



California Automotive Teachers

Fall 2016

Issue #47

CAT NEWS

www.calautoteachers.com

Newsletter Highlights

- ♦ Bring Back Vocational Education
- ♦ Excellence in Education
- ♦ Climate Changes & The Auto
- ♦ Scholarships for Vets

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Why We Desperately Need To Bring Back Vocational Training In Schools by Nicholas Wyman – Forbes Contributor

Throughout most of U.S. history, American high school students were routinely taught vocational and job-ready skills along with the three Rs: reading, writing and arithmetic. Indeed, readers of a certain age are likely to have fond memories of huddling over wooden workbenches learning a craft such as woodwork or maybe metal work, or any one of the hands-on projects that characterized the once-ubiquitous shop class.

But in the 1950s, a different philosophy emerged: the theory that students should follow separate educational tracks according to ability. The idea was that the college-bound would take traditional academic courses (Latin, creative writing, science, math) and received no vocational training. Those students not headed for college would take basic academic courses, along with vocational training, or “shop.” Ability tracking did not sit well with educators or parents, who believed students were assigned to tracks not by aptitude, but by socio-economic status and race. The result being that by the end of the 1950s, what was once a perfectly respectable, even mainstream educational path came to be viewed as a remedial track that restricted minority and working-class students. The backlash against tracking, however, did not bring vocational education back

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**The California Automotive Teachers will meet at Fullerton College
for the Fall 2016 Conference on October 14 & 15.**

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President's Letter by Don Schumacher

I am going to be wearing two hats with this report, President and Conference Coordinator. Let's start with the Presidents stuff. CAT as an organization is celebrating its 50th anniversary this year. 50 years of promoting the best interest of automotive instruction throughout the state of California. Pretty impressive! Over the last 50 years there has been change in this organization but it's core principals have remained the same.



One big change that happened at the Spring conference in Modesto was that of our Executive Directors position. For those of you who were unable to attend the conference Bob Barkhouse, Executive Director and founding member of CAT announced his retirement. After a well-deserved standing ovation and interesting stories for Bob, George Hritz was introduced as CAT's new Executive Director. George is a great fit for the position as he has been with CAT for many years, served on the board and is a past president of CAT. Our executive Treasurer Steve Vail also announced his retirement. Throughout his tenure Steve has worked behind the scenes to make your conferences run as smoothly as possible. He along with Tom Broxholm streamlined the registration process using CVent. I know I speak for the rest of the board members, you guys will be missed at the meetings. Speaking of board meetings, I invite anyone who wants to know how your CAT board works to join the meeting. I promise the meetings are really not boring.

Governor Brown signed off on the \$200-Million-dollar Strong Workforce bill. What that means is each Community College district will be receiving a share of those funds. Couple of things to note about this money. It is "Outcome Based". The purpose is to increase the "quantity and quality" of CTE with the secondary goal of increasing completers, certificates and degree's. These funds can also be used to offset FTES needs to keep low enrollment classes open with the intent of increasing enrollments. It is very important however that you as a CTE instructor be involved with planning how these funds are spent. For more information about this funding visit the doing what matters website at

[HTTP://doingwhatmatters.cccco.edu/StrongWorkforce.ASPX](http://doingwhatmatters.cccco.edu/StrongWorkforce.ASPX)

Now on to the Conference stuff. What a great spring conference Modesto Junior College put on. Fantastic tours, great food and excellent training sessions. Pedro, Gerald, John and staff did a fantastic job. Thanks for the great start to CAT's 50th year celebration.

The Fall conference is being held at Fullerton College this year October 14th and 15th 2016. Victor and staff have set up some fantastic tours which include a "Vault Tour" at the Petersen Museum. Other tours are to the NHRA Museum and the Nethercutt Museum. Make sure you register early as these tours are sure to fill up.

Well that wraps it up for me. Hope to see you at Fullerton College!

Executive Director's Report by George Hritz



Bob, as you complete your “Final Lap” as Executive Director all of the CAT members cannot begin to repay or express our gratitude for all you’ve done. You were a founding member, two times you were the President and CAT’s ONLY Executive Director to this point in time. Most importantly was your mentoring of so many of us to become better teachers and leaders. You have created a legacy for Automotive Education in the State of California.

I want to thank the CAT Board and the Membership for selecting and approving me as the Executive Director of CAT. I look to forward to the challenges and the rewards this role will present.

The Spring conference at Modesto Junior College organized by Dean, Pedro Mendz; Professors, Gerald Wray and John Peterson; Adjuncts, Deven Chew, John Davis, Leonard Corgiat, Doug Preston; Lab Assistant; Macario Ramirez and all the Auto Tech Student volunteers resulted in a great event. The Trade Show and Seminars provided for everyone’s point of interest plus the tours were enjoyable and informative. Congratulations on a job well done and thank you for a great conference!

As I chase Bob around on his “Final Lap” I am busy trying to keep up. In June I attended the Auto Care Industry Summit in Long Beach, the topics included, “Cybersecurity and Its Relationship to Telematics”, “Connected Shops are the Future”, and “Federal and State Legislative and Regulatory Issues Impacting the Auto Care Industry”. When I started teaching... these topics were not reality, but found only in science fiction novels. Changes in technology will require all of us to be lifelong learners.

