

January 31, 202 MACS Golf Tournament

February 1–3, 2024 Training & Networking

February 2, 2024 Trade Show

TRAINING from The BEST of The BEST



MACS is thrilled to return to the beautiful Rosen Centre Hotel in Orlando, FL! Join us for three+ days filled with knowledge, networking, and cutting-edge innovations in the mobile air conditioning and vehicle thermal management industries. We've revamped our training schedule and added exciting special events.

highlights

Prevost Training Field Trip Carm Capriotto Keynote & Town Hall Refrigerant Manufacturers Panel A/C Basics for the New Technician

AFFILIATE ACTIVITIES

AMRA/MAP Technical Conference SAE HFTC6 Committee meeting SAE ICCC Committee meeting

macsmobileairclimate.org











44th Annual Training Event and Trade Show

The Mobile Air Climate Systems Association (MACS) welcomes you to join us in Orlando, FL for our 44th annual Training Event and Trade Show at the Rosen Centre Hotel. The MACS Training Event provides a forum that joins all industry segments and professionals together to foster growth and expand knowledge across all aspects of Vehicle Thermal Management. By facilitating relationships industry-wide, MACS allows industry professionals to easily attain the information they need to better serve their customers through the entire chain including Manufacturers, Distributors, Service Providers and Educators.

Over three+ days, attendees can learn from 35 speakers and choose from 70+ hours of Mobile A/C and Vehicle Thermal Management training. Presentations will feature service and repair knowledge for automotive, light-duty trucks, heavy-duty and off-road trucks, busses, and electric vehicles. Multiple social events provide important networking time to create and grow relationships. MACS holds the only mobile A/C product specific Trade Show in the United States. This is your opportunity to meet the expert industry vendors of parts, tools and equipment, and chemicals. MACS will also hold complimentary Section 609 classes in English and Spanish.

New for 2024, MACS will hold an "A/C Basics for the New Technician" class on Friday that includes Mobile A/C Best Practices, Section 609 Certification class & test along with access to the trade show.

Companion Tour



Winter Park Scenic Boat Tour & More! THURSDAY, FEBRUARY 1ST (\$99/PERSON)

Join us for a day of sightseeing and culture in Winter Park. Located on Lake Osceola in the quiet suburb less than 10 minutes from downtown Orlando, the Winter Park Scenic Boat Tour is an hour long, guided cruise through three of the seven lakes and two, narrow manmade canals on the tranquil Winter Park chain. Enjoy the flora & fauna of this off the beaten path experience!

The day will continue with admission to the Morse Museum. This Museum houses the world's most comprehensive collection of works by Louis Comfort Tiffany (1848 1933), including the artist and designer's jewelry, pottery, paintings, art glass, leaded glass lamps and windows; his chapel interior from the 1893 World's Columbian Exposition in Chicago; and art and architectural objects from his Long Island country estate, Laurelton Hall.

2024 schedule at a glance

TRAINING EVENT & TRADE SHOW

Wednesday, January 31

REGISTRATION 10:00 AM-5:00 PM

SAE HFTC6 Committee 8:30–11:00 AM

ANNUAL GOLF TOURNAMENT Eagle Creek Golf Club 12:00 PM

PREVOST OFF-SITE TRAINING 12:30-5:00 PM

Friday, February 2

REGISTRATION 7:00 AM-5:00 PM

Continental Breakfast 7:30-8:00 AM

General Session/Moderated Refrigerant Panel 8:00–9:45 AM

A/C Basics for the New Technician 8:00-11:00 AM

Trade Show 10:00 AM-4:00 PM

Grab A Bite Lite Lunch 12:00-1:00 PM

EPA Section 609 Certification Class & Testing English 1:00–3:00 PM

EPA Section 609 Certification Class & Testing Spanish 1:00–3:00 PM

Afterparty and Networking Social 4:00-5:00 PM

Thursday, February 1

REGISTRATION 7:00 AM-5:00 PM

Continental Breakfast 7:30–8:00 AM Training Classes 8:00–11:15 AM SAE ICCC Meeting 8:30 AM–4:00 PM Companion Tour 9:30 AM–3:30 PM Keynote Luncheon/Pioneer Awards 11:30 AM–12:45 PM Training Classes 1:00–4:15 PM MACS Member Meeting 4:30–5:00 PM North American Vehicle Market Data 5:15–6:00 PM Welcoming Reception Poolside 6:30–8:00 PM

Saturday, February 3

REGISTRATION 7:00 AM-2:00 PM

Continental Breakfast 7:30–8:00 AM Training Classes 8:00–11:15 AM Town Hall Lunch 11:30 AM–12:45 PM Training Classes 1:00–4:15 PM

Morning Coffee Break Sponsored by

Afternoon Snack Break Sponsored by

Event Badges and Lanyards Sponsored by







Event Bags Sponsored by



Heavy Duty Program Sponsored by







Wednesday Training & Events

12:30-5:00 PM (Reservation Required)



Robert Hitt, Volvo Prevost Fundamentals of Motorcoach HVAC Sponsored by



Join MACS for a special two-part training seminar, presented by Prevost!

