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TRACTOR-TRAILER CONNECTIONS  
**THE MATING GAME**

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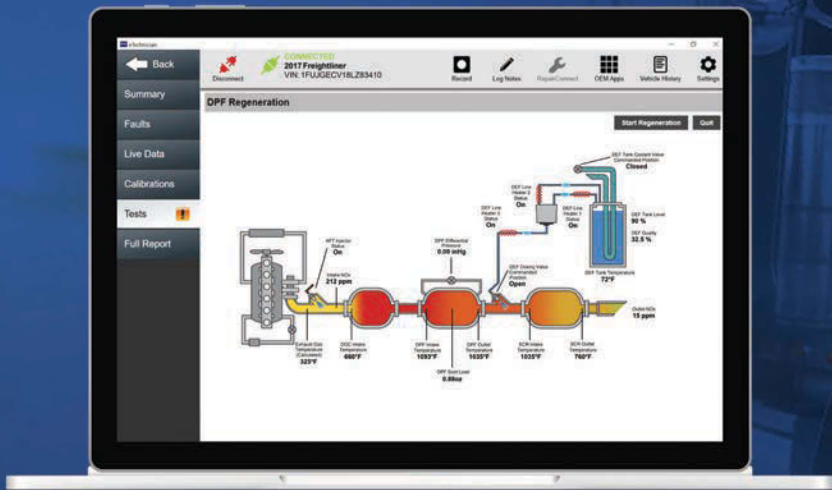
ON THE ROAD AND OVER THE AIR

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## FINDERS KEEPERS

**AN IN-DEPTH GUIDE** to recruiting and retaining the best and brightest commercial vehicle technicians.

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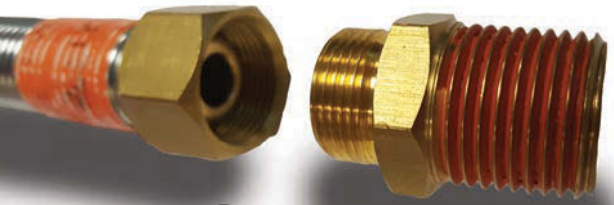
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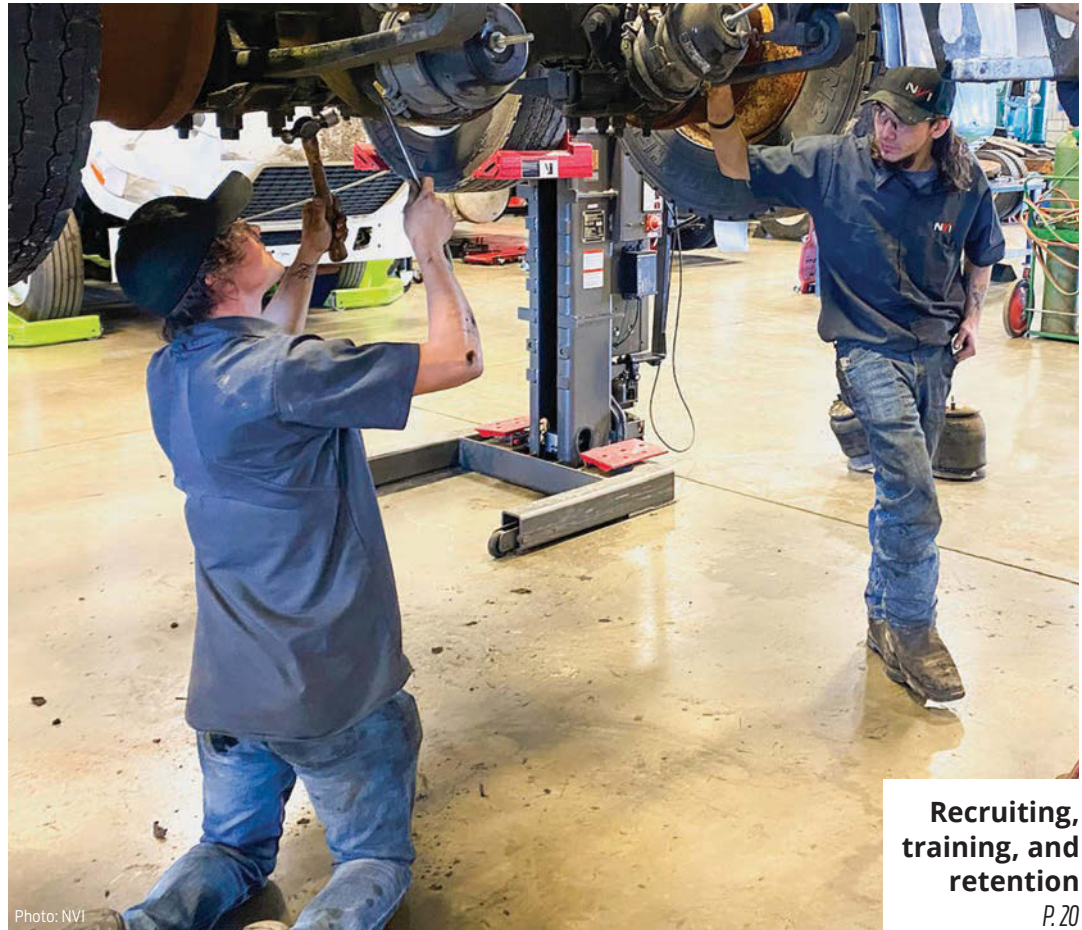


Photo: NVI

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

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» **Cover photo:** John Hitch | Fleet Maintenance

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Photo: A. Duie Pyle

### ARTICLE

#### Maintenance key to A. Duie Pyle's award-winning safety operations

The Pennsylvania-based LTL carrier won the ATA's highest safety award for the fifth time, and that culture permeates the fleet's shops as well.

[FleetMaintenance.com/21270600](http://FleetMaintenance.com/21270600)

### ARTICLE

#### Southern Tire Mart teams with Kodiak to simplify AV maintenance

The maintenance provider has found autonomous vehicle developer Kodiak Robotics' SensorPods, which house several complex cameras and sensors to enable autonomous trucks to operate, are as easy to change out as a tire.

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Photo: Kodiak Robotics



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### NEWS

#### CVSA Brake Safety Week starts Aug. 21. Are you prepared?

Brake Safety Week will take place August 21-27. Here is what you need to know prior to the safety blitz, and how your fleet's assets can be prepared to pass inspection.

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### ARTICLE

#### Tips to help fleets manage costs amid inflationary pressures

Brian Antonellis, SVP of fleet operations for Fleet Advantage, recommends breaking down fleet expenses into four major buckets and planning out equipment procurement three to five years in advance.

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# Why are shops still a 'no woman's land'?

Vehicle maintenance isn't for everybody, but the lack of female technicians makes no sense.



By John Hitch  
Editor in Chief



@Hitched2Trucks



We leaned hard this issue into training technicians, with a deep dive into finding and keeping them (Pg. 20), as well as an in-depth guide to the Technology & Maintenance Council's Fall Meeting (Pg. 38). In this space I want to discuss an issue that has confounded me for some time: Why are there so few female commercial vehicle technicians? The accepted percentage is 3%-4%, though women make up more than half the population.

This while the industry faces a shortage of qualified labor.

"I don't know how our industry gets fixed when 96% of the employees are one sex," said Tyler Robertson, CEO and founder of Diesel Laptops, referring to the discrepancy between male and female technicians. "You've got to get females involved to help [fill these jobs] as well."

How to do that efficiently still seems to evade fleet and shop recruiters, despite soaring entry-level wages for diesel technicians of \$62,000 or more. Otherwise, the percentage of female technicians would be far less meager. Manufacturing, an industry I previously covered, made a big deal about the gender disparity, and that stands at 30% women to 70% men, according to the U.S. Department of Commerce. Having ten times less than that isn't just a problem—it's an embarrassment.

**"There are some jobs that are physically demanding that you need to be able to perform, but that doesn't mean women or anyone else can or cannot do those jobs."**

Robert Braswell, executive director of American Trucking Associations' Technology & Maintenance Council

The stats don't tell the whole story, though. There are some big differences between the jobs. CV maintenance can require more physical exertion than manufacturing tasks such as fabricating or assembling. Shops routinely do brake jobs, and those assemblies can be quite heavy—even Meritor's lightweight EX+ LS Air Disc Brake weighs 71 lbs. And Class 8 truck tires weigh 110 lbs.

Save for some behemoth tech affectionately named Ox who can lug those around without breaking a sweat, any tech, male or female, can and should leverage shop material handling equipment like brake drum dollies for heavy lifts, or get help. With labor in short supply, it's not worth the risk for a pulled muscle or hernia.



Photo: 1227432460 | RyanJLane | Getty Images

"There are some jobs that are physically demanding that you need to be able to perform, but that doesn't mean women or anyone else can or cannot do those jobs," noted Robert Braswell, executive director of American Trucking Associations' Technology & Maintenance Council.

And Braswell dismissed the notion that women in general are more likely to hinder shop productivity, but the stickler for metrics noted that with all technicians, "you need to set your standards and your expectations to what you think they need to be, and then apply them consistently across the board."

Basically, treat everyone equally when it comes to judging performance. And the word from the industry is that women can absolutely perform the job.

"In my experience, some of the best techs that I've seen were females," said Adam Duplin, diesel technology coordinator at New Village Institute-Blairsville, a training center that opened this year in Pennsylvania. "They have a different methodical approach and are very detail-oriented, and they just do a really good job."

Duplin noted that at the high-school level, it's still difficult to overcome the pervasive stigma "that this isn't a girl's job."

"From a physical standpoint, there's nothing making this a man's-only job," he added.

The industry is starting to come around to that belief.

Diesel and automotive trade school WyoTech in Laramie, Wyoming, has found success recruiting women. CEO Jim Mathis said 5% to 8% of the student population is female. "We're looking for more because they are awesome," he said. "And they're smarter and more detail-oriented—and easier on equipment and tools and everything else. We want more, and the opportunities for them are limitless."

WyoTech has a goal of educating 10,000 students per year and will never reach that goal without women, who represent 51% of the population. One way they are doing that is evaluating what curricula and programs would be more inclusive, Mathis said.

A new club at the school, called Women of WyoTech (WOW), has started providing a place for female students to talk about their collective challenges and support one another. Penske and United Rentals already have shown great interest in WOW's 15 members and are attempting to recruit them into their shops through visits to the school and invitations to their dealerships.

There's still plenty of work to do. Ellen Voie, CEO of the Women In Trucking Association, a group dedicated to showing women have a place in the transportation industry, shared these results from a recent report:

- 94% of respondents say they have no women in technician roles.
- 2% say they have 10%-20%.
- 2% report they have 30%-40%.
- 2% reported plus-90% (though Voie said these were small companies with few techs).

This is not an issue that will be solved overnight, but it's also one that we've all known about for decades. The difference is that now the industry is at an inflection point where the job is less about tearing down engines and more about finding problems via computers to increase an engine's life. And many in the industry, who have a vested interest in its success, say an influx of female techs will help ease the labor crunch.

I don't know how it will all turn out, but I do know vehicles will always need maintenance, and the earlier you get girls involved, the better their career prospects. Now excuse me, as I am going to teach my daughters about torque by defeating their Fisher Price Power Wheels car's speed limiter device (a screw). ▀

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# ON THE ROAD AND OVER THE AIR



SITUATION:



Remote programming  updates are changing how fleets perform maintenance on trucks. And the technology is just in its infancy.

By James Alfred





## [ SAFETY & TECHNOLOGY ]

**T**he computerization of commercial vehicle powertrains has revolutionized the way they operate today. This constantly evolving vehicle system continues to integrate technology, giving engine designers and maintenance professionals unprecedented power to fine-tune and even micromanage virtually every aspect of how a vehicle operates.

Small computers, called electronic control modules (ECMs), can manage everything from the spray shape of fuel emitted from a fuel injector to precisely when and how that fuel is ignited, to automated manual transmissions (AMTs) skipping gears to ensure optimal fuel economy, and even acceleration in different operating conditions.

Coupled with this explosion of engine management software and ECMs has been a revolution in wireless and cellular communication capabilities. Using these systems, designers of everything from smartphones, tablets, laptops, and even powertrain systems can now receive software updates from virtually anywhere with good Wi-Fi or cellular service. Increasingly, truck and engine OEMs are using this over-the-air (OTA) update technology to perform all sorts of system updates and checks—tasks that not long ago would have required bringing a truck into a dealership and plugging in a computer to obtain the same results.

“The concept of OTA is rather new for the trucking industry, even though it has been a technology used by suppliers of different industries for some time now,” said Bruno Gattamorta, chief commercial officer for diagnostic and maintenance solution provider Cojali. “We can find an example in telecom providers who for years have been using this for deploying the firmware and file packages with a better level of coverage—mobile devices connected to an established Wi-Fi connection. And now, thanks to the new 4G/LTE and 5G networks, the paradigm has changed, and the Internet of Things (IoT) allows us to connect multiple devices with a robust and fast bandwidth.”

This has led to smarter trucks capable of higher levels of communication among vendors, carriers, and customers.

“Our latest generation of Volvo trucks are like iPhones on wheels,” explained Ashley Murickan, product marketing manager, connectivity and OTA features, Volvo Trucks North America. “The extensive OTE connectivity features dealers, customers, and drivers have access to have a huge positive impact on the truck’s productivity and efficiency, enabling remote software updates and remote change of parameter settings to optimize the truck according to its assignment.”

The change started as OEMs and technology providers began adding more sophisticated components to manage all the new telematics and engine data coming from the trucks, resulting in more efficiency and visibility on the maintenance side. Lee Lackey, product manager at



Noregon, explained that remote programming of ECUs initially targeted engine updates and was becoming commonplace in the beginning of 2018. “Fleets quickly bought into the technology,” he added, “because they recognized the total cost of ownership (TCO) benefits of updating their software over the air versus waiting hours or days at a service center for the same update.”

The technology only has accelerated since its widespread introduction a mere four years ago, Lackey noted. He said that OTA technology is still most prevalent for engine modules. But as more and more components on vehicles become connected and gain the ability to self-diagnose and/or “learn” better and more efficient ways to operate, it is only a matter of time before nearly every major component will be connected to a network and therefore can receive OTA updates.

Navistar launched OTA software update functionality for all engines in 2015, according to

device that would tether to a cellphone or tablet to initiate and monitor the update on the engine. But even though the OTA process worked with Wi-Fi devices, the process had too many weak links, Mallela said. It required technical expertise to perform the OTA—something that could not always be guaranteed.

To counter this problem, Mallela said that in 2019, Navistar-equipped on-highway vehicles with cellular-based connectivity hardware integrated into the vehicle cluster, providing the seamless in-cab driver experience to initiate and perform engine software updates and programmable parameter updates such as max speed. Other updates have followed; for example, Navistar introduced idle shutdown timers in 2020. And new developments are on the horizon, as Mallela said Navistar continues to work with its partners to support their controllers’ OTA parameters and calibrations.

## “We’ve invested in more seamless technology so updates can happen while you’re sleeping—making your next ride a better experience.”

Alex Purdy, director of business operations, enterprise connectivity, Ford Motor Co.

Srinivas Mallela, director of connected services, for the OEM. Its journey has been typical for most engine makers using this cutting-edge technology. Mallela said that in 2015, Navistar OTA updates were performed using a Wi-Fi-enabled

OTA updates are moving into the passenger car and light-duty vehicle segments, too. One such example is Ford’s Power-Up OTA program. According to Alex Purdy, director of business operations, enterprise connectivity, Ford Motor

» Ford’s Power-Up software allows 6 million connected vehicles to receive updates to enhance user experience and performance.

Photo: Ford Pro

Co., the first Ford Power-Up software updates for F-150 and Mustang Mach-E customers in North America began in March, accelerating a transformation that he said is already well underway. Currently, he said, Ford has more than 6 million vehicles on the road today featuring advanced, embedded modem connectivity. New vehicles equipped with Ford Power-Up capability identify customer preferences and vehicle issues, which Ford engineers then translate into quality and capability improvements delivered through Ford Power-Up enhancements.

“Software updates are common across billions of connected devices but not yet for vehicles,” Purdy noted. “Ford Power-Up software updates will change that by quickly bringing this technology to millions of people. We’ve invested in more seamless technology so updates can happen while you’re sleeping—making your next ride a better experience.”

