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JULY 2017 Vol.126, No. 1

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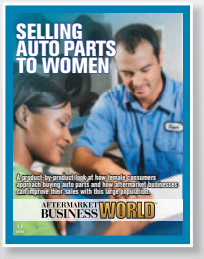

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The Business Information Association, a division of SIIA

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TECHNICIAN ATTITUDE STUDY

QUALITY COUNTS

QUALITY, AVAILABILITY TOP LIST OF REASONS TECHNICIANS BUY A SPECIFIC PART

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TRAINING KEY TO OBTAINING GOVERNMENT ACCOUNTS

BY **JAMES E. GUYETTE**
NEWS CORRESPONDENT

Not every military vehicle maintenance task is restricted to GIs in khakis and camouflage. Much of the work on standardized and specialty vehicles is outsourced to civilian parts and repair providers.

Armed with the appropriate technical training, along with an affinity for learning an alphabet soup of acronyms, aftermarket businesses in proximity to base motor pools are well-positioned to pursue these types of contracts.

Similar services can be applied to other governmental and quasi-governmental fleets, including post offices, police departments, disaster preparedness agencies, road crews, utilities, educational and cultural institutions, and an additional assortment of entities at the national, state and local levels. Commercial operations are another avenue for your expertise in specialty vehicle repairs.

On the military front confines apply. Weapons systems are off-limits and tended to by personnel holding appropriate security clearances.

Wherever there are boots on the ground there's a good chance that the troops are riding in a Humvee. Bearing the official acronym of HMMWV – for High Mobility Multipurpose Wheeled Vehicle – Humvees are produced by AM General as part of its large roster of purpose-built governmental and commercial vehicles.

Headquartered in South Bend, Ind. with a 675,000-square- foot assembly plant along with a Supply & Logistics Center and a Testing & Training Facility, AM General ensures that its customers are educated on all aspects of automotive-oriented readiness.

Features of the company's operational base include a 320-acre off-road training course, classrooms, hands-on technical training bays and state-of the-art driving simulators.

A network of trainers is deployed worldwide to impart military and civilian technicians, vendors, sales representatives and other personnel with the skills they need to execute mission-critical maintenance, up-fitting and other tasks. Specialized in-house and field service representative-led instruction is taught to thousands of students in the U.S. and abroad.

The company's Service, Parts and Logistics Operation (SPLO) entails:

- Supply chain management, including options for onsite warehousing and parts
- Support at strategic locations in the U.S. and overseas
- Field service support from experts who share the latest technical knowledge and hands-on training to operators, technicians and instructors
- Dealer and technician training
- Driver training
- Maintenance planning
- Technical manual, both interactive and conventional
- Warranty support
- U.S. Government safety reporting
- Customer satisfaction analysis.

Jordan Ford Mobility/MV-1 of South Texas in San Antonio highly recommends the instruction provided by AM General's Mobility Ventures subsidiary, producer of the MV-1 line of paratransit vehicles.

"We have two certified mechanics for the MV-1," says the dealership's Manny Todd. "It's complex because you have specialized parts that you have to order, so that's where the training comes in handy."

Constructed from the ground-up for wheelchair accessibility, "the ramp comes first" in the design process, he explains, "and the vehicle is built around the ramp." Avoiding the engineering and performance challenges that can be encountered when converting a conventional van, the MV-1

THE MV-1, BUILT BY AM GENERAL SUBSIDIARY MOBILITY VENTURES, IS A POPULAR FLEET ADDITION IN THE DISABILITY COMMUNITY INCLUDING TAXIS ENGINEERED SPECIFICALLY TO CARRY FARES USING WHEELCHAIRS.

has become a popular fleet addition within the disability community.

The dealership sends its stock of MV-1's nationwide. Chicago, Washington, D.C. and other communities have been using the MV-1 along with social services agencies nationwide.

In 2016, the MV-1 Empire Taxi was introduced into New York City's collection of cabs. Pat Kemp, Mobility Ventures' executive VP, says the model is "the best choice for taxi drivers and fleet owners now making the switch to a wheelchair accessible vehicle."

Innovations and opportunity

Assuming the proper management and staff training is achieved, ongoing opportunities are available within the overall specialty vehicle sector.

Suitable training is important because specialty vehicles can be highly sophisticated in terms of diagnosing problems, obtaining the correct parts and completing the repairs.

Numerous OEMs are consistently unveiling a variety of specialty vehicles with updated training requirements to maintain them properly.

The U.S. Postal Service, for instance, has implemented a Next Generation Delivery Vehicle (NGDV) program under which AM General's Center for Advanced Automotive Design in Livonia, Mich. was selected to provide prototypes aimed at meeting certain fuel efficiency and exhaust emissions standards as the USPS replaces its fleet. Although people are mailing fewer letters in the Internet age, e-commerce has resulted in a dramatic increase of package deliveries – growing from 3.7 billion pieces in 2013 to 4.5 billion in 2015.

"Our design offers the postal service unmatched innovation and the opportunity for significant savings on costs, maintenance and delivery operations," says Howard Glaser, AM General's executive VP for commercial business and president of Mobility Ventures.

The engineering "is combining highly reliable, low maintenance, fuel-saving powertrain options and advanced safety systems into a durable, low operating-cost vehicle." Innovations include:

- Lightweight, fuel-efficient vehicle technologies
- Advanced powertrains with system options
- Substantial emissions decrease with a zero-emissions option
- Next-generation safety systems
- Reduced maintenance schedule with less complex repairs
- 20-plus-year body durability for a long vehicle life.

Building on its engineering abilities as displayed on the MV-1, the company is partnering with the U.S. Tank Automotive Research Development and Engineering Center (TARDEC) to develop and demonstrate an autonomous vehicle that could revolutionize how military personnel – along with equipment and supplies – are transported at military facilities.

A test-model is being put through its paces by carrying cadets with medical issues at the U.S. Army Military Academy in West Point – which has a semi-controlled environment of restricted roads and predefined routes – as part of the Applied Robotics for Installations and Base Operations program (ARIBO).

"The West Point demonstration uses AM General's vehicle to not only demonstrate an autonomy kit, but to highlight the idea of robotics for military and civilian use," says Alex Jimenez, project leader for TARDEC's ARIBO program.

"The best robotic systems in the world will not find traction until users are comfortable with the systems," he says. "West Point is a prime location to address the acceptance aspect of robotics by having future Army leaders see and experience these robotics first hand."

AM General Executive VP Kevin Rahrig says the vehicle is ideally suited for this initiative because it augments the Academy's existing transportation system consisting of a 24/7 shuttle service for military personnel going to and from the base hospital.

"Imagine what having a fully autonomous wheelchair-accessible vehicle would mean to individuals with disabilities," he says. "This partnership with the Army could be the first step in transforming transportation for millions of people."

And as an OEM contract manufacturer, the company is producing the Mercedes-Benz R-Class luxury crossover, currently sold only in China, at its 675,000-square-foot Commercial Assembly Plant in Mishawaka, Ind. □

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WHY A CATALOG IS NOT CONTENT

Expectations today are for immediate access to rich data and multiple digital assets.

Paper catalogs are dead. We just haven't had the memorial service.

I recently attended the 44th annual conference of what is now known as the Automotive Content Professionals Network – ACPN. For 43 years this organization, was known as the National Catalog Managers Association (NCMA). I was struck by what has changed besides the name in the past couple of years.

The catalog has become content and the association has become a network. This rebranding is much more than semantics. It captures how the critical business of publishing automotive information has pivoted from the age of analog catalogs to digital content.

I witnessed the deliberations years ago when "catalog managers" first contemplated a name change to "content managers." Among those who defended the catalog name there was talk of how everything from application listings to interchange tables and market copy, line drawings and technical specs – was all content. So, didn't the name "catalog manager" accurately reflect responsibility for everything between the covers of the catalog?

The leading argument in favor of the name change was the notion that web, mobile and electronic catalog systems were the primary method of parts identification. A well-crafted Google search can get you close to the right part for your vehicle. Often, a click away, was an installation or demonstration video on YouTube. On the next tab are multiple images of similar products. Links to information about the company or the brand are embedded in the results. The point being, the expectations today from professionals and consumers are for immediate access to rich information and multiple digital assets, all in lightening-quick time.

Here's where it gets tricky. Paper catalogs are dead. We just haven't had the memorial service. And some companies haven't read the obituary. Every retailer and point-of-sale technology company invests exclusively in better ways to manage, search and display digital content. The argument that paper is needed for power outages and other natural disasters is rendered moot by mobile devices. No one is trying to engineer a better catalog rack.

What's driving this tsunami is demographics. 10,000 baby boomers are retiring daily and millennials replacing these parts professionals have never known a day without the Internet. They are not going to learn how to navigate through 12 feet of paper catalogs.

