

# **NACAT NEWS**

VOL 36

APRIL 2022

NO.2

# **NACAT 2022**

**CONFERENCE & EXPO**

**NORTH AMERICAN COUNCIL  
— OF AUTOMOTIVE TEACHERS —**

**August 7-11, 2022**

*Registration Now Open*

**NORTH AMERICAN COUNCIL**  
**OF AUTOMOTIVE TEACHERS**

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OF AUTOMOTIVE TEACHERS

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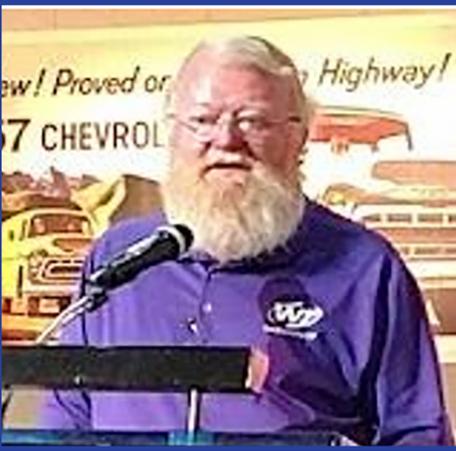
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TOM MILLARD

WARREN TECH

Happy April 2022! I was looking back over the past several years.

*March 2020* - I was at the Vision conference in Kansas City, and Russell Ferguson walked up. We did the toe kick, elbow bump, and fist bump. It became the latest dance move of the decade. March 13th, I returned to Denver and was notified that Jeffco schools was going to quarantine all programs indefinitely due to the latest adventures that we as teachers had to deal with, Covid-19. We spent the next two and a half months learning the new world of education.

Remote learning. I, as well as most of you, had to learn to teach car repairs as a virtual education plan. This would be the hardest time for my (and your) students, since they were not able to touch a car to learn how to do electrical diagnosis, transmission repair, and engine repair.

*Summer of 2020* - We were unable to travel to meet up with industry colleagues, other educators, and vendors of products and services.

*Fall of 2020/ 2021 school year* - We were learning the new world of hybrid education. At Warren Tech, it meant we would have half of our students in person one-half of the week, while they would do online classwork the other half. Having 100 students per class with myself and one other instructor still meant 25 students in person on Monday and Wednesday, as well as online on Tuesday and Thursday. The other half of the students were in class on Tuesday and Thursdays, and online on Mondays and Wednesdays.

Another variable, for which we had to adapt, was what happened if the instructors or students tested positive for Covid. We would have to quarantine for 5 to 10 days, and then do online education. I'm sure most of you had the same sort of conditions to deal with. When our students were in class, we all had to wear masks (the new normal), but the students were actually more involved and eager to learn.

*August 2021* - We returned to the classroom, wearing masks, with a full roster of 50 students per instructor. Classes were Monday thru Friday mornings from 7:30 to 10:30 AM, and Monday thru Thursday, 12:00 until 3:45 PM. The masks made it difficult to discuss things with students, as I was not always able to hear them, they were not always able to hear me, and I was unable to see their faces. The good part of this whole new world is our students are more engaged and motivated to do class time activities. I really believe that the Covid world made my students become more engaged, motivated, and eager to learn. I am hoping all of you had similar positive outcomes from the last two years.

*CONTINUED ON PAGE 13*

# NACAT

## NORTH AMERICAN COUNCIL

### OF AUTOMOTIVE TEACHERS

### Officers

*President*  
2021 - 2023

**Tom Millard**  
Warren Tech  
13300 W 2<sup>nd</sup> 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*  
2021 - 2022

**Jim Voth**  
Red River College  
Z117-2055 Notre Dame Ave  
Winnipeg, MB R3H 0J9

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2021 - 2022

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K&N Engineering  
1455 Citrus Street  
Riverside, CA 92507

*Board Member*  
2019 - 2022

**Drew Barnes**  
Vale School District  
403 E Street West  
Vale, OR 97918

*Board Member*  
2019 - 2022

**Jason Bronsther**  
Western Quebec Career Centre  
100 Frank Robinson  
Gatineau, QC J9H 4A6

*Board Member*  
2019 - 2022

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Pickens Technical College  
500 Airport BLVD.  
Aurora, CO 80011

*Board Member*  
2020 - 2023

**Stephen Tucker**  
SUNY Delhi  
2 Main Street  
Delhi, NY 13753

*Board Member*  
2021 - 2024

**Louie Longhi**  
Mechanics Local 701 Training  
450 Gunderson Drive  
Carol Stream, IL

*NACAT News is Now Published SIX Times per Year!*

### *DEADLINE DATES*

June 2022 issue - May 10, 2022	December 2022 issue - November 10, 2022
August 2022 issue - July 10, 2022	February 2023 issue - January 10, 2023
October 2022 issue - September 10, 2022	April 2023 issue - March 10, 2023

The latest advertising size and rate information can be found at [www.nacat.org](http://www.nacat.org).

