

Alternate Vehicles

Originally this month's newsletter was to contain reader responses to December's article on Alternate Vehicles. However, in order to allow additional time for more responses, we've decided to run the second installation of that series in the February edition. If you haven't read the article from December's newsletter, please take the time to do so and then give us your opinion on what you believe will, and won't, be the power system on tomorrow's cars and trucks.

Present Skills = Future Skills?

For as long as I have been an automotive instructor, two observations concerning technicians have remained unchanged. One is that techs tend to be logical, tactile learners with good deductive reasoning and two, those same individuals seem to have a tough time with the concepts of electricity and electrical diagnosis. Trying to understand why that is, and how to alleviate the situation, have been concerns of mine for nearly two decades.

Case in point: While instructing for a major manufacturer some years back, a number of individuals who were supposed to be good electrical guys came to the training center to 'test out' of the required electrical course. Not one ever passed the test. Even now, when I draw the schematic in figure 1 and ask, "What voltage should you measure between point A and ground?"

more often than not, the answer given is either zero or ground (the answer is 12 volts).

As I transitioned from a new, less-than-competent instructor to an experienced less-than-

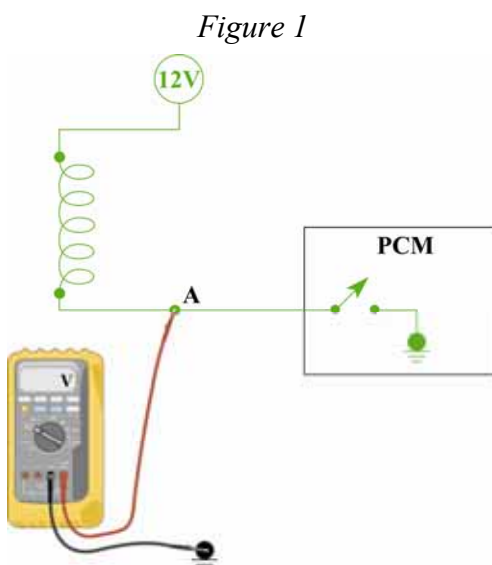
competent instructor, it became necessary to ask the tough questions, such as, 'Is my teaching method flawed?', 'Are they not being taught in the manner in which they learn?' and 'Are we asking them to go against their basic nature?' After using every comparison from water hoses to ping-pong balls to help students understand electrical concepts (with limited success), the last two questions began to take on greater significance.

Technicians, by their very nature, are tactile people who learn with their hands. Just think about how many repairs these guys perform every day just by feel, since it is impossible to actually see what is being fixed. Electrical training and diagnosis, on the other hand, has very little in the way of sensory input; meaning it can't really be seen, heard, or smelled while it works and, except for the occasional unintended interaction with an ignition coil, it really isn't felt either. So are we then working against their basic nature? Automotive technicians by and large have an intuitive understanding of gears, belts, valves, clutches, and a great many other things that spin, roll, slide, turn, mesh, open, close, and rub. But again, electrical systems, and their diagnosis, contain few of these mechanical characteristics.

Certainly we can all agree on three things; 1) Modern vehicles are changing every year, 2) The changes will continue to occur at an increasing rate for years to come, and 3) More and more of those changes will involve electrical systems. Already there has been a large decrease in the number of mechanical repairs being performed, such as engine and transmission rebuilds, and an increase in electrical repair.

Some relatively recent mechanical-to-electrical changes include:

- Standard brakes adding ABS and soon All-Electric Braking
- A/C Blower and Compressor Clutch converted to Automatic Climate Control Systems (some with electric compressors)
- Automatic Transmission Line-Pressure/Throttle Valve shifting replaced by shift valves and Pressure Control Solenoids
- Shocks & Struts now have electronically-controlled valving



- Power Steering Pumps giving way to Electric-Assist Steering

Plus there are others which are relatively new or will be available soon such as:

- High voltage electrics in hybrids and battery-electric vehicles
- Increases in telematics such as GPS, On-star, Entertainment systems, etc.
- CAN communications and increases in multiplexing
- New battery types such a Nickel-Metal Hydride and Lithium-ion

So what does all of this mean from an educational perspective, and how do we get students from their present level of skills to the required Future Skills? Will the technician of today be the same individual as the Electrical Specialist of tomorrow? What changes will need to be made to automotive curricula?

If we assume that the individual we are looking for might otherwise have become an Industrial Electrical/Electronics technician, would he/she be able to earn a good wage in Automotive instead of manufacturing/industry? What would be the pay difference between the Electrical tech and the Mechanical tech? This will be a crucial factor in attracting the right students to an occupation where they must work on flat rate and purchase their own tools (a situation that doesn't occur in other electrical occupations). After having identified those potential students, what changes to training must occur?

Assume that a Future Skills training program was set up with an Electrical Technician specialty. Would it require all students to attend all classes, Electrical and Mechanical, or would it be two-tiered and have separate paths for each? Could the training time required for an Electrical Technician Specialization be reduced to one year instead of two? What equipment would be required for E.T. Specialization training that doesn't currently exist in your classroom? Could more of the training be done with trainers, simulators, and Computer-Based programs rather than live vehicles? Would it be more or less expensive to operate such a program as opposed to today's arrangement?

As is so often the case when dealing with future requirements; too much is unknown to make informed choices. However, we cannot wait until the future is upon us to begin planning for it. So I suppose it all comes down to this; what do you see as the future educational needs of the industry, and what changes are you making to your program to meet those needs? The future of the automotive repair industry rests upon the decisions we make today in the Automotive Technical Training arena.