I represented CAT at the ASCCA Team Weekends in June and August. I am a member of the ASCCA Government Affairs Committee; the role of Executive Director is to address automotive educators’ concerns during the monthly meetings. ASCCA truly recognizes the need for training and strongly supports CAT, Automotive Education and CTE.

Along with Drew Carlson, I represent automotive educators as members of the Bureau of Automotive Repair Advisory Group that meets quarterly. Because of the new Smog Tech licensing structure, the regulations for Certified Instructors and Institutions are in the process of being updated. Also BAR is updating the Lamp and Brake Inspection Manuals which is long overdue.

(Continued on page 5)

In August Bob and I attended the NACE/CARS Expo & Conference in Anaheim hosted by ASA. I attended seminars on “Remote Diagnostics” and “Technology and Telematics”. It is clear that vehicle repair today is more electronic than mechanical and the training we provide must reflect that. Two examples I learned were that if a repair inadvertently causes a road position sensor to be moved slightly out of position a number of codes could set and systems may fail. Secondly a new BMW seven series requires the roof be removed when replacing the quarter panel. A student needs to learn to check the procedure guide before performing almost any repair. I also attended the CTE Educators Town Hall Meeting sponsored by I-Car. Bob and I walked the Expo floor several times. Both the Expo and the Town Hall Meeting provided the opportunity to network and identify new exhibitors and presenters for future conferences.

Furthermore, I am a member CalABC’s Executive Board and attend their quarterly board meetings and participate in their monthly conference calls. They are very active in the legislature and track any bill that affects the automotive industry or CTE in the state to provide input and support or opposition.

I believe in setting standards that meet the needs of industry and the Department of Education. CAT has always supported certification. The certification process can only strengthen your program. If you have a Small Engine Repair Program I recommend that you apply for certification with Equipment & Engine Training Council EETC. A High School Automotive Program should apply for the ATTS Level I or NATEF Maintenance & Light Repair MLR. Fifty-five percent of the Community College Automotive Programs are certified; I encourage the remaining forty-five percent to work towards becoming ATTS or NATEF certified.

In closing I want to wish you a successful school year. I hope you have the support you need to reach the goals you have set for yourself and your program. Remember the mission of CAT is to support and improve Automotive Education in the State of California. We’re all here to help each other. So, if you need help ask someone in the organization for advice and resources. There is a huge pool of knowledge, experience and expertise among us.

I don’t have an ending salutation like Bobs’ “KEEP THE SHINY SIDE UP AND THE GREASY SIDE DOWN”. So I’ll just end with See you at the Fullerton CAT conference. I hope to see you at Fullerton College on October 14th and 15th to help celebrate CAT’s fifty years of supporting Automotive Education in the State.

Smog Checks and BAR's Vehicles of Interest Study

by Rocky Carlisle

In May 2015, BAR implemented the BAR OIS testing program. This program utilizes new inspection equipment and procedures, and establishes new readiness monitor requirements that vehicles must meet before passing an inspection. The new readiness monitor requirements are as follows:

➤ Gasoline powered:

One incomplete monitor allowed for 1996 to 1999

Only the Fuel Evaporative Monitor allowed incomplete for 2000 and newer

➤ Diesel powered:

Zero monitors allowed incomplete for 1998 to 2006

Any two monitors allowed incomplete for 2007 and newer

While BAR anticipated that some vehicles might have problems meeting the new readiness monitor requirements, most vehicles are able to meet them without difficulty. However, several vehicles continue to challenge the Smog Check industry with issues related to the new testing protocol. For this reason, BAR undertook a "Vehicles of Interest Study" to better understand several of the issues. Three sets of vehicles surfaced in the first year of OIS testing that required BAR's attention.

One of the first vehicles scrutinized by BAR was the 2004 Ford E350 Super Duty with a 5.4L gasoline-powered engine. Based on BAR's statistical analysis of Smog Check data, 95 percent of these vehicles were projected to fail the Smog Check inspection due to an incomplete Catalytic Converter (CAT) monitor. After consulting with the Air Resources Board and Ford Motor Company, Ford engineers identified a bug in the Engine Control Unit's firmware. Ford developed a reflash that resolved this problem and the solution was subsequently printed in BAR's Smog Check OBD Reference.

Another vehicle was the 2000 model-year BMW 323i. Approximately 31 percent of these vehicles could not meet the new monitor standard; most would not complete the O₂ sensor monitor while some failed to complete the CAT monitor. BAR recruited 18 vehicles that were tested at the Referee and were subsequently sent to BMW dealerships for diagnosis. Six of the 18 vehicles were dropped from further study since they had problems unrelated to BAR's concern for incomplete monitors, such as broken PCV valves and leaking radiators. After significant diagnosis and research, BMW determined the cause to be a software problem and

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created an update for their Powertrain Control Module. Once again this resolved the problem and the solution was printed in BAR's Smog Check OBD Reference.

In both of these cases, the vehicle required manufacturer intervention to create a software update to remedy a flaw in the vehicle's software. However, this solution is not typical since most vehicles fail to complete the monitors for some type of defective component.