### Appointments

*Business Manager*

**Sheri Hamilton / Heather Sebben**  
5950 North Oak Trafficway, Suite 201  
Gladstone, MO 64118  
Email: [info@nacat.org](mailto:info@nacat.org)  
Office Phone: 913.703.7390

*Executive VP for 2022 Conference*

**Laura Lyons**  
ATech Training  
12290 Chandler Drive  
Walton, KY 41094

*NACAT News Editor*

**James Curry**  
JasCor LLC  
108 Carolinian Drive  
Summerville, SC 29485  
Email: [nacatnews@nacat.org](mailto:nacatnews@nacat.org)



*Bruno Sauriol*

Back in 2013, Jacques Guay from ConsuLab invited me to come to the NACAT Conference. Since then, I've never missed a conference! I got addicted to the training where I always find something new for me and the schools along with the friends I have made over the years.

**DON'T FORGET  
TO SUBMIT FOR  
PERKINS FUNDS**

**AUGUST 7-11, 2022**  
*Covington, Kentucky*

**INDUSTRY LEADING COLLISION ENGINEERING PROGRAM  
RECEIVES \$700,00 GRANT FROM ECMC FOUNDATION**

[The Collision Engineering Program](#) has received a \$700,000 grant from [ECMC Foundation](#) to support the growth and expansion of the industry-leading program's efforts. With foundational support provided by the [Enterprise Holdings Foundation](#), the program is designed to attract and develop entry-level talent to fill essential roles within the collision repair industry and enhance retention and advancement among collision repair technicians.

With nearly 100,000 new entrant collision technicians needed between 2021 and 2025, according to the [TechForce Foundation](#), the Collision Engineering Program addresses the ongoing industry technician shortage and skills gap. Collision repair businesses are facing unprecedented challenges in growing and sustaining their workforce as baby boomers retire and demand outpaces a declining supply of postsecondary collision technician entrants. At the same time, automotive technology is rapidly changing, requiring skill sets to evolve for those who repair vehicles.

The program replicates [Ranken Technical College's](#) unique two-year apprenticeship model at schools across the United States, preparing students for success by treating them as professionals from day one. Students gain real-world education working alongside industry experts while also earning their associate degree. Currently, the program is in its second year of a two-year pilot at four schools across the country—Ranken Technical College in St. Louis, Missouri; [College of Lake County](#) in Grayslake, Illinois; [Contra Costa College](#) in San Pablo, California; and [Texas State Technical College](#) in Waco, Texas.

[Since the pilot launched in 2021](#), the Collision Engineering Program has also received contributions from [Chief Collision Technology](#) and [Mitchell International](#). [Click to view The Collision Engineering Program's website](#).

# MF400-HCTS

## Hydraulic Cylinder Training System

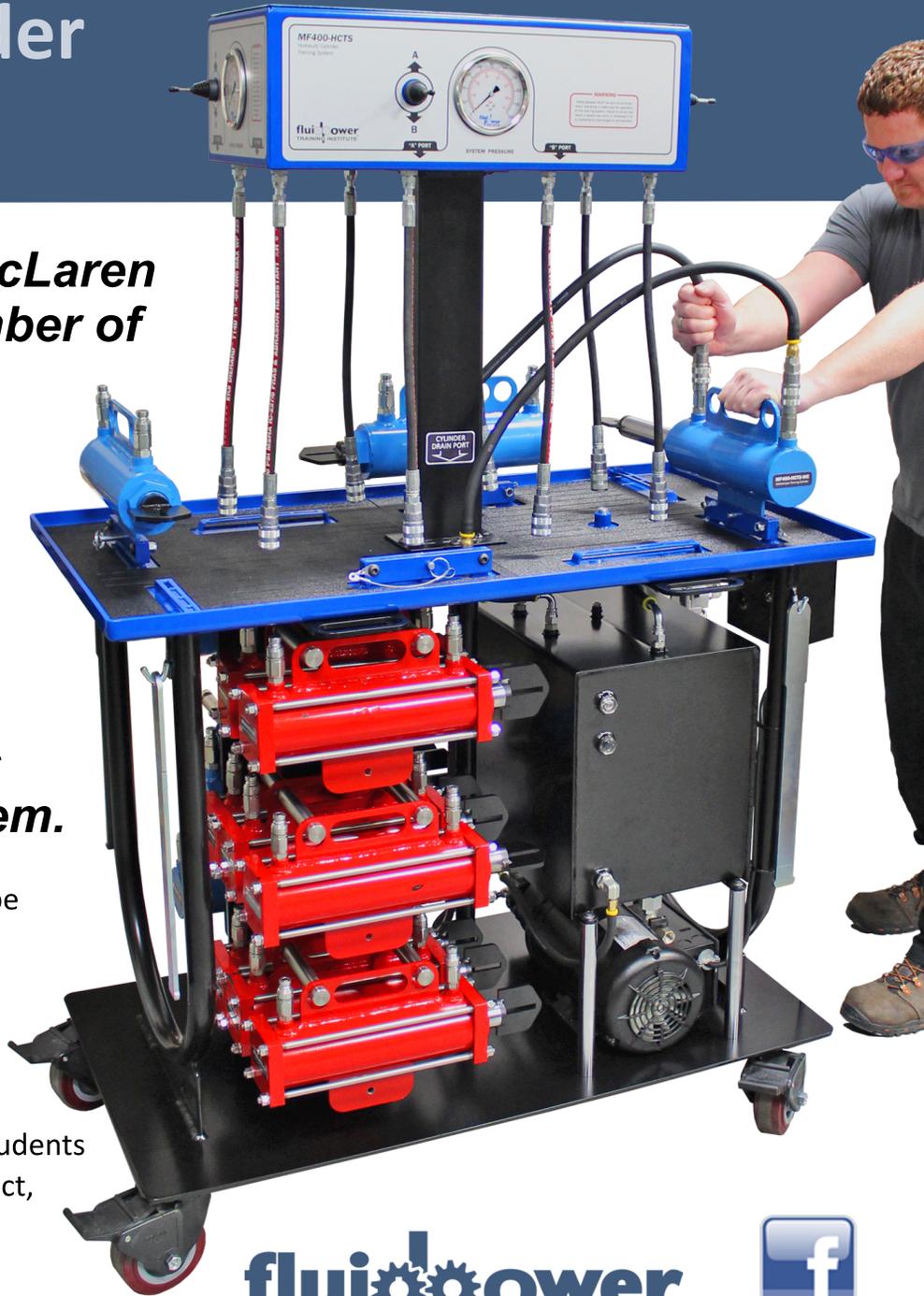
***FPTI's founder, Rory McLaren has investigated a number of incidents in which technicians were seriously injured or killed while repairing hydraulic cylinders. This is what inspired him to design the MF400-HCTS Hydraulic Cylinder Training System.***