Part 1: Attendees will be transported to the Prevost Service Center in Winter Garden, FL for hands-on training that includes a facility tour. We'll see the training center, parts department, service shop and get up close to the components that cool these 56-passenger vehicles. Registration is limited. (Part II, See Thursday AM)

12:00 Noon Shotgun Start

(Reservation Required)

MACS 2024 Annual Golf Tournament

The 2024 MACS annual golf tournament is always a valuable and enjoyable networking event. Recruit your foursome now, to get ready for a day of sport and camaraderie on the Scottish style links at the scenic Eagle Creek Golf Club.



Sponsored by

Thursday Training & Events

8:00-11:15 AM



Robert Hitt, Volvo Prevost

Fundamentals of Motorcoach HVAC When comparing the size of mobile A/C systems, it's hard to find one bigger than a motorcoach! Many of these systems have three or four

evaporators, compressors the size of a small gasoline engine, and hold 26-pounds of refrigerant!

8:00-11:15 AM



Jerry Mungle, ACDelco

HVAC Controls, Diagnostic and Service Techniques This Seminar will provide technicians with the

diagnostic techniques and strategies required to diagnose non-refrigerant related issues with the HVAC electronic controls that impact electronically regulated compressor operation and the air delivery system.

8:00-9:30 AM



Dave Hobbs, Delphi Technologies Emerging Technologies in Propulsion

HEVS, PHEVs and BEVs are on the their way to becoming the norm instead of the exception. Will the combustion engine go the way of the horse? How will this affect your vehicle service opportunities? In this program, Delphi will share some insider tips.

8:00-11:15 AM



Tom Rayk, AVI

Hybrid EV Maintenance Opportunities – Cooling Systems

Service opportunities for hybrid and electric vehicles are increasing for all shops. This

course covers Hybrid/EV cooling system components, inspection, diagnostics, and maintenance procedures required to keep them in optimal operating condition.

8:00-11:15 AM



Pete Meier, Dorman Products

Using the Scan Tool and Scope for Drivability Diagnosis

There are only four areas of focus when diagnosing drivability issues, especially when

the complaint is not accompanied by a related Diagnostic Trouble Code (DTC). In this class, learn how to use a scan tool and digital storage oscilloscope (DSO) to narrow down the cause of your customer's engine performance concerns quickly and accurately.



Thursday Training & Events

8:00-8:45AM



Jeff Moredock, Sy-Klone International ISO 23875, Smart Cabs, and the Future of HVAC Design

Jeff will lead a discussion through the world of cab air quality from the perspective of standards,

regulations, markets, and research. Jeff was the lead researcher for NIOSH on the recently completed NIOSH Smart Cab project, which is the culmination of 17 years of work in operator enclosure air quality.

9:45-11:15 AM



Peter McArdle, Four Seasons Eliminating A/C Comebacks

An A/C repair that leaves the shop blowing ICE cold air but comes back blowing warm, in a day, or even a year can be very frustrating. Join us for this class where we will share 12 essential strategies for eliminating A/C comebacks.

8:45-9:30 AM



Frank Woodson, Gates

Cooling Systems – A Photo Gallery of Failed Water Pumps and What They Are Telling Us This session is going to concentrate on photos of water pumps that Gates has examined during

their bi-annual water pump warranty sorts. What are these water pumps telling us? What are the "best practices" in cooling system maintenance to help us avoid seeing examples of water pumps like this in the future?

9:45-11:15 AM



Joe Long, Peak / OWI Today's COOLANTS and DEF Topics covered will include:

Coolant colors and technology

- Today's issues with heat transfer
- Why Nitrite Free
- How to test coolant in the field
- DEF how can I prevent issues in my SCR System

Keynote Luncheon Sponsored by

11:30 AM-12:45 PM



Carm Capriotto, Remarkable Results

Does Your Shop Reflect the Innovation and Continuous Improvement We Admire at NASA?