The third set of vehicles was the 2001 – 2002 Nissan Maxima and Infinity I30. Since both of these vehicles are the same A33 chassis with different badging, they are combined into one set. Thirty-eight percent of these vehicles were projected to fail readiness for incomplete CAT monitors and in some cases O₂ sensor monitors. Twenty-six vehicles were selected for study but six were dropped since they fell outside the scope of BAR's monitor study. Seventeen of the remaining 19 vehicles were successfully repaired and passed the Smog Check inspection. However, unlike the previous two sets of vehicles, the Nissan and Infinity vehicles required component replacement to repair the vehicles and those were as follows:

- 6 – Replaced CATs and O₂ Sensors
- 6 – Replaced CATs only
- 3 – Ran the Published Drive Cycle
- 1 – Replaced O₂ Sensor
- 1 – Replaced MAF Sensor

This last set of vehicles revealed a failure of technicians to properly diagnose the vehicle, as they were assuming that since the Malfunction Indicator Light (MIL) was not illuminated there was no defective part in the vehicle.

Instructors should emphasize the importance of proper diagnosis of the OBD systems and teach technicians not to rely solely on the illumination of a MIL to alert them to a defective component. OBD data provides information on component condition as it relates to the component's potential performance or in other words, how near is the component to the failing threshold. Technicians who rely solely on Diagnostic Trouble Codes, as demonstrated with the Nissan and Infiniti failures will miss the fact that, while the component has not dropped to a level low enough to record a code, its performance is too low to achieve the results required by

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WEBMASTER Report by Tom Broxholm

Making Payment By Check

One of the most frequent request I get from an administrator is “who do we make the check to” and “Where do we mail it”. Please note that after you register you are sent an email with all of this information in it. Please forward that email to the administrator who is responsible for making the payment. In addition you can always point them to our website. On the conference page there is a link with “Pay by Check” instructions they can follow. Forwarding this information will make it easier for everyone.



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We now offer a group registration method. This allows one person to register multiple members all at once and make a final payment for everyone all at once. You can also take advantage of the split payment feature above if the member is responsible for part of the payment. Specific instructions on group registration can be found on our conference registration page. www.calautoteachers.com/reg_join. Please note `reg_join` in the URL has an underscore between `reg` and `join`. Click on the “Group Registration” link to view the instruction. Please read these instructions before attempting the group registration because detailed information will be needed prior to registration. As always I can be reached for questions or comments by clicking on the “Contact the Webmaster” link that is located on our home page. www.calautoteachers.com

the monitor. Technicians must be trained to have the skills and understanding necessary to diagnose complex OBD failures that provides a durable repair and returns the vehicle to its previous performance and low emissions.

Too often, inspectors use one of two solutions when monitors fail to complete. Either the motorist is told to drive the vehicle for a length of time or instructed to make a Referee appointment in the belief that the Referee will waive incomplete monitors. When the vehicle is broken and requires a diagnosis and subsequent repair, the Referee will not waive incomplete monitors.

One step that will assist technicians is to review BAR's new 2015 Smog Check OBD Reference. This reference, found on BAR's website, identifies problems with many vehicles whose monitors may not complete for a variety of reasons and provides a starting point from which to proceed. If the reference guide provides no information for the vehicle, then a diagnosis should be performed to determine the cause of monitors not completing. Test-Only stations should refer the vehicle to a Test and Repair Smog Check station for a diagnosis. The Test and Repair station should explain to the motorist the reason monitors were incorporated into the OBDII system and offer an estimate for diagnosis and repairs. In doing so, the motorist will see an improvement in the vehicle's performance and emissions. The station will enhance their customer service and improve the shop's bottom line profit.

Automotive News Stories—Online Articles and Links

Mazda Approves Rotary-Powered RX9 for 2020

<http://www.motortrend.com/news/report-mazda-approves-rotary-powered-rx-9-for-launch-in-2020/>

New Camaro ZL1 Hits 60 MPH in First Gear

<http://www.roadandtrack.com/new-cars/future-cars/news/a30495/camaro-zl1-gearing/>

Chevrolet Adds Teen Driver Tech to 9 New Models

<http://www.motortrend.com/news/chevrolet-adds-teen-driver-tech-9-new-models/>

Ford Building Cars Without Steering Wheels, Gas or Brake Pedals

<http://www.businessinsider.com/fords-self-driving-cars-wont-have-steering-wheels-2016-8>

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to the academic core. Instead, the focus shifted to preparing all students for college, and college prep is still the center of the U.S. high school curriculum.

So what's the harm in prepping kids for college? Won't all students benefit from a high-level, four-year academic degree program? As it turns out, not really. For one thing, people have a huge and diverse range of different skills and learning styles. Not everyone is good at math, biology, history and other traditional subjects that characterize college-level work. Not everyone is fascinated by Greek mythology, or enamored with Victorian literature, or enraptured by classical music. Some students are mechanical; others are artistic. Some focus best in a lecture hall or classroom; still others learn best by doing, and would thrive in the studio, workshop or shop floor.