For Ford, this means the new, fully networked, second-generation electrical architecture and advanced tech stack creates the foundation to deliver unique Ford Power-Up software updates. These quick and easy wireless upgrades help enhance features, quality, experiences, capability, and convenience, Purdy said. Capable of updating the vast majority of vehicle computer modules—more than 80 on higher-end models—these upgrades can help improve the ownership experience and may help reduce the need for repair trips.

Many Ford Power-Up software updates will be virtually invisible to customers, enabled by a tech platform that installs much of the new software in the background. Additionally, Purdy added, many

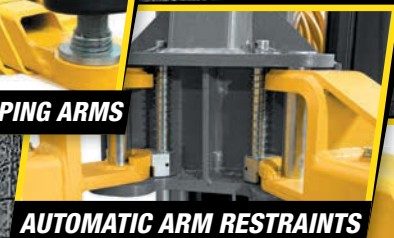
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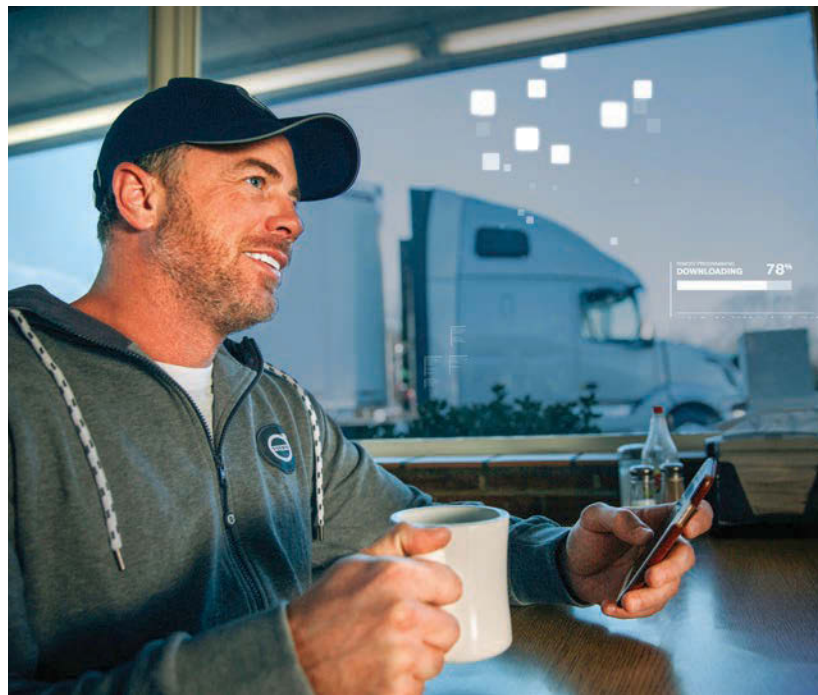
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» Depending on the connection and size of the update, OTA updates even can be performed during a driver's dinner break.

Photo: Volvo Trucks North America

updates require little to no action by the customer, enabled by SYNC 4 Technology that keeps current software running until the new version is ready to go.

### Fixing issues in a flash

Currently, Lackey explained, OTA updates typically occur while a truck is temporarily out of service, such as when the driver is asleep or taking a dinner break, depending on the size, speed, and scope of the update. Unless the OE deems an update warrantable, fleets typically incur an expense to purchase and push out the update. The updates are definitely beneficial for fleets, he added.

"Reflashing or updating an ECU—especially when it's a warrantable update—can solve any number of issues, from phantom faults to increased fuel consumption to avoiding a forced derate while in transit," he said. "Now, add the benefit of doing this remotely and you're looking at considerable uptime improvements. An in-shop reflash may require waiting behind three trucks facing more serious repairs, which is downtime that is easily avoided by pushing out an update over the air instead."

As just one example of how important these software updates can be, Lackey pointed to ongoing emissions and exhaust aftertreatment issues. "To address the ongoing DEF quality sensor shortage, OEs worked with the EPA to get permission to override a derate caused by the sensor," he explained. "They accomplished this via ECU updates, both over the air

and in the shop. Taking advantage of this update kept fleets off the side of the road and removed the threat of long down periods due to a parts shortage."

OTA updates are in general cutting down on new trucks having to visit dealers, Cojali's Gattamorta noted.

"This huge breakthrough is helping to minimize warranty calls, for instance," he said. "Additionally, these vehicles are able to enhance their performance and capabilities. These updates can be deployed over any electronic control unit installed in the vehicle."

Gattamorta added the engine control system gets more updates than other truck systems because of its complexity and that adjustments there improve behavior the most.

Fleets need to remember that each OE essentially owns the remote update process for their components, Lackey cautioned.

"Whether it's an engine, ADAS, transmission, or other major component, the OE provides the applications that can push these updates over the air," he explained. "This reflects the in-shop process, too, where a majority of work can be performed in an after-market diagnostic application. But specialized functions like reflashing an ECU require the OE's tool. Fleets must be sure to not confuse remote diagnostics and remote updating."

While remote or OTA updates are done at the OE level, fleets should be taking advantage of aftermarket remote diagnostic solutions that are holistic in nature and monitor all components on all makes.

## Scheduling OTA updates

Generally speaking, the process for enacting OTA updates is fairly straightforward, Mallela said. With Navistar, any fleet manager with programming rights can initiate the remote updates. New engine calibrations are periodically added to the OnCommand Connection dashboard for all customers. Those software updates also can be initiated by fleets when they so choose. Once approved by the fleet manager, the driver then receives an in-cab alert via the dash and can select when to initiate the update.

“When a new engine software/calibration is released, the fleet manager can approve the update to a select truck, a subset of trucks, or all trucks in the fleet,” Mallela added.

Once approved, the software is downloaded over the cellular network onto the vehicle. When this is complete, the driver is notified through a dash alert that a software update is available. The driver can then perform the update at his or her convenience by approving the update on the dash.

“The fleet manager has complete visibility of the process: vehicles awaiting download, downloads in progress, calibrations in progress, calibrations refused/deferred, and vehicles that are up to date,” Mallela added. “In fact, customers can initiate parameter changes, things like adjusting throttle pedal and cruise control speeds, specific to some or all of their fleet vehicles, whenever they choose.”

**“Whether it’s an engine, ADAS, transmission, or other major component, the OE provides the applications that can push these updates over the air.”**

Lee Lackey, product manager, Noregon

On the other hand, given the current state of OTA technology, fleet managers do need to consider OTA updates on a case-by-case basis to determine when to schedule them, Lackey cautioned. “If it’s a minor update that won’t affect the truck’s safety or performance, fleets can wait until scheduled downtime or even have it done during the next

planned maintenance event,” he said. “If it’s a warrantable update that could prevent something serious like the engine derating, it could be in the fleet’s best interest to update during the driver’s next stop.”

For Navistar, giving fleet managers complete control over the OTA process is critical, according to Mallela. “We designed our system to provide the fleet manager and drivers complete control of the process to perform the updates based on their convenience and schedule,” he said. “The fleet manager can authorize the update to select vehicles or an entire fleet. Once the update is downloaded onto the vehicle, the driver can approve the calibration and start the update process at his or her convenience.”

Volvo recently introduced Driver Display Activation, which moves the activation step into the cab and the hands of the operator, adding flexibility and another option over having to call a Volvo Action Service agent to initiate a remote update, Murickan noted.

“Having the latest updates and change settings is easily and quickly accessible,” she added. “Updates which previously required trucks to be taken out of operation to have them hooked up to a laptop at the dealership are now updated in a few minutes remotely when the truck is parked for dispatching, or the driver is taking a break. These features have also gained the drivers’ appreciation, as they maximize productive driving time, allowing [drivers] to earn more money. And what we see today is

only the beginning; customers can expect more features to be introduced, and parameter updates will become more dynamic and enable the truck to adapt automatically to local conditions.”

If the light-duty side of the industry is any indication, minor OTA updates may soon become a relatively routine occurrence for fleets.

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“Many Ford Power-Up software updates are seamless, enabled through an innovative, cloud-connected, and vehicle software platform that keeps current software running until the new version is ready to go so fleet managers do not need to schedule updates, they happen automatically,” Purdy explained. “These upgrades can help improve the ownership and vehicle management experience and may help reduce

the need for repair trips—over time helping to contribute to a lower total cost of operation. Additionally, new features can be pushed to the vehicle as fleet managers ‘plus up’ their Ford Pro Telematics or E-Telematics subscriptions to include features like In-Cab Driver Coaching and Driver ID.”

Currently, remote updates require keeping the vehicle stationary for an OTA action to take

place, Gattamorta adds. “Fleet managers should find the best spot to execute these operations in terms of network coverage but also driver and freight availability,” he advised. “Also, keep in mind that technology is improving, but in some cases, it might fail due to the multiple factors involved. Even today, we lose internet connection for some brief period of time in many locations, so that situation is very sensitive for

remote updates as the messages should not be delayed more than some milliseconds. A corruption of the communication might corrupt the ECM memory; therefore, the engine will not crank.”

## A future on the fly?

OTA updates are still brand new, in technological terms. And, just like any other technology, its capabilities will expand and the process itself will become more efficient over time. Which raises some interesting possibilities when considering the future of OTA technology: Might it be possible to one day update trucks while they’re actually driving down the road? Might it be possible to have OTA updates initiated by preset geofencing—to reconfigure an engine that is moving into mountainous terrain, for example, from making fuel economy a priority to giving the driver more power to deal with steep mountain grades?

Experts say that, in all likelihood, these capabilities and many others will eventually become reality for fleets using OTA updates. But there are still many basic operating parameters that have to be worked out first.

“With Ethernet coming to heavy-duty trucks, eventually, it is likely that a central telematics platform will become the standard and allow one gateway to the vehicle rather than each component having to maintain their own connection,” Lackey mused. “In fact, the Society of Automotive Engineers (SAE) has already begun working on messaging that would allow multiple components to share usage of a central telematics gateway.”

But, Lackey added, as trucks and trucking components become more connected by the day, it only makes sense that OTA processes will improve, and more parts of the truck will be updated remotely. “If OEMs relinquish the sole ability to provide applications that deliver these updates, the technology could be rolled into remote diagnostic applications or other tools offered by telematics providers,” he added. “In that case, fleets could recognize in real time when critical updates can improve the performance of their vehicles.”

Navistar’s telematics/OTA technologies were developed to be able to interact with every module on a vehicle, Mallela

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said. "As Navistar and our strategic partners enhance the capability to communicate with those modules, we'll add that capacity to the programming pages within OnCommand Connection. So, OTA capabilities were designed from the outset to grow and become more effective."

Because of that, Mallela sees a day soon where OEM OTA capabilities will evolve from updating proprietary components inside a truck to include equipment installed by customers, fleets, and upfitters as well. "We have multiple communication methods available to us," he said. "It's a matter of time and our mutual customer demands."

Mallela also said that geofencing requests for OTAs are already common from Navistar customers. "A request we receive regularly is to have the ability to make geofence-based speed adjustments," he noted. "We are in the early phases of investigation for the U.S. market; however, the feature is supported in our European models."

OTA calibration also is progressing. Brad Sutton, executive director of on-highway engineering for Cummins, said most OTA calibrations are currently driven by three primary reasons: safety, performance, and regulatory requirements.

"At Cummins, we are already working on making performance OTA calibrations based on fleet duty cycles," he noted. "And we see that, and more specific updates based on individual fleet requirements, is where this technology is already headed."

Things get more exciting looking even further out. In a few years, Sutton believes it will be possible to leverage the enormous amounts of data already coming off of truck components and powertrain systems to tailor OTA updates down to the specific needs and performance quirks of individual trucks—as opposed to blanket updates targeting a fleet's operating parameters.

"Right now, OTA calibrations generally have a certification associated with them—basic software that you really can't touch," he said. "But soon, I think we'll be able to optimize and tailor those updates much more specifically, based on the

data that we have and the algorithms that we run, so that we can make an individual truck run with better fuel economy or better performance. And, moreover, we'll be able to go to a fleet manager and make specific update recommendations for specific trucks based on that data."

It is clear that OTA updates are already a powerful tool helping fleets maximize performance from

their assets with the latest powertrain programming available. And it is even more apparent that this new frontier in fleet operations is only just beginning to transform maintenance and operations in the 21st century. ■

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Tractors and trailers were built to stay a happy couple, but even simple relationships can turn messy if not given enough attention.

By Seth Skydel

[ TRAILERS, TOWING & SPECIALTY ]

**F**leets have several high-maintenance relationships when it comes to tractor-trailers, such as with aftertreatment and tires. But maintaining those relationships should not come at the cost of the simple-yet-vital connections that hold everything together—the kingpins, fifth wheels, and trailer lines. After all, you wouldn't have a tractor-trailer without them, and if something goes wrong, you might end up with a tractor here and a trailer there.





This is why fleets and maintenance providers should never take trailer connections for granted; instead, keep a close eye on them if they want to stay hitched.

As the manager of A&H Truck Service, Nick Hoag has seen his share of trailer connection issues. A&H is a full-service shop just outside of Cleveland, Ohio, providing repairs, maintenance, and inspections for owner-operators and fleets,

“It’s important to be proactive so you don’t have issues on the road,” he said. “A lot of times, especially on trailers that are hooked up multiple times per day, simple things can cause problems.”

In many cases, those problems can be avoided with a little extra attention, Hoag added. For example, he related that making sure the fifth wheel is clean around the area where the locking jaws are located is a simple and effective practice.

“A buildup of grease will block the jaws from closing properly, especially in winter,” he said. “When truckers come in and say the fifth wheel won’t latch, it’s often because there’s dirt and grease in the jaws.”

When it comes to trailer air and electrical connections, Hoag advised checking gladhand seals for dry rot or missing gasket material to prevent air leaks. On electrical connections, inspect for worn ends, broken pins, and a snug fit. Additionally, inspect the spring that closes the door over the seven-way connector to make sure it shuts properly.

“Tight connections are the easiest place to start,” Hoag said. “If the gladhands and seven-way are loose, or you need a hammer to make the connection, something is wrong.”

To make sure nothing goes wrong and those connections stay strong, *Fleet Maintenance* caught up with several “mating experts” to guide you to a long-lasting relationship between your tractors and trailers.

## 1. Start with routine inspections

The first thing to keep in mind is that it takes both sides for a successful union. Fleets and their drivers are responsible for ensuring proper tractor-trailer connections are made, noted Art Hobbs, branch operations manager at Great Dane Trailers. And there are several key connections to look at.

“It’s crucial to make sure connectors, fifth wheels, and lines are routinely inspected to ensure safety and compliance are maintained at all times when you’re on the road,” he asserted.

Not taking the time to ensure that a trailer is fully and correctly connected can lead to a dangerous and costly mistake. But according to Hobbs, it is completely preventable.

“A coupling issue that we see quite often happens when a driver backs under the trailer, gets out to make sure everything is locked, hooks up their air lines and wiring, and then doesn’t do a tug test before releasing the brakes to make sure the trailer is securely locked,” Hobbs said.

“After all of the things they did on an almost-perfect coupling routine, they release the brakes, and the trailer takes off down the road.”

A trailer separation may cause damage to the landing gears, cross members, flooring, and even bottom rail. Hobbs said that “could easily cost thousands of dollars in repairs and five to seven days of downtime for repairs to be made, resulting in loss of revenue as well.”

Hobbs added that when backing under the trailer, the driver should always listen for the “click” sound when the fifth-wheel lock on the truck engages, and visually look at the fifth-wheel locking handle to ensure it is all the way in and locked. Lastly, before rolling up the landing gear legs, always put the truck in gear, and give it a tug to ensure the trailer is locked in place.

Improper maintenance on the road can lead to poor performance. Failing to lubricate a fifth wheel could alter aerodynamics, leading to a reduction in fuel efficiency.

“Look at the locking jaws on the truck’s fifth wheel for signs of wear or shiny spots that have not been lubricated properly,” Hobbs advised. “Also, visually inspect the trailer kingpin for signs of unusual wear or damage from being coupled to the truck.”

“Check the electrical cord from the truck to make sure there is no corrosion present on the seven-pin connection, that there is no damage or cuts in the cord, and that it has enough slack in it to enable making sharp turns with no issues,” he continued. “And make sure both gladhands are connected securely to the trailer—that both lines are snug.”