National retailers invest millions in point-of-sale technology to help their newest store associates appear knowledgeable and to help deliver a great experience to the customer. Most customers have shopped the retailer online before they go to the store. Online, they expect access to all the information about all the products. That's the great thing about the Internet – it empowers choice and possibilities. If one site has less detail and fewer "extras" like videos, an alternative site is a click away.

On the final day of ACPN I was pleased to moderate a panel discussion with five content executives for major national automotive chains. Seizing the opportunity, I asked, "if digital content is so darned important to your business, why do you continue to require that suppliers print paper catalogs and ship them to you at great expense?" I assumed it was because they were just being big, bad retailers. But, the answer was even easier to understand. One explained, "We require paper catalogs because some of the applications and much of the related product information that we rely on are not available to us in digital form. When all the content between the covers of the paper catalog is available in digital form and supported by the industry data standards there will be no further need for paper catalogs and the requirement will go away," he explained – that was the applause line of the session.

Millions of dollars are spent annually to print non-automotive applications, technical specs and other assets that are not available digitally. Depending on the markets served by the chains, these marine, off-road and industrial applications may account for 2 percent or up to 15 percent of their sales volume. But, until the industry supports the exchange of applications for all classes of vehicles and machines, the burden to print catalogs remains.

One panelist suggested that if the Auto Care Association invested the dollars necessary to populate all the needed vehicle types in the ACES standard, the industry would save millions annually, ensuring a very positive return on investment. This industry should commit itself to achieving the goal, of extending the data standards to support all vehicle types and eliminate the need to publish paper catalogs completely. We live in the era of digital content. Paper is dead. It's time to have the funeral. □

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NEXT-GENERATION AUTO TECHNOLOGY

Questions raised about aftermarket participation in V2V

There were 175 companies from around the world at the Department of Transportation's Plug Fest in San Antonio in May. Many were aftermarket suppliers of vehicle-to-vehicle (V2V) communications equipment previewing equipment that they hope will be certified when the DOT-endorsed V2V certification process starts up later this summer.

Aftermarket V2V devices will play a big role in determining how quickly autonomous vehicles become successful. How big a role will be determined by how some of the intricacies of the new, proposed National Highway Traffic Safety Administration (NHTSA) standard works. There is a lot of ironing out to do, based on comments the DOT's NHTSA received at its January 2017 proposal to create a Federal Motor Vehicle Safety Standard (FMVSS) No. 150. It will require all new light vehicles to be capable of V2V communications, such that they will send and receive basic safety messages (BSMs) to and from other vehicles.

The Intelligent Transportation Society of America (ITS America) has forecast the growth of aftermarket and consumer electronics given a V2V motor vehicle standard. Its forecast shows that by 2029 – seven years after the projected phase-in of the light vehicle V2V rule – 60 percent of all vehicles, or 146 million cars, will have DSRC/V2X equipment. Adoption of aftermarket/consumer electronics DSRC/V2X devices for existing vehicles are forecast to outpace factory installed DSRC for new cars for by 2027.

The aftermarket installation of DSRC aftermarket radios raises questions that NHTSA does not address in its proposed rule: who is going to certify equipment (OEM and aftermarket) and against what standards; will V2V equipment be subject to state vehicle inspection; and will aftermarket equipment have to meet the same standards as OEM equipment in all instances.

The certification question will be settled by NHTSA deeming the OmniAir Certification Services (OCS) will be given the authority to green-light products. Jason Conley, executive director, OCS, says testing will begin this summer. The OCS will test products against the 802.11p/1609 Wireless Access in Vehicular Environments (WAVE) protocols and other protocols. "The aftermarket is one of the first places we will see V2V equipment deployed," he says.

The American Association of State Highway and Transportation Officials (AASHTO) says there are several questions that are not adequately addressed in the proposed rule. Among those are whether NHTSA will establish standards and specifications to ensure that aftermarket devices are installed and operated properly. Aftermarket products will have to be certified by OCS, but will installers of aftermarket devices have to be certified, too? Will there be training standards for installers?

These are crucial questions. "We do have concerns that a program designed to certify installers may not be the best approach," says Aaron Lowe, senior VP of regulatory and government affairs, Auto Care Association. "We would like NHTSA to consider the possibility of dedicated or designated certification stations that could be used to test both professionally installed, and do it yourself (DIY) installed V2V communications."

There also are uncertainties as to whether NHTSA standards for radios will lock out aftermarket radios. Paul Schomburg, director, government & public affairs, Panasonic Corporation of North America, says rather than adopting 300 meters as the minimum transmission range and requiring that vehicles transmit the BSM to at least 300 meters in all directions (i.e. 360 degrees), Panasonic believes that NHTSA should specify an average range of at least 300 meters and allow vehicle manufacturers flexibility to determine range and coverage.

Aftermarket V2V devices will play a big role in determining how quickly autonomous vehicles become successful.

"Aftermarket installations, which will be an important element in accelerating DSRC deployment, will not enjoy the advantage of a complete system design of the antenna, antenna position and vehicle shape, making it difficult to ensure 300-meter coverage over 360 degrees," Schomburg explains. "NHTSA should allow vehicle and aftermarket device manufacturers flexibility to determine how best to meet the requirement of an average 300-meter communication range." □

COVERSTORY

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BUSINESS OUTLOOK CONFERENCE FOCUSES ON IMPACT OF NEW TECH, ECONOMIC TRENDS

BY **BRIAN ALBRIGHT** | CONTRIBUTING EDITOR

TECHNOLOGY and macroeconomic trends are set to create significant challenges and opportunities in the automotive repair and aftermarket parts distribution markets. The upcoming NACE Automechanika Chicago Business Outlook Conference (July 26 to 27) will help distributors, suppliers, shop owners, managers and other stakeholders in the service and collision repair markets better understand the forces that are going to affect their business in the coming years. Click here to register for the conference.

The inaugural event has a packed list of expert speakers who will hold forth on topics ranging from telematics and Big Data to important legislative and regulatory issues.

Connected vehicles to impact collisions

The auto industry is coming off a massive sales upswing driven by pent-up demand following the 2008 recession. That will have huge financial implications for the aftermarket and collision repair segments, says Dan Hearsch, director with financial firm AlixPartners.

In Hearsch's session, "Fundamentals of the U.S. Auto Market: The Industry After its Best Year," he'll examine what the ramifications are for the aftermarket repair segment now that auto sales appear to have passed their most recent peak.

"The collision and repair business does not correlate with auto sales," Hearsch says. "It's all about miles driven, and that's going up. The more miles people drive, the more maintenance they need and more crashes occur. There's a lot of cars coming off lease. That's positive for the market."

Technology, however, could have some significant impacts when it comes to autobody repair, particularly self-driving cars and driver assist technology. "Everyone jumps ahead to autonomy, but collision avoidance and advanced driver assistance systems are going to cause fender benders to decline while making repair costs go up," Hearsch says.

Due to advanced technology in vehicles, even minor

Photo: Choose Chicago

crashes can cause thousands of dollars of damage. It's harder for repair shops to afford the necessary training and equipment to repair the cars, and total losses will increase. "That will push out the mom and pop shops in favor of multi-shop operators (MSOs) and dealers who can afford to make those capital expenditures," Hearsch says.

Autonomous vehicles, however, might be driven more, which could lead to a greater demand for maintenance and mechanical repairs.

"But small collisions, which are the bread and butter of that industry, will go away and that's where the industry potentially could experience a lot of pain," Hearsch cautions.

Making cars smarter

Technology also will be the focus of conference speaker Dan Ricci, global automotive leader with IBM Cognitive Solutions. Cognitive technology solutions and machine learning can be combined to automate much of the traditional supply chain analysis that occurs, both improving efficiency and accuracy of the results. It can even help cars become smarter – collecting data and even diagnosing problems and alerting owners and repairers.

"Cognitive is the ability for machines to understand, reason, learn and engage, and that's different from what we've traditionally done with analytics, which was centered around building predictive models or mining data and extending human capability," Ricci says. "A machine can read infinite amounts of information. We've taught the machine to read that information, understand it, and help bring that information to an expert who can use it."

In his presentation – "Big Data and Analytics Impacting the Automotive Sector" – Ricci will explain how IBM is using its cognitive technology and famous Watson computer system to help solve specific business challenges.

Watson made headlines winning the TV game show "Jeopardy," but the question answering platform can do much more than answer trivia. In healthcare for example, Watson is evaluating reams of medical literature to help doctors make better clinical decisions. IBM has partnered with Manipal Hospitals in India to help identify personalized, evidence-based cancer treatments for patients.

Ricci also will discuss how automakers and suppliers are using cognitive solutions in their own operations and inside vehicles. The technology could improve everything from manufacturing processes to auto sales, he says.

