

NACAT
CONFERENCE
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EV / HYBRID
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NACAT NEWS

VOL 37

APRIL 2023

NO.2



Allied Members

NACAT
NORTH AMERICAN COUNCIL
OF AUTOMOTIVE TEACHERS



NACAT

NORTH AMERICAN COUNCIL

OF AUTOMOTIVE TEACHERS

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NACAT News is Published SIX Times per Year!

DEADLINE DATES

June 2023 issue - May 10, 2023

August 2023 issue - July 10, 2023

October 2023 issue - September 10, 2023

December 2023 issue - November 10, 2023

February 2024 issue - January 10, 2024

April 2024 issue - March 10, 2024

The latest advertising size and rate information can be found at www.nacat.org.

Officers

President

2021 - 2023

Tom Millard

Warren Tech
13300 W 2nd PL, Auto Tech BLDG C
Lakewood, CO 80228

Vice President / President Elect

2021 - 2023

Drew Barnes

Vale School District
403 E Street West
Vale, OR 97918

Secretary / Treasurer

2022 - 2023

Steve Tucker

SUNY Delhi
2 Main Street
Delhi, NY 13753

Appointments

Business Manager

Heather Sebben

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Email: info@nacat.org
Office Phone: 816.766.1515

Business Advisor

Sheri Hamilton

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Conference
LOCATION



**South Shore
Harbour Resort and
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League City, TX 77573

Check In:
3:00 pm
Check Out:
11:00 am

NACAT2023
CONFERENCE & EXPO
NORTH AMERICAN COUNCIL
OF AUTOMOTIVE TEACHERS

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in NACAT News!

Email: nacatnews@nacat.org

TELL

YOUR

STORY



NACAT PRESIDENT'S UPDATE

TOM MILLARD

WARREN TECH

Spring has Sprung!

Election time is here for NACAT. We are in need of an incoming Vice President / President Elect. This individual would be a part of the board for the next two years, and then advance to the Presidency for the following two years. I have enjoyed being your President for the last year and a half, and can't wait to see what the future will bring. We are also in need of members to join the board. It is up to your board to help make the changes for the future. If you know someone who would be good at this opportunity or if you are interested in joining the Board, please [complete the linked form or encourage them to do the same](#).

We also have awards and scholarships available. They can be found under the "resources" tab on the [NACAT website](#). They include the [Cengage Jack Erjavec Innovative Instructor Award](#) and the [Larry Cotten Memorial Scholarship](#). The **Mitchell 1 Educator of the Year Award**, based upon the top scorer on the ASE Test in the Educator category, is also given at the annual NACAT Conference.

New memberships are also on the rise. We had a booth on site at the 2023 VISION HiTech Training & Expo in Kansas City earlier this month, and I met many new and past NACAT members. I am excited about the addition of members as this is such a great time for NACAT.

Planning for the [2023 NACAT Conference](#), July 10-13, 2023 at San Jacinto Community College in Houston, Texas, is coming along well. We are excited about the new vendors and class offerings that will be available. [Book your hotel](#) and prepare to join us!

A new [Mentor Training Opportunity](#) will soon be available to any and all NACAT members, whether you are new to teaching, only have a few years of experience, or are a seasoned veteran. On *April 20, 2023*, we will be hosting sessions, and we are looking forward to meeting, sharing, and discussing hardships, accomplishments, and goals. Watch your email for further information. If you are an experienced educator and would like to volunteer to be part of this process, please let me know and I can share your information with the board and the mentor training crew.

We have recently organized a Families of NACAT Committee, and there is a Facebook [group](#) for Families as well. Your Families of NACAT Chair is Tamber Nellinger, and the Vice Chair is Bonnie Millard. The Families of NACAT Committee generated a schedule of fun family activities for the 2023 conference. [Guest Registration](#) for the activities is now open.

I am looking forward to all the new changes and the upcoming events, and I look forward to seeing you at NACAT conference later this year.



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K&N Engineering
1455 Citrus Street
Riverside, CA 92507

Board Member 2021 - 2024

Louie Longhi

Mechanics Local 701 Training
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Board Member 2022 - 2025

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Getting To Know...

...Drew Barnes, NACAT President - Elect

Hello, my name is Drew Barnes, I am the current NACAT Vice President/President Elect.

How did I get here? Like many of you, this journey began at a young age. For me it was probably during my high school years. I am not really sure if it was for my liking of working on cars or dislike of farming and ranching? To be honest, the farm and ranch life was not all that bad, it was just not for me. I liked working on tractors, trucks, and other farm equipment. However, I really enjoyed working on cars, pickups, and motorcycles. My father really helped me realize at a young age that I had a good mechanical aptitude and was pretty good at solving problems. By the time I reached my freshman year in high school, I had already gained quite a bit of experience helping my dad on the farm. In fact, by this time I had already rebuilt my first engine in my first high school pickup (1980 Chevy K10, Square Body, still my favorite pickups). As soon as I was eligible my sophomore year, I signed up for Auto 1. Realistically, I would say this is where my Automotive journey began.

I continued in my high school automotive program for the next three years, trying to be involved as much as possible. I was "that kid", if you are an automotive instructor, you know the one I am talking about. I was the one that spent every moment I could in the shop, often times that was when I was actually supposed to be in other classes. I was our SkillsUSA Chapter President my senior year. By the time senior year rolled around, I had all but decided that I would be pursuing a career in Automotive Service.

I began researching many different post-secondary options, and after many discussions with my auto instructor, different recruiters, and my father, I finally decided. I had made the decision to go through a General Motors ASEP program at the College of Southern Idaho. I have made some questionable decisions in my life, but this was definitely not one of them. There is not a path that could have suited me better.

So, it began. I graduated from Marsh Valley High School on a Saturday night and began working at a GM dealership the following Monday morning. I was 17 at the time. Over the course of the next two years, I learned and grew more as an Automotive Technician than I ever thought possible. I continued to stay involved and be "that student". This is where I discovered that Automotive Technology was not just my intended career path, but my passion. In May 2005, I graduated with honors from the College of Southern Idaho. The next week I began my full time career as an Automotive Technician, working for the same dealership that I was at since high school graduation. I was 19 years old.

Fast forward about two months to July 23, 2005. I married my beautiful wife, Whitney, whom I met while in college. This year we will be celebrating our 18th wedding anniversary. July 17, 2006, we welcomed Dax, the oldest of our two son's into our lives. It is hard to believe that he is now a junior in high school, currently enrolled in my automotive classes.

In January of 2007, I decided to make a bit of a career change. I packed up my young family and moved to Sun Valley, Idaho. I was still an automotive technician, however, I was now working at an independent shop. I continued on this path until August of 2008. Somewhere around June of that year, I received a phone call from my high school automotive instructor. He was teaching at Buhl High School, but due to life circumstances, he was needing to make a career change himself. The intent of this phone call was to try and recruit me to become his replacement. My first response was, thank you, but no. I did not feel like I

CONTINUED ON PAGE 8

was anywhere near qualified for such a job. A couple weeks later, I received another phone call from him. After some serious consideration and multiple discussions with my wife and my boss at the time, I decided to apply and interview. Immediately after the interview, I was offered the position. Well, now it was real, I had to make a decision. August 2008, I began my career as an automotive instructor. I was 22 years old.