Fleets also can leverage technology to help promote fifth-wheel safety. Rob Marsh, VP of truck product sales-OEM and Fleet at JOST International, said the company has two systems available.

“The JSK37USK model is a two-sensor fifth wheel that senses the proximity of the kingpin and the handle to give feedback directly to the driver using an in-cab display,” he explained.

Features of the JSK37USK include a visual lock indicator to confirm proper locking and an automatically engaging secondary lock to ensure security. With this model, the first sensor verifies that the kingpin is in the lock, and the second sensor indicates that the fifth wheel is locked and the release handle is secured.

To check these items manually, a driver would need to go under the trailer to verify that the kingpin was properly in the throat of the wheel and confirm, by a visual inspection, that the handle is fully retracted to the casting.

“Our newest design is called the Loc-Light fifth wheel,” Marsh said. “This model uses the same two-sensor system, but the positive/negative feedback is shown through a light underneath the handle. It also includes an audible beeping sound if it notices a negative connection and has an LED light to help a driver see if the locking bar is completely across the throat.”

The dual-sensor Loc-Light system is connected to a go/no-go light next to the handle. When the

fifth wheel is properly coupled with the kingpin and the handle is in the locked position, the light will show solid green. If the system does not see both the handle and the kingpin in the correct locked position, it will flash red. The throat illumination light automatically turns on when the system is engaged.

## 2. Continue with maintenance best practices

Preventive maintenance plays a key role in ensuring proper and safe trailer connections, with proper lubrication at the top of the list. Hobbs pointed out that the fifth wheel on the tractor and kingpin on the trailer should be greased regularly to reduce friction and prevent premature wear. He also said that the electrical plug from the truck to the trailer should be coated with dielectric grease to prevent damage from corrosion.

Additional advice from Great Dane includes checking gladhand grommets periodically to make sure they remain soft and make a good seal. “They should be replaced when they become hard to prevent any air loss,” Hobbs said. “Adding screens to each gladhand will also keep insects from entering the air system when the trailer is not hooked to a truck.”

Tony Ryan, technical services and training manager at SAF-Holland, provided a series of kingpin inspection and maintenance recommendations. “We recommend that fleets follow kingpin manufacturers’ instructions for maintenance and replacement procedures,” he said. “Trailer upper coupler, or bolster plate, and kingpin inspection and maintenance are just as important as the inspection and maintenance of the fifth wheel.”

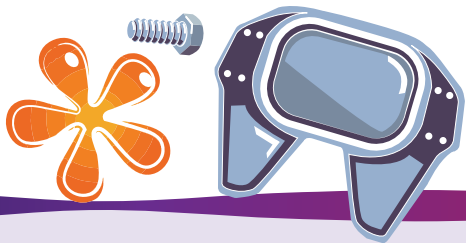
## 3. Keep air and electrical power flowing

The trailer’s air ride suspensions, brakes, and automatic tire inflation systems rely on the tractor air compressor, and certain trailer electrical systems feed off the truck’s battery. To prevent failure and a possible safety issue, those connections also need proper oversight and routine maintenance.

“Trailer electrical and air connections are subject to abuse and exposure to harsh conditions,” said Todd Howe, manager of product management at Lawson Products. “Heat, cold, moisture, dirt, oil, and grease all combine to interfere with good electrical conductivity, and cable and hose integrity.”

“Improperly installed tractor-trailer electrical cables place mechanical strain on wiring, leading to failure,” he continued. “Electrical connection problems may exhibit themselves in dim, flickering, or failed lighting on the trailer and can result in a failure of the trailer’s antilock braking system.”

Poor air brake connections may lead to trailer pressure loss, immobilizing the truck, noted Andre Murphy, senior technical services engineer



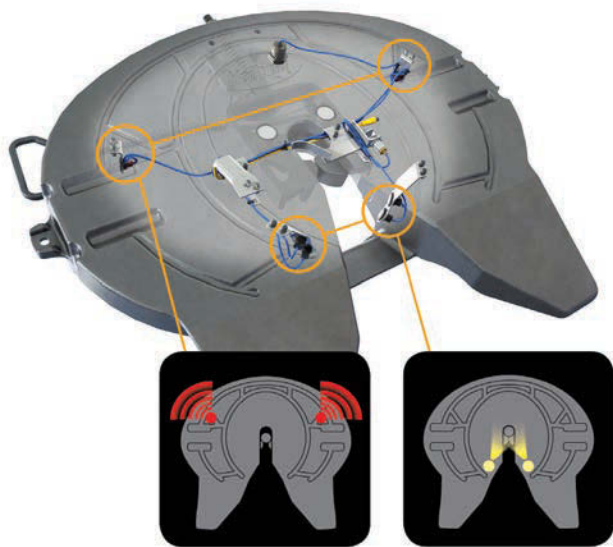
## Fifth wheel maintenance tips

### SAF-Holland recommends the following steps for its fifth wheel components:

- Lubricate the locking mechanism every three months or 30,000 miles.
- Thoroughly clean the locking mechanism every six months or 60,000 miles. Clean all moving components. Use of a WD-40 or CRC spray is recommended.
- Remove old grease and debris from all fifth wheel-to-trailer contact surfaces.
- Apply new water-resistant, lithium-based grease to all fifth wheel-to-trailer contact surfaces.
- Inspect for bent, broken, or missing parts every six months or 60,000 miles.
- Check the operation by locking and unlocking using a lock tester. Verify that the fifth wheel is completely closed.
- Clean and lubricate the locking mechanism if problems arise with coupling, uncoupling, or pulling the release handle.

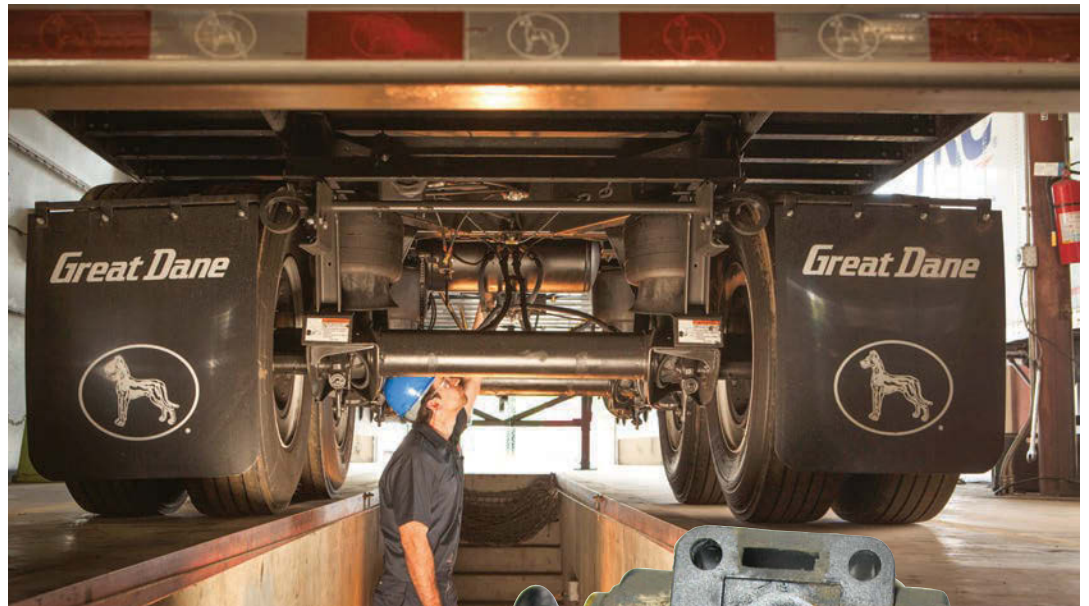
### JOST International maintenance recommendations include:

- Lubricate the kingpin lock using a hand pump grease gun through the grease zerk provided on the skirt of the fifth wheel.
- Apply a lithium-based grease with EP (extreme pressure) additive to the trailer contact surface of the fifth wheel.
- Apply a light oil to all moving parts.
- Every three months or 30,000 miles, inspect the mounting; repair or replace any missing or damaged fasteners or broken components.
- Inspect bracket pin bolts; make sure locking tabs are properly securing the bolts in place.
- Inspect the fifth wheel for bent, worn, or broken parts.
- Lock and unlock several times using a lock tester to check that the locking mechanism functions properly.



» SAF-Holland's cast steel FW35 features its TwinLock coupling mechanism that captures the kingpin, prevents impact bounce-out, and ensures a reliable coupling on the first attempt. Flashing red lights alert failure, while bright inspection lights indicate success.

Photo: SAF-Holland



» "It's crucial to make sure connectors, fifth wheels, and lines are routinely inspected to ensure safety and compliance," Great Dane's Art Hobbs said.

Photo: Great Dane

at distributor Lawson Products. "When connecting, be sure to align seals before rotating 1/4 turn, and be sure that the gladhand is fully locked in place and secured," he advised.

"Always inspect the condition of gladhand seals on both halves when connecting and disconnecting, and look for signs of wear, cracks, or cuts," Murphy added. "There should be resistance when connecting gladhands; if it seems loose, the seals need to be replaced."

Murphy also advised using strain relievers or spring guards in areas where air-brake hoses are required to move and to ensure that coil hoses are properly secured to prevent wear caused by abrasion. "Always inspect hose condition when picking up and dropping trailers to look for kinks, cracks, and signs of wear," he said.

"Inspect end fittings for signs of wear and evidence of strain or pulling at hose connection points," Murray continued, "and be sure to check the tractor side of the cable assembly, which is disconnected less frequently but where failures can occur."

Technicians should also be aware of where dirt and contaminants can build up.

"The height control system for chassis and cab air suspensions acts as a catch-all for whatever debris makes it through a vehicle's air system," said Brian Kujala, VP of business development at Link Mfg., which produces the former Hadley Products line of height control valves. "That can lead to improperly functioning valves, which can cause unsafe weight-shifting load issues and higher costs due to premature wear."

It's important to start at the source of the problem, which means making sure air tanks are purged regularly to eliminate water and rust, Kujala advised. Automatic purge systems are not always found on trailer tanks, he also noted.

"Proper installation of air lines and connections ensure proper air flow," Kujala added. "And if gladhands aren't connected correctly and seals are not intact, not only could the trailer not be at the right ride height, it creates a leak path for water."



» On height control valves' plastic tubing, Link recommends using tube cutters, not wire cutters, which can deform the edges and create a leak path.

Photo: Link Mfg.

Steve Howse, director of technical services at Tramec Sloan, said American Trucking Associations' Technology & Maintenance Council (TMC) Recommended Practices, including RP 159, RP 435, and RP155A, can serve as the source of a valuable inspection checklist. Among the items included are the following:

- Check for audible leaks in lines, connections, and valves when the system is pressurized.
- Check for loose gladhand clamps and damaged or worn seals.
- Pull back the air line spring at gladhand and tractor connections, and inspect along the length of lines for kinks or restrictions.
- Check along the length of air lines for wear.
- Confirm that a functioning strain relief method is in place at the plug/cable attachment.
- Confirm that air and electrical lines are not sagging or dragging.
- Check that tender springs, clamps, pogo sticks, or slider bars are installed and function properly.
- Untangle lines to ensure free movement unless lines are purposely joined together.
- Check operation of all lights, ABS modules, and other electrical devices.
- Check along the electrical lines for wear. Inspect faded lines closely for fine cracks or brittleness in the outer cover.
- Check plug and socket terminals for wear and corrosion.
- Confirm that a functional strain relief method is in place at plug/cable attachment.
- Confirm that mated plugs and sockets are not loose and that the socket lid spring and plug/socket latching mechanisms function properly.



## 4. Avoid corrosive behavior

Among the many items in its series of Qwik Tech Tips, Phillips Industries covers combating electrical corrosion.

Fleet and drivers first detect corrosion problems in electrical, noted Ron Fay, technical support specialist at Phillips Industries. "That is because electricity causes the copper wiring within the electrical system to heat up and expand, and with fluctuating temperatures, it acts as a sponge, sucking moisture and contaminants further in, accelerating the corrosion process," he said.

In an experiment conducted at Phillips, Fay said, it took less than 24 hours for saltwater to wick through a 7-inch piece of copper wire, without varying temperatures that would expand and contract the wiring. "Imagine how much farther it could have traveled if an electrical current was passed through the wire?" he asked.

Additionally, this experiment was conducted with salt and water. Today, roads are treated with deicing chemicals such as magnesium chloride and calcium chloride that are 50% smaller than sodium chloride (salt), so they fit into tighter spaces. And they are highly soluble in water, creating finer mists of spray that coat more of the vehicle and have the ability to absorb moisture from any source, including the air in low humidity conditions.

Fay said that the following maintenance steps can help prevent damage from corrosion to the electrical system:

- ➔ Significantly reduce magnesium and calcium chloride buildup during the cold weather by frequently washing equipment. Do not power wash as water can be forced into areas and cannot escape, leading to corrosion.
- ➔ Do not leave soap residue on electrical connections. When degreasers come into contact with electrical connections, it increases the corrosion reaction.
- ➔ Use a plug and socket brush with water (*not soap*) to clean connectors every six months, or more frequently in highly corrosive environments.
- ➔ Reapply dielectric grease on plug and socket pins to keep

corrosion at bay after every cleaning.

- ➔ Inspect cables and wires for road-hazard damage such as cracks, cuts, and rubbing, and excessive butt connectors from an old repair. Wiring can wick moisture and additional corrosion might be present further up from the initial problem area. Replace or repair any damaged areas.
- ➔ If you must repair wiring harnesses, or any

kind of wiring, use heat shrink terminals and/or heat shrink tubing with adhesive that seals the connection.

Knowing these rules will put you on the right path, but like with any successful marriage, just don't forget to put in the work. ▀

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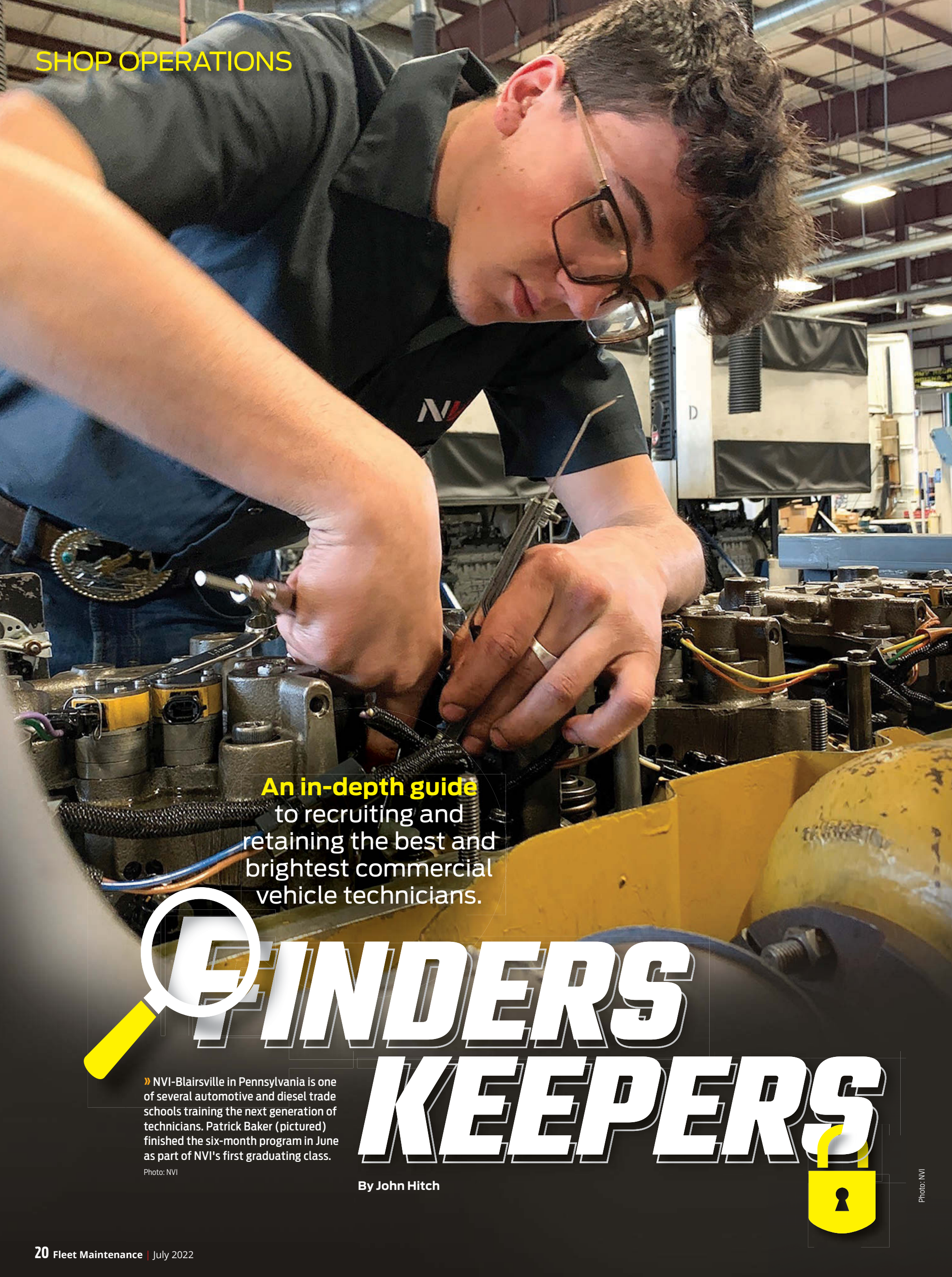
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**An in-depth guide**  
to recruiting and  
retaining the best and  
brightest commercial  
vehicle technicians.