In the automotive repair sector, cognitive technology could help technicians arrive at faster and more accurate diagnoses and repair recommendations. "A cognitive solution could leverage the experience of everybody who ever touched that type of vehicle and generate information about it," Ricci says. "You're not just getting the opinion of the one service technician in front of you, but every technician who has ever worked on that type of vehicle."

Cognitive technology also could help create a bridge between the different silos of activity at the major OEMs to help red flag design flaws earlier in the process. "A lot of these recall and safety issues we've seen in the auto industry could have been prevented if these different silos had been working together better," Ricci says.

OEMs also are turning to IBM and Watson to provide a better in-vehicle experience via services like GM's OnStar Go, which uses IBM's tech to learn drivers' preferences and offer automated parking spot locating and in-vehicle purchasing.

While IBM is working with telematics data to help identify safety issues for automakers, the company isn't targeting the autonomous driving space. "We will provide some high-definition map analytics capabilities that can support it, but strategically that's not where we're playing," Ricci says.

Telematics evolves

The NACE Automechanika Chicago Business Outlook Conference also will feature a panel discussion on telematics technology led by Greg Potter, executive manager and COO of Equipment and Tool Institute (ETI).

The panel will include Bob Stewart of General Motors, Bill Leisenring of Delphi/Control Tec, Innova's Mike Fitzgerald and Tim Morgan of Spanesi.

While other speakers will focus on both OEM and aftermarket efforts to drive business with remote diagnostics and other telematics features, Morgan will discuss collision industry challenges specific to pre- and post-scanning, as well the complexity of working on modern cars. "We'll be looking at driver assist technology and the difficulty that comes with repairing those cars," Potter says. "The marketplace didn't have to deal with those challenges previously."

With pre- and post-scanning requirements, Potter says the industry should push for the use of open, third-party tools. "We have a problem with the manufacturers saying repairers have to use their tools because the aftermarket tools aren't' good enough," Potter says. "They would be good enough if the manufacturers shared their data. Having shops buy scan tools for every make and model is going to be cost-prohibitive."

Potter says one key telematics challenge the aftermarket is going to have to grapple with moving forward will be efforts by OEMs to limit third-party telematics systems. "One of the things they are talking about is shutting off enhanced communication to the vehicle when it's moving, so the dongle-based system would not be very effective. You could still get the standardized J1979 messages, but any enhanced data for doing repairs other than testing – that would be turned off when the vehicle is moving."

The model the OEMs would like to use is one in which the data is pulled from the car to the manufacturers, and then licensed to any third parties who want to use it. "No one would have direct access to vehicle telematics except the manufacturers," Potter says.

Potter says ETI supports the type of vehicle-to-vehicle and vehicle-to-infrastructure framework being developed within ISO because it allows for secure communication with the vehicle. "We think we should use that for everything we're doing, including diagnostics," Potter says. "We don't want to see companies handcuffed to a licensing agreement with the manufacturer to access that data."

So far, OEMs appear to have an advantage over the aftermarket in terms of leveraging telematics to drive customers to the service center. "Telematics can help improve the way customers take care of their vehicles, but we're trying to keep a level playing field for the aftermarket," he says. □

VW CHARGES UP EV SUBSIDIARY

NETWORK OF CHARGING UNITS AIMS TO RAISE ELECTRIC VEHICLE ACCEPTANCE

BY **JAMES E. GUYETTE** | NEWS CORRESPONDENT

Volkswagen is charging ahead with a bold plan to electrify America – literally. In April VW unveiled its Electrify America subsidiary that is partnering with EVgo to create a network of more than 450 electric vehicle charging stations in 11 major metropolitan areas along with strategically placed fast-chargers along heavily traveled highways.

"Electrify America aims to establish one of the largest, most technically advanced and customer-friendly charging networks in the U.S.," declares divisional CEO Mark McNabb. "Our investments will make it easier and faster for millions of Americans to charge their electric vehicles while encouraging more drivers to explore and embrace electric driving."

This National ZEV Investment Plan coincides with the automaker's goal of annually producing a million EVs by 2025. A trio of EV concepts has recently been introduced at industry trade shows; a compact, an SUV and a van called the I.D. BUZZ that harkens back to the iconic VW Microbus.

TRENDS & MARKET ANALYSIS

"If it was ever possible to make a 100 percent-certain prediction of what the future will look like, it is achieved here," according to Klaus Bischoff, VW's chief designer. "The three prototypes of this new generation of zero-emission vehicles – I.D., I.D. BUZZ and I.D. CROZZ – mark the start of a design and technology revolution that is going to change individual mobility and the Volkswagen brand forever."

As multiple international automakers join VW in venturing into EVs, they are counting on driver interest to dramatically increase with the arrival of new and improved affordable models bearing better batteries capable of longer ranges.

Currently there are some 600,000 existing electric vehicles motoring along America's roads, sparking demand for parts, maintenance, repairs and accessory add-ons facilitated by personnel properly trained in EV knowledge. Opportunities additionally abound for aftermarket businesses eager to plug-in to the field of installing and servicing the charging machines that keep EVs running.

A market study by EVgo in conjunction with Vision Ridge Partners and Navigant Research finds that U.S. EV purchases in 2016 topped 2015's tally by more than 20 percent, and 2017 EV sales are anticipated to rise at a 75 percent clip. The report further estimates that American EV purchases could be up by as much as 500 percent by 2021.

Global EV acceptance is expected to annually increase by 61 percent through 2022, amounting to $342.5 billion in sales, according to a forecast from Markets and Markets. The

VOLKSWAGEN'S GOAL IS TO PRODUCE 1 MILLION ELECTRIC VEHICLES BY 2025.

study portends that EV charging unit placements will increase each year by nearly 30 percent, creating a $12.6 billion marketplace by 2022 amid a worldwide push to popularize EVs and make sure there are enough quick-filling electricity dispensers along the route.

In Canada, for example, dignitaries representing a governmental, public utility and private industry partnership cut the ribbon in May to open an inaugural Plug'n Drive Electric Vehicle Discovery Centre in Toronto "that will serve as an EV hub for consumers throughout Ontario and for visitors from around the world," explains Plug'n Drive President and CEO Cara Clairman. "We are providing a one-stop shop where consumers can explore and test-drive the latest EV models – alongside charging solutions at home and on the road."

"The EV industry is currently at a tipping point with longer-range and more affordable EVs available to consumers and a fast-charging infrastructure in place to facilitate long trips," reports Terry O'Day, EVgo's vice president of product strategy and market development.

Currently the company hosts the country's largest public fast-charging network with more than 900 fast-chargers positioned in 66 of the top-selling automotive marketplaces.

O'Day says that EVgo can deliver "exemplary service" because it retains ownership and the operational aspects while offering a variety of flexible driver purchasing options such as pay-as-you-go and low-cost membership plans, plus unlimited charging arrangements for owners of EVs produced by its automaker partners, including BMW, Nissan, Ford and General Motors along with VW.

"EVgo has taken another first step in next-generation high-power fast-charging that will advance the entire electric vehicle industry," he observes. "Our goal is to enable improved fast-charging service in the future, helping our automotive OEM partners provide even more convenient and appealing options to their customers."

Awareness and education

Electrify America's National ZEV Investment Plan stems from VW's court case regarding the diesel emissions issue. U.S. Special Counsel Robert S. Mueller III previously served as "settlement master" in the proceedings, under which VW agreed to invest $2 billion over the next 10 years in "a brand-neutral public awareness and education campaign to increase understanding about electric vehicles, charging availability and the benefits of electric mobility."

An initial outlay of $300 million has Electrify America, based in Reston, Va., implementing charging stations in metro regions such as Boston, Chicago, Denver, Houston, Miami, New York City, Philadelphia, Portland, Ore., Raleigh, N.C., Seattle and Washington, D.C.

Highway-side charging devices will be present in 39 states and have a high correlation with the EV Charging Corridors recently designated by the Federal government. Sites will be on-average about 66 miles apart with no more than 120 miles between them to accommodate shorter-range EVs.

EVgo is the project management company; the charging hardware is being provided by BTC Power and ABB. Enlisting effectively trained localized vendors to assist in executing the process is part of the efforts.

"ABB shares EVgo's vision of supporting an ever-growing population of EV drivers who demand the convenience of a fueling station experience," says Tarak Mehta, president of the firm's Electrification Products Division. "We're proud to be part of this industry-leading project with our high-power charging technology."

A huge Swedish-Swiss multinational corporation headquartered in Zürich, Switzerland, ABB (ASEA Brown Boveri) operates in some 100 nations. Under the auspices of ABB University it provides specialized instruction in the U.S. at its main training center in Auburn Hills, Mich. Affiliated facilities include:

- Jefferson State Community College and Robotics Technology Park in Alabama
- Vincennes University in Indiana
- Fox Valley Technical College in Wisconsin

Covering the company's extensive lineup of new and existing products, processes and technological advances for maintenance and operations personnel along with engineers and programmers, ABB also offers onsite education at your location and online instruction, noting that "we help you to increase the skill level and knowledge of your employees through training assessment programs including competence development, custom courseware and coaching services."