The service industry can learn a lot by looking at NASA. We can take lessons from launch to touchdown on what it takes to serve our clients. We need to innovate, strive for perfection, learn from our mistakes,

and have a continuous improvement standard.

Carm will draw innovative parallels on how our automotive repair service industry can emulate NASA by taking 5 of their key principles into the culture of our repair centers. As the aftermarkets premiere podcaster with Remarkable Results Radio, the gold standard of auto repair shop podcasts, he has over 1200 episodes he has championed that have produced some of the best insights, thoughts, ideas, and wisdom that he pulls on to share with you.





Thursday Training & Events

1:00-4:15 PM



Al McAvoy, Stellantis

Stellantis 2024-25 HVAC Update Introducing the all-electric 2025 Ram Rev Pickup! Stellantis plans for more than 25 EVs in the US by 2030:

- Dodge Hornet and Alfa Romeo
 Jeep Avenger Tonale PHEV
- Ram ProMaster BEV
- Chrysler Airflow
- FIAT 500

- Jeep Recon Jeep Wagoneer S
- Dodge Charger
- Daytona SRT

1:00-4:15 PM



Mike Bailey, the AutoProf

High Voltage HVAC Electric HVAC systems are used in EVs, and there's a lot to learn about how they work! Join Mike Bailey, the Auto Prof, to learn about HV

Battery Power Supply, Main Disconnect/Safe-Down Procedures, and HV components, operation, and testing.

1:00-4:15 PM



Peter Orlando, AAP / CTI

Hybrid and EV Climate Control Operation Using Scan Tool Analytics We will Cover:

- Climate Control System Performance Tests on Hybrid and EV systems
- Understanding HVAC data parameters
- Power of "Grouping" Graphed data

1:00-2:30 PM



Sherwood Wheeler, AGCO

AGCO Equipment HVAC Service & Repair Sherwood's program will feature HVAC product updates on AGCO built products including TSB information and refrigerant capacity updates for new models.

2:45-4:15 PM



Jerry Lemon, Lemco Mobile A/C Consulting

Field Service Tools & Techniques for off-road A/C Dive into the world of A/C service tools specifically designed for HD & off-road equipment. Gain insights into their practical applications to perform efficient field service.

Poolside 6:30-8:00 PM **Welcoming Reception**

Indulge in a selection of invigorating drinks and delectable cuisine while basking poolside at our welcoming reception. Soak up the invigorating Florida sunshine, sounds of the steel drum band and refreshing breeze as you connect and network with your colleagues.

Sponsored by Honeywell ROBINAIR qpd• RANSHU OMEGA ENVIRONMENTAL



1:00-4:15 PM

G Truglia, Dorman Products Critical Thinking-Diagnostic Strategies "2024"

Success in diagnosing today's high-tech systems requires a high-tech approach. This class covers

the tools you need to cope with these challenges. You'll learn to develop a diagnostic process and a diagnostic "Game Plan".

1:00-4:15 PM



Jerry Mungle, ACDelco **Refrigeration Diagnostics and** Service Procedures

Designed for technicians with prior understanding of the refrigerant cycle and system operation, this seminar

will provide technicians with techniques and strategies required to isolate the root cause and perform repairs of failures in R-134a and R-1234yf equipped Air Conditioning A/C systems.



Friday Training & Events

8:00-11:00 AM

A/C BASICS FOR THE NEW TECHNICIAN

Are you new to the world of mobile A/C? Ever wonder what's going on inside those pipes? Do you have new technicians working at your shop who could benefit from an A/C basics class?

On Friday, February 2, 2024 from 8am-11:00am, MACS will host, "A/C Basics for the New Technician", geared towards those who are new to the field or just want a refresher on air conditioning and refrigeration fundamentals. After class visit the MACS 2024 Trade Show and enjoy a Grab A Bite Lunch!