# FINDERS KEEPERS

» NVI-Blairsville in Pennsylvania is one of several automotive and diesel trade schools training the next generation of technicians. Patrick Baker (pictured) finished the six-month program in June as part of NVI's first graduating class.

Photo: NVI

By John Hitch



Photo: NVI

## [ EMPLOYMENT ]

**T**he transportation industry's maintenance technicians were once viewed as expendable as wear items, like tires or brake pads. After grinding them down with excessive use, fleets could replace them with a fresh one. Because these workers are humans, not replaceable parts, that strategy has worn thin, and now fleets and shops find themselves in the throes of a technician shortage that is projected to worsen over the decade.

"For a long time, people in the industry treated a lot of technicians like they were a number—'Oh, fine, I'll go get somebody else,'" said Tyler Robertson, founder and CEO of Diesel Laptops, a provider of diagnostic tools, software, parts, and training. "And those days are long gone."

Fleet leaders report that finding and keeping technicians is one of the industry's top challenges. According to Fullbay's 2022 State of Heavy-Duty Repair Industry Report, more than half of the fleet and independent shops surveyed said hiring technicians was the top challenge, while 65% found hiring "difficult."

Now, employers will be lucky to get the attention of any qualified candidate, let alone one with the acumen to perform complicated truck repairs, and possibly ascend to a management position. Fresh management will be needed as the Silver Tsunami, or massive wave of baby boomers leaving the workforce, builds over the decade.

"This is a crisis, and it's a permanent one if we don't get our heads around these sourcing and retention issues," warned Gary Beeman, CEO of New Village Institute (NVI), a Blairsville, Pennsylvania-based diesel and automotive training school that opened in January.

The campus, an hour east of Pittsburgh, is tucked on the Allegheny Mountains' western ridge, among sprawling forests and craggy hills. It was once a flourishing WyoTech campus, but it closed in 2018. (WyoTech is under new management and runs a nine-month auto and diesel technician training program in Laramie, Wyoming.)

NVI's first modestly sized class of diesel technicians just graduated in June. The six-month program is broken into four six-week units. The first is fluid power, where they learn about hydraulics, control systems, pumps, and basic electrical—which becomes more important as trucks transition to fully electric powertrains. This is followed by powertrain and brakes; engine management; and finally the engines themselves. By the end, students will understand how to replace a clutch, troubleshoot lighting issues, perform preventive maintenance, diagnose aftertreatment issues, and even tear down and reassemble an engine.

Beeman noted fleets asked NVI to compress the training time to six months "because they're desperate for techs." These fleets, such as PGT, United Rental, Pitt Ohio, Penske, Ryder, and Waste Management, have helped tailor the curriculum and provide resources to ensure these new technicians can contribute from day one.

"We want to get them in here, give them a skill set, and get them back out into the industry as quickly as possible so that they can start to earn a living, but also help serve that need for technicians in the industry right now," Beeman said.

What shops need most are workers they can rely on, and NVI's classroom instruction goes hard on soft skills, those work ethic-related intangibles.

"The soft skills and the life skills are just so important," Beeman said. "Ninety percent of the game is to be reliable, show up, and have a positive attitude."

And Beeman is positive NVI will help with the shortage. At max capacity, NVI's limit is 2,400 students per year, and he said they could reach that number "in the next few years."

Over at WyoTech, which started back up in 2018 with 12 students, the student body has swelled to 685 this spring, an increase of 2,300%. WyoTech CEO Jim Mathis expects 800 students by the fall.

And fleets and dealerships are traveling out to Wyoming to court them. A job fair this spring attracted more than 70 employers from across the country. Suitors included construction and agricultural companies. John Deere went as far as flying students out to a Colorado equipment dealer.

"If a student wants a job, they could leave with 10 job offers just in those two days," Mathis said. "That's how intense and how needed our students and other tradespeople are."

Twenty years ago, Mathis said the Laramie campus had nearly 2,200 students, and the Blairsville site had 1,500 at one time.

"Our ultimate goal is to have 10,000 students in Laramie on campus by 2030," Mathis said.

So while help is coming, from these two schools, and several others, it won't be enough.

As this is one of the most pressing issues facing commercial vehicle maintenance management, *Fleet Maintenance* visited experts, instructors, and even students throughout the industry, and talked to several more, to find solutions to the problem. While we don't claim to have discovered a panacea to quell this growing epidemic, we have found some best practices that any fleet or shop can enact to make recruiting and retention far more manageable.

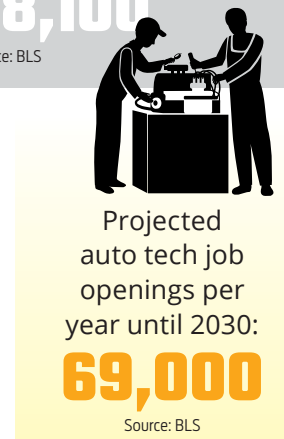
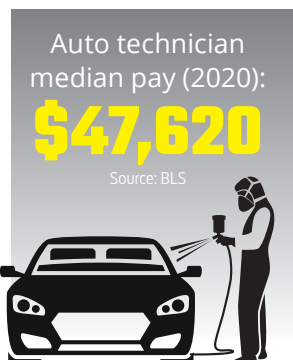
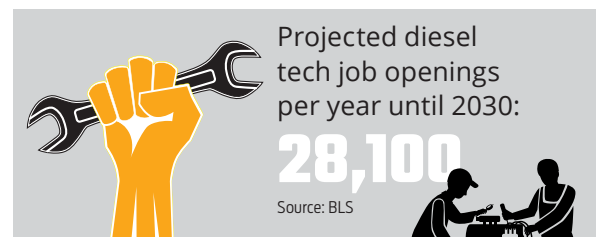
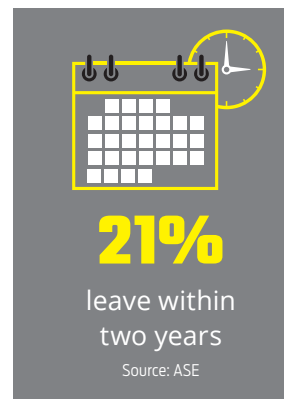
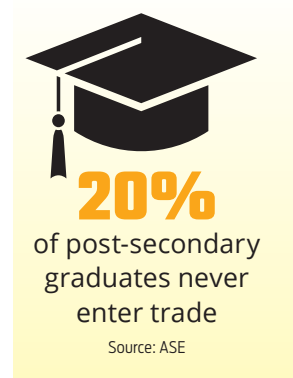
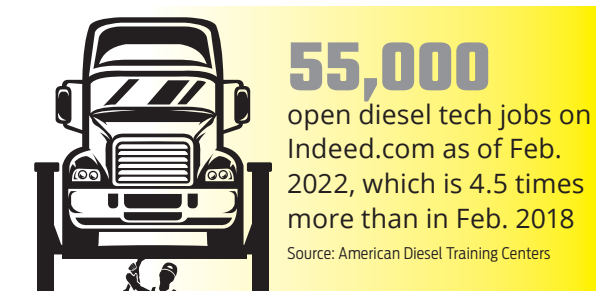
### The big shortage

Damage control always starts with first assessing the situation, and this one ain't pretty. As Robertson pointed out, reducing technicians to a number helped create this shortage. Now the industry is left scrambling to add technicians within its ranks.

According to TechForce Foundation's 2021 Transportation Technician Supply & Demand Report, there are five open automotive or diesel jobs for each new technician completing a post-secondary program.

"Postings for diesel mechanics on Indeed.com have increased 450% since February of 2018," noted Tim Spurlock, CEO and co-founder of American

## TECHNICIAN SHORTAGE BY THE NUMBERS



Diesel Training Centers. “On February 10, 2022, there were more than 55,000 diesel mechanic listings. This is a record number of postings.”

He also noted that there are 30,000 heavy-equipment technician openings.

“I think the true number is well over 100,000 because not every company lists all of their openings on Indeed or job boards,” Spurlock said. “This is triple the number of openings on Indeed three to four years ago.”

The issue is likely to get worse before it gets better. The U.S. Bureau of Labor Statistics estimates that every year until 2030, the deficit of diesel and automotive technicians will expand by 28,100.

Part of this is due to many older techs retiring or taking their talents out of the shop and into a better paying, less work-intensive role.

That speaks to the one biggest issue of commercial vehicle maintenance and repair: The job is challenging and not for everybody. Troubleshooting a diesel truck’s aftertreatment system, for example, is not easy work and takes diagnostic expertise and patience, but doing it quickly and accurately is one of the top needs of the trucking industry.

In general, shop life can be demanding, and there is a lot to learn. Many finish vocational or technical school and discover the job isn’t right for them. About 41% will leave the industry within two years, according to a survey by the National Institute for Automotive Service Excellence (ASE) of recent graduates in the trade.

Competition within the industry is another hurdle. Robertson acknowledged that shops aren’t the only ones vying for quality diesel techs. Diesel Laptops, along with other vendors and truck manufacturers like Daimler Truck North America, Paccar or Volvo Trucks North America, also covet experienced technicians.

“They’re now competing, not just with other shops, but companies like mine and OEM call centers,” explained Robertson, who said 40 of Diesel Laptops’ 200 employees are former diesel technicians. “We’re hiring experienced diesel technicians, paying them a really good wage, and let them work from home. And that’s a hard thing to compete against.”

The pandemic exacerbated the situation, said Spurlock, noting that “community college enrollments, especially skilled trades, tanked after COVID and have not returned.” He counted 6,000 people studying diesel technology receiving Title IV grants, loans, and aid per year, and that “few actually graduate.”

Meanwhile, Spurlock said there is a huge interest in maintaining trucks and other equipment.

“There are hundreds of thousands of people out there who would love to work in this field, but they don’t have the time or funds for an extended training program,” Spurlock continued.

American Diesel Training tries to alleviate some of these issues. Students don’t pay tuition until they are hired, and oftentimes their employer will pick up the costs. The Columbus, Ohio-based school has churned out more than 1,700 entry-level diesel techs since opening in 2017.

The question is how to reach and hire these potential workers.

## SHOW 'EM THE MONEY

### Entry-level techs are cashing in on America’s neglect of the trades.

The technician supply chain has been stifled by societal neglect. For many decades, the trades were stigmatized as parents and teachers pushed high school graduates to universities. The culture is shifting, though. It appears high school students are less confident in a four-year degree. According to a study by ECMC Group, 71% of students surveyed in May 2020, at the beginning of the COVID-19 pandemic, said they would likely attend a four-year university, while in September 2021, that figure had dropped to 48%.

“There is definitely a push to encourage students to consider the trades more, but it’s difficult to determine exactly how many of these students that don’t attend college go to the trades,” noted Gabe Pinchev, founder and CEO of Field Service Software Co., who advises various trade industries on labor shortages. Pinchev said they may settle for retail or fast-food jobs.

But automotive and diesel careers have more to offer to those willing to do the work. Pay is at the top.

Pinchev pointed out that a technician with four years of experience can earn \$50,000, and top performers get efficiency bonuses. Lately, it’s much more.

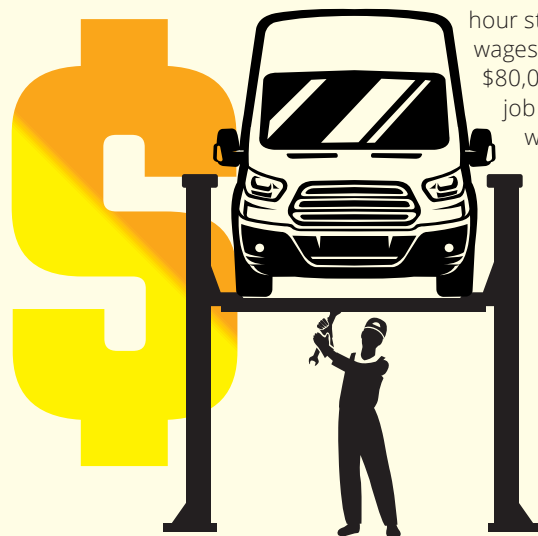
“The median income for diesel techs has been going up dramatically over the last few years,” said Gary Beeman, CEO at NVI, an auto and diesel school in Pennsylvania. “It’s not uncommon to start at \$65,000/year.”

Tuition for NVI-Blairsville

is \$25,000, with an extra \$5,000 room and board cost for non-locals. The first waves of students have received grants to cover their costs and get the program off the ground.

Those who pay the full tuition will still be far ahead of peers who choose the university route. “You’re about \$300,000 ahead against the four-year school,” he said, factoring in the difference in tuition and working for an additional 3.5 years.

WyoTech CEO Jim Mathis concurred. “I’ve never seen it like this—the wages are incredible,” he said. “UPS out of Denver is offering our students \$39/hour starting wages. That’s an \$80,000-a-year job starting without any overtime. It’s pretty amazing what some of these students are offered.”



**“We’re hiring experienced diesel technicians, paying them a really good wage, and let them work from home. And that’s a hard thing to compete against.”**

Tyler Robertson, founder and CEO, Diesel Laptop

### Talent search

“If you wait on the current system to produce, you will be waiting for a long, long time,” Spurlock said. “The current system is irreparably broken.”

He may lack faith in America’s trade education pipeline but believes a big share of entry-level work can be taught in-house.

“Most companies will tell you that their most important job is a PM (preventive maintenance)—

brakes, electrical, diagnostics,” Spurlock said. “The only way to get this is to grow your own.”

There’s no one way to find technicians to grow, so you’ll likely want to try more than one. This goes beyond hanging “Help Wanted” signs and posting to online job sites such as Indeed, ZipRecruiter or others.

Mega dealers have the capital to fly out to premier diesel schools and pitch pending

➔ **Continued Page 25**

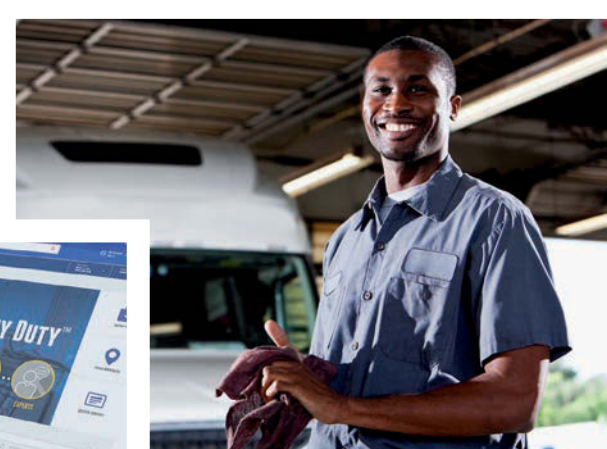
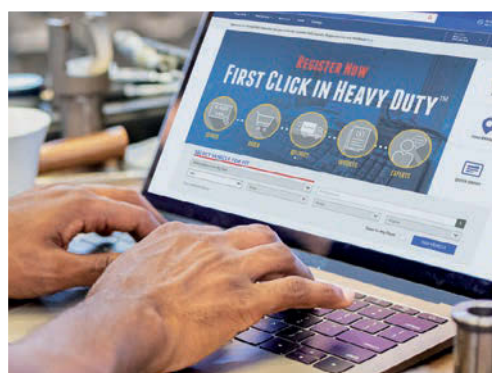


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# STAR TECHS: THE NEXT GENERATION

Meet the next wave of highly skilled recruits being molded at state-of-the-art diesel school NVI-Blairsville.