I am not going to lie, it was a very difficult transition. There was a very steep learning curve, being in education was a whole lot different than being in industry! Not only was I now on a completely different career path, I was also back in college and raising a family. To say this was difficult is an understatement, but even through the challenges, I truly did enjoy teaching.

I continued on to teach at Buhl High School for three years, but another great opportunity presented itself. A very well known High School automotive instructor, who had built a very successful automotive program had decided to retire. This individual was Merle Saunders, automotive instructor from Vale High School, in Vale, Oregon. In April of 2011, I applied and interviewed for this position. Shortly after, I was offered the position and accepted. I started as an automotive instructor for Vale High School in August of 2011. One of the key factors in making this decision was the opportunity to receive mentorship from a veteran instructor who had run such a successful program for so many years. I am currently in my 15th year of teaching and 12th year at Vale High School.

So, how did I get here? I would like to say it is because of hard work, perseverance, and dedication. That is just a small part of it. The real reason is because of the people and their influences that have helped me along the way. If it wasn't for the following individuals, I am quite sure I would not be where I am today: My father Tom Barnes, for being my first real teacher and helping me find my strengths. Aaron Ball, my high school automotive instructor, for helping me not only in finding my passion for automotive technology but also convincing me to become a teacher. My dealership Service Manager, Mark Huelsman, for taking a chance on a young kid. My college automotive instructor and close friend, Dave Rodriguez, for always challenging me and making me become a better technician. My dealership mentor and now a college automotive instructor, Brock Gunter. He is the one who truly taught me what it means to be a successful flat-rate automotive technician. My boss from the independent shop in Sun Valley, Ken Hansen, for his help and support when I was transitioning from technician to a teacher. Former Vale High School automotive instructor, Merle Saunders, for his mentorship and help in showing what it takes to be a successful automotive instructor. Finally, probably the most important person in my life, my wife, Whitney Barnes. Without her continued support and encouragement, I would not be the man I am today.

How does NACAT play a role in all of this? Simple answer, there is no better resource available to fill the needs of Automotive Instructors. The resources and opportunities that we provide in terms of training and networking with fellow automotive instructors are second to none. As I stated previously, intelligent people and positive influences are truly the best way to grow and become better. That is what NACAT provides.

I look forward to seeing you at the 2023 NACAT Conference and future conferences.



The delicate balance of mentoring someone is not creating them in your own image, but giving them the opportunity to create themselves.

Steven Spielberg

INTUITIVE SOLUTIONS

ConsuLab recently went through a brand change. We are still the same company we've been for more than 50 years. We still offer you the best automotive and heavy vehicle training aids available.

We have a new logo, new colors and a new "catchphrase".

As you can see in this logo, our new logo is quite a bit different than a previous one. And our new slogan is more apropos for today's ever-changing technology.



We still are helping you teach technology, but now we do so by offering you intuitive solutions in the world of automotive, EVs, hybrids and heavy vehicles.

"Our industry is at such a turning point right now when it comes to technology, that it only made sense to pivot with the industry," said ConsuLab President Kevin Boden.

Boden said that there are four key principles to ConsuLab's vision now and into the future:

1. Demonstrating how stuff works by offering you products that will help your students visualize today's complicated technology.
2. The ability to practice service and maintenance procedures on our products.
3. Introduce real-world diagnostic procedures.
4. Evaluate student competencies in a very consistent manner.

"That's how we came to Intuitive Solutions as our new slogan. All of these four principles factored into it."



Now in a new facility that more than doubles our manufacturing capability, it was the right time to launch a new brand.

"We are incredibly proud of our new facility which we call our center of excellence," Boden said.

ConsuLab's new brand will be implemented in multiple phases starting with the rollout of the new brand and shows, like NACAT, but also on the shirts our staff will wear every day and the more formal shirts they will wear during trade shows and events. Additionally, the new ConsuLab brand with the new logo and new color scheme will be rolled out on products throughout 2023.





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Thank you to those who have either joined or renewed their membership since Februar 1, 2023.

David Beachler
Warren, OH

Luis Diaz
West Nyack, NY

Duncan Nasse
Calgary, AB

Kyle Snover
Tunkhannock, PA

Russell Bacarella
Garden Grove, CA

Patrick English
Big Rapids, MI

Lewis Nellinger
High Springs, FL

Brian Spray
Valdosta, GA

Ailbe Burke
Moylish, Ireland

Dave Giles
Lawrencetown, NS

Sean Reisdorf
Farmington Hills, MI

Mark Steinle
Sheldon, IA

Chistopher Burkett
Katy, TX

Brad Kozubski
Kamloops, BC

Michael Richards
Eureka, CA

Quentin Swan
La Crescenta, CA

Charles Butler
Cincinnati, OH

Louie Longhi
Carol Stream, IL

Michael Scamardella
North Bellmore, NY

Lance Webber
Monticello, IA

John Chism
Elizabethtown, KY

Edward Martin
Aurora, CO

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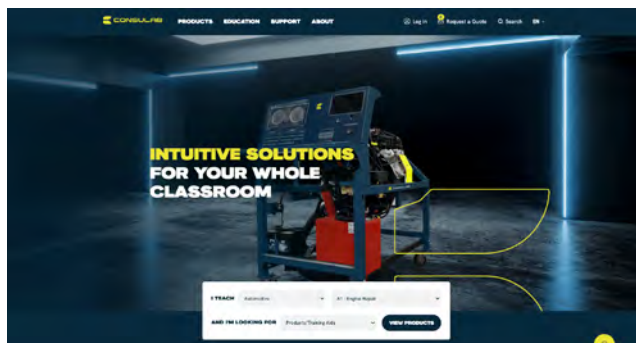
CONSULAB LAUNCHES NEW WEBSITE

On Valentine's Day ConsuLab launched their brand-new, customer-focused website. February 14 was a great day to launch as this was a labor of love.

Launching a new website was a large task and a total team effort. It was all part of the new brand that ConsuLab launched simultaneously.

"Celebrating our 50th anniversary I couldn't have thought of a better to launch a brand, move into a new building and launch a new website," said ConsuLab President Kevin Boden.

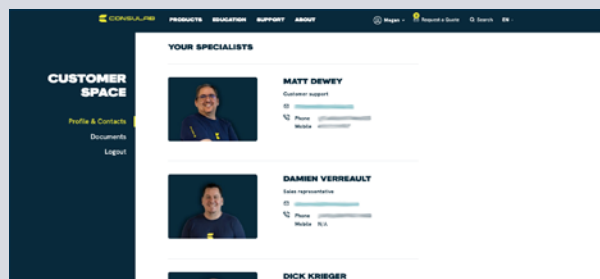
The end result is a website that is modern, simple and most importantly customer driven.