And not everyone goes to college. The latest figures from the U.S. Bureau of Labor Statistics (BLS) show that about 68% of high school students attend college. That means over 30% graduate with neither academic nor job skills. But even the 68% aren't doing so well. Almost 40% of students who begin four-year college programs don't complete them, which translates into a whole lot of wasted time, wasted money, and burdensome student loan debt. Of those who do finish college, one-third or more will end up in jobs they could have had without a four-year degree. The BLS found that 37% of currently employed college grads are doing work for which only a high school degree is required.

It is true that earnings studies show college graduates earn more over a lifetime than high school graduates. However, these studies have some weaknesses. For example, over 53% of recent college graduates are unemployed or under-employed. And income for college graduates varies widely by major – philosophy graduates don't nearly earn what business studies graduates do.

Finally, earnings studies compare college graduates to *all* high school graduates. But the subset of high school students who graduate with vocational training – those who go into well-paying, skilled jobs – the picture for non-college graduates looks much rosier. Yet despite the growing evidence that four-year college programs serve fewer and fewer of our students, states continue to cut vocational programs. In 2013, for example, the Los Angeles Unified School District, with more than 600,000 students, made plans to cut almost all of its CTE programs by the end of the year. The justification, of course, is budgetary; these programs (which include auto body technology, aviation maintenance, audio production, real estate and photography)

(Continued on page 14)

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are expensive to operate. But in a situation where 70% of high school students do not go to college, nearly half of those who do go fail to graduate, and over half of the graduates are unemployed or underemployed, is vocational education really expendable? Or is it the smartest investment we could make in our children, our businesses, and our country's economic future?

The U.S. economy has changed. The manufacturing sector is growing and modernizing, creating a wealth of challenging, well paying, highly skilled jobs for those with the skills to do them. The demise of vocational education at the high school level has bred a skills shortage in manufacturing today, and with it a wealth of career opportunities for both under-employed college grads and high school students looking for direct pathways to interesting, lucrative careers. Many of the jobs in manufacturing are attainable through apprenticeships, on-the-job training, and vocational programs offered at community colleges. They don't require expensive, four-year degrees for which many students are not suited.

And contrary to what many parents believe, students who get job specific skills in high school and choose vocational careers often go on to get additional education. The modern workplace favors those with solid, transferable skills who are open to continued learning. Most young people today will have many jobs over the course of their lifetime, and a good number will have multiple careers that require new and more sophisticated skills. Just a few decades ago, our public education system provided ample opportunities for young people to learn about careers in manufacturing and other vocational trades. Yet, today, high schoolers hear barely a whisper about the many doors that the vocational education path can open. The "college-for-everyone" mentality has pushed awareness of other possible career paths to the margins. The cost to the individuals and the economy as a whole is high. If we want everyone's kid to succeed, we need to bring vocational education back to the core of high school learning.

CAT NEWS AD Space!

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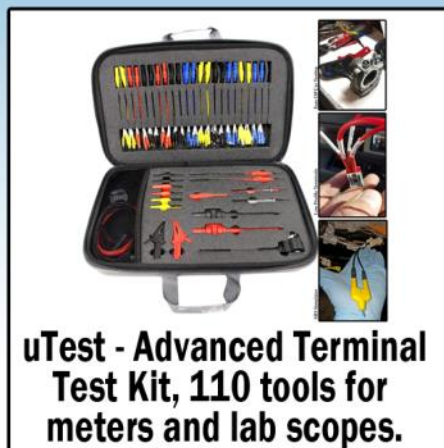


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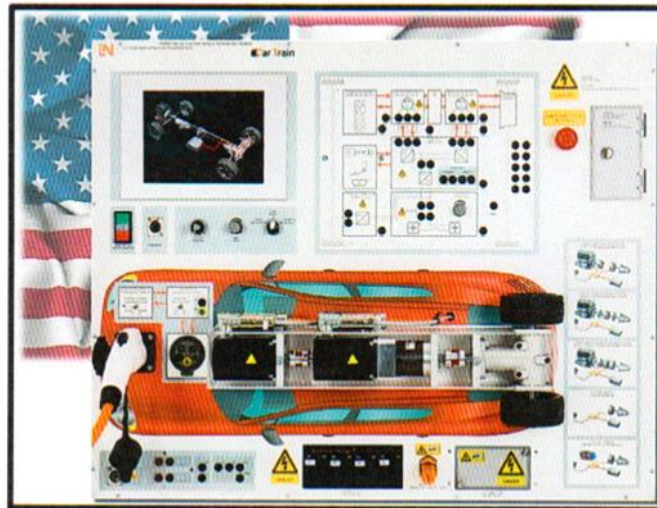
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Meet Robert Wilson — California Department of Education

My career in the automotive industry spans over 40 years. It all started back in the early 1970's. I spent more time in my high school auto shop class than any of my other "academic" classes. My teacher, a disheveled looking man with dirty coveralls, a gravelly voice, who was never without his big hammer didn't seem to mind me hanging out all day. In those days I was considered a shop rat. Freshly graduated (barely) from high school and not having a clear idea of what the future held for me, I was lucky enough to gain employment as a "gas station attendant". My primary responsibilities included pumping the requested amount of gas into the customers gas tank, washing the front and back windshields, asking the customer if he or she would like to have their engine oil checked, and occasionally checking the air pressure in all four tires.