Adam Duplin, diesel department coordinator at NVI-Blairsville in Pennsylvania, started learning about truck maintenance with his dad, the owner of a small fleet of dump trucks, in his driveway (and sometimes during road calls). While he grew up immersed in the world of maintenance, he said that's not a prerequisite to thrive in a shop.

"We can take a student with little mechanical knowledge whatsoever, and develop them into a great entry-level technician," Duplin asserted.

One of these may be Bryce Williamson, a 19-year-old from Daytona Beach, a former football player who left college and a kinesiology degree in sunny Florida to pursue a new career in the Pennsylvania wilderness in April. There is nary a night club in sight, though a Walmart is across the street.

"I've never changed even a light bulb before I came up here—the only thing I did with anything is fill up my car with gas," Williamson admitted. He's now a lot more confident in his abilities, and when he talks to his grandfather, a truck driver for Walmart, about the profession, he can keep up.

"When he started talking about things back then [before attending NVI], my head would get lost," he said. "Now, we have a little bit more conversation about things."

Williamson already learned one of the most important lessons—the ability to do his job correctly directly impacts people on the road. "I wouldn't want anyone to put his life in danger, so I need to do my job the best I can," he said.

The diesel technology school also is attracting people burnt out from other trades. Jonathan Lawson from nearby Indiana, Pennsylvania, was a factory worker who assembled, sandblasted, powder-coated, and did any other repetitive task his employers asked.



"I just couldn't take it anymore," the 31-year-old said. "I couldn't stand doing the same thing, just standing in the same aisle."

He has a jumpstart on other students because he already learned the basics of wiring and electrical systems at a previous technical school and has worked on residential housing.

Internal combustion, though, gets his motor running. His father was a demolition derby racer, which also has given him an edge. "I've been working on those cars since I could walk," Lawson said. "I was pretty proficient at it, so I decided to go to the other end of the spectrum with diesel."

One reason is because he loves farm equipment—and has already talked to West Central Ag about a job. Wherever he goes, the positivity of the environment will determine how long he stays. "Morale is one of the biggest things with me because every job I've had out at those factories, the morale was just crap," he asserted. "People were unhappy, didn't like the management—it takes a toll on you."

Matt Dalton, 30, also is from the nearby city of Indiana, known for being Jimmy Stewart's hometown. After high school, Dalton joined the Air Force and was a B-52 crew chief in Louisiana.

» Instructor Rick Johnston (center) is molding the next wave of diesel technicians at NVI-Blairsville, which includes Brima Kallon (left) and Jay Gensemer (right).

Photo: John Hitch | Fleet Maintenance

"We would tow a jet into the hangar and over a period of two weeks would basically take the jet apart, inspect everything, fix what was broken, lubricate it, put it back together, and send it back out on the line," Dalton explained. He was essentially the shop supervisor, coordinating with different shops and writing up work orders.

Stewart would likely approve—the highly decorated World War II aviator flew B-52 missions for the Army/Air Force.

Dalton found only "dead-end jobs" after the service, but the grant to attend NVI at no cost may just lead him to a wonderful life.

Despite his military experience with training and managing people, that life will likely be more on the floor than in an office. He prefers doing to teaching.

"I'm just excited to get into a good work environment where I can just do what I love—which is just fixing things," Dalton said.

Brima Kallon, who hails from Boston, has the most experience, having worked as a diesel mechanic with his father already

and having run his own mobile maintenance van. The 35-year-old came to NVI to expand his skillset and be able to work on more complex electronic components as well as get down to the "nitty gritty" of diesel maintenance and become more precise at repairs. "I want to get the letters and numbers, everything right. That's why I'm here," he emphasized.

He would prefer working for a fleet but would be fine with an independent shop or even going back to road service.

"Being on the road for me is more fun, and you make more money being on the road," he said.

What Kallon wants in an employer is what nearly any technician, from trainee to veteran, wants—and deserves: "continuing education, a place that I can look forward to improving me more, a 401k, and family time."

These students are from vastly different backgrounds, ages, and experience, but the thing they have in common is what they want out of their future employer: respect and fairness. If a shop can't provide those, they shouldn't be in business anyway.





graduates on what they can offer. These technicians were molded to provide immediate help, with a foundation to build even more skills. If one of these schools is not near you, diesel, or auto programs are offered via a community college or technical school. Job fairs, outreach to high school and vocational programs, and open houses can all get leads as well.

At the very least, transportation stakeholders in need of technically adept workers should have open lines of communication with the various high school and post-secondary schools. This may include joining an advisory board, making curriculum suggestions, or donating equipment.

And lack of time is no excuse, said Robert Braswell, executive director of American Trucking Associations' Technology & Maintenance Council.

"It's either important for you, or it's not important for you," he asserted. "If I don't have time to brush my teeth this morning, well, there's a consequence to pay for that—my teeth are going to fall out. Whether you're a big fleet or a small fleet or a small shop, I think there is a certain amount of time that you can give to that sort of thing, even if you just reach out to the schools in your area and find out what their curriculum is."

ASE Education Foundation launched the Adopt-A-School program to connect fleets and shops with nearby high schools and colleges to make this easier.

"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," ASE President Mike Coley noted.

George Arrants, VP at ASE Education Foundation, said he believes reaching these students during their education will mitigate those early losses, which break down 20% of diesel students choosing another path right after graduating from a high school vocational or post-secondary trade program, and another 21% leaving within two years.

"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," he advised.

Spurlock is skeptical of this approach, questioning how a company would aggregate this approach: "There are no high school diesel programs in Columbus and five auto programs with a total enrollment of maybe 150 kids. I've spoken at most of them. Moreover, the majority of students in these programs are not ready for a real shop environment. You're throwing an 18-year-old kid into a tough environment with 30- to 40-year-olds. It's tough."

Diesel Laptops' Robertson also questioned how much effort should be placed in high schools.

"It's kind of an unpopular opinion, but I don't see how going into high schools is really going to move the needle on anything," he admitted. "We've been talking about that for over a decade. The fact is, we look at every stat that ever exists. Most high school seniors already know what they want to do before somebody shows up and says you should do this profession."

Robertson believes a better strategy is to "go find people in their early 20s, people who may have had a life that's been a little rough, and who have a job that takes a lot of energy and is physical but



» Students in NVI-Blairsville's diesel program learn to detect lighting faults they will see in the fleet by using electrical training boards.

Photo: John Hitch | Fleet Maintenance

doesn't pay that well." He said this includes manual laborers, servers, and line cooks. It could also be someone who isn't as happy in another industry or a veteran. NVI has one of each in the September graduating class (see sidebar on pg. 24).

Pitt Ohio has found some success by working directly with vocational students, according to Taki Darakos, the midsize fleet's VP of maintenance and fleet services. It has cooperative programs with vocational schools in Pittsburgh and Hermitage, Pennsylvania.

"It's been wonderful—18-year-olds coming in, working in the shop part of the time and going to school the rest of the time," Darakos explained.

He said these potential techs learn basic skills, how to work safely, and how to communicate and interact with teammates.

Those experienced techs also benefit from what Darakos calls the "co-op factor."

"It's also been great for our seasoned techs because there's so much excitement when these

"The one thing that keeps me up at night is that there are so many people leaving and retiring from the industry, and then you have an influx of young talent," he said. This loss of solid mentors could disrupt the shop, and younger techs could become disengaged.

That's why when you find technicians who want to work for you, the most important thing is to not let them go.

## Attention on retention

Darakos advised that like older trucks and budding plants, young technicians need plenty of maintenance and care.

"If you're not watering and fertilizing these techs with experiences, knowledge, and education, the newness—the excitement on the job—is eventually going to go away, and they're going to leave you," he warned.

The fleet executive also found that the first one to two years is pivotal. "That's a really critical time where you've got to pay extra attention to people and make sure they have the support to continue," Darakos said.

Supervisors should ensure new techs are "fitting into the shop, fitting into the culture of the organization, and feel valued and like they're getting everything they were looking for," he added.

Instilling a sense of value comes from trust, and that likely means giving technicians more responsibilities.

"The most important thing that companies can do is provide continuous training and a pathway to promotion," Spurlock said. "If someone is ready, promote them. It doesn't matter if they've been working for two months or two years. Treat techs like a valuable investment, not a commodity."

Robertson agreed that the keys to retaining newer technicians are training and a solid career path.

"Because someone's always going to offer more money, how do you keep them in there?" he asked.

**"If you're not watering and fertilizing these techs with experiences, knowledge, and education, the newness—the excitement on the job—is eventually going to go away and they're going to leave you."**

Taki Darakos, VP of maintenance and fleet services, Pitt Ohio

young kids are showing energy and enthusiasm and wanting to grow and learn," he said.

These seedlings won't flourish in any and every shop environment, though. "It's got to be the right shop and the right mentorship," said Darakos, who has a biology degree and looks at these issues in a naturalistic way. "But you get those things right, and it's like a symbiotic relationship."

Darakos worries about the pending imbalance happening in the industry that could throw off the homeostasis.

"You've got to keep them engaged and make it a great place to work."

Braswell encourages fleets to provide newer technicians with "a clear career path where they can make improvements during those first two years." Once they make those improvements, they need positive reinforcement, such as a raise, perk, or benefit, he explained.

"That is a tried-and-true method ... and a lot of companies will simply ignore that," Braswell lamented. "All they do is get a warm body in there,

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# RECRUITING & RETENTION QUICK GUIDE

## FINDING THEM

- Sign up for ASE Education Foundation's Adopt-a-School program to connect with local trade schools and community colleges.
- Invest time and resources into helping schools develop curricula based on modern industry expectations and standards.
- Hire students from nearby vo-tech schools to work part-time and possibly full-time upon graduation.
- Be open to hiring and training veterans and others over 20 with no direct auto/truck experience but work physically demanding jobs.
- Make your shop inclusive to female techs.

## KEEPING THEM

- Upon hiring, present techs with long-term training and promotion plan.
- Connect hires with enthusiastic mentors.
- Routinely refer to TMC's apprenticeship model, as well as RP 516A (technician training), RP 519 (setting up a performance review) and RP 526 (shop review practices).
- Set aside time for training and continuous education.
- Recognize and reward performance.
- Encourage participation in skills competitions.
- Offer a 10-hour, four-day workweek.

» Bendix headquarters in Avon, Ohio, includes working "air boards" to help techs visualize the systems and run troubleshooting exercises.

Photo: John Hitch | Fleet Maintenance



and they don't give it any thought after that. And that's a recipe for disaster and usually why you find a lot of these folks are leaving six months after they get hired."

This is backed up by a late 2021 survey by Navistar's dealer service development and market research teams, and the findings were paired with qualitative and quantitative research. The goal was to find what service departments need to improve retention; what motivates technicians and senior advisors; and what competitive compensation, benefits, and career opportunities look like, explained Ana Salcido, Navistar's technician recruitment manager.

"The biggest finding? Compensation and benefits get technicians in the door, but management and culture are what retain and motivate talented employees," Salcido noted.

To further motivate and recognize employees, the OEM introduced the Technician of Influence award, given to four high-performing employees per month "for going the extra mile and demonstrating responsibility, trust, proficiency, and productivity," according to Salcido.

## Master tech and apprentice

Braswell advised that maintenance management set up a functioning apprenticeship program to ensure those technicians that were so difficult to find stay at your company. TMC's S.5 Fleet Maintenance Management Study Group and Educator Committee released the Model Registered Apprenticeship Program for Commercial Vehicle Technicians to offer a roadmap on how to set up an apprenticeship program and monitor apprenticeships.

While this calls for all apprentices to be supervised by a fully qualified technician while performing tasks, that supervising technician does not need to watch every little move. However, they do need to be available for questions and ensure they have the instructions and resources to perform the job "safely, correctly, and efficiently."

To prevent these apprentices from becoming part of the 20% who leave within two years, super-

visors should find appropriate mentors who have the patience to teach others and step away from their own work.

"It's not your best technician in the shop," said Paul Cigala, an ExxonMobil commercial vehicle lubricants applications engineer. "Usually, it's the technician who has been there for a while, knows the ins and outs, and can work closely with that new technician to help them."

Cigala hosted a technician-related podcast with Arrants called "The Long Haul with Paula and George," where he picked up several kernels of truth from fleet experts.

"Really focus on making sure that the technicians coming out of schools are prepared to get into the industry and are onboarded correctly," Cigala instructed. "If he doesn't feel like part of the family—maybe he's struggling and nobody's helping him or watching over his shoulder—he'll be gone in less than a year and on to something else."

TMC also has recommended practices to aid with technician training (RP 516A), setting up a performance review (RP 519), and shop review practices (RP 526).

## Training daze

The complexity of commercial vehicles never stops growing and could completely shift in the next few decades from internal combustion to electric powertrains. Technicians need to keep up, so education must continue from the apprentice level to master tech and beyond. From a business side, this will help a shop take on more work and improve uptime. For the employee, upskilling helps build confidence, reduce monotony, and better their chances at advancement.

But finding classroom time for a tech who could be in the bay working has proven difficult for many shops.

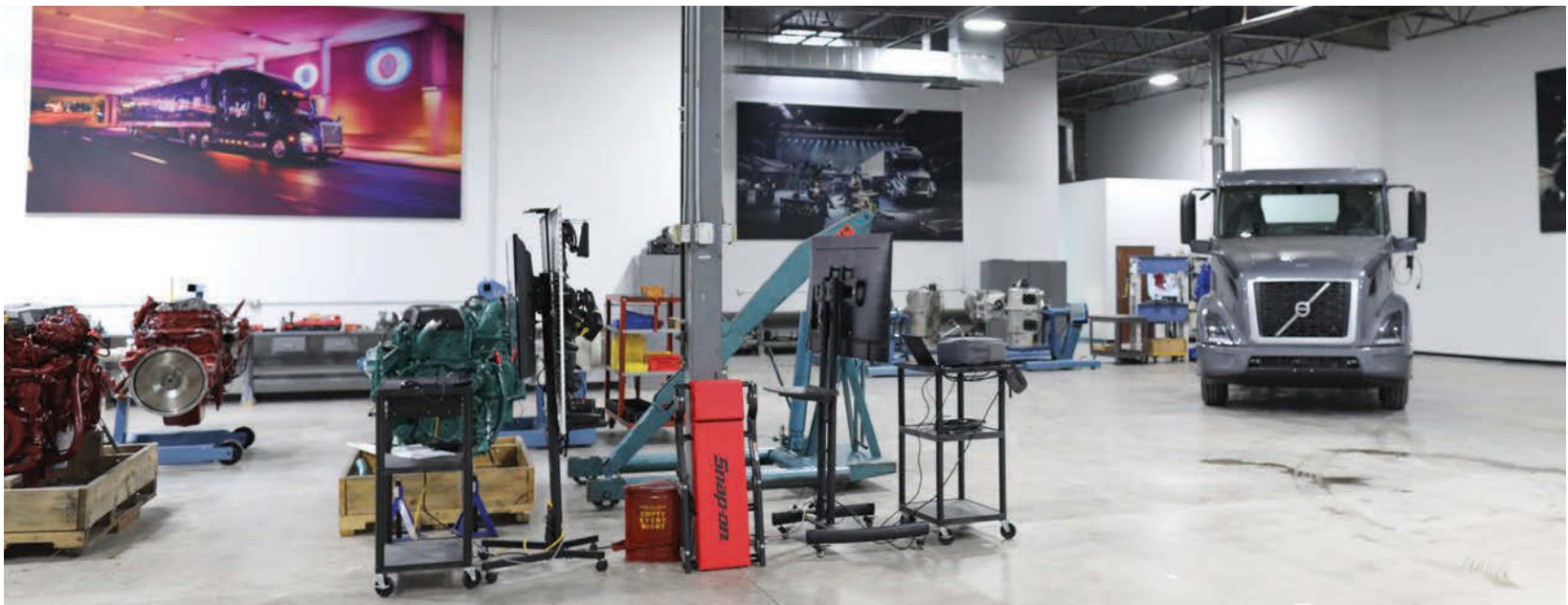
"I think our biggest struggle is getting shops to spend the time and money to actually send their technicians to a training class somewhere because it's not cheap," Diesel Laptops' Robertson said. "And they're already short-staffed with trucks broken down. Now we're trying to get them out of the shop for a couple of days to go to this class, so there's a continuous loop of just not enough resources and time to deal with it."