Sooner or later, a technician is going to be tasked with replacing seals in a hydraulic cylinder. A job that seems simple and straightforward can quickly become a technician's worst nightmare.

The MF400-HCTS is designed to teach students how to troubleshoot, disassemble, inspect, reseal, assemble and test hydraulic cylinders - SAFELY.

The cylinders, tie-rod and welded-type, are specifically designed for educational purposes. Handles are welded to the cylinder for safe handling. A steel plate is welded to the cylinder to secure the cylinder in a vice. The MF400-HCTS holds up to eighteen (18) cylinders.

The MF400-HCTS has four (4) independent test stations, which can be fitted with transparent covers for social distancing.



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# NACAT2022 *Agenda* CONFERENCE & EXPO

## *Sunday August 7, 2022*

[Registration \(click to register\)](#)  
Welcome Reception

4:00pm - 7:00pm  
7:00pm - 8:30pm

## *Monday August 8, 2022*

Breakfast on Own  
Registration  
Family Meeting  
Membership Meeting and Keynote Speaker  
Morning Refreshment Break  
Continued: Membership Meeting and Keynote Speaker  
Lunch on Own  
Training Sessions  
Expo Setup PM  
On Own

Morning  
8:00am - 11:30am  
9:00am - 9:30am  
9:00am - 10:30am  
10:30am - 10:45am  
10:45am - 12:00pm  
12:00pm - 1:30pm  
1:30pm - 3:00pm  
2:00pm - 6:00pm  
Evening

## *Tuesday August 9, 2022*

1st Time Attendee Breakfast  
Breakfast on Own  
Training Sessions  
Morning Refreshment Break  
Training Sessions  
Lunch & Expo  
Training Sessions  
Afternoon Refreshment Break  
Training Sessions  
Family BBQ\*  
Valve Cover Races\*

7:00am - 8:00am  
Morning  
8:00am - 9:30am  
9:30am - 10:00am  
10:00am - 11:30am  
11:30am - 2:30pm  
2:30pm - 4:00pm  
4:00pm - 4:30pm  
4:30pm - 6:00pm  
6:30pm - 8:00pm  
8:00pm - 9:30pm

## *Wednesday August 10, 2022*

Breakfast on Own  
General Session and Keynote  
Expo  
Lunch & Expo  
Training Sessions  
Afternoon Refreshment Break  
Training Sessions  
On Own

Morning  
8:00am - 9:30am  
9:30am - 1:00pm  
12:00pm - 1:00pm  
1:00pm - 2:30pm  
2:30pm - 3:00pm  
3:00pm - 4:30pm  
Evening

## *Thursday August 11, 2022*

Breakfast on Own  
Training Sessions  
Morning Refreshment Break  
Training Session  
Lunch on Own  
Training Sessions  
Afternoon Refreshment Break  
Training Sessions  
Dinner & Awards\*

