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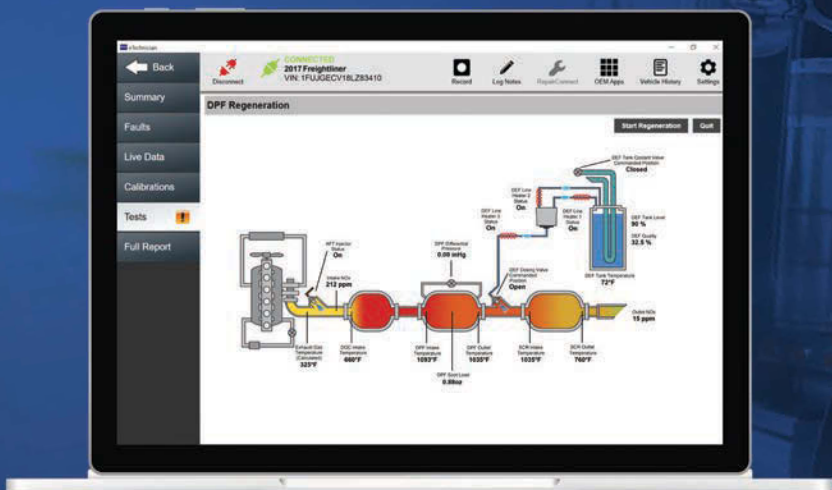
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UNLOCKING  
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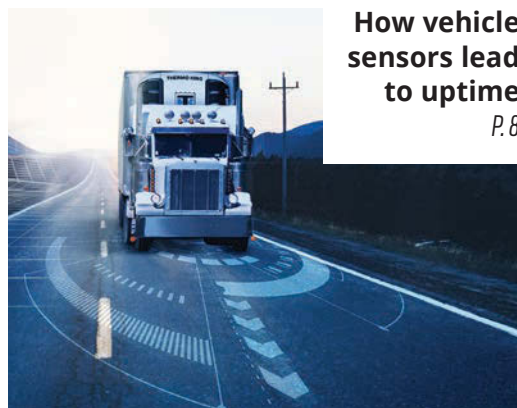
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- » Aperia launches Halo Connect 2.0 tire management platform
- » Michelin debuts its lowest rolling resistance tire

➔ On the cover: Photo: PPG Industries



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**Want to contribute?** Contact us at [editor@FleetMaintenance.com](mailto:editor@FleetMaintenance.com)

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### Autonomous truck developers share benefits, challenges, and timeline

At Truckload 2022, leaders from Aurora, Waymo, and Plus discussed how AVs promise to provide safer roadways, business gains, and relief from the driver shortage, though they must overcome several hurdles first.

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## BLOG

### Why you may want to repair wheel-end systems now

CVSA announced that wheel-ends will be the focus of this year's International Roadcheck. Repair wheel end systems now ahead of the May 17-19 inspection blitz.

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### The realities of BEV maintenance

Less maintenance overall will be an obvious benefit, but new zero-emission technology comes with a steep learning curve and complex components.

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Published by Endeavor Business Media, LLC  
 1233 Janesville Ave, Fort Atkinson, WI 53538  
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Vol. 26, No. 3

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*Fleet Maintenance* (USPS 020-239; ISSN 2150-4911print; ISSN 2150-492X) is published 10 times a year in February, March, April, May, June, July, August, September, October, and December by Endeavor Business Media, LLC, 1233 Janesville Avenue, Fort Atkinson, WI 53538. Periodicals postage paid at Fort Atkinson, WI 53538 and additional mailing offices. **POSTMASTER:** Send address changes to *Fleet Maintenance*, PO Box 3257, Northbrook, IL 60065-3257. Canada Post PM40612608. Return undeliverable Canadian addresses to: Fleet Maintenance, PO Box 25542, London, ON N6C 6B2.

**Subscriptions:** Individual subscriptions are available without charge in the U.S. to qualified subscribers. Publisher reserves the right to reject non-qualified subscriptions. Subscription prices: U.S. \$48 per year, \$93 two year; Canada/Mexico \$70 per year, \$131 two year; All other countries \$103 per year, \$195 two year. All subscriptions payable in U.S. funds, drawn on U.S. bank. Canadian GST#842773848. Back issue \$10 prepaid, if available. Printed in the USA. Copyright 2022 Endeavor Business Media, LLC.

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# Sweetening the deal for shop technicians

To attract more technicians to the trade, maintenance managers must sweeten life in the shop.



By John Hitch  
Editor



@Hitched2Trucks



**By all accounts, the technician shortage** has left a sour taste in the commercial vehicle industry's mouth. I'll spare you the grim government and non-profit projections and offer up what your peers have experienced. According to Fullbay's latest State of Heavy-Duty Repair Industry Report, two out of every three of the 900 maintenance stakeholders surveyed found it difficult to hire technicians. More than half called it their top challenge.

Cue the optimists chiming in with "when life gives you lemons, make lemonade." Maintenance folks like a good challenge, but the current situation goes beyond that platitude. It requires tangible solutions.

Finding those won't be easy. For starters, there aren't that many lemons anymore. *Fleet Maintenance* contributor George Arrants, VP of the ASE Education Foundation, revealed his organization's internal data found about 40% of auto/diesel tech school graduates leave the trade within two years (pg. 38). ASE's strategy is for high schools and trade schools to partner with industry mentors, who can nurture students' interest so one rotten experience as an entry-level tech doesn't sour them. It's a good plan but only in the seedling phase.

Along with the lack of labor, shops can't reliably get the parts needed to make repairs. In the Fullbay report, 82% of respondents reported disruptions due to the parts shortage. Getting ahead of problems with data and telematics (p. 8) and streamlining DVIR reporting and work order approvals (p. 20) can help squeeze out more efficiency.

Those digital solutions may be just enough to achieve stability. Shops also must find time to prepare for the impending forced conversion to zero-emission trucks while currently juggling a rising complexity of truck technology, such as with advanced driver assistance systems. (Our contributor Mindy Long does an excellent job of describing those challenges and what to watch out for on p. 34.) To advance beyond muddling through day to day and to attract more technicians to the trade, shops must sweeten the pot.

Fullbay's data indicate this is happening, according to Jacob Findlay, founder and chairman of the maintenance management software provider. He said last year 73% of independent shops did provide a wage increase, to the average tune of \$13.80/hour.



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## Fullbay Chairman Jacob Findlay advised that for every \$0.50 increase in technician wages, shops should increase labor rates by \$1.

"You would think it would be 100%, given the period of price inflation that we're going through," Findlay reasoned in March at American Trucking Associations' Technology & Maintenance Council 2022 Annual Meeting & Transportation Technology Exhibition. "So, over a quarter of the shops surveyed [reported] zero increase in technician wages last year. And I'm fairly confident that those shops are increasing turnover and decreasing their proficiency and recruitment capabilities."

Not being compensated after being asked to do so much may be a reason many entry-level technicians leave within two years. That could also drive experienced techs away as well. Findlay advised that for every \$0.50 increase in technician wages, shops should increase labor rates by \$1.

"You do need to pay the technicians what they are worth in the market as a shop, and the fleets need to be willing to pay a higher labor rate to keep that shop in business," he said. "The fleets will be okay paying those higher rates because their trucks will be operational more consistently, and they will make more money with the trucks. We all cooperate together and it's a true win-win."

Findlay, a numbers guy who left an accounting professor track for the commercial vehicle maintenance sector, argued that paying higher wages as the labor quantity goes down "will create new entrants into the diesel technician market—it's classic supply and demand."

That's a start, but with such a stiff job market, shops need to set themselves apart by heaping in even more sugar via incentives. The Fullbay report found 44% of shops offer bonus/incentive programs and 40% recognize individual achievements, while one-third provide lunch and about one-quarter give out gift cards and other gifts. Shop management data measuring repair times and bay throughput will come in handy to decide who deserves what.

Fullbay CEO Patrick McKittrick also intimated that shops may be getting even more creative by reinventing the workweek, instituting three 12-hour days and then having four days off. "That's flexibility that money can't buy, so there will be things beyond just pay," he concluded.

I would advise to take it a step further and figure out a way to gamify the shop. From what my sources tell me, that's not too common right now, but it could be done with existing data and third-party API. ■



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# THE FUTURE OF **TELEMATICS IS NOW**

Truck sensors and data platforms have advanced to the point where downtime can be shortened or altogether avoided.

By Faith Boone

[ SAFETY & TECHNOLOGY ]

Photo: OrbcComm



In a short time, telematics and connectivity have experienced an astronomical evolution, and fleet uptime will be the greatest beneficiary. The advancement in technology empowers fleets with vast new abilities—from sorting and analyzing asset data to scheduling maintenance and addressing issues smarter and faster than ever before.

What started with simple location data has transformed into the future fleet managers have long awaited. Now, they have tools that can predict when equipment may fail, supply a host of locations to send the truck for repairs, or schedule maintenance for less pressing matters.

It all started with fleets adding GPS sensors to understand where trucks are on the road. Things kicked into high gear following federal electronic logging device (ELD) mandates to track driver hours of service (HOS). Fleets were now required to have some form of telematics, allowing developers a larger customer base and a wider array of solutions.

This has led to the new revolution in uptime, as data can shoot right from equipment on the trucks—such as from engines and tire pressure monitoring systems—to management, who can now make more informed decisions.

## The uptime advantage

Mike Keus, VP of the asset maintenance division at telematics provider Trimble Transportation, explained that uptime, a fleet's main concern, impacts everything from asset utilization to driver satisfaction. Fleets can handle this when the trucks are near home base and have the bandwidth to tackle repairs, but trucks are always on the move—and technicians usually have their hands full with scheduled preventive maintenance. This creates major uptime problems.

“There’s a lot of inefficiency in the process when fleets are looking for outside repair,” Keus told *Fleet Maintenance* at American Trucking Associations’ Technology & Maintenance Council 2022 Annual Meeting & Transportation Technology Exhibition.

In a common scenario, Keus explained, once a driver notifies the office of an issue, the fleet manager or road call team will try to find a vendor and make a dozen phone calls to find parts. Then someone must fill out vendor repair orders in the fleet maintenance system and add service requests in the vendor system. Dwell time for unplanned repairs can average four to six days, at a cost of about \$700 a day, he added.

“How do you reduce that communication between your fleet maintenance system?” Keus asked.

The company spent a lot of time during the show discussing their answer with attendees, and how the Trimble Connected Maintenance ecosystem and TMT Fleet Maintenance have undergone their own evolution. It has completed integrations with both TravelCenters of America and Navistar’s International 360 to allow drivers to automatically find a haven for quick repairs. Dwell time can be cut by two days, Keus revealed.

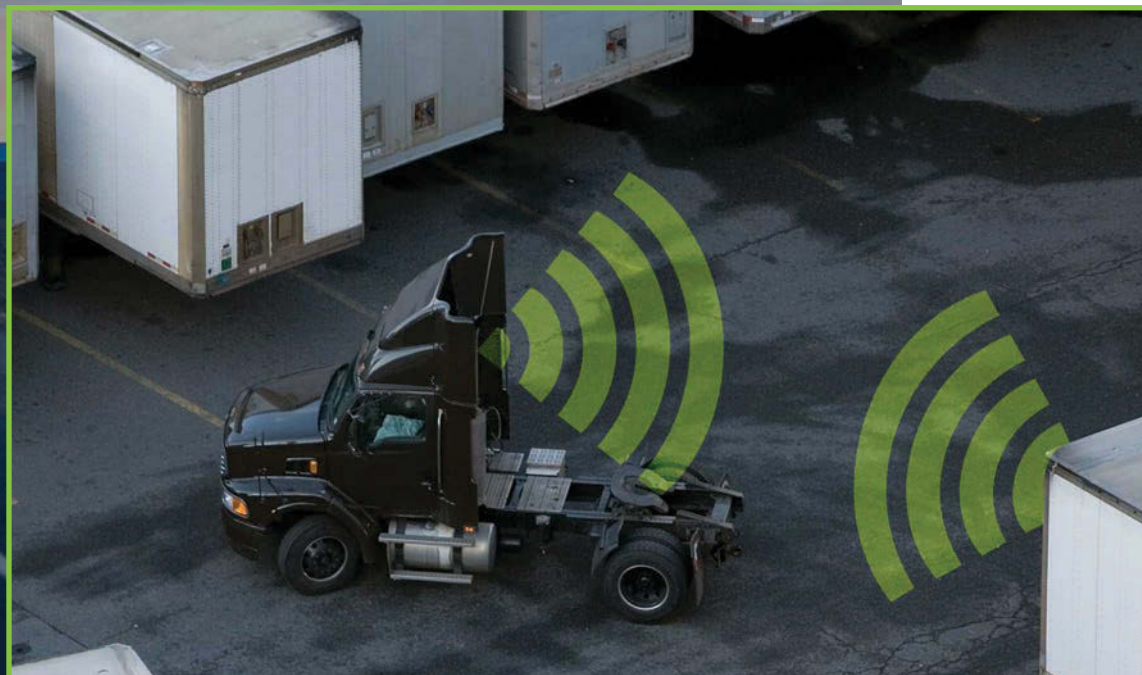
Now, he pointed out, when drivers use this telematics solution if the truck’s alternator is about to fail, the system alerts how long they can travel and then suggests the nearest vendor location. Enabled by connecting with TA and International 360, management can set priorities and preferred locations. Everything is streamlined and automated, where work orders are populated in multiple systems.

Fleets are leveraging these maturing technologies to reallocate road-call employees and other employees where they are needed.

## Origins of telematics

Willie Reeves, director of maintenance at PacLease, recalled the humble beginnings of telematics, when it was used to track only the location of a specific unit, and noted how that compares to the technology of today.

“This was one of the first benefits of telematics, and it helped pave the way for the advances that we see today,” Reeves said. “In today’s ever-changing and expanding environment, we are not only able to simply track the location of a specific unit; we are able to see diagnostic information, fault codes, engine mileage, idle time, and even perform over-the-air software updates.”



**“Fleet managers can now better understand maintenance requirements, truck conditions, and even predict potential areas to address.”**

Willie Reeves, director of maintenance, PacLease

» Orbcmm’s Tractor ID sensor helps fleets correctly pair tractors and trailers to avoid wasting time and fuel. Many solution providers are adding sensors to trucks and trailers to improve fleet efficiency and aid maintenance departments in identifying issues earlier.

Photo: Orbcmm



Telematics and connectivity provide an easy-to-use solution for most fleets, Reeves said.

“Fleet managers can now better understand maintenance requirements, truck conditions, and even predict potential areas to address,” he said. “The days of simple telematics—that only provide asset location—are long behind us.”

Fleets with thousands of assets know about these abilities, how they provide transparency, and more importantly, how they help plan scheduled downtime and decrease unplanned maintenance. But with this evolution of connectivity and telematics solutions, changes are happening so rapidly, there are now several strategies and options for all fleets.

## Low-hanging fruit

Every organization has its own preference on what fleet management software and hardware is used to optimize operations. Minneapolis-based carrier Dart Transit’s fleet, which comprises about 1,100 trucks from three OEMs, has embraced several telematics provider solutions and uses them in their daily operations, according to Paul Pettit, Dart’s VP of maintenance.

This has enabled Dart to find connectivity solutions for both the truck and trailer sides, he said.

“There are several suppliers that have given fleets the ability to take what was a pretty simple trailer in years past and now have as much data sent to you as you want,” Pettit explained.

Sensors are included to address tire concerns, potential bearing failures, and inoperable lights, as well as cargo monitoring.

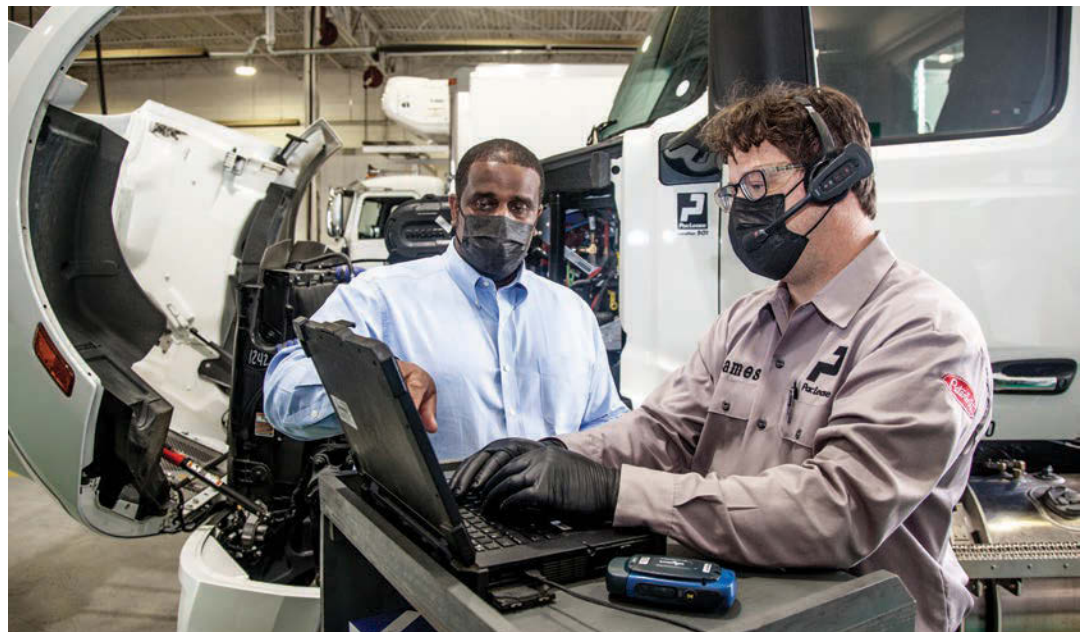
“Trucks can be even more detailed, with data coming from the engine, transmission, and tires, to name just a few,” he added.

