, Charging, & Start-up Procedures**

An overview of a transcritical CO2 system with emphasis on evacuation, charging, and start-up procedures. More technical session for those who have a basic transcritical knowledge.

Bring your questions!

**Trainer:** John Bento ■ CO2 (R-744) ■ Level 2

📅 **April 30:** 9:30AM | **May 1:** 9:30AM | **May 2:** 7:30AM

**Hussmann: Propane Monoblock Install & Maintenance**

An overview of Hussmann's new Monoblock R-290 installation and maintenance. Students will learn about the flexibility of propane, unit installation, pumping stations for water-cooled systems, and maintenance.

**Trainer:** John Bento ■ Propane (R-290) ■ Level 1

📅 **April 30:** 2:00PM | **May 1:** 2:00PM | **May 2:** 9:30AM

**Kysor Warren: Intro to CO2 System Designs**

This session provides an overview of CO2 systems and the technologies available to improve refrigeration system efficiency. Topics include basic principles, safety, and CO2 system design.

**Trainer:** Ignacio Chaparro ■ CO2 (R-744) ■ Level 1

📅 **April 30:** 9:30AM | **May 1:** 9:30AM | **May 2:** 7:30AM

**Kysor Warren: CO2 Installation, Maintenance, & Troubleshooting**

This course provides an overview of CO2 systems installation, start-up, maintenance, and troubleshooting. Topics include display case setup, basic rack installation, startup, operation, maintenance, and TC CO2 troubleshooting. *This is part 2 of "An Intro to CO2 System Designs."*

**Trainer:** Dale Sizemore ■ CO2 (R-744) ■ Level 2

📅 **April 30:** 2:00PM | **May 1:** 2:00PM | **May 2:** 9:30AM

**NASRC: Debunking CO2 Myths**

This training will review and debunk some of the biggest myths about CO2 servicing and maintenance and explain the correct approach to optimizing and successfully operating CO2 transcritical booster systems. Open to retailers and technicians.

**Trainer:** Rusty Walker ■ CO2 (R-744) ■ Level 1

📅 **April 30:** 7:30AM | **May 1:** 7:30AM

**NASRC: Understanding the Basics of Case Controllers**

Understand the basics of the many different case controllers and EEV used in modern CO2 and HFC/HFO rack systems. We will review a few of the different types of case controllers and manufacturers of these controllers. We will discuss the two different types of EEVs, troubleshooting tips, how to use a small oscilloscope, the different types of communication protocols (i.e. Modbus and BACnet), and the proper way to run and terminate our case controller network.

**Trainer:** Rusty Walker ■ CO2 (R-744) ■ Level 1

📅 **April 30:** 2:00PM | **May 1:** 2:00PM

## Session Descriptions

### **NASRC: CO2 Rack Troubleshooting 101**

This class will discuss how we run a CO2 service call using tried and true methods. Review the proper way to pump a CO2 rack down to lower pressure and what to do when the cases are running warm. Better understand how graphs can help get the root of the problem quicker. We also discuss the personal attributes, attitude, and mindset needed when working on a CO2 rack.

**Trainer:** Rusty Walker ■ **CO2 (R-744)** ■ **Level 1**

📅 **April 30:** 12:00PM | **May 1:** 12:00PM

### **Parker Sporlan/Micro Thermo: CO2 Component & Case Control Overview**

An introduction to refrigeration as a concept with an overview of CO2 systems. Topics include CO2 system components, including the Gas Cooler/Flash Gas Bypass Valves, Electric Expansion Valves, solenoid valves, ball valves, and more. The course will also showcase the S3C Case Control as an integral part of the system that controls evaporator temperature and can remotely monitor and troubleshoot system conditions.

**Trainer:** Heath Schaefer ■ **CO2 (R-744)** ■ **Level 1**

📅 **April 30:** 9:30AM | **May 1:** 9:30AM

### **Parker Sporlan/Micro Thermo: CO2 Control Application**

An overview of the Micro Thermo Alliance control platform, focusing on CO2 refrigeration control. Topics include MT Alliance's control schemes, data interpretation, advanced graphing, and Case Controller & Gas Cooler smart node interface set-up.

**Trainer:** Charles Cunliffe ■ **CO2 (R-744)** ■ **Level 2**

📅 **April 30:** 2:00PM | **May 1:** 12:00PM | **May 2:** 7:30AM

### **Refrigerant Management Solutions (RMS): Refrigerant Regulations & Compliance – Watchouts & Pitfalls**

Compliance with federal, state, and local refrigerant regulations is a tag-team effort between food retail end-users and their service technicians. With new regulations coming out at least once a year now, the tag team is struggling to keep up. This training covers compliance with the latest federal and state refrigerant regulations, as well as watchouts and pitfalls for service technicians and food retail end-users.

**Trainer:** Keilly Witman ■ **Regulations** ■ **ALL Levels**

📅 **April 30:** 2:00PM | **May 1:** 2:00PM | **May 2:** 9:30AM

### **Refrigeration Mentor: Maximizing Earnings as a Refrigeration Service Technician**

This presentation outlines strategies for refrigeration service technicians to boost their income by enhancing skills, delivering superior customer service, understanding business fundamentals, specializing in niche areas like supermarket refrigeration, and embracing technology like CO2. Topics include continuous education, effective communication, business management, niche specialization, and modern tools for efficiency.