Some of the features of the new website include:



1. Customer portal – After creating a user account, you will have access to product materials including curriculum, manuals and videos for products you've purchased or might be interested in.



2. Access to our support and education team.



3. Logically organized content of all the products we offer including our newest released training aids.



4. A quick and easy way to request a quote on any of the products that catch your eye.

The new ConsuLab.com is both mobile friendly and multiple browser friendly for both PCs and Macs.

"It was an important part of our future to have a new website that was mobile friendly but more important user friendly," Boden said. **"We think we've accomplished that with the new consulab.com."**

MF300-VCLS

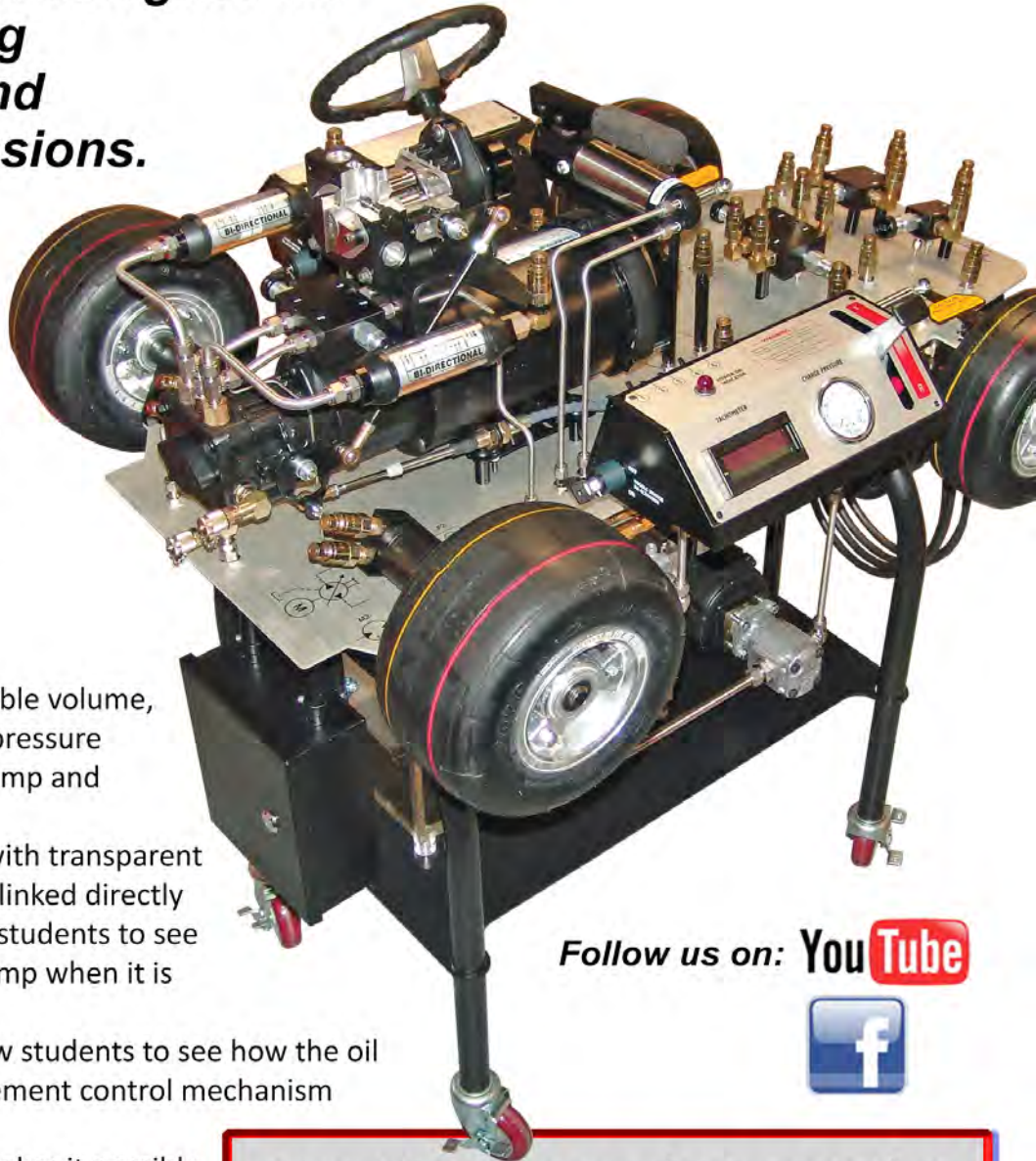
Hydrostatic Transmission and Hydraulic Steering Training System

The MF300-VCLS is an extremely versatile 2-in-1 training system designed for teaching and learning hydraulic steering and hydrostatic transmissions.

The front-end has a fully-functional hydraulic steering system that is identical to those found on articulated machines such as front-end loaders. The rear-end features a fully-functional hydrostatic (hydraulic) transmission identical to those in skid-steer type loaders and many other types of industrial and mobile machinery.

The MF300-VCLS consists of:

- Pump (functional) - overcenter, variable volume, axial piston-type with internal high-pressure relief valves, check valves, charge pump and charge pressure relief valve.
An identical cutaway of this pump, with transparent charge pump cover, is mounted and linked directly to the functional pump to allow the students to see what actually happens inside the pump when it is activated.
- Dual, bi-directional flow meters allow students to see how the oil reverses direction when the displacement control mechanism moves over-center.
- Optional troubleshooting package makes it possible to cause on-board components to wear out.
- Fully functional hydraulic steering system designed exclusively for educational purposes.
- . . . and much more!

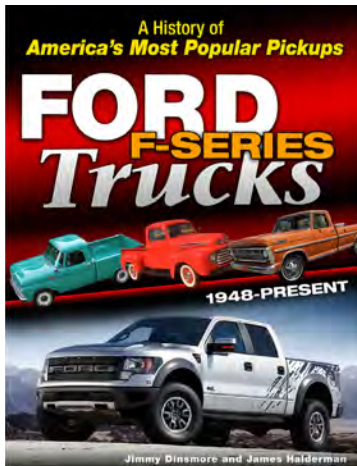


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When Henry Ford first started manufacturing Model Ts more than 100 years ago, he didn't really have any sort of pickup or truck configuration in mind. However, enterprising people and businesses were modifying those early chassis for commercial use, and it didn't take long for Ford to figure out that there was a demand for a truck application of the Model T. Soon, Ford was making its own configurations for commercial use, first through third-party body companies and eventually by Ford itself with the Model TT. From these humble beginnings, Ford stumbled onto the basis for one of the most popular vehicles ever built: the Ford F-Series pickup truck.



In ***Ford F-Series Trucks: 1948–Present***, authors Jimmy Dinsmore and James Halderman thoroughly dissect the history of Ford F-Series pickup trucks as seen from a technical viewpoint. Fully covered are all the options, chassis specifications, running changes, and the evolution of these trucks, as they transformed from postwar utilitarian vehicles to the best-selling luxury family cruisers seen today. Not only are Ford trucks the best-selling trucks, they are the best-selling vehicle of any category, cars included.

