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PERFORMANCE



HOW

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**COULD TPMS
BECOME
MANDATORY?**

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Navigating FCA's secure gateway module

OEM is changing the game for vehicle diagnostics. Here's what you need to know.

In recent years, vehicle manufacturers have pursued solutions to protect their vehicles' communication networks from unauthorized access, including potential cyber-attacks. Fiat Chrysler Automobiles (FCA US), for example, implemented a secure gateway module (SGW) on a selection of their 2018 and newer model vehicles—including light-duty vehicles that serve commercial interests.

For these FCA vehicles, access to certain diagnostic functions requires registration and authentication for aftermarket scan tools. According to FCA, the SGW wasn't developed to restrict access to diagnostic data. Instead, it restricts the ability of non-registered and non-authenticated users to perform intrusive diagnostics such as bi-directional controls.

To provide clarity and insight on FCA's implementation of SGW and a solution to provide direct access to perform diagnostic functions, Dave Shock, product manager for NEXIQ Technologies®, answers some of the questions he has been asked most frequently in relation to this essential technology.

What motivated FCA to develop a secure gateway module?

In 2015, hackers were able to remotely take control of a 2014 Jeep Cherokee and manipulate many vehicle features including steering and braking. After issuing a vehicle recall, FCA began development on the SGW in an effort to secure numerous on-board control modules behind a "firewall" to address potential cybersecurity vulnerabilities.

What is the significance of the SGW to a commercial vehicle repair facility?

Shops that perform repairs on MY18 RAM® trucks and MY20 RAM ProMaster® vans and later models need a diagnostic scan tool that has the capability to unlock SGW modules and allow technicians to perform diagnostic procedures and repairs.

What is the downside for a repair operation that does not have the ability to unlock an SGW?

There's a significant downside for shops that do not have this capability. For example, such shops will not be able to clear fault codes and calibrate variable geometry turbochargers, as well as hundreds of other diagnostic procedures for any electronic modules on the vehicle. This includes input/output controls and routine special testing.

How do repair facilities gain access to the SGW?

I can't speak for all aftermarket scan tool/technology providers, but NEXIQ has coordinated with FCA to enable technicians to use eTechnician™, our PC-based diagnostic software application, to perform diagnostic procedures on FCA US models 2018 and newer (e.g., RAM vehicles).

eTechnician and similar tools require an internet connection to access the SGW in order to conduct bi-directional testing, including the clearing of fault codes. This also requires a subscription with AutoAuth®—an authentication service that gives technicians the ability to use aftermarket diagnostic tools to perform secured functions that would otherwise be locked by the OEM.

Is there a fee/subscription required to set up an account with AutoAuth?

Repair facilities can register through AutoAuth's Internet-based registration portal for \$50 per year. While up to six users can register under this initial fee, additional users can sign up for a nominal cost.

How might this impact fleets?

Once an AutoAuth account is created, the repair facility adds the technician and diagnostic tool to the account. Given the fact that some fleets have hundreds if not thousands of diagnostic machines that may need to be registered across multiple applications, this appears to be a daunting task on the surface. However, NEXIQ has developed partnerships with fleets and OEMs to assist in finding a solution to reduce the complexity of the certification process—and provide vital access to security gateway enabled vehicles.

To learn more about NEXIQ eTechnician and other NEXIQ products and services, please visit NEXIQ.com or call 248-293-8200.

NEXIQ Technologies

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Female tech makes history at TMCSuperTech 2022

As FedEx Freight dominated the TMCSuperTech competition, shop technician Bonnie Greenwood scored a historic victory for female techs by coming in second place.

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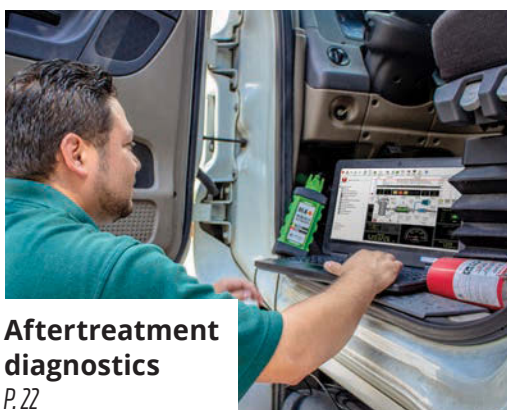
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SENZIT

Want to contribute? Contact us at editor@FleetMaintenance.com

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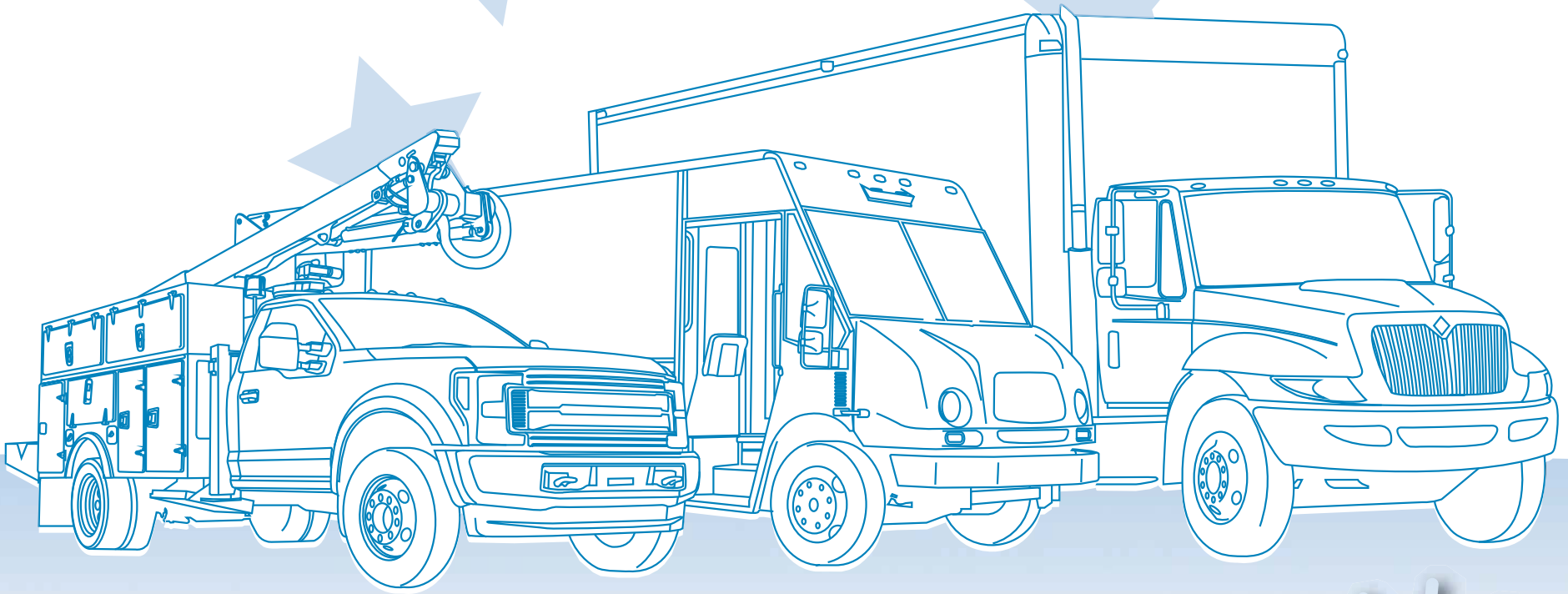
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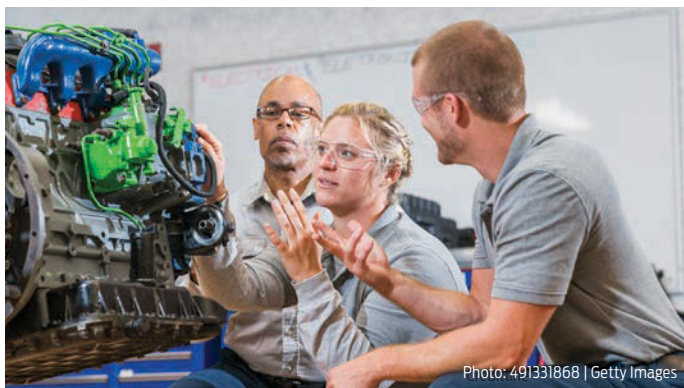


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ARTICLE

Shops must develop strong culture, mentorships to get techs

Fixing the technician shortage will take more than higher compensation at individual shops; a new approach to marketing and shop culture can help in recruiting and retaining technicians.
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SHOP PROFILE

How dry-bulk hauler run by ATA chairman optimizes workflow

Efficiency and experience power J&M Tank Lines, a dry-bulk hauler run by ATA Chairman Harold Sumerford, Jr.
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Photo: J&M



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TOOL REVIEW

Milwaukee Tool M18 Inflator

Eric Moore, fleet manager at Griffin Pavement Striping in Columbus, Ohio, attested to the capabilities of the 18V cordless tire inflator.

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NEWS

Fleet Maintenance awarded for editorial coverage, art direction

May 2022 feature *The dawn of hydrogen trucks* was named the year's top B2B technology article at the 2022 Folio: Eddie and Ozzie Awards.
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Equipping your fleet for future battles

Good things are happening in the world of commercial vehicle maintenance, but fleet management must brace for some tough challenges in the coming years.



By John Hitch
Editor-in-chief



@Hitched2Trucks



Much has changed in the last few years in the trucking industry. Fuel prices and inflation are out of control one month and seem to stabilize the next. Labor and parts scarcity appear to spell certain doom for awhile, and then fleets find a way to adjust. Government emissions and electrification plans will certainly transform trucking over the next decade, but the question remains if that will be for the better or worse.

What's all this mean? Well, to me, it means that the future is often volatile and uncertain. And to succeed in this competitive and critical industry that impacts billions of people, you need to prepare for anything and everything.

To hedge against rising fuel costs, perhaps investigate which low-rolling resistant tires offer the best total cost of ownership for your routes and if a tire pressure monitoring system will help even further (Pg. 12).

On the parts and labor front, evaluate how often issues, such as with aftertreatment systems, are being misdiagnosed and how many hours and repair items are being wasted because of them (Pg. 22). Would a significant investment in better diagnostic tools and technician training today prevent years of hassles down the road?

I won't pretend to have any answers for the electrification stuff, other than to keep apprised of what is going on in your state in terms of incentives, subsidies, and energy infrastructure, and talk to as many early adopters as possible on the pros and cons of various technologies. Try not to fall victim to either hype or pessimism.

Most importantly, allow at least a little room for optimism. This is an industry full of hard-working, intelligent, and motivated people. That's what I saw at the most recent American Trucking Associations Technology & Maintenance Council's Fall Meeting, where there was a lot to get excited about (Pg. 46).

For one, TMC SuperTech was back in full force after a scaled-down event last year (with fewer than 40 participants), and no event in 2020. About 140 current and prospective technicians descended on Cleveland's Huntington Convention Center this year for TMC SuperTech and TMC FutureTech, and the two-day competition required the full breadth of the convention center's 225,000 sq.-ft. exhibit floor space.

FedEx Freight's Bonnie Greenwood, one of a handful of female technicians at the event, came in second place overall, which should help persuade other women that the commercial vehicle repair sector is a place they can flourish—if they like the job and put in the work. Greenwood was also the first woman to win TMC FutureTech, and this was her first attempt at the professional-level skills challenge, so it's conceivable she could become Grand Champion at some point. That would be a boon for female tech recruitment, which the industry sorely lacks in (Pg. 48).

Now, I must remind you that leaving a little room for optimism means saving the rest for pragmatism. Managing the maintenance and repair of a fleet's commercial vehicles is still one of the more challenging jobs out there in a post-pandemic world. At the Fall Meeting Fleet Talk, only one hand out of hundreds raised when asked if they had no trouble finding labor.

Fleets and shops are also having a tough time finding equipment. According to an independent representative for an alignment manufacturer I spoke with at the HD Repair Forum (co-located with the TMC Fall Meeting), equipment made with steel can take up to six months to deliver.

According to Mohawk Lifts President Steve Perlstein, competitors' customers are coming to the manufacturer because they have been waiting several months for lifts. He said, in August, a distributor from California told him he had been waiting on another company to deliver a lift since April. That distributor had a deposit and an increasingly frustrated customer, but still no lift.

Perlstein said he could likely deliver by mid-September. He was confident in that estimate because Mohawk sources U.S.-made steel and also solved a similar issue in June. That previous customer, based in Idaho, needed a 25,000-lb. four-post drive-on lift and had been waiting six months on another lift manufacturer. Perlstein quoted him six weeks and delivered in just over five.

Mohawk is not immune to those aforementioned labor challenges, though.

"Everybody wants to say that things are groovy, but my supply chain crisis is more staffing shortages, like everybody in the world is having," Perlstein relayed. He said everything

"But [the supply issue is] still people more than anything. And this represents the biggest problem in the industry."

Steve Perlstein,
President, Mohawk Lifts

from retirement to people unwilling to work has caused this crisis.

"That's why we have attendance bonuses, retention bonuses, signing bonuses—those kinds of things that we're doing these days," he said. "But [the supply issue is] still people more than anything. And this represents the biggest problem in the industry."

When spec'ing new shop equipment, Perlstein advised to go with what lasts and provides the best total cost of ownership, even if it costs more upfront.

"Yes, I'm going to charge somebody more on the day that they buy it, but I'm also going to provide them the cheapest lift they're ever going to own," he asserted. "And there is always a cost of ownership on everything you buy. I don't care what it is."

He noted Mohawk lifts have a 25-year factory warranty and their leaf chains have a 10-year warranty. Lifting cable, by contrast, may be backed by a one-year warranty.

"A new set of cables is \$200-\$300 depending upon which lift you have. And it's a couple hundred dollars in downtime, and a couple hundred more in the service work performed by the local repair technician," he explained. "And guess what happens a year or two after that? That happens all over again."

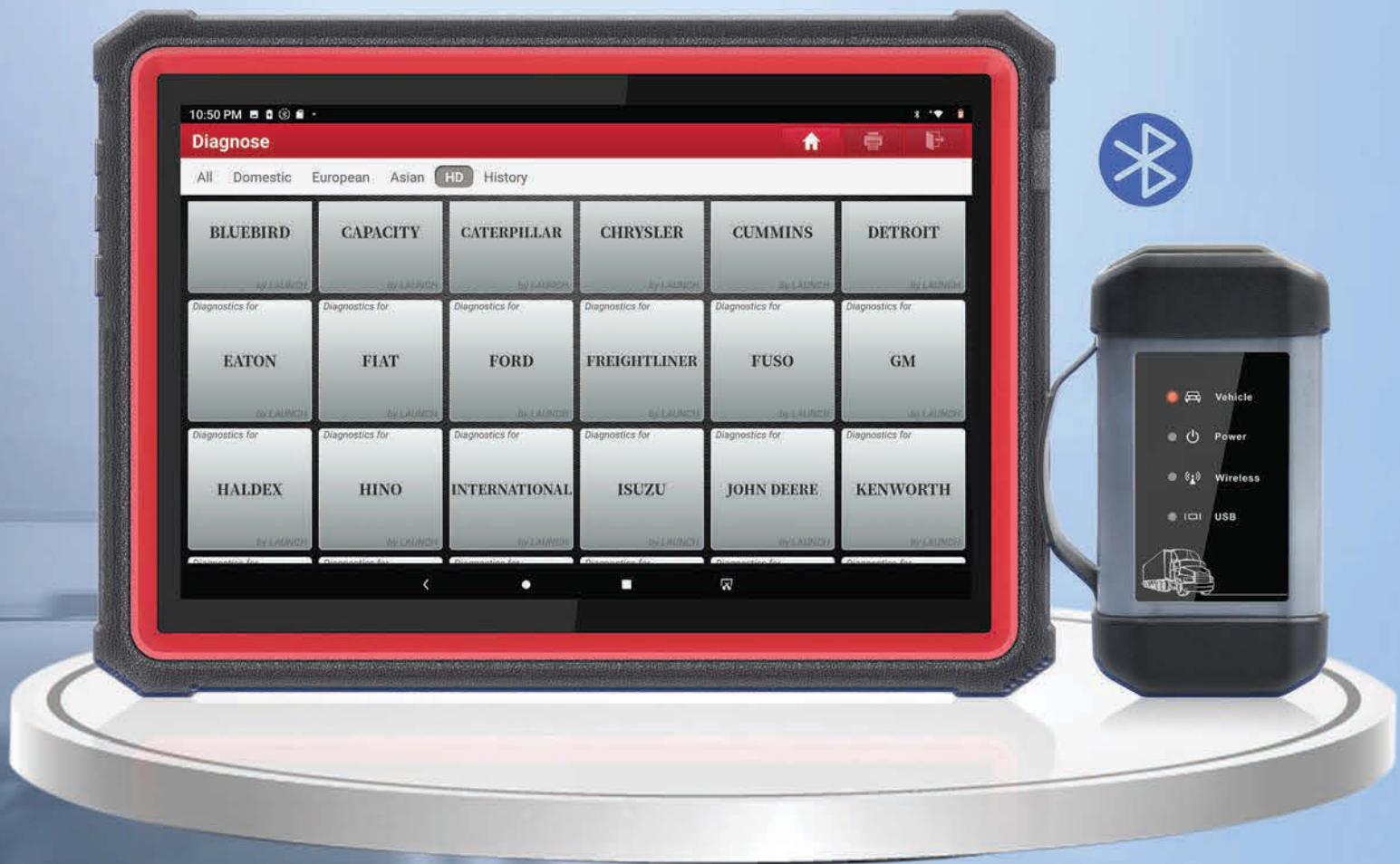
The cost of steel, meanwhile, is rising. "Pre-COVID, steel used to be only about \$0.60/lb., and it's about \$1.00/lb. now," Perlstein said. "Everything has gone up, up, up like there's no tomorrow."

There, of course, will still be a tomorrow, and countless days after that. And if you want to stay in business, you have to plan for all of them. ■

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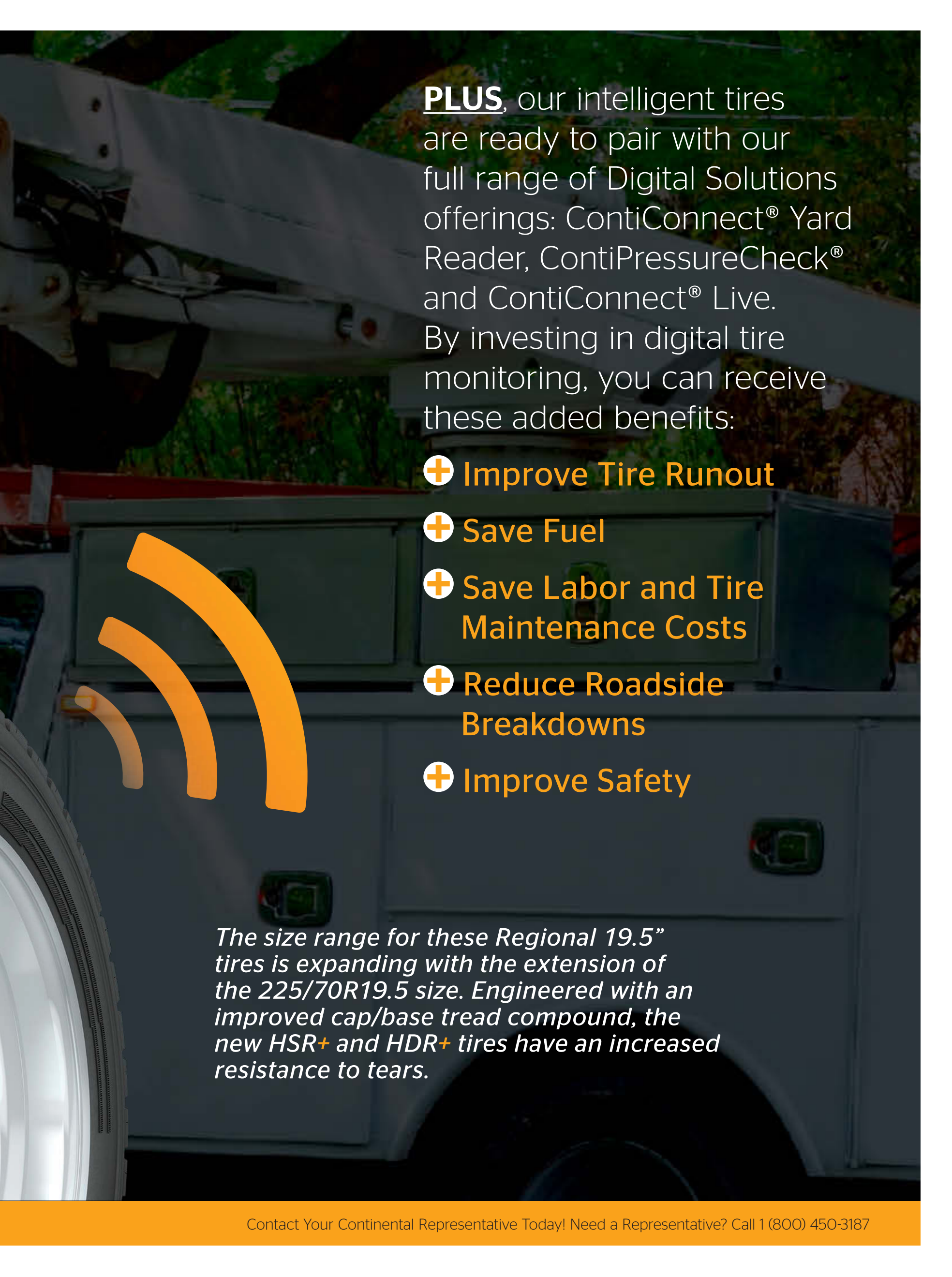


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Photo: Aperia Technologies

TPMS is now mainstream, but should it be

MANDATORY?

The case for TPMS seems clear enough for most fleets and they are in wide use, but could the government mandate them?

By James Alfred

[BRAKES, TIRES & WHEELS]



Tire maintenance can be the trickiest aspect of commercial vehicle fleet management. Tires routinely rank as one of the top three main cost items for fleets (along with fuel and drivers), so gathering as much data as possible about their health and performance has always been a challenge for fleet managers. That's the long-term problem.