According to the 2022 ASE Training Managers Council (ATMC) Training Benchmarks Survey, 60% of fleet technicians said they did not have enough access to training. Truck technicians specifically cited electrical/electronic and engine performance as the most needed training content.

Robertson noted that diagnosing issues with emissions systems and onboard computers requires such training, and even experienced techs don't always have the basic skills needed. That's a reason Diesel Laptops offers virtual training to the industry.

A pretest on the basics of electrical work, from Ohm's Law to how to use a multimeter, illuminated the overall problem to Robertson.

"On one, 80% of the students failed," he exclaimed. "These are not like brand-new students out of school. These were all people that have been in the industry for years, so we stopped giving the pretest because hardly anyone would pass the thing."



For Pitt Ohio, honing in on electrical training will be increasingly important as it adds more electric vehicles to its LTL fleet. The company just received two Class 7 Volvo VNR Electrics to operate in the Cleveland area. It has extended service agreements with a Volvo dealer, but at some point, the fleet wants to do its own warranty work on them, and that will require electric vehicle training. Volvo has eight Volvo Trucks Academy Learning Centers across North America to complete the battery-electric truck training.

“All these high-tech vehicles are going to need really good people to maintain them, and we’re going to have a bigger problem than our supply chain issue if we can’t invest in these young folks,” Darakos said.

He also noted one key to success in this area will be to ensure techs have the skill level and interest to get value from the training.

“There could be somebody that’s really competent and really sharp, but if they don’t want to go there, that would be a bad choice from the start,” he said. “Because I think you need somebody willing to learn and grow, and they’re going to be engaged and understand that it’s not all going to be roses, and there’s probably going to be some hiccups and hang-ups.”

Pitt Ohio also has vendors come on-site to perform training on safety, tires, and brakes and also has technicians go out to OEMs to learn about specific engines.

Overall, Darakos said techs need 30 to 50 hours of professional development a year to keep from getting behind.

Training is a huge component of Bendix Commercial Vehicle Systems’ plan to serve customers and make the roads safer through its advanced driver assistance systems, electronic roll stability, brakes, and other related components. In fact, the centerpiece of the OE’s new headquarters in Avon, Ohio, is a large, glass-enclosed classroom filled with dynamic training boards that include functioning air and electrical systems.

Unlike with a static drawing, someone trying to learn about these pneumatic and electronic systems can see how exactly how systems integrate with each other, much like doctors learn about living organs by working on corpses. The

difference here is that these systems are still alive thanks to shop air and an electric cord. These “air boards” can also be rolled onto trailers and delivered to fleet facilities or other training locations.

They were getting plenty of use at a recent two-day training event at the building, which fully opened in April. A few dozen technicians from various fleets filled up the room to learn how to work with the OE’s product lines. On day one, they covered air disc brake maintenance and performed a Tappet Boot replacement; on day two, they spent several hours going over ADAS troubleshooting, talked through specific sensor issues, and watched some videos on the Bendix ESP electronic stability technology followed by a technical discussion.

After lunch, in likely one of the industry’s most stunning cafeterias, the fleet technicians reconvened and broke into teams to test their diagnostic acumen on the air boards as well as other hands-on troubleshooting exercises.

“A technical mind is a visual learner—I know mine is,” offered Brian Screeton, Bendix supervisor of technical training. “And I can talk about it all day, but if I can show them up there, and then come over [to the air board] and actually show them how things flow, how things work, where the air is going, what it’s doing—that really cements it in. And I love seeing that light coming through.”

One huge loss during the pandemic was preventing techs from in-person learning like this, which has no substitute. Not only do learners get to work with actual components under the supervision of OE experts, they learn from each other.

“We did a lot virtually through COVID, but one of the huge benefits of being back in person is that people feed off each other,” noted Nicole Oreskovic, Bendix VP of marketing, product planning, and sales operations. “And one question may lead to another question to another question.”

“Chances are they’re not the only ones that may have experienced that same issue or have that question,” she continued. “It’s no different than when you’re in grade school, and your teachers encourage you to ask a question because everyone in the class learns from it.”

To borrow from Pitt Ohio’s Darakos and his simile about training techs being like nurturing

» Volvo recently opened an electric truck training facility in Tinley Park, Illinois. The Volvo Trucks Academy has eight total sites to teach technicians how to work on electric vehicles.

Photo: Volvo Trucks North America



» On the to-do list for Taki Darakos, VP of fleet maintenance at Pitt Ohio, is training some of his technicians to work on the Volvo VNR Electrics the LTL recently received. They have a service plan, but he wants to do some warranty work in-house.

Photo: John Hitch | Fleet Maintenance

plants, training techs together is an act of cross-pollination to ensure the whole field will thrive.

“The benefits are you get everybody’s perspective and experiences in one room,” Screeton said. “And they’re always different. Maybe you were troubleshooting and you didn’t get it—let’s bring it up and we’ll talk about why we can solve it in the class.”

Getting techs up to speed won’t only help their fleets manage downtime and get ahead of problems; it ensures trucks’ emergency braking works as intended, or that a trailer won’t tip over. And overall, it’s making stronger diagnosticians, which is where the industry is heading.

“Especially as the products are evolving, and the systems are getting more complicated, it’s important to understand how they work so [technicians] can troubleshoot them effectively,” Oreskovic said. “[This ensures] that when they are doing maintenance or having replaced a part, they’re replacing the root cause of the problem and not something that’s just a symptom of it.”

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



» Aligning the rear axle is the final step in what Bee Line calls a “total vehicle wheel alignment.”

Photo: Bee Line

TAKING THE  
RIGHT

# ANGLE

## on alignment services

With the right tools, training, and strategy, vehicle alignments can become a money-making machine for both repair shops and the fleets they service.

By Gregg Wartgow

Vehicle alignments present an opportunity for fleets to extend tire life, boost fuel economy, and improve driver satisfaction. While the upfront costs can be significant, the long-term payback can make it a worthwhile investment.

“Alignment equipment can range from a few thousand dollars to around \$50,000,” said Ralph Bachemin, senior manager of sales development

at Hunter Engineering, a provider of alignment, wheel and tire, and ADAS calibration equipment. “Having the right system for your specific operation makes all the difference.”

### Options for setting up service

If a shop plans on performing a lot of alignments, setting up a dedicated bay or service pit could make sense. For shops that anticipate doing just a few alignments a week, a portable alignment system is a good way to go.

“The alignment system we’ve put together can be rolled around our shops,” said Daniel Mustafa, director of technical service at TravelCenters of America, which employs nearly 3,000 technicians at its TA Truck Service Centers across the country. “Our system includes a stand with a computer and printer. All of the sensors and remote-control connections can be stored in the rear of that stand. There is plenty of mobility. We typically store our system in a cage when a technician isn’t using it. The price on any computerized alignment system is rather high, so you definitely want to protect it.”

Also in the interest of mobility, TA Truck Service refrains from utilizing lifts or platforms. Alignments are performed with the vehicle parked on the ground. “You just drive the front wheels onto turn plates to eliminate any friction from the scrub of the tire on the ground,” Mustafa explained. “If you have the brakes released so the vehicle can roll a bit, the thrust angle can be adjusted without the need for any other specialized equipment.”

For a shop going that route, turn plates are a separate investment. A rack would require additional investment, too, but the time savings and other benefits could more than offset it over time—particularly for a shop performing alignments on a regular basis.

“Our setup uses an alignment rack that gets the truck to a height where adjustments can be made from a standing position,” said Tim Lamoreaux, truck service manager at North American Trailer in Inver Grove Heights, Minnesota. North American Trailer is a subsidiary of Blaine Brothers, which provides parts, service, and towing in Minnesota and Wisconsin. Lamoreaux has also worked at Blaine’s TruckAline business. “The racks are set up in two-foot sections so you can remove a section to gain better access to the suspension. This setup prevents a lot of the up-and-down work that can lead to back and leg strains,” he said.

Hunter’s Bachemin said he is starting to see more shops look to some type of rack or lift to help perform alignments. “I conducted a time study and found that the time saved while using a rack is about 25%. Using a rack requires a lot less effort. Suspension parts are often pretty tight and require a cheater bar to get them loose. There isn’t much room for leverage when the vehicle is not up in the air,” he explained.

## Benefits of a computerized system

When it comes to the alignment equipment itself, shops can choose between a manual and computerized system. While both ultimately perform the same task, the effort required—and end result—may differ greatly.

“With a manual system, the technician needs to be capturing measurements with mechanical gauges and writing all of that information down,” said Chris Schutt, technical training specialist at Bee Line, a manufacturer of computer laser wheel alignment, tire balancing, and frame correction equipment. “Manual and computerized alignments are both simple, really. But a computerized system is much faster and easier to teach.”

“A computerized system walks the technician through the process,” added Lee McLaughlin, Bee Line owner and president. “That makes it easier to cross-train technicians. Our system has help screens and videos that guide the technician through the process.”

Hunter’s computerized system offers two levels of software. One has additional functionality that walks a technician through the alignment process. The other level is more self-guided, making it a more cost-effective option for a technician who is already somewhat familiar with performing alignments.

TA Truck Service has stuck with the same computerized alignment system for many years. In fact, Mustafa first learned how to perform alignments on this system several years ago. Additionally, TA has begun experimenting with a second system. As Mustafa pointed out, all systems have their pluses and minuses.

“The new system we’ve been testing has another level of mobility in that we can load it onto a service truck,” he continued. “It can work effectively anywhere. On the other hand, the system we’ve been using for years, while very accurate and reliable, can have some issues on really sunny days because the light can throw off the lasers. Because it uses a different technology, the new system we’ve been testing doesn’t seem to have that issue.”

## Equipment and tooling needs

Aside from the alignment system itself, and perhaps some turn plates or a rack, the typical maintenance shop will already have much of what it needs to begin doing alignments. Mustafa said the typical technician can get everything else they need for less than \$500.

“The first thing a technician needs is something to turn the tie rod,” he said. “That might be something like a four-foot pipe wrench. The technician will also need something to manipulate the positioning of the rear axle, likely some kind of hydraulic tool.”

Hunter’s Bachemin said a shop will also want to keep plenty of alignment shims in its parts inventory for when technicians are making the actual adjustments.

It’s a good idea to ensure that the alignment system itself will allow for a complete alignment. Bee Line is a big believer in what it refers to as “total vehicle wheel alignment.”

“You’re not just aligning wheels to wheels, which is considered a thrust angle alignment,” McLaughlin said. “You’re actually aligning the axles 90-degrees parallel to the centerline of the frame so the entire truck goes down the road straight.”

Some alignment systems may only measure and adjust toe and tracking errors. Total vehicle alignment requires all critical angles to be gauged, and both camber and caster to be corrected. Fleets should ensure that the system they invest in has the tooling and capabilities to address all critical angles.

Additionally, Bachemin said it’s beneficial to have a system that can measure all three axles simultaneously, which makes things easier on the technician while boosting efficiency.

Recognizing the importance of a three-axle alignment is critical. “If the truck has a pull, it doesn’t necessarily mean there is anything wrong with the caster and toe,” North American Trailer’s Lamoreaux explained. “The drive axles could just as easily be pushing the truck left or right.”

## Training and support

Like with any specialized service, technicians are going to need some training to get up and running with alignments. Equipment manufacturers often provide a combination of online video training and in-person training at their facilities. Additionally, many will send trainers to a shop that recently invested in their equipment. As a general rule, the training often lasts one to three days depending on the experience level of the technicians.

At TruckAline, a new technician is trained for at least four weeks with a senior alignment technician before being sent on their own. And even then, close supervision continues to take place for some time.

“It’s one thing to know that adding caster to the right side will help correct a right pull, but knowing how much to add without causing a left pull and premature tire wear takes time and experience,” Lamoreaux said. “The alignment equipment we use is fairly straightforward and the computer makes recommendations, but it’s all about feel. It’s also important to test drive the vehicle to see if any improvements were made, so having a CDL is a huge advantage for an alignment tech.”

Maintaining the accuracy of an alignment system does require some regular maintenance, primarily cleaning and lubing certain areas. System calibration is also important. Calibration can be affected by several things, including extreme weather and humidity. Additionally, a technician can sometimes drop a sensor onto the ground.

“Having the calibration checked at least a couple of times a year is nice,” Hunter’s Bachemin said. “It’s even better when technicians can check it themselves without having to call out a service professional. The actual calibration procedure does require special tools. But a technician can check to make sure the system is calibrated on their own. We have a reverse sensor test that takes five to seven minutes. Anytime a technician drops a sensor or is seeing data that just doesn’t seem right, it’s a good idea to run this test to put their mind at ease.”

McLaughlin said Bee Line’s system allows technicians to perform the actual calibration themselves. “We write our own software, and

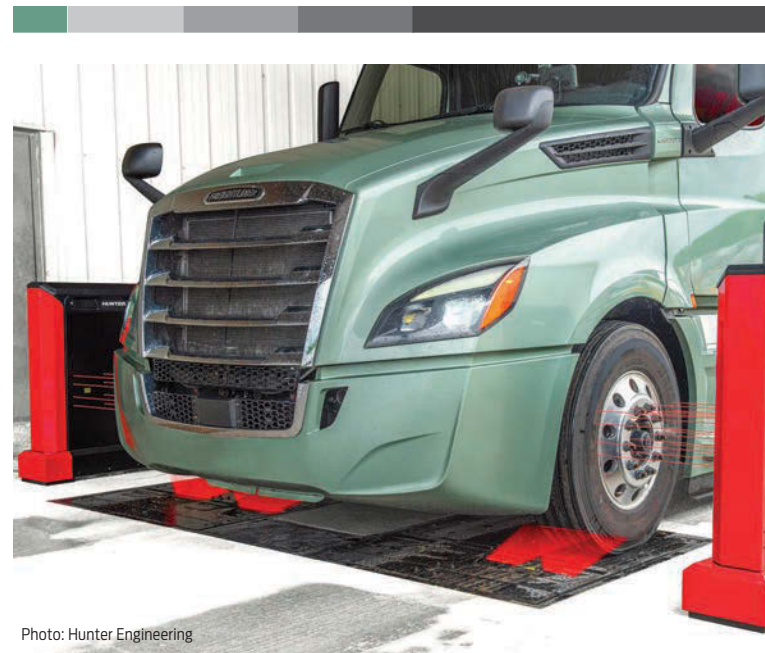


Photo: Hunter Engineering

## Automating alignment checks

Hunter has recently introduced a newer product that can help a fleet stay on top of alignments.

Quick Check Commercial consists of two systems that can be purchased together or individually. As a vehicle drives into a service area, Quick Check Heavy Duty uses cameras and lasers to check alignment on the steering axle and scrub angle on the two rear axles as well as scrub angle on the trailer. The other element of the Quick Check Commercial system is Quick Tread Heavy. It also uses cameras and lasers to measure tread depth on all 18 tires.

“Essentially, the alignment can be checked in the time it takes to drive 100 feet,” said Ralph Bachemin, senior manager of sales development at Hunter Engineering, a provider of alignment, wheel and tire, and ADAS calibration equipment. “The data is reported through an internet-based system. Then the fleet manager can see when a certain vehicle or trailer is in need of some alignment attention.”

calibration is built right into the cabinet itself,” McLaughlin pointed out. “This allows the technician to calibrate in roughly four minutes.”

When a fleet decides to venture into alignment services, Bachemin said it must be an all-in commitment. There is good reason to make that commitment. Technicians can get up to speed and develop some proficiency fairly quickly, especially with a computerized system. Alignments also present a good money-making opportunity.