This book will thrill truck aficionados and Ford historians alike, as it covers the first F-Series models (1948–1952), the ever-popular second-generation F-Series models (1953–1956), the popular Bumpsides (1967–1972), and all the way through the remarkable technology of what is now the 14th generation of the F-Series.

Says co-author Jimmy Dinsmore, who co-wrote it with Jim Halderman, "This is our second book collaboration together. We wrote [Mustang by Design](#) together and actually wrote this truck book immediately after completing Mustang by Design."

Dinsmore said the book takes a historic look at how the Ford truck has evolved through time. "You can literally track where we were as a society by how the Ford F-Series looked and performed. It's quite interesting. That truck, America's truck, evolved with us in society. From a rural, agricultural society, to a do-it-yourself baby boomer society to today's modern daily driver pickup." The text even covers the all electric F-150 Lightning along with the small Ford Maverick pickup truck. It is truly a comprehensive look at the F-Series.



Jim Halderman



Jimmy Dinsmore

STUDENT SUCCESS!

FORMER WESTERN QUEBEC CAREER CENTER STUDENTS OPEN SHOP!



Two brothers, Gilbert and Leo Mofleh, each taught four years apart by former NACAT Board Member Jason Bronsther, have [opened a shop](#) in the Hull / Gatineau area (Quebec).

Bronsther states, "The dream of the senior brother was to open his own shop and have his younger brother come and work for him. Well here it is! So happy for them. Dreams and hard work do come true."

NACAT would like to congratulate Gilbert and Leo on their dedicated work to make their dream a reality. We would also like to congratulate Jason Bronsther for his role in nurturing their spark to become the flame into which it is growing. Well done to all!

2023 NACAT Conference



Agenda

Monday, July 10, 2023

All events at the hotel

9:00 am - 12:00 pm: Registration

10:30 am - 11:30 am: First-Time Attendee Meeting

12:00 pm - 2:00 pm: Opening General Session, Keynote, & Lunch

2:00 pm - 2:30 pm: Break

2:30 pm - 4:00 pm Training

4:00 pm - 4:30 pm: Break

4:30 pm - 6:00 pm: Training

6:00 pm - 7:00 pm: Welcome Reception

Tuesday, July 11, 2023

All events at Pasadena Convention Center

(transportation provided)

7:30 am - 8:00 am: Breakfast

8:00 am - 9:30 am: Training

9:30 am - 10:00 am: Break

10:00 am - 11:30 am: Training

11:30 am - 12:30 pm: Lunch and Exhibits

12:30 pm - 4:30 pm: Exhibits

4:30 pm - 6:00 pm: Valve Cover Races

6:00 pm - 7:30 pm: BBQ and Networking

Wednesday, July 12, 2023

All events at San Jacinto College (transportation provided)

7:30 am - 8:00 am: Breakfast

8:00 am - 9:30 am: Training

9:30 am - 10:00 am: Break

10:00 am - 11:30 am: Training

11:30 am - 12:30 pm: Lunch

12:30 pm - 2:00 pm: Training

2:00 pm - 2:30 pm: Break

2:30 pm - 4:00 pm: Training

4:00 pm - 4:30 pm: Break

4:30 pm - 6:00 pm: Training

7:00 pm: Additional outing (more details coming soon)

Thursday, July 13, 2023

All events at San Jacinto College (transportation provided)

7:30 am - 8:00 am: Breakfast

8:00 am - 9:30 am: Training

9:30 am - 10:00 am: Break

10:00 am - 11:30 am: Training

11:30 am - 12:30 pm: Lunch

12:30 pm - 2:00 pm: Training

2:00 pm - 2:30 pm: Break

2:30 pm - 4:00 pm: Training

6:30 pm - 7:00 pm: Cocktail Reception

7:00 pm - 8:00 pm: Awards Dinner (additional charge)

Monday, July 10, 2023

Code	Training	Begins	Ends	Instructor
S1-1	Advanced Automotive Module Programming Sponsored by OE Alternatives	2:30pm	4:00pm	Mike Christopherson
S1-2	Competency Based Evaluations	2:30pm	4:00pm	Jason Bronsther
S1-3	Ford Battery Electric Technology Sponsored by Ford Motor Company	2:30pm	4:00pm	Alan Ritter
S1-4	Next Generation Automotive Programs with Augmented and Virtual Reality Sponsored by zSpace	2:30pm	4:00pm	Nikki Lester
S1-5	Strategies for Teaching Hybrid and Electric Vehicle Technology Sponsored by Electude	2:30pm	4:00pm	Darcy Wedel
S1-6	Teaching Gas Direct Fuel Injection Control Sponsored by Consulab	2:30pm	4:00pm	Al Santini
S2-1	ASE Registered Apprenticeship for Students Sponsored by ASE Educational Foundation	4:30pm	6:00pm	George Arrants
S2-2	Competency Based Evaluations	4:30pm	6:00pm	Jason Bronsther
S2-3	EVPro+ Training with National Certification Sponsored by Future Tech Auto	4:30pm	6:00pm	Ken Mays
S2-4	Preparing Students for Successful MLR Technician Jobs Sponsored by G-W Publisher	4:30pm	6:00pm	Luke Thompson
S2-5	Strategies for Teaching Hybrid and Electric Vehicle Technology Sponsored by Electude	4:30pm	6:00pm	Darcy Wedel
S2-6	The Brake Issue That Requires More Than Just Replacing Parts Sponsored by ProCut	4:30pm	6:00pm	Steve Smith

2023 NACAT Conference



Tuesday, July 11, 2023

Code	Training	Begins	Ends	Instructor
S3-1	Behind the Grill: ADAS (Hands-On)	8:00am	11:30am	Pam Oakes
S3-2	Iron Sharpens Iron Sponsored by Consulab	8:00am	9:30am	Tim Dwyer & Jeff Curtis
S3-3	Teaching High Voltage Batteries Sponsored by Joliet Junior College & Pearson Education	8:00am	9:30am	Curt Ward
S4-1	Hybrid and Electric Vehicle Air Conditioning Systems Sponsored by Joliet Junior College & Pearson Education	10:00am	11:30am	Curt Ward
S4-2	Iron Sharpens Iron Sponsored by Consulab	10:00am	11:30am	Tim Dwyer & Jeff Curtis