There are day-to-day management issues as well. Simply keeping tires at their correct air pressure is—hands down—a fleet's most powerful tool for ensuring good fuel economy, safety, and long tire life. But getting drivers to actually put a gauge on a tire stem and get a pressure reading has always been an iffy proposition. Many drivers consider simply whacking a tire with a stout wooden stick to be an adequate tire-check procedure. (Spoiler alert: it's not.)

Add-on tire pressure monitoring systems (TPMS) were developed to address all of these issues. Initially offered as add-on systems for trailers, TPMS offered fleets direct monitoring of tire pressures on a trailer. Early systems simply alerted the driver if there was a pressure issue—a feature that was revolutionary at the time. Typically, fleets set their own thresholds. Boyle Transportation, for example, sets its Bendix SmarTire TPMS to alert operators at 15% underinflation.

According to the American Trucking Associations Technology & Maintenance Council, a tire continuously underinflated by 20% will have nearly one-third less life, while 40% underinflation cuts a tire's expected life by half.

"Underinflated tires are a foreshadowing of premature tire wear, tire failure, or even a tire-related accident in the future," noted Judith Monte, VP of marketing & client success at Aperia Technologies, a provider of tire inflation and TPMS solutions. "That can be seen in statistics from the National Highway Traffic Safety Administration (NHTSA), which show 35% of accidents attributed to 'vehicle malfunctions' are primarily attributed to tire-related problems."

Tire failures occur often and with significant consequences, Monte continued. In fact, she said, tires need to be checked and maintained more than any other truck component and disproportionately benefit from the addition of automation paired with sensors and analytics.

Today's TPMS generally use telematics to alert both a driver and a fleet manager to an underinflated tire. In both cases, the information allows prompt action to be taken to correct the issue before a catastrophic failure occurs. TPMS is, to put it mildly, a good idea whose time has come.

"It is especially important to know the tire pressure on commercial vehicles," stressed Jim Sharkey, VP of global sales and marketing at Pressure Systems International (P.S.I.). "Unlike a passenger car, it is more difficult to 'feel' soft, underinflated tires, so having the pressures monitored is very important to preventing roadside calls and improving highway safety."

For those reasons, Sharkey said that both TPMS and automatic tire inflation systems (ATIS), which take things a step further by actually pumping air from a truck's air compressor into a low-pressure tire, can dramatically improve the efficiency and accuracy of pre-trip inspections.

He also challenged the notion that pre-trips are done 100% of the time and performed accurately.

"They're not," Sharkey alleged. "And using tire-bats or kicking a tire to 'check' its air pressure have proven to be largely ineffective and misleading."

The thumper method might be quick and cheap, but it will cost the fleet and driver in flat tires and roadside calls and can create unsafe driving conditions.

"According to NHTSA, vehicles driving on under-inflated tires are three times more likely to be involved in a crash compared to vehicles with proper inflation," added Jamie Barnett, senior manager, tire-centric product management, Bridgestone Mobility Solutions. "And from a fuel economy standpoint, under-inflated tires lead to a 3% reduction in fuel efficiency. If you apply that to a Class 8 sleeper, that 3% reduction equates to approximately \$2,503 per vehicle annually in fuel expense. Multiply that over a business's entire fleet, and you can see how great of an impact it will have on your bottom line."

Another strong factor driving fleet adoption in the U.S. is that TPMS is a proven money-saver for fleets, added Mark Molitor, senior product manager, chassis and suspensions, Link Manufacturing.

"Studies have shown that 25% of all dual tire assemblies have tires that differ in pressure by more than 5 psi," he said. "And while 5 psi may not sound like much, a tire that is just 5 psi lower creates a 5/16" difference in diameter. In a dual tire arrangement, the larger tire will drag the smaller one an estimated 13' for every mile driven, prematurely



» P.S.I.'s TireView TPMS can alert drivers to fast or slow tire leaks, as well as temperature events.

Photo: P.S.I.

“Studies have shown that 25% of all dual tire assemblies have tires that differ in pressure by more than 5 psi.”

Mark Molitor, senior product manager, chassis and suspensions, Link Manufacturing



» Digital tire monitoring solutions such as ContiConnect allow fleets to ensure tires are properly inflated and at less risk for failure and costly roadside repairs.

Photo: Continental

wearing out the tire and potentially leading to a safety hazard. Tires 15% under inflation also reduce mpg by 2.5%, impacting profits. So, from that perspective, TPMS is a proven winner for fleets when it comes to extending tire life while controlling operating costs.”

According to Jonathan Gravell, VP of business development at P.S.I., the company’s TireView TPMS solution also frees up fleet yard workers from pounding pavement walking to each and every trailer to check the tires. Instead, they know right where to go.

“I’m not going to go check 2,000 trailers; I’m going to go check the 20 that I could see are in red, and walk straight to them,” he said.

Gravell also noted TireView helped one regional pickup and delivery fleet cut roadside calls by 70%. And with economic inflation soaring, it’s more important than ever to ensure an underinflated tire doesn’t create an emergency roadside event. FleetNet America found that the average event cost (without towing) for a power unit rose by 12.9% from Q1 2021 to Q1 2022, while for a trailer it increased by 19.7%.

TPMS has been such a success globally now that it’s being mandated on new trucks and trailers in countries around the world. Which begs the obvious question: Will similar regulations come to the United States soon as well?

Inflation intervention

Europe, long a leader in mandating safety systems on commercial vehicles, has already taken the lead in mandating TPMS, said Nicola Zingraf-Bolton, head of digital solutions, CVS Americas, ZF. “New European regulations began in July of 2022 that require all new truck trailers to be fitted with TPMS,” Zingraf-Bolton explained. “However, at ZF, we currently do not see a push for similar regulations here in the U.S. The biggest reason is because TPMS has gained large market share in fleet applications. The technology is already very common in the U.S. today. So, we really see the market itself taking care of tire monitoring in a way that [the] government doesn’t feel any pressure to step in and mandate the technology.”

Fred Andersky, director, government and industry affairs, Bendix Commercial Vehicle Systems, agreed with that assessment. “At this point in time, there doesn’t seem to be much interest in mandating TPMS on Classes 7 and 8 commercial vehicles in the U.S.,” Andersky said. “I see NHTSA’s current

efforts focused more on autonomous emergency braking systems, electric vehicles, and autonomous vehicles.”

However, Andersky cautioned, given the rapid pace of technology today, things could change. “As we get to more automated and autonomous vehicle technologies, I believe TPMS has to be part of the package of sensors and systems used on these vehicles,” he noted. “Ensuring the vehicle is in a safe state for driving requires that the system know that tires are inflated along with other information such as tread depth, wheel-bolt tightness, brake-pad wear, and other operational factors.”

To bolster his view, Andersky pointed to the Transportation Recall Enhancement, Accountability, and Documentation (TREAD) Act, which was passed in 2000, in order to increase consumer safety through mandates assigned to NHTSA. “Because the TREAD Act uses the term ‘vehicle,’ instead of specifying a specific class, many folks interpret this to mean the TREAD Act includes trucks,” Andersky said. “This may give the agency flexibility in the future to mandate TPMS and other systems on commercial vehicles. But that is just speculation on my part. We haven’t heard anything about requests for NHTSA to mandate this technology yet.”

While the Tire Industry Association has not taken an official position on TPMS mandates,



Kevin Rohlwing, SVP of Training at the TIA, told *Fleet Maintenance*, “As a rule, the Association is against regulations that result in higher costs for fleets, so we would likely support the fleet position if it was proposed.”

He also noted the TREAD Act provided a major reason for the medium- and heavy-duty trucking sectors to not follow suit.

“When the TREAD Act mandated TPMS on vehicles under 10,000 lb. GVWR, each manufacturer approached it differently, so there are multiple systems with no interchangeability,” he said. “In order for TPMS [regulations] on trucks to work in the U.S., there would have to be universal connectivity with every tractor and trailer manufacturer. Mounted tire programs would be a nightmare keeping track of sensors.”

He also noted that ATIS can be regarded as a type of TPMS, and thousands of new trailers are spec’d with those systems each year. According to Hendrickson, which makes the TIREMAAX Pro ATIS solution, ATIS is adopted on 70% of new trailers in North America.

Another factor that must be considered are ever-stricter rounds of U.S. Environmental Protection Agency (EPA) and California Air Resource Board (CARB) emissions mandates aimed at improving fuel economy and reducing emissions for diesel-powered trucks, Monte said.

“It’s worth noting that the Greenhouse Gas Phase 2 emissions rule (which currently regulates diesel truck exhaust emissions in the U.S.) promotes using TPMS and ATIS to reduce heavy-duty vehicle emissions,” Monte said. But, she added, there’s been quite a bit of back-and-forth on the issue lately. “At first, due to more aggressive California state legislation and the higher-than-expected shifts to zero-emissions vehicles (ZEV) before 2027 in many trucking



» Aperia’s Halo tire inflation system charges itself back up as the tire rolls.

Photo: John Hitch

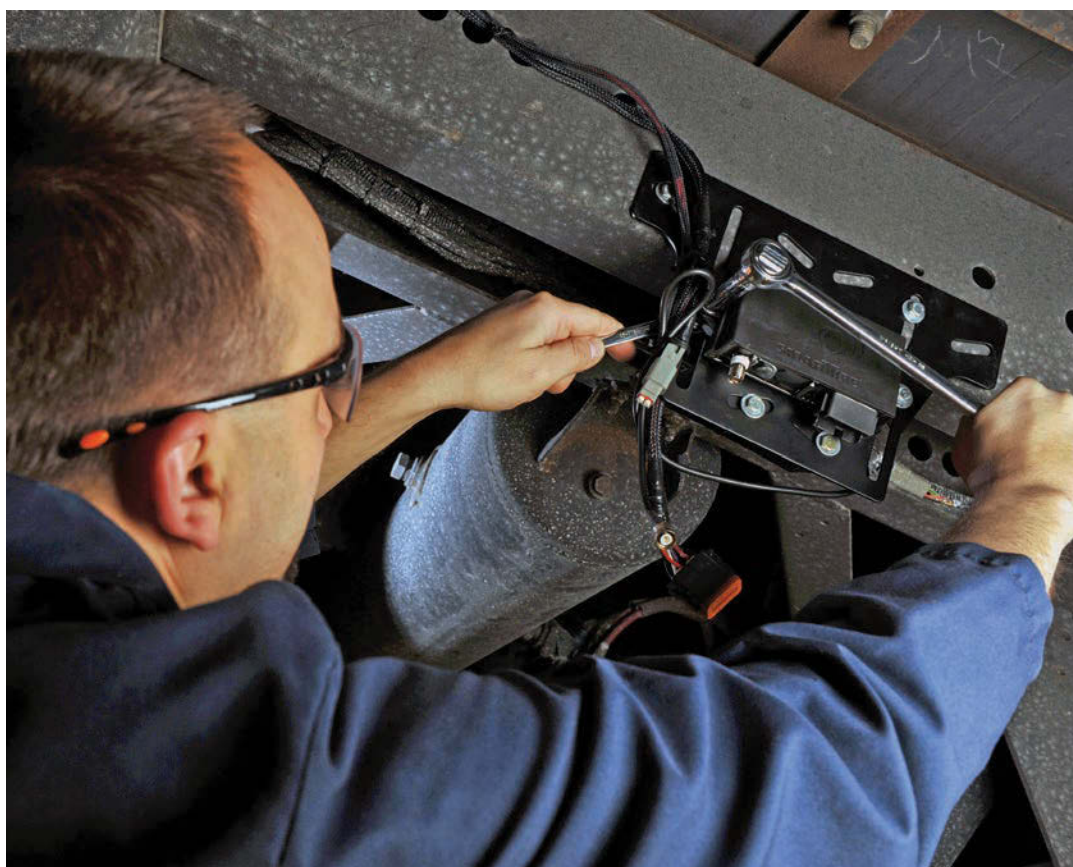
“The technology is already very common in the U.S. today. So, we really see the market itself taking care of tire monitoring in a way that [the] government doesn’t feel any pressure to step in and mandate the technology.”

Nicola Zingraf-Bolton,
head of digital solutions,
CVS Americas, ZF

segments, the EPA signaled the possibility that emissions credits produced in these segments by advanced technology multipliers might allow fleets to forgo many available sustainable technologies, such as ATIS and TPMS, on diesel-powered vehicles,” she explained. “However, there has since been a course-correction on that front, with new proposed legislation continuing to support the use of ATIS and TPMS to generate legislative credits.”

Monte said that time will tell if tire pressure management technologies will be mandated in the U.S. and Canada. But she does think it’s likely as emissions mandates become stricter in the future. “Before the Clean Air Act, environmental legislation in the United States tended to follow EURO legislation,” she added. “So, if I were a betting woman, and I tend to be, I would say it is only a matter of time until the technology is mandated in the United States as well.”

Turn to page 18 for TPMS service tools.



» A technician installing the Bendix SmarTire solution.

Photo: Bendix

For related content go to
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Get Ready to Lift Electric Vehicles

Electric vehicles are going nowhere but up. EV sales keep sparking higher, with global electric commercial vehicle sales forecast to grow from 353,000 in 2022 to 3.144 million units by 2030 at a compound annual growth rate (CAGR) of more than 31 percent, according to a recent report by Markets and Markets.

As a result, it's clear that more and more EVs will be rolling into shops over the next few years. Handling the work safely and efficiently will require shops to invest in equipment engineered specifically for EV service.

Many electric cars, pickups and vans are heavier than those with internal combustion engines, thanks in large part to the hefty high-voltage battery packs that can weigh from 1,000 to nearly 3,000 lbs. each. What's more, these batteries occupy most of the vehicle's undercarriage, pushing lifting points out to the extreme edges of the frame, making it tricky to lift the vehicle. All-electric medium-duty and Class 8 trucks may still be liftable using mobile column lifts since they connect to the vehicle by its wheels, but a shop will need new equipment to access the high-voltage batteries.

Built for the job

Manufacturers are responding to these EV challenges with new lift designs and updated products.

To safely raise an electric vehicle for service, you'll need a lift with sufficient rated load capacity and the ability to reach the OEM-recommended lifting points. A two-post surface lift with 10,000 pounds capacity is enough for the electric cars, pickup trucks, SUVs, and vans currently on the market, but you'll want to make sure the lift arms can reach the lifting points and that you have the required adapters. Also, if you're planning to service electric vans, make sure you have enough overhead clearance — consider a tall lift with a higher top beam. For example, the top beam on the BendPak XPR-10S-168 is 14 feet high instead of the standard 12 feet.

When it's necessary to remove an EV's battery pack, using a lift table eliminates manual lifting or lowering, making it safe and easy to move the pack around the shop. Recognizing that most vehicles on the road will continue to use internal combustion engines for a long time, BendPak designed its new EV2400SL electric vehicle battery support system to lift, lower and position high-voltage



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batteries, engines, transmissions, fuel tanks, transaxle assemblies and more, making it a versatile choice.

The EV2400SL delivers wireless, rechargeable electric/hydraulic operation which improves operator efficiency by eliminating the need for a manual hand crank or foot pump to operate the lift table, while maintaining complete portability. Its twin-cylinder design provides maximum load stability for lifting and lowering, while an automatic safety lock system secures a massive 2400 pounds at working heights up to 75". Easy-Glide Multi-Directional Swivel Casters drive the ultra-portable design, making effortless work of moving loads up to full capacity. The EV2400SL also comes standard with an impact-resistant UHMW protective cover on the lift table, providing insulation from electric shock hazards.

For routine maintenance that doesn't require standing under the vehicle, shops may want to consider a mid-rise scissor lift for light-duty vehicles. While many mid-rise scissor lifts can't reach EV pickup points, the new



BendPak MDS-6EXT was designed with long lift platforms to better accommodate them. Configurable approach ramps and push-button controls make it easy to position vehicles weighing up to 6,000 pounds.

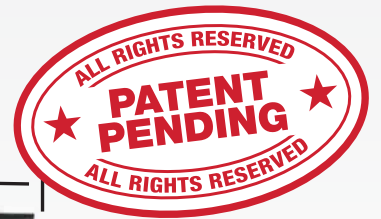
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How do *you* plan to service **EV battery** packs?

The BendPak EV2400SL is a push-around full-rise scissor lift table that is perfectly suited for EV battery pack replacement. With its compact design, this space-saving scissor lift can be easily transported anywhere in the workplace, making it ideal for multi-bay facilities or workplaces with confined areas. To learn more visit www.bendpak.com/EVLIFT.

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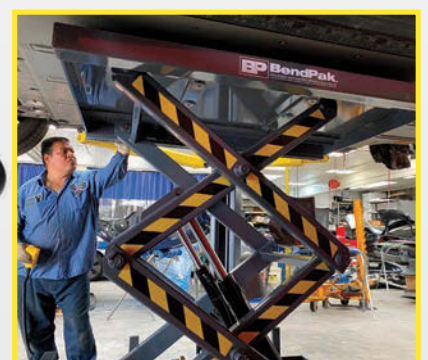
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TPMS service tools

Handheld TPMS readers offer an efficient and effective tooling option for diagnosing, programming, and servicing vehicles' TPMS sensors.

By Tyler Fussner

Fleets who invest in tire pressure monitoring systems (TPMS) will also need to acquire TPMS readers, which are handheld devices that pull data and help ensure your investment is working like it should. After all, sensors can fail on occasion and the batteries don't last forever, and fleets need to be ready to repair and replace them.

"TPMS tools decode the sensor data such as ID, pressure, frequency, battery status, and accelerometer," said Danijela Haskin, product

manager at Bosch. "They also activate recognized OEM and universal TPMS sensors when sensors are replaced."

TPMS readers also include the ability to diagnose, test, repair, and reprogram vehicles' TPMS components.

Full capabilities vary from brand to brand, so check out some of the latest TPMS readers below to help you decide which is best for your operations.



ST-1 TPMS TOOL SCHRADER TPMS SOLUTIONS

The ST-1 TPMS Tool from Schrader TPMS Solutions features EZ-sensor programming and an ID-Sync function for matching scanned IDs to vehicle ECU IDs. The tool displays all sensor data (pressure, battery, temperature, ID, frequency) and indicates OE sensor and service kit part numbers. In addition, it provides TPMS ECU relearn procedures and retrieves and decodes TPMS DTC information. The TPMS tool has a 2.8" LCD screen, protective rubber sleeve, is Wi-Fi capable, and comes with a quick-connect cable and carrying case.



VT TRUCK 2.0 ATEQ

The ATEQ VT Truck 2.0 is designed for the maintenance of commercial trucks and buses. It can easily read sensors, even in twin wheels, and can manage up to 22 wheels. The tool is compatible with most truck and bus TPMS sensors and can be frequently updated with new heavy transport vehicles as soon as they are introduced. The VT Truck 2.0 features a built-in vehicle configuration system and has OBD-II capability for on-board diagnostics, aftermarket programmable sensor support, Wi-Fi and real-time updates, and it displays all TPMS information on one screen.



TPA 300 TPMS TOOL BOSCH DIAGNOSTICS

The Bosch TPA 300 TPMS Tool is a comprehensive TPMS tool designed for sensor programming, activation, and ECU reset, including checking the remote keyless entry signal. The full-color, intuitive interface guides the user when replacing and servicing TPMS sensors. The TPA 300 supports all known OE and aftermarket programmable sensors for all light vehicles. Frequent updates allow new features, vehicles, and sensor coverage to be added regularly.



HD TPMS CANDO INTERNATIONAL

The HD TPMS from CanDo International is an activation tool with functionalities designed for the maintenance of trucks and buses. The unit reads sensors for psi, temperature, sensor ID, and battery status. It works for twin wheels and is able to manage up to 22 wheels. The tool is compatible with today's leading truck and bus TPMS sensors and can be updated with new heavy transport vehicles as soon as they are introduced, the company said.



AUTODIAGNOS TPMS D CONTINENTAL

The Continental Autodiagnos TPMS D is designed to read and diagnose all OE and 20 aftermarket TPMS sensor brands on the market, helping shops optimize their investment in TPMS and tire service. It can also perform relearns on 98.6% of all domestic, European, and Asian TPMS-compliant vehicles. The tool can read and clear TPMS codes, has a built-in VIN scanner for faster make/model/year look-ups, and can program sensors from historical data. It also features easy-to-use software, connects to Wi-Fi for software updates and downloads of the latest vehicle applications, and can be easily read in direct sunlight.



X-431 TSGUN LAUNCH TECH

The Launch Tech X-431 TSGUN is designed to work with X-431 scan tools to expand TPMS functions for X-431 users. It can instantly read tire pressure, tire temperature, and battery status. The X-431 TSGUN can activate and match all 315MHz or 433MHz sensors as well as read, copy, and write the sensor ID quickly and easily. Users can also reprogram Launch sensors unlimitedly with a built-in tire pressure learning instruction.

The Ultimate Comprehensive Diagnostics Solution For Fleets

In today's world many factors define a fleets composition. Elements such as cargo type, distances, and ease of maintenance can segment the quantity of vehicles, manufacturers chosen and the price of the vehicles needed.

Currently, a large part of the fleets are mixed, in terms of both the vehicle class, as well as their manufacturers. But what are the main challenges faced by this type of fleet in terms of maintenance?