These features are now standard on engines. For example, Detroit Diesel’s DD13 Gen 5 comes with the Detroit Connect suite of connected vehicle services. These inform fleets of vehicle health, fuel efficiency, and safety data. Specifically, the Detroit Connect Virtual Technician remote diagnostics service allows fleet managers to see within minutes if a fault event occurs, along with severity, and when, where, and how to best resolve the issue.

Daimler Truck North America took this a step further by partnering with Platform Science to offer Virtual Vehicle, an open OEM platform that lets fleets access telematics, software solutions, real-time vehicle data, and third-party applications right from the truck.

“With Virtual Vehicle, we offer our customers an open digital solutions and services platform that allows them to choose fleet applications that best meet their needs,” said Sanjiv Khurana, head of the connected services group at Daimler Truck. “The system is seamlessly enabled in our trucks without the need for installing any additional telematics hardware or the associated costs and loss of uptime.”

Navistar offers OnCommand Connect, an all-makes remote diagnostics platform, which for the OEM’s customers integrates with the International 360 solution, while Mack uses GuardDog Connect, Volvo has Remote Diagnostics, and Paccar relies on Paccar Solutions. There are numerous third-party providers as well.



» Willie Reeves, PacLease director of maintenance, assists a technician in running diagnostics.

Photo: Paccar

Pettit identified spot-checking assets’ fuel efficiency as a major advantage.

“We use our telematics to review them on a truck-by-truck basis versus looking at one specific make model year and seeing how that entire model year is looking,” Pettit said. “From there, we look at what kind of outliers we are having, and if that idle percentage is driving down fuel economy or anything like that, and try to work toward educating drivers where we can on how to reduce idle.”

When it’s done right, these solutions can lead to a faster ROI, improve uptime, and increase vehicle total cost of ownership.

“If the fleet is able to act on the data and avoid costly repairs, the initial charge and possible monthly charge is not as painful,” Pettit said.

## Data management

As maintenance VP, Pettit has many more responsibilities other than tracking asset data, so he does his best to avoid data overload—the point at which all that data becomes white noise.

“The challenge is having the systems in place to act on the data and take advantage of the technology chosen for your fleet,” he explained. “The amount of data incoming can be overwhelming, and it is too easy for maintenance teams to simply not act on any of the issues. You have to be able to choose strategically what data you want, and then work with it once you have received it.”

For Dart, this meant picking out what alerts to prioritize, such as those that would signal a breakdown.

“Those would be acted on quickly to help get the driver into a safer situation, expedite the breakdown, and still service the customer at the same time,” Pettit said. “By being proactive, we are able to help steer the course of action, which works for us much better than being reactive and working with a situation completely out of your control.”

Martin Günsberg, Ford Motor Company’s director of connectivity and new business communications, agreed.

“Access to real-time vehicle health helps fleet managers proactively service a vehicle to help

avoid more costly repairs or worse, unplanned downtime,” he said.

Ford is newer to the telematics game but has picked up momentum with the creation of a new commercial vehicle-centric business, Ford Pro, and the launch of Ford Pro Telematics. With it, the light- and medium-duty segment now has a free option to gather data to improve performance, efficiency, and total cost of ownership.

It works with gas, diesel, hybrid, and electric vehicles, and comprises several cost-saving features such as instant odometer readings, diagnostic trouble codes, recall notifications, trackable maintenance alerts, and information around engine hours and oil life.

As customers transition to electric vehicles, Ford Pro Intelligence will link the services they need, including electric vehicle data such as live range, optimal time to charge, and charging products and services across depot, home, and public.

Günsberg reiterated the importance of collecting real-time data from your fleets’ operations.

“Vehicle health insights are critical to maintaining uptime,” he said. “A fleet manager no longer has to rely on a driver to inform them of a vehicle health issue. Vehicle health information is available in the dashboard to help make immediate decisions about a vehicle to maximize uptime.”

## Empowering predictive maintenance

The latest way to avoid data overload is by letting the cloud-based platforms do the heavy lifting through predictive maintenance.

One example is sending sensor data from the powertrain to an electronic control unit. From there, the data is transferred to connectivity devices that send the information off to the cloud. The platform then cleans and analyzes the numerous points of data to distill them into actionable insights for fleet management.

And it’s becoming more available for fleets big and small.

“Combining artificial intelligence and data off the trucks and from the shop, fleet maintenance



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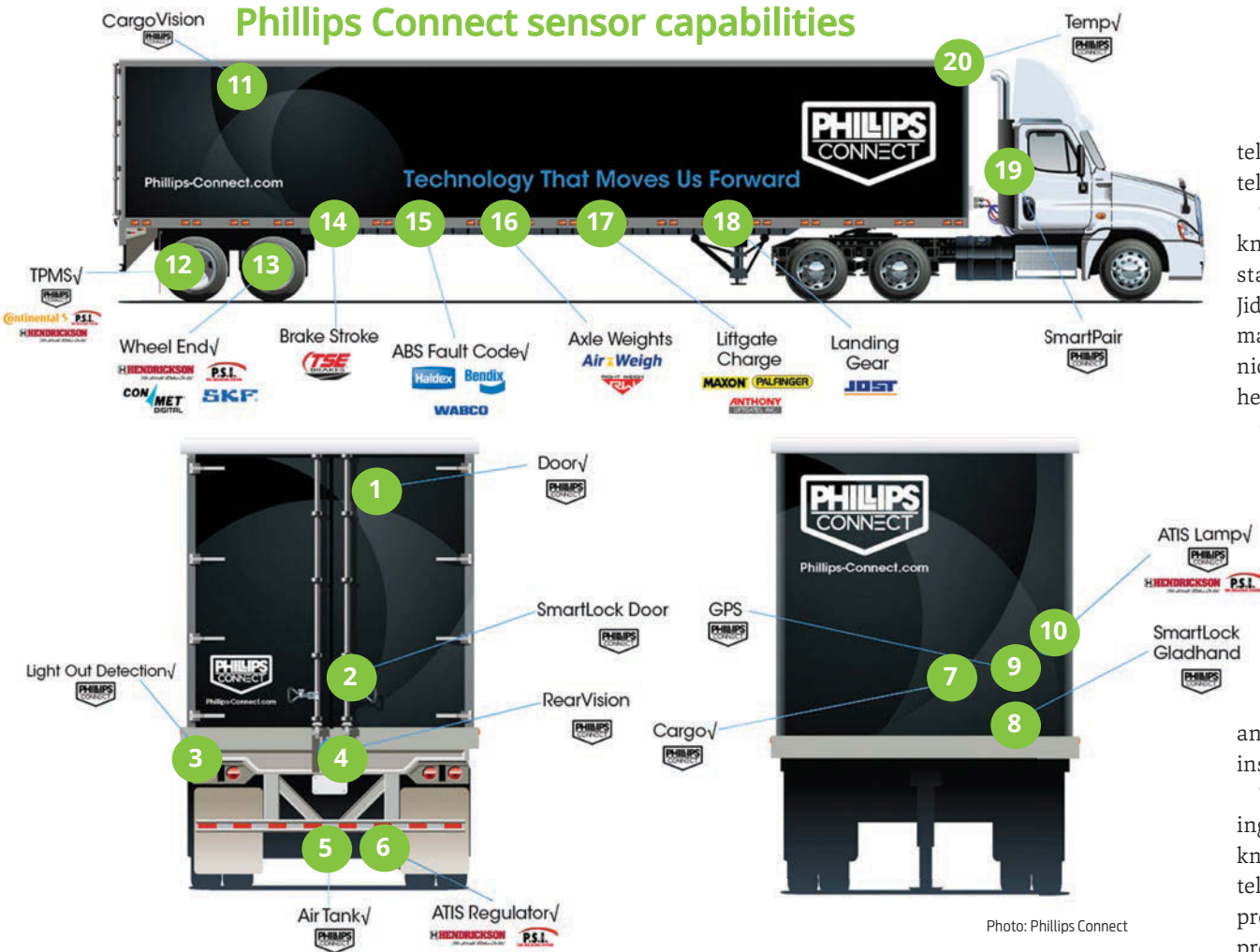
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## Phillips Connect sensor capabilities



platforms can filter oceans of data and find pearls of wisdom to help you make smart decisions,” explained Jessica Kim, marketing manager at Pitstop, a Canadian provider of vehicle predictive maintenance. “Alongside telematics, they use data to provide new opportunities across various business functions. But beyond impacting a company’s bottom line, the right fleet technology can effectively streamline and increase efficiencies on the day-to-day operations of fleets of many sizes.”

Pitstop reported its fleet customers have experienced a more than 20% reduction in downtime, saving up to \$2,000 per vehicle, annually.

Predictive maintenance also helps eliminate some of the issues that will lead to breakdowns on the side of the highway.

“There is a huge safety concern with drivers broken down on the side of the road, so if we can identify a potential breakdown in advance, it helps keep our driver from an unsafe situation,” Pettit said.

Remote diagnostics are another advantage.

“If we look at just the telematics coming to us from our trucks’ engines, for example, we can quickly determine what the fault codes are, what dealers are closest, and the level of urgency related to the engine fault code,” Dart’s Pettit said. “Before telematics, we would have to attempt to troubleshoot with the driver, and we had limited visibility until the truck arrived at a dealer or company shop.”

Some fleets still operate with that minimal to nonexistent visibility.

“I can’t believe how many customers still work off of Excel and a war board,” said Brian Mulshine, Navistar’s director of digital service delivery. He said even smaller customers can leverage predictive maintenance with International 360 and the Advanced Preventive Maintenance feature. This can help fleets more efficiently manage preventive maintenance.

“We have the fuel economy for up to about 30 telematics providers and based on the fuel economy, we can suggest adjusting the maintenance interval,” Mulshine said, “because now you can stretch that oil change interval when you get better fuel economy.”

PacLease’s Reeves said advances in technology have made predictive maintenance an essential part of keeping their trucks and shops running smoothly.

“All of this ever-advancing connectivity and technology allows fleet and individual asset owners to have a better view and understanding of how to manage their equipment to increase uptime while driving driver and customer satisfaction,” he said.

With shops focusing on quality as well as speed of maintenance, predictive analytics offers insights in advance of potential failures that will occur, allowing ample time to notify the repair shop. It also helps avoid missing parts or increased shipping fees for a shorter turnaround.

A fleet can also customize what data the AI looks at and from there identifies trends and issues. For instance, they can query the system to check how many trucks in a fleet of 1,000 may have transmission issues based on similarities they share with a truck with a known transmission problem.

“You can send that data out and make IoT of the dealerships aware of what’s going on and what to be on the lookout for,” Reeves explained. “It gets them involved, and that way they can take a look at things themselves.”

## Loading up with trailer telematics

Putting GPS-tracking sensors, cargo sensors, TPMS sensors, wheel-end sensors, lighting alerts, and more onboard and linking that to the tractor

telematics is just the start of the next evolution of telematics: the smart trailer.

“It is a trailer that knows its current state. It knows its systems and its operation, health, and status at any given point in time,” said Nada Jiddou, EVP of Clariance Technologies and general manager of Road Ready. “It is also able to communicate that to the fleet—or the operator—comprehensively with a complete data set.”

Orbcomm’s Smart Truck array of solutions include a cargo camera sensor and Tractor ID sensor to ensure the correct tractor-trailer pairing, as well as integrations with Bendix to leverage safety and video data, and Noregon TripVision for maintenance insights.

Chris MacDonald, Orbcomm SVP of North America Sales, noted 70% of CSA violations are from maintenance or service problems, and data can help identify issues before a CVSA inspector does, which leads to more downtime.

“By providing real-time visibility into lighting, brakes, tires, and other components that are known to be usual suspects during roadside stops, telematics identifies many issues that are easily preventable with proactive trailer maintenance programs in place,” MacDonald said.

Several other telematics solutions already exist and are rapidly becoming more sophisticated. These include the PetersonPULSE trailer telematics system, DröV Technologies’ AirBoxOne comprehensive smart trailer solution, and ZF’s TrailerCAST.

ZF has advanced even faster after acquiring Wabco in 2020. The two sides have integrated their connectivity and safety technology to form ZF’s Commercial Vehicle Solutions Division. ZF customers are now able to see detailed histograms on tire pressure and temperature, as well as speed and load. Diagnostics provide alerts on if an axle load sensor fails, then provides management with service center information.

This requires some installation and maintenance considerations. That is also getting easier. At the recent TMC meeting, Phillips Connect announced a partnership with Utility Trailers to develop the Utility Connect solution. This combines Utility’s proprietary wiring harness with Phillips’ Smart7 nosebox, a smart trailer solution that can monitor ABS bulbs, ABS fault codes, automatic tire inflation system (ATIS) bulbs, air tank, tractor/trailer pairing, cargo status, door status, light-out status, regulator, TPMS, internal camera, wheel end, and more.

Because the evolution never stops, this technology has built-in expansion to allow for over-the-air communication updates that will integrate with advanced tire pressure monitoring systems and Bendix’s roll-stability system, trailer weight, air tank pressure, and optional brake pad wear sensors for disc brakes, Phillips explained.

“We’re not just in the GPS tracking business. There’s so much more than that,” commented Phillips Connect CEO Rob Phillips at the TMC Annual Meeting. “We’re talking smart trailers and adding a lot more than just ‘where’s my trailer.’”

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# PAINT POINTS



Changes in paint colors and body materials have complicated the collision repair process. Here are tools and tips to help.

By Gregg Wartgow



## [ COLLISION & PAINTING ]

**S**ome of those dents, scratches, and rust spots you notice in the service bay might seem like more of a nuisance than anything. But ignoring even minor cosmetic damage can hurt a fleet's image—and may lead to more problematic issues down the road.

Today's fleet technicians are also dealing with a wider variety of construction materials, including steel, aluminum, and composites. Because of this, it's beneficial to have a strategy in place to streamline workflows and tackle exterior repairs with the right knowledge, tools, and processes to ensure as quick a turnaround as possible.

Even within the same make, materials can differ. For instance, Ford's Transit, Transit Connect, and E-Series vans have steel bodies, while Ford's F-Series trucks have bodies made of high-strength, military-grade aluminum alloy panels.

Shops should be aware of this and should think about in which bay these vehicles are placed.

"To prevent cross-metal contamination that could lead to vehicle corrosion, aluminum vehicles undergoing repairs should be separated from vehicles undergoing steel repairs," said Gerry Bonanni, senior engineer for paint and body repair at Ford Motor Company.

"Furthermore, equipment used to repair aluminum body panels must be maintained separately from steel repair equipment."

Regardless of vehicle or material type, Bonanni stressed the importance of making sure any collision repair, whether a minor ding or major body damage, is performed by a trained technician and to OE workshop manual procedures, along with industry guidelines and training for collision repair.

"There are naturally different processes needed to repair steel or aluminum, including welding, riveting, dent extraction, and other techniques," Bonanni said. "Our manuals show the vehicle's structure, what it is made of, and repair procedures. We expect professional technicians to know how to carry out these procedures and to understand what the collision repair industry mandates."

### How coatings can cause confusion

"On the coatings side, all of your Class 8 trucks in the USMCA (United States, Mexico, and Canada) space are now painted basecoat/clearcoat," said Joe Wood, VP of global commercial vehicle coatings at Axalta, a supplier of automotive paints and coatings. "That is much different than in the past when there was a mixed bag of basecoat/clearcoat and monocoat."

» Customer demand is driving new paint colors, which may require different primers.

Photo: PPG Industries



This trend plays to a paint technician's advantage. The monocoats of the past were single-stage paints with no clearcoat layer. Thus, they were not as durable with respect to color and gloss retention.

"Furthermore, repairing with basecoat/clearcoat gives the technician a wider operating window for blending the basecoat followed by a clearcoat application," Wood explained. "The technician can better provide an invisible repair and also has the ability to buff minor imperfections without sacrificing durability, as would be the case when polishing a monocoat."

That said, non-LTL commercial trucks can present some challenges for paint technicians. "The truck itself might be a basecoat/clearcoat, but an accessory such as a box or wrecker could be monocoat or powdercoat," Wood said. "If a truck comes in with damage in multiple areas, the technician could have some challenges in getting to the right solution from both a color and gloss perspective."

Dan Olsen, who has been in the collision repair industry for 27 years, knows all about these challenges. He went straight for the heavy-duty segment, bypassing the glitz and glamour of hot rods and luxury automobiles. Over the past five years, however, a bit of glitz has made its way to the Class 8 segment, said the collision manager at Premier Truck Group's Salt Lake City location.