If interested in connecting with the charger installation and maintenance industry, "an obvious business model is to find opportunities and offer the EV user something to do, eat and buy during the 10 to 20 minutes the vehicle is charging," according to ABB spokesman Jimmy Håkansson. "In other words, the traditional services offered at the gas station will be relevant even after the electric vehicle revolution."

O'Day emphasizes the importance of having alternative non-waiting-around activities available at charging sites – 89 percent of EV drivers typically make a purchase when charging at a retail location, and 83 percent say they tend to shop more frequently at businesses that provide EV charging services.

Placing units where people park and go elsewhere is another key element. Multi-family residences, workplaces, fleet yards, municipal buildings, entertainment venues, athletic arenas, hotels, schools and healthcare facilities are among the suitable candidates.

EVgo is willing to make arrangements to install chargers at many types of businesses, says O'Day. And upon determining that a location is a good fit assistance is rendered for obtaining construction and signage permits, securing the appropriate electrical hookup, overseeing installation and maintenance, and delivering ongoing marketing and brand awareness programs. □

ELECTRONIC TRAINING FOR THE FUTURE

EVS OFFER GROWING NICHE FOR SHOPS WILLING TO INVEST IN TRAINING, EQUIPMENT

BY **JAMES E. GUYETTE** | NEWS CORRESPONDENT

As a pioneering trainer addressing parts and services for electric vehicles (EVs), in addition to educating civilian industry participants, Craig Van Batenburg has conducted numerous sessions for government employees and military personnel assigned to oversee an ever-expanding array of EV fleet applications that include both plug-ins and hybrids.

"It's been a little broader than I ever could have imagined," says Van Batenburg, CEO and co-owner with his wife Deb of the Automotive Career Development Center (ACDC) in Worcester, Mass.

ACDC has presented EV repair and engineering classes at American military bases all over the world, especially at Air Force facilities where research into new ground-based transportation technologies is an ongoing mission.

"We're worldwide with every branch" of the service, plus other government entities such as Homeland Security, he says, telling Aftermarket Business World that he has recently been contacted again by the U.S. Navy seeking his expertise. Some 15,000 technicians and other civilian, governmental and military commanders and managers have

BUSINESS OUTLOOK CONFERENCE

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SPEAKER SPOTLIGHT

FUNDAMENTALS OF THE U.S. AUTO MARKET

The U.S. auto market is at the top of a cycle after experiencing its best year by unit sales ever in 2016. Dan Hearsch, director of AlixPartners, will discuss recent sales and economic trends in the industry, and provide some commentary on the near-term outlook for new and used vehicle sales, as well as key factors impacting the service and aftermarket segments of the industry.

Read more about this

SOME 15,000 TECHNICIANS AND OTHER CIVILIAN, GOVERNMENTAL AND MILITARY COMMANDERS AND MANAGERS HAVE RECEIVED EV INSTRUCTION FROM CRAIG VAN BATENBURG IN MORE THAN SEVEN COUNTRIES AND 46 STATES.

received EV instruction from Van Batenburg in more than seven countries and 46 states.

He recently answered a series of questions about aftermarket education and opportunities within the EV segment:

Q: Aren't most, if not all, EVs still under dealer warranties?

A: No. Most warranties vary in their length and mileage for all types of cars.

Q: Then there are sales opportunities available now? How do you assess the level of acceptance by aftermarket businesses gearing up to provide EV parts and services?

A: It depends on who you ask. Midwesterners don't see it coming; if you ask a supplier on the East Coast or West Coast they totally get it – they risk being left behind their competitors if they don't learn about this.

Q: How soon do you anticipate that the aftermarket can glean significant sales within the EV segment?

A: No one's looking for a date; they're not even flirting with us. It is a market that is going back to the dealership for repairs, about 92 percent of the business. ACDC exists to keep independent shops in business, and if you don't work hard at it you'll remain at 8 percent of EV parts and services sales.

Q: So now is the time to seek out EV training?

A: Yes! The initial training is 100 hours, and the longer you wait the steeper the climb. Three years from now it will be 130 hours of training – every year you wait it takes longer to get caught up with the technology.

Q: What are some of the aftermarket EV components that you see as having the most sales potential?

A: Batteries are No. 1. After batteries, you have high-voltage parts that fail; inverters, AC-DC converters, electric motors and regenerative braking components. It's like a four-channel ABS system, and a lot of them are getting old. Hybrid cars have gas engines, so they have every problem that gasoline cars have.

Q: Given the dominance of dealer service centers, is it worthwhile for independent repairers to implement EV repairs and the accompanying marketing measures at this point?

A: Yes! It is wide open for the smart independent shop. To offer repairs to electric car owners you should offer free electric car charging. That will bring people to your door.

Q: What are some of the key upgrades that shop owners need to make for accommodating EV repairs?

A: You have to get some good scan tools, safety equipment, training obviously, and if you want to work on pure electric cars you need a charger and a battery lift fixture. The battery is so very heavy that you need the lift fixture for the safety of your employees.

Q: What are some of the cost figures involved with this?

A: If you already have a well-equipped shop it's under $6,000 for working on hybrids. It takes $5,000 to train a single technician over the course of a year. We recommend that two technicians are trained at a time. A technician may go on vacation or leave for another job, and then you'd be stuck.

Q: Do you offer training for owners, managers and counter people at warehouses and retailers?

A: We provide classes onsite, online and at our training center in Worcester, Mass., and I've written two books.

Q: Do you anticipate much of a DIYer market for EV parts?

A: There's a market out there for DIYers. If you go on YouTube there are videos of people rebuilding battery packs. We're engaged with DIY EV owners – helping them find an aftermarket shop (to provide expert advice and assistance). When I had my own shop, I worked with a lot of do-it-yourselfers: "Bring your car in and I'll finish it for you."

If you own a parts store you can put some EV stuff on the shelf and see if it sells. But once you start placing them you should keep the parts in stock. A customer is not going to wait three days for a part. And you need to advertise that you have them. I've never walked into a parts store yet that has a sign that says, "Hybrid Parts Here."

Q: Do you offer training for fuel cell vehicles?

A: Yes. We've taught a few classes on fuel cells already. Right now, though, fuel cells are so new that you wouldn't replace a single component; you'd replace an entire system, and there are big warranties on these systems. Check back in a year or two and we'll see what is happening. □

TAX PROPOSALS DRIVE IMPORTERS (BAT)TY

THE PROPOSED BORDER ADJUSTMENT TAX MIGHT INCREASE THE COST OF PARTS, VEHICLES

BY **BRIAN ALBRIGHT** | CONTRIBUTING EDITOR

With all the political intrigue and in-fighting happening in Washington, D.C., one piece of the House Republican tax blueprint that has split the party into two camps may have slipped under most readers' radars: the proposed border adjustment tax (BAT) on imports.

The BAT, which would impose a 20 percent tax on imports as a replacement for the current corporate income tax, has the support of House Speaker Paul Ryan and other Republicans, but is opposed by others in the party as well as several major, import-heavy industries – including automotive manufacturers, dealers and parts suppliers. As of mid-June, the Trump administration's tax reform proposal did not include a BAT.

The BAT was the subject of a recent roundtable sponsored by the Motor Equipment Manufacturers Association (MEMA), with economists and industry representatives sparring over the actual effect this destination-based cash flow tax would have.

TRENDS & MARKET ANALYSIS

Under the House proposal, the current corporate income tax would be abolished to incentivize companies to return overseas profits to the U.S. to be reinvested. The BAT would impose a 20 percent tax on all imported goods. Exports would be exempt from taxation. The House also wants to eliminate corporate interest deductibility.

That poses a big problem for importers, says Xavier Muscgat, senior partner and managing director of the Detroit office of Boston Consulting Group. Muscgat noted that international trade in the vehicle industry is relatively balanced. The company examined the potential impact of the BAT on auto parts and vehicles, and found that it would increase costs for consumers without encouraging companies to begin manufacturing more parts or vehicles in the U.S.

"The U.S. market is at peak capacity," Muscgat said. "The only way this plan would repatriate jobs is if manufacturers shift capacity from one plant to another, and in the U.S. OEM capacity is at 100 percent utilization. They don't have the space to create new jobs at those plants. They would have to build new plants," which is unlikely given the cost.

According to Muscgat's figures, the BAT would add as much as $4,000 to the cost of some vehicles, and the average cost of a car in the U.S. would increase by $1,800 across all manufacturers. Because only domestic products would be deductible as a cost of goods sold, retail operations would also face higher tax bills.