“In the heavy-duty world, it’s realistic to say that 80% of the vehicles out on the road are in need of an alignment,” Bachemin said. “Checking alignment every 25,000 miles could help a fleet save 2-4% on fuel and up to 20% [on] tire life. That is money to a fleet.”

And for the shop, the money is in providing a valuable service that helps fleets save over the long haul. ■



Photo: ASE

# Acing the ASE certification process

ASE's SVP of communications explains what professional credentials mean for technicians and the shops that employ them.

By Tyler Fussner

**T**he National Institute for Automotive Service Excellence (ASE), which turns 50 this year, started out with only four certification tests for automotive technicians. Since 1972, ASE counts 2.1 million program graduates among its ranks and currently offers 57 tests that range from cars to medium- and heavy-duty commercial vehicles and much more.

To better understand how ASE provides value to the industry, what these certifications mean for the technicians, and how they can boost recruitment and retention for shops, we spoke with Trish Serratore, ASE's SVP of communications.

*[This interview has been edited for clarity and length.]*

**Fleet Maintenance: How did ASE begin and what does the institution look like today?**

**Trish Serratore, ASE:** We were started from an outcry from the public about not being able to get their car fixed appropriately.

It got to the point where there were congressional hearings regarding auto repair, the maliciousness, and people getting ripped off, so the industry decided to come together, from the OEMs and the National Automobile Dealers Association (NADA). They told Congress, 'We can take care of our own, and we've got a plan.' They did a study that showed that there was a mechanism to identify the competency level of individuals via a test, and then awarding a credential based on the outcome of that test and attaching some experience requirement to it.

The original founders of ASE, through that initiative with NADA and the car companies,



» Trish Serratore, SVP of communications, ASE



expanded to the aftermarket, to trucks, to collision, and everybody who had an interest in making sure that the industry took care of its own and recognized the skills and knowledge of our service professionals, as opposed to having a licensure or tax come down.

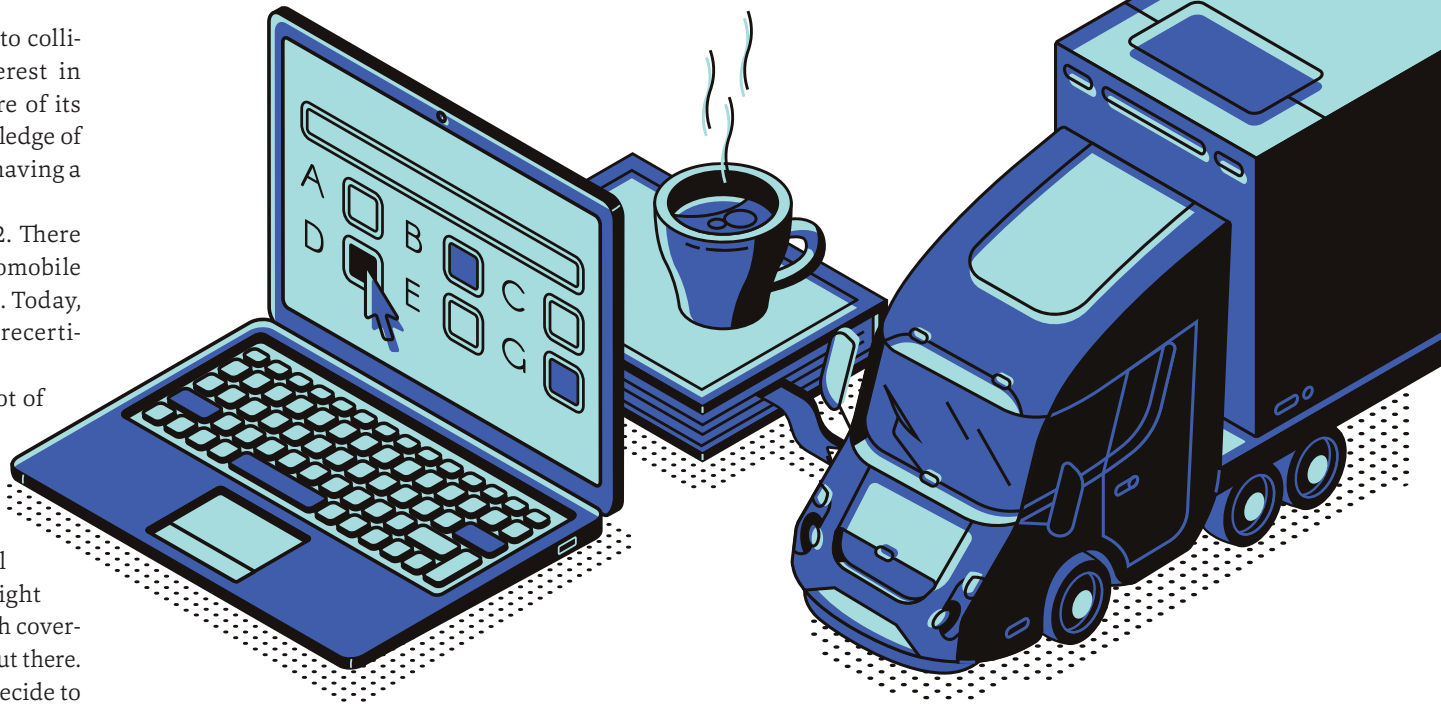
The first tests were delivered in 1972. There were only four, and they were in the automobile category. We took off and ran from there. Today, we're roughly at 57 tests, and we have a recertification test for almost every one.

We give a lot of tests every year to a lot of service professionals, including automotive, medium and heavy truck, collision repair, school bus, and transit bus. We also have parts specialist certification, service consultant, advanced level tests, and the ASE maintenance and light repair certification test. We're pretty much covering every system in almost every vehicle out there.

ASE is industry based. We didn't just decide to make this up because we wanted to; we continuously have input from all of those sectors telling us, 'Hey, here's what's coming down the road. You need to have a test for it,' or 'Let's revise the test you have.' ASE, in conjunction with the industry, has really made it what it is. We're a not-for-profit organization, run by a board of directors and governors from the industry. We're not doing this to make money. We're doing this to support and recognize the professionalism of our industry.

**FM: What is the process for a technician seeking to obtain an ASE certification?**

**TS:** The first thing we suggest is to check out ase.com and hit the navigation button labeled 'Tests.' That will take you to a page that shows you all the available tests that ASE offers.



We have all the information regarding when the tests are given, and we are testing almost year-round. However, we do have deadlines to register. That's just simply to remind you to do something. If you miss it, you can catch up in the next window.

The next thing you do after you've read about the test and understand what might be covered on it and when it might be is to create a myASE account. Then, we will assign you an ID number and your account is created. You then can go in and see where the particular test you want to take is being given near you. We have about 300 Prometric brick-and-mortar, computer-based test centers around the country. You can see where

the test center is, then you can choose the test you want to take, and when you want to take it. You can purchase the test through that account using a credit card. At that point, you would receive a confirmation that we've gotten the information when you want to test and where you want to test. You receive an admission ticket—you will want to hang on to that. You can manage all of those items through the myASE account.

When you show up at the center the day of the test, they're going to ask you to turn out your pockets, and look at your glasses, and put your pen away. There is a little bit of "TSA stuff" going on there. But it's important because we want to be sure that no one is trying to impersonate you

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or take advantage of you and perhaps get your credentials. We want to be sure that all the correct security protocols are done.

The technician sits down and takes the test on the computer. After they are finished, have collected their items, and get to their car, the test results are in their inbox.

In addition to passing an ASE test—any test that you’re taking to be ASE-certified—you must also indicate that you have two years of work experience in the area that you’re going to be certified in. Once you show us that information, we store it for you so that you don’t have to do it again.

The myASE portal allows you to manage your credentials. It’ll tell you when you’re going to expire. All of our tests have a five-year expiration, so it’ll send you an email saying you’re getting ready to expire.

It’s important to note that we don’t sell that information. It is sacrosanct at ASE. The only people who mail against it would be us. We’re very protective of our service professional data.



Photo: ASE

**FM: Are there any differences with the re-certification procedure?**

**TS:** Say you need to recertify in brakes. You click on the brakes test, you pick that test center and when you want to take it, and the whole process works similarly. The only difference is the recertification test is a shorter test, and it has a higher degree of difficulty to the questions. The assumption being you’ve been working as a technician for the last five years, so therefore you’ve seen and have had access to some of the newer technology or changes in service and repair procedures in that five-year time. So, we’ve upped the ante a little bit. Most people, if they’re already certified and they come and take a re-cert test, are probably going to pass.

**FM: Are there any challenges or hurdles for technicians trying to obtain a certification?**

**TS:** The first test you take should always be the one you’re the most comfortable with. Don’t try and do all of them at once. Pick a couple that make sense to you and get them under your belt.

And while we don’t necessarily struggle with them, electrical and electrical systems can be a little more challenging if that’s not an area that you have a lot of experience in.

Then, of course, as you move up the ladder, our advanced-level tests have a much more diagnostic and higher-level technology aspect to them. I wouldn’t recommend that you shoot for those until you’ve completed some of the normal ASE tests, and you’ve had some experience working in the field.

**“...if the shop is going to continue to be successful and put out productive, efficient, and good work, training and certification do need to be integral to that.”**



Trish Serratore, SVP of communications, ASE

**FM: Are there any certifications that stand out that would help an entry-level technician become a well-rounded beginner?**

**TS:** No matter if you’re in auto, truck, or collision, I would recommend taking the G1—Auto Maintenance and Light Repair Certification Test, particularly if you’re coming out of an automotive service technology or a diesel program. That test is very broad but shallow. That one is a really good one to start with across the board.

**FM: How can a busy shop with only a few technicians afford to send a tech to train and certify while work at the shop remains?**

**TS:** First of all, it is so important to continue the training and certification because the second you don’t, you drop behind. Despite the fact that maybe you have good people, if you don’t keep up with training, your shop and your folks are going to fall back. And in the long run, they’re either going to leave or your shop is going to have issues in terms of being able to get

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stuff done right. While we all appreciate that it's a complicated situation because of the technician shortage and the lack of time and energy to be able to do that, it's still important to figure out a way to do that. And I don't necessarily have the answer; I just know that if the shop is going to continue to be successful and put out productive, efficient, and good work, training and certification do need to be integral to that.

So how do we do that? A lot of the vehicle manufacturers and other folks are offering training. Whether there's the ability for the shop to let the individual go on-site, through COVID, we learned that there's a lot of online training, a lot of virtual training out there. Trying to figure out a way to incorporate that into the business—whether it's lunch and learns, or whether the shop can do something to support the individual doing it after work, or whether it's a group session on the weekend—is just really important to make sure that training stays in place.

The certification part is pretty easy. It's a whole lot shorter of a timeframe to get that done in the sense that most of our ASE tests are only an hour long. We have multiple opportunities to test, including early evenings, and some of our test centers have weekend availability. There's a way to fit that in a little bit more easily than if we're looking at a week-long training session.

It is important to maintain both of those things as businesses and as the vehicles that the shops are working on get more complicated. Also, it becomes a selling point for recruitment. If a shop is committed to making sure that the individuals are trained and certified and credentialed, that word gets out. That word gets out to people who are looking to move from a shop that doesn't do that. And particularly when you have folks coming out of automotive service technology programs, where continuous learning was built-in and they were doing that every day, that's an expected part of what they've had in their past. When they walk into a shop and that's not there, they're potentially concerned about that.

They may ask themselves, 'What is my career going to be if I don't see a career path or a training pathway to help me be better?' So, I think they go hand in hand; you're going to retain your people better if you keep them trained and certi-

fied, and you're going to recruit better people if you offer that as a selling point to go into work at your facility.

Our research over the years has shown that individuals who are ASE certified have better retention; they stay in their business, or where they're working, longer. They have better productivity rates, and they're just all-around better employees because they have pride in what they do. And that benefits the business 100%. ■

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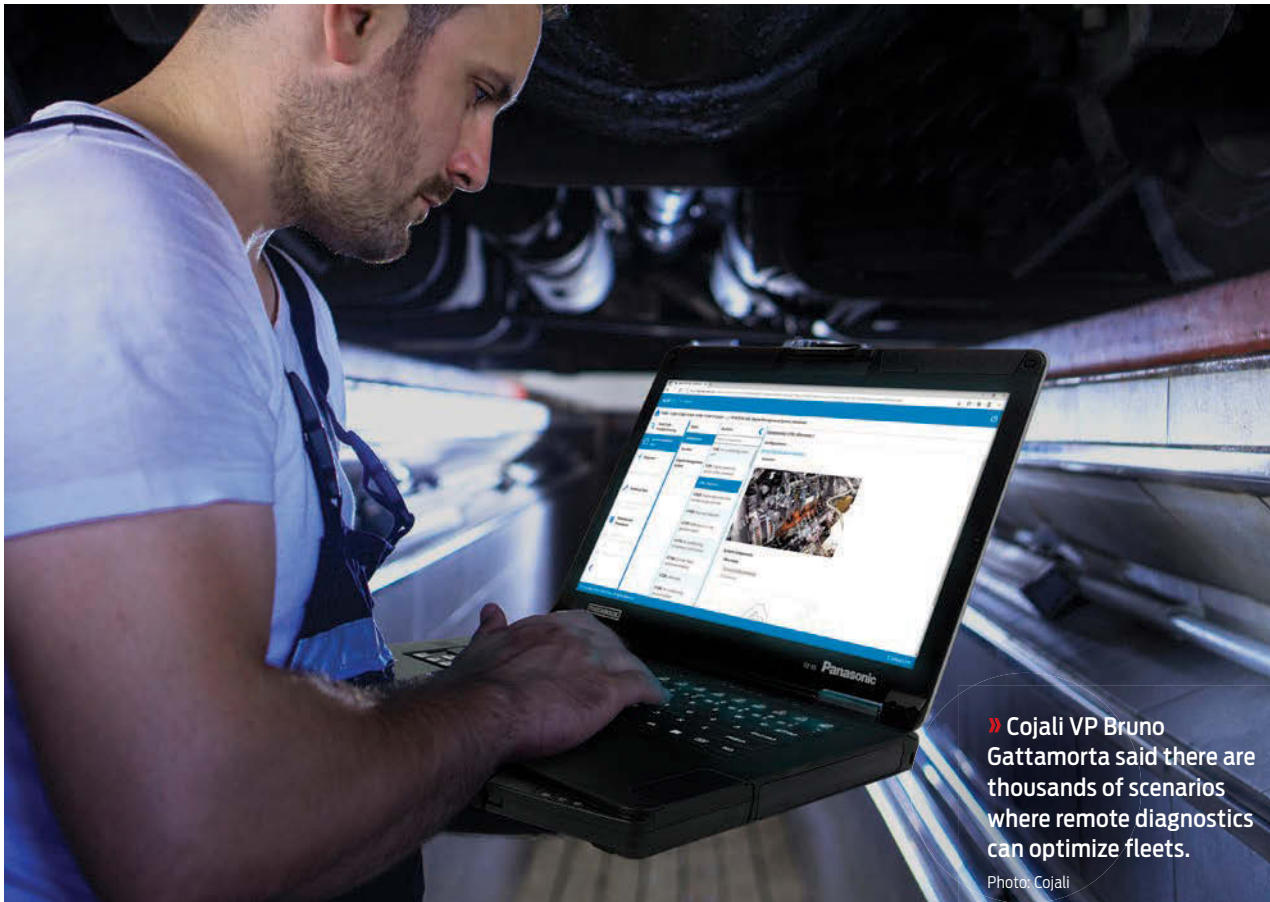
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## Commercial Vehicle



» Cojali VP Bruno Gattamorta said there are thousands of scenarios where remote diagnostics can optimize fleets.

Photo: Cojali

# Remote diagnostics helping shops control downtime

Experts discuss the benefits of remote diagnostics tools.

By Mindy Long

**Downtime costs money, and fleets are looking for quick and efficient ways to diagnose and program equipment to keep vehicles on the road.** Technicians are turning to tools to help improve uptime and lessen the amount of time in the shop, and customers are increasingly requesting remote capabilities. However, it not uncommon for users to confuse the various remote solutions available to fleets and vehicle owners.

“For example, remote diagnostics imply that fault-based diagnostic information is available to remotely monitor or manage the health of the truck. This is vastly different from remote

programming, which is essentially an over-the-air software update,” said Jason Hedman, product manager at Noregon Systems.