Wednesday, July 12, 2023

Code	Training	Begins	Ends	Instructor
S5-1	ADAS and Autonomous Automobiles (Hands-On) Sponsored by Consulab	8:00am	9:30am	Tim Dwyer
S5-2	Brake Systems Diagnosis and Repair Sponsored by ACDelco	8:00am	11:30am	Jerry Mungle
S5-3	Current & Updated Relay Technology Class (Hands-On) Sponsored by Consulab	8:00am	11:30am	Dick Krieger
S5-4	Diagnosing by the Numbers Sponsored by ATech Training	8:00am	11:30am	Jim Wilson
S5-5	Electric Vehicles - Teaching High Voltage Batteries and Motors SAFELY (Hands-On) Sponsored by Megatech Corporation	8:00am	9:30am	Varant Basmajian
S5-6	The Four Horsemen of Drivability Sponsored by Endeavor Business Media	8:00am	11:30am	Pete Meier
S5-7	You Teach, Why Do Students Not Learn? Sponsored by ATech Training	8:00am	11:30am	Sam Houston
S6-1	ADAS and Autonomous Automobiles (Hands-On) Sponsored by Consulab	10:00am	11:30am	Tim Dwyer
S6-2	Electric Vehicles - Teaching High Voltage Batteries and Motors SAFELY (Hands-On) Sponsored by Megatech Corporation	10:00am	11:30am	Varant Basmajian
S7-1	Advanced Driver Assistance Systems Sponsored by ACDelco	1:00pm	4:30pm	Jerry Mungle
S7-2	ADAS and Autonomous Automobiles (Hands-On) Sponsored by Consulab	1:00pm	2:30pm	Tim Dwyer
S7-3	Current & Updated Relay Technology Class (Hands-On) Sponsored by Consulab	1:00pm	4:30pm	Dick Krieger
S7-4	Electude and You (Hands-On) Sponsored by Electude	1:00pm	4:30pm	Dr. Alex Richards
S7-5	Emerging Technologies, Evolving Repair Strategies Sponsored by Industry Attends	1:00pm	2:30pm	Justin Kidd & Nick Czerula
S7-6	Working with the VW Group CAN Bus Sponsored by WORLDPAAC	1:00pm	4:30pm	Cameron Conover
S7-7	You Teach, Why Do Students Not Learn? Sponsored by ATech Training	1:00pm	4:30pm	Sam Houston
S8-1	Breaking Bolts: And Why We Should Teach Students How to Break Them (Hands-On) Sponsored by Consulab	3:00pm	4:30pm	Jeff Curtis
S8-2	Emerging Technologies, Evolving Repair Strategies Sponsored by Industry Attends	3:00pm	4:30pm	Justin Kidd & Nick Czerula

2023 NACAT Conference



Thursday, July 13, 2023

Code	Training	Begins	Ends	Instructor
S9-1	HVAC 2023 - Keeping It Cool Sponsored by Standard Motor Products	8:00am	11:30am	Ryan Kooiman
S9-2	HVAC: HV Batteries (Hands-On)	8:00am	11:30am	Pam Oakes
S9-3	Hybrid and Electric Vehicle Maintenance and Repair Sponsored by ACDelco	8:00am	11:30am	Jerry Mungle
S9-4	Teaching Low Speed, High Speed and K Line CAN Bus Sponsored by Consulab	8:00am	11:30am	Al Santini
S9-5	TPMS - Technology, Diagnosing, and the Future (Hands-On) Sponsored by Continental	8:00am	11:30am	Sean Lannoo
S9-6	Understanding and Analyzing a Parallel Circuit (Hands-On) Sponsored by ATech Training	8:00am	11:30am	Jim Wilson
S9-7	VW/Audi 4cyl, Evolution of EA888 Sponsored by WORLDPAAC	8:00am	11:30am	Cameron Conover
S10-1	Audi Hot V (HSI) Engines Sponsored by WORLDPAAC	1:00pm	4:30pm	Cameron Conover
S10-2	HVAC: HV Batteries (Hands-On)	1:00pm	4:30pm	Pam Oakes
S10-3	Labscope Power User Sponsored by Standard Motor Products	1:00pm	4:30pm	Ryan Kooiman
S10-4	Mastering The Art of Electrical Troubleshooting Sponsored by Endeavor Business Media	1:00pm	4:30pm	Pete Meier
S10-5	Teaching Low Speed, High Speed and K Line CAN Bus (Hands-On) Sponsored by Consulab	1:00pm	4:30pm	Al Santini
S10-6	TPMS - Technology, Diagnosing, and the Future (Hands-On) Sponsored by Continental	1:00pm	4:30pm	Sean Lannoo
S10-7	Understanding and Analyzing a Parallel Circuit (Hands-On) Sponsored by ATech Training	1:00pm	4:30pm	Jim Wilson

Pricing Details

	Before April 30, 2023	After April 30, 2023
NACAT Members	\$520	\$595
Non-Members	\$620	\$695



Hotel

South Shore Harbour Resort
2500 South Shore Blvd
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Cost: \$149 per night plus tax

TRAINING COURSE SELECTION: Selections must be made in advance and are available on a first-come, first-served basis.

MEALS: Continental breakfast is served on Tuesday, Wednesday, and Thursday. Lunch is served Monday, Tuesday, Wednesday, and Thursday. Refreshment breaks are each day.

NACAT Member Discounts: NACAT Members receive a \$100 discount on registration packages. Visit nacat.org to become a member.

AWARDS DINNER: Attendees may purchase tickets for \$60 each. Tickets are limited so early registration is encouraged.

REGISTRATION & PAYMENT: To register, please complete the online registration form at www.nacat.org. Registrations must be received no later than July 3, 2023. Registrations accepted ON-SITE ONLY after July 3, 2023. We cannot guarantee availability for late or on-site registrants. A confirmation letter and detailed conference information will be e-mailed in late-June.

CANCELLATION AND REFUND POLICY: Full refunds will be granted, less a \$30 processing fee, if cancellation is received in writing by June 1, 2023. No refunds will be granted after June 1, 2023. Name substitutions will be accepted.

2023 NACAT Conference

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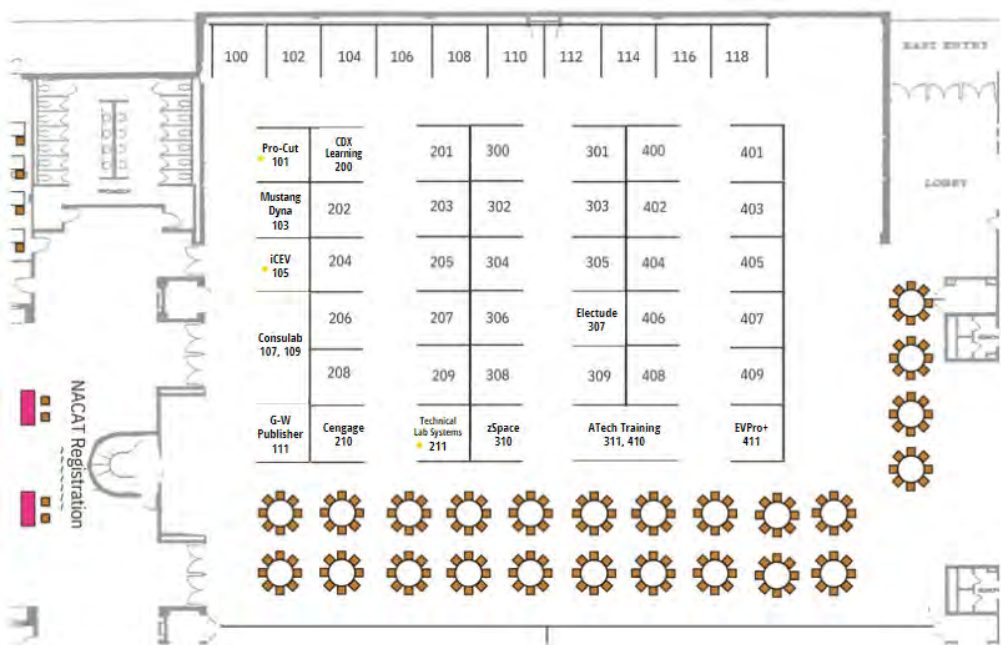
Pasadena Convention Center