"That' a significant tax that would be paid by consumers," Muscgat said. And although that increase wouldn't dramatically reduce the number of cars sold, consumers would begin "decontenting" cars by purchasing few

"THE BAT, WHICH WOULD IMPOSE A 20 PERCENT TAX ON IMPORTS AS A REPLACEMENT FOR THE CURRENT CORPORATE INCOME TAX, HAS THE SUPPORT OF HOUSE SPEAKER PAUL RYAN, BUT IS OPPOSED BY SEVERAL MAJOR, IMPORT-HEAVY INDUSTRIES – INCLUDING AUTOMOTIVE MANUFACTURERS, DEALERS AND PARTS SUPPLIERS.

features and accessories. Boston Consulting estimates there would be an 8 percent decrease in add-on features, resulting in a loss of 35,000 to 70,000 jobs in the supplier base.

The argument in favor of the BAT is that both corporations and consumers (under the proposal) would be paying lower taxes, and the BAT would positively affect the exchange rate so that the dollar would appreciate.

The BAT is different than a traditional value-added tax (VAT,) which is the approach taken in many other countries, in that it allows deductions for wages (which traditional VATs do not). It is a consumption tax, so all goods consumed in the U.S. would be taxed at the same rate, regardless of where they were produced.

"The cleanest thing to do would be a pure VAT system, but the problem is that's a political non-starter for Republicans," said Warren Maruyama, partner at Hogan Lovells and former general counsel for the U.S. Trade Representative. That's because many Republicans are opposed to any plan that creates new tax revenue streams.

The idea is that the BAT would cause a large appreciation of the dollar, such that the negative affect on imports would be nullified. However, if the dollar doesn't appreciate significantly, then prices would rise (as would, theoretically, wages). However, that still means that both manufacturers and consumers would pay higher prices. If the anticipated currency adjustment does not happen as quickly as hoped or isn't as high as required, the BAT could cause significant economic disruption.

"If you are really exposed, this will be incredibly disruptive," said Chad Brown, senior fellow at the Peterson Institute for International Economics. "We've looked at other countries that have implemented value-added tax regimes to see how long and to what channels these changes happen. [Currencies] do tend to move over time, but it's not immediate. No country has ever done the sort of big change we are proposing here."

"This is a new tax that is going to be passed on to the consumer," said Cody Lusk, president of the American International Automobile Dealers Association. "It would be a significant cost and we have real concerns about that."

Another problem is that the BAT may not pass muster with the World Trade Organization (WTO).

Export-heavy industries favor the Border Adjustment Tax (BAT), and have formed a lobbying group called the American Made Coalition.

"The WTO does allow border tax adjustments, but they are limited to indirect taxes like a VAT or sales tax," Maruyama said. "This is not a true VAT. If you parse it, it's an effort to cram border adjustability into corporate income tax reform. That does not work under WTO rules. There would be challenges in the WTO to this as an illegal export subsidy, and we could find ourselves facing a humongous retaliation bill."

Export-heavy industries favor the BAT, and have formed a lobbying group called the American Made Coalition. Brian Reardon, an advisor to the group and a former special assistant for economic policy and staff member of the National Economic Council under President George W. Bush also was on the panel.

"What they are imposing is a cash flow tax. It's like a VAT, only better," Reardon said. "There's a deduction for labor, so you don't double tax labor."

Reardon argued that the BAT would make it easier to export cars from the U.S. to countries like Germany and Japan. Other panelists pointed out that taxes were only a small part of why those countries don't import from the U.S.

"And we're operating at capacity here, so I don't know where all those exported cars would come from," Cody added.

"The BAT will increase the price of American vehicles across the line … at a time when affordability is a huge issue here," Cody added. "This is not a tax cut, it's a brand new tax that shifts the burden from U.S. corporations who will pay no net tax under this, and gets shifted onto consumers, who will have everything they buy cost them more."

Exactly how the BAT will play out, if adopted, is unclear because no other country has adopted an identical policy. The expected currency adjustment, for example, could take several years – which could be fatal for particularly price-sensitive importers in some industries.

According to Gordon Gray, director of fiscal policy with the American Action Forum, the debate has been muddied somewhat because the effect of the BAT will happen in concert with other portions of the House blueprint. "If you take the border adjustment in isolation, all else being equal, you will have an offset in currency appreciation," he said. "You plow that into the blueprint, and you have incentives going in different ways that will move the dollar to some degree. We just don't know what way that is right now."

Even if the BAT passes through the House despite some Republican opposition (like the healthcare bill), it may be dead-on-arrival in the Senate, and President Trump's position appears to be anti-BAT.

"I'm not the smartest guy in the room, but I can do math," Lusk said. "I haven't heard one senator come out and say this is a great idea." □

TECHNOLOGY, AUTO SECTORS CONVERGE

THE RACE TO AUTONOMOUS VEHICLES PITS AUTO SUPPLIERS VS. HIGH-TECH COMPANIES

BY **BRIAN ALBRIGHT** | CONTRIBUTING EDITOR

Tech giant Intel Corp. acquired Mobileye N.V., a leader in the development of the computer vision and machine learning solutions used for advanced driver assistance systems (ADAS) and autonomous self-driving vehicle solutions. The deal, completed in March, was valued at approximately $15.3 billion.

Intel made this move to position itself as a leader in the autonomous vehicle space, where both automotive OEMs and tech firms like Google are already jockeying for position. Intel estimates that the vehicle systems, data, and service market opportunity will reach $70 billion by 2030. Bain & Company puts the autonomous vehicle market at $25 billion annually by 2025.

The new Intel autonomous driving organization will combine both companies' technology, and will be led by Professor Amnon Shashua (Mobileye's co-founder and CTO) from its headquarters in Israel.

TRENDS & MARKET ANALYSIS

"This acquisition is a great step forward for our shareholders, the automotive industry and consumers," said Brian Krzanich, Intel CEO. "Intel provides critical foundational technologies for autonomous driving including plotting the car's path and making real-time driving decisions. Mobileye brings the industry's best automotive-grade computer vision and strong momentum with automakers and suppliers. Together, we can accelerate the future of autonomous driving with improved performance in a cloud-to-car solution at a lower cost for automakers."

Increased activity around autonomous vehicles, as well as growth in the electric vehicle segment and consumer interest in converged infotainment and navigation systems, means that companies like Intel, Apple, Google, and others are becoming a larger part of the automotive supply chain. They also are trying to get a piece of what could be a very lucrative business based on the data generated by these new types of vehicles.

The convergence of tech and automotive suppliers is being driven by two trends. Technology companies like Intel are looking for new outlets for their technology as their traditional, legacy computer business have slowed down. At the same time, automotive manufacturers and suppliers have been hard pressed to keep up with the fast pace of development when it comes to new mobile technology and self-driving car solutions.

Intel's Krzanich, in fact, recently spoke at the L.A. Auto

ELECTRONICS ACCOUNT FOR AS MUCH AS 30 PERCENT OF A NEW VEHICLE'S COST, AND THE ROLE OF SOFTWARE IS RAPIDLY EXPANDING IN VEHICLES. AS A RESULT, COMPANIES LIKE INTEL, APPLE, GOOGLE AND OTHERS ARE BECOMING A LARGER PART OF THE AUTOMOTIVE SUPPLY CHAIN.

Show where he gave a speech entitled "Data is the New Oil."

"My message was simple: automobiles and the automotive industry are increasingly driven by data and computing," Krzanich said in a statement after the Mobileye acquisition. "The saying 'What's under the hood' will increasingly refer to computing, not horsepower.

"At four terabytes of data per day, the average autonomous car will put out the data equivalent of approximately 3,000 people," he continued. "Put just one million autonomous vehicles on the road and you have the data equivalent of half the world's population. This massive amount of data requires all of Intel's assets to provide the cost-effective high-performance solutions our customers need. The addition of Mobileye to our family provides the data path to our computing solutions becoming the intelligent set of eyes that will allow a vehicle to see and define the world around it."

A challenging market

Electronics account for as much as 30 percent of a new vehicle's cost, and the role of software is rapidly expanding in vehicles. As tech companies move closer to vehicle production, they do face some challenges. Product development cycles are much longer in the automotive space than in technology – years compared to weeks, in some cases.

"The level of performance required is much higher in automotive than it is in consumer electronics," said David Leiker, senior research analyst, global auto and truck, for Robert W. Baird & Co. "When there is a new technology, the auto industry is going to evaluate that for a year or more to make sure it will do what they think it will do, so there is a contract that is out 18 to 24 months before a car even goes into production."

The second challenge Leiker sees is that technology systems have to be automotive grade in order to survive extreme operating temperatures and vibration, and that can be in place for as long as 10 years.