8:00-9:45 AM

MACS GENERAL SESSION

MACS Update EPA Update Refrigerant Manufacturers Panel

1:00-3:00 PM

SECTION 609 CERTIFICATION PREP CLASS & TEST Available In English

Sponsored by



4:00-5:00 PM

AFTERPARTY AND NETWORKING SOCIAL

Sponsored by

y en Español

Honeywell

10:00 AM-4:00 PM

MACS TRADE SHOW GRAB A BITE LUNCH

Sponsored by



Saturday Training & Events

8:00-8:45 AM



Gerald Morris & Erick Njos, Caterpillar

- Caterpillar Update for Off-Highway Equipment
- Field service quality updates
- Using a thermal imaging camera as a diagnostic tool
- In depth look at troubleshooting A/C system with pressure switches and pressure sensors
- Alternative refrigerant for off-highway machines
 update

8:00-9:30 AM



Andy Fiffick & Bill Snow, RadAir Complete Car Care and Tire Centers

Starting And Managing Your Internet Presence from Scratch

From the beginning of claiming your sites to advanced strategies and tactics to master communicating with your customers and getting found on-line.







Saturday Training & Events

8:00-9:30 AM



Agnes Perez, AAP-PR (SPANISH)

Mejores practicas: Teoría, diagnósticos y procedimientos del sistema de aire acondicionado automotriz

Este curso describe los procedimientos de servicio y reparación de aires acondicionados relacionados a los sistemas móviles. Los procedimientos descritos en este programa deberán ayudarte a garantizar un diagnóstico más preciso, realizar reparaciones de alta calidad ayudando en la reducción de las reapariciones y logrando una mayor satisfacción con el cliente.

8:00-11:15 AM



Mike Bailey, the AutoProf

Hybrid and EV Thermal Management Refrigerant systems in Hybrids and EVs don't just cool passengers; they're used to cool AND heat passengers, along with the

vehicle's battery and power electronics systems.

8:45-9:30 AM



Aaron Clark, Danfoss MAC Hose Application and Troubleshooting Numerous reasons exist for premature

failure of hoses in MACS applications, this presentation is designed to explore the factors that influence

the selection and application of various hose designs.

9:45-11:15 AM



Matt Farel, INFICON & John Duerr, Spectronics

Leak Detection Tools and Methods for EV Applications



Leak detection is one of the most important steps when servicing an A/C system, and we have two main tools at our disposal: UV dye and ELDs. Brought to you by the experts in both categories, this class will show you the right tools to use and the right ways to use them.

8:00-11:15 AM



Dave Hobbs, Delphi Technologies

ABCs of Electric Vehicle Charging Some vehicle owners say that the "ABCs" for BEVs (Battery Electric Vehicles) stand for

"Always Be Charging". The real "ABCs" for every successful service professional is developing the flexibility to adapt to technologies that seem to Always Be Changing! Delphi Technologies brings you the latest changes in J1772 charge plug diagnostics and tech tips.

8:00-11:15 AM



Pam Oakes, autoINENG.io HVAC-Heat Pumps Demystified with Hands-On Lab More hybrids to BEVS, more plumbing! Learn how coolant and refrigerant work in tandem to keep occupants comfortable and the HV battery even more so...

9:45-11:15 AM



Kermit Walden, Trans/Air

The Ins, Outs and In Between Of Bus Air Conditioning This presentation will discuss the components, their functions (in detail), how they are

connected and how they work together. Kermit will also talk about the installation process.

9:45-11:15 AM



Agnes Perez, AAP-PR (SPANISH)

Enfriamiento en el sistema del auto eléctrico Durante este curso informativo podrás aplicar y conocer por qué es importante el enfriamiento en los autos eléctricos ya que contienen muchas

piezas que generan calor. Estos autos contienen una batería de alto voltaje de litio y está genera calor lo que puede provocar incendiarse si no es enfriada correctamente.



Saturday Training & Events

1:00-2:30 PM



Peter McArdle, Four Seasons

Eliminating A/C Comebacks An A/C repair that leaves the shop blowing ICE cold air but comes back blowing warm, in a day, or even a year can be

very frustrating. Join us for this class where we will share 12 essential strategies for eliminating A/C comebacks. We will explain the magic of forming gas leak detection, thermal expansion valve service tips, electronically controlled variable displacement compressor (eVDC) service and much more.