Morning  
8:00am - 9:30am  
9:30am - 10:00am  
10:00am - 11:30am  
11:30am - 1:00pm  
1:00pm - 2:30ppm  
2:30pm - 3:00pm  
3:00pm - 4:30pm  
6:00pm - 9:30pm

[\\*These events are available for an additional charge.](#)

# NACAT2022 *Training* CONFERENCE & EXPO

[Download Course Descriptions](#)

[Register for the Conference](#)

## Monday, August 8, 2022

**1:30pm - 3:00pm**

- S1-1: *Discover the Benefits of Using "Hands-On" Activities While Teaching Electrical Diagnostics in Today's Classroom* by Jim Wilson sponsored by ATech Training
- S1-2: *Hybrid and Electric Vehicle Battery Safety* by Bob McGinn sponsored by CCAR and Electude
- S1-3: *Think Like a Computer - Electronic System Diagnostic Strategies* by Dave Kapitulik sponsored by Megatech Corp
- S1-4: *What the Ignition Waveforms are Trying to Tell Us* by Jim Morton

## Tuesday, August 9, 2022

**8:00am - 9:30am**

- S2-1: *Diagnosing Multiplexed Data Bus Networks* by Rob Roth sponsored by General Motors / ACDelco
- S2-2: *New Automotive Instructor Fundamentals: It Isn't As Scary As You Might Think* by Mark McKinney sponsored by ATech Training
- S2-3: *Three's Company - Diagnosing 3-Phase Low Voltage BLDC Motors* by Dave Hobbs sponsored by Delphi Technologies by BorgWarner

**10:00am - 11:30am**

- S3-1: *Introducing Your Students to the Lab Scope* by Jim Morton
- S3-2: *Revealing the Mystery Behind Hybrid/Electric Vehicle Transmissions* by Curt Ward
- S3-3: *The Art of Electrical Fault Diagnosis* by Pete Meier sponsored by Motor Age Training

**2:30pm - 4:00pm**

- S4-1: *Handling Incomplete Readiness Flags* by Rick Escalambre sponsored by AES Wave
- S4-2: *Starting and Charging Systems* by Rob Roth sponsored by General Motors / ACDelco
- S4-3: *The New CDX Online* by Keith Santini sponsored by CDX Automotive

**4:30pm - 6:00pm**

- S5-1: *Everyday Scope Techniques* by Pete Meier sponsored by Motor Age Training
- S5-2: *INVEST - Intelligent Vehicle Electrification Systems Training* by Dave Hobbs sponsored by Delphi Technologies by BorgWarner
- S5-3: *Teaching Automotive Students How to Use Vehicle Service Repair Information* by Alex Richards sponsored by Electude

## Wednesday, August 10, 2022

**1:00pm - 2:30pm**

- S6-1: *Hidden COVID Funds for Training Programs* by Jake Clayson sponsored by DAKTIC
- S6-2: *CAN Bus for Electric Vehicles* by Al Santini sponsored by ConsuLab
- S6-3: *What You Need to Teach EV Technology* by Craig Van Batenburg sponsored by ACDC

**3:00pm - 4:30pm**

- S7-1: *Evaporative Emissions Systems Diagnosis* by Rob Roth sponsored by General Motors / ACDelco
- S7-2: *Have You Driven a Ford Lately? Mustang EV* by Craig Van Batenburg sponsored by ACDC
- S7-3: *Tools for the Flipped Classroom* by Darcy Wedel sponsored by Electude

## Thursday, August 11, 2022

**8:00am - 9:30am**

- S8-1: *Heavy Duty EV Trucks, Busses and Vans* by Craig Van Batenburg sponsored by ACDC
- S8-2: *Variables for Running Non-Continuous Readiness Monitors* by Rick Escalambre sponsored by AES Wave
- S8-3: *The Electrification of the Automobile Series: Chevrolet Bolt* by Alan Nagel sponsored by LJM Energy

**10:00am - 11:30am**

- S9-1: *Connected, Automated and Intelligent Vehicles* by Nelson Kelly sponsored by Macomb Community College, The Center for Advanced Automotive Technology
- S9-2: *How to Successfully Establish an Effective CTE Advisory Committee* by George Arrants
- S9-3: *What is New in 4WD and Torque Vectoring* by Keith Santini sponsored by CDX Automotive

**10:00am - 2:30pm**

- S9-S10-1: *Onsite Tour - ATech Training* by Lyle Taylor sponsored by ATech Training

**1:00pm - 2:30pm**

- S10-1: *New Ford Automotive Technology - Vehicles & Diagnostic Equipment* by Jason Duvall sponsored by Ford Motor Company
- S10-2: *TPMS 2022 - The Road to Intelligent Talking Tires* by Sean Lannoo sponsored by Continental Automotive Systems
- S10-3: *Training Students on ProDemand* by Mike Alberry sponsored by Mitchell1