Atech at 2009 ACTE Nashville



The show was held at the Gaylord Opryland Resort and Convention Center in Nashville, TN. Estimated attendance was around 4,900 CTE instructors and administrators.

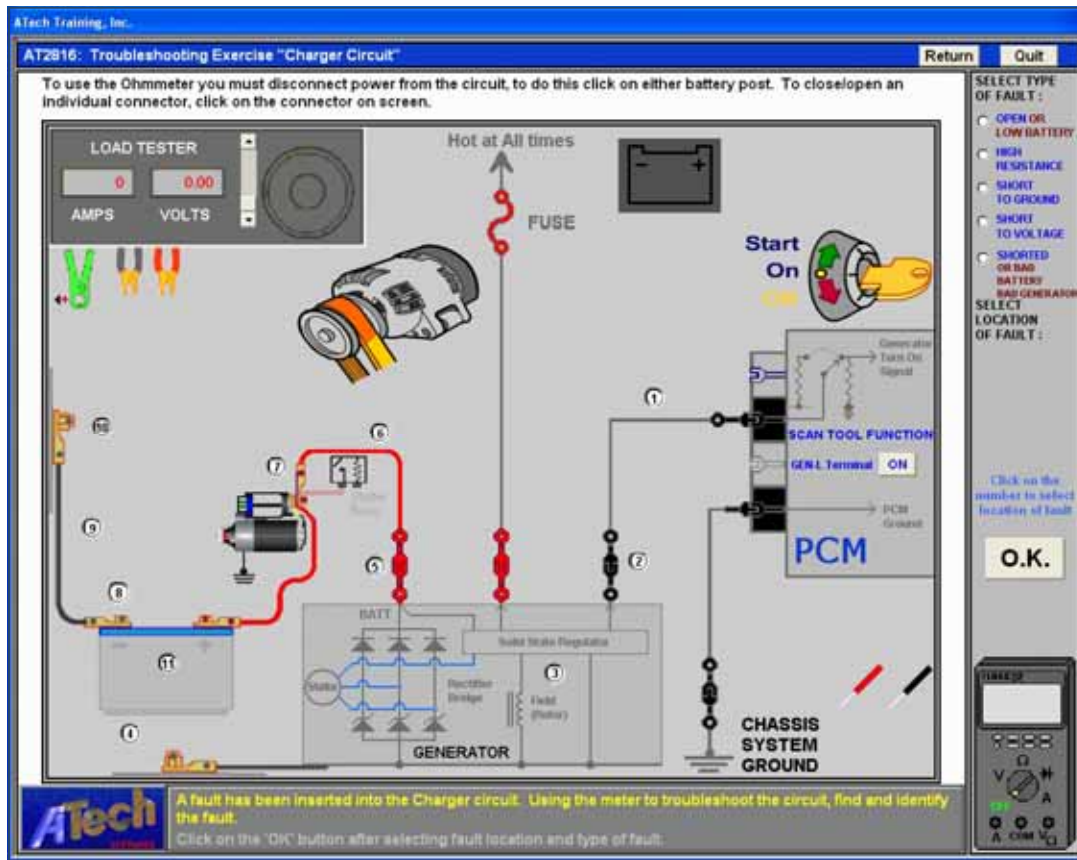
Visit www.acteonline.org to learn more about this annual show. 2010 ACTE Convention to be held December 2nd– 4th in Las Vegas, NV.

Atech Visits Oman



In December, Atech had the privilege of conducting a training class at the Vocational Training Center in Muscat, Oman. Our hosts were gracious and the instructors were enthusiastic about using their new trainers. It was an enjoyable, eventful week and Atech looks forward to continuing our work with the teachers of that region. Pictured above: Salim Al Amri, Issa Al Anqoodi, Saif Al Hashmi, Saif Al Hadrami, Ahmed Moosa Abu Eid, Yaser Ahmed Al Sadeq, Mustafa Ambu Ali, Eduardo J. Llanita, Tarek El Saadany, San Jay Sadhu, Vijai Murugan, and David Mitchell.

Charger System Troubleshooting Model 2816



The Charger System Troubleshooting Trainer is a software program based on the Charger System and deals with the basic concepts of troubleshooting those automotive components. This program can operate in random mode where the faults would be selected randomly for each circuit chosen, or the instructor can select a set of faults from various circuits to be activated when each student runs the program.

Features:

- Realistic operation of charging system.
- Built-in DVOM and Load Tester.
- Student performance is stored in Central Records or student drive as the student proceeds through the program.
- The IMP initializes the student record by assigning an I.D. number and password for the student to operate the program on the student computer.
- Audio reinforcement of circuit behavior.

Activities Include:

- Troubleshooting section that will insert 19 possible faults into charging circuits to be diagnosed at the Training or Advanced Mode.

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ATech Training, Inc.
12290 Chandler Drive, Walton, KY 41094
Ph: (859) 485-7229 Fax: (859) 485-7299
E-mail: sales@atechtraining.com

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Automotive Technology

ATech Training Inc.
12290 Chandler Drive
Walton, KY 41094
(859) 485-7229
www.atechtraining.com
sales@atechtraining.com



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2010 Conference Schedule

Spring 2010 CAT Conference

April 23rd & 24th, 2010
Yuba College

Marysville, California

NACAT 2010

July 19th - 23rd, 2009
Seminole State College of Florida
Sanford, Florida

Fall 2010 CAT Conference

October 15th & 16th, 2010
UTI
California

2010 ACTE Las Vegas

December 2nd - 4th, 2010
The Las Vegas Convention Center
Las Vegas, Nevada

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