That's why technology companies typically need some sort of bridge between their market and automotive, and some Tier 1 suppliers have emerged to fill that role. "We've long positioned Delphi as just as much of a technology company as anyone in Silicon Valley," Leiker said. "They serve as that type of bridge between tech companies and being a Tier 1 supplier that can deliver a part to the assembly line 60 minutes before it goes into the car."

Last year, Samsung Electronics announced it would buy Harman, a U.S.-based infotainment/audio supplier, for $8 billion. The majority of Harman's revenue (65 percent) comes from supply components and software for auto manufacturers, including navigation, infotainment, telematics and driver assistance solutions.

Samsung also is rumored to be in talks to acquire Magneti Marelli, a high-tech component company that is a subsidiary of Fiat Chrysler. Parts maker Denso also made an investment in Ibiden, an electronics company, to develop products for electric vehicles. Bosch and Daimler are teaming with Intel rival NVIDIA on another autonomous vehicle project.

Intel also has formed partnerships with BMW and Delphi Automotive, as well as acquiring a 15 percent stake in digital mapping company Here. In fact, the Mobileye acquisition grew out of a partnership between the two companies and BMW to deploy 40 autonomous cars in the U.S. and Europe this year. In May, Delphi officially became part of the BMW/Intel/Mobileye autonomous driving platform project. The company will help integrate the BMW/Intel solution into OEM vehicle architectures, as well as providing hardware components such as sensors.

"This is a great opportunity for Delphi to use its technical depth and experience with automated driving and electrical architecture to help the cooperation develop and deploy at scale. Our close working relationship with all three partners serves as a solid foundation for a success," said Kevin Clark, president and CEO of Delphi.

There is significant opportunity for traditional suppliers to both leverage their own tech as well as forge partnerships with these newer entrants and be well positioned as the automotive tech market develops.

"We cannot speak regarding specific companies or to a specific instance, but there is no doubt the mobility industry is on the cusp of the biggest changes it has seen in 100 years," said Steve Handschuh, president and CEO of the Motor Equipment Manufacturers Association (MEMA). "Technology is emerging quickly, and MEMA's members are poised to meet the demand for vehicle-to-vehicle communications, advanced safety systems, and automated driving technology. MEMA's members are leveraging technology to become an economic engine driving growth in jobs, fuel economy, and – perhaps most important – safety."

One area where tech companies and OEMs will come to loggerheads is in data ownership and privacy. Automakers have long tried to keep a firm grasp on operational and customer data generated by vehicles. Technology companies, on the other hand, tend to strive for open access.

"There are many automakers, for example, that won't do business with Google because their contracts require data sharing," Leiker said. "They are trying to maintain the privacy of the customer and derive value from that relationship. They also have the desire to monetize that data. They aren't going to allow Google or anyone else to take that data and use it for themselves." □

TECHNICIAN ATTITUDE STUDY

QUALITY COUNTS

QUALITY, AVAILABILITY TOP LIST OF REASONS TECHNICIANS BUY A SPECIFIC PART

BY **BRUCE ADAMS** | MANAGING EDITOR

QUALITY and availability are the two reasons technicians cited most often as to why they buy a specific aftermarket product, according to the 2017 *Aftermarket Business World* Technician Attitude Study.

Those two items were mentioned as their reasons for buying a specific product in six of the seven product categories surveyed. Quality was listed as the top reason for buying in three categories – brakes, chassis parts and wiper blades. Availability was the top reason cited in one category – fuel injectors, but was a close second in three other categories – chassis parts, shocks and struts, and wiper blades.

Also appearing as important reasons for buying a specific product were brand, warranty and compatibility.

Technicians most often buy their aftermarket parts from auto parts retailers and warehouse distributors, according to the study They also tend to buy often from jobbers and auto dealerships. Auto parts retailers were the purchasing source named the most often in five categories – brakes, chassis parts, gaskets, shocks and struts, and wiper blades.

Technicians said auto parts retailers are their preferred purchasing channel in five of the seven categories surveyed – brakes, chassis parts, gaskets, shocks and struts, and wiper blades. Warehouse distributors finished as the second most preferred supplier in three categories – brakes, shocks and struts, and wiper blades; and as the most preferred supplier of auxiliary lighting. Jobbers were the preferred supplier of fuel injectors, according to the study.

The reason technicians say they prefer a certain purchasing channel was most often due to parts availability, with good relationships and fast delivery also frequently mentioned.

Price was only mentioned three times as being one of the preferred reasons that a supplier is selected, and it came in a distant third or fourth in all three mentions.

Methodology: The *Aftermarket Business World* 2017 Technician Attitude Study was fielded to readers of sister publication *Motor Age* via email. Study results are intended to show general industry trends, not statistical certainties. □

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Photo: Thinkstock.com / Sergei Gontsarov

SOUTH

SOUTH

STUDY

TECHNICIAN ATTITUDE STUDY

QUALITY COUNTS

AUXILIARY LIGHTING

Purchasing source

Warehouse distributor	56%
Auto parts retailer	22%
Internet	11%
Jobber	56%
Dealership	11%

Preferred purchasing channel

Warehouse distributor	44%
Auto parts retailer	11%
Dealership	11%
Jobber	22%

Primary reason for preferred supplier

Good relationship	33%
Parts availability	11%
Price	11%
Fast delivery	22%

Margins

55% of technicians report they DO NOT know how much over the jobber they pay.

What techs know they pay

1-5%*	33%
6-10%*	33%
11-15%*	0%
16-25%*	33%
More than 25%	0%

What techs think they pay

1-5%*	0%
6-10%*	43%
11-15%*	29%
16-25%*	14%
More than 25%	14%

*Percent over jobber

45% of technicians never give recommendations for buying a specific brand of auxiliary lighting.

Amount of auxiliary lighting that is returned monthly

None	67%	5-9%	0%
1-2%	11%	10% +	0%
3-4%	11%	Don't know	11%

90% do not purchase **auxiliary lighting** from a dealer.

Reasons:

Too expensive	38%
Aftermarket products as good as (or better than) OEM	50%
Limited stock/don't stock	50%

Frequency of supplier contact

Once a week	0%
Every two weeks	0%
Once a month	11%
Every three months	11%
Every six months	11%
Yearly	11%
No contact necessary	56%

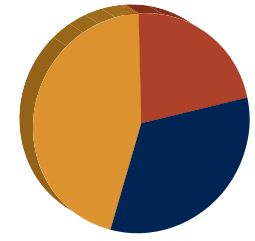
Brand vs. supplier loyalty

If a primary supplier of batteries replaced a brand with another of like quality, a tech would:

Change suppliers to continue purchasing original brand 22%

Keep primary supplier and purchase new brand 78%

National brands vs. private label purchases



Reason for buying specific auxiliary lighting

Compatibility	14%
Warranty	11%
Quality	11%

Internet ordering frequency

0-10% of the time	80%
11-25% of the time	10%
25-50% of the time	10%
51-99% of the time	0%
All of the time	0%

Some chart totals exceed 100 percent because respondents could provide multiple answers. Other charts do not reach 100 percent because all answer options are not represented.

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STUDY

TECHNICIAN ATTITUDE STUDY

QUALITY COUNTS

BRAKES

Purchasing source

Warehouse distributor	43%
Auto parts retailer	67%
Direct from manufacturer	15%
Jobber	41%
Dealership	26%

Preferred purchasing channel

Warehouse distributor	19%
Auto parts retailer	44%
Direct from manufacturer	7%
Jobber	19%

Primary reason for preferred supplier

Good relationship	20%
Parts availability	33%
Carries specific brands	17%
Fast delivery	15%

Margins

71% of technicians report they DO NOT know how much over the jobber they pay.

What techs know they pay

1-5%*	19%
6-10%*	31%
11-15%*	19%
16-25%*	25%
More than 25%	6%

What techs think they pay

1-5%*	22%
6-10%*	31%
11-15%*	19%
16-25%*	17%
More than 25%	11%

*Percent over jobber

47% of technicians always give recommendations for buying a specific brand of brakes.

Amount of brakes that are returned monthly

None	46%	5-9%	0%
1-2%	46%	10% +	0%
3-4%	0%	I don't know	8%

53% purchase **brakes** from a car dealership.

Reasons:

OEM form, fit, function	72%
Only place available	52%
Customer request	41%

Frequency of supplier contact

Once a week	9%
Every two weeks	2%
Once a month	9%
Every three months	9%
Every six months	4%
Yearly	4%
No contact necessary	62%

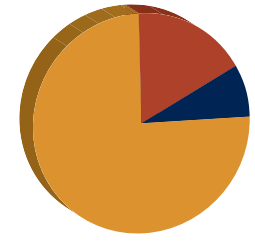
Brand vs. supplier loyalty

If a primary supplier of batteries replaced a brand with another of like quality, a tech would:

Change suppliers to continue purchasing original brand 43%

Keep primary supplier and purchase new brand 57%

National brands vs. private label purchases



Reason for buying particular brakes

Price	40%
Performance	50%
Quality	58%

Internet ordering frequency

0-10% of the time	89%
11-25% of the time	4%
25-50% of the time	2%
51-99% of the time	3%
All the time	2%

Some chart totals exceed 100 percent because respondents could provide multiple answers. Other charts do not reach 100 percent because all answer options are not represented.