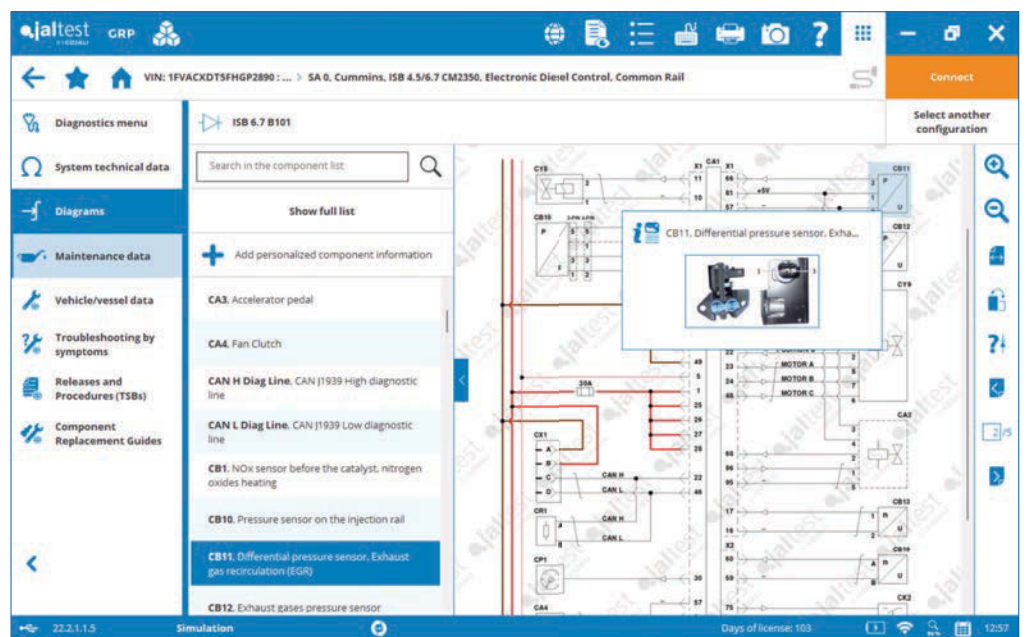
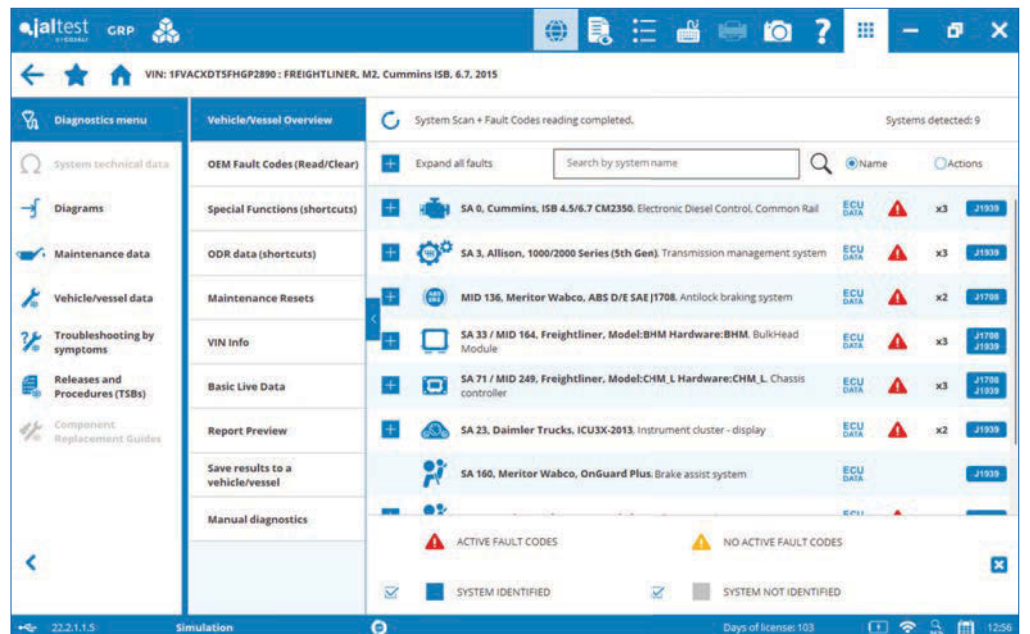
In essence, the large variety of manufacturers related to electronic systems. Vehicles today incorporate an increasing number of on-board systems such as engine, brakes, or transmission. Each of them is usually manufactured by a different OEM, meaning that, in the same vehicle, we can generally find an average of 3 to 6 different system manufacturers. When carrying out maintenance and repair tasks the mechanic must be able to communicate with these ECUs, for which it will be necessary to use a OEM specific diagnostics tool. If for each of these systems we have to use a different tool, then things get complicated.

Different types of tools for different types of needs. Assuming that the fleet carries out its maintenance and repair actions in-house, the challenge comes when deciding which diagnostic tools are the most appropriate in each case. Here, fleet owners will have to ask themselves and take into consideration the specifics of their fleets. A single make fleet will not be the same as a fleet that works with All-Makes. In the first case, yes, it might make sense to work with a reduced number of OEM tools, but does it? In regards to mixed fleets, perhaps a more convenient option would be an all-makes tool in order to make the life easier for the mechanic, learn just one platform, while saving time and costs.

Types of All-Makes tools. Like everything in this life, there are many options, ranging from the most basic (and cheaper) handhelds that only read fault codes, through the mid-level ones that, in addition to reading codes, offer limited bidirectional actions, to the most advanced, which integrate proprietary diagnostics actions alongside the different dealer-level bidirectional controls that are necessary.

Advantages of working with a single advanced All-Makes diagnostics tool vs. working with OEM/ dealer services tools. In short, a more efficient repair, that generates time and cost savings. And why is that? Because the need of working with multiple hardware/software tools disappears, the learning curve is streamlined, the license renewal processes become seamless, the support to the mechanic is unified, and because the independence and freedom in the repair grows.

Jaltest Diagnostics falls into the category of "Dealer Level" All-Makes tools, and, in addition to its high level of coverage, it stands out from the rest of competitors for being the only one that integrates technical and repair information on the same diagnostics platform. Picture this, getting a code and clicking right next to it for your troubleshooting guide. Not only that, but it links to the affected



component's replacement guide. You now know what's wrong and how to swap it, so the electrical diagram shows you how to connect to the ECM. And this logic just keeps going until the repair is 100% complete. Since everything is integrated, mechanics will no longer have to search for the manufacturer's specs in another tools, call the dealer, or waste time on Google. Jaltest is an intuitive and easy-to-use tool that is designed to walk the technician through the repair process to increase their productivity, while saving a lot of time and money in the long haul.



The Value of the Technician



In the labor market of today, a company's biggest asset has truly become its employees. With the severe shortage of available labor, the recruitment and retention of employees is paramount to success. As shops struggle to fill open vacancies the problem becomes having enough billable hours to create a monthly revenue stream that is profitable.

The modern technician is looking for a shop that provides great pay, a stable future, and the best working environment possible. It is imperative for shops to offer the technician a shop with the most modern and up to date equipment, making their job easier and safer. Nate Weston, a technician at Gray Diesel in Lincoln, NE explains, "when our shop went to Gray's WPLS mobile column lifts, high rise component jacks and other new equipment, I had my doubts, I thought changing the way I worked would slow me down, what it actually did was make my job at least 75% easier and I am now getting twice the

work done in a day." This comment illustrates how new equipment can ROI itself in a shop. By allowing a technician to get more done in less time a shop is able to produce more throughput with its existing staff. Also, Dave Hunt, the Service Manager at the Lincoln shop, explains recruiting new technicians is an easier task when they walk in and see the modern equipment. The moral of the story is do not overlook how your shop's jacks, lifts and component jacks effect the recruitment, productivity, and safety of your technicians. Gray Manufacturing Company, an American manufacturer of professional shop equipment is available to help you make sure your shop equipment is up to industry standards.

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Diagnosing AFTERTREATMENT HEADACHES



Aftertreatment systems have evolved a lot since their inception, yet still create headaches for the industry. The right balance of diagnostics and best practices can relieve that stress and promote uptime.

By Mindy Long

[DIAGNOSTIC & REPAIR]



» By plugging into a truck's OBD-II port, a technician can pull relevant aftertreatment data such as temperature to troubleshoot issues.

Photo: Noregon

A

ftertreatment systems are responsible for some of the most common faults found on commercial vehicles, and problems with the systems can result in unplanned downtime if they aren't addressed. Diagnostic tools, telematics, and preventive maintenance can help, but technicians often face challenges when servicing the systems, which became mandatory for diesel trucks 15 years ago after the Environmental Protection Agency introduced new emissions regulations.

"It is very technical, and technicians jump to conclusions and don't follow the best diagnostic steps," said Dan Carrano, VP of fleet maintenance for A. Duie Pyle. "The biggest challenge is finding techs that have an in-depth understanding of exactly how the system functions, allowing them to diagnose the issues properly."

Daniel Mustafa, director of technical service for TravelCenters of America, said not having a clear understanding of what components in an aftertreatment system do leads to poor diagnostics as well as wasted steps, time, and money.

"The biggest challenges come from the large amount of sensors and the tight tolerances they must operate in, as well as the escalating amount of parts that can be affected before problems are addressed," said Len Copeland, Detroit product marketing manager, Daimler Truck North America.

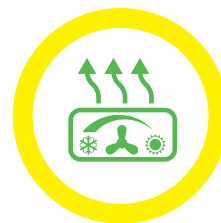
Bruno Gattamorta, chief commercial officer for Cojali USA, agreed that the growing complexity of aftertreatment systems has created more issues on the truck: "They get dirty. There are a lot of sensors. They can get clogged and there can be short circuits."

Getting to the root cause

Finding the true cause, whether that is a clogged diesel particulate filter, wiring problem, or something else requires a good amount of detective work. Aftertreatment systems can generate multiple fault codes, but technicians need to look beyond those to diagnose the root cause.

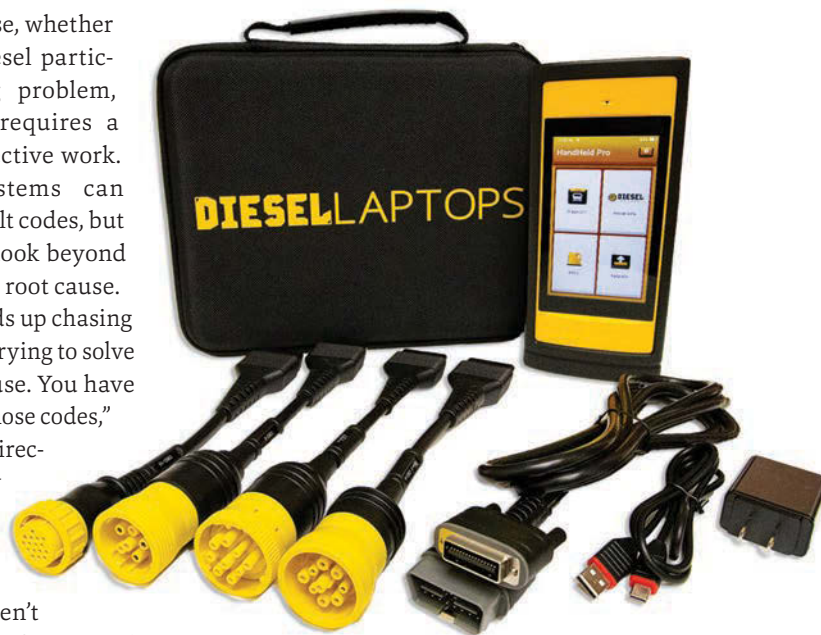
"The technician ends up chasing his tail because he is trying to solve the effect, not the cause. You have to know how to find those codes," said Chris Freeman, director of heavy-duty sales and training for Autel North America. "I think we, as an industry, haven't done a really good job of training the technicians on how the system works and how to troubleshoot it."

Instead of looking to resolve the issue, technicians may opt to conceal



"Upstream issues are defined as issues related to the proper function of the engine and related systems. Fueling, cooling, timing, and air handling problems can all present themselves disguised as aftertreatment problems."

Chris Johnson, marketing specialist, Diesel Laptops



» The Diesel Laptops Handheld Pro clears DTCs, reads live data, and performs DPF regens on most heavy-duty diesel trucks.

Photo: Diesel Laptops

the problem, calling the manufacturer's support network to ask how to turn a light off.

"We'll tell them they have to fix the problem, but they're just looking to turn off a light and expecting to be able to push a button. There is a lot more to it," Freeman said. "We try to educate them."

One major challenge is keeping up with changes in the technology, which has evolved greatly since 2007.

"Some of the machines, depending on the year, will have certain technologies and some won't," said Edwin Hopkins, digital solutions business leader at Cummins. "If you're a fleet owner or have a bunch of machines, you need to have a high level of knowledge of what you have in your equipment."

Chris Johnson, marketing specialist for Diesel Laptops, said most aftertreatment issues are a result of upstream issues.

"Upstream issues are defined as issues related to the proper function of the engine and related systems. Fueling, cooling, timing, and air handling problems can all present themselves disguised as aftertreatment problems," he said. "Determining the root cause when an aftertreatment fault code or symptom arises is key to avoiding unnecessary and wasteful repairs."

One of the biggest challenges for most technicians is understanding the complexities of how the upstream components can interact and cause downstream/aftertreatment components to fail, Johnson added.

The aftertreatment system is a compilation of how well the upstream systems have done their job, and it is not uncommon to have a misdiagnosis as multiple failures can show similar symptoms, noted Duane Tegels, powertrain product marketing manager for Volvo Trucks. "This may result in a technician replacing a damaged component rather than finding the upstream root cause," he said, adding that a fundamental understanding of the aftertreatment system and surrounding elements is vital to a proper diagnosis.

Excessive engine blow-by, leaking or plugged EGR coolers, faulty AHI modules or 7th injectors, and diesel exhaust fluid (DEF) crystallization can all resonate symptoms in the aftertreatment system, Tegels continued.

Within the system, the diesel particulate filter collects soot; then there is a regeneration process that removes the soot, or the carbon, out of the DPF, but a small amount of ash builds up. "If you don't clean the ash out, you have excessive back pressure," Hopkins said, adding that filters must be cleaned or changed regularly.

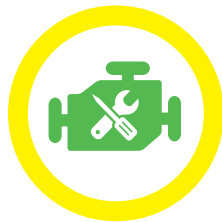
It is easy for an upstream issue to be misdiagnosed or missed. "Let's say you have a diesel particulate filter with a face completely plugged. You put in a new filter, and it runs great. A few months later, we have the same condition because we never identified the root cause," Carrano posed. "It could be a bad injector, bad dosing, or the EGR cooler."

Technicians have to resist the urge to jump right into a forced regeneration and instead start with a proper diagnostic procedure. "By forcing a regen when it's not the correct procedure, technicians are wasting time and fuel while placing undue



» A. Duie Pyle conducts regular training on how to get accurate readouts from diagnostic tools.

Photo: A. Duie Pyle



"When a truck enters the workshop with an aftertreatment issue, the operator should be interviewed to understand the truck's usage and whether the operator follows best practices."

Brian Bressler, director of powertrain aftersales, Paccar Technical Center

stress on vehicle components," said Jason Hedman, product manager at Noregon.

Diagnosing the problems

Given the system's complexity, technicians must use tools to diagnose aftertreatment issues. "Technicians typically can't look at a fault code and immediately transition into the repair process," Hedman said. "Because many different factors can cause an issue, the diagnostic and troubleshooting process can be quite extensive."

There are different levels of technology already in place to diagnose aftertreatment systems.

"Starting from the lower level to the highest level, we have onboard diagnosis," said Fabio Mazzon, technical manager for Texa, "[such as] warning on the vehicle dashboards, standard code readers, advanced scan tools that offer live data, fault code troubleshooting, bidirectional/resets capability, and remote diagnosis."

Monitoring faults in real time can help fleets prepare for when they are able to get their hands on the vehicles. "Driver training and familiarization with the dash lights, what they mean, and how to react is an industry best practice," Detroit's Copeland said.

Brian Bressler, director of powertrain aftersales at the Paccar Technical Center, said the best technology is built into the diagnostic capability

of the engine's control module. "EPA and CARB guidelines require the ECU to be programmed with broad and detailed compliance diagnostics, called OBD. The shop needs to possess off-board diagnostic equipment that can read, perform tests, and even analyze the data generated and stored by the ECU," he said.

Hedman suggests technicians pair a comprehensive electronic diagnostic scan with a visual inspection. For JPRO users, an aftertreatment visual inspection checklist launches when the user opens the aftertreatment diagnostic feature, suggesting the user check for issues such as loose clamps and damaged piping.

Gattamorta said certain codes can't be deleted without an advanced diagnostics tool. "Most of the tools we sell are because people need to treat the aftertreatment system," he said.

Telematics devices that send real-time fault-code information provide valuable visibility. "You can see information like elevation, engine load, coolant temperature, and nearly any other relevant vehicle data," Mustafa said. "This information can be very helpful in resolving ATS issues."

Cummins has partnered with Elevät to integrate its Cummins Connected Diagnostics application with the Elevät Machine Connect IoT platform, to process data and troubleshoot, which Hopkins said can help technicians get to the root cause faster. "We have all of this data,

then we're able to present back to customers through Elevat on a statistical root cause probability," he said. "It could be that based on this condition, we think 85% of the time it is the turbo, or NOx sensor, or DEF quality sensor—or it could be that it is a non-Cummins part."

Copeland said it is important to know the duty cycle, monitor individual vehicles, and follow the maintenance guidelines. Understanding most of this within a Detroit engine can be accomplished through Detroit Connect and Virtual Technician. "Virtual Technician will notify a fleet of faults that occur at different levels of importance. Some codes are information only, some are meant to be addressed at the next scheduled maintenance, and others require immediate attention," he said.

As a best practice, Hedman recommends that whenever a fleet vehicle is in the shop, planned or unplanned, technicians thoroughly scan the entire vehicle to get ahead of any aftertreatment issues that may not yet be obvious to the driver. He said fleets need to pay close attention to inactive faults on the entire DPF system. "Inactive faults with counts higher than ten are commonly considered active by the OE's standards and, as a rule, should be treated and repaired as such."

An example of that is a DEF pump issue. "If the pump is faulting when a passive regen is attempting to start or is in the process of running, it can cause it not to start or can make the regen ineffective," Hedman said. "Another example is an intermittent DPF sensor pressure fault. The same type of thing can happen here if wiring is damaged or the connectors are faulty. The system won't let the regen start, or it will stop it in process."

Freeman noted systems have two NOx sensors, a DEF-level sensor, a DEF quality sensor, and DEF temperature sensors. "Usually, codes will be down to those five sensors," he said, adding that DEF temperature sensors have been an issue because parts are on national backorder.

Communication between drivers, fleets, and technicians can help technicians diagnose the problem. "When a truck enters the workshop with an aftertreatment issue, the operator should be interviewed to understand the truck's usage and whether the operator follows best practices," Bressler suggested. "This should be done before significant diagnostic work is performed."

Preventing issues

General maintenance habits, such as fuel filter and air filter maintenance, help minimize aftertreatment issues. Mustafa recommended fleets establish service intervals for key ATS components such as the fuel doser, DEF doser, and DEF filter replacement. In addition, the DPF should be cleaned on a regular interval rather than relying

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on the vehicle's diagnostic systems to identify a plugged or failed DPF.

Johnson recommended data analysis. "Many aftertreatment/engine-related failures show themselves at fairly defined intervals," he said. "Looking for patterns of fault codes at certain mileage can give indications of future potential failures."

The hurdle here for technicians is recognizing the signs of an impending aftertreatment issue, Mustafa said. "Having the knowledge and experience to recognize signs of leaking fuel injectors, coolant issues, leaking DEF and fuel dosers can go a long way to keep aftertreatment system-equipped vehicles operating reliably."

The DPF portion of the ATS has been around the longest, and fleets have gotten very good at preventive maintenance, diagnosis, and repair of the DPF and the related components, Mustafa said. "Though the SCR system has been around a while, it seems that failures there are on the rise," he explained.

Bressler said following best practices daily as outlined in the operator's manual is the best way, and perhaps the only way, to prevent aftertreatment issues.

A. Duie Pyle monitors soot levels during PM inspections and each oil change. "If the soot level reaches a predetermined point, we perform a forced regen," Carrano said. "It has significantly reduced the amount of parked regens the drivers had to perform during the course of their day."



» Look for patterns of fault codes at certain mileage intervals, as they could indicate potential failures in the future.

Photo: CanDo International

Tegels continued. "This is less of a concern when a vehicle's powertrain is under load. However, the exhaust temperature will naturally drop if the duty cycle requires high engine rpms and low-load conditions such as empty haul backs. Under these conditions, passive regenerations will decrease, requiring additional active regeneration cycles."

Mazzon said drivers need to pay more attention to vehicle behavior and dashboard displays. "Most of the time, the drivers ignore the warning messages related to the aftertreatment system until the truck enters into derate mode," he explained. "At this point, the performances of the vehicle are limited, and it is necessary to drive the truck to the closest shop to have it fixed."

One of the more common issues is failing to maintain a proper DEF level. If the DEF tank is low on fluid or has improper levels, EPA dictates OEMs restrict that engine. "All of this can be monitored remotely," Hopkins stated. "In seconds, the fleet will know you will have a power loss within seven hours if you continue running this way."

Hopkins also noted that drivers must use the right fuel. "We've found there are some places where they are running higher-sulfur fuel," he said. "If you're on-highway, go to any truck stop and there won't be a problem; but if you're off-highway, you could end up running some higher-sulfur fuel. You want to make sure you're running the right fuel for the application."

Copeland said poor fuel quality is an industry issue, mostly due to a lack of standardization—particularly in the stability of biodiesel fuels.

When improperly stored or contaminated, DEF can cause aftertreatment system issues, specifically in the SCR system, Mustafa warned.

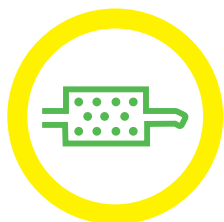
Drivers often ignore the initial level or quality warning because the engine feedback is mild, Bressler explained. "Once the more serious warning is received, it may take several drive cycles after the incident for the warning and engine feedback will abate," he said. "If prompt action is not taken, even when the driver eventually fills the DEF tank or takes other appropriate action, the warning may persist, putting the driver in the position of either admitting bad behavior or blaming the system."

Old habits can also create a problem. "There was a time when idling a vehicle only posed a threat to maintaining good fuel mileage. On the modern truck, idling or pulling very light loads can cause the diesel oxidation catalyst to face plug, preventing an effective regen from taking place," Mustafa noted.

High idle times require an increased frequency of active regens, which can take 45 minutes to complete. Bressler said operators sometimes choose to skip or delay parked regenerations because it detracts from productivity.

Freeman recommended fleets run manual regenerations as often as needed, and he advised drivers to stop and do a regen when the light comes on. "The purpose of doing a regen is to reduce the soot level," he said. "If the light is on, save yourself time and worry down the road and let the regen go through its process. It is going to save you a lot of heartache and hassle down the road and keep your truck out of the shop." ■

For related content go to [FleetMaintenance.com/in-the-bay](https://www.fleetmaintenance.com/in-the-bay)



"If the soot level reaches a predetermined point, we perform a forced regen. It has significantly reduced the amount of parked regens the drivers had to perform during the course of their day."