Pasadena, Texas

July 10-13, 2023

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heather@nacat.org



★ New Exhibitors

Floorplan subject to change
updated 3.29.2023

Allied Members - \$750 per booth before March 31, 2023; \$850 afterwards. Non-Members - \$850 per booth before March 31, 2023; \$950 afterwards. Each booth includes one representative. Additional representatives are \$175 each (includes Welcome Reception, Refreshment Breaks on Tuesday, Lunch on Tuesday, Valve Cover Races and Family BBQ)

SCHEDULE OF EVENTS

Monday, July 10, 2023

9:00am-12:00pm Registration Open
10:30am-11:30am First Time Attendee Meeting
12:00-2:00pm Opening General Session & Keynote
12:00-6:00pm Exhibitors Setup
6:00-7:00pm Welcome Reception

Tuesday, July 11, 2023

8:00-11:30am Exhibitor Setup
8:00-11:30am Training Sessions
9:30-10:00am Refreshment Break*
11:30am-7:30pm Lunch & Exhibitors*
11:30am-12:30pm Lunch*
3:00-3:30pm Refreshment Break*
4:30-5:30pm Valve Cover Races*
6:00-7:30pm Family BBQ*

Wednesday, July 12, 2023

8:00am-6:00pm Training Sessions

Thursday, July 13, 2023

8:00am-4:00pm Training Sessions
6:30-7:00pm Cocktail Reception
7:00-8:00pm Dinner and Awards

Schedule subject to change

* - exhibit times

SPONSORSHIP OPPORTUNITIES

All sponsorships include signage, website and social media recognition.

First-Time Attendee Meeting: Make a lasting impression with the first time attendees by sponsoring their meeting and being able to network. **\$750**

Welcome Reception Sponsorship: This kickoff event provides an opportunity to meet and greet this year's attendees. **\$2,500**

Opening General Session and Keynote: Have your brand in front of all the attendees at the opening general session and keynote. **\$750**

Refreshment Breaks: Keep the energy going by providing attendees with refreshments during their break. **\$250 each** each 9 available

Lunch Sponsorships: Lunch is a great time to take advantage of the opportunity for additional exposure for your company. **\$750 each** 4 available

Family BBQ: This BBQ is a great opportunity to have your brand seen by all attendees plus their family for additional exposure. **\$1,500**

Valve Cover Races: What's better than a friendly competition? When your company is the one helping sponsoring the evening, it will be a night to remember. **\$1,500**

Cocktail Reception: Sponsor the cocktail reception and have your logo featured on the drink ticket everyone receives and make a toast to all attendees! **\$1,500**

Dinner and Awards: This special evening allows you to join your colleagues and customers in a relaxed setting. The Awards Dinner celebrates those individuals achieving excellence in the automotive service industry. Your logo will also be included in the evening's dinner program guide. **\$2,000**

Lanyard Sponsorship: Have your logo seen throughout the annual meeting as attendees network and attend training. Your company's logo'd lanyards will be provided to our team in advance of the conference. **\$1,500**

Conference Tote Bag Sponsorship: Your provided bags will be presented to each attendee at registration. Have your branding throughout the event as attendees visit exhibits, attend training and network. **\$1,500**

Mobile App Sponsorship: Be at the attendees fingertips with this unique opportunity. Your logo and recognition will be included in the mobile app, as well as website and social media recognition. Don't miss this opportunity to have your company seen each time an attendee opens the mobile app to and event information and their handouts. **\$2,000**

Notepad Sponsorship: Attendees gain a lot of information and knowledge during the conference. Your provided logo'd notepads are utilized throughout the event as well as when attendees return back to their school. The exclusive sponsor will provide their notepad/notebooks to be included in registration packets for each attendee. **\$250**

Pen/Highlighter Sponsorship: Your provided logo'd pens will be included in each attendee registration packet. Sure to be utilized through the event, this long-use item returns home with the attendees as a reminder of your support of their training endeavors. **\$250**

Email Banner Ad: A banner ad in a NACAT email campaign. **\$250 each** 5 available

Overall Conference T-Shirt Sponsor: Have your logo on the sleeve of the 2023 NACAT Conference T-Shirt **\$1,500**

Logo on T-Shirt: Your logo will be on the back of the 2023 NACAT Conference T-Shirt and will be present every time someone wears it for branding that can last decades! **\$250**

Transportation: Get featured on the transportation to and from the school/convention center for the entire day. **\$2,000** 3 available



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Servicing the Air Conditioning System on a Hybrid or Electric Vehicle

During the spring semester many instructors are teaching their automotive air conditioning course. As the number of hybrid and electric vehicles on the road increases so do the methods of heating and cooling the passenger compartment as well as the battery and high-voltage electronics. In this article we will explore the basic service of these systems.

Let's begin with high-voltage safety. Modern hybrid and electric vehicles use a high-voltage electric compressor to circulate the refrigerant through the system. Before servicing the compressor, it is important to know how to safely depower the high-voltage system. Typically, the process includes disconnecting the 12-volt battery and removing the high-voltage disconnect. It is important wear the proper person protective equipment when removing the high voltage disconnect. This includes properly fitted class "0" gloves rated at 1000 volts with clean leather protective gloves over the top.



Figure 1: Filter

Speaking of compressors, it is important to remember the refrigerant oil used in hybrid and electric vehicle is different than the refrigerant oil used in a conventional vehicle. Currently, hybrid and electric vehicles, regardless of whether they use R134A or R1234YF refrigerant, use a POE (polyol ester) refrigerant oil. The POE oil is very hydroscopic and has very specific storage and use requirements. Refer to the specific service instructions to ensure moisture is not unintentionally added to the system. Failure to use the correct oil may cause the deterioration of the insulation of the windings and may cause the compressor to become electrically conductive. Most OE manufacturers are specifying separate refrigerant recovery systems for vehicles that use POE so there is no change of cross-contamination with a system that uses PAG (polyalkylene glycol) oil.

Many of us use dye in the refrigerant system to locate those difficult to find leaks. Make sure to use a dye that is compatible with a high-voltage compressor system. The wrong dye can also lead to a loss of isolation fault and shut the system down.