The owner of the gas station saw that I had a mechanical aptitude and ask me if I would like to work in the repair shop. I jumped at the opportunity to get off the pump aisles. His bowling buddy was the local Mac tool rep and between the two of them I was able to assemble a starter tool kit. I worked my into a full time position in the repair shop, became ASE certified, earned my California Smog license and thought I had found a lifetime career path.

The gas station was a family owned business and I could see the handwriting on the wall that a family member would take over when Dad retired so I made the decision to move onward to what would today be similar to a Pep Boys. An all in one automotive repair shop, auto parts retailer, and a full service automotive machine shop. I served in a variety of roles including mechanic, parts person, parts manager, and eventually the general manager. During my time there I continued to have aspirations of owning my shop one day and knew I would need a business management education.

I enrolled at the community college in my area, taking general education classes with an emphasis on someday earning a business degree. I continued to work in the automotive service center during the day while taking classes at night. In the meantime I became married and together we had a daughter and twin boys. Eight years later I earned a Bachelor degree in Economics. I continue to work at the automotive full service center. Through an employee stock ownership plan offered at the company, I accumulated enough stock to become a twenty percent owner in the company.

Fast forward into the early 1990's, my old auto shop teacher from back in my high school days came into the shop and told me he was retiring and if I was interested I should apply. After much thought and conversations with my wife, I decided to go for it. I was hired on with an emergency credential until I could satisfy the designated subjects credential requirements which I fulfilled at night while teaching a full load of auto shop classes during the day.

(Continued on page 21)

Thank You Bob Barkhouse for 50 Years of Service to CAT!



**Your Vision, Leadership, and Encouragement
will always be a part of us!
Thank you Gayle for loaning Bob to CAT!**

Stringent Climate Goals Will Require Big Changes

Kelly Pleskot—Words (Reprint from September 19, 2016)

Electric cars make up a tiny percentage of the global car market, but that will have to change soon. Automakers must stop selling gas-powered cars by 2035 to achieve climate goals established at the Paris summit last year, reports *Reuters*.

World leaders came together last December to limit temperature increases to “well below” 3.6 degrees Fahrenheit over the pre-industrial era, and they have been working on an even stricter limit of 2.7 degrees. To achieve this more stringent goal, sales of gasoline and diesel cars must cease by “roughly 2035,” the Climate Action Tracker concluded in a new study. And 2050 should mark the end of the gasoline car altogether, with the last fossil fuel cars being phased out of operation.

Along with putting more clean vehicles on the road, the climate monitoring group says companies will need to focus on generating electricity without power based on fossil fuels. Unfortunately, many automakers aren’t prepared to give up on gasoline so quickly. Toyota has vowed to cut emissions by only 90 percent by 2050, for example. Meanwhile, electric vehicles still face plenty of challenges before they become mainstream.

“Electric vehicles are still more expensive to purchase than other cars, and policy projections still only see a share of around 5 percent of electric vehicles in the total European Union, China, and U.S. fleets by 2030,” the CAT said in its report. Meanwhile, Norway is ahead of the game, with plug-in vehicles making up about a quarter of the auto sales in that country.

(Continued from page 19 - Wilson)

In the late 1990’s/early 2000’s then President Bush passed the No Child Left Behind legislation. In response, the administration at my high school encouraged everyone to embrace the use of technology in the classroom by suggesting that all staff members consider a master’s degree in education with an emphasis on the use of technology in the classroom. I was back at the University at night for two more years and earned my Master’s degree in education.

The recession of 2008-2012 hit most school districts very hard and not unlike many others mine directed budget cuts at the career and technical education department. I decided it was time to pursue other interest, so I applied for a position with the California Department of Education (CDE). I was hired on full time in the spring of 2012 and have been with the CDE since. This summer a position became available in the Career and Technical Education Division for a Transportation Sector Lead and I was selected. I feel like I have come full circle and are back among the shop rats and I couldn’t be happier.

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STAR EnviroTech Sponsors US Military Veteran Automotive Scholarship

Scholarship Supports Veterans and The Future of the Aftermarket

Huntington Beach, CA (May 26, 2016) - STAR EnviroTech is working with the University of the Aftermarket Foundation (UAF) to fund a Military Veteran Automotive Scholarship.

The scholarship is open to any active or honorably discharged member of the US Military or Military Reserve enrolled as a full-time student in a qualified automotive, heavy-duty or diesel technician-training program within the U.S. The University of the Aftermarket Foundation Scholarship Committee will choose the 2017 scholarship recipient.

"STAR is honored to sponsor this scholarship to give back to those who have served in our military," said Jim Saffie, STAR EnviroTech CEO. "We have a commitment to donating to military and veterans causes as well as giving back to the future of the automotive aftermarket by supporting education and educators."

Interested students may complete the online application for the STAR EnviroTech Scholarship at automotivescholarships.com/STAR.

About the University of the Aftermarket Foundation

Since 1986, the University of the Aftermarket Foundation has funded millions of dollars of scholarships, grants, research and ongoing educational programs to help develop a strong knowledgeable aftermarket work force.