**3:00pm - 4:30pm**

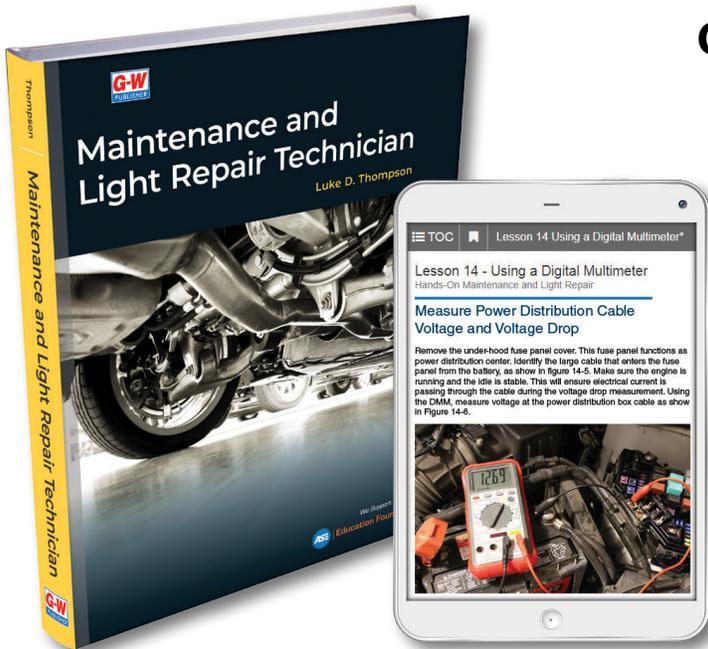
- S11-1: *Attacking the Top 10 DTCs - From Initial Inspection to Final Verification* by Pete Meier sponsored by Motor Age Training
- S11-2: *Diesel Emissions and Exhaust Aftertreatment* by Rob Roth sponsored by General Motors / ACDelco
- S11-3: *Using a DSO to Introduce Engine Inputs and Outputs to Student and/or Technicians* by Al Santini sponsored by ConsuLab

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**NACAT2022** *Training*  
**CONFERENCE & EXPO**

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Conference  
**LOCATION**



**Cincinnati Marriott  
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10 West RiverCenter Blvd  
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**Parking and airport  
information can be  
found at NACAT.com**

Check In:  
4:00 pm  
Check Out:  
11:00 am

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*Special  
Events*



*Family BBQ*

Tuesday, August 9  
Join us as we gather  
for a family BBQ!

Tuesday, August 9  
Don't miss out on the  
annual Valve Cover Races!



*Valve Cover Races*



*Awards Dinner*

Thursday, August 11  
Celebrating individuals  
achieving excellence.

There is an additional fee for Special Events

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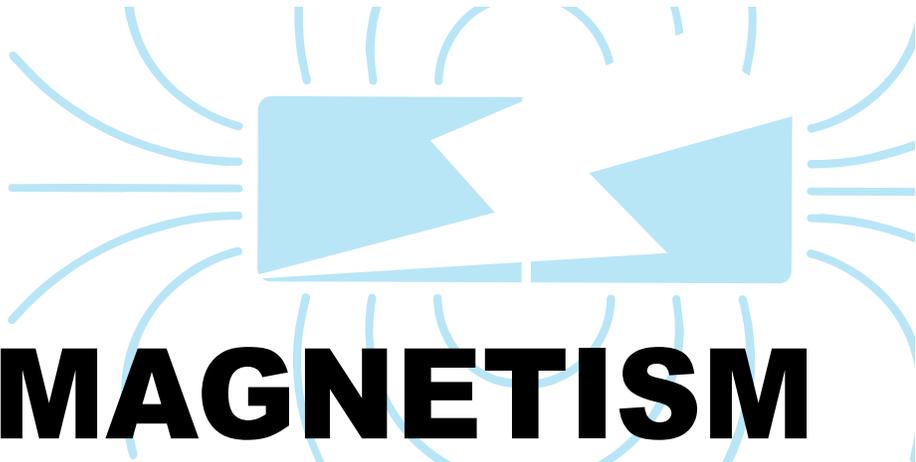
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# ELECTROMAGNETISM TRAINER CL-1902

Do your students struggle with electricity?

Do you have challenges capturing their attention and getting them interested in how electric motors work?

Do you want to equip them with the skills and knowledge necessary to work on hybrid and electric vehicles?

The ConsuLab CL-1902 Electromagnetism trainer can help challenge your students and keep them engaged.