Dan Carrano, VP of fleet maintenance, A. Duie Pyle

As a part of a preventive maintenance plan, technicians should ensure there are no exhaust leaks. "You want to maintain that high temperature so you can maintain that DPF," said Tim Moore, VP of TMcare Operations for FleetNet America.

Moore added that technicians and drivers should pay attention if they must add coolant, as it could mean the EGR is starting to leak. "That coolant is going somewhere, whether it is on the ground or through the tailpipe," he explained. "If that goes downstream and through that DPF filter, you can have a problem."

Installing OEM-approved parts, selecting the correct oil, and/or completing recommended maintenance practices are vital to extending the life of an aftertreatment system, Tegels added.

Properly selecting and spec'ing the correct powertrain can be just as crucial to an emission system as proper maintenance. "Powertrains with manual transmissions and/or higher rear axle ratios typically run higher engine rpms,"

In addition to low-load drive cycles, stop-and-go cycles can be a challenge due to low exhaust temperatures, which limits the system's ability to perform passive regenerations, requiring a higher frequency of active regens. That is an issue for trucks operating in an urban environment, Carrano said.

"The exhaust aftertreatment system is really a one-size-fits-all system designed for an on-highway application where it is running at a constant speed and temperature. That is where it performs optimally," Carrano said. "When you put that on a truck operating in a stop-and-go urban environment with a lot of low-load, low-temp operating conditions, it doesn't get hot enough to turn the soot to ash."

Educating drivers

Driver behavior is also critical. Moore said one of the biggest issues is drivers not completing a regen when needed. "If you pause it or don't do it, you get a clogged DPF," he said.

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HOW KPIs FUEL SHOP EFFICIENCY

Fleets, service providers, and maintenance management software suppliers all agree on the value of key performance indicators to improve shop operations.

By Seth Skydel

[SHOP MANAGEMENT]

For Mike Palmer, VP of fleet services at Estes Express Lines, the best way to assured success is through continuous improvement.

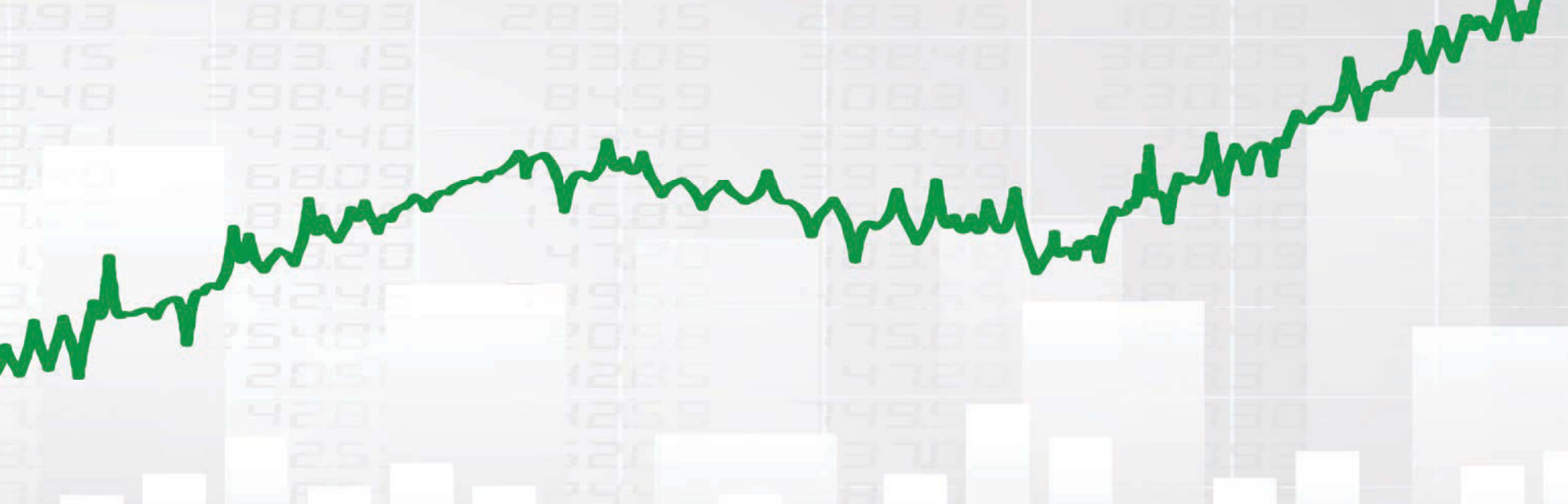
“In maintenance operations, you have to consistently move the needle,” Palmer told *Fleet Maintenance*.

How to move that needle, though? With fuel and payroll taking up larger shares than in the past, that only leaves so much for maintenance. Palmer advises fleets to use something they already have—measurable data—and to leverage their reporting capabilities, with an emphasis on key performance indicators (KPIs), the metrics that tell a business if goals are being accomplished or not.

“With metrics, you can tell which way the wind is blowing and then you can use KPIs to see where processes may be breaking down and need adjustment,” Palmer explained.

For Estes, the nation’s 5th largest LTL carrier, the stakes can be high. The company operates more than 9,000 tractors and 36,000 trailers. The fleet, which operates from over 270 locations in the U.S. and Canada, is serviced at 82 shops by nearly 800 technicians.

This means that small changes in operations can have big effects on all aspects of the business. In terms of maintenance



KPIs, not realizing a change is beneficial or detrimental could impact uptime, which would reverberate across the fleet. That's why, in this modern age where measuring data is so vital to the health of a truck, fleets must also remember data has *always* been important to the health of the overall organization.

Meaningful metrics

To track KPIs, you need to first capture data. Using Trimble's TMT Fleet Maintenance software, Estes measures a wide range of key performance indicators in a series of dashboards, tracking metrics that indicate efficiency and proficiency. One of the key metrics it monitors is the number of vehicles that are down for service at each shop.

"For each location, we set a threshold depending on the size of the facility and the number of units based there," Palmer related. "That tells us how many vehicles we can have out of service and still meet operational needs. Then we can dig into the reasons, whether it's for a PM (preventative maintenance), an accident, or a special project and identify units that shouldn't be out of service."

With that out-of-service data, Estes calculates how many hours are needed to complete service, as well as if an outside vendor is needed to help with the backlog. The data can also address issues where vehicles are waiting for parts. "Even if a shop can buy a part locally for a higher price, the value of uptime may exceed the added expense," Palmer said.

"KPIs also give us visibility into labor," Palmer continued. "We use SRTs (standard repair times) and metrics on hours worked, and direct versus indirect labor, to measure technician efficiency and productivity. That information also lets us establish a ratio of trucks per technician so we can adjust staffing levels as needed."

Other KPIs measured at Estes focus on outside repair costs, road calls, parts, repeat repairs, overdue PMs, campaigns, and the number of rentals—which are an indicator of productivity. "All of those are used to more effectively plan shop workflow," Palmer said. "In the end, it's all about uptime."

City of Yonkers, New York, Mayor Mike Spano's Department of Public Works provided a list of the top metrics that are followed and described their value

in more effectively maintaining the fleet of over 1,000 vehicles and pieces of equipment:

- Asset downtime metrics ensure that PM schedules are followed and determine what additional repairs are needed either in-house or with outside vendors.
- Technician proficiency metrics effectively assign repair work, determine where changes can be instituted, and eliminate downtime waiting for parts and locating vehicles.
- Inspection and PM program accuracy metrics indicate technician training needs, especially as newer vehicles are added to the fleet, to keep the comeback rate low.

Metrics make the data

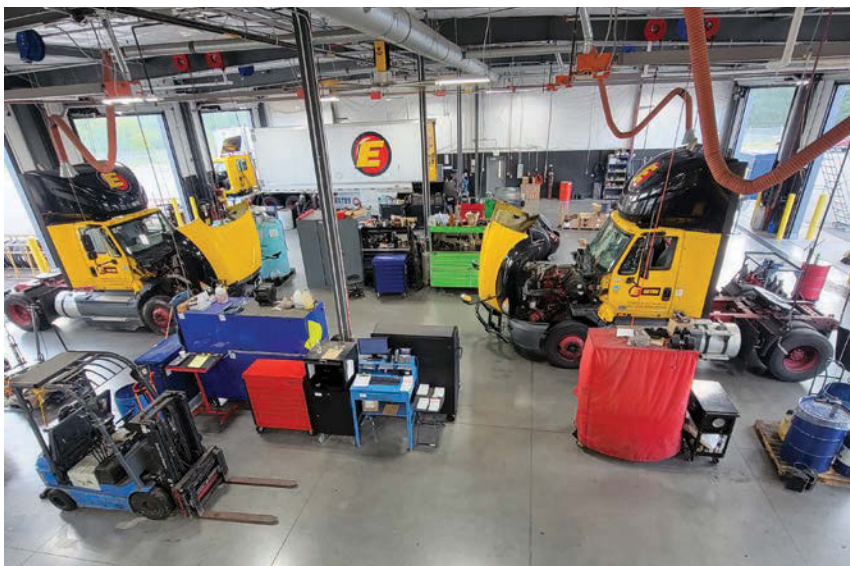
Data overload is one issue maintenance providers encounter and must learn to keep in check. Choosing the right metrics will help do just that.

"We have increasing amounts of data available to us, so the question about KPIs becomes what can we do to make them relevant," said Pete Russo, SVP of product management and solutions at Decisiv. "Raw data is useless unless you can reach a level where it's intelligent and can directly affect decisions on what needs to be managed."

And it can take a deeper dive to make that judgement. For example, Russo pointed out that measuring PM currency can tell you how often maintenance is completed but not how many PMs were done late. Likewise, repair time metrics can point to shop and technician proficiency, but if the estimated

» KPIs in dashboards are used during regular manager's meetings at Estes Express Lines to focus on a range of service management, maintenance, and repair metrics.

Photo: Estes Express Lines



» The Estes Express Lines fleet of more than 9,000 tractors and 36,000 trailers is serviced at 82 shops by nearly 800 technicians.

Photo: Estes Express Lines





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Heavy-duty KPIs

Jacob Findlay, co-founder and executive chairman of Fullbay, provided a series of KPIs for heavy-duty repair shops to consider:



Technician KPIs

- Comeback rate, typically measured as comeback hours in a given period divided by total billable hours, is a measure of technician proficiency.
- Technician efficiency measured as service order hours (actual wrench-turning time) divided by billable hours.
- Technician utilization, a measure of service order hours divided by clocked hours.



Parts KPIs

- Inventory shrinkage and turn rates, the latter being average inventory balance divided by cost of parts used over a time period. The lower the rate, the slower your inventory is turning and therefore the more you will lose to obsolescence, shrinkage, etc. (The carrying cost of inventory is typically between 15% and 20% of the total inventory balance per year.)



Shop KPIs

- Shop efficiency and utilization is measured in the same way as technician efficiency and utilization, but at a shop level.
- On-time PM rate as a percentage of PMs performed on or before their due date.
- Warranty claims as a measure of parts and labor cost savings.
- Efficiency of roadside repairs versus in-shop repairs as billable hours divided by actual hours.

“Because the primary concern of fleets is unit uptime, tracking and executing a solid PM program is crucial,” Findlay said. “Shop and technician efficiency KPIs are indicators of an effective PM program, as it means more work can be done in less time, and with fewer technicians.”

“The quantity of commercial vehicles on the road is increasing at the same time that the quantity of technicians available to maintain those vehicles is decreasing,” Findlay added. “Shops need to use KPIs to run more efficiently so they can do more with the technicians they have while maintaining a high level of quality workmanship.”



» Technician proficiency is a critical measure for FleetPride, especially with the cost of labor continuing to rise, as it is an important KPI for ensuring the quality of the repair and customer satisfaction.

Photo: FleetPride

time to complete repairs is missed, the real cost is to the fleet in lost revenue.

Real-time data is essential for developing valuable KPIs, Russo noted. “Looking at fault code patterns leads to a better understanding about which alerts indicate critical repair needs, and trends in those metrics get you closer to predictability about failures,” he said. “Analyzing data that way puts you ahead of the curve rather than being reactive.”

On an industry level, Decisiv is utilizing its vast repository of actionable data derived from nearly four million annual repair events in partnership with TMC to elevate the ability to analyze maintenance and repair activity. In their quarterly North American Service Event Benchmark Report, the organizations track KPIs that highlight maintenance labor and parts costs by nine VMRS (vehicle maintenance reporting standards) System level codes.

What can be valuable for fleets as well, Russo added, is the ability to automate VMRS encoding. The capability that Decisiv offers analyzes individual service operations using Machine Learning (ML) and Artificial Intelligence (AI) to interpret information captured during the creation of a repair order and assigns VMRS codes to completed operations.

Another source of industry-level metrics is the TMC/FleetNet Vertical Benchmarking Program. Through the program’s quarterly Truckload Vertical Benchmark Study, which tracks mileage and uptime between unscheduled road repairs, fleets can access an analytic tool that allows

» The Chevin KPI Wizard allows users to build fleet status KPIs that can be viewed in a dashboard or in their FleetWave software’s Reports module.

Photo: Chevin

them to drill into their data, comparing it to the industry average.

Leveraging the data

Management information technology is central to the development of metrics and the effective use of KPIs. Shaun Rowley, global head of product at Chevin Fleet Solutions, was quick to relate that vehicle downtime is a top metric to track.

“Looking at historical data, you can identify what faults have occurred on the same vehicle types,” he said. “That helps make sure the right parts are in place. It’s also about keeping technicians fully utilized and having the data to understand the size and complexity of repairs, which ensures that skill sets fit the job.”

For KPIs that address technician proficiency, it’s key to have the ability to understand repair times and the time between jobs in order to measure productivity, Rowley added. “If your technicians are 80% productive, then what are they doing for the other 20%, and how can you reduce that?”

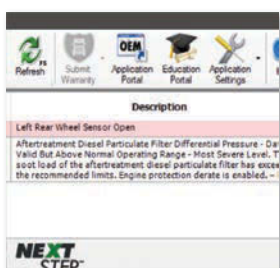


Five Steps to Avoid Unnecessary Regens

Often, a technician will see the word “DPF,” “Aftertreatment,” or “SCR” in a fault description and instinctively attempt a forced DPF regeneration (regen) to correct the issue. Unfortunately, this has costly consequences when a forced regen is the incorrect procedure, such as:

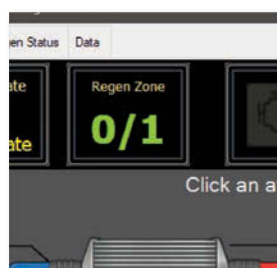
- **Wasted Fuel** – A forced regen can burn up to 1.5 gallons of fuel.
- **Component Stress** – The heat required for a forced regen can weaken vehicle components over time.
- **Unnecessary Downtime** – The regen can last 30-60 minutes, plus additional time afterward for the components to cool down.

These issues affect the profitability of a fleet and the service center performing the service. Fortunately, we have five tips to help reduce the occurrence of unnecessary regens in the shop.



1. Read the *entire* fault description

Don't quit reading when you see the word “DPF.” Diagnostic tools that offer enhanced fault descriptions may provide more guidance on the issue later in the text.



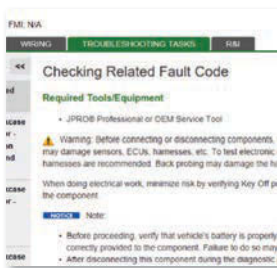
3. Verify the regen zone

Technicians should make it a habit to always check which regen zone a vehicle is in, as it can immediately indicate if a forced regeneration is necessary. A regen is not required if the truck is in zone 0 or 1.



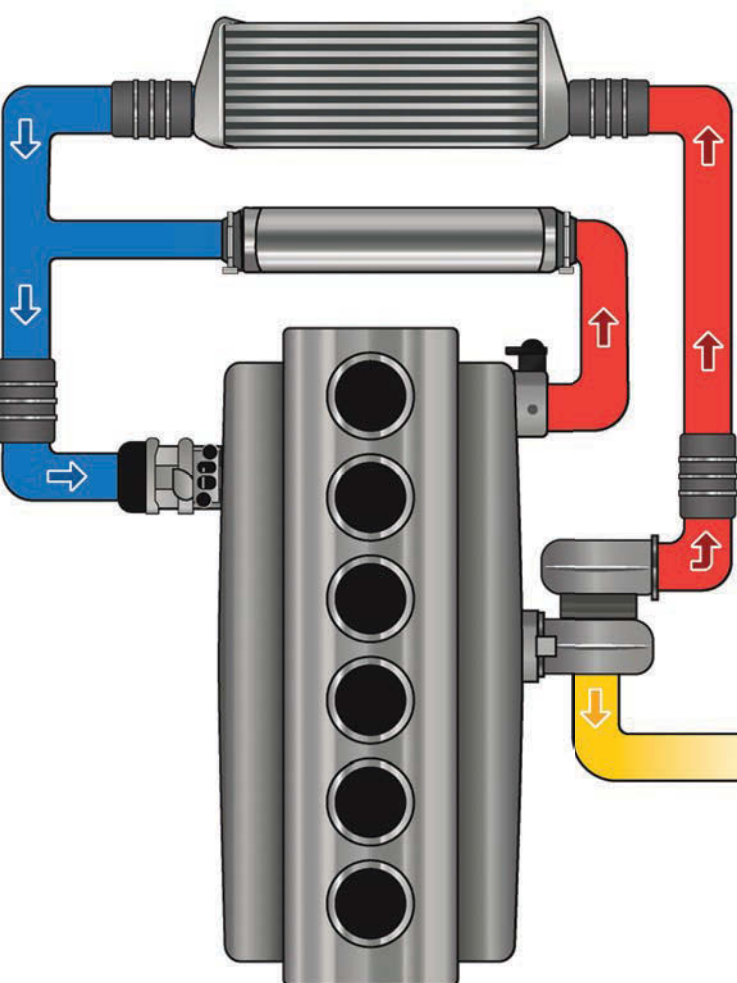
2. Review the checklist

JPRO's aftertreatment diagnostics feature provides an essential **aftertreatment diagnostics checklist** for the technician to review. Following this set of diagnostic procedures helps identify the root cause and determine the correct repair procedure.



4. Troubleshoot the problem

An aftertreatment diagnostic checklist can help identify many visual issues, but at times more in-depth troubleshooting is required to determine the root cause. Use an assisted troubleshooting tool like JPRO's Fault Guidance feature that ensures you follow all valid troubleshooting steps before considering the regen.



5. Follow detailed repair procedures

Once you have identified the problem, utilize the OE service manuals or an online service like NextStep Repair to follow instructions for repairing the issue. These documents ensure the job is done safely and accurately and help technicians avoid unnecessary procedures.



Using data to focus on what to outsource is essential as well, Rowley noted. For example, say the standard time for rebuilding a gearbox is 10 hours, but because your technicians are not doing that work regularly, it takes them three times as long. Knowing that reveals that your technicians are only 30% productive for that job. The data can help you decide when it is more cost effective to do a job in house or if you are better off outsourcing.

“You can use historical data from your fleet management system to understand when and why vehicles typically break down to create an inspection program that is more effective or to know when maintenance is likely to be needed,” Rowley continued. “It can be as simple as creating clear rules.”

Management systems can generate information and reports to help support and measure actual performance, related Ben Johnson, director, product management at Mitchell 1. “If a fleet measures shop performance against established KPIs, that information can be used to identify performance gaps and close them,” he said.

One of the challenges today is in the collection and appropriate use of data that is available on most vehicles, Johnson noted. “That information is generally in silos which doesn’t expose it to the tools we have to create KPIs and deliver insights that are possible for predictive analytics,” he stated.

One example that Johnson mentioned was tying real-time vehicle mileage to maintenance records to help predict the next logical timeframes for service. That way the required maintenance can be performed during scheduled intervals instead of having a failure that can jeopardize goals.

“As a vehicle service history is built into an intelligent data pool, AI can be applied to those records and, based on usage models, a fleet could ascertain which vehicles, makes, models, powertrain configurations, etc. offer the lowest overall life of ownership cost,” Johnson said. “That KPI would advise a fleet when a vehicle has reached the end of its useful life without requiring a major investment to maintain its ability to meet operational needs. Then the fleet can make more informed decisions on which vehicles to replace to optimize that fleet’s lifecycles.”



» At PacLease, specific areas of service management are addressed by the associated metrics, including: shop throughput, technician proficiency, parts control, inventory costing, outside service provider, inspection and PM program, and breakdowns.

Photo: PacLease

Cory Anderson, FleetPride’s general manager and VP of service, pointed out that KPIs are important because shop throughput and asset downtime are affected by every aspect of the repair process.

“It begins with the manner in which maintenance or repair needs are communicated to the repair facility,” Anderson said. “Proactive fleet management begins with the process of alerting a repair facility to the vehicle’s needs, allowing them to prepare with parts and technician time, and that improves asset downtime.”

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Additionally, Quick Check® Commercial allows customers to track all of their inspection data through HunterNet® 2, Hunter’s online portal. The data collected by HunterNet® 2 provides real insight for setting goals, ensuring accountability and monitoring ROI – not to mention the peace of mind that comes from knowing fleet maintenance issues are well in hand.

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“Technician proficiency is a critical measure, especially with the cost of labor continuing to rise,” Anderson continued. “That is also an important KPI for ensuring the quality of the repair and customer satisfaction.”

Establish targeted KPIs

For the ultimate success with metrics and KPIs, don't let the data mislead you. In any analysis of commercial vehicle service activity, it's important to understand the metrics and KPIs, noted Joel Levitt, president of Springfield Resources (and regular *Fleet Maintenance* columnist).

“Metrics are the data you watch and KPIs are the actual measures of success. In effect, metrics tell you what happened while KPIs give you an opening for action.

“For example, PM compliance is a metric while uptime is the KPI goal,” Levitt explained further. “Similarly, adherence to SRTs can tell you how productively technicians are performing while knowing actual labor times lets you find the cause of inefficiency, such as high rates of indirect labor.”

With tight algorithms, it's less likely you'll be overwhelmed by data because you can rule out what's not an issue and focus on what's important. “Increasingly sophisticated technologies like AI can replace what was done statistically up until just a few years ago,” Levitt said. “Let's say that in the past you knew that a component would average a certain number of miles before failure. Today, you can use sensors to see an impending failure and then establish a plan for replacement.