Premier Truck Group, part of the Penske family of brands, is a full-service Freightliner, Western Star, and Isuzu dealership across North America—and the trend is happening across makes and models.

"The days of nothing but solid white, black, or red tractors are long gone," Olsen said. "We're seeing many more colors and more metallics, so our technicians are having to learn new spray patterns. For example, a certain color and finish may require the air pressure on the spray gun to be adjusted."

The paint manufacturers have also noticed the trend of trucks veering into the flashy colors of the consumer vehicle space.

"The stylists at the OEMs are now looking at automotive colors to build their color palettes from," added Scott Colvin, brand manager for fleet segments at PPG, a supplier of automotive paints and coatings. "That means more metallics, pearls, and special-effect colors."

Colvin and Olsen concur that the expanding range of colors is driven by customer demand. It's all about improving fleet image and standing out. "We have one fleet customer who is running seven or eight different pastels," Olsen said. "He definitely keeps us on our toes."

With deeper, richer colors and even some tri-colors, Olsen said the same traditional basecoat isn't always the default solution in the paint booth anymore. "A white primer sealer is often needed nowadays on some of these lighter colors. If you're not using the right sealer, there's a good



» Navistar's new San Antonio assembly plant paint booths use a dry filtration system to optimize paint usage and reduce product waste.

Photo: Navistar

chance you'll end up fighting a complete color shift," Olsen explained.

The end result could be a final repair that is anything but "invisible." And that can have an adverse effect on the truck's appearance and fleet's overall image—just like all of those dents, scratches, and faded paint that are left unattended.

» Milwaukee Tool's M12 Color Match Light has a CRI of 98+ to help illuminate colors and imperfections.

Photo: Milwaukee Tool



## Matching colors, maximizing efficiency

Maintaining quality and efficiency in the paint booth requires unprecedented collaboration with a good paint vendor. As Axalta's Wood pointed out, the goal is to always make a repair look invisible while also ensuring that it wears and looks the same as the truck continues down its lifecycle.



“A heavy-duty paint shop really needs a complete layering system, irrelevant of where assets are in their lifecycle,” Wood emphasized. For example, premium-quality paints, such as Axalta’s Imron line, are desirable when repairing trucks that are just a couple of years old. For older vehicles, that might require a complete reimagining. In that case, an economy coating, such as Axalta’s Rival, could be the ideal solution.

“When it comes to selecting a paint vendor, look at how broad the product offering is,” Wood suggested. “Additionally, scrutinize the color capability. Axalta has roughly 96% of the Class 8 truck market at the OEM level. We tell the OEMs, ‘You can have any color you want because we have around 18,000 colors and are creating more every year.’”

Premier’s Olsen said his shop is constantly updating its color library to accommodate new colors and formula changes at the factory that are leading to color shifts in the field.

“For instance, an Imron Elite Productive EY formula is still basically a basecoat/clearcoat like Imron Elite EB, but the factory cure time is faster,” Olsen said. “So with that, we are still dealing with the same toners, but the activators and reducers have changed, which can result in some color shifts. Our technicians just need to be on top of those things.”

Colvin said PPG has focused on making its color-matching process as easy to use as possible. PPG’s Fleet Color Selector systems consist of chips that are actually sprayed, as opposed to printed or being ink drawdowns. “This gives the painter a better representation of the colors they’ll encounter on a truck,” Colvin said. PPG’s system is roughly 4,000 colors strong and growing. “We launched an additional 300 chips last year,” Colvin pointed out.

A well-designed paint-matching light with a CRI (color rendering index) over 90 does a good job of replicating sunlight to help illuminate colors and imperfections to aid in paint-matching.

Milwaukee Tool recently introduced its M12 Color Match Light. It provides five different color temperatures and three modes generating up to 1,000 lm of light output. The CRI is 98+, giving technicians a near-perfect replication of natural sunlight. Technicians report that the brightness of high mode is helpful in identifying pearls and coarse metallics.

Olsen said his go-to color-matching tool is a camera. Thanks to recent improvements in technology, his shop is seeing a nice lift in efficiency. “We’re now about 75% successful in getting matches without having to ask for help from our vendor (PPG),” Olsen said.

PPG’s RapidMatch XI spectrophotometer is another useful tool to match colors.

“The software includes proprietary mathematical equations that work specifically with our colors,” Colvin explained. “We recommend that the technician capture five images in the area being painted. But first and foremost, it’s important to make sure the surface is clean. And if it’s scraped up, we recommend buffing out a spot because the camera is very sensitive and will pick up scratches and dirt. PPG’s color science team builds formulas and mathematical equations to point the camera

system to the color with the closest possible match.”

Developing those matches is also a science. When doing a body repair, Olsen said a technician cuts out a piece of the panel that needs to be repaired. That piece is sent to PPG’s lab for analysis. Data from the analysis is uploaded into the software. The next time that same make, model, and color rolls into the shop, the technician can get a head start on color matching.

“In a perfect world, every blue truck coated with a certain paint code should be exactly the same,” Colvin said. “In reality, there are variations of color. When we get these samples from the shops, we are able to look at how closely they match the standards we have created. From there, we can create variants to that standard. That way, the painter can look it up in the computer and see that there is a standard but also a variant with certain characteristics. For example, if a technician is looking at a truck and thinks it is bluer than the standard blue, the technician can look to a variant to begin the matching process.”

## Automating exterior inspections

The opportunity to automate different steps of the repair process is growing. Color-matching cameras are one example. Additionally, AI (artificial intelligence) and machine learning have the potential to expedite and improve the visual inspection process, giving technicians another tool to stay on top of exterior repairs.

A software developer in Toronto is already showcasing the possibilities. PAVE is a browser-based app that works with any smartphone to automate the inspection process. The app guides a user through a series of photos that need to be taken. Those photos are then analyzed by PAVE’s built-in intelligence. A vehicle-condition report is generated within seconds, which includes itemized details of any damages detected along with suggested repair types. The whole process reportedly takes no more than five minutes.

“Our goal is to replicate that same 360-degree visual inspection like you’d get with a professional inspector,” said Steve Southin, co-founder and co-CEO of Discovery Loft, the developer of PAVE. “A lot of decision-making has to happen when managing a fleet. Is a given vehicle in a condition that can easily be cleaned up and put back on the road within days, or is it getting to that point where it’s going to need some serious maintenance, reconditioning, or even disposal? When you’re moving the visual inspection process more upstream, ideally when the person is the actual user of the vehicle, decision-making becomes much more streamlined.”

PAVE recognizes not only paint irregularities, scratches, and dents but also things like worn tires, broken taillights, and even signs of corrosion and leaks—all important insights that can help technicians better prepare for

**“We have one fleet customer who is running seven or eight different pastels. He definitely keeps us on our toes.”**

Dan Olsen, collision manager,  
Premier Truck Group - Salt Lake City



» When using PPG's RapidMatch XI tool, the technician should clean and buff the surface and capture five images in the area being painted. The camera is very sensitive and will detect scratches and dirt.

Photo: PPG



what needs to be done when a vehicle makes its way to the service bay. And because PAVE is an open API (application programming interface), it is accessible to other software developers. In other words, PAVE's damage detection and analysis capabilities could be integrated with existing fleet management or shop management software, giving fleet maintenance teams another tool to help manage workflows.

Uveye is another automated vehicle inspection system. The deep-learning AI platform of the system analyzes high-quality, multi-angle images to identify hard-to-detect issues such as scratches, dents, and corrosion. The vehicle scan takes a few seconds, and a high-resolution image of the vehicle marked with potential trouble spots pops up on the technician's monitor.

Technology is also helping to automate the collision repair estimating process. PPG's AdjustRight draws on a robust database of parts and repair information to produce detailed, accurate estimates. The secret is the back-end "logic" that helps estimators select the correct parts and determine the necessary repair and refinish labor. A tool like this helps standardize the estimating process, reducing the time needed to create estimates while virtually eliminating the possibility of errors.

Fleets can benefit from automated inspections when their assets are dispersed throughout a broader region. "Having that initial visual inspection done ahead of time helps the fleet manager determine which shop to send the vehicle to," PAVE's Southin explained. "The fleet manager doesn't have to worry about sending a vehicle to Shop A, only to find out later that it also has to be sent to Shop B to get a fender repaired, for instance."

PAVE's initial focus is on the passenger vehi-

**"Our chemists looked at those options on the lower end to determine if they could create a lower-VOC formula that retained all of the back-end qualities we also need."**

Dan Olsen, collision manager,  
Premier Truck Group - Salt Lake City



» PPG's Fleet Color Selector consists of chips that are sprayed to give a better representation of the colors encountered on a truck.

Photo: PPG Industries

cle segment, along with select segments of the commercial sector, including delivery vehicles such as pickups and cargo vans. That is because a tremendous amount of upfront work goes into gathering all of the vehicle data so PAVE's AI can do its work. "We can run analysis on every passenger vehicle sold in North America for the past 15 years," Southin pointed out. "The next frontier is additional segments of the commercial vehicle market, including heavy-duty."

### Reducing a collision repair shop's carbon footprint

The next frontier for fleets also includes increased environmental consciousness.

For a paint shop, the first step toward reducing its carbon footprint is using the most environmentally friendly coatings possible. "In North America, that is typically a high-solid, two-part urethane," Axalta's Wood explained. "But it's also about how much energy the shop uses. Is the shop using a highly efficient paint that can drive the cure cycle down by 50%?"

PPG has taken its premium heavy-duty paint offering in a more environmentally sensitive direction. The Delfleet One system is replacing the company's paint system of more than 20 years. Delfleet One gives heavy-duty shops a complete product offering in the 1.5 to 1.9 VOC range, which is lower than most traditional products.

"You get to a lower-VOC paint by looking at the chemicals that go into it," Colvin explained. "Some solvents and activators have a lower VOC than others. Our chemists looked at those options on the lower end to determine if they could create a lower-VOC formula that retained all of the back-



» A technician at TNT Services applies a coat of paint.

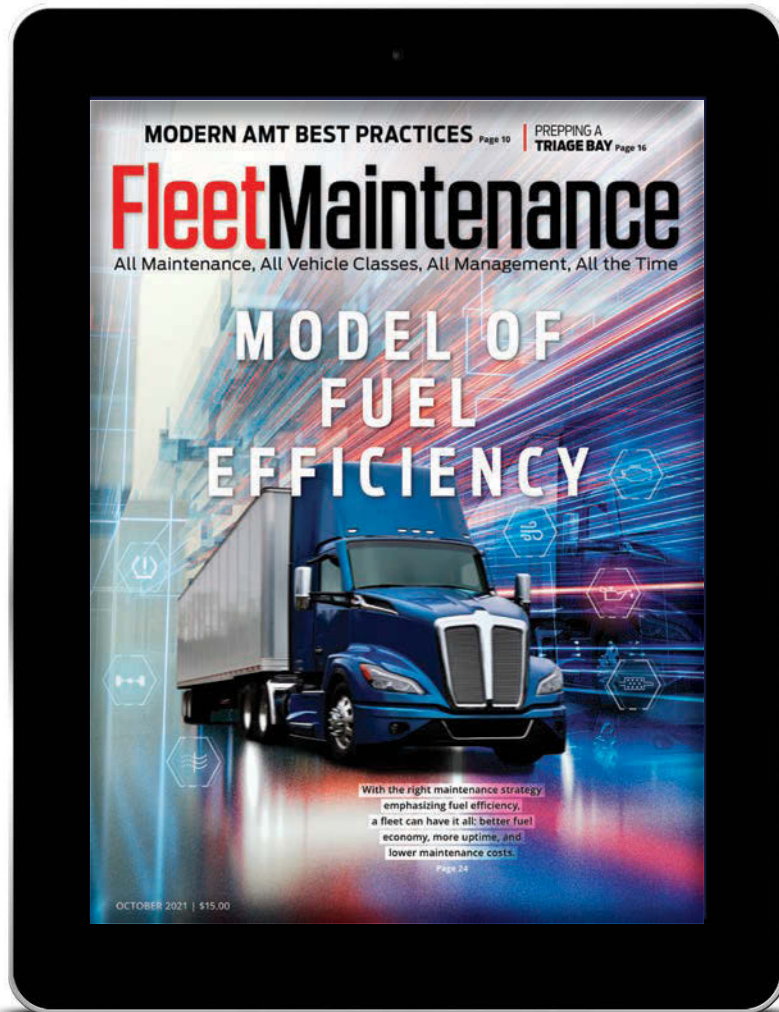
Photo: TNT Services

end qualities we also need, such as durability, gloss, and ease of use."

Aside from using the right coatings, Wood said there are other things a shop can do to reduce its carbon footprint. Is the curing equipment well-maintained so time and energy aren't wasted when curing? Are air hoses leaking all over the place that cause the compressor to run nonstop? Not only can these play into a paint shop's carbon footprint but also its bottom line. ▀

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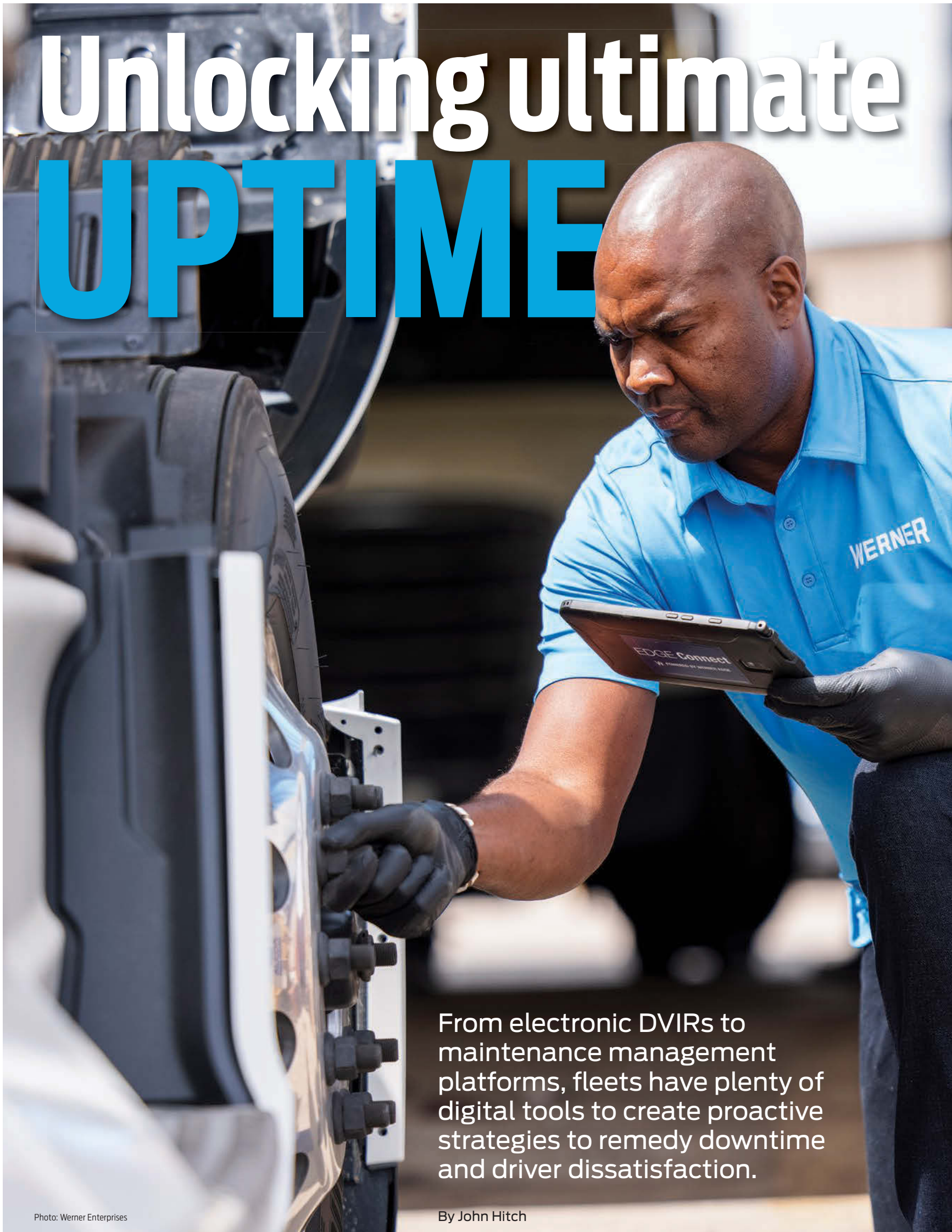
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# Unlocking ultimate UPTIME



From electronic DVIRs to maintenance management platforms, fleets have plenty of digital tools to create proactive strategies to remedy downtime and driver dissatisfaction.

Photo: Werner Enterprises

By John Hitch





## [ SHOP MANAGEMENT ]

**F**or a truck driver waiting in a repair shop, every tick of the clock feels like a pin prick, bleeding money from what would otherwise have been a productive day. Drivers get paid by the mile but, unfortunately, pacing back and forth in a waiting room doesn't count.

It's a maddening experience, according to Kevin Bowers, director of service operations at TranSource, a dealership that services Hino, Isuzu, Mack, and Volvo medium- and heavy-duty trucks.