WHICH BRAKE PAD STOPS YOU UP TO 50 FEET SOONER?*

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First, we put new Wagner OEX brake pads for Pickups, SUVs and CUVs through rigorous 3rd party validation. Then we got them into the hands (and vehicles) of top techs around the country. The verdict? Wagner OEX changes the game for braking performance.

- **Stops up to 50 feet sooner than other leading pads***
- **Lasts up to 2x longer†**
- **Custom-designed to your vehicle's unique brake system**

#partsmatter

Explore the Science Behind the Stop at
wagnerbrake.com

WAGNER® | OEX

MADE IN USA OF U.S. AND IMPORTED ★ PARTS ★

* Results based on 60 mph post-fade performance testing, conducted by Link Engineering Company, comparing Wagner OEX brake pads to competitors' brake pads on the 2014 Ford F-150, 2011 Toyota RAV4 and 2013 Chevrolet Tahoe.

† Results based on internal testing comparing Wagner OEX to other Wagner offerings.

FEDERAL-MOGUL MOTORPARTS

STUDY

TECHNICIAN ATTITUDE STUDY

QUALITY COUNTS

CHASSIS

Purchasing source

Warehouse distributor	39%
Auto parts retailer	65%
Direct from manufacturer	15%
Jobber	41%
Dealership	35%

Preferred purchasing channel

Warehouse distributor	13%
Auto parts retailer	46%
Dealership	9%
Jobber	24%

Primary reason for preferred supplier

Good relationship	31%
Parts availability	29%
Carries specific brands	16%
Fast delivery	13%

Margins

79% of technicians report they DO NOT know how much over the jobber they pay.

What techs know they pay

1-5%*	22%
6-10%*	23%
11-15%*	33%
16-25%*	22%
More than 25%	0%

What techs think they pay

1-5%*	29%
6-10%*	14%
11-15%*	21%
16-25%*	29%
More than 25%	7%

*Percent over jobber

36% of technicians always give recommendations for buying a specific brand of chassis parts.

Amount of chassis parts that are returned monthly

None	49%	5-9%	0%
1-2%	39%	10% +	0%
3-4%	5%	I don't know	7%

76% purchase **chassis parts** from a car dealer.

Reasons:

Only place available	75%
OEM form, fit, function	50%
Customer request	22%

Frequency of supplier contact

Once a week	7%
Every two weeks	7%
Once a month	4%
Every three months	9%
Every six months	5%
Yearly	9%
No contact necessary	59%

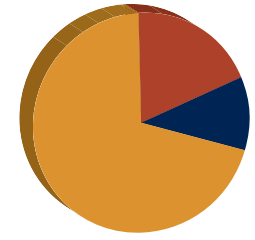
Brand vs. supplier loyalty

If a primary supplier of batteries replaced a brand with another of like quality, a tech would:

Change suppliers to continue purchasing original brand 38%

Keep primary supplier and purchase new brand 62%

National brands vs. private label purchases



Reason for buying a particular chassis part

Availability	44%
Warranty	42%
Quality	58%

Internet ordering frequency

0-10% of the time	88%
11-25% of the time	5%
25-50% of the time	2%
51-99% of the time	5%
All of the time	0%

Some chart totals exceed 100 percent because respondents could provide multiple answers. Other charts do not reach 100 percent because all answer options are not represented.

Only MOOG® ball studs are proven to be OE or better*.

MAS, Centric and Mevotech Supreme claim "OE or better" but when put through independent metallurgical testing, they failed.

BALL STUDS TESTED THAT CLAIM TO BE OE OR BETTER

	Ford® F-150	Chevy® Silverado	Toyota® Camry
MOOG	✓	✓	✓
MAS	✗	✗	✗
Centric	✗	✗	N/A
Mevotech Supreme	✗	✗	✗

When ball studs fail, bad things happen.

That's why at MOOG we invest so much time and money to test the performance of MOOG and other chassis brands. MOOG ball studs meet or exceed the OE standard. The difference is huge because inferior chassis parts may put your customers, and your reputation, at risk.

Don't take chances.
Make it MOOG every time – the professionals' choice.

moogparts.com *#partsmatter*

MOOG®
Go the extra mile.™

*Results shown are based on independent testing conducted by St. Louis Test Laboratories, Inc. and analyzed by Anderson & Associates, Inc. on studs in ball joints for the 2007 Toyota Camry, 2013 Ford F-150 and 2007 Chevrolet Silverado in accordance with ASTM 415-15, ASTM E340-15, and ASTM E18-16 standard test methods. MOOG, MAS, Mevotech Supreme and Centric ball joint stud metallurgy was compared to the OE (original equipment) stud metallurgy. Stud metallurgy was analyzed by evaluating chemical composition, heat treatment, shot peening and the impact of those factors on stud fatigue life.

FEDERAL-MOGUL MOTORPARTS

STUDY

TECHNICIAN ATTITUDE STUDY

QUALITY COUNTS

FUEL INJECTORS

Purchasing source

Warehouse distributor	40%
Auto parts retailer	35%
Direct from manufacturer	30%
Jobber	45%
Dealership	55%

Preferred purchasing channel

Warehouse distributor	15%
Auto parts retailer	25%
Dealership	15%
Jobber	30%

Primary reason for preferred supplier

Good relationship	10%
Parts availability	40%
Carries specific brands	20%
Fast delivery	20%

Margins

89% of technicians report they DO NOT know how much over the jobber they pay.

What techs know they pay

1-5%*	0%
6-10%*	50%
11-15%*	0%
16-25%*	0%
More than 25%	50%

What techs think they pay

1-5%*	12%
6-10%*	31%
11-15%*	19%
16-25%*	19%
More than 25%	19%

*Percent over jobber

60% of technicians always give recommendations for buying a specific brand of fuel injector.

Amount of fuel injectors that are returned monthly

None	84%	5-9%	0%
1-2%	11%	10% +	0%
3-4%	5%	I don't know	0%

67% purchase **fuel injectors** from a car dealer.

Reasons:

OEM form, fit, function	57%
Only place available	43%
For OEM brand name	36%

Frequency of supplier contact

Once a week	5%
Every two weeks	0%
Once a month	0%
Every three months	10%
Every six months	10%
Yearly	5%
No contact necessary	70%

Brand vs. supplier loyalty

If a primary supplier of batteries replaced a brand with another of like quality, a tech would:

Change suppliers to continue purchasing original brand 26%

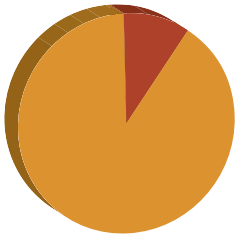
Keep primary supplier and purchase new brand 74%

National brands vs. private label purchases

90% National

0% Private

10% Both



Reason for buying particular fuel injectors

Quality	46%
Warranty	46%
Availability	50%

Internet ordering frequency

0-10% of the time	95%
11-25% of the time	0%
25-75% of the time	0%
76-99% of the time	5%
All of the time	0%

Some chart totals exceed 100 percent because respondents could provide multiple answers. Other charts do not reach 100 percent because all answer options are not represented.

Nobody does **NEW** like **Standard.**

BIGGER, BETTER DIESEL.

NEW, NOT REMANUFACTURED
OE production fuel injectors for popular Navistar, Maxxforce, and Ford® Power Stroke® diesel engines. FJ927NX, just one of the thousands of genuine diesel parts available from Standard.

STANDARD® Diesel

StandardDieselParts.com

STUDY

TECHNICIAN ATTITUDE STUDY

QUALITY COUNTS

GASKETS

Purchasing source

Warehouse distributor	38%
Auto parts retailer	48%
Direct from manufacturer	21%
Jobber	45%
Dealership	48%

Preferred purchasing channel

Warehouse distributor	17%
Auto parts retailer	34%
Dealership	17%
Jobber	21%

Primary reason for preferred supplier

Good relationship	14%
Parts availability	41%
Carries specific brands	14%
Fast delivery	17%

Margins

79% of technicians report they DO NOT know how much over the jobber they pay.

What techs know they pay

1-5%*	43%
6-10%*	29%
11-15%*	14%
16-25%*	0%
More than 25%	14%

What techs think they pay

1-5%*	21%
6-10%*	26%
11-15%*	21%
16-25%*	21%
More than 25%	11%

*Percent over jobber

41% of technicians always give recommendations for buying a specific brand of gasket.