“That helps achieve the ultimate goal of truly predictive maintenance and the ability to use components for as long as possible and replace them for as little cost as possible,” Levitt added. “It's why you should figure out the metrics or indicators to track and decide which KPIs work best for your operation, including those that may not always be obvious.”

For related content go to [FleetMaintenance.com/shop-operations](https://www.fleetmaintenance.com/shop-operations)

Real-world service management metrics

There are many service providers using KPIs to positively impact shop operations. At PacLease, Willie Reeves, director of maintenance, related specific areas of service management and their associated metrics:

- Shop throughput is an indication of asset downtime and can be determined with the average number of days a unit has been down based on repair types.
- Technician proficiency is determined by taking standard repair times and comparing them against actual clocked time on the job. This gives you each technician's individual proficiency percentage and helps generate standards.
- Parts control, inventory, and costing require more in-depth KPIs. The total inventory dollar amount as well as the number of each item currently on hand is a start. Inventory turn metrics help determine which items to stock.
- Outside service provider repairs create a variable expense for the fleet. Being able to track this cost for each unit helps provide valuable data for determining your expected cost based on things such as unit type, vocation, and application. Once the expected KPIs have been created, managing not just this cost but the downtime in days becomes critical.
- Inspection and PM program accuracy measures in terms of “fix it right the first time” rates and unscheduled repairs, which can help ensure quality PMs are being performed. A related item is variable expenses due to breakdowns. The higher your variable expenses, the lower your PM quality and accuracy.

Monitoring the total number of breakdowns, days the unit(s) has been down, and even the revenue lost can generate KPIs for creating standards, achieving the ultimate goal of reducing downtime.



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SPOTLIGHT ON UNDER VEHICLE



» Hawaiian Airlines uses Stertil-Koni's Mobile Column Lifts to perform maintenance on a pushback tractor.

Photo: Stertil-Koni

Lifting strategies OF THE SOUTH PACIFIC

Even in paradise, trucks need maintenance. And with space in short supply, that's often facilitated by mobile lifts.

By John Hitch

In the early '90s, equipment salesman Lou Cardoza's children were grown and out of the house, making the California man and his wife empty nesters. Instead of flying south to enjoy their golden years, they made the 2,500-mile-long journey west to Hawaii's Big Island, where they always dreamed of retiring. The dream location was achieved, but retirement was still financially out of reach for the couple, so Cardoza kept selling as an independent contractor.

Cardoza, now an exclusive seller for lift manufacturer Stertil-Koni in Hawaii—along with Guam, Saipan, and American Samoa—has one of the largest territories imaginable and by far the most sparsely populated.

“If you take all of the registered vehicles in Hawaii, Guam, Samoa, and Saipan and put them all together, it’s still much smaller than probably what’s registered in New York or Maryland,” Cardoza noted.

Technology has allowed Cardoza to be a less frequent flyer. He used to make quarterly visits to Guam, a 4,000-mile trip, which required a nine-hour flight. Now, most of the sales and training to those far-off tropical territories are done virtually.

His customer base is also vast, serving a range of fleet customers from Class 8 trucks and tour buses to airport, military, and municipal units.

When he first arrived to the Rainbow State, Cardoza solely worked for a Japanese equipment manufacturer, but then he expanded to covering 40 automotive product lines. Cardoza soon discovered his customers on the islands lacked something mainland shops may take for granted: vehicle lifts. And he decided in 1998 to go exclusive with his best-selling brand, Stertil-Koni. He also held onto his Pro Cut International account. Pro Cut, a division of Snap-On Inc., sells brake lathes, which have become more popular with trucking fleets as they adopt air disc brakes.

“Ninety percent of the accounts I called on had no vehicle lifts,” Cardoza recalled of his early days. “They were doing all their service on creepers, literally crawling along the ground—not a particularly safe or efficient practice.”

Improving shop efficiency is of even higher value on an isolated mound of cooled lava, when every resource is rare, from labor to parts to land. Lifts can increase the one controllable resource: time.

“If they do a PM in the air versus on the ground, timewise, it’s 80% less time,” Cardoza said. These PMs can range from oil changes to brake and wheel maintenance. “They can then remove the wheels, the brake drums, and so forth with our high-lift wheeled dolly.”

Lifts also protect employees from losing time and companies from paying for workplace-related injuries

“A lift improves technicians’ proficiency and their well-being,” Cardoza said. “It’ll reduce workmen’s compensation because they’re not developing back problems from getting under a vehicle.”

And likely because of Cardoza’s longevity and tenacity in the region, Stertil-Koni’s reach has greatly increased. The best seller by far has been the Maryland-based lift manufacturer’s line of mobile column lifts, which can be arranged by one person in multiple configurations. These include wireless mobile column lifts, cabled mobile column lifts, and EARTHLIFTS.

Hawaii has some of the priciest land in the U.S., a reason the pineapple and sugar farms are no longer viable. Shops that serve a small customer base that doesn’t travel far (the longest trucking route is 100 miles) must use their space economically as well. That’s why Cardoza estimated that 90% of his customers choose mobile lifts.

“Mobile column lifts are adaptable to all applications,” Cardoza explained. “They can be moved from point A to point B and so forth. The customers like them because of their mobility and all the factors that go along with them.”

Some larger customers, such as the City of Honolulu, also use Steril-Koni’s Skylift and



» The maintenance department at the State of Hawaii Airport Fire Department prefers mobile column lifts, as they can be configured for each type of vehicle in the fleet and at various service bays.

Photo: Stertil-Koni



» Equipment salesman Lou Cardoza shows his grandson, Aiden, the finer points of lifting his 1966 Corvette at his Hawaii home.

Photo courtesy of Lou Cardoza

aboveground four-post lifts, though those cost more overall due to changing the infrastructure. Honolulu County purchased 16 mobile column units, along with six flush-mounted Skylifts.

“Sometimes that’s impossible because the landlord, or the lease, won’t allow them to dig up the concrete,” Cardoza said. “Mobile columns are more economical based on those facts.”

Cardoza doesn’t have to spend much time setting up the shops, as unboxing and training take about an hour total. He noted the wheels on the lifts have the ability to withstand all the capacity to lift and won’t damage the surface beneath them, whether that is concrete, asphalt, or another hard surface.

The wireless mobile lifts use a military signal called Zigbee to connect the independent columns,

which need to be in perfect synchronization to prevent a vehicle from tipping off the lift.

“A lot of times you’re lifting vehicles—a waste truck, for example—that have unequal weight distribution between the front and rear axles,” said Paul Feldman, Stertil-Koni’s director of marketing. “The mobile lift automatically adjusts for that.”

Feldman added the mobile column lifts come with touchscreen controls to make operation easier. Former “Tonight Show” host and prodigious car collector Jay Leno has one in one of his garages.

They are powered by marine batteries, with ratings of 18,500 lb., 22,000 lb., or 40,000 lb. per column. The battery lasts about 35 lift cycles and will need to be replaced between three and five years. Maintenance is minimal, with hydraulic flushes needed every two years.

“A lift improves technicians’ proficiency and their well-being. It’ll reduce workmen’s compensation because they’re not developing back problems from getting under a vehicle.”

Lou Cardoza, sales and service representative, Stertil-Koni

A truck with a dual-drive axle may need six columns, while a fire-fighting water truck at the airport would use eight. A pickup would likely only need two, one in front and one behind.

The lifts come with an extra wide set of forks to accommodate wider, larger tires.

Air lift

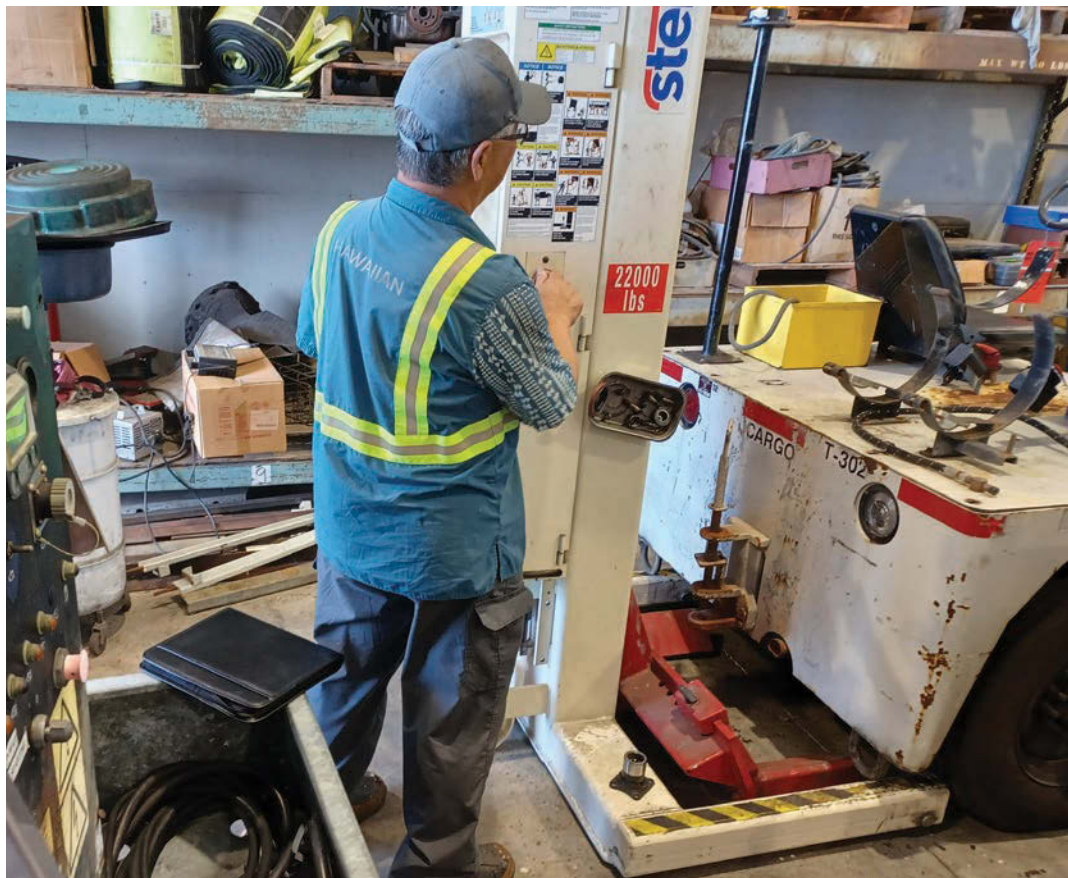
Those attachments come in handy at Hawaiian Airlines' various sites across Hawaii's main islands, including Oahu, Maui, and Kauai, explained Curtis Balingit, Hawaiian Airlines' senior manager of the ground service equipment department. These include smaller 6,000-lb. baggage tugs to 65,000-lb. pushback tractors and fuel haulers, which the airlines' technicians have serviced with Stertil-Koni's mobile lifts for about a decade. There are five stations currently using the mobile lifts, according to Balingit.

"It makes more sense for the guys to stand up and easily work on the heavy tractors instead of having to crouch down," Balingit said. "There is a much older gentleman who doesn't like to bend down. He uses the Stertil-Koni lift so he can work on forklifts' brakes and tires."

At the nine-bay Honolulu site, Balingit's crew performs PMs, unscheduled work, and fabrications for various custom units, and that versatility calls for flexibility of the equipment. Because the mobile columns can be configured for each type of vehicle and at various bays, the lifts have fit right in.

"We like their ability to easily move around the shop, and we can lift pretty much anything at any location," Balingit explained.

There's also a drive-on Challenger system rated up to 18,000 lb. in the shop for brake, transmission, and axle work, but Balingit did not want to



» A technician in the ground maintenance department at Hawaiian Airlines prepares to lift a small pushback tug with a Stertil-Koni Mobile Column Lift.

Photo courtesy of Lou Cardoza

add any extra fixed lifts, which would tie up more space and become trip hazards.

Cords are also trip hazards, which is another reason Balingit favors the wireless battery-operated lifts. They can recharge overnight.

In terms of safety, Hawaiian Airlines reinforces lifted equipment with additional jackstands.

"Just in case we lose tire pressure on one of the units while it's on at height, we don't want this thing to come crashing down, so we put support stands on all the units that we lift," Balingit said.

Recently, Balingit noticed the columns were too far apart and supervised the adjustment of them to ensure that if a tire did go flat, the rim would not fall through and damage the chassis.

"That would make for a catastrophic event because that thing would definitely tip off of the lift and could fall to the ground," Balingit asserted. "You want to make sure that the unit is picking up the tire as close as possible to the forks—you don't want any gaps. When you're lifting a vehicle, you want it to be lifting up equally."

Maintenance on the airline's shop equipment was not needed during the COVID-19 pandemic, as Hawaii saw a sharp decline in tourism because of the lockdowns. No flights in or out meant the vehicles did not require as much maintenance. But now things are nearing normal again, and Balingit and other fleets on the island have Cardoza to arrange help.

Cardoza has a repair tech well-versed in swapping batteries, changing fluids, and fixing any other issue.

"We do have to check periodically to make sure they're in in spec," Balingit said. "And there were a couple of times when we needed some repairs because something wasn't working, but Lou is really good about getting those concerns addressed and back in operation for us." ■

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Do the benefits of additives really add up?

Fleets are rarely enticed by marketing claims, but case-study data show that there's some solid science behind all of that additive sales sizzle.

By Gregg Wartgow

The global fuel and oil additive market, which exists to boost fuel and engine oil efficiency and vehicle performance, is already very sizable—at over \$10 billion, according to Technavio—and continues to grow. According to Data Bridge Market Research, the diesel bottled fuel additive sector will see a compound annual growth rate of 6.5% from 2022 to 2029.

Even so, not all fleets are sold on their purported benefits, such as improved fuel economy. Plus, additives introduce another layer of expense on top of rising fuel costs. But for fleets using additives, rising costs seem to be the biggest motivator.

Additives can be seen as vitamin for the engine, as the quality of fuel at truck stops can vary as greatly as the food sold inside of them. They essentially are designed to compensate for and even boost lower-quality diesel.

“What it comes down to is that we really don’t know what quality we’re getting at the pump today,” said Josh Steinmetz, e-commerce and digital marketing manager at Lubrication Specialties, a provider of oil, lubricants, and additives whose brand names include Hot Shot’s Secret. “Station 1 might have a certain quality of fuel, and Station 2 across the street is likely a different quality.”

Knowing the precise quality is necessary for fleets that rely on a certain level of engine performance to stay profitable.

“Today’s equipment runs on such tighter tolerances that the fuel needs to be at the optimum level to not only perform well, but also reduce breakdowns and trips to the repair shop,” Steinmetz added.

Additives also boast about improving performance. Oil additive companies, for example, have a lot of things they put into their chemistries to precisely dial in certain levels of performance. That said, with CK-4 and FA-4 oils emerging over the past several years, fuel economy has become a larger factor.

“The OEMs have recognized that they need to provide durability and wear protection, but also need ways to get more efficiency out of the engine,” said Greg Matheson, product manager for commercial engine lubricants at Lubrizol, a specialty chemicals company whose oil, fuel, and lubricant additives are used by a variety of OEMs and aftermarket marketers. “So, as an additive company, we need to really look at that fuel economy piece.”

The other potential benefits of additives can be a big deal, too, including reduced maintenance, cleaner exhaust, and perhaps even stronger used-vehicle resale values.

According to Ed Gibbs, EVP of marketing at MotorKote, a supplier of additives and lubricants for gasoline and heavy-duty diesel engines, the ROI generated from additives are hard to ignore. Gibbs, a regular on the popular radio show “America’s Truckin’ Network” for nearly 20 years, which earned him the moniker “Mr. MotorKote,” said he recently took a call from a fleet operator who claimed that for every dollar of MotorKote products he used, he recovered six dollars.

“The added bonus was that in the used-vehicle market, this guy became very respected for having the best trucks around,” Gibbs related. “This guy told me he actually had a waiting list for his trucks because everything was so clean and well-maintained.”



» Additive makers have been working diligently to develop formulas that help fleets increase engine performance while addressing today’s realities of tighter engine tolerances, inconsistent fuel quality, high fuel prices, and ongoing aftertreatment system headaches.

Photo: Lubrizol

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Signs you might need an additive

When you get down to it, though, most fleets that begin using various additives do so in order to solve an immediate problem. There are certain warning signs fleets can watch for that might suggest an additive could help.

“Most fleets are tracking fuel mileage pretty closely now,” said Clay Parks, VP of strategic development at Bar’s Leaks, a leak-detection products manufacturer whose brands include Rislone, a maker of engine treatments and fuel additives. “If the fleet is seeing a gradual decline in fuel economy, there’s a pretty good chance it is fuel related. Black smoke coming out of the exhaust, especially on newer vehicles, is a big sign. Unusual noise in the exhaust is something else to look for.”

A technician may also notice deposit issues with the fuel injectors or other parts of the fuel system, signaling the potential need for a fuel additive with cleaning properties.

“For older diesel trucks, there is also often a need for lubricating additives,” Parks added. “With a reduction in the sulfur in fuel, a lot of the lubrication ability inside of those systems has been lost. There are even benefits to some of the newer diesel models since lubricating additives can also help with injector stiction.”

Stiction refers to the sticky residue on moving engine parts from burnt oil. While some additives are designed to take care of one problem, such as stiction, others are designed to tackle several problems.

MotorKote’s Gibbs advised fleets to be skeptical of products that claim to do too many things. “With each additive in a final product, you have to hit on the right percentage of concentration for it to work,” he explained.

Parks agreed with that sentiment—to a certain degree. “Nine times out of 10, dedicated products are a bit stronger,” Parks said. “But when you look at the claims made on the product data sheet, users will meet all of the claims with the additives that are in that product.”

It really comes down to fleets understanding what a given additive is capable of doing and whether or not that performance level will satisfy the expectation they have.

“We formulate our products to the max level, so there aren’t any fillers,” said Steinmetz of Hot Shot’s Secret. “That allows us to do several things well, together. We’ve also found that we get synergies between different components. For example, lubricity can be improved with a lubricity improver, but also some of the other ingredients in the product. When you use one additive to do one thing, you can’t benefit from those syner-



» MotorKote’s flagship product, Hyper Lubricant, coats metal surfaces to reduce engine friction and can help lead to lower operating temperatures, reduced vibration, and increased horsepower. It can also be used in transmissions, differentials, and power steering at half the dosage.

Photo: MotorKote



» Lucas Oil’s Diesel Deep Clean can reportedly reduce particulate matter by up to 32% when used correctly.

Photo: Lucas Oil

gies. So that’s how our chemists go out and find the best products to use together to create the best formulations.”

Engine oil additives

Lubrizon’s Matheson said fleets running the newer CK-4 and FA-4 engine oils have a need for additives. Because modern engines are more compact with less clearance between components, engines run hotter and require enhanced protection against oxidation and corrosion.

“Lubrizon’s technologies have evolved to include ingredients like anti-oxidants, friction-reduction agents, as well as detergents and dispersants to keep engine components free of deposits and acids that can build up,” Matheson pointed out.

To get to the optimum formulation, Lubrizon chemists perform extensive testing. First, standard API licensing tests are conducted. “Outside of that, we do extensive field testing in the real world,” Matheson said. “For the CK-4 and FA-4 products that are on the market today, we have tested over 75 million miles running up and down the road. A lot of the testing we do is with our customers. In many cases, the marketers of the final additive treatment product have the same data we do. Fleets should always ask their oil and additive suppliers about the field-testing data they have.”

Hot Shot’s Secret, for example, has compiled quite a bit of data of its own. In one of their many third-party field studies, a trucking firm called Blackrock Logistics tested three standard freight trucks with two of Hot Shot’s Secret additives. Stiction Eliminator, a blend of synthetic cleaner and proprietary lubricant, was used in oil systems. Diesel Extreme, a concentrated injector cleaner and cetane booster, was added to fuel tanks. By using both additives, as opposed to just one or the other, maintenance costs were reduced by more than half. Drivers also reported a noticeable increase in power.

To that point, MotorKote’s Gibbs said he often hears from radio show callers that using both an oil and fuel additive can help improve fuel economy by as much as 6 mpg.

Fuel additives

The conversation about fuel additives begins with the fuel they are created to supplement.

“Diesel fuel specs in the U.S. have been relatively loose when compared to other countries,” said Kevin Griffith, product manager for diesel fuel additives at Lubrizon. “The heavier duty equipment has generally been able to handle that fuel for the past couple of decades. The big changes have come with the bigger push for emission reduction and fuel economy. Now, you’re starting to see different conditions that are happening with these newer heavy-duty diesel engines.”

As mentioned earlier, new engines tend to run hotter today. That can lead to an increased level of deposit formation inside the injectors and on the injector tips. “A fleet could end up seeing significantly decreased performance due to a blocked injector flow,” Griffith explained. “Lower horsepower and torque output can lead to worse fuel economy and emissions.”



» Hot Shot’s Secret Diesel Extreme is a fully-formulated, concentrated cleaner that removes all internal diesel injector deposits. In addition, this fuel additive contains a top-tier level of cetane booster, lubricity additive, and fuel stabilizer to provide maximum performance while cleaning the fuel system.

Photo: Hot Shot’s Secret



» Rislone’s Hy-per Diesel complete fuel system treatment was designed to improve the fuel quality by increasing its cleaning ability, boosting cetane, adding lubrication, removing contaminants, fighting corrosion, and helping to prevent gelling.

Photo: Rislone

For that reason, a fuel additive designed to clean and prevent deposits can prove to be a good investment for a fleet, particularly fleets running higher duty cycles such as vocational or city delivery.

“Each fleet is unique with its own working load on its vehicles,” Griffith said. “That’s why I always caution fleets to not completely accept the claims on an additive bottle as what they can expect. Explain your situation to the additive supplier and ask what a realistic expectation is. A lot of starting, stopping, and idling can lead to deposits faster which can impact performance and also create exhaust issues. On the other hand, long-haul applications will still likely benefit from a fuel additive, but should maybe set their expectations a bit lower, perhaps in the few-percent improvement range.”

In addition to deposit control, Griffith said several other additives can come into play with fuel. The most common is a lubricity improver, driven by the move to a lower-sulfur fuel specification which has resulted in reduced friction modifier benefits. “In other words, this fuel is a bit rougher on metal surfaces which can lead to increased wear on things like fuel pumps,” Griffith explained.