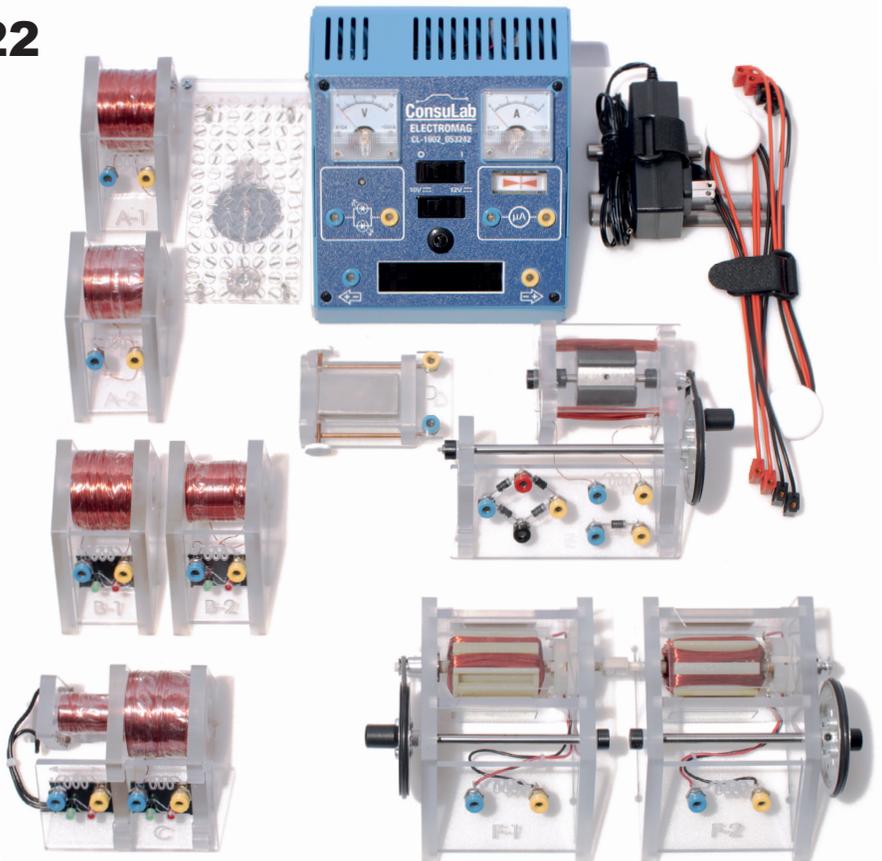


PRODUCT SPECS



PRODUCT VIDEO

**AS SEEN AT VISION 2022**





STEVE GIBSON

RIVERSIDE, CALIFORNIA

In our last issue of *NACAT News*, “change” was a major theme. Change is a very powerful word. For some, it invokes fear, anxiety, and stress. For others, change is exciting, an opportunity to try something new. No matter what your opinion is of change, we can all agree that **1)** change is natural and **2)** change is inevitable.

NACAT is no stranger to change. Our organization has made numerous changes since our founding nearly 50 years ago. We have changed office locations. We have adjusted the organization to accommodate new technologies like computers and cell phones (wow, are we really that old?!). We have even changed our name. Throughout the course of our changes, we have always kept the instructor first.

If you are a member who doesn't like change, please take comfort in the fact that the changes being made to NACAT are being made carefully, thoughtfully, and strategically, to make the organization better for our members. As we draw closer to our Conference and Expo this summer, you may start to see some things that are different from past conferences. And that's ok! As we try new formats with some of our activities, they may occur on different days or times than in the past. Our goal is to maximize our members' time available to attend training, engage with presenters, exhibitors, and vendors, and socialize with other members. I think you'll enjoy our “refreshed” look, but if you don't – the board is very open to your feedback, and we are open to making adjustments if something isn't working like we planned.

[We are only 4 months away from our conference dates of August 7-11, and we still have lots to do to get ready. Registration is open at \[www.nacat.org\]\(http://www.nacat.org\)! Please make plans to join us, whether it will be your first conference or your 20th. I think you'll like what our hosts have lined up for us. I for one can't wait to get there!](#)

## PRESIDENT'S UPDATE - CONTINUED FROM PAGE 3

I am looking forward to getting back to being able to travel and participate in conferences and trainings and socializing with many of you in the near future. [Our annual conference is scheduled for August in Covington, Kentucky, and the officers and board members of NACAT hope to see you there. Registration is now available on the website at <https://www.nacat.org>.](#)

We are also looking for members to join our Board of Directors. Nominations are open, and we are *looking for help and involvement with the Board*. [Please click here to complete the NACAT Board Interest Form and see the requirements for becoming a member of the NACAT Board of Directors.](#)

# The most advanced mobile hydraulics training system on the planet . . . . . . now meets AED National Technical Standards



Model MF500-HTTS shown with electric motor prime mover and optional Implement and Steering Training System



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# A T T E N T I O N

## SCHOLARSHIP OPPORTUNITIES

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[Automotive Hall of Fame Scholarships](#)

[Automotive Women's Alliance Foundation Scholarships](#)

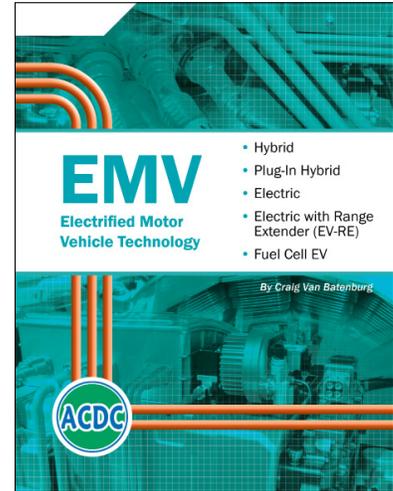
[Garage Gurus Scholarship Program](#)

[Peak Performance Scholarship](#)



## New HEV, EV, FC Textbook

Written by Craig Van Batenburg with other contributing writers.