The Foundation encourages industry support, including donations for the purpose of honoring or memorializing individuals or otherwise recognizing special events, to help ensure the continued availability of training and education that strengthens the industry. For more information about the University of the Aftermarket Foundation, visit www.UofAFoundation.com

More on UAF Scholarships at www.automotivescholarships.com.

About STAR EnviroTech

STAR EnviroTech, the inventor and world leader in Diagnostic Smoke® leak detection, worked in collaboration with partners including Ford, GM and Chrysler, through the OEMs' USCAR organization, to develop a universally-accepted, and in most cases mandated, EVAP and vacuum system leak detection technology, chosen by virtually every OEM.

STAR technologies are inside smoke machines from the leading tool manufacturers supplying the automotive, truck, industrial, marine, and aviation industries, including the Canadian Air Force and the U.S. Military. More on STAR EnviroTech at StarEnviroTech.com.

For further scholarship information, go to automotivescholarships.com/STAR

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Excellence in Education

Name: Lucile Beatty

Age: 53

Family: My wife, Laura Slattery

Hometown: Bethesda, MD

Current City of Residence: Oakland, CA

School Where you Teach: Contra Costa College



Your Teaching Philosophy

My teaching philosophy is to set high expectations and create a supportive learning environment where everyone knows everyone's name and supports each other through teamwork. Also, part of the supportive learning environment is intensive follow-up with students who are falling behind and struggling, assisting with connecting students with resources from the college and the community.

Automotive experience and how many years at each

I entered the automotive field in September, 1992, as an apprentice. In addition to being a service technician I have worked as a service advisor and a service manager. I began teaching in August, 2004, part-time and became full-time in 2010.

What is the biggest problem you see for the automotive teacher

There is a lack of teacher training and networking with teachers to discuss teaching strategies, classroom management, classroom assessment techniques and ways to create an equitable learning environment.

What is your dream job

I am working my dream job. I love teaching and being with students. I enjoy improving the program and curriculum and I love being at Contra Costa College, which is a supportive community.

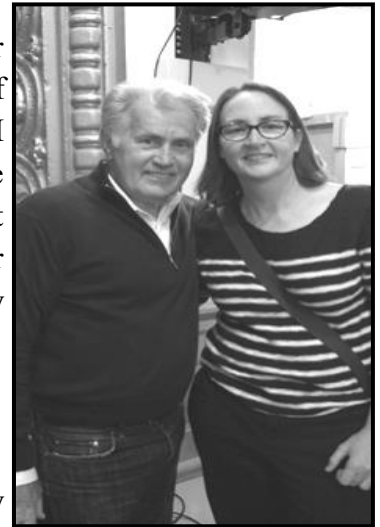
What is the closest you have been to a famous person and who was it

Martin Sheen is a famous person I have been the closest too. He has done several fundraising events for my wife's organization, The Gubbio Project, which provides sacred sleep for homeless people in San Francisco.

(Continued on page 25)

Person you most admired and why

I admire most the young people in the street today continuing the struggles for liberation. I admire these young people because this country's vision of democracy is a journey that has not yet been accomplished in its entirety. I admire them because it has always been the resistance movements which have brought this country closer towards this vision of democracy and a more perfect union (the abolition of slavery, the civil rights movement, the united farmer workers movement and other labor movements, the women's movement, the gay rights movement, etc.).



What was the first car you owned and how did you afford it

1966 Toyota Corona - three on the tree. I traded my brother-in-law my motorcycle for this car.

Hobbies

Biking and hiking

Favorite quote

"Have patience with everything unresolved in your heart and try to love the questions themselves...

Don't search for the answers, which could not be given to you now, because you would not be able to live them. And the point is, to live everything. Live the questions now. Perhaps then, someday far in the future you will gradually, without even noticing it live your way into the answer. "

~ Rainer Maria Rilke



Legislative Update on Behalf of ASCCA's

Lobbyist Jack Molodanof

AB 1174 (Bonilla): Vetoed - This bill originally included language that would have required the Bureau of Automotive Repair (BAR) to post on its website all complaints against an automotive repair dealer (ARD), without any due process - very similar to "Yelp." The bill also provided BAR citation and fine authority (up to \$5,000 per violation) for shops making simple paperwork mistakes. There was strong opposition and push back from the automotive industry, which included intense grassroots lobbying efforts. With our continued lobbying throughout the legislative process, the Assembly Member agreed to delete the objectionable sections from the bill. The bill was vetoed by the Governor because it was "unnecessary and duplicative of existing practice at the Bureau." Read the Governor's full veto message here: https://www.gov.ca.gov/docs/AB_1174_Veto_Message.pdf

Spring 2016 Conference Pictures Provide by Roddy Rampersad



Spring 2016 Conference Highlights

At the spring 2016 conference hosted by Modesto Junior College CAT celebrated a major event. It was the 50th anniversary of the California Automotive Teachers.