"Every driver or every trucking company that drops their truck off to us, they're mad when they get here," Bowers told *Fleet Maintenance*. "They're mad because the truck's broke, they're mad because they're going to have to spend money to fix it, and they're mad because they don't have the truck to pull their load."

The ramifications for the fleet are twofold: a truck not on the road is an unprofitable one and ticked-off drivers are as bad for business as downtime.

"Reliable equipment plays a big part in retention, and if a fleet is not addressing their needs in a timely manner, or supporting their drivers in every way possible, it's more likely they'll leave," said Tristan Nolan, Werner Enterprises' product manager for maintenance, equipment, terminal network, and technology platform.

That's why fleets and maintenance providers must use every tool at their disposal to speed up what can be a very long repair process rife with potentially long part lead times and understaffed shops. And for the challenge of expediting the repair process, it appears that digital tools—powered not by pneumatics or electricity, but by data—are providing the biggest help. These include all sorts of apps, platforms, and acronyms, from SRM (service relationship management) to CMMS (computer maintenance management systems). They may work in combination or alone, but they all have a knack for unlocking more efficiency and uptime than fleets ever had before.

### High-level solutions

Werner Enterprises hangs on the cutting edge of the digital tool spectrum. One of the largest for-hire fleets in North America, the Omaha, Nebraska-based carrier developed its own telematics solution called Werner EDGE, which feeds data into the Werner Event Resolution System (ERS). Sixty road breakdown specialists use ERS to assist with issues ranging from preventive maintenance to major equipment failures. The team also deals with estimate reviews, invoices, and warranty filing via cloud-based ERS workflows. Nolan said Werner has cut driver dwell time by more than half and cut time per call to address vendor repair needs by 10 minutes since the inception of EDGE and ERS.

The logistics company manages 8,000 tractors, 24,000 trailers, and utilizes a network of 13,000 repair shops. Werner has also integrated with OEMs Daimler Truck North America and Navistar, as well as SRM provider Decisiv, to widen its reach and reduce time on the phone.

"With our integrations, phone calls are eliminated, drivers are served faster, and agents can address a higher volume of repair needs," Nolan explained.

TranSource, meanwhile, has dealerships across North Carolina and South Dakota, with 130 bays spanning several facilities and 100 ASE- and OEM-certified technicians, who also service the dealer's lease and rental fleet. TranSource solely uses Decisiv's SRM.

This end-to-end software solution, which Volvo Group brands as the ASIST SRM, expedites estimates and approvals, and manages and streamlines the overall repair process. This starts with Driver Vehicle Inspection Report (DVIR) data, after which work orders are quickly created through the Karmak Fusion dealer management system (DMS). The necessary information, from diagnostic reports and estimates to warranty coverage and customers' preferred inspection and service procedures, all funnel down to the technician making the repair. Basically, those who need to know will know.

**"Anything problematic that happens out there, I'm involved in; I'm copied on all the case notes flying back and forth within service departments."**

Kevin Bowers, director of service operations at TranSource





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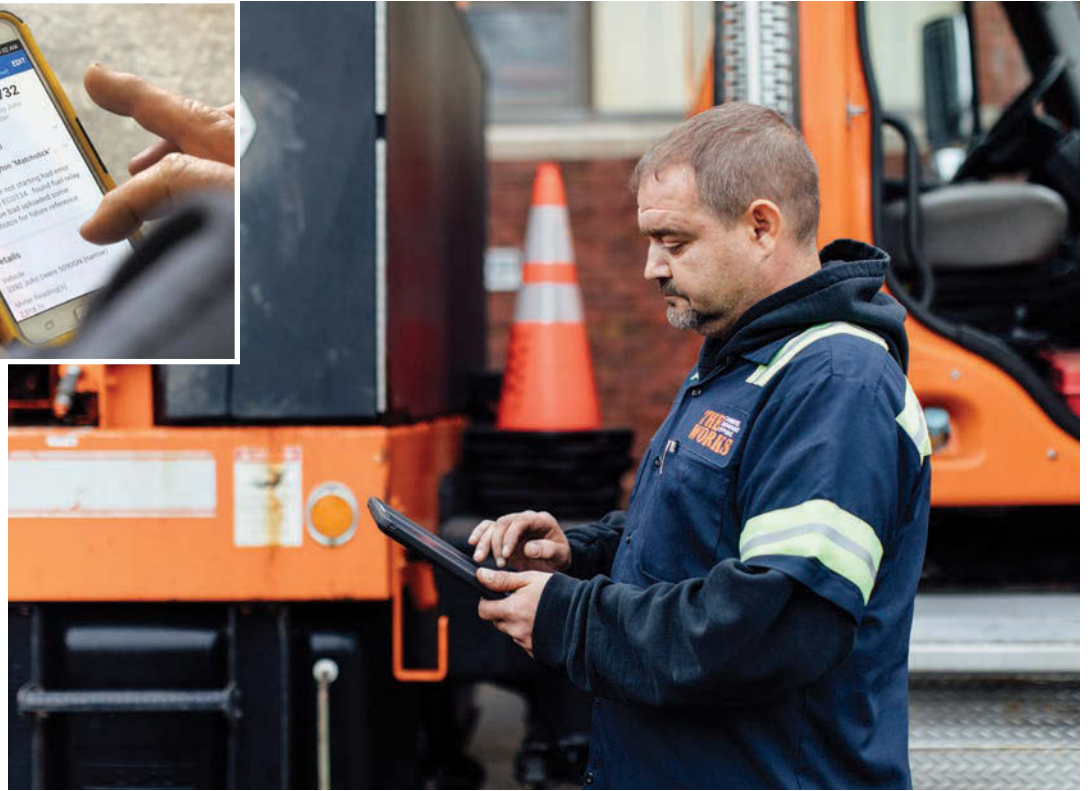
» Using software for as many administrative tasks as possible frees up technicians to get the repairs completed.

Photos: Fleetio

“It helps me manage my business, because I can keep my eye on the ball out there and what’s going on,” said Bowers, who has used Decisiv for about two decades. “Anything problematic that happens out there, I’m involved in; I’m copied on all the case notes flying back and forth within service departments.”

Through Decisiv’s Builder app, TranSource has made nine custom inspection procedures totally paperless, including for lease/rental and used-truck turn-in, trailers, and maintenance programs.

This type of technology is no longer just for the larger companies, though. Smaller fleets and shops can also leverage these tools if they drop the pen and paper and connect to the cloud.



## Inspection gadgets

For a dealer like TranSource, a service request is needed to start a job. This can be kicked off typically with a Department of Transportation pre-trip inspection or DVIR. The Federal Motor Carrier Safety Association requires this inspection at the end of each workday, with the report submitted to the fleet when reaching the home terminal. The compliance and safety measure is the first line of detection for defective equipment, ideally ensuring a fleet does not put a truck with underinflated tires or bad brakes on the road.

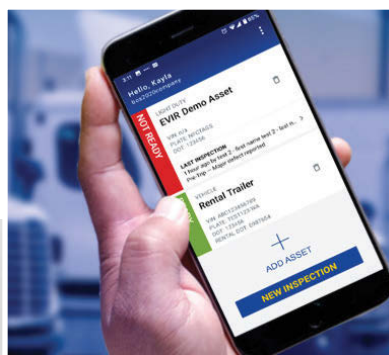
Using an electronic DVIR is the first step toward speeding up the repair process; Werner does this through the EDGE system.

“Werner’s professional drivers conduct pre-trip and post-trip inspections every time they get in the truck or finish up a delivery,” Nolan said. “In addition, Werner Maintenance places a high emphasis on regular inspections by technicians.”

TranSource does not itself offer eDVIRs but integrates with many other

**“[Drivers] can take a picture and attach it to the EVIR, and now there’s no confusion of what that defect is or what needs to be replaced.”**

Fred Fakkema, VP of safety and compliance for Zonar Systems



» Digitizing the inspection process can ensure and expedite its completion.

Photo: Zonar

telematics and fleet-management platforms that offer the tool, which can be accessed from a driver’s smart device.

Going paperless circumvents the “protracted” manual route, explained Richard Clark, product manager for Chevin FleetWave, a fleet-maintenance management provider. Before helping develop the latest iteration of the FleetWave platform, he was an avid user of the technology as a technician and later as a fleet manager at a large U.K.-based fleet.

“When I was training as an apprentice, the driver would fill in the paper document and have to walk across the massive yard to the transport office,” he recalled. From there, the shop was contacted, and a technician would have to grab the truck keys to bring it in.

FleetWave Forms, the platform’s eDVIR, alleviates this process. “If there is something wrong, the workshop gets a notification, and they can already go and pre-plan, pick parts, and be organized before the driver has even arrived,” Clark explained. “You realize how inefficient that way of working is compared to now, and the savings of time and improvement in efficiencies.”

Using a tablet or other smart device to check off inspection boxes also guides the driver through the process to ensure nothing is missed.

“Typically, drivers have pencil-whipped,” relayed Fred Fakkema, VP of safety and compliance for Zonar Systems, a fleet management provider. “They just check the box—they don’t actually get out and walk around the vehicle to see what’s going on.”

Fakkema saw this often in his 25 years at the Washington State Patrol, where he also led the Commercial Vehicle Division. And even though the driver may miss a loose mudflap or broken marker light, the Commercial Vehicle Safety Alliance (CVSA) inspector won’t, and visible issues will likely initiate a more thorough, time-consuming 37-point inspection. The CVSA officer will put the truck out of service until the defects are fixed, and the driver will sit and wait. And not make any money.

Zonar developed the EVIR (electronic verified inspection reporting) system, which guides the driver to inspect specific zones by scanning RFID tags stuck to the truck.

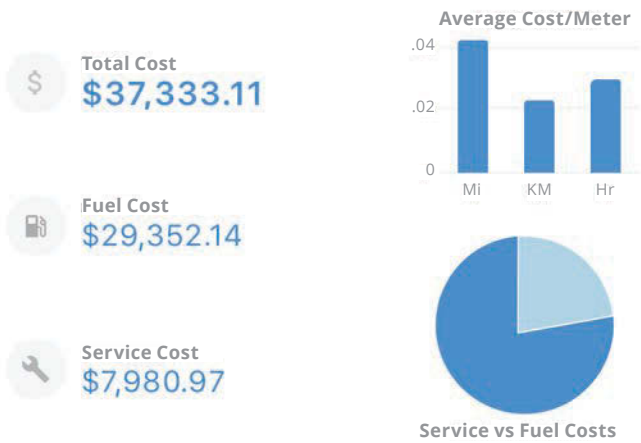
“If there’s a defect, once the driver does the complete walkaround and docks the tablet, [the data] immediately go to the back office for the mechanics to see,” Fakkema explained. “They can take a picture and attach it to the EVIR, and now there’s no confusion of what that defect is or what needs to be replaced.”

The configurable EVIR has been used for OTR trucks, buses, forklifts, and even a roller coaster, Fakkema said.

Expect the shop to be a little busier at first because new users’ defect reports show “hockey stick” growth, as drivers are catching defects that were previously overlooked. “That levels out to a normal plane once fleets get used to it,” Fakkema said.



## Operating Cost Report



» Using a fleet management platform, such as Fleetio, allows management to get a clear view of maintenance and fuel costs.

Graphic: Fleetio

## Confidence building

Pennsylvania-based Treeways, a vegetation management service that has 1,100 power units, ranging from Class 7 vocational bucket trucks to pickups, relies on fleet maintenance provider Fleetio's Inspections app for eDVIRs.

A main reason is to simplify the process because "the driver is a tree trimmer first and a driver second," said Robert Polka, Treeways director of fleet operations. The company worked with Fleetio and Altec Fleet Services to develop a mobile inspection solution that was easy to use and would help drivers detect broken lights and leaking fluids. This ultimately builds more confidence, Polka explained, because logged defects automatically take the truck out of service and immediately generate an email to the shop or fleet director.

"All too often, fleets are putting a lot of pressure on the driver or the operator to identify issues with the truck," Polka said. "They do their part and identify issues, but they never get resolved. So how many times does that happen until the driver loses his or her incentive to want to really do a thorough DVIR and identify issues?"

The method ends up saving time so workers can get to the jobsite faster. Fleetio customer Zerorez Atlanta, a carpet cleaning business with 47 Chevy Express vans, reduced vehicle inspection time by 65% and cut hourly maintenance costs by \$3,500 in the first 45 days, according to fleet manager Josue Zavala.

Fleetio also allows drivers to attach pictures and voice memos of problems, even ones that might not warrant a CVSA officer's attention but may make the job harder, like a door handle that takes a few tries to shut correctly. Fleetio Product Manager Michael Harrison explained "small cosmetic defects that are frustrating to a driver" can also be logged and stay in the system so technicians can see and address them during another service event.

Fleets do need to convince drivers the new technology will make their lives easier, which can be an uphill battle.

"Drivers are initially quite skeptical that they have a new piece of technology that they're responsible for keeping track of," Harrison acknowledged. "Once they realize that it actually gives them a better mouthpiece for reporting the things that they're interested in and getting things resolved more quickly, that sort of consternation dissipates."

## The office angle

Before discussing how these digital tools help the technician, let's take a side trip to the back office. The data these tools generate allow managers far greater transparency into the operation, which can help with everything from scheduling PMs to planning maintenance budgets.

Transparency was the main draw for Robert Francis, fleet manager at Prudential Overall Supply, to adopt Fleetio. Prudential delivers everything from uniforms and towels to pharmaceuticals across the country, using hundreds of step vans, about 80 box trucks, and 20 Class 8 tractors.

Prior to deploying the platform, Prudential used an "antiquated system that was built for building maintenance," he said. Only the technicians and administrators in the fleet department had access.

"The general managers had no clue what was going on—they had no visibility to the expenses for the fleet, or when their services were due," Francis said.

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“They were in the blind unless we sent them an email saying these trucks are coming up for service,” Francis continued.

Now they do have that visibility into budgets, fuel costs, maintenance costs, and truck status, though without the ability to edit work orders or vehicle information, he added.

Technicians can also alert managers at the facilities when any of their vehicles are due for PMs, so they can ensure a spare truck is ready to take its place. Francis said managers can get an overview of how many trucks

are due or overdue for service. The platform also helps locate mobile maintenance providers when needed, and though they can't schedule mobile services like they can with in-house services, an auto-integrate feature pays out vendors quicker. Overall, there is far less paperwork, which Francis related is “the difference between writing an essay paper and doing a one-pager.”

“This access completely changed the way our general managers look at their fleet,” Francis said. “Our local GMs are all over the country, and [Fleetio provides] the ease of use to give them one dashboard to where they can see the health of their fleet.”

To get buy-in from the top brass for digital tools, Francis advised to key-in on the specific time savings.

Fleetio's Harrison said digitizing the electronic approval process can save “hours and hours of time” for both the shop and the fleet.

“Instead of having to play a game of phone tag between multiple parties to get individual line items approved, that can all happen electronically, using auto approvals in some cases based on logic the fleets can build,” he said.

This allows everyone from the driver to the technician to become involved in the maintenance lifecycle.

Harrison found it curious that maintenance is generally one of the top three fleet line items, though an area where management is “most blind.”

“The irony is that it's one of the easiest places to save money when operating a fleet if you can centralize the data and learn from it, and find ways in which you could be operating more efficiently or doing things in a more preventative manner,” he asserted.

### Bay efficiency

The proactive use of fleet-management tools will get the driver and asset to the shop faster and get the work approved as well. The vehicle still needs the repairs, though.

The technician might already have some information and photos attached to the case, though they can also gather several critical data points during the courtesy inspection when a truck comes in.

Bowers said this e-inspection primarily helps the dealer upsell services but also is a safety measure. “We don't want to see something safety-related on the truck and

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not do anything about it, let it go, and two days later the truck has a failure that kills somebody because we didn't follow through on it."

A TranSource service writer will connect a Noregon JPro tool to the vehicle, and any faults and vehicle data are displayed on a tablet. This is sent to the Decisiv system and creates the case. The service writer will ask follow-up questions, such as if an engine issue arose in traffic, and gather info to help the assigned technician. With the push of a button on the ASIST platform, the case exports into Karmak Fusion to generate a work order.

Any additional sold items are pushed from ASIST to the business system for invoicing purposes. The platform estimates the time of repair, which allows TranSource supervisors to get the right technician on the job. For example, an engine overhaul could take a week or more, and this helps allocate the right person to do the repair efficiently. Other less labor-intensive services, such as alignments, might be sublet to an appropriate vendor.

"You don't want to give technicians a job they are not familiar with," Bowers said. "We try to give technicians a little bit of everything to their level, where they can handle anything."

Decisiv also integrates with Mitchell 1's TruckSeries TruckLabor module to estimate repair times and analyze technician performance to further increase their efficiency. Labor and parts cost are tracked via Vehicle Maintenance Reporting Standards (VMRS) codes.

FleetWave also guides shop users to mark attendance, allocate work, order parts, and upload media.

"It becomes a central source of truth for that whole fleet journey, whether it's looking at what vehicles to purchase, or making sure you're compliant, and that you've met your manufacturer's warranty service intervals," Clark said. "Because we can have all that data in that one place, it gives that actionable information so you can be proactive rather than reactive."

In the end, getting software to do as much work order and administrative tasks as possible frees up technicians to get the repairs done.