Monthly Train-the-Trainer Classes

Education Support Program (ESP) was designed during Covid-19. In 2020/2021, ACDC had time to form a group of 5 Colleges to create a turn-key program. Educational institutions of all types now have access to a well thought out program to deliver a comprehensive HEV-EV classes. To learn more, go to [www.FIXEV.com](http://www.FIXEV.com) and click on ESP. This may be what you were looking for. The Book is included in ESP plus a lot more!

Craig@fixhybrid.com 508.826.4546

[www.fixhybrid.com](http://www.fixhybrid.com)

## SENSATA TECHNOLOGIES ANNOUNCES STRATEGIC COLLABORATION WITH NIRA DYNAMICS TO DEVELOP TIRE TREAD DEPTH MONITOR SOLUTION

[Sensata Technologies](#) announced a new collaboration with NIRA Dynamics AB to deliver an accurate and robust tire [Tread Depth Monitoring \(TDM\) 'virtual sensor' system](#) for automotive OEMs that optimizes tire health and improves vehicle safety, efficiency and uptime. The TDM solution, powered by NIRA Dynamics' tread wear estimation software, is designed to give vehicle OEMs, drivers and fleets timely alerts when tires have worn to unsafe levels and need servicing.

The virtual sensor system is a new, innovative technology that gathers and combines data from multiple existing sensors on a vehicle, including Sensata's tire pressure sensors, to provide accurate information about tire wear and tear.

This software-based system uses a complex algorithm that monitors the tire tread's decreasing depth, while compensating for a wide range of real-world environmental challenges. The system tracks tires through changes and rotations and provides a more comprehensive solution than just measuring the distance travelled.

The virtual TDM can be integrated into existing Electronic Control Units (ECU) and is designed to work with many combinations of tire and vehicle designs. Vehicle manufacturers can quickly introduce and implement the solution across vehicle platforms without the need for custom software development.

To learn more about Sensata's Tire Tread Depth Monitoring solution for vehicle OEMs, please visit [www2.sensata.com/tire-tdm](http://www2.sensata.com/tire-tdm).

Written By: Curt Ward, Professor at Joliet Junior College

## WHAT DO I NEED TO KNOW ABOUT EV AND PHEV CHARGING?

As we are all aware, the sales of hybrid and electric vehicles has risen to its highest rate since their introduction into the marketplace. We all agree that this subject will need to be added to our curriculum sooner rather than later. The primary focus of the curriculum will be on the vehicle and its high-voltage systems. However, like a vehicle with an internal combustion engine, we also need to focus on the fuel. In the case of EVs and PHEVs, that is electricity from the grid. In this article we will discuss vehicle charging, some of the components required, and some of the potential issues a customer may be concerned about.

Let's begin with the types or levels of vehicle charging devices. Level 1 charging uses 110/120-volt standard electric outlet (20-ampere circuit). The maximum power with a Level 1 charging is approximately 1.9 kW. This low rate of charging means that it is best to charge the vehicle overnight, so it is ready to go the next morning. The advantage is that there is little, if any, installation cost because many houses are equipped with 110/120-volt outlets and can supply up to 16 amperes protected by a 20-ampere circuit breaker.

Level 1 charging results in 2 to 5 miles of range for each hour of charging. Before plugging an EV into any outlet, be sure that the circuit does not supply other appliances, such as refrigerators or lights. For the connector, nearly all EVs come with a portable Level 1 cord set, which has a standard three-prong household plug on one end for the outlet and a standard J1772 connector for the vehicle (see **Figure 1**).



Figure 1: Level 1 Cord Set



Figure 2: Level 2 Charger

Level 2 charging uses 208/240 volts to charge the same vehicle in about 4 hours. Level 2 chargers can be added to most houses, making recharging faster (up to 80 amperes) when at home, and are the most commonly used charging stations available at stores and colleges (see **Figure 2**). A 208/240-volt Level 2 charger rated at 30 amperes will deliver 7.2 kW. In one hour. A Level 2 charging adds about 25 miles of range per hour. For Level 2 charging, vehicles have between a 3 kW and 10 kW on-board charger, which is usually the limiting factors as to how many kWh of charging is achieved.

An additional strategy to heat the passenger compartment is the heat pump. A heat pump scavenges the heat from the power electronics, the inverter, the electric motors, and the battery and uses it to heat the passenger compartment. Conceptually, a heat pump is a reversible air conditioning system that provides both cabin heating and cabin cooling.