With the introduction of R134A and later R1234YF, combined with the efficiencies of an electric air conditioning compressor, the normal charge level of refrigerant has dropped significantly in most systems. Most systems today barely have one pound of refrigerant when properly charged. The efficiency of these systems drops dramatically when the system is undercharged or overcharged. In most diagnostic scenarios, the only way to ensure the system has a proper charge is to recover the refrigerant and then recharge to the specified level. When evacuating the system, notice that many systems with an electric compressor are specifying a minimum of 45 minutes of evacuation time. This will help ensure all the moisture has been removed from the system. With the varied heat and humidity loads, pressure readings on a set of manifold gauges are not an accurate enough measurement of the charge level.

Most hybrid electric vehicle batteries are located within the passenger compartment or trunk area. The batteries are heated and cooled with the same air that is used to heat and cool the passenger compartment. To maintain

CONTINUED ON PAGE 21

proper airflow around and through the battery there may be specific maintenance that needs to be performed. Several manufactures have cabin filters in the air intake system to prevent dirt, pet hair, and other debris from entering the battery cooling system (**See Figure 1 – Filter**). These filters require replacement on a regular service interval. Other manufactures suggest cleaning the air intake ductwork and cooling fan to remove dirt and debris to improve battery cooling. Proper heating and cooling of these batteries will help to ensure they reach their maximum service life.

The high-voltage battery on many electric vehicles is heated and cooled with a coolant loop. The example I will use for this article is the Chevrolet Bolt. When the battery temperature is below the specified ideal temperature a high-voltage battery coolant heater is used to warm the coolant. The coolant heater is a 2000-watt heating element immersed in coolant (**See Figure 2 – Heater**). The battery coolant loop uses an electric pump to circulate the coolant but does not have a radiator. If the battery is above the desired operating temperature, the heat in the coolant is removed by the battery chiller. The battery chiller is a mini evaporator with a separate thermal expansion valve (TXV) that is part of the high-voltage refrigerant system. The system operates both when the vehicle is be driven as well as when the battery is being charged. A low refrigerant charge will result in poor passenger compartment cooling and an unacceptable battery recharge rate, particularly when using a DC fast charger. The additional coolant loops require regular service using a premix of Dexcool and deionized water.



Figure 2: Heater

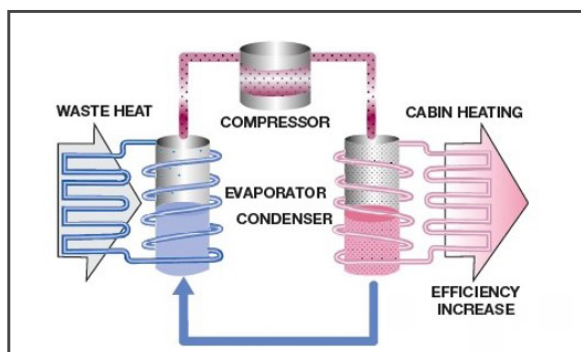


Figure 3: Heat Pump

Lastly, I want to reference the increased use of heat pump systems in electric vehicles. A heat pump is basically a reversible air conditioning system that provide both cabin heating and cabin cooling. A heat pump system is more efficient than PTC or electric heating and allows the manufacturer to maximize the vehicle range, particularly in the winter (**See Figure 3 – Heat Pump**). Some heat pump systems capture energy by recycling waste heat from power electronic modules, drive motors, on-board chargers, the battery pack, and inverters to warm the passenger compartment. These systems have the same requirement for the correct airflow and refrigerant charge as a conventional climate control system.

To close, I want to reference a vehicle I recently worked on. The vehicle was a third generation Toyota Prius. The customer concern was that the air conditioning was not blowing cold and that there was a noise in the engine compartment. When the air conditioning was turned on, it sounded like there was gravel in the compressor. Diagnosis revealed that the high side pressure was low and the low side pressure was high. Additionally, there was evidence that the pressure relief valve had allowed refrigerant to escape from the system and then resealed. Further diagnosis did not reveal any reason why there would have been a loss of refrigerant at the pressure relief valve. Additional conversations with the customer revealed they had tried to fix the lack of cooling by adding “cans” of refrigerant from the local parts store. It was determined that the electric motor within the compressor was strong enough to destroy the scroll as a result of an overcharge condition. Just because it is high-voltage does not mean a customer may not try to fix it first.

I will finish this article with the same offer I make after each of my presentations. If you are interested in getting started and want more information, please feel free to [reach out](#). I am more than willing to sit down in-person or online and share my experiences. Are you looking for a classroom textbook? [Reach out to Pearson](#) and ask for a review copy of the all-new [Electric and Hybrid Electric Vehicle](#) text that Jim Halderman and I co-authored. It is a comprehensive text covering all the latest information on the subject.



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INTRODUCING REPAIRIFY INSTITUTE: THE NEW STATE-OF-THE-ART TRAINING PROGRAM FROM INDUSTRY DISRUPTOR REPAIRIFY



[Repairify, Inc.™](#), a portfolio company of Kinderhook Industries, LLC ("Kinderhook") and industry leader in diagnostics, remote scanning and programming, automotive intelligence and calibration services, unveiled at the 2022 SEMA Show its plans to launch in 2023 the Repairify Institute, a comprehensive technical training program for automotive professionals designed to ensure service readiness.

The Repairify Institute is the automotive service industry's first education organization to utilize a revolutionary course development process called adaptive learning, which focuses on understanding each individual's knowledge level to adjust its teaching based on the learner's strengths and opportunities for improvement. Through the Institute, students can work at their own pace via several planned academies to achieve certifications or to expand their learning on several automotive topics.

Additional program features will include a mentorship support program that tracks progress of learned new skills and a Proof of Skill concept that ensures every student can demonstrate mastery of the skills they've learned to perform safe and proper repairs.

"The Repairify Institute is the embodiment of the Repairify Mission to help automotive repair professionals in their quest to simplify complex repairs," said Cris Hollingsworth, President of Repairify Global Holdings, Inc. "Not only are we enabling this mission with our patented technology, but we also are building curriculum and courses that help technicians achieve and maintain certification in their desired areas of expertise."

The Institute's physical locations, known as Centers of Excellence, will serve as examination and certification hubs for students, featuring a variety of spaces to optimize learning including classrooms, spaces to proctor oral examinations and a shop space where students will demonstrate their abilities to perform their learned skills. These facilities will be strategically located so students can easily travel to a regional location. The first Center of Excellence is slated to open near Dallas in early 2023.

Repairify Institute will create multiple certification opportunities for the most important industry services, with specific academies and curriculums based around a variety of automotive service segments. [Automotive Training Group](#) ("ATG"), a leading technical training company recently acquired by Repairify, will add advanced mechanical training to the program offerings. The Repairify Institute is partnering with many leading product and service providers across the mechanical and collision industries to further expand training and curriculum offerings in the future.

"Today's vehicles have become some of the most complex machines on the planet," said Chris Chesney, Repairify's Vice President of Training and Organizational Development. "Repairify Institute understands the modern vehicle and the systems onboard, providing the necessary training needed by the industry to ensure technicians are ready and able to serve the motorist in a safe and accurate way."

For more information on the Repairify Institute, visit <https://astech.com/repairify-institute/>.