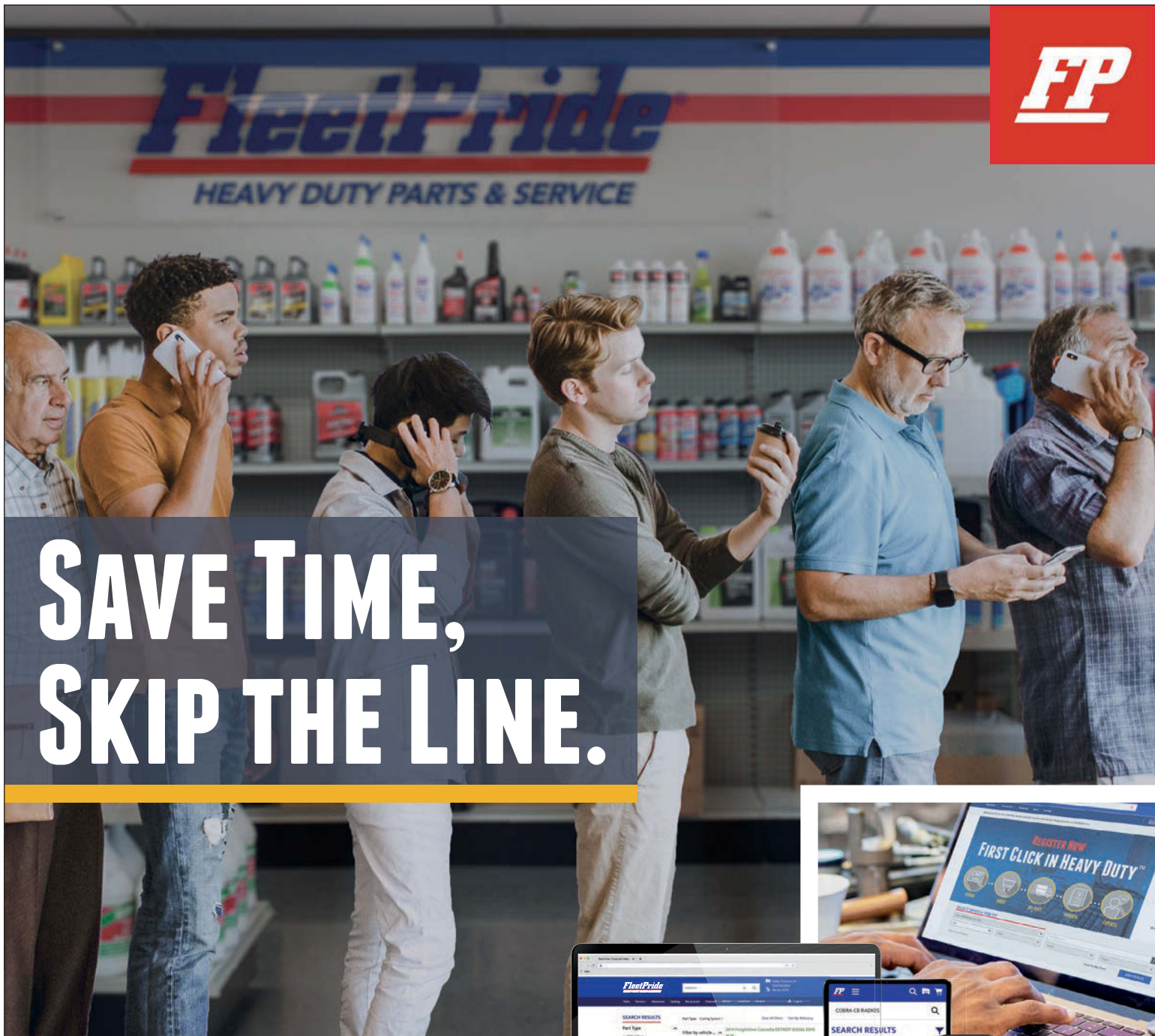
"When I became a mechanic, I never wanted an office job to fill in paperwork—and that's kind of exactly how the job has gone," Clark noted.

This is something the repair shops cannot afford because of the technician shortage.

"Top-quality technicians are harder to come by, so we need to be able to make sure they do what they're good at doing," Clark concluded.

Leveraging those technicians better should pay off in the bay with more efficient repair and maintenance, which will get drivers out of the waiting room and accruing miles again. And that's the best resolution for everyone. ■

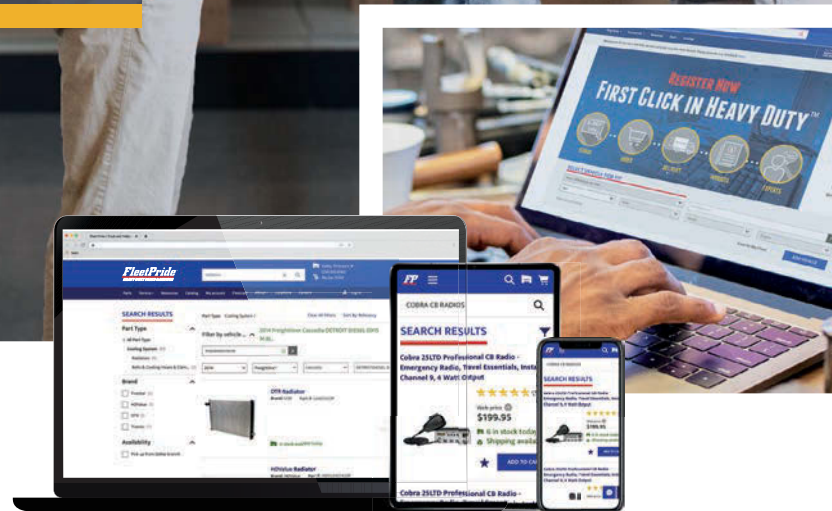
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» Cummins OEM DPF system

Photo: Diesel Emissions Service

# DPF inspection best practices

Diesel particulate filters work hard to keep the air clean but get dirty and damaged in the process. Here's what technicians should know in order to spot potential issues and what can be done to fix and prevent them.

By Seth Skydel



» Cummins DPF

Photo: Diesel Laptops

**A**ftertreatment systems (ATS) have been mandated on diesel trucks for about 15 years, yet diesel particulate filter maintenance continues to be a complex issue for the trucking industry and a big source of downtime. Shops have admirably acquired the knowledge to service the ever-evolving DPFs, but it's an ongoing process. And lately, the parts shortage has made ATS components harder to come by. Spotting signs of trouble and damage will help their fleet better manage DPF issues, making inspections so important.

First, some DPF maintenance basics. The active and passive regeneration process routinely burns off soot collected in the filter during the engine combustion process, which keeps clogging at bay.

But the system may also require a forced regen while parked. That causes a truck to become inoperable for about 45 minutes while the regeneration takes place.

According to RoadWarrior Inc., a provider of aftermarket DPFs, if a regen goes for an hour or longer and/or a truck undergoes unusually frequent forced regens, it could indicate that the filter isn't heating up enough to burn off the soot. This leads to a clogged filter.

"It's important to deal with this quickly, or the pressure buildup can crack the DPF," the company noted.

And regens won't burn off ash. At some point, the DPF will need to be cleaned or replaced.

"There are a few different factors when determining when a DPF should be replaced," said Dustin Carnes, training/SME manager of product development at Diesel Laptops. "Some manufacturers recommend replacing the DPF around the half-million-mile mark. Others say the DPF should last the life of the vehicle, but that is only under the most ideal scenario."

In between, the DPF can be cleaned, which can cost \$250 to \$650, according to Diesel Emissions Service, an operator of four truck repair and DPF cleaning facilities on the West Coast. A new DPF costs several thousand dollars. OEMs set these intervals based on mileage and/or fuel consumption. DPFs can last 300,000-500,000 miles. A fleet should not rely on those intervals alone. Engine data will also give fleets a good start on detecting if DPF service is needed.

"Engine manufacturers use strategies within the aftertreatment or engine control module to calculate the percentage of ash in the DPF and to recommend when the filter should be removed and cleaned," Carnes explained.

He noted that "most DPF replacements are the result of other upstream issues or a lack of maintenance." Those issues could include oil, fuel, or coolant contamination, or could be a result of other uncorrected engine problems. These issues in turn may cause catastrophic damage to the DPF, Carnes warned.

"Every part of the engine works in conjunction with the exhaust aftertreatment system in maintaining a working vehicle," he added. "If any part upstream fails, it has the potential to create problems in the aftertreatment system. Because the DPF is utilized to catch what's in the exhaust, it can become the casualty of many other root cause issues."

## Inspection process

When determining whether to clean the DPF or replace the centerbody, specific processes and proven methods need to be applied when inspecting the filters to identify damage.

Velocity Truck Centers, a dealership network that sells and services Freightliner, Western Star, Mitsubishi Fuso, Hino, Autocar, Ford, FCCC, and other truck brands, provided a video demonstration on how to inspect the DPF core and identify damage. Velocity's outlined criteria can be applied to all generations of exhaust aftertreatment, and the inspection process is purely visual, so no special tools are required.



It should be noted that the exhaust side of the DPF provides the most detail for determining the condition of the core. Good lighting will aid in the inspection process, Velocity advised. The dealer also detailed a number of specific areas to inspect when assessing a DPF for damage. According to Velocity, these include:

#### **Surface damage: Gouges or scrapes**

Scrapes and gouges on the surface of the core cannot exceed 1/2" in length and 1/4" in width and can be no deeper than 1/8".

#### **Surface damage: Loss of substrate plugs**

The loss of substrate plugs across the surface is considered surface damage. Open cells along the outer edges cannot exceed three rows in from the edge. Surfaces with numerous gouges that do not exceed the tolerance criteria cannot exceed a total of five blemishes across the entire surface area.

#### **Vertical cracks**

Vertical cracks are visible at the surface and may be seen on one or both sides. Vertical cracks may propagate in different patterns that may spider across the surface or around uniformly, parallel, or perpendicular with the cell walls.

#### **Horizontal cracks**

To identify filters that have experienced horizontal cracks internally, turn the filter to the exhaust or outlet side for inspection. The exhaust side of the filter can be identified by an embossed arrow on the can showing flow that points to the exhaust side of the filter or by careful consideration of the mounting flange characteristics. The exhaust side of the filter should have no signs or evidence of soot. Horizontal cracks run laterally through the brick. Cracking begins around the outer area of the substrate brick and propagates to the center but cannot be seen at the surface of the brick.

#### **Internal horizontal cracks**

Internal horizontal cracks in early stages leave traces of soot in a ring around the outer edge of the outlet side of the filter. More severe internal cracks that have propagated across the entire brick allow soot to accumulate in the outlet across the entire surface in a uniform pattern.

#### **Foreign matter**

Foreign matter blocking the surface pores of the substrate cause damage through the cells and during removal. Contamination could be any substance that adheres to the surface of the substrate and restricts flow.

#### **Fusion or melding**

Internal fusion breakdown allows soot accumulation on the exhaust side of the filter and can be identified as spots of soot or evidence of soot in non-conforming patches on the outlet surface. Fusion or melding of the substrate brick and the severity of the failure can be localized internal hot spots known as fusion or as extensive as a complete exothermal breakdown that can be seen by massive deterioration of the cell walls extending to the surface of the brick.

#### **Brick slippage**

Slipping of the brick can be identified by a reduction of clearance from the outlet surface area to the outlet flange of the filter can.

#### **Can damage**

Dents that exceed 1/2" into the can constitute can damage. Witness marks from clamps are acceptable unless the damage is so severe as to allow rust to penetrate through the can.

#### **Flange damage**

Flange damage is a distortion of the mating surface of the filter can at either the inlet or outlet clamping area. Bracket damage is a distortion of the bracket.

Key points such as direction of exhaust flow, specific characteristics, and substrate brick damage and soot patterns are important when inspecting the particulate filter core for potential damage.

Similarly, Diesel Forward Inc., a distributor of new and remanufactured diesel engine components through its Alliant Power brand, details visual DPF core inspection criteria.

The Diesel Forward process includes steps for visually inspecting the DPF core housing and substrate inlet and outlet faces for the following damage:

- Cracked filter substrate
- Gouged filter substrate
- Melted filter substrate
- Soot accumulation on the DPF outlet face

### **DPF diagnostic considerations**

Diesel Laptop's Carnes explained that DPF diagnostics can be as simple as removing the inlet and checking for contamination or damage—or as complicated as running multiple on-board



» Staining on an uncatyzed filter like this is not harmful if the cause was corrected.

Photos: Diesel Emissions Service



» Exothermal damage caused by over fueling or a high temperature condition.

diagnostic tests with a scan tool to monitor the rise and fall of DPF pressures and the differential. Additionally, soot accumulation on the back or outlet side of the DPF is a telltale sign that the filter is internally cracked.

"When a DPF is replaced or cleaned, a technician must go into the diagnostic software and program a reset or replacement command so the control module knows that the DPF is now clean," Carnes said. "One problem that arises is when technicians perform the resets when they are not needed, which can throw off the calculations inside the control module. That leads to technicians having to perform more diagnostics than necessary when ash has accumulated in the DPF, but the control module may not be aware of it."

Diagnostic scan tools offer a solution to that challenge. Scan tools are needed for performing a DPF service for a number of reasons, noted Victor Rivilla, marketing director at CanDo International, maker of a wide range of diagnostic scan tools for commercial vehicles. For example, they give forced regenerations the ability to override soot levels logged in the engine ECM, which occurs when soot loads are too high for a passive or active regeneration. The tools are also needed to scan for trouble codes prior to performing a forced regeneration.

"It is also important to use a scan tool to view live data on soot levels, soot concentration, and DPF load before, during, and after the forced regeneration," Rivilla said. "Finally, after performing the forced regeneration, the scan tool is used to reset or turn off the DPF light."

Steve Hoke, president of Diesel Emissions Service, said that a sound approach to evaluating DPFs is to use several tools to get the whole picture on aftertreatment problems. At the same time, he was quick to point out that DPFs are serviceable units and should be cleaned every 75,000 to 100,000 miles.

"This keeps the volumetric efficiency of the DPF where the manufacturer intended it to be," Hoke explained. "Barring no engine upset conditions and yearly cleanings, the DPF should last for many years. In fact, we have customers that have had the same DPF for more than ten years."

When it comes to sourcing replacement DPFs, Hoke noted that current supply chain issues have led to some lack of OEM ATS components, but there has been steady availability of aftermarket parts. "Fleets could assume that a branded part meets or exceeds all OEM parameters," he explained. "Brand reputation should help with this decision, and warranty length and what's actually covered should also be included when making a choice."

"In all cases, fleets should look to their local truck parts supplier or specialist in the DPF cleaning business," Hoke added. "Most truck parts distributors have chosen reputable companies to partner with for aftertreatment parts."

The importance of proper DPF inspections cannot be understated. Beyond cleaning and maintaining the filters, however, it is important to recognize that a DPF will eventually need to be replaced. In those cases, there are several OEMs and aftermarket providers that offer new and remanufactured replacements. ■





» John O'Leary, DTNA CEO, delivers the keynote during TMC's 2022 Annual Meeting.

Photo: John Hitch | Fleet Maintenance

# The world is changing fast, and trucking industry must, too, says DTNA CEO

In a keynote at the Technology & Maintenance Council 2022 Annual Meeting, DTNA CEO John O'Leary talked drastic changes to the economy, emissions, and safety and how the industry must respond.

By John Hitch

**D**uring American Trucking Associations' Technology & Maintenance Council 2022 Annual Meeting breakfast keynote, Daimler Truck North America (DTNA) CEO John O'Leary pondered the global shifts in the environment and economy, and how changing dynamics will affect the transportation industry. He argued that drivers and those who support them must contend with both an aggressive push to increase road safety and decrease vehicle-related emissions bringing large-scale technological changes to the industry.

"It begs the question of how we continue to do this in the long term," he said. That's not a question that can be fully answered in a 30-minute keynote, but O'Leary did provide some examples

of how the world in which trucks operate has rapidly changed.

This starts with global commerce and consumer buying habits and a severe shift to e-commerce. Many who once made regular trips to the grocery store now shop on their phone and schedule deliveries right to their front door.

"That will last long beyond the recent crisis," O'Leary predicted. "It's evident in figures supplied by the Bureau of Transportation Statistics: The value of freight shipments by truck will increase nearly twofold from 2018 to 2045. Additionally, according to e-commerce research, final-mile delivery is expected to grow by an exceptional 15% in just the next four years."

"Our industry is expected to transform in numerous ways of our own—greater safety, reduced congestion, and with both regulatory and consumer pressure to drive toward decarbonization," O'Leary added. "Any one of these three goals require technological innovations that by themselves would have historically taken decades to accomplish. Instead, we're looking at doing all three at once and against an aggressive timeline."

But whatever the challenge, O'Leary, who previously headed Mercedes-Benz Trucks in Germany, stressed the truck makers cannot churn out "science projects on the road" and that all technological innovations need to have a practical benefit.

## Data surge

The way to do this is through generating and analyzing good data, O'Leary argued, which he said DTNA has done for a decade with the Detroit Connect Virtual Technician remote diagnostics system. Data coming off the truck "help fleets and drivers make informed repair decisions within minutes of a fault event," O'Leary said.