*CONTINUED ON PAGE 17*

CONTINUED FROM PAGE 16

A Level 3 charging station, despite its name, is a DC fast charging station. A DC fast charger uses 440/480 volts AC input and outputs DC to charge most electric vehicles to 80% charge in less than 30 minutes. Level 3 chargers recharge the vehicle battery using direct current (DC) at a rate up to 125 amperes and can provide 60 to 80 miles of range in as little as 20 minutes of charging time. Because a DC fast charger outputs direct current to the vehicle, the on-board charger is not used in the process. There are some Tesla Super Chargers that operate up to a rate of 250 amperes and can provide over 250 miles in a little as 30 minutes (see **Figure 3**).



Figure 3: Level 3 Charging Station

The most common concern heard from a customer regarding charging is that the vehicle takes longer to charge than what is advertised.

There are many factors that may affect the rate the vehicle charges, however, most are related to circumstances rather than a defect. For example, a public charging station may have two cables. Is a single cable in use or are two vehicles charging at the same time? When the power source is shared, the time to recharge the battery will increase. Additionally, not all public chargers are powered the same and as a result, the amperage available to charge the vehicle may be less than what is expected.

There are also conditions related to the vehicle that will affect the charging rate. Battery temperature is the single largest variable. Is the battery cold or has it been preconditioned for charging? A battery that has been properly preconditioned will charge faster than one that has not. Additionally, most vehicles will have a slower battery charge rate after the battery capacity reaches 80%. If a customer wishes to charge beyond this percentage, the charge time will increase.

The second most common concern heard from customers is that the vehicle will not charge at all. This is most commonly heard at a public charging station. Is the charger online? A quick check of the app or a phone call to the 800 number might answer the question. Is the vehicle communicating with the charging station? Without communication, the battery will not charge. Is there a problem with the vehicle? Something as simple as low coolant level in the battery/electronics cooling system will prevent the battery from charging.

Would you like to know more? [Reach out to Pearson](#) and ask for a review copy of the all new Electric and Hybrid Electric Vehicles text that Jim Halderman and myself co-authored. It is a comprehensive text covering all the latest information on the subject.

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*Excellence, therefore, is not an act but a habit.*

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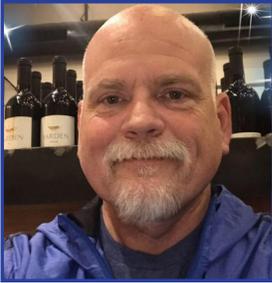
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Written By: Ed Martin, Pickens Technical College

## OVERCOMING STRUGGLES

As many of you know, when we are teaching, surprises pop up all of the time, and for the most part we all do a good job of adjusting on the fly, making those changes that will push our students towards success. But what about the challenges that kind of knock us off of our feet? The ones that make us step back and say, "how do I handle this one?"

I had one of those in my first year as an Automotive Instructor here at Pickens Tech in Aurora, Colorado back in 2010. I was diagnosed with cancer. To complicate things even more, the cancer was located on the base of my tongue. Ultimately, I went on to lose half of my tongue to surgery, all of my teeth to radiation damage, and was the beneficiary of ongoing issues with my jawbone. I had to learn how to talk and how to eat all over again.

The whole time I couldn't help but wonder how my students would react to what I was going through. Would they be able to understand me? If not, would they drop my class? Would the school have to replace me? Was this it? As if I didn't have enough stress in my life, these questions gnawed on me constantly.

As I was nearing the end of my recovery time and beginning my preparations to return to the classroom after being gone for over 30 days, I reached out to my Administrator and said, "I think I'm going to need some assistance transitioning back into the classroom." Without hesitation I was offered whatever I needed. There is great comfort in knowing that there are people out there willing to help, and that all we have to do is ask. In a world that seems callous at times, asking for help can be difficult. We don't like to rely on others, I get it. If I can give any encouragement here, it would be to go ahead and ask for help, as you will be amazed at how people will respond.

Another resource that I found to be incredibly helpful came as a recommendation from a fellow auto teacher and friend, Tim Dwyer. He told me about an organization called NACAT, which is an acronym for North American Council of Automotive Teachers. What a fantastic group of dedicated professionals who have been exactly where you are right now. They have numerous resources available to help you be successful as an Automotive Instructor. Even better are the friendships that you make once you become involved with the group of supportive industry professionals. There is no need to try to reinvent the wheel, so to speak, as someone you meet most likely has the answer because they've been there already.

When I returned to the classroom, I was prepared to open up to my students, and ask them if they wouldn't mind helping me. I needed them to make sure they weren't talking when I was, due to the difficulty I was having in learning once again how to speak clearly enough to be effective in the classroom. Before I could even speak the words I had prepared, the students all stood to their feet and gave me a standing ovation which seemed to never end. When it did, one student spoke up and said, "Mr. Martin, whatever you need from us, you got it. Just say the word. We got your back."

The lessons I learned on that day was that it is okay to not be okay, and to ask for help if and when you need it. You will be surprised just how much support you will get if you just let someone know that you need them.

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