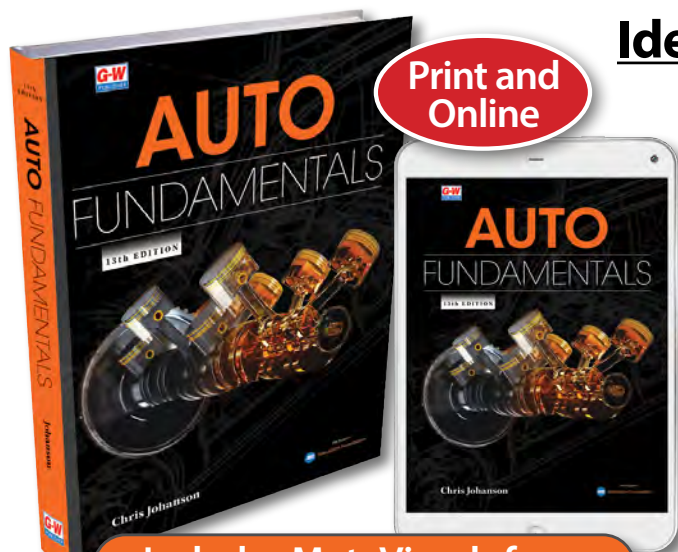
If you've attended NACAT Conferences in years past, it is possible you recognize Chris Chesney, Repairify's Vice President of Training and Organizational Development.

Joining their team in 2021, Chesney stated, "I'm excited to join the Repairify team, who share my long term vision of helping technicians grow their knowledge and skills to better serve the motorist. The advancing technologies in today's vehicles will require a commitment from every facet of our industry and Repairify is positioned to serve at a very high level."

Chesney spent the last 20 years of his career leading Advance Auto Parts' Carquest Technical Institute.

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A photograph of two women in conversation at a conference. The woman on the left is older, with short blonde hair and glasses, wearing a bright yellow floral shirt. The woman on the right is younger, with dark hair and glasses, wearing a plaid shirt. They are both smiling and appear to be engaged in a friendly conversation. The background is slightly blurred, showing other people and a railing.

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Details at **NACAT.org**

US DEPARTMENT OF LABOR ANNOUNCES MERCEDES-BENZ USA, JOB CORPS PARTNERSHIP TO TRAIN STUDENTS FOR AUTO TECHNICIAN CAREERS

To help meet the need for auto technicians in the growing electric vehicle industry, the U.S. Department of Labor has [announced](#) a national partnership with Mercedes-Benz USA to train Job Corps students initially at centers in Kentucky, Massachusetts, New Jersey and Utah for automotive industry careers.

The agreement between the global automaker and the nation's largest job training and education program will enable Mercedes-Benz USA to develop the curriculum, train Job Corps instructors to deliver it, provide technical support and donate materials, tools and equipment needed to educate the students.

The public-private partnership is designed to create pathways for students from 16 to 24 years of age toward good-paying jobs as auto technicians, including potential employment with Mercedes-Benz.

Job Corps will now offer students opportunities to study high-voltage and electric vehicles, and training opportunities with high-voltage vehicles at the following campuses: Earle C. Clements Job Corps in Morganfield, Kentucky; Westover Job Corps in Chicopee, Massachusetts; Edison Job Corps in Edison, New Jersey; and Clearfield Job Corps in Clearfield, Utah.

"This training program is an ideal entry point for students who want to become professionals in the automotive industry, especially aspiring electric vehicle mechanics," said Job Corps National Director Rachel Torres. "Having Mercedes-Benz train our Job Corps students is a great example of the public and private sectors working together to prepare students for careers and provide companies with skilled workers."

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NORTH AMERICAN COUNCIL OF AUTOMOTIVE TEACHERS AT VISION HITECH TRAINING & EXPO!

NACAT hosted the educator reception at VISION HiTech Training & Expo on Thursday, March 2, 2023. Due to the generosity of sponsors ATech Training, AESwave, ConsuLab, and EVPRO+, attendees were able to have fun, network with other educators, and work to continue to build the future of automotive education.



NACAT President Tom Millard manned a booth at the 2023 VISION HiTech Training & Expo as he worked to spread the benefits of NACAT's unique **"for automotive teachers, by automotive teachers"** approach to professional development and mentoring to new potential members.

Millard was able to network with many hundreds of automotive education professionals at VISION and his efforts have helped fuel NACAT's growth through a recent surge in membership.

Please help President Tom Millard and NACAT by continuing to share this uniquely positioned family friendly organization: a 49 year old, automotive educator-centric council which utilizes the knowledge and experience of the automotive teacher to lead change and provide benefits to other automotive teachers.

Tom looks forward to talking with you at the [2023 NACAT Conference!](#)

A lesson in how the inlet side of a hydraulic pump functions, and fails, that students will never forget!

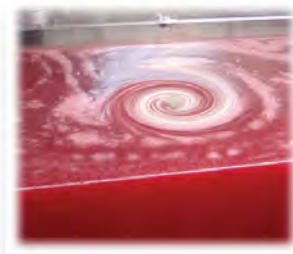
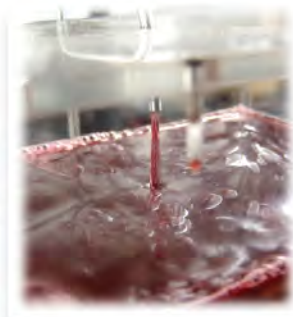


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GARAGE GURUS® ANNOUNCES 2023 AUTOMOTIVE TECHNICIAN SCHOLARSHIP PROGRAM



Garage Gurus®, the industry-leading training and support platform from Tenneco's DRiV group, has announced that its Automotive Technician Scholarship Program will return for 2023. Now in its ninth year, the Gurus will again award up to \$30,000 in scholarships to future automotive technicians who are accepted or currently enrolled in accredited, U.S.-based automotive technical schools, colleges, and universities, or enrolled full-time at a U.S. high school. Applications are now available on the Garage

Gurus website for the opportunity to receive one of 12 \$2,500 Garage Gurus Automotive Technician Scholarships for the 2023-2024 school year. **All materials must be submitted by May 31, 2023**; winners will be announced on or about July 1, 2023.

In addition to the application, students are also required to submit two (2) letters of recommendation from non-family members as well as a typed essay or video introducing themselves and indicating "Why I Want to Be a Top Technician." (Applicants must be legal residents of the United States, in the United States on a valid student visa, or possess resident alien status.) All applications and related materials will be reviewed and the winners selected by Garage Gurus' team of ASE Master-certified technicians and other team members.

"We continue to see the effects that technician shortages across the automotive aftermarket have on shop owners and customers, so being able to support students who want to establish a career in the repair industry is especially fulfilling," said Dennis Sheran, Executive Director, Garage Gurus. "Through this annual program, as well as our online and onsite training classes, Garage Gurus stands committed to helping address skills gaps and to providing the proper education for those that are looking to begin and enhance their own careers."

To learn more about the Automotive Technician Scholarship Program, to apply, and to read the full set of rules and eligibility requirements, visit www.garagegurus.tech.



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