In 1966, Bob Barkhouse, Mel Edwards, and Norm Gibbs were together at a CITEA Conference. They observed that the subject of automotive was not being addressed. At this point they decided to form the California Automotive Teachers. The first CAT meeting was held at Sierra College in Rocklin. About 30 members were in attendance. Most workshops were conducted by automotive teachers teaching teachers. There were a couple of industry presenters. The conference was one day. The second conference was expanded to two days. Friday was a day long workshop on one subject. There was no exhibitor participation at that time. The spring conference at Modesto had 160 attendees and 22 exhibitors. CAT has come a long ways.

Starting with the fall conference at Fullerton CAT begins a new era. Thank you to the Bob, Mel, and Norm for founding such a wonderful organization that has stayed the course for 50 years.

CAT Conference Sponsorship

A BIG THANK YOU to the companies that helped sponsor the spring CAT Conference Friday night dinner, the continental breakfast on Saturday, and refreshments throughout the weekend. Each sponsor received a Certificate of Appreciation and were recognized at the Friday night dinner and the Saturday luncheon. The sponsoring companies were:

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Editor's Note

On behalf of the CAT Board and its membership, I would like to thank the newsletter advertisers, the conference exhibitors, presenters, and sponsors. Without your commitment to the organization and to education in general much what CAT does could not take place. We appreciate your support and willingness to contribute money or time to improving the educational environment for our members.

Pressure Transducers: Getting the Picture

by Shannon Lindsey

The diagnostic process is, at its very core, a process about collecting and analyzing information. The process should begin with a question. From that question, a plan should be formed. That plan should contain steps to obtain the necessary information to answer that question. There are times when that is enough to come to a conclusion, but, all too often, the process must be repeated. Hopefully, every repetition brings us closer to the root cause.

When I was in trade school, quite a number of a years ago, I remember being introduced to the test light. The test light was such an amazingly simple and powerful tool! One day, we were shown how to diagnose a no start condition using a test light. The example system was distributor-based and it had an external coil. Touch the test light to the driven side of the coil circuit, watch the behavior of the light, and diagnostic magic would ensue!

The simplest outcome was that the test light would blink while the engine was cranking. In order to blink, there would have to be power to (and through) the coil. There would also have to be a drive signal to the coil. The circuit was complete and could carry current. If the coil had everything it needed to operate and still failed to produce a spark that could jump the spark tester, then the coil was defective. How much more simple could it be?

The truth is, unfortunately, a lot more complicated than that. The test light can tell us that the circuit, at some point, is complete. It can tell us that the circuit can carry some current. It can tell us that we have some power and some ground. The story that the test light tells us is murky, at best. We really have not answered any diagnostic question unless that question was, “is something happening?”

Using a digital multimeter in place of the test light can give us more information. To be really confident about what is happening, we would want to use an oscilloscope. An oscilloscope will give us much more detail, but it does require more skill and knowledge to use correctly. Effective oscilloscope usage allows us to gather more concrete information in about the same amount of time. Using three channels on a scope, we can observe power, drive (ground), and current flow through the circuit. We can observe the entire circuit, in detail, in one fell swoop. Collecting information in this way allows us to accurately assess the circuit and to make a solid diagnostic decision. Perhaps that decision relates to the root cause or perhaps that decision leads us, confidently, to our next step in testing.

Discussing the potential shortcomings of the venerable test light is nothing groundbreaking. However, what if I were to say that a compression gauge and a test light were in the same category? Let me explain.

(Continued on page 29)

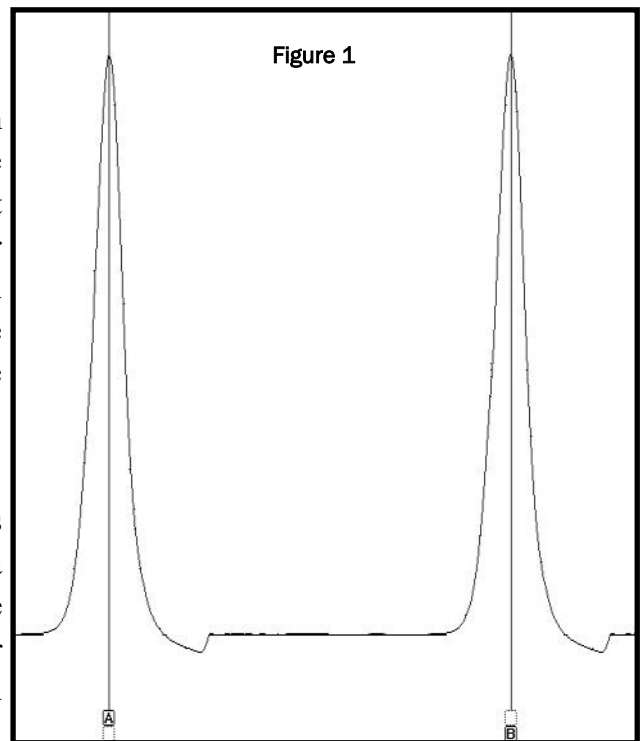
Let us start with a simple scenario. An engine has a steady single cylinder misfire and the to-be-expected misfire code. I always like to start any single cylinder misfire diagnosis off by qualifying the cylinder, mechanically. So, let us suppose that we go for the classic cranking compression test. We perform the test and the compression reading is right at the ideal specification. Is the cylinder mechanically good? We cannot yet say.