1:00-4:15 PM



Peter Orlando, AAP / CTI Hybrid and EV Climate Control Operation Using Scan Tool Analytics We will Cover:

- Climate Control System Performance Tests on Hybrid and EV systems
- Understanding HVAC data parameters
- Power of "Grouping" Graphed data
- Using Scan Tool Active test functions
- OE vs Aftermarket information
- Diagnosis of Hybrid and EV HVAC systems using Scan Tool Analytics

1:00-4:15 PM



Tom Rayk, AVI

Electric A/C Diagnostics & Repair

HVAC is becoming more complex in today's vehicles, and this course will present cutting-edge HVAC diagnostic procedures. This course will cover

conventional HVAC systems and discuss electric and hybrid electric heating and cooling systems. Objectives:

- Define an Automotive HVAC System
- Explain the Different Components that Make Up an HVAC System
- Describe Common Causes of Failures of HVAC Components
- Identify When to Flush & When to Replace Components
- Explain Proper HVAC Testing Procedures
- Leak Detection with GM Factory Authorized Too
- List Common HVAC Diagnostic, Recovery, & Maintenance Tools
- Describe the Difference Between Conventional & Electric Vehicle HVAC Systems
- Explain When a Scan Tool Can Help

1:00-4:15 PM



Jerry Lemon,

Lemco Mobile A/C Consulting Heavy-Duty Truck and Agricultural Machinery Mobile A/C Best Practices

Servicing heavy-duty A/C systems has become more complicated in recent years as vehicle and equipment OEMs continue to build more modern and complex systems. Presented by MACS, the worldwide leader in mobile A/C information and training, this clinic will help service technicians to better understand component design and integration, testing, and replacement, along with recommended best service practices to get the job done right the first time.



Town Hall Lunch Saturday

11:30 AM-12:45 PM

A Town Hall hosted by Carm Capriotto to discuss the current Hot topics that affect both the passenger/Light Truck and Heavy Duty/Offroad/ Bus sectors of our industry.





Host Hotel

Rosen Centre Hotel, Orlando, FL January 31-February 3, 2024

MACS has made every effort to secure the best group room rate for you at the 2024 Training Event and Trade Show at the Rosen Centre Hotel. The MACS negotiated rate for a single/double occupancy room is \$209 plus tax, per night.

For reservations, please go to the MACS 2024 Training Event page on our website macsmobileairclimate.org for the reservation link, or call (800) 204-7234.

Please remember to mention you are part of the MACS Training Event & Trade Show. Room reservations must be made by January 10, 2024, after which reservations and substitution request will be accepted only if hotel space is available.

Remember to keep your confirmation number. Please advise the hotel regarding any disabilities or special requirements. Check-in time after 3:00 pm and check-out time is 11:00 am. Standard in room Wi-Fi is complimentary.



NOTE: Beware of bogus hotel reservation companies: MACS and the Rosen Centre Hotel are NOT affiliated with any third party for booking hotel rooms. Should you be contacted to book your hotel room through a third party, please know this is likely a scam. Please report any suspect activity to MACS.

Visit the TSI Supercool Booth in the Trade Show to pick up your collectible event T-Shirt!



2024 registration

SAVE \$\$\$ BY PRE-REGISTERING NOW!

Register: Email info@mac	csmobileairclimate.org	Call (215) 631-7020	Online www.macsmobileairclimate.org
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ARE YOU A MACS MEMBER? (check one)				
Service/Installer	□ Distributor	□ Manufacturer/Supplier	Educational/Trai	ning Facility 🗌 Individual
Name	Company/Shop			
Address				
City		State/Province	_Zip/Postal Code	Country
Email	Onsite cell number			
Emergency contact_		Emergency contact cell		

Registration	The health and safety of our attendees, exhibitors, guests, and staff are of upmost importance. By accepting your event registration, attendees, exhibitors, guests, and staff agree to abide by all local, state, and federal laws, regulations, declarations, and rules put in place for the benefit of your	
Wednesday, January 31–Saturday, February 3, 2 Member \$495 Non-Member \$695 INCLUDES: • All Training sessions Thursday & Saturday • Keynote Lunch • Welcoming Reception Poolside • Friday AM General Session • Trade Show Exhibits & "Grab-A-Bite" lunch • Post Trade Show After Party • Saturday Town Hall lunch w/ Carm Capriotto Optional Events (Additional Registration Required): Annual Golf Tournament - \$130 Prevost Offsite Training - \$49 A/C Basics for the New Technician - \$99 Complimentary EPA Section 609 Certification Companion Tour - \$99	health and actatu	
Signature	Date	
Enclosed is my check for \$	NAME ON CARD	
Please charge to (check one):	CARD #	

 Please charge to (check one):
 CARD #_____

 Mastercard
 Visa
 Discover
 American Express

 EXPIRATION ______
 SECURITY CODE ______

Contributions or gifts to MACS are not deductible as charitable contributions for Federal Income Tax purposes. Dues payment may be deductible by members as an ordinary and necessary business expense. Pre-registration will save you money. Prices at the Training Event will be 10% higher than those above.