Amount of gaskets that are returned monthly

None	67%	5-9%	0%
1-2%	18%	10% +	0%
3-4%	11%	I don't know	4%

82% purchase **gaskets** from a car dealership.

Reasons:

OEM form, fit, function	65%
Only place available	61%
For OEM brand name	27%

Frequency of supplier contact

Once a week	14%
Every two weeks	0%
Once a month	10%
Every three months	4%
Every six months	0%
Yearly	0%
No contact necessary	72%

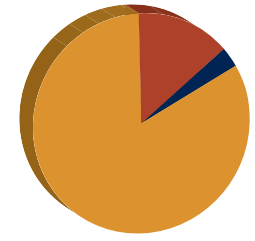
Brand vs. supplier loyalty

If a primary supplier of batteries replaced a brand with another of like quality, a tech would:

Change suppliers to continue purchasing original brand 39%

Keep primary supplier and purchase new brand 61%

National brands vs. private label purchases



Reason for buying a particular gasket

Brand	62%
Availability	41%
Quality	59%

Internet ordering frequency

0-10% of the time	86%
11-25% of the time	11%
25-75% of the time	0%
76-99% of the time	4%
All of the time	0%

Some chart totals exceed 100 percent because respondents could provide multiple answers. Other charts do not reach 100 percent because all answer options are not represented.

“There’s just no other gasket brand.”

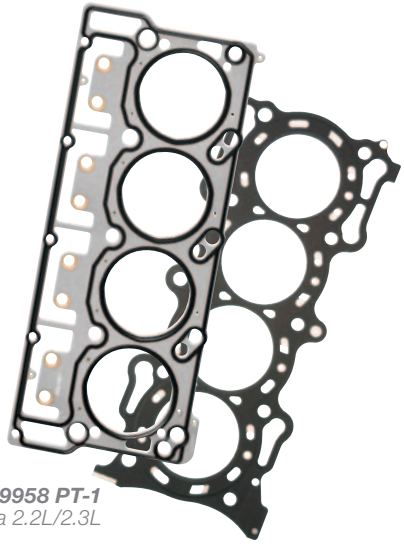
FelPro.com #PartsMatter

“ONLY FEL-PRO®

has the coverage I need to service the vehicles I work on, whether it’s European, Asian or domestic.”

Trust Fel-Pro® for industry-leading coverage and assurance of a complete sealing solution for every repair.

FEL-PRO®
THE GASKETS PROFESSIONALS TRUST™



26374 PT
Power Stroke 6.0L

9958 PT-1
Honda 2.2L/2.3L

Visit **FelPro.com** to learn more about our problem-solving Power Stroke® head gasket!

FEDERAL-MOGUL MOTORPARTS

STUDY

TECHNICIAN ATTITUDE STUDY

QUALITY COUNTS

SHOCKS & STRUTS

Purchasing source

Warehouse distributor	50%
Auto parts retailer	61%
Internet	14%
Jobber	41%
Dealership	30%

Preferred purchasing channel

Warehouse distributor	25%
Auto parts retailer	43%
Direct from manufacturer	7%
Jobber	16%

Primary reason for preferred supplier

Good relationship	20%
Parts availability	36%
Price	14%
Fast delivery	23%

Margins

67% of technicians report they DO NOT know how much over the jobber they pay.

What techs know they pay

1-5%*	14%
6-10%*	43%
11-15%*	14%
16-25%*	29%
More than 25%	0%

What techs think they pay

1-5%*	14%
6-10%*	34%
11-15%*	24%
16-25%*	21%
More than 25%	7%

*Percent over jobber

44% of technicians always give recommendations for buying a specific brand of shocks & struts.

Amount of shocks & struts that are returned monthly

None	60%	5-6%	5%
1-2%	28%	10% +	2%
3-4%	3%	I don't know	2%

56% purchase **shocks & struts** from a dealer.

Reasons:

Only place available	64%
OEM form, fit, function	56%
Customer request	36%

Frequency of supplier contact

Once a week	0%
Every two weeks	0%
Once a month	25%
Every three months	16%
Every six months	11%
Yearly	21%
No contact necessary	27%

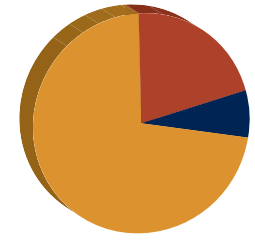
Brand vs. supplier loyalty

If a primary supplier of batteries replaced a brand with another of like quality, a tech would:

Change suppliers to continue purchasing original brand 47%

Keep primary supplier and purchase new brand 53%

National brands vs. private label purchases



Reason for buying particular shocks & struts

Brand	55%
Availability	47%
Quality	47%

Internet ordering frequency

0-10% of the time	78%
11-25% of the time	7%
25-50% of the time	5%
51-99% of the time	10%
All of the time	0%

Some chart totals exceed 100 percent because respondents could provide multiple answers. Other charts do not reach 100 percent because all answer options are not represented.

Get the right [re]man for the job

Ask for Arnott.

Remanufactured in the USA, each Arnott strut is thoroughly tested, cleaned, repainted and then rebuilt with a new name-brand multi-ply air spring along with heavy-duty crimping rings, bump stops, long-lasting seals and new wiring harness. Arnott is so confident in its remanufactured struts that it backs them with a Limited Lifetime Warranty.

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Arnott®
Air Suspension Products

Engineered to Ride. Built to Last.®

ENGINEERED & ASSEMBLED IN THE U.S.A.
RECYCLED & REMANUFACTURED IN THE U.S.A.
LIMITED LIFETIME WARRANTY
ISO 9001:2008 CERTIFICATE NO.: 54407

Limited Lifetime Warranty and 30-Day Money Back Guarantee on Arnott's New and Remanufactured Air Struts, Air Springs, Compressors and Conversion Kits.

STUDY

TECHNICIAN ATTITUDE STUDY

QUALITY COUNTS

WIPER BLADES

Purchasing source

Warehouse distributor	38%
Auto parts retailer	76%
Internet	5%
Jobber	33%
Dealership	33%

Preferred purchasing channel

Warehouse distributor	24%
Auto parts retailer	43%
Dealership	5%
Jobber	24%

Primary reason for preferred supplier

Good relationship	29%
Parts availability	33%
Price	14%
Fast delivery	19%

Margins

91% of technicians report they DO NOT know how much over the jobber they pay.

What techs know they pay

1-5%*	25%
6-10%*	50%
11-15%*	0%
16-25%*	25%
More than 25%	0%

What techs think they pay

1-5%*	28%
6-10%*	11%
11-15%*	44%
16-25%*	17%
More than 25%	0%

*Percent over jobber

24% of technicians always give recommendations for buying a specific brand of wiper blade.

Amount of wiper blades that are returned monthly

None	86%	5-9%	0%
1-2%	10%	10% +	0%
3-4%	0%	I don't know	4%

73% do not purchase **wiper blades** from a car dealer.

Reasons:

Too expensive	72%
Aftermarket products as good as (or better than) OEM	28%
Convenience/time limits	39%

Frequency of supplier contact

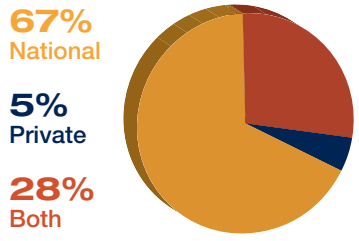
Once a week	14%
Every two weeks	5%
Once a month	19%
Every three months	0%
Every six months	5%
Yearly	5%
No contact necessary	52%

Brand vs. supplier loyalty

If a primary supplier of batteries replaced a brand with another of like quality, a tech would:

Change suppliers to continue purchasing original brand	24%
Keep primary supplier and purchase new brand	76%

National brands vs. private label purchases



Reason for buying particular wiper blades

Brand	36%
Availability	36%
Quality	39%

Internet ordering frequency

0-10% of the time	95%
11-25% of the time	0%
25-50% of the time	0%
51-99% of the time	0%
All of the time	5%

Some chart totals exceed 100 percent because respondents could provide multiple answers. Other charts do not reach 100 percent because all answer options are not represented.

THE CHANCES OF BAD WEATHER ARE GOOD.

AND THAT'S **NOT BAD** FOR BUSINESS.

Precipitation can be a great business partner.
So take a moment to inspect and replace all wiper blades, front and rear, with ANCO®.

ANCO®

ANCOwipers.com **#PartsMatter**

FEDERAL-MOGUL MOTORPARTS

OPTI-CAL™

Premium New Caliper

No Core Return
100% New Components

Optimum Quality.
Optimum Coverage.

Machined to OE precision, the premium Opti-Cal caliper is made of 100% new components and unlike traditional calipers, it requires no core return. Designed to Raybestos® engineering specifications and manufactured to meet or exceed OE performance, this all-new, award winning, premium caliper provides trouble-free installation and optimal performance.

Raybestos®
The best in brakes®

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