It is possible that there is a valve sealing issue and that issue can be small enough to not show up on a compression test. The next logical step would be to perform a cylinder leak down test. We perform the leak down test and find under two percent leakage. The cylinder generates the expected compression and shows no sign of leakage. Is the cylinder mechanically sound? Can we be confident that the misfire is a result of another issue? Or is there still more mechanical testing that we should do? What concrete diagnostic answers has our testing, up until this point, given us? What action can we take based off of the information we have gathered?

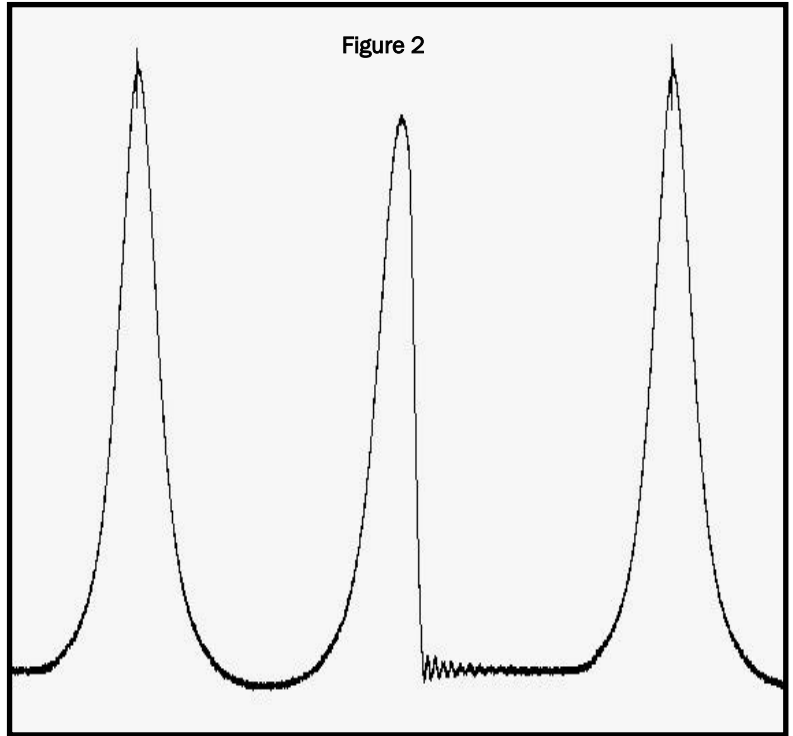
In the same amount of time it takes to perform the cranking compression test, we could have, instead, used a pressure transducer. With an in-cylinder pressure transducer and an oscilloscope, we can see the pressure changes in the cylinder throughout the four stroke cycle. There is an immense amount of information available in a compression waveform. The waveform can reveal issues related to leakage, valve timing, valve action, and backpressure. In the same way that using an oscilloscope to assess a primary ignition circuit gives us more information than using a test light, using an in-cylinder pressure transducer gives us more information than a compression gauge.

Let us return to the scenario we discussed earlier. With an in-cylinder waveform from the same cylinder, the problem is instantly obvious. An exhaust valve that is not opening would certainly cause a misfire, yet the cylinder would have normal compression and leak down readings. A single test combined with knowledge of the four stroke cycle gave us the information necessary to make an effective diagnostic decision.

Explaining the anatomy of a compression waveform is beyond the scope of this short article. With that said, a normal cranking compression waveform [fig. 1] will have one significant rise above atmospheric pressure, once per four stroke cycle, as the piston is approaching top dead center during the compression stroke. The area between cursor A and cursor B represents one four stroke cycle; one TDC compression event to the next. In the known bad cranking example [fig. 2], there are two rises in a single four stroke cycle.



How can we have a significant rise in pressure, above atmospheric, in a cylinder? The piston must be traveling upwards and all valves must be closed. As we all know, the piston travels upwards twice during a four stroke cycle: once during the compression stroke and once during the exhaust stroke. The only way for there to be a second rise in pressure, similar to the rise in pressure during compression, is for all valves to be closed during the exhaust stroke. Since intake valves are supposed to be closed during the exhaust stroke, there is only one possible explanation for the known bad waveform.



The test light often leaves us with more questions than answers. We should feel the same way about the compression gauge. When collecting information to make an accurate diagnosis, it is important to use techniques that provide concrete information that we can use to make confident diagnostic decisions. We do not want to create unnecessary questions or introduce blind spots. When it comes to engine mechanical diagnostics, using pressure transducers can support this goal. Even if we are not facing a mechanical issue, we can use pressure transducers to qualify the engine so that we can confidently move on to another area.

Shannon Lindsey holds three automotive-related AS degrees from De Anza College, is an ASE Master Tech and a BAR Certified Instructor. He began his automotive career 15 years ago and has spent most of this career specializing in drivability, diagnostics, and smog work. Currently, he teaches part-time at Skyline Community College and, when time permits, does mobile diagnostic work for local shops.

A Message from the Newsletter Editor!

We always need technical articles to share with our members.

If you have an article for the newsletter
(it is never too early) please email them to:

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www.calautoteachers.com

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