With the 3G sunsetting, soon that could go from minutes to seconds. O'Leary said 4G "doesn't just double or triple connection speeds [over 3G], it exponentially increases the connection by 14 to 15 times," and when 5G takes over, that speed will improve up to 100 times over that of 4G.

"The rapidly increasing growth of this technology means that smart trucks will continue to roll out until the entirety of the nation's fleet is connected," O'Leary said. "It also means that service operations will be better informed about what truck is coming in for service, why, and what parts are needed when that truck arrives."

Sensor technology, specifically advanced driver assistance systems (ADAS), has also helped address the safety issue.

O'Leary cited data from Bosch, which manufactures a litany of automotive parts and technologies, that ADAS such as lane-keeping assist and automatic emergency braking can reduce injuries from large-truck crashes by up to 23% and lower fatalities by up to 19%.

"I'm convinced improved capabilities for the technology will continue to show an even stronger benefit," O'Leary said. He explained that as vehicles add more ADAS, they will be able to sense if a driver has had a medical emergency due to not receiving any inputs, such as steering, and can intervene and slow the truck to a stop. "This isn't science fiction," O'Leary said. "This is technology that's available now for new trucks."

## Move to zero emissions

In regard to global concerns over climate change and trucks' impact on emissions, O'Leary pointed out the Class 8 market-leading Freightliner Cascadia improved fuel efficiency by 35% since being launched in 2007.

"We've been able to improve it in large part because of the aerodynamic efficiencies we've applied and the improvements to our Detroit engines," O'Leary explained.

Read the full story online at:

[FleetMaintenance.com/21259368](https://www.fleetmaintenance.com/21259368)



# Mitchell 1 enhances TruckSeries with tools to boost productivity and efficiency

At the TMC 2022 Annual Meeting, Mitchell 1 explained how more interactive wiring diagrams and data-driven time management tools can help prepare a shop for growing repair complexity.

By John Hitch

**Mitchell 1 updated its TruckSeries repair information platform** with two new digital tools to help commercial vehicle technicians. A time management tool designed to bolster shop productivity and an improved wiring diagram tool to assist with electrical diagnostics and repairs were announced at the TMC 2022 Annual Meeting.

Both features work within the Manager SE Truck Series software, which is used to help service Classes 4-8 trucks, and were developed to help technicians work smarter and more efficiently as the transportation industry becomes more complex and high tech, said Ben Johnson, director of product management at Mitchell 1.

These advancements include more efficient advanced driver assistance systems (ADAS), diesel engines, electric drivetrains, and autonomous trucks. “With these new technologies, maintenance technicians will experience a lot of ‘first time’ events in the repair shop with no experience to draw upon,” Johnson said. “What this means is that techs on the front lines will need to adopt a proven electronic diagnostics strategy to succeed in repairing and maintaining fleets with these advanced technologies.”

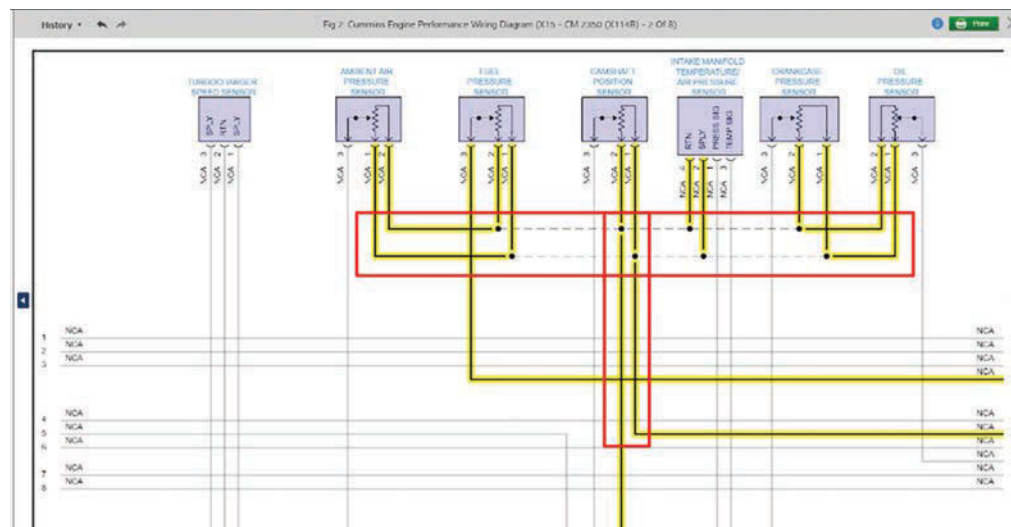
## Time management

Mitchell 1 also provided a way to get technicians to better use their time on the job. The Time Management update is now available for Mitchell 1’s Manager SE Truck Series software and provides shop management new ways to measure technician productivity they can use to enact change.

Accessible through smart devices, the software automatically generates productivity statistics as technicians clock in and out of labor operations, and it also enables users to track and report employee shift hours in real time on mobile devices.

“Once they log in, they can do the same things I used to do with that old-time clock—they can clock in when they get there, and they clock out when they leave for lunch,” he said.

The sign-in feature is geofenced so a tech cannot clock in or out from home or somewhere else. Unlike a rusty punch clock on the wall, this digital time management program lists all the repair orders that are assigned, provides progress reports on each, how much time was spent on the repair,



» The Advanced Interactive Wiring Diagrams update to TruckSeries helps technicians see how wires flow through the system, as well as quickly access other relevant repair information with a tap of a button.

Photo: Mitchell 1

and how much they will get paid. When a tech steps away from a repair, they would pause the job. If a technician billed 40 minutes, but the job took an hour and 20 minutes to complete, the technician knows they need to improve.

Managers can also run reports to identify the most productive workers as well as training opportunities.

Johnson explained that a manager can sit down with a technician and show them “where they are kicking butt” and areas they need to improve, such as with electrical repairs.

## Wired up

The Advanced Interactive Wiring Diagrams update addresses a way to more quickly resolve issues within the truck’s electrical systems. Technicians can search for and identify connectors, grounds, and splices in a more interactive way.

Other improvements include a dropdown history that shows the previous 10 diagrams viewed in a session.

The exclusive feature allows a technician to navigate via the diagram directly to repair information for components. The component names are hyperlinked to the information a tech needs, such as location, connector views, and replacement procedures.

Johnson demoed the display, where he went through how to locate a fuel rail pressure sensor wiring diagram on a Cummins X15 engine. The wiring diagram for that part was highlighted in yellow for better tracking.

“As a technician, I can very quickly focus in on what I want to see. I can dim the rest of the

**“With these new technologies, maintenance technicians will experience a lot of ‘first time’ events in the repair shop with no experience to draw upon.”**

Ben Johnson, director of product management, Mitchell 1

wires so that I can focus even better,” Johnson explained. “I can zoom in and see what I’m interested in looking at.”

Prompts also give warnings, such as that the fuel is under high pressure and that the fluid is hot and could cause burns. Parts and repair information are displayed. The feature also works in conjunction with diagnostic tools such as a multimeter or digital oscilloscope.

Johnson said this is vastly different than the old days of Mitchell 1’s thick brown books, where a tech would bookmark a page, find additional information about the sensor somewhere else, and then continue on to the task. Digital diagrams of old also had efficiency issues.

“I [would] exit the diagram, search for the sensor, find out what I want to find out about it, come back in to research the diagram, and then go to the next step,” Johnson explained.

As a whole, Johnson concluded this interactive tool will allow “not-so-awesome” techs to become better and allow a shop’s highly skilled technician to reach even greater heights of efficiency.





» The Aperia Halo Tire Inflator can mount to tractor or trailer tires and uses the tire's rotational energy to create air to keep the tire inflated to the optimal psi.

Photo: Aperia Technologies; Inset photo: John Hitch | Fleet Maintenance

## Aperia launches Halo Connect 2.0 tire management platform

Aperia's next evolution of its tire management platform allows for more predictive-based recommendations to the fleet to prevent tire-related service events.

By John Hitch

**Aperia Technologies Inc. announced the launch of Halo Connect 2.0**, the latest evolution in the company's comprehensive tire management platform, which the company said "incorporates features to prevent tire health issues from ever occurring." The solution was demonstrated at American Trucking Associations' Technology & Maintenance Council 2022 Annual Meeting & Transportation Technology Exhibition in Orlando, Florida.

Aperia calls Halo Connect, which debuted in 2019, "a cradle-to-grave connected tire management platform that allows fleets to virtually eliminate unplanned tire-related downtime, reduce tire costs per mile, and engender driver confidence by pairing machine learning with active inflation."

The solution first considers inputs including tire pressure sensor data, macro data and intelligence, and preferences and priorities set by the fleet. The analytics engine then predicts likely outcomes, such as an imminent blowout and need for roadside assistance, and sends alerts to the fleet and driver.

Halo Connect pairs with Aperia's Halo Tire Inflator, a device mounted to tractor and trailer wheels to provide automatic inflation when pressure decreases. The platform is compatible with all vehicle makes and models and is available

through major OEMs, a network of partners, and directly from Aperia. Through the Halo Connect Plan, Halo Connect 2.0 can be purchased as an asset or as a subscription service.

"Halo Connect now couples deep historical tire health insights with fleet-specific inputs to deliver transformative tire management solutions customized to each client," said Josh Carter, CEO of Aperia.

He explained Halo Connect 2.0's analytics engine "leapfrogs" other tire pressure monitoring systems, which provide threshold-based alerting.

As the company described: "If a fleet's target cold inflation pressure (CIP) is 100 psi, the system typically alerts when tires fall 20% below target pressure. Because TPMS do not consider context, they often yield substantial false positives and data overload."

Halo Connect 2.0 can leverage the data revealed from 50 billion miles of real-world fleet tire data, and the engine's machine learning characterizes the various interrelated and competing variables that affect and inform tire-related maintenance and strategic decisions.

Aperia said this "effectively [enables] fleets to shift from flying blind with a reactive tire service model to confidently executing a proactive service model that optimizes uptime and tire maintenance cost."

Previously, an Aperia study found using Halo Connect can reduce the total number of alerts requiring attention by about 75%. Per truck, this equates to 3.4 alerts annually versus 16.5 alerts via a basic TPMS.

"By considering the business and operational context necessary to deliver actionable alerting, Halo Connect enables fleets to get every cent they paid for out of their tires and tire technology investments," Carter concluded.

## Michelin debuts its lowest rolling resistance tire

The X One Line Energy D2 drive tire is available for line-haul, dry van truckload, and refrigerated truckload applications. It's designed to save fuel, lower TCO, and provide traction and driver confidence.

By Tyler Fussner

**Michelin unveiled its new X One Line Energy D2 drive tire at ATA's Technology & Maintenance Council 2022 Annual Meeting.**

The X One Line Energy D2 is available for line-haul, dry van truckload, and refrigerated truckload applications. It's designed to reinforce Michelin X One fuel savings superiority versus dual tires, the company said. The tire is available in size 445/50R22.5 L and has a 20/32 tread depth.

"This is our lowest rolling resistance tire that we have ever launched," said Nate Kirian, Michelin VP of B2B sales-North America.

The tire is designed for industry-leading fuel savings, lower total cost of ownership, and exceptional traction and driver confidence, according to the tire maker.

The X One Line Energy D2 is a directional tire for the first half of its life, Kirian explained. The tire's advanced tread compound is credited in part for the fuel savings it can deliver.

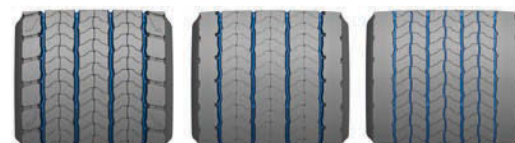
"When tests were run on the X One Line Energy D2, diesel prices were about \$2.55 per gallon," Kirian said. And when tested directly against a competitive tire, there were "about \$2,300 per year in fuel savings."

With the rise in diesel prices today, the fuel-efficient design of the X One Line Energy D2 would deliver even further savings than at the time of testing.

"The most exciting thing about this tire is that this tire breaks the trade-off between rolling resistance, traction, and wear—and that's not easy to do," Kirian said.

Read the full story online at:

[FleetMaintenance.com/21259368](https://www.fleetmaintenance.com/21259368) ■



New  
20/32

Mid life  
15/32

End of life  
5/32

» Michelin's Regenion technology changes the tread pattern as the tire wears to maintain traction over the life of the tire.

Photo: Michelin





Photo: 195430633 by Anatoly Stojko | Dreamstime

# Is our faith in algorithms misplaced?

AI has great benefits, but trusting machines and sensors could lead to bad decision making.

**Recently, my doctor gave me a stress test,** which basically amounts to running on a treadmill while attached to an electrocardiogram machine. I noticed the pulse rate on my Fitbit watch varied from the EKG reading. The variance changed with time but did not seem to follow any pattern. No big deal (I'm fine), but I was fascinated by how this could be.

The answer may be a flaw in how software engineers think. They like to measure things that are easy to measure. And when measuring is difficult or expensive—such as measuring the heart's electrical activity—they come up with a new solution. Here, the light in my wrist

was being measured to calculate my bpm. The engineer makes some assumptions, tests, and develops an algorithm to turn that data into the displayed pulse.

The problem is that the reading was wrong. I have been living as if my pulse rate is 75 when, in fact, it isn't. Again, no big deal, but what if it was a big deal? We are so used to relying on algorithms that we will make the wrong decision every day of the week.

This is increasingly relevant as commercial vehicles increase their level of automation. Someday, these commercial vehicles will likely be driving themselves, and we need to have a healthy fear of where this might lead—and maybe a hesitation with algorithms in general.

Algorithms are concise instructions or recipes that computers can follow to do their assigned work. Who writes these algorithms? Programmers do. They may be experts in the systems they write for, or have no expertise in them at all. They might have expertise in a completely different field. That disconnect has always been this way in the computer software field. Today, data scientists do the programming, and these subject-matter experts (SMEs) do hold expertise in the application and what the readings mean for the sophisticated technology.

But it can get complicated. The CAT 799 truck for mining has about 150 sensors generating data every second, which are transmitted locally or even to the cloud. The sensors can measure loading, weather, fuel, and GPS, and the data combine to become big data. Now hundreds or even thousands of algorithms might use those fields to figure out what is happening inside the asset, what to do about it, and how to improve performance.

The goal of the SME may be to predict component failure and test hundreds of algorithms to find a few that work. What happens if the algorithm doesn't work? How do we act if an algorithm gives us bad results? Mistakes and biases with artificial intelligence rank among the greatest fears of AI scientists, technologists, business leaders, and policy makers alike. I think that

blindly following the computer's results without thought should be our fear as well.

In some cases, the company will lose money; in others, quality might suffer a bit. But in a few instances, lives are in the balance.

This worst-case scenario happened with Boeing's 737 Max, where bad software caused two fatal passenger jet crashes. Here's the short version: Boeing installed new flight control software called the Maneuvering Characteristics Augmentation System (MCAS) to overcome aerodynamic issues that came up when the Max got a bigger engine. Pilots were told that flying this new 737 was just like the classic version, only this system may take control and push the nose down if externally mounted sensors determine the plane's pitch is too high and might cause the plane to stall. The pilot loses control, and if the sensor and software are wrong, there is no recourse, because the programmers didn't code for that. And as a result, 346 people died.

## What happens if the algorithm doesn't work?

In *IEEE Spectrum*, pilot and engineer Gregory Travis wrote: "It is astounding that no one who wrote the MCAS software for the 737 Max seems even to have raised the possibility of using multiple inputs, including the opposite angle-of-attack sensor, in the computer's determination of an impending stall. As a lifetime member of the software development fraternity, I don't know what toxic combination of inexperience, hubris, or lack of cultural understanding led to this mistake."

This is one of many reasons why I fear that we will defer to the machine and not think for ourselves. Likely, this is already the norm. ■



**By Joel Levitt**  
**PRESIDENT, SPRINGFIELD RESOURCES**  
 Joel Levitt is the president of Springfield Resources, a management consulting firm that services a variety of clients on a wide range of maintenance issues. Levitt has trained more than 17,000 maintenance leaders from more than 3,000 organizations in 38 countries. He is also the creator of Laser-Focused Training, a flexible training program that provides specific, targeted training on your schedule, online to one to 250 people.





» Specific equipment is needed to perform static ADAS calibrations.

Photo: Precision Diagnostics

# ADAS adds safety and confusion

## Technicians must overcome differences in ADAS technology with calibration tools and new industry standards.

By Mindy Long

**Advanced driver assistance systems (ADAS) rely on a combination of cameras, radar, lidar, ultrasonic sensors, and other technologies to improve safety, but where those technologies are located and how they interact with the vehicle vary. The differences in these systems can make a technician's life hard.**

"There is a lot of confusion out there exactly how ADAS works, how to calibrate it, what can be calibrated, and what can't be calibrated," said Chris Freeman, director of heavy-duty sales and training for Autel North America. "We're getting a lot of different feedback from the dealers. No one puts these sensors in the same places. They're different from make to make and model to model."

Diagnostics providers such as Autel are equipping the industry with calibration tools to help close the gap as techs strive to ensure systems are working correctly.