Since there is a North American standard relating to wear scar, Griffith said most fuel additives will provide some degree of lubricity improvement. The question is, how much?

“The North American specification for wear scar is much easier to meet than other regions, such as Europe,” Griffith pointed out. “So, there is still plenty of room to improve fuel lubricity. This is where a fleet may want to treat itself because the fuel coming out of the pump might not deliver the highest performance in this area. The fleet can take it upon itself to add additional additives to better protect its equipment, especially if the fleet plans on hanging on to that equipment for a long time.”

One other consideration with fuel additives relates to cold-temperature operation. Additives containing cold-flow, anti-gel properties can benefit any fleet operating in cold environments, including southern fleets driving into northern markets.

Finally, fuel additives can result in an important side benefit: better aftertreatment system performance. Cleaner-burning fuel results in cleaner exhaust. According to Hot Shot's Secret's Steinmetz, adding cetane to a fuel additive is one of the easiest and most effective ways to improve DPF regens.

Speaking of DPF regens, there are other additive products available that are specifically designed to tackle this challenge head-on.

For instance, Lucas Oil's Diesel Deep Clean is marketed as a particulate filter cleaner and power booster thanks to its ability to deep clean the entire fuel and exhaust system. According to the company, particulate matter can be reduced by up to 32% when used correctly, helping to improve regen efficiency.

Another example is MotorKote's DEF Reducer. This additive is designed to enable the combustion fuel catalyst to allow fuel to burn cleaner and more efficiently. That can result in less soot and filter contamination, resulting in a cleaner DPF that can last longer, which results in less DEF consumption—hence the product's name. Gibbs said field data shows

that proper use of DEF Reducer can reduce regens by up to 80%.

Rislone is working on an additive of its own that relates directly to the DPF. “A lot of fleets are dealing with more frequent regens and fault codes,” Parks said. “The product we're working on is designed to help reduce the number of regen cycles.”

If there is a fuel- or oil-related headache fleets

encounter, you can bet that additive formulators are working on a solution. Every fleet has different assets, applications, and expectations. Whether or not a given fleet decides to buy in to the use of additives is up to that individual fleet. Nowadays, the decision can be motivated by not just packaging sales sizzle, but science from the lab and performance data from the field. ■

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» BendPak founder and chairman emeritus, Don Henthorn

Photo: BendPak

BendPak founder reflects on career lifting up the vehicle repair industry

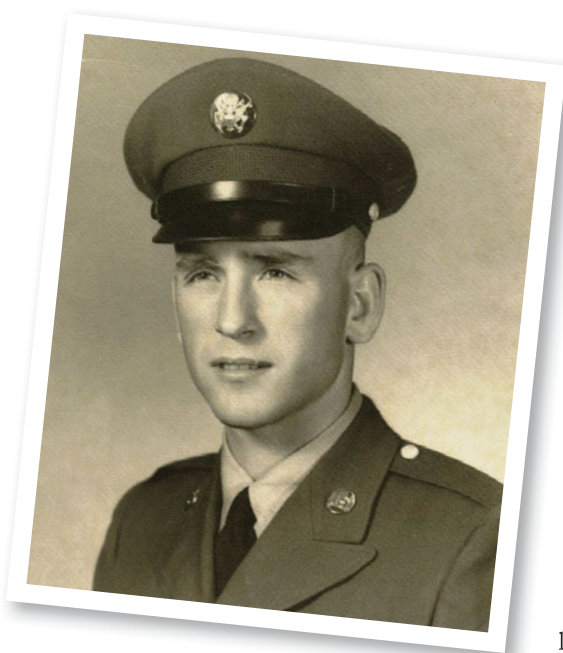
Don Henthorn founded BendPak as an aerospace machining shop in 1965 and built it into a world-class shop equipment manufacturer. Here, he reflects on his career.



By John Hitch

When Don Henthorn founded a modest machine shop, Quality Machine & Associates, in Simi Valley, California, in 1965, the aerospace industry was booming and the nation's collective sights were set on the moon. Henthorn supplied companies such as Rocketdyne, Rockwell, and Hughes Aircraft with precision parts, but he wanted to do more than make parts for other companies. He wanted to invent his own.

And that's what he did over the next decade, first with a ball-joint replacement tool for automotive front ends called the 5ivePak. This all-in-one tool combined a coil spring compressor, U-joint press, and gear puller. Then he patented the Macpherson Strut Spring Compressor and a handheld portable hydraulic tail-pipe extender. After the construction of a 20,000-sq.-ft. manufacturing facility in 1977 came the introduction of a hydraulic tubing bender to ease maintenance in



» BendPak founder Don Henthorn volunteered for the U.S. Army when he was 19 years old because "my life was going nowhere and I felt I had to make a change."

Photo courtesy of Don Henthorn

muffler shops. While in the '60s everyone was looking to the stars, in the '70s Southern Californians could barely see past the thick layer of smog in the sky, so controlling vehicle emissions became a big business.

And Henthorn's business became bigger because of it, as the company increasingly focused on serving muffler shops, and the name was changed to BendPak, now a recognized name in both automotive and commercial vehicle maintenance circles for its lifting technology. The company has sold more than 500,000 vehicle lifts since 1984 and includes a wide range of products such as car and truck service lifts, pipe benders, air compressors, tire changers, wheel balancers, wheel aligners, brake lathes, and more. Along with the BendPak brand, the company also owns Ranger, Cool Boss, MaxJax, Dannmar, and several others. A private fleet called Bolt Transport was even started up by BendPak this year to ensure reliable delivery of its freight. Overall, BendPak said its revenue grew by more than 200% over the last decade.

Now, 57 years after Henthorn started up that job shop, BendPak claims to be the world's largest supplier of lifts and automotive equipment. Henthorn has decided to go out on top, and in August he handed command over to his trusted employee of 40 years, Jeff Kritzer, who was promoted from EVP to president and CEO. Henthorn, now 83, has become chairman emeritus.

He may not be as active in the day-to-day, but he has a treasure trove of transportation industry insights in his head, chiefly on managing a successful business, and he shared some of them with *Fleet Maintenance* shortly after his succession took place.

[This interview has been edited for clarity.]

Fleet Maintenance: How did you end up in the shop equipment industry?

Don Henthorn: In the beginning, I did contract machine work in the aircraft industry. I liked working with my hands and I was always eager to learn. If I would be in a place where I didn't learn enough, I'd leave and go to another job just so that I could learn more. Working in the machining industry, you either had as much work as you can handle or more, or you had no work. I became dismayed with that and decided to pursue some other areas.

I wound up developing a couple of patents on hand tools. One was the 5ivePak, a handheld tool that you could use to replace ball joints on the front end of a car without having to remove the lower A arm, and another one was the McPherson Strut Spring Compressor. That kind of led me to develop the bending machine for exhaust jobs in the late '70s. I could see that the future opportunities would be limited, so that's when I developed the four-post lift. The exhaust industry was really booming in those days and there were

exhaust shops everywhere in the early '80s.

FM: What made the four-post lift so significant to vehicle repair shops?

DH: Working on the exhaust was easier to do on the four-post lift because the vehicle sat on the tires. And when technicians changed the exhaust pipe, it would be as it would be on the ground. If they used a two-post lift and then set it on the ground, the exhaust pipe could hit something.

FM: As a leader, what helped you transition so seamlessly from smaller tools to lifts?

DH: My insecurities had become my best asset. I think I was very insecure, very fearful of failing. And that just made me work harder and gave me an edge on the competition, I've always believed.

The early success with the hand tools and with the bender gave me a lot of confidence, but I was never comfortable with just that. I always felt like that wasn't going to be enough to sustain me. The exhaust industry could not have supported our business for all these years. I needed to grow the business, and a few success stories made that all happen.

FM: What was your management style like?

DH: I was always very much hands on. At first, I didn't have any knowledge as to what was needed out there, so I would talk to mechanics and they would tell me, "We have a big problem with this part or that part." And that would give me a reason to go back and try to develop something to solve that problem.

FM: What are some business- and people-managing strategies you've found have helped you steer the company over the last 57 years?

DH: Working hard and never letting up is the biggest thing. Of course, with me, I didn't have to satisfy any stockholders or anything, so I just always put the money right back into the business. But it's been a big learning curve for me because I didn't have any background in business development or anything like that.

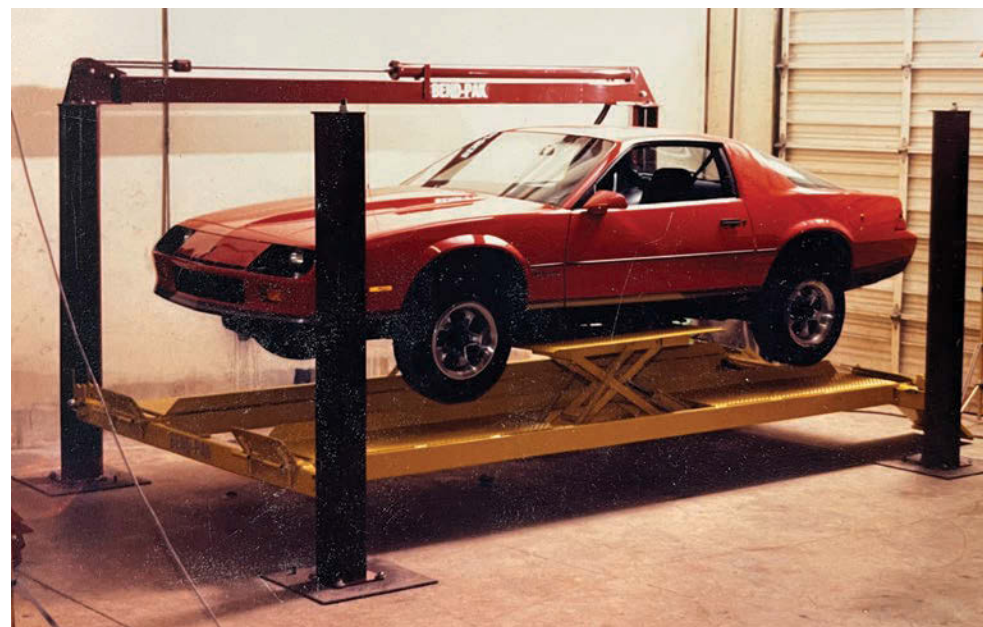
I haven't changed my philosophy of work at all. I'm usually in the office by 5:30 a.m. to 6:00 a.m. I leave earlier than I used to now—usually I'm out of here by 4 p.m.

And I know everybody's name who works for me. I start every day off with a "Good morning" to every one of them who I approach. People need to know what they can expect from you. I think they know that with me. I may have to scold them a little, but I will always be fair. And they'll know that before we ever had the meeting, because I am always that way.



» BendPak's first car lift, circa 1983. It was a fully mechanical lift with chains, sprockets, and a single large electric motor for the drive system. After selling about 200, the company discontinued this model in favor of simpler hydraulic/chain-driven designs.

Photo: BendPak



» As muffler shops were trying to diversify their services, BendPak introduced this four-post lift with a wheels-free design around 1986 to facilitate wheel and tire repair.

Photo: BendPak

FM: As far as developing a leadership team that can execute your strategies, aside from working hard, what other skills have you found over the years that are important to look for when hiring?

DH: In interviews, I'd ask questions just to see if the guy is trying to impress me or if he's really sincere. Sincerity is a big thing. And I think you can read it in people. So often, I get these resumes that tell me the person saved their company \$2 million a year. And I'm thinking to myself, "Why in God's name would they ever let you go?"

“People need to know what they can expect from you. I think they know that with me. I may have to scold them a little, but I will always be fair.”

Don Henthorn, BendPak founder and chairman emeritus



» In 2006, BendPak introduced a new line of heavy-duty mobile column lifts for lifting trucks, buses, or other large commercial vehicles. The addition of the MCL-16 Mobile Column Lifting System greatly extended BendPak's market presence from typical automotive and truck lift services to fleet, bus, and commercial truck garages and service outlets.

Photo: BendPak

You can tell if they know their industry, or their function, with a few simple questions. You get the right direction from it. I don't have any formula; I just go by feel.

I've been so blessed to have been able to choose the right people to do the jobs, and I pride myself in being pretty good at selecting staff, including Jeff Kritzer, of course, but there's a whole list behind him. There are a lot of people who have been with me for over 30 years. And I really appreciate those people we have.

FM: Leaders are also molded by their failures. Any that stick out to you that have helped you achieve success later?

DH: Without failures, you've got no successes. I'm lucky that I haven't had so many failures that set me back very much.

Early on, there was one lift I put a lot of work into where I tried a chain drive, and it just didn't work out very well because of my lack of experience with lifts. I learned a lot from that failure. The next unit was still a chain drive,

» The BendPak machine shop where the company made all its bender machine components and pipe bender tooling around 1985.

Photo: BendPak



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“Without failures, you’ve got no successes. I’m lucky that I haven’t had so many failures that set me back very much.”

Don Henthorn, BendPak founder and chairman emeritus



but it worked much better and was a saleable lift. Ultimately, we went to a cable drive.

FM: On that subject, what have been some of the biggest changes in lifts?

DH: The biggest were all safety changes. Speed and safety are always paramount with lifts. There were problems in the industry back then with accidents. It’s not as though they were happening frequently, but they were happening. And it made us all aware of our duty to design and build better-quality and safer products. I keep focusing on the safety because if you’re getting under a lift, you want to feel comfortable about that.

From the ’80s on, we were always trying to develop better-quality lifts all the time and making innovative changes. One I am proud of at BendPak was when we developed an arm lock for the two-post lift.

FM: How long have you been thinking about your succession plan and how did you pick your new CEO?

DH: I’ve been thinking about succession for 20 years probably, but not very seriously until perhaps the last five years. I needed to know what I was going to do in the business and how it was going to continue. I feel I built something worthwhile here, and I’d like to see it turned over to someone in good hands. Jeff Kritzer fits the bill in every way. Jeff came to work for me 40 years ago, and he’s never let up. He’s had his foot on the gas pedal all the way. He’s been reliable, responsible, and as much family as I could have. So, it was a pretty easy choice for me to make him the new CEO. ▀



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Female tech makes history at TMC SuperTech 2022



» FedEx Freight technician Phillip Pinter became TMC SuperTech Grand Champion for the second time.

Photos: John Hitch | Fleet Maintenance

As FedEx Freight dominated the TMC SuperTech competition, shop technician Bonnie Greenwood scored a historic victory for female techs by coming in second place.

CLEVELAND—For the second time in four tries, FedEx Freight’s Phillip Pinter became Grand Champion of TMC SuperTech, the annual American Trucking Associations Technology and Maintenance Council’s National Technicians Skills Competition. The event was held in Cleveland’s Huntington Convention Center from September 25-26. Pinter’s colleague Bonnie Greenwood came in second place, which is the highest ranking ever for a female in the competition’s 17-year history.

Pinter last won the intense two-day event, which tests a technician’s knowledge and hands-on skills in regards to heavy-duty trucking maintenance, in 2018. TMC SuperTech was not held in 2020 due to the COVID-19 pandemic.



» The Trailer Wheel End station required a hands-on approach.

He credited pouring over TMC’s Recommended Practices and manufacturers’ maintenance manuals as the key to his success. “It’s a lot of reading and it’s a lot of work,” Pinter said. “There’s a lot of time that goes into it.”

Pinter also credited his shop teacher at his Dundee, Michigan, high school for pushing him into the trade. He attended Michigan Institute of aviation technology in 2009, but switched to the more in-demand automotive repair field. He went to heavy-duty diesel in 2015, when he joined FedEx Freight.

“I haven’t really looked back since,” he said. “The automotive and heavy truck industries have treated me very well.”

The win also paid quite well, with Pinter taking home nearly \$20,000 in shop equipment and prizes, supplied by companies including Cox Automotive, Hendrickson, Imperial Supplies, MOTOR Information, Noregon, NEXIQ, Premier Tuck Group, Reliance, Snap-On, and Truck-Lite.

Greenwood, a shop technician in the Salt Lake City area, was also the first woman to win TMC FutureTech, the student version of SuperTech.

Greenwood, who has bachelor’s degree in wildlife biology, went to WyoTech in Laramie, Wyoming, to learn how to become a diesel technician. She was attracted to the math and science aspects of the trade.

“This was a very good industry to get into,” said Greenwood, who hopes to work more on



» Bonnie Greenwood, FedEx Freight shop technician

alternative-fuel vehicles in the future to blend her passions together. “It has been exactly what I needed.”

Greenwood’s victory may also be just what the industry needs to attract more female technicians. Female technicians account for about 2-3% of the vehicle repair sector, according to industry estimates.

“I feel incredibly proud to be representing women in this industry today, to have this opportunity—I’m really thankful,” Greenwood said shortly after the event. “And

I just encourage more and more women to get involved. The trades need more people. And there’s a whole other half of our population that we haven’t tapped fully into.”

While SuperTech only had one other female competitor, women represented about a quarter of the 17 FutureTech participants, all from WyoTech.

Greenwood reiterated that female techs “can do any job we set our minds to,” and that any women thinking about a career in the trades should “chase that down and go after it.”

And what would Greenwood say to anyone questioning that she is one of the most capable techs in the country, regardless of gender?

“I’d say, ‘Step back and watch me work.’ I can do any job, and I will find a way to do it,” she asserted.

FedEx Freight swept the top five of the two-day competition, with Eric Vos finishing third, Doug Nickles fourth, and Kelby Bentley fifth.

This year, Mario Kjukan, a student at Forsyth Technical Community College in Winston-Salem, North Carolina, won TMC FutureTech. Timothy Rose from Ferris State University finished second and Braedon Pollard from DMACC Transportation Institute finished third.

FedEx Freight’s Cory Westfall won the TMC SuperTech Trailer Track competition, with Cox Automotive’s Michael Kerfoot Jr. finishing second. Travis Cox of FedEx Freight placed third.

In the light- and medium-duty track, Phillip Barlow of FedEx Freight came in first, edging out Kevin Malczyk of Frito-lay North America (second) and FedEx Freight’s Chris Czerwinski (third).

The first day of the competition for the heavy-duty track, September 25, comprised a series of written exams at 12 stations, while the second day was more hands-on.

“After a two-year pause, having a full competition with all of our tracks and hosting 140 technicians was tremendously gratifying,” said Robert Braswell, TMC executive director. “Congratulations not just to the winners, but to all the competitors for making it to Nationals, and we look forward to seeing them all back here next year.” ■—John Hitch

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TMCSuperTech Station Winners

HEAVY-DUTY TRACK: DAY ONE STATIONS

ASE Written Test: Joseph Anderson, TravelCenters of America
RP Manual: Nicholas Bryant, FedEx Freight
Wiring Diagrams: Phillip Pinter, FedEx
Freight Lubricants & Fuels: Phillip Pinter, FedEx
Freight Coolants & DEF: Kelby Bentley, FedEx Freight
Hydraulics & Drivebelts: Bonnie Greenwood, FedEx Freight
Electrical Circuits: Nathan Olson, NationalLease
Fasteners: Phillip Pinter, FedEx Freight
Precision Measuring: Phillip Pinter, FedEx Freight
Service Information: Michael Krause, Clarke Power Services, Inc.
Cybersecurity: Adam Martin, W. W. Williams
Trailer Lighting: Mitchell Buelow, FedEx Freight

HEAVY-DUTY TRACK: DAY TWO STATIONS

Brakes: Jesse Elmore, Doggett Freightliner
Wheel End: Phillip Pinter, FedEx Freight
Fifth Wheel: Kelby Bentley, FedEx Freight
Liftgates: Eric Vos, FedEx
Freight HVAC: Charles Gleason, United Parcel Service Inc.
Tire & Wheel: Mitchell Buelow, FedEx Freight
Tractor PMI: Doug Nickles, FedEx Freight
Starting & Charging: Eric Vos, FedEx Freight
Steering & Suspension: Eric Vos, FedEx Freight

TRAILER TRACK

Winner: Cory Westfall, FedEx Freight

LIGHT AND MEDIUM VEHICLES TRACK

Winner: Phillip Barlow, FedEx Freight

TMCFUTURETECH STATIONS WINNERS

Winner: Mario Kjuka, Forsyth Technical Community College

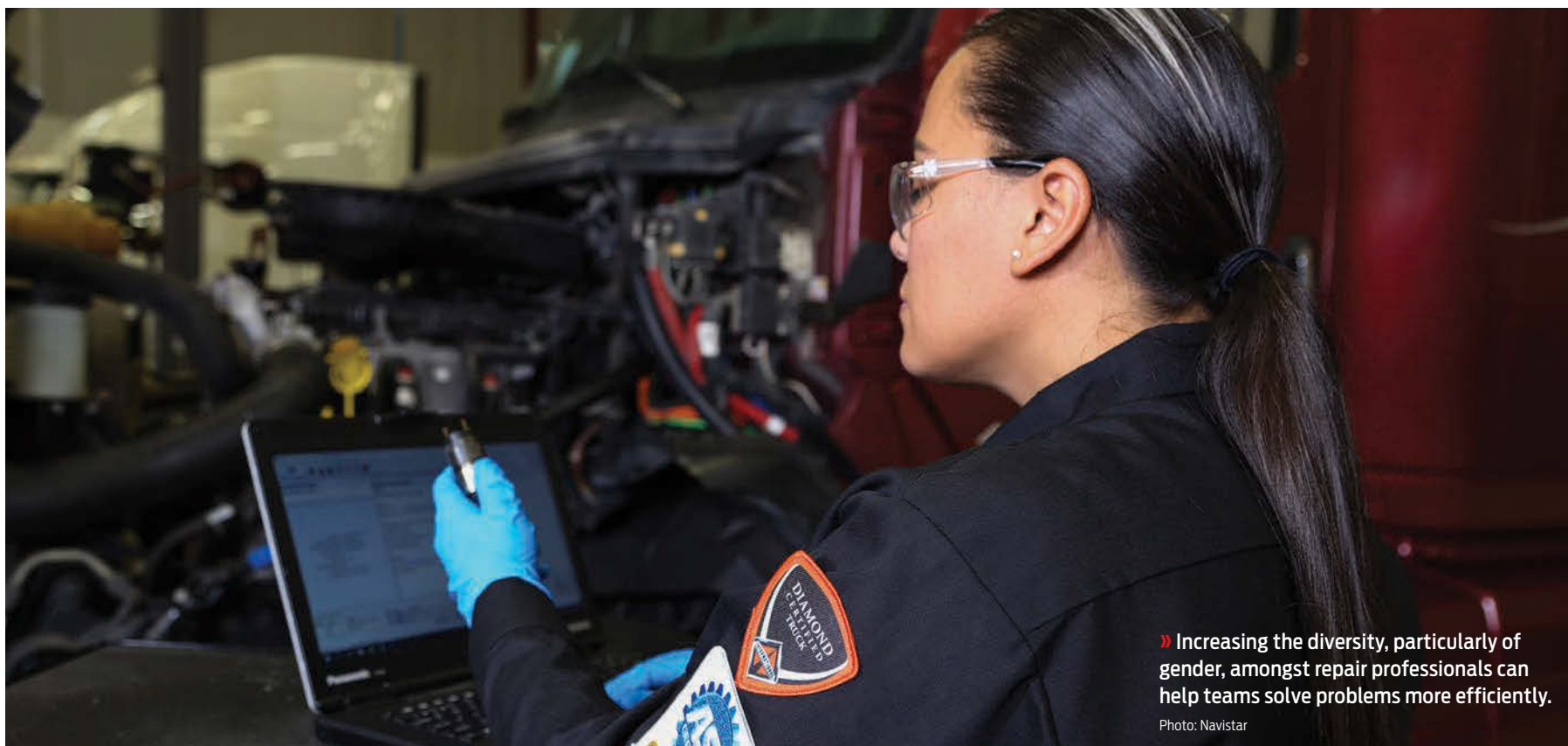
For a full list of winners, visit: FleetMaintenance.com/21282233



» A technician at the Trailer Electrical Corrosion station.