**Trainer:** Trevor Matthews ■ **Strategy** ■ **ALL Levels**

📅 **April 30:** 9:30AM | **May 1:** 9:30AM | **May 2:** 9:30AM

### **True Manufacturing: Intro to R-290 Commercial Ice Machines Service & Maintenance**

An introduction to the service and maintenance of R-290 commercial ice machines, including an explanation of components and sequence of operations.

**Trainer:** Rich Boedeker ■ **Propane (R-290)** ■ **Level 1**

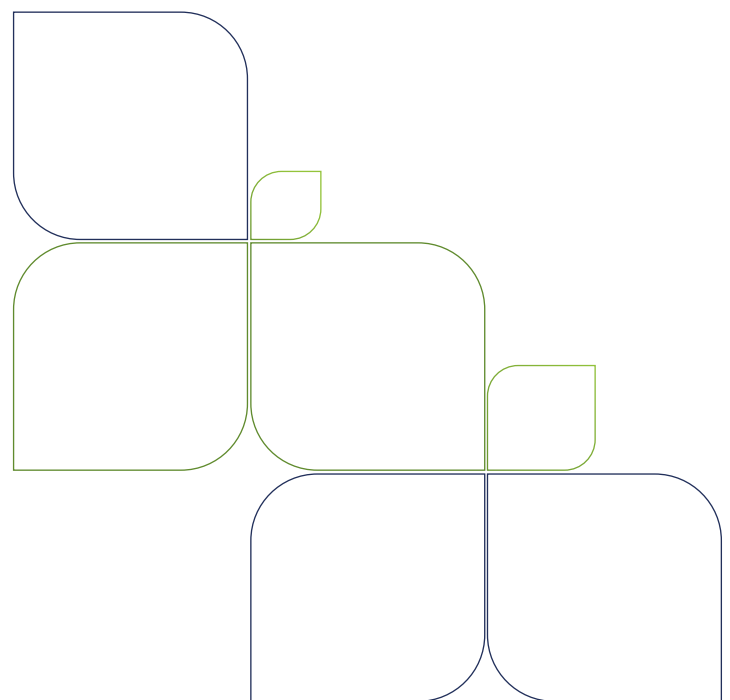
📅 **April 30:** 7:30AM | **May 1:** 7:30AM

### **Zero Zone: CO2 Transcritical Systems: Focus on High-Pressure Expansion Valve Operation**

A brief overview of the transcritical CO2 system and properties. The session will include a description of the operation of the high-pressure expansion valve using the pressure enthalpy diagram, a review of various system architectures, and a discussion on operator safety.

**Trainer:** Bruce Hiermeier ■ **CO2 (R-744)** ■ **Level 1**

📅 **April 30:** 7:30AM | **May 1:** 7:30AM | **May 2:** 7:30AM





Use this three-day overview to map out your personalized schedule. Mark the classes you want to attend and get the most out of your training!

Training Provider	Session Title	Topic	April 30				May 1				May 2			
			7:30	9:30	12:00	2:00	7:30	9:30	12:00	2:00	7:30	9:30		
AHT	R-290 Overview Including Micro Distributed Systems & Plug-In Units	Propane			✓					✓				
BAC	Understanding Adiabatic Cooling	CO2		✓					✓					
BITZER	Advanced Troubleshooting Using the IQ Module	CO2	✓					✓						
CAREL	Intro to Case Control	CO2	✓					✓					✓	
CAREL	Intro to CO2 Valves & Their Control	CO2			✓					✓				
Copeland	Managing CO2 Pressures & Oil Management Systems	CO2	✓					✓						
Copeland*	Live Demo & Training w/ CO2 Booster System	CO2		✓		✓			✓		✓			
Copeland	E3 Supervisory Controls w/ CO2 Applications & New CC200 Case Control	CO2			✓					✓				
Danfoss	CO2 Transcritical Systems & Controls	CO2			✓				✓					✓
DORIN	CO2 Transcritical Compressors: Design & Troubleshooting	CO2			✓					✓				
Hillphoenix	Understanding Booster Oil Systems	CO2		✓					✓				✓	
Hillphoenix	Understanding & Troubleshooting the High-Pressure Control & Flash Gas Bypass Valves	CO2				✓					✓			✓
Hussmann	CO2 Evacuation, Charging, & Start-up Procedures	CO2		✓					✓				✓	
Hussmann	Propane Monoblock Install & Maintenance	Propane				✓					✓			✓
Kysor Warren	Intro to CO2 System Designs	CO2		✓					✓				✓	
Kysor Warren	CO2 Installation, Maintenance, & Troubleshooting	CO2				✓					✓			✓
NASRC	Debunking CO2 Myths	CO2	✓					✓						
NASRC	CO2 Rack Troubleshooting 101	CO2			✓					✓				
NASRC	Understanding the Basics of Case Controllers	CO2				✓					✓			
Parker Sporlan	CO2 Component & Case Control Overview	CO2		✓					✓					
Parker Sporlan	Micro Thermo CO2 Control Application	CO2				✓					✓	✓		
RMS	Refrigerant Regulations & Compliance – Watchouts & Pitfalls	Regulations				✓					✓			✓
Refrigeration Mentor	Maximizing Earnings as a Refrigeration Service Technician	Strategy		✓					✓					✓
True Manufacturing	Intro to R-290 Commercial Ice Machines Service & Maintenance	Propane	✓					✓						
Zero Zone	CO2 Transcritical Systems: High-Pressure Expansion Valve Operation	CO2	✓					✓					✓	
Hands-on Breakout Sessions (30-minute blocks; see program insert for details)													✓	✓