"We're trying to clarify the information," Freeman said. "That way, we can give a clear picture of what needs to be programmed and what doesn't."

There are various elements to vehicle ADAS, including adaptive cruise control, around-view monitoring, blind-spot detection, lane departure warnings, light imaging detection and ranging, night vision systems, and rear collision warnings.

"Each of these have a different function and use different sensors or a combination of sensors to function," said Brandon Alexander, marketing manager for Thinkcar.

Adding to the confusion, there aren't consistent expectations of ADAS capabilities for any given fleet or consumer vehicle.

"Because of that inconsistency, technicians don't know if a vehicle has the same capacity as the vehicle before it. I'm finding, too, that some technicians are even confused about what it means to perform a calibration and have it pass," said Jordan Krebs, worldwide alignment product manager at Snap-On Equipment.

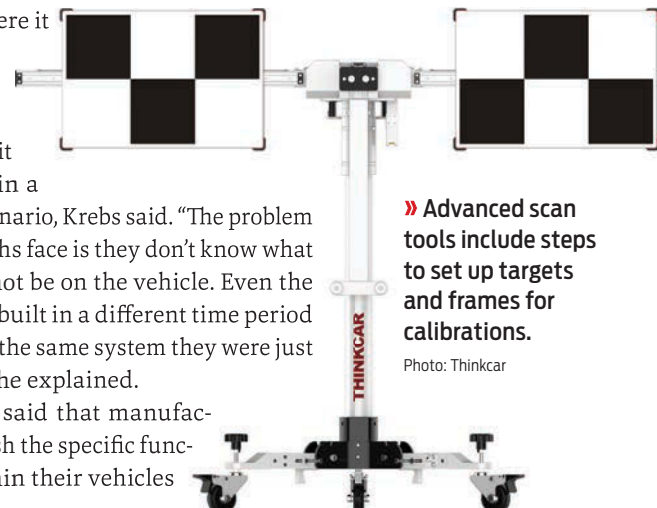
Tom McGuire, chief operating officer of Precision Diagnostics, said the industry hasn't even figured out how to standardize terminology in the U.S. "With emergency assist braking across 35 different manufacturers, there are literally 35 to 40 acronyms they use to describe their systems," he said. "There is a tremendous challenge of having both access and the current level of service information to really support that technician in not only where the sensors and the components of the ADAS are but also what is required to program or calibrate it correctly."

Scott McKinney, senior product manager at Bosch Automotive Aftermarket, said a lack of standardization and the fact that ADAS technology is new puts the responsibility squarely on the shoulders of the shop to ensure a calibration is completed properly.

There are thresholds and tolerances that each system allows, which means there are instances where it may pass but not prevent an accident or perform as it should have in a real-world scenario, Krebs said.

"The problem that many techs face is they don't know what may or may not be on the vehicle. Even the same vehicle built in a different time period may not have the same system they were just working on," he explained.

Alexander said that manufacturers establish the specific functionality within their vehicles



» Advanced scan tools include steps to set up targets and frames for calibrations.

Photo: Thinkcar



and the calibration process. The general function of the ADAS components is similar between brands, but the ADAS calibration process will differ.

Fortunately, Fred Andersky, director of government and industry affairs for Bendix Commercial Vehicle Systems, said most truck OEMs make collision mitigation technology standard on their highway vehicles in the heavy-duty market. And there are really only three collision mitigation technologies in the heavy-duty truck market—Bendix Wingman, Wabco OnGuard, and Detroit Assurance—limiting confusion in that sector. “Each system has its own set of maintenance rules that are published by the manufacturer just like with any other system on the vehicle,” he said.

## Understanding the importance of tools

Marcos Obispo, director of sales for Cojali USA’s commercial vehicles division, said everybody seems to understand the safety benefits of ADAS, however, the lack of regulation has slowed adoption, and therefore the need for shops to invest in calibration equipment and training for technicians.

Calibration tools are helping to provide all necessary information to technicians so they can prepare for the calibration and better estimate the time to repair, Krebs said.

Alexander said advanced scan tools will include detailed steps on how to set up the targets and framework, providing technicians greater confidence.

McGuire said his technicians utilize OEM information as well as calibration tools. “We like to have both. For a technician to work on it without a tool, they become almost a liability rather than an asset,” he said. “You can have a great technician, but without accurate, up-to-date service information, you’re chasing things you shouldn’t have to chase.”

Completing an ADAS calibration using the standard OE process can take up to an hour, McKinney said, but with Bosch’s DAS 3000’s approach, that exact calibration can be completed in under 10 minutes.

Obispo said calibrations could be either dynamic or static, which are not interchangeable. Some systems can be calibrated by driving the vehicle while using a hand-held or diagnostics device connected to the ADAS, which is the dynamic calibration. The tool will tell the technician how to drive during the calibration, according to the manufacturer. Static calibrations are performed with the vehicle stopped. “In this case, we would need specific, sensitive calibration equipment to calibrate and test the ADAS modules to ensure their correct functioning,” he explained.

Not all shops have the right tools needed to perform static calibrations, which can cause them to lose income. If repairers want to continue being competitive, they will have to seriously consider this new market demand, Obispo explained.

## Meeting technicians’ challenges

The most common obstacle techs face is familiarity with the calibration process. “As with any newer technology, it is taking time for technicians to become comfortable with ADAS and gain the knowledge specific to calibrations,” Alexander said. “Until that time, a limited number of technicians will be willing and trained to perform the calibrations, resulting in labor shortages.”

Brian Screeton, supervisor of technical service training at Bendix Commercial Vehicle Systems, said radar alignment tends to be one of the top issues technicians encounter. “While radars today do a great job in adjusting their alignment, it can still happen that a radar needs to be aligned by the technician,” he said. “The other issues typically tie to the braking system. If the ABS goes out, then both stability and collision mitigation are deactivated. If stability goes out, then collision mitigation is deactivated.”

Often, issues with ABS tie to wheel speed sensors with the gap between sensor and tone ring being too great because the sensor was pushed back in the clip during a previous wheel end repair or a worn spring clip, Screeton said. Another area often overlooked is some type of wiring harness issue, such as a wire casing that may be cut, he explained.

One of the stumbling blocks for technicians when repairing ADAS is not looking beyond it. ADAS relies on information from many other parts of the vehicle, including the ABS and stability systems. “Other systems, mainly the drivetrain, supply information that ADAS requires to function correctly,” Screeton said. For example, an ‘Adaptive Cruise Fault’ could be activated by ADAS, and the root cause of the fault could stem from an engine issue.

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» The most common obstacle technicians face is familiarity with the ADAS calibration process.

Photo: Cojali

The area needs to be level, free of obstructions, and have ample lighting.

“Technicians have to know how to prepare the shop environment before starting the calibration. The OEM may provide the information in the service manual, but then the technician has to go through that service manual, and it adds to the time,” Krebs said. “There is a lot out there and a lot of confusion on what it takes to have a clean environment.”

ADAS calibration tools consist of the targets, framework to position the targets, and diagnostic tablets to access the CAN, Alexander explained. “High-quality targets are key to providing an accurate reference point for digitally calibrating the vehicle sensors,” he said. “The targets must be at the exact height, angle, and distance relative to the vehicle, and a solid framework with alignment accessories is critical to hold the targets in the precise position. Professional-level diagnostic tablets are essential to accessing the vehicle onboard network to initiate and confirm the calibration process.”

ADAS technology changes frequently, so regular software updates for calibration tools are critical. “For our technicians, whether they’re in one of our brick-and-mortars or are mobile, there are constant updates being sent to tools. If you don’t update it, you’re looking at the front end of a car looking for a sensor that should be at point A, but at the mid-year model change, they moved it,” McGuire said, adding that he does a lot of work with Autel. “They do a nice job of providing you with auto-updates as long as you use them. You waste a lot of time without updates.”

### Educating buyers

Technicians are undergoing a learning curve related to ADAS, but buyers also have to gain a new understanding of the technology. For vehicle owners, there are things they can no longer do. “For instance, a lot of truck owners would buy a truck and replace the plastic bumper with a chrome bumper. With ADAS, you have to have one that works with it. There are things like that you have to think about now,” Freeman said.

McGuire explained that ADAS technology is a living, breathing component of the vehicle. “You have to be aware that once you modify as built, you could have changed how it works,” he said.

A somewhat common situation that can cause lost repair time is not paying attention to J1939 communication errors first, especially ones that are being reported by multiple systems, Screeton said. “We recommend that technicians resolve those diagnostic troubleshooting codes first, then rerun the Bendix ACom PRO diagnostic software to see what remaining DTCs may remain,” he said.

Systems have unique ways that they are calibrated and require different tools and procedures to perform calibration and alignment, Screeton said. Having the correct tools and service information for the ADAS the technician is repairing is crucial.

“We recommend that all technicians troubleshooting Bendix electronic systems, including ADAS, use Bendix ACom PRO or Noregon’s JPRO software,” he said. “Those PC-based, subscription-based diagnostic tools are comprehensive to cover all Bendix electronic systems and offer a complete suite of diagnostics, troubleshooting, advanced troubleshooting, and reporting capabilities for both tractor and trailer systems.”

A second element that can present an issue is the space and environment required for calibrations.

**“With emergency assist braking across 35 different manufacturers, there are literally 35 to 40 acronyms they use to describe their systems.”**

Tom McGuire, Chief Operating Officer, Precision Diagnostics

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Every time a windshield gets replaced, it has to be recalibrated, and even an aftermarket windshield rather than an OE windshield could create challenges. “Some aftermarket windshields have more wave to them, or the tint level could be off in some cases,” Krebs said.

Autel’s Freeman explained that even a small bump, such as hitting a curb or a small animal, can cause problems if the system isn’t recalibrated. “The slightest bend can take a sensor from reading straight to reading at an angle,” he said.

McGuire said. “As technologies and systems are advancing and more are being added, the lack of standardization really drives an incredible wedge between time and efficiency,” he emphasized.

In the future, equipment and technology providers can expect more systems to address the safety features. “Bosch is planning for these changes with upgradeable technologies to integrate in the shop now and grow with the technicians’ skill and expertise as the industry moves toward digitalization,” McKinney said. ■

**Monitoring mandates**

In the U.S., there is not a mandate for ADAS like there is in Europe. “In Europe, everyone has to have it, and it is a done deal,” Freeman said.

Bendix’s Andersky said mandates may be coming to the U.S. “In the Infrastructure Investment and Jobs Act, the recently passed ‘infrastructure bill,’ there is a requirement that NHTSA promulgate a rulemaking for autonomous emergency braking on Class 7 and 8 tractors and motorcoaches within two years,” he said. “There is also a study requested for eventually mandating on Classes 3-6 trucks.”

Additionally, the U.S. government’s new car assessment program is getting a major update, which is moving the country closer to an ADAS mandate, Obispo said.

There has also been work to standardize terminology. While there are numerous marketing and brand names for ADAS, SAE and AAA have recommended a classification for naming 20 different types of ADAS, McKinney said.

Creating standardization is not an easy task because of the dynamic and changing nature of ADAS development, Obispo said. “Traditionally, there have been a lot of acronyms and naming given to these systems,” he said. “Manufacturers used to put their own names to similar technologies, which of course did not help much to the comprehension of the systems.”

**Going forward**

Because there are so many variables and the technology is continuing to emerge at a lightning pace, it is going to become more challenging in the near- to mid-term for technicians to perform the tasks they’re required to perform,



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» Partnering with schools allows shops to directly mentor students during the education process.

Photo: ASE Education Foundation

# Grow your own techs to solve labor issues

Trouble finding technicians? Ditch the poach approach and adopt a school.

**Looking to hire well-trained, entry-level service technicians?** With the ASE Education Foundation's new Adopt-A-School program, the solution may be right down the street—at the local high school or college.

The Adopt-A-School program not only offers companies a way to show support for their local high school and college training programs but also benefits their businesses by connecting them with the next generation of repair professionals. The Adopt-A-School toolkit consists of detailed plans, ideas, examples, activities, videos, presentation tools, checklists, best practices, talking points, engagement ideas, and so much more. In addition, a local field manager will be in touch to help connect the business with schools in their area.



**By George Arrants**

VICE PRESIDENT, ASE EDUCATION FOUNDATION

George Arrants is the vice president for ASE Education Foundation. 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.

"The demand for automotive technicians is greater than ever with more baby boomers retiring every day and the industry facing growing competition from other skilled trades for the best young people," ASE President Mike Coley said. "Instead of trying to hire experienced technicians away from other businesses, the best solution is to grow your own. While it takes time, it allows the business to choose and nurture the technicians who will grow with them and are more likely to stay long term."

The companies that have already adopted schools are seeing the advantages of these efforts, which have allowed these organizations to be good citizens while also providing them with an avenue to access future employees. For their part, schools get industry partners that provide advice and guidance, demonstrate career opportunities for their students, and provide students with hands-on experience that will grow their skills and encourage them to pursue a fulfilling automotive career.

"Right now, there are students taking automotive and truck training classes at the local high school or college in preparation for entering the workforce," Coley said. "The good news is that schools are providing students with the fundamental training they need to get started. Through the ASE Education Foundation's Adopt-A-School program, businesses can connect with local schools and their students, and develop a beneficial partnership for years to come. It is a terrific opportunity all the way around."

## Mutually beneficial advantages

The business-school partnership needs to be a two-way street. Schools want to provide well-trained entry-level technicians, but they need the help and input of businesses to be successful and meet their employment needs. Schools need partners from the industry to provide advice and guidance, demonstrate career opportunities for their students, and help those students get the hands-on experience that will grow their skills and encourage them to stick with an automotive career.

When a business supports a local school's training program, they not only build the future pipeline of talent for their shops but also can grow community awareness for their business, find candidates for a variety of jobs in their company, and build teamwork and morale.

"There are businesses that hire students while they are still in school. If it is done right, this 'work-based learning' reinforces classroom instruction and increases students' hands-on skills, making graduates more productive from the start," Coley explained. "Research shows that students who participate in work-based learning are more likely to join the transportation service industry and remain there long term. Supporting local schools can help solve the technician shortage and increase retention."

Not supporting schools may have an adverse effect. ASE data found that after graduating from high school or a trade school, 20% of students choose not to pursue a career in the trade, and another 21% leave within the first two years of working as a diesel technician. Partnering with schools allows shops to directly mentor students during the education process and proactively address any issues they may have before they quit the trade.

The ultimate goal of the Adopt-A-School program is to bridge the gap between businesses in the transportation industry and the schools in their local communities. This mutually beneficial program enables businesses to provide support to their local schools while simultaneously providing those businesses with access to up-and-coming automotive service professionals entering the work force.

And the commitment can vary based on a shop's availability.

"Companies can decide the amount of time and money they would like to invest in the Adopt-A-School program," Coley explained. "They can start working with their local school very simply and grow the partnership as they see the benefits grow. Keep in mind that they are really investing in their business as well as their community. ASE is here to help with a plan and plenty of action steps to take."

The transportation industry has a shortage of qualified service professionals. The Adopt-A-School program helps the community and industry and allows businesses to hire and train their future employees right from the start.

For more information, visit [aseeducationfoundation.org/adoptaschool](http://aseeducationfoundation.org/adoptaschool) to access the complete Adopt-A-School toolkit free of charge. ■





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## » Offers unobstructed and improved spring performance

The **Phillips Industries 16" Dual Tracker Spring Kit with QWIK-SNAP**, No. 17-420, and with **QWIK-CLAMP**, No. 17-180, are two dual tracker spring kit designs with enhanced features for better performance. The kit with QWIK-SNAP now includes an unbreakable composite spring separator at the top and bottom of the springs, keeping the springs separated from one another as they extend and eliminating the need for a two-carbineer attachment to the tracker bar. For added selection, a QWIK-CHANGE 16" Dual Tracker Spring Kit, No. 17-425, with the additional benefit of the spring separators, is now available with the QWIK-CLAMP Hose Holder, No. 17-180.

➔ For more information visit [FleetMaintenance.com/21261823](https://FleetMaintenance.com/21261823)



## » Provides ease of use and control

The **SmarTemp 3.0**, No. 5013873A, and **SmarTemp 3.0 Bluetooth**, No. 5013874A, controllers from **Webasto** provide ease of use and control of both Webasto fuel-operated air heaters and fuel-operated coolant heaters from a single unit. The rotary dials of the controllers allow air heater users to dial in the temperature they desire, and the device does the rest. The unit's large backlit LCD screen is easy to read and brightens while in use, automatically dimming itself a few moments after interaction. Integrated panels softly glow red when in heating mode, blue when in ventilation mode, and blink to indicate diagnostic alerts and heater fault codes.

➔ For more information visit [FleetMaintenance.com/21261813](https://FleetMaintenance.com/21261813)



## » Helps to stabilize trailers in high cross winds

The **NextGen Fixed Stinger** from **EkoStinger** is built with advanced design and engineering. Key improvements include a streamlined, compact design; a lighter and stronger system than previous models; easier access to brakes and tandems; and faster and simpler installation. The NextGen Fixed Stinger provides fuel efficiency benefits; is stable, durable, and impact resistant; and protects the rear suspension from road debris. The product also helps to stabilize trailers in high cross winds and is capable of handling steep docks and tight turns.