» A WyoTech student using a multimeter at the Electrical Circuits station.



» Increasing the diversity, particularly of gender, amongst repair professionals can help teams solve problems more efficiently.

Photo: Navistar

The 2% solution to the tech shortage

Women comprise about 2% of the vehicle repair sector, which is struggling to fill jobs. How to get more females involved was the focus of the 2022 ASE Instructor Training Conference.

Training Conference held recently in Frisco, Texas. The keynote panel discussion, titled *The 2 Percent Solution*, featured several female automotive service professionals, students, and instructors.

The session was moderated by Catherine “Cat” Treanor, U.K. business development manager for Electude. The other panelists included Missy Albin, a Navistar master diesel mechanic at Taylor & Loyd; Lou Bramante, an automotive instructor at Vineland Senior High School; Raven Hartkopf, a collision discipline lead, Colin College; Jenny Kovacs, a Ford master technician; Joe Laubhan, service director at Classic Chevrolet; Vanessa Retsos, a Chevrolet service technician; and Paulina Sanchez, a shop owner and collision repair student at Colin College.



» The keynote panel discussion at the ASE Instructor Training Conference featured several female automotive service professionals, students, and instructors.

Photo: ASE

The 21st century has brought new challenges and demands to every industry in the United States, and the automotive repair industry is no exception. In addition to meeting the demands of rapidly-changing technologies, a shifting consumer base, and uncertain economic and supply-chain conditions, the industry sees the importance of developing a workforce capable of meeting those demands. One of the key components to realizing that goal is bringing more women into the industry in roles where they have been lacking, specifically as service technicians. The challenge is more complicated than it may seem on the surface, and there are numerous obstacles to navigate as industry leaders seek to develop a workforce that not only resembles society at large, but also possesses the skills and desire to create successful and rewarding careers.

A lively and informative panel discussion, focused on making training programs and workplaces more welcoming to everyone, kicked off the in-person ASE Instructor

Facing challenges

As the session got underway, Mike Coley, president, ASE Education Foundation, stated that one of the problems that the automotive repair industry is facing is that women make up 50% of the workforce, but only 2% of service technicians.

“We’re telling half the population ‘You don’t need to apply for a job in this industry,’ but we have a technician shortage and it’s not like the chip shortage—it’s not going to get solved when the supply chain kinks get sorted out,” Coley said. “We need to work together to solve the technician shortage. We need to make the industry open and educational opportunities available for women and anybody else who wants to get involved.”

Treanor reiterated that the automotive repair industry has several big issues to overcome. “We have a shortage of technicians, an aging workforce, a negative stereotype, a lack of new



talent, and a tidal wave of new technology,” Treanor said. “The answers to all these challenges is diversity. We need diversity of gender, ethnicity, of age, physical attributes, and more.”

Treanor pointed out that a diverse team can solve more problems more efficiently than one that isn't. “It's important to remember that everyone has strengths, but that we also all have weaknesses, and that's why with diversity comes strength.”

During the two-hour discussion, Treanor and the panelists focused on some of the challenges that females face in school and in the workplace, including the perception of not being able to do the job, not being taken seriously, being stereotyped into a certain job, trying to get that first job, and the lack of support from others.

One of the key topics amongst the panelists was barriers that they have faced while working towards a career as an automotive repair technician. Albin said one of her biggest barriers was the lack of support and not having enough believers. She started her education at a four-year college studying graphic design, which she learned quickly wasn't the career path for her.

“As a young child, I was always pulling things apart,” Albin recalled. “I was interested in knowing what things looked like on the inside or how they worked. There was a passion inside of me to find out who I was without being restricted or told ‘This is what you need to do because of society.’ For me, the passion to become a technician was built within me. It's something that I didn't need to really look for—I just needed to figure out how to express myself.”

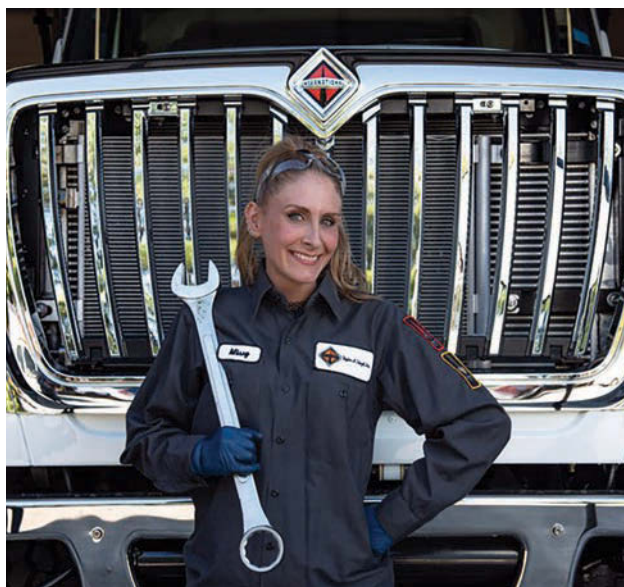
When trying to get experience during high school, Kovac said one of the barriers that she encountered was getting her first hire. She explained that she interviewed for a job-shadowing position and that the interview quickly changed once she got to the dealership. She ended up being a night service cashier, so she didn't gain any shop experience. The next place she went to try to get a technician job saw that she had experience answering telephones, so they thought the best job for her was in an office position as well.

“I think that's one of the stereotypes that women face is ‘You look like you'd be better in a customer-facing position, so we're going to push you in that direction,’” Kovac said. “As a technician, I was extremely valuable, and I just had to make people see that.”

Other barriers that the panel discussed included not being considered capable of being a service technician, that they aren't being taken seriously as a female, a perception that females cannot do the job, continual rejection and not getting a chance to prove themselves, and being stereotyped into a certain role or type of position.

“We're telling half the population ‘You don't need to apply for a job in this industry,’ but we have a technician shortage and it's not like the chip shortage, it's not going to get solved when the supply chain kinks get sorted out.”

Mike Coley, President, ASE Education Foundation



» Missy Albin serves as a female ambassador for Navistar's technician recruitment program, TECH EmPOWERment.

Photo: 781 Photography

On the topic of stereotyping, Treanor asked the panel if there was anything intimidating about a career in the automotive repair industry or if they had any reservations. For Albin, using tools was intimidating at first because she didn't have anyone to teach her how to properly use them.

“At first, I was afraid of anything pneumatic, with a wheel, but over the years, I lost the intimidation factor when somebody actually embraced how humiliated I was by not knowing how to use the tool properly,” Albin recalled. “How do you use the tool for the job? And which tool to use for the job? Overcoming that, I was able to flourish as a technician once I knew what tools were out there, how to use them, and when to use them.”

Talking about her own experience as a new technician, Treanor said that she never wanted to ask for help because she didn't want to be seen as not knowing the answer, and that, she believes, was a big hindrance to her.

“A really classic stereotype that we all have to break and deal with every day is that people think we're stupid or a grease monkey,” Treanor said of repair professionals. “It's actually a science at the end of the day. What we're doing is only going to get more complicated. Breaking

stereotypes and what people think automotive is a really good start.”

Knocking down barriers

The panel and the audience provided a wide array of suggestions to help increase the number of females in schools. The ideas included increasing shadowing opportunities, giving high school students the option to explore automotive classes to see if they like them, starting to reach females in middle school to encourage them to think about a career in the transportation industry, providing facts to potential students about the advantages of the industry and financial benefits they could achieve, creating a safe environment for students, eliminating the term ‘non-traditional,’ and working with administrators and counselors to encourage female students to participate in automotive programs.

Bramante said he creates a safe and inclusive space for his students through motivational signs throughout his classroom, and he lets students know from day one that they will not be bullied, harassed, or intimidated in his world.

“That's the least that I can do is to provide a stable learning experience for all students,” Bramante said. “And it's not just females, it's all of my students, but the females get a sense of safety and belonging, and it doesn't take a lot of effort.”

Other suggestions that were discussed included featuring women in the automotive repair industry in marketing materials like company posters, websites, and online advertisements, finding a role model or mentor for guidance, creating after-school programs for middle schools focusing on service repair, and creating clubs in high school for students to have a place to discuss automotive careers.

At the end of the discussion, Treanor asked the panelists what they would tell their younger selves. Albin responded, “I would tell my younger self that I'm worthy of my dreams and to not be nervous or scared to pursue them. And everybody that tells you no, just laugh at them instead of cry. It would be amazing to tell my younger self where I am today.”

Kovac would tell her younger self, “You got this. And you don't have to know everything from the start—nobody does. I wish I could show her that I made it.”



By George Arrants

VICE PRESIDENT FOR ASE EDUCATION FOUNDATION

George Arrants works with instructors and administrators to develop partnerships with local businesses and industries through program advisory committees. He is the past chair of the Technology and Maintenance Council's TMC SuperTech, the National Technician Skills Competition, and TMC FutureTech, the National Student Technician Competition. His entire career has been in the automotive service and education industries.



FLEET PARTS & COMPONENTS

What's new in products for more efficient fleet operation.

Editor's Pick



Optimized treads resist damage and increase retreadability

Because retreading is more important than ever to improve tires' total cost of ownership, **Goodyear** has engineered the **Armor Max Extreme Service Drive (ESD) tire**, which was specifically designed to stand up to the rigors of heavy-duty construction, logging, oil, and mining jobsites with a tread compound that resists cuts, chips, and tears. Available in 11R22.5 H and 11R24.5 H sizes, these premium tires feature an optimized tread geometry to prevent stones from lodging in the tire while the enhanced under-tread provides protection against stone drilling. Both improve casing durability and the potential for retreading. Furthermore, the 32/32" tread design ensures minimized mud and snow buildup for enhanced off-road traction, while the sidewall design allows chains to be placed above tread blocks, minimizing slippage.

➔ For more information visit FleetMaintenance.com/21281748



For more on these tires, we spoke with Jessica Julian, commercial product marketing manager at Goodyear North America.

Fleet Maintenance: What are some key points to know about the Armor Max Extreme Service Drive tire?

Jessica Julian: We've optimized the tread geometry, changing the way the tread blocks are shaped. Think of it as going from a 'V' to a 'U' shape. That keeps the stones and the gravel and mud from staying in that tread. Then, our engineers also added penetration protectors—little nubs that also help eject stones. Finally, we enhanced the undertread, which is another layer of protective rubber. All of those things help protect that casing and protect the investment for the fleet. And the aggressive tread really gets you out of those sticky situations in the mud or out of the mine where there's big gravel and rocks. You really need that meat on those tires.

FM: Who will benefit the most from using the Armor Max ESD tire?

JJ: When you think about

Armor Max, think about more durability and traction. That's why a fleet is going to want to put that on their vehicle. Think of construction fleets, logging, mining—anywhere there is more off-road than on-road with gravel and mud. You don't want to get stuck or have tire failures when you're in those particular vocations.

FM: Why was this tire developed?

JJ: We had noticed that there was a lot of issues across the industry with the casing being damaged. If a fleet buys a tire, they want to be able to retread it; they want to get as many cycles as they can out of that casing. If the casing is damaged and it can't be repaired, that costs the fleet more money. And in off-road vocations, you're just beating the snot out of your tires. A stone gets lodged in the tread, and if it's not able to fall out, every time the tire rolls over something else, like another rock, it's just pushing that stone deeper and deeper into the tread to the point where it will go into the casing and puncture those steel belts. So, Goodyear took all that data and went to the

drawing board, and we set about answering how we can improve this for fleets. The initial feedback was it reduced stone holdings significantly enough to where I think that fleets are really going to take note of this and see a big improvement in their return ability of the casing.

FM: What else should we know?

JJ: The Armor Max ESD is part of Goodyear's Total Mobility platform. We have our trusted product, the tire, and then we have our nationwide network to assist if there are any maintenance issues that are needed with that tire. There's also our Total Solutions platform. That includes tire pressure monitoring, the CheckPoint drive-over reader, and the TireOptix handheld device. We all know how important it is to keep your tires inflated—how it affects the fuel consumption. And having the incorrect tire pressure in a tire can also damage the casing. So it's all of these things that play into a fleet's total cost of ownership. If you pay a premium price for a tire, but then you're not maintaining it, then you're just wasting your money.



» Handles 55,000 lb. vertical load and up to 140,000 lb. GCW

Fontaine Fifth Wheel's 7000 Series integrates Fontaine's No-Slack technology in a cast housing and is designed for heavy-duty applications with mounting brackets available in a wide variety of sizes in both stationary and sliding configurations. The 7000 Series handles 55,000 lb. vertical load and up to 140,000 lb. GCW. The top plates integrate seamlessly with the new heavy- and severe-duty brackets and work well with KIT-NO-TILT, a bolt-on kit which converts the fifth wheel to a no-tilt model for frameless dump applications.

➔ For more information visit FleetMaintenance.com/21279085



» FMVSS 108 and ECE compliant

From on-highway to the farm or city streets, **Grote Industries 90mm LED High Beam and Low Beam headlamps** provide an illuminating solution for heavy-duty vehicles. These FMVSS 108- and ECE-compliant LED headlamps feature a 9V-32V multi-volt design and can be used as high-tech, drop-in replacements for standard 90mm halogen or HID headlamps. They utilize the latest high-performance LED technology in conjunction with reflectors and lens optics while providing drivers with performance and light patterns.

➔ For more information visit FleetMaintenance.com/21279104



» May be transferred between vehicles

Bud and Tony's Truck Parts launched a series of **Patented Heavy Duty Truck Locking Fuel Cap Covers**. The Patented Heavy Duty Truck Locking Fuel Cap Covers line applies to: Freightliner, Sterling, and Western Star No. BT-FLNR-35; Kenworth, International, Mack, and Volvo No. BT-KWHD-350005; Peterbilt No. BT-PBTL-0001; and Universal Medium Truck No. BT-UNIV-20000-10. The locking fuel cap covers protect against fuel theft and contamination. The covers fit over the existing fuel cap and features a built-in lock with a shiny, plated finish. Three keys are included. The covers may be transferred between vehicles. Designed with a built-in "spring open" mechanism made from Zamak5 Zinc Alloy, the cap cover spins freely when locked.

➔ For more information visit FleetMaintenance.com/21281982

THE ENDEAVOR COMMERCIAL VEHICLE GROUP WINS AWARDS IN 2022

The Endeavor Commercial Vehicle Group has been recognized by the publishing industry for its editorial coverage and overall art direction.



The Folio: Eddie & Ozzie Awards

Winners

- + Best single technology article, B2B: *Fleet Maintenance*, The dawn of hydrogen trucks
- + Investigative Journalism, B2B: *Bulk Transporter*, BT Intellistop
- + Editorial Use of Data, B2B: *FleetOwner*, Trucking by the Numbers

Honorable Mention

- + Overall Art Direction, B2B: *Fleet Maintenance*



TABPI TABBIE Awards

Honorable Mention

- + 2022 Feature Article: Top 25 Issues: *Bulk Transporter*
Acquisitional by nature: TFI grows Tank Group into \$500M operation



SIIA Neal Awards

Winner

- + Best Single Issue of a Tabloid/Newspaper/Magazine:
FleetOwner, Trucking by the Numbers





» Decreases fuel consumption and emissions

SPIER System from **SPI.Systems Corporation** is an upfit that can be used to reduce emissions on any diesel truck, from current models dating as far back as 2010, including highway and work trucks. It is a combination of exhaust plumbing and “dual induction” of a portion of the tailpipe exhaust back into the engine cylinders. The chemical engineering of this approach releases alternative energy in the combustion process which decreases fuel consumption and emissions. There is no interaction with or alteration of OEM systems on the vehicle. Benefits include lower soot levels inside the engine and a gain in power. Installation requires about six to eight hours for most trucks from a kit of parts supplied by SPI.Systems. The cost is structured to deliver ROI in less than one year, the company said.

» For more information visit FleetMaintenance.com/21281970



» Applicable to Freightliner 2017-14, Mercedes Sprinter Van 2018-14

The factory DEF heater on certain vehicles often fails from fluid intrusion. The **Diesel Exhaust Fluid (DEF) Heater**, No. 904-642, from **Dorman Products** is a Dorman OE FIX solution which modifies the OEM design to address this failure point and increase reliability by delivering additional protection from fluid intrusion. Applicable to Freightliner 2017-14 and Mercedes Sprinter Van 2018-14. Thoroughly tested, each design undergoes cyclical heater element fatigue testing.

» For more information visit FleetMaintenance.com/21281978



» Secures 420 lb.

RotopaX Tank Holder, No. 25728, from **SeaSucker** is a convenient way to carry liquids outside a vehicle without having to drill holes to permanently install a mount. The RotopaX Tank Holder secures up to a three-gallon model on the vehicle exterior and mounts and removes quickly without leaving marks. The RotopaX Tank Holder uses the force of two SeaSucker 6” Vacuum Mounts. It adheres in a vertical alignment to any smooth, non-porous surface such as the back glass of a vehicle or the side window of a van. The device quickly installs with a few pumps of the integrated power button. The SeaSucker solution secures 420 lb. even over rough terrain and often for days on end. This rugged yet lightweight accessory is built for continual outdoor exposure with UV-resistant materials and stainless steel components. It measures 15” in length by 6.5” in width and sits 2.75” off the surface with a 3/8” thick HDPE deck to stabilize the tank. It’s predrilled for easy installation of a RotopaX base. Made in the U.S.

» For more information visit FleetMaintenance.com/21281975



» DOT FMVSS108 compliant

The **6” Oval Back-Up Lightning A-Series**, No. M63347-ADF, from **Maxxima** features a DryFit Connector integrated into the rear housing. When paired with the Maxxima No. M50908 Pigtail (sold separately), it provides a weather-tight connection and is also compatible with industry-standard, AMP-style connectors. It features the company’s patented Lighting Optics lens for off-axis visibility. It is DOT FMVSS108-compliant in either 1-lamp or 2-lamp configurations. This light features a polycarbonate housing and lens and is backed by a five-year warranty.

» For more information visit FleetMaintenance.com/21281971

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The LT996D Shockit™ Socket Diesel NOx & Particulate Sensor Removal Kit solves these problems by using the force and sonic vibration of an air hammer along with a Shockit™ Punch to loosen the most rusted sensors without thread galling and the compact design gives access to the most difficult to reach sensors. Each Shockit™ Socket has 3 driving ears with 8mm inverted indexed holes for tightening and loosening, allowing the most stubborn sensors to be worked back and forth during removal.

This patented kit includes 20mm, 24mm & 30mm Shockit™ Sockets, 22mm & 24mm Low Profile Shockit™ Sockets, a 22mm Thin Wall Deep Shockit™ Socket, 20mm, 22mm & 27mm bottoming tap and dies for sensor and mounting hole threads and a non-turning offset 8mm radius tip LT1910P 11” Standard Shockit™ Punch. Additional Shockit™ Punches are also available separately.

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» For Ford 2012-11 vehicles with specified V8 406 6.7L (6651cc) and L6 408 6.7L engines

The **Nitrogen Oxide (NOx) Sensor**, No. 904-6038, from **Dorman Products** has been made to match the original equipment sensor on certain Ford 2012-11 vehicles, with specified V8 406 6.7L (6651cc) and L6 408 6.7L engines. It is designed to properly restore nitrogen oxide detection to comply with emissions regulations. This replacement NOx sensor matches the function and performance of the original sensor on specified vehicles, OE Nos. BC3Z9D378C, BC3Z9D378D, BC3Z9D378E, BC3Z9D378F, BC3Z9D378G.

» For more information visit FleetMaintenance.com/21281977



TOOLS & EQUIPMENT

A roundup of the latest tool and equipment offerings.



» Features a 20,000-lb. capacity

The **ML-220 Two-Post Heavy Duty Vehicle Lift** from **Mohawk Lifts** is designed for lifting points of medium-duty work trucks or retracting to service short wheelbase vehicles. The lift has a 20,000-lb. capacity and comes standard with three-stage swing arms that can reach the furthest lifting points. With a direct-drive, all-hydraulic lifting system and no overhead cable covers, the ML-220 ensures technicians can fully lift high-profile vehicles. The ML-220 comes with Mohawk Lift's 25-year warranty. The ML-220 includes full sets of truck adapters for servicing all vehicles. Made in U.S.

➔ For more information visit FleetMaintenance.com/21126103



» Protects against impact and compression

The **Cat Footwear Exposition 6" Alloy Toe Work Boot** protects against impact and compression, offering the strength of a steel toe in a lightweight and compact format due to the cement construction. The durable rubber outsole provides comfort for walking all day long. The SRX slip-resistant rubber outsole is abrasion resistant, performs against oil and water, and provides traction on slippery surfaces. The electrical hazard protection is rated to protect against open circuits up to 600V in dry conditions. Available in black or pyramid and in men's sizes seven to 14.

➔ For more information visit FleetMaintenance.com/21280528



» Ideal for NVH balancing applications

The **Pico Technology PQ316 PicoBNC+ Optical Sensor Kit** provides users with a convenient means to capture rotational speed reference signals for noise, vibration, and harshness (NVH) balancing applications with the benefits provided by Pico Technology's PicoBNC+ smart interface technology. The PQ316 PicoBNC+ optical kit can be partnered with an NVH kit and a PicoBNC+ Automotive PicoScope to help users detect propshaft (drive shaft) vibrations. It can also support speed measurement of other rotating items. The PQ316 kit includes the TA497 PicoBNC+ optical sensor and a PicoScope magnetic mount.

➔ For more information visit FleetMaintenance.com/21281420



» Shocks tie rod ends loose

The **ESCO Heavy Duty Tie Rod End Remover - Commercial Set**, No. 40315, comes with five individually-marked tie rod end sockets that are designed to shock tie rod ends loose without damaging threaded areas, rubber seals, or oil nipples. Each socket is manufactured to withstand rigorous use in a professional environment and comes in a fitted case for easy storage. Each socket features a corrosion-resistant black oxide finish and can be used with up to a 1" impact tool. Set includes: 1/2"-20, 7/8"-14, 3/4"-16, M20 x 1.5, M16 x 1.5.

➔ For more information visit FleetMaintenance.com/21280530

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LT891 Bendix/Knorr-Bremse Air Disc Brake Pad Retainer Tool

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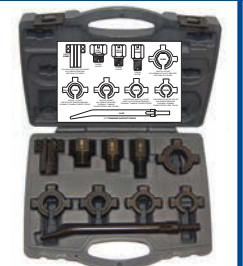


REMOVING RUSTED AND OBSTRUCTED DIESEL NOx AND PARTICULATE SENSORS DOESN'T HAVE TO BE AN EXPENSIVE AND TIME CONSUMING PROBLEM ANYMORE!

LT996D Shockit™ Socket Diesel NOx & Particulate Sensor Removal Kit

- Air hammer powered Shockit™ Sockets for removing rusted and obstructed diesel exhaust sensors
- Compact sizes for reaching sensors with restricted access
- Uses the force and vibration of an air hammer to loosen the most rusted sensors without thread galling
- Includes non-turning offset 8mm radius tip LT1910P 11" Standard Shockit™ Punch - Additional Shockit™ Punches sold separately
- Each Shockit™ socket has 3 driving ears w/ 8mm inverted indexed holes to deliver maximum rotational force for tightening and loosening, allowing the most stubborn sensors to be worked back and forth during removal
- 22mm Shockit™ Socket removes NOx sensors on Chevy® Duramax, Dodge® Cummins, Ford® Power Stroke. Also removes most Semi Truck Nox Sensors including Kenworth®, Cummins®, International®, Detroit & Volvo®
- 22mm Low Profile Shockit™ Socket for delivering maximum rotational force and minimum side loading for extremely stuck NOx sensors
- 22mm Thin Wall Deep Shockit™ Socket removes NOx sensors on Jeep® & RAM® ECO Diesel
- 24mm Shockit™ Socket removes Particulate Sensors (Soot Sensors) on Chevy® Duramax, Dodge® Cummins and Ford® Power Stroke
- 24mm Low Profile Shockit™ Socket for delivering maximum rotational force and minimum side loading for extremely stuck particulate sensors
- 30mm Shockit™ Socket removes the NOx sensor lock nuts on Jeep® and Ram® ECO Diesel
- Includes 20mm, 22mm & 27mm bottoming tap and dies for sensor and mounting hole threads
- Must be used with Shockit™ Punches for maximum performance and warranty coverage

AIR HAMMER POWERED



NEW PRODUCT

Patent #7,677,143

996-3

996-4

996-9

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» Features a spring ratchet locking mechanism

The **Platinum Tech 2-pc Combination Internal and External Snap Ring Pliers Set**, No. PLT-99911, features a spring-ratchet locking mechanism that securely holds against snap ring tension, a thumb release that allows for smooth and controlled tension release, and a cushion grip for comfort. The internal ring size ranges from 3-1/16" and 6-1/4" (78mm - 159mm), and the external ring size ranges from 3-1/2" and 6-1/2" (89mm - 165mm). The tip sizes are .120", 0 degrees, 45 degrees, and 90 degrees, and are replaceable. Made in the U.S.

➔ For more information visit FleetMaintenance.com/21280537



» Maximum lifting height of 78"

The **Danmar D4-12A Alignment Lift** can be used to perform two- or four-wheel alignments and general service work on cars, SUVs, and light trucks weighing up to 12,000 lb. The ALI-certified lift comes with free-floating, heavy-duty turnplates and rear slip plates built into the runways for maximum convenience. The lift has a maximum lifting height of 78" and features an automatic leveling system with multiple auto-leveling locking positions in each column and a push-button safety release. The non-skid runways adjust for various tread widths. The D4-12A runs on an electric/hydraulic power system with a single hydraulic cylinder mounted under a runway for convenience and protection.

➔ For more information visit FleetMaintenance.com/21280534

» Delivers 1,200 cranking amps

The **WeeGo 120 Jump Starter** delivers 1,200 cranking amps and features a bypass button that allows users to jump a completely dead battery. It's rated for all gas engines and diesel engines up to 15L. With the included 30" detachable clamps, users can access remote batteries and posts more easily. The WeeGo 120 can also detect low voltage and provide support to raise and maintain the voltage of a vehicle's 12V battery to a level safe for jump starting. It also doubles as a portable power source for recharging USB devices and 12V tools. The reinforced case is IP65 rated for water, dust, and dirt resistance.

➔ For more information visit FleetMaintenance.com/21280536



» Removes quick connect with snap/side lock couplers

The **Cal-Van Tools Adjustable Jaw Fuel Line Pliers**, No. 68800, are designed to disconnect fuel, EVAP, and breather push-style quick connect fittings. Can also be used on some electrical connectors. Features a spring-loaded handle with a 2-3/8" maximum jaw spread in the straight position and a 1" maximum spread in the 90-degree position. The 2" long, tapered jaws rotate 180 degrees and have 1/8" contact points. The pliers are suitable to use on multiple vehicles.

➔ For more information visit FleetMaintenance.com/21280531



ALLISON APPROVED Heavy Duty Heated Transmission Component Flusher with ADJUSTABLE FLOW RATE

The **Flo-Dynamics TTCF-9A** Variable High Flow Hydraulic System Flusher will flush and clean transmission coolers and lines or any hydraulic system of contamination, sludge, varnish deposits, and particles. The TFCF-9A, with an adjustable flow rate from 1-8.5 GPM, was specially developed to service both automotive and heavy duty transmission cooling systems in one machine! A non-variable **TTCF-9B** base unit is also available for lower volume shops. Allison approved!

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- Air injection agitates the system, creating a scrubbing action to remove trapped debris and solidified waxy varnish
- Selectable flush cycles; choose from continuous or 15-120 minutes with or without air injection

FLUSH COMPLETE			
Run Time: 0:15:44.4			
START	STOP		
T: 140 F	138 F	F	
P: 75 PSI	54 PSI	PSI	
F: 5.60 GPM	7.20 GPM	GPM	

Flush cycle results displayed live



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» Includes a two-position body clip

The **Fenix Lighting PD25R Rechargeable Flashlight** produces a maximum 800 lm from an included 16340 rechargeable Li-ion battery. The flashlight features a tail cap switch for on/off and a momentary-on function, and a side switch on the head for mode selection. It offers five brightness levels, plus a strobe. The two-position body clip holds the light securely to a pocket. The PD25R measures 3.62", is IP68 rated for dust and water, and includes a battery, charging cable, lanyard, two spare O-rings, and a body clip.

» For more information visit FleetMaintenance.com/21280529

» Useful for small parts in blind spots

The **Performance Tool Flexible Magnetic Pickup Tool**, No. W83191, is a rigid yet flexible pickup tool that bends to any position and stays in place. The tool is useful for small parts in blind spots and hard-to-reach places. The flexible aluminum neck with knurled aluminum handle measures 24", and the 1.5-lb. capacity magnetic head is 5/16" in diameter.

» For more information visit FleetMaintenance.com/21280532



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» Double-dipped grip for comfort

The **Lisle Corporation Molding Clip Remover**, No. 83220, is designed to quickly disengage windshield molding clips. Simply slide the tool under the windshield molding until it hooks the retaining clip. A simple twist of the wrist pulls the clip out a bit which releases the molding from the clip. The tool features a double-dipped grip for comfort.

» For more information visit FleetMaintenance.com/21279776

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Removes a wide variety of hose clamps

The **CTA Manufacturing Locking Hose Clamp Pliers With Offset**, No. 1224, is designed for removing a wide variety of hose clamps. The head of the pliers has a dimension of 32mm by 19mm and features a multi-directional slotted pattern for wide application range, including tank ventilation line clamps, radiator hose clamps, and transmission cooler lines. The spring-loaded locking mechanism can open up to 65mm. The pliers have an extra-long reach of 10.5" and have cushion grips for comfort.

For more information visit FleetMaintenance.com/21280538



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The **Ernst Manufacturing Bit Bar** is designed to provide an ideal solution for bit sets and will mount magnetically on the sides of toolboxes, top of chest lids, or in drawers. It can also be used for stationary or portable storage. With three configurations available, the Bit Bar is able to hold a combination of short and long bits in one easy place. Options include 60-, 78-, or 96-tool capacities. Bits are held firmly with taper lock holes and will easily release when pulled out. Available in red/black or black/Hi-Vis. Made in the U.S. and comes with a lifetime guarantee.

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» 1/2" all-metal chuck for maximum durability

The **Milwaukee Tool M12 FUEL 1/2" Hammer Drill/Driver**, No. 3404-20, features a Powerstate brushless motor to deliver the power to complete the widest range of applications of any subcompact hammer drill driver, the company said. At 5.9" in length, this portable drill allows access into tight spaces. It also offers LED lighting for visibility in low-light situations, an all-metal belt clip for portability, and a 1/2" all-metal chuck for maximum durability, grip, and bit retention. Additionally, it offers 400 lb.-in. of torque and a mechanical clutch for consistency in driving a wide range of fasteners.

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» Tray secures to any steel surface

The **Olsa Tools 27-pc 3/8" SAE Socket and Magnetic Socket Organizer Set**, No. 1436, enables technicians to store deep and shallow chrome sockets in a drawer or mounted to the side of their toolbox. With its ferrous magnetic base, the socket holder is able to keep the sockets in the tray and the tray secured to any steel surface. The 3/8" chrome sockets include SAE sizes in deep and shallow profiles from 1/4" to 1" with every 1/16th of an inch: 1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 11/16, 3/4, 13/16, 7/8, 15/16, and 1". The six-point sockets feature large, easy-to-read stamped markings for instant identification and are constructed from Cr-V steel for strength and durability.

➔ For more information visit [FleetMaintenance.com/21281417](https://www.fleetmaintenance.com/21281417)



» Includes a high-power white LED

The **Streamlight Dualie 3AA Color-Rite** provides the option of bright, white light or high CRI light with Streamlight's Color-Rite Technology. The dual beam light offers three output modes: a spot beam for distance illumination; a soft, wide flood beam to illuminate work areas and to aid in true color recognition; and a combined spot and flood beam. The compact, rugged light measures 7" in length and is IP67-rated dust-tight and waterproof operation. The spot beam emits 225 lm while the flood beam emits 175 lm. When combined, the light offers 320 lm. It's powered by three AA size alkaline or lithium batteries, and includes an integrated, snag-free clip.

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» Allows for a quick, leak-free repair

The **ProMAXX Tool Cylinder Head Repair Kit** allows technicians to rescue a botched repair where an attempt to drill out a broken exhaust manifold bolt has penetrated the cylinder head. The kit comes packaged in a convenient case with a precision drill bit, tap, locking fluid, Blind ProSert, and insert tool. The Blind ProSert fits into any 8mm bolt hole, used by most automotive manufacturers, including Ford, BMW, GM, Mercedes-Benz, CDJR, Audi, and many others. The Blind ProSert is hardened steel and black-oxide coated for corrosion resistance. The kit is made in the U.S.

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Filter monitoring for increased uptime

By monitoring filter data, fleets can avoid engine damage and downtime.

Inflation and continued supply chain strains are driving up costs, particularly on replaceable engine parts. Proper engine maintenance will ensure parts last longer and the system runs at peak performance. This is the job air and fuel filters were made for, so a smart strategy is to make sure these also operate at an optimal level.

One option is to have technicians perform more frequent engine checks, but with the shortage of qualified repair technicians, this could leave other tasks undone. The less labor-intensive solution is to deploy a continuous filtration monitoring solution. Recent advances in sensor technology, along with the wider use of telematics and data analytics, are making this possible and helping prevent downtime caused by poor filtration.

These solutions continuously look for a dip in performance and alert fleets. This allows fleets to proactively schedule a filter change that, if left unchecked, could put undue stress on the engine. Even if this doesn't lead to a costly roadside event or unscheduled maintenance, the truck will lose fuel efficiency and increase the fleet's fuel expense.

Continuously monitoring your filtration helps to not only minimize costly, unwanted downtime, but also unchains your operations from a time-based schedule to a condition-based one, often reducing the number of filters you need to

purchase and stock each year. The savings can really add up across an entire fleet.

With this said, let's focus on the two different types of filtration monitoring for your over-the-road vehicles: air and fuel.

Particulate air filters

Diesel soot, dust, dirt, and pollen are all filtered out of a vehicle's cabin through its particulate filters. With these filters capturing the largest pollutants, and because of the importance of air filters to the health and safety of both the operator and the truck, they will need to be cleaned or replaced in a routine manner.

Unfortunately, many truck operators don't check their dirty air filters and end up having downtime problems as consequence. Whether you are an operator or a fleet manager, become educated on this matter and properly maintain your vehicles for health, safety, and equipment performance.

An important area to start this education is the diesel particulate filter (DPF), which captures and stores particulates in its cylindrical-honeycomb structure. Those captured particulates must be occasionally burned off to regenerate the filter. If your DPF were to fail due to poor servicing or maintenance, particulates could get to your vehicle's core system and cause damage over time, resulting in unplanned downtime or even engine failure.

Replacing an air filter can be expensive—but replacing an engine system is even more expensive. You are protecting hundreds of thousands of dollars of equipment by investing in suitable filters and filtration monitoring.

Fuel filtration

If you aren't replacing the diesel filter consistently, it can force the engine to use more fuel to get power and acceleration, which can wear the engine down. Nowadays, creating filter replacement intervals based on data instead of a blanket number of miles can be vital to

cost reduction and proper fleet maintenance.

Something highly desirable to equipment owners in today's market is saving money on service. Most of the maintenance that needs to be done can be serviced straight from your truckyard to avoid high maintenance costs. Check in with an external partner that can help you monitor your engine's diesel fuel through digital maintenance monitoring systems for maximum operating performance and efficiency.

The solution: predictive monitoring

The greatest way to monitor your diesel engines is through predictive maintenance monitoring tools that give you a complete overview of your equipment with engine analytics and location services. For a better understanding of what you may be able to benefit from by using these external services, you may want to research the digital maintenance services used by many top companies.

In trucking and transportation, equipment reliability is essential for profit maximization and deadline completion. With this proactive approach, you'll worry less about diesel soot and improve uptime with predictive maintenance tools to increase how many miles your equipment travels per quarter. These condition-based monitoring tools allow you to spend more time on what matters most—moving commercially, not fixing problematic engines.

Many top equipment monitoring solutions provide these features to help your company with maintenance:

- **Predictive engine and filter monitoring:** Obtaining AI-powered actionable insights so you can predict maintenance and avoid emergency repairs instead of operating by a predetermined schedule is cost-effective and increases a business' return on investment.
- **Maintenance logging and reporting:** Many top solutions include the ability to log and report your maintenance for leadership, as well as communicate with local maintenance businesses for easy-to-obtain services.
- **Geolocation:** With the ability to monitor both active and historical fleet visibility straight from phone or computer applications, location servicing has never been easier. Geolocation is perfect for theft prevention and keeping your aggregate equipment on-site.
- **Driver workflows:** Trucking operators can minimize guesswork and reduce paper-and-pen data entry with guided workflows and optimized productivity.

With both air and fuel filtration monitoring clearly showing as vital components to your average over-the-road fleet equipment, you will need to engage in this practice to keep up with your competitors.

In closing, just remember the biggest benefit of filtration monitoring is reducing unplanned and unwanted downtime. Keeping your vehicles on track to destinations without critical problems is key to being a fleet manager. Help yourself with predictive engine analytics by investing in digital maintenance tools that make your and your operators' lives easier. ■



By Chaz Vollmer
PRODUCT OWNER, SENZIT

Chaz Vollmer is an expert in data-driven technologies with over a decade of experience in product management and digital application design. As Product Owner at Senzit, he leads the user experience program and predictive analytics innovation team, focused on reducing heavy-duty equipment downtime.



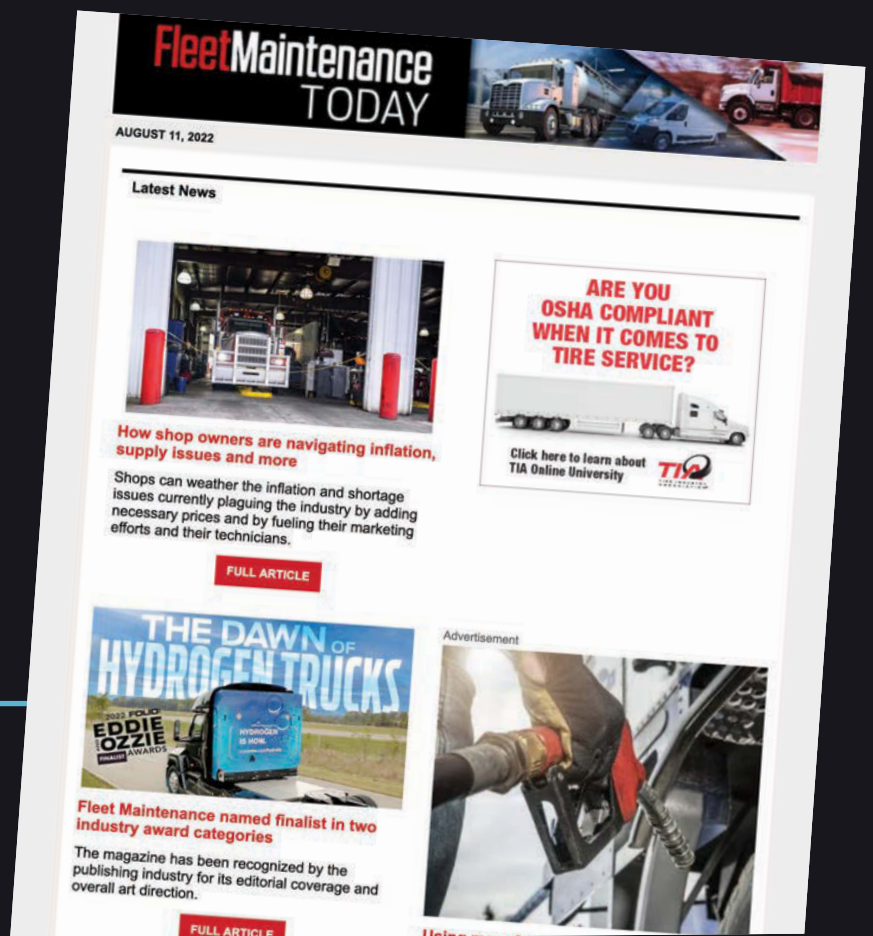
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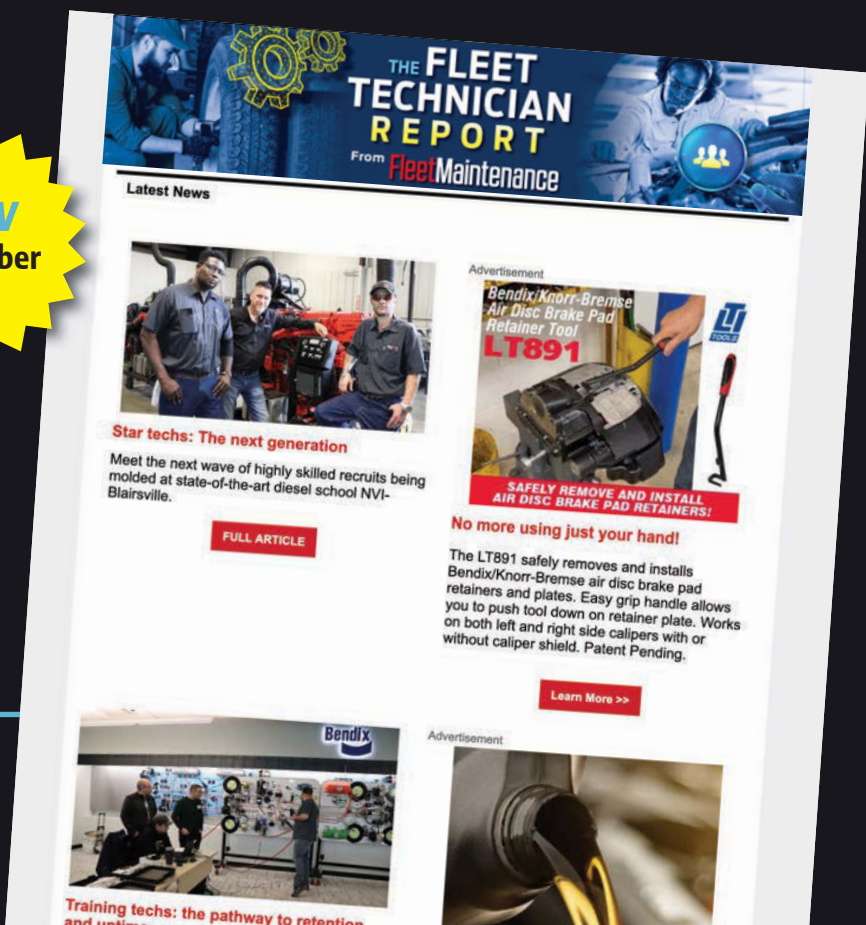
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