➔ For more information visit [FleetMaintenance.com/21261822](https://FleetMaintenance.com/21261822)

## » For light- to medium-sized worksite vehicles

The **Trico Products ANCO Fleet Blade** was created specifically for worksite vehicles. The blades are designed for light- to medium-sized worksite vehicles at commercial job sites and other environments that require the removal of harsh debris from windshields. Engineered to perform in the toughest conditions, the blades maintain maximum windshield contact and snap on easily to deliver a constant, no-fuss performance.

➔ For more information visit [FleetMaintenance.com/21245990](https://FleetMaintenance.com/21245990)



## » Easily clicks onto the nipple of a valve

The **Hose Connector**, No. MH-10, from **Fumoto USA** is designed to quickly connect a hose to any of the company's 3/8" short nipple valves. MH-10 is a brass-made, durable connector that easily clicks onto the nipple of a valve. It will sit firmly on the nipple until the end of the oil change. Simply snap it off together with the hose after use.

➔ For more information visit [FleetMaintenance.com/21261826](https://FleetMaintenance.com/21261826)







# TOOLS & EQUIPMENT

A roundup of the latest tool and equipment offerings.



## » Can transport two PACKOUT stacks

The **Milwaukee Tool PACKOUT Rolling Tool Chest**, No. 48-22-8428, enables users to store larger tools and equipment while providing the ability to transport two PACKOUT stacks. Featuring an industrial-grade handle and 9" all-terrain wheels, the tool chest can be rolled anywhere. An impact-resistant body and metal-reinforced locking points provide maximum strength and durability. The 35-gallon tool chest has a 250-lb. capacity and an interior organization tray, making it ideal for storing and keeping large tools and materials organized. A locking lid support feature keeps the top securely open, which prevents sudden lid closure while working with tools and accessories.

➔ For more information visit [FleetMaintenance.com/21233814](http://FleetMaintenance.com/21233814)



## » Solution-soaked refill package for 90-count canister

The **Tub O' Towels Heavy Duty Cleaning Wipes Refill Pack** from **FedPro** is 100% solution soaked and includes one refill roll of 90 wipes. The 10" by 12" oversized wipes remove stains including grease, tar, ink, paint, permanent marker, and other hard-to-remove soils. The wipes do not contain harsh chemicals, disinfecting, or antibacterial properties. Foaming agents lift grime off the surface so it can easily be wiped away. Durable fiber weave wicks up moisture, enhances scrubbing, and grabs dirt, while the quilted design offers cushioning and surface texture. Use with Tub O' Towels Heavy Duty Cleaning Wipes 90-Count container (not included).

➔ For more information visit [FleetMaintenance.com/21245984](http://FleetMaintenance.com/21245984)



## » Automatically scans the entire inner rim

The **Hunter Engineering SmartWeight Elite Wheel Balancer** is designed for maximum speed, efficiency, and accuracy. Its simplicity and efficiency comes from replacing dataset arms with a pair of diagnostic lasers that provide all the necessary data. When the hood is lowered, the lasers automatically scan the entire inner rim, providing precise locations for weight placement. The automatic functions include measurement and dimension entry; inside rim runout, which helps identify bent wheels; spoke locations, to conceal weights; and CenteringCheck, to ensure the wheel is properly centered on the shaft. Additionally, the system designates weight placement anywhere along the wheel rather than only the left or right planes.

➔ For more information visit [FleetMaintenance.com/21245991](http://FleetMaintenance.com/21245991)

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## » Available in 115VAC or 12VDC models

The **Graco EGP Electric Transfer and On-Demand Pumps** are available in 115VAC or 12VDC models and are compatible with most standard electric configurations. By simply plugging the pump into a power source, an entire 55-gallon drum of 10W oil at room temperature can be emptied in less than eight minutes with the 8 gpm flow rate transfer model, the company said. The EGP pumps are ideal for use as an energy-efficient option to standard pneumatic pumps or if unable to otherwise utilize compressed air. They're engineered to last with precision gears for consistency and have a built-in inlet strainer and motor over-temperature protection to prevent overheating.

➔ For more information visit [FleetMaintenance.com/21242001](http://FleetMaintenance.com/21242001)



## » Comes with an updated wireless VCI

The **TOPDON Phoenix Elite Diagnostic Scan Tool** supports online programming for nine vehicle brands, online coding for three different makes, and comes with an updated wireless VCI. The Phoenix Elite features topology mapping, allowing technicians to quickly find communication issues or to identify and fix trouble codes by showing a clear picture of the vehicle's systems in a tree diagram. Its Bluetooth-enabled VCI equipped with CanFD protocol provides vast coverage and enables users to complete the job on most modern vehicles. Compatible with the BT Mobile ProS and the Phoenix ADAS Mobile, the scanner can perform battery testing and ADAS calibration, expanding the users' capabilities.

➔ For more information visit [FleetMaintenance.com/21242489](http://FleetMaintenance.com/21242489)





### » 16-gauge metal thickness

The **Homak 72" RS Pro 3 Drawer Hutch with Power Strip and Stainless Steel Top** measures 23.5" by 72" by 24.375" and weighs 254 lbs. Its body, frame, and drawers have a metal thickness of 16 gauge/1.5mm. The hutch features lift latch drawer pulls, a HMC high-security tubular locking system, removable ball bearing slides, EVA drawer liners and top mat, and full extension gas struts. It has UV protective finish and 3.2mil powder coat paint finish. Additionally, it includes a toolboard back wall, power strip, and two USBs with four outlets and grommet cut-outs. Available in red, black, blue, orange, and green.

➔ For more information visit [FleetMaintenance.com/21245986](https://FleetMaintenance.com/21245986)



### » Tower-free design

The **Rotary Lift R1090 Pro 3D Alignment System** features a tower-free design and comes with a portable, space-saving cabinet that requires no dedicated bay, giving shops with limited space the flexibility needed to perform wheel alignments anywhere. The system's three-point tire clamps allow for quick setup, and the automatic lift level with Rotary's On-the-Rack Test Drive program improves cycle time by eliminating the need for difficult and time-consuming rolling compensation.

➔ For more information visit [FleetMaintenance.com/21245992](https://FleetMaintenance.com/21245992)



### » Has a convenient magnetic charging system

The **Ledlenser H15R Core Headlamp** combines ideal light output and focusability, the company said. The headlamp features long runtimes with its removable battery and convenient magnetic charging system. The wheel switch on the lamp head makes for easy operation and brightness control, while the lamp head itself rotates seamlessly so users can quickly direct light to where it's needed most. The H15R Core Headlamp is also protected from dust and water.

➔ For more information visit [FleetMaintenance.com/21243568](https://FleetMaintenance.com/21243568)



### » Ergonomically designed contoured grip

The **AIRCAT High Torque Long Reach Ratchets**, Nos. 805-HT-22 and 805-HT-5, combine the flexibility of an extended reach driveshaft with torque output for ideal tightening power. The extra-large ratchet head increases reliability and the ergonomically designed contoured grip and trigger provide comfort for the operator. The ratchets have a 200 rpm free speed and a maximum torque of 130 lb.-ft. They measure 21.6" in length and weigh 5.15 lbs. Available in 3/8" (No. 805-HT-22) and 1/2" (No. 805-HT-5).

➔ For more information visit [FleetMaintenance.com/21247061](https://FleetMaintenance.com/21247061)

### » 1/2" or 3/4" anvil size options

The **Durofix 60V Cordless Brushless Jumbo Impact Wrenches**, Nos. RI60164 and RI60164-6, have two anvil size options: 1/2" (No. RI60164) and 3/4" (No. RI60164-6). The 1/2" impact wrench delivers up to 1,500 lb.-ft. of maximum reverse torque and offers three pre-set torque stages (332, 450, and 1,000 lb.-ft.). The 3/4" impact wrench has a maximum reverse torque of 1,605 lb.-ft. and offers three preset torque stages (332, 450, and 1,070 lb.-ft.). Both feature a built-in LED light and battery power indicator.

➔ For more information visit [FleetMaintenance.com/21249584](https://FleetMaintenance.com/21249584)



### » Bonds metals, hard plastics, glass, rubbers, and more

The **Permatex 500° High Heat Epoxy** is an ideal solution for underhood repairs that need to withstand extremely hot temperatures. The epoxy is formulated to withstand temperatures up to 500 degrees F and is designed to bond and seal against liquids, gases, and common automotive fluids. It has a holding strength of 2,500 psi, sets in 10 minutes, and has a two-hour cure time. Permatex 500° High Heat is available in a syringe, which allows for easy and pinpoint application. The epoxy bonds metals, hard plastics, ceramics, glass, rubbers, and more.

➔ For more information visit [FleetMaintenance.com/21245981](https://FleetMaintenance.com/21245981)



### » Set includes 7", 10", and 12" pliers

The **Matco Tools 3-pc Slip Joint Pliers Set**, No. PL3S, features a curved jaw design and induction-hardened teeth for a strong hold. The jaws open wide for multiple positions for maximum versatility. The pliers are made from high-strength alloy steel and have a dipped vinyl handle to reduce hand fatigue. The set includes 7", 10", and 12" pliers.

➔ For more information visit [FleetMaintenance.com/21249589](https://FleetMaintenance.com/21249589)



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# Cooperative procurement: strength in numbers

For government fleets, cooperative procurement can save valuable time and taxpayer money. Here's how it works.

**Cooperative procurement has grown exponentially** in the past 20 years, now saving state and local government entities billions of dollars a year. And yet it remains an underutilized resource for many fleet managers who continue to get bogged down in the traditional approaches to spec'ing, bidding, and awarding contracts.

For those not familiar with cooperative procurement or for those who need a refresher, the process is simple. A government agency—state, city, county, school district, etc.—completes the required steps of the bid and procurement process. A contract is established for an item or group of products, and an award is issued to one or more vendors. Once the contract is in place, it can now be used by all government agencies throughout the country.

Using cooperative procurement, an agency in Lake Forest, Illinois, purchased a crack-sealing machine at a cost savings of more than \$6,000 over the low bid received from a local vendor. There are thousands of examples of contracts

like this that have been secured by government agencies using a similar approach.

Cooperative procurement truly is a win-win proposition. The fleet manager receives the equipment they need while the procurement department secures a greater return for their taxpayers' dollars, thanks to the price advantage gained by "volume purchasing." Best of all, cooperative procurement allows fleet managers to focus more on the job of running their operations instead of writing bid specifications for equipment.

The alternative to cooperative procurement is the time- and cost-intensive approach required of those who "go it alone," something many are all too familiar with: interviewing potential vendors, advertising bids, responding to pre-bid questions, analyzing responses, and eventually making an award. In 40 years, I have yet to meet a single fleet manager who says they enjoy this process or who believes it's the best use of their time.

Beyond the time involved, it's also expensive. Mike Wenzel, former chief procurement officer for the state of Maine and past member of the National Association of State Procurement Officers, estimated that the total cost of procurement for agencies that choose this path can be as much as \$10,000, and substantially more for complex purchases.

That was the experience of a Wisconsin transit agency that insisted on bidding for a transit bus lift rather than using the state contract. In the end, the agency received responses and spent \$10,000 more than the discounted state

contract price, resulting in a waste of procurement time and taxpayer funds.

Fortunately, every state now has laws to avail itself of a cooperative contract, but the procurement department still needs to familiarize itself with the specific state laws before registering with a contracting cooperative (co-op).

When you are ready to move forward, it is recommended that you perform your due diligence on any co-op you may want to join. Questions you may want to ask include:

- How long has the co-op been operating?
- Is there a fee to join?
- What procurement laws does the co-op follow in soliciting, evaluating, and awarding contracts?
- Is contact information provided to readily conduct more in-depth research?
- What is the level of customer service in response to questions, concerns, or requests for information?

Cooperative procurement can be used for a wide variety of purchases, but it is ideally suited for items that may only need to be purchased occasionally, such as when your garage expands or if the existing equipment is no longer able to service your current fleet (e.g., lifts, tire changers, and wheel balancers).

With cooperative procurement, fleet managers and procurement departments need not worry about the acquisition process turning into a virtual arm-wrestling match, as can happen. All contracts available through established co-ops are competitively bid and awarded and carry a full set of government terms and conditions the vendors must comply with for your shop as a government buyer.

## Cooperative procurement is ideal for items that may only need to be purchased occasionally.

For example, NASPOValuePoint.org has a contract titled "Vehicle Lifts and Related Garage Equipment" that is being used by 35 different states. The terms and conditions are clearly spelled out, and the contract itself has a mandate for guaranteed lowest government pricing.

With an increasing number of fleet managers and procurement officers across the country retiring or close to retirement age, more pressure is being placed on staffs to secure the equipment needed to maintain their fleets at a fair and responsible price.

Government-to-government procurement services hold the key to reducing the cost of goods and services by aggregating the purchasing power of public agencies nationwide. State Procurement Director Steve Berg summed up the benefits of cooperative procurement perfectly when he said, "Why reinvent the wheel when another state and its procurement staff have done all the work?" ■



**By Steve Perlstein**

SALES AND MARKETING MANAGER, MOHAWK RESOURCES LTD.

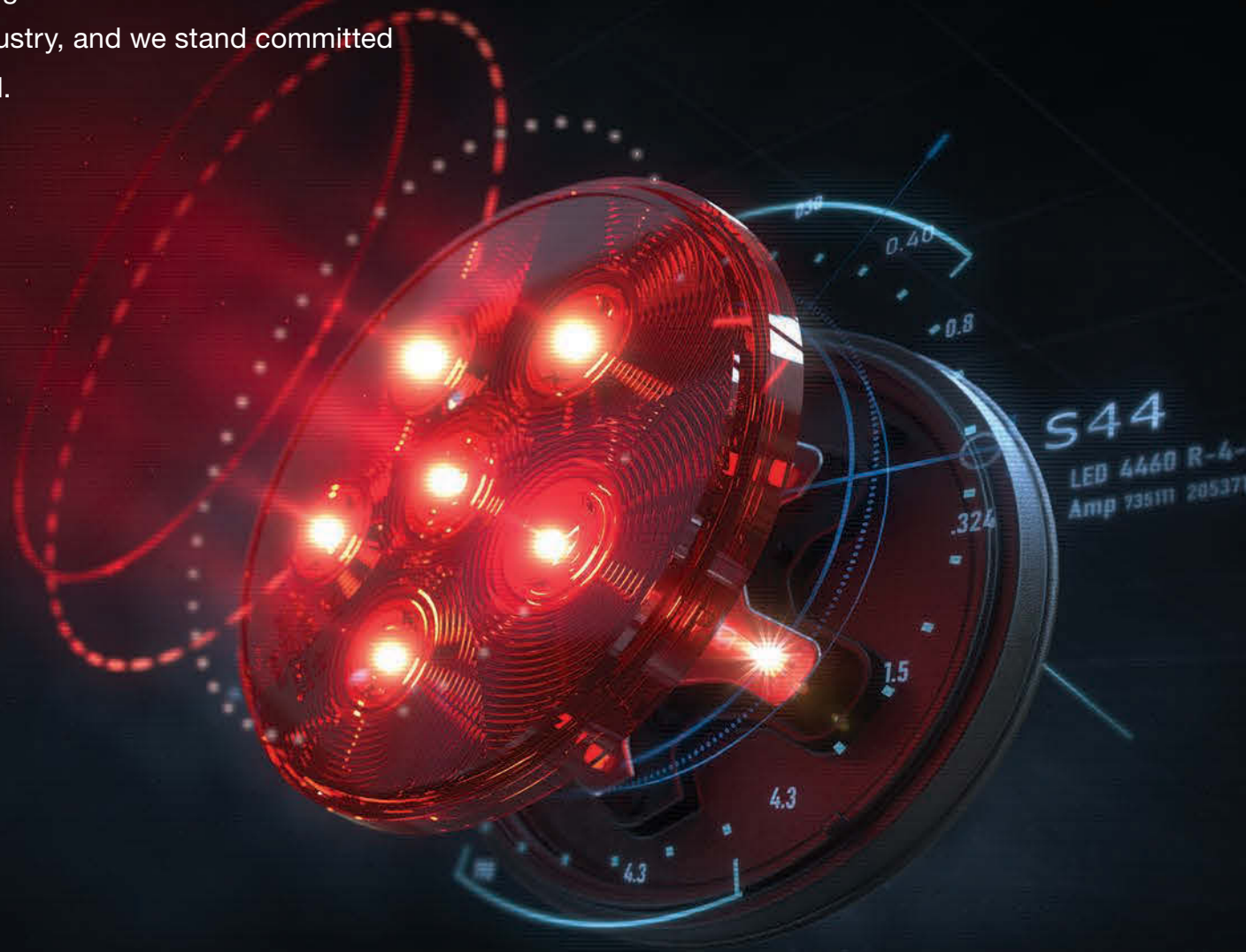
Steve Perlstein is the sales and marketing manager for Mohawk Resources Ltd., a lift manufacturer based in Amsterdam, New York. He has worked in the garage equipment business since 1981 as one of the company's founders. Perlstein is responsible for managing Mohawk's multiple award schedule contracts with GSA, various states, and national government cooperatives.



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