## Benefits of remote diagnostics

With remote diagnostics, equipment is continuously connected to an onboard diagnostic tool in the vehicle. “This is what we do with our telematics hardware that is ready to perform remote diagnostic functions,” said Bruno Gattamorta, VP of sales and marketing for Cojali USA Inc. “There are thousands of scenarios where remote diagnostics is the solution to optimize their fleet and their business.”

Cojali built a diagnostics tool, put an antenna on it, and put it on the truck. “We’re connecting directly to the ECM and not the CAN bus. It reads it when it is going down the road,” Gattamorta said, adding that Cojali’s diagnostic tools read fault codes, monitor the inputs and outputs to the ECM, vehicle trip data, and perform DPF regenerations and other bidirectional routines.

Brandon Alexander, marketing manager for Thinkcar, said he has seen increased demand for field diagnostics. “This ability to perform remote diagnostics is very helpful in determin-

ing the severity of the issue and if the vehicle can continue to be driven,” he said.

Having the health status of the vehicle readily available speeds decision making, Gattamorta said. “Additionally, we have developed predictive maintenance based on artificial intelligence models and big data due to the vast [amount] of information collected every minute from the vehicles,” he explained. “We need to give the fleets actionable information to make educated decisions.”

Alexander said demand for remote diagnostics and tools that support remote diagnostics has been steadily increasing, and he expects the trend to accelerate as newer technologies continue to be introduced. “Elements such as ADAS require specialized expertise to perform the calibration process after a repair has been completed,” he said.

Online programming of the numerous modules within vehicles has also added to the demand for remote diagnostics. “More and more technicians are relying on remote services, which have easy access to vehicle manufacturer software and can quickly perform this process,” Alexander said.

However, Gattamorta said remote diagnostic solutions cannot replace off-board diagnostics equipment. “It is a different approach, and in most cases, it is a complementary tool for technicians and fleet managers to be able to read the fault codes and schedule when the vehicle should approach the bay,” he explained.

One of the main limitations on remote diagnostics is the ability to feel how the vehicle is operating and directly manipulate the physical elements of the vehicle, Alexander said. The process is also restricted by the availability of and speed of the internet connection.

## Increased demand for remote programming

Hedman said in-shop diagnostic applications typically cannot remotely program a vehicle component. That requires a separate OE application. However, in-shop OE applications can reprogram a component while connected to the truck, and it is typically considered best practice to do so when in the shop for preventative maintenance or other scheduled services.

Noregon has developed a combination of hardware and software that can remotely adjust parameters, such as max road and cruise speeds and idle shutdown times, but there’s a major difference between parameter adjustments and reflashing or programming a module, Hedman said. “A remote parameter adjustment sends a command to the vehicle to change a value, but a reflash requires the OE to release its new software version to a particular module, such as an engine, for an update,” he said.

Hedman said customers are asking for increased remote programming capabilities, but fleets don’t have many options when choosing an application that remotely programs their trucks that can also be

» The TEXA Navigator TXTs is a multibrand diagnostic interface that connects to a vehicle’s diagnostic socket and communicates to computers via Bluetooth.

Photo: TEXA USA



**“This ability to perform remote diagnostics is very helpful in determining the severity of the issue and if the vehicle can continue to be driven.”**

Brandon Alexander, marketing manager, Thinkcar



» THINKTOOL Master X provides full vehicle scans, reads and clears fault codes, and more.

Photo: Thinkcar

their main tool for remote diagnosis. “Aftermarket providers offer applications like TripVision that remotely monitor all components on their truck for faults, but remote programming must be done through the OE’s tool. These tools are usually also limited to the brands and their components,” he said.

However, diagnostic tools can aid in overall remote programming, said Allison Whitney, a content manager for Autel. “A diagnostic tablet capable of performing an all-system scan of all the available systems on the vehicle is essential to pre-scan and gauge the status of the vehicle prior to determining if a module needs to be flashed or replaced, and to perform a post-scan to ensure the programming efforts have resolved the initial issue and that no issues have been created as a result of programming,” she said.

Autel has rolled out a Remote Export platform for passenger and light-duty vehicle module programming and hopes to expand the service to commercial vehicles, which Whitney said are more complex, toward the end of the

year. Via the platform, technicians can post vehicle and ECU-specific programming tasks directly from one of the Autel Ultra Series tablets. “Experienced expert programmers with subscriptions to OE software can then ‘pick up’ the job and negotiate a price with tech,” Whitney said. “Once confirmed, the expert connects to the vehicle in need of service via a hardware and software configuration that includes the use of J2534 programming devices and the technician’s tablet.”

Autel ensures ECMs are programmed correctly by using the correct OE software and ensuring that the server connection is strong and consistent to enable the software to be installed successfully and completely. “On both ends of the remote programming operation, we highly recommend the connection is hardwired to the internet modem to ensure successful module programming,” Whitney said.

### Remote support for technicians

Technology providers said they’ve also built in remote support options. “We have a remote technician function where our support personnel can remote into our tools and take over the control of the tool from a desktop,” said Victor Rivilla, marketing director for CanDo International. “We can then show users where certain modules and functions can be found in the tool, and if they so choose, we can perform those functions for them.”

Examples include locating the proper path to clear codes and perform a DPF reset and regen, Rivilla explained. “It is more to help novice technicians or new users of our tool,” he said.

Thinkcar’s professional diagnostic tools feature TeamViewer, which allows access to the tool from any desktop or laptop computer. “In addition to viewing recorded/live data and reports, the remote technician can directly control the tool while connected to the vehicle,” Alexander said, adding that for a more comprehensive remote diagnostic solution, Thinkcar designed the X5 and X10. “These tools combine video and voice communication with professional level diagnostics. The remote technician can not only view and control the tool but can also speak to the field technician, hear the vehicle, and visually observe any issues.”

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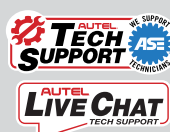
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# TMC

TURNING EXPERIENCE INTO PRACTICE

## AIMING FOR DIAGNOSTIC EXCELLENCE

ON LOCATION IN CLEVELAND

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**TMC MEETINGS**

**CLEVELAND, OHIO**  
 September 25-29, 2022  
 2022 Fall Meeting & National  
 Technician Skills Competitions  
 Huntington Convention Center

**ORLANDO, FLORIDA**  
 February 27-March 2, 2023  
 2023 Annual Meeting &  
 Transportation Technology  
 Exhibition  
 Orange County Conv. Center

# TECHNOLOGY & MAINTENANCE COUNCIL

*TURNING EXPERIENCE INTO PRACTICE*

June 1, 2022

Dear Trucking Industry Professional:

ATA's Technology & Maintenance Council (TMC) invites you to join us for our 2022 Fall Meeting, Sept. 25-29, at the Huntington Convention Center in Cleveland, Ohio. Once again, TMC's Fall Meeting features a strong slate of educational sessions for equipment professionals, as well as a host of activity geared for truck technicians.

The theme of TMC's 2022 Fall Meeting—**Diagnostic Excellence for Today and Tomorrow**—centers around finding answers to the environmental, economic, cybersecurity, and regulatory challenges that face our industry. Many of our educational sessions will address these topics, as explained in our fall meeting promotion.

In addition, TMC is holding North America's 17th annual **National Technician Skills Competitions** Sept. 25-27. The event—**TMCSuperTech 2022**—will feature three separate competitions: our traditional (heavy-duty) track, trailer track, and light/medium vehicle track. The event showcases our industry's commercial vehicle technicians, who will compete for top honors and valuable prizes as they demonstrate their diagnostic abilities through a series of skills stations. Organized by TMC's Technician & Educator Committee (TEC), TMCSuperTech 2022 will this year start Sunday morning and conclude Monday evening. Awards will be given to the top three technicians and skills station winners during Tuesday evening's Awards Banquet. This year also features our seventh Student Technician Skills Competition, **TMCFutureTech 2022**. All meeting attendees are welcome to observe the contests.

The Council is also offering the **TEC Technician Training Fair**. The Fair will take place on Tuesday, Sept. 27. These sessions are being organized by TMC's TEC, and will feature expanded blocks of training on root cause diagnostics, and diagnostics and repair of collision avoidance & advanced driver assistance systems (ADAS). For details, please review the material provided in our meeting brochure, found on TMC's event website: [tmcfall.trucking.org](http://tmcfall.trucking.org). For information, call (703) 838-1763.

On behalf of TMC's Board of Directors, I encourage you to take advantage of this opportunity and join us at TMC's 2022 Fall Meeting. We look forward to seeing you in Cleveland!

Sincerely,

Robert Braswell  
 TMC Executive Director



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» TMC has more than 2,300 members representing nearly every sector of the industry.

Photo:TMC

# How TMC works for you



With experienced professionals from a broad cross-section of fleets, equipment suppliers, educators, and service providers, TMC delivers real-world experience and technical expertise to its members.

By Technology & Maintenance Council Staff

**ATA's Technology & Maintenance Council (TMC)** has a proud history many decades long in helping fleet professionals improve equipment, maintenance practices, and maintenance management. So, how does TMC work for you?

With experienced professionals from a broad cross-section of fleets, equipment suppliers, educators, and service providers, no other industry trade association matches the real-world experience and technical expertise of TMC's membership. As a TMC member, that experience and expertise is at your fingertips.

By providing leadership support and opportunities to collaborate, TMC helps members develop the industry's best practices that address the critical technology and maintenance issues that have the greatest impact on truck fleets. That means reliable answers to the challenges you face every day in this industry.

For more than 60 years, TMC's member-driven Recommended Maintenance and Engineering

Practices have been setting the standards that help trucking companies specify and maintain their fleets more effectively. TMC's industry best practices also provide guidance to manufacturers in the design of their equipment. That means the Council's institutional knowledge on how to best specify and maintain equipment is at your disposal 24/7.

TMC has grown into an organization of more than 2,300 members with representatives from virtually every sector of the industry, including fleets, owner/operators, manufacturers, suppliers, service providers, educators, press, association representatives, and technicians. That means we have the largest, most diverse group of maintenance and equipment experts available to help you answer whatever technical challenges your company might face.

TMC's technical information is developed by consensus and is non-commercial. TMC members work hard to ensure that the solutions the Council

provides are technically sound and not motivated by commercial bias. This means you can trust what TMC says when using our information to improve your operation.

TMC succeeds because of its volunteer membership. Without volunteers, the Council simply could not function. This means your input is not only wanted, but it is also essential. You have numerous opportunities to contribute as well as benefit from TMC's rich tradition of technical excellence. This includes opportunities to chair committees, access study groups, task forces, and other industry groups that support the Council's mission.

TMC delivers a host of tangible member benefits that include publications, periodicals, technical resources, access to technical meetings and events, and other services designed to make you better at your job in commercial vehicle specification and maintenance. That means there are lots of tools in the TMC toolbox that members can leverage to get things done the right way.

TMC's professional staff serves as a conduit to all of the services and opportunities that await you as Council members. That means you can consider TMC staff as an extension of your own team, helping you find solutions and make connections.

TMC members enjoy substantial discounts on meetings, products, and other services. That means you save even more as a TMC member when you come to meetings, buy products, or utilize TMC services.

Now that we've discussed a few of the many ways TMC works for you, let's examine some specifics that pertain to your benefits.

## Tips to make the most of attending a TMC meeting

TMC has two General Meetings each year:

- An Annual Meeting & Transportation Technology Exhibition in February or March
- A Fall Meeting and National Technician Skills Competitions in September or October

These are the largest events TMC holds, at which full Council business takes place over four or five days, including meetings of task forces, study groups, committees, exhibitions, competitions, and more. Usually, these are in-person events; however, under certain circumstances, they may be completely virtual or hybrid (in-person and virtual) events.

TMC also has a Summer Conference, typically held in June. This is a smaller event, typically only one or two days in length, which can be in-person, virtual, or hybrid. There are also webinars and other online events that may be held during the course of the year for educational or Council business purposes.

Getting to a TMC General Meeting in person is a big commitment of your time and your company's money. To make the most of this, take advantage of these hints provided by long-time TMC attendees:

- **Participate:** Every TMC leader will tell you he or she gets more out of TMC by being an active participant. Pick at least one Study Group and volunteer your services to the Study Group Chairman. That's how every TMC leader gets started. If you have five or less years of experience in





the industry, consider TMC's Leaders of Tomorrow Program, which trains individuals to assume leadership roles within the Council.

• **Develop contacts:** Talk to Full and Associate Members. If you're a first-timer, start by visiting the people at TMC's Welcome & Help Desk. They are there to help you get started on the right foot and can match you with a TMC mentor to help you best get involved and maximize your investment in TMC. There is also ample opportunity to make contacts during coffee breaks, between meetings, and at social functions. The person sitting next to you at lunch may tell you something that can save your company thousands of dollars. Everyone at TMC shares your concerns, and sometimes your problems. These are people you can work with later via phone, text, email, or TMC's social media and collaborative work platform TMC Connect.

• **Arrive on time:** Always try to arrive at a TMC General Meeting for the first day's business. That's when TMC's Task Force Meetings, Fleet Talk, Associates Meeting, Town Meeting, and Fleet Operators' Forum are held. These sessions should not be missed. Try to arrive the day before if you are working with a Task Force. That will give you some time to prepare. Once a TMC General Meeting gets underway, there isn't time for much else.

• **Come prepared:** Bring your specific maintenance and/or equipment problems with you for discussion at the Fleet Operators' Forum. If it does not require a manufacturer solution, fellow maintenance managers have probably had—and solved—the same problem. If it hasn't been solved, TMC will help you solve it. A link to an online form is sent with your registration confirmation. Fill it out before coming to the meeting while the problems are fresh in your mind. Also, use the pre-meeting information about Technical Sessions and Study Group meetings. If the presentation is on paints and paint shop operations, talk to your paint shop to find out what kinds of problems they have. TMC attracts the best manufacturer representatives in the industry. They will answer your questions authoritatively. A small investment of preparation before coming to a TMC meeting pays big dividends.

• **Ask questions:** Raise questions during Technical Sessions and Study Group meetings. This generates worthwhile discussion and gets everyone more involved. If you don't understand something about TMC, grab an Officer (they're the ones wearing the red blazers). They're happy to tell you everything you need to know about TMC and how to make it work for you. After all, it's your organization. If it's not working for you, do something about it.

• **Take notes:** TMC's Technical Journal, The Trailblazer, covers the official proceedings of the meetings, but you shouldn't depend on that to cover every last detail. Everything you hear at a TMC General Meeting will probably interest someone in your company even if it doesn't interest you directly. Take good notes, and give them to the people who work for you and the people you work for.

• **See something in the area:** TMC meetings happen all over the country. If you're a Full Member and we're meeting in Seattle, for instance, try to visit the Paccar proving grounds. This will enhance your job effectiveness and provide your company with excellent contacts. Do something like that enough times and you'll soon have a broad industry perspective, making you even more valuable on the job. If you're an Associate Member, try to see a fleet operation.

#### A final word

An organization is only as good as its least-active member. You have to participate in TMC activities to make it work. This is your Council. Work with it, and you'll be a leader in your industry.

"A wise man will make more opportunities than he finds," said philosopher Francis Bacon. TMC is opportunity waiting to be made.

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# Smart trailer tech proves hot investment for cold chain logistics providers

TMC study analyzes refrigerated trailer carriers' perceptions of smart trailer technology benefits and challenges.



By Robert M. Braswell

Paying attention to the details in cold chain logistics can save customers and carriers cold hard cash—especially for those companies that are investing in the latest technological advancements. That's why ATA's Technology & Maintenance Council (TMC) has turned its sights onto the study of refrigerated trailer operations.

TMC has recently issued a new information report entitled "North American Refrigerated Trailer Survey Report: Next Generation Trailer Expectations." Developed in cooperation with eSMARTT, a collaboration between Business Accelerants and WillGo Transportation Consulting LLC, the information report benchmarks the operations of 33 fleets representing an estimated 20% of all refrigerated trailers and domestic containers produced during the last seven years in North America, and about 12% of all reefer units in North American operation overall.

The latest report builds on the success of the collaboration's first effort in June 2021, which explored the use and adoption of intelligence products and services across the trucking industry with an examination of adoption of the trailer rental and lease fleet sector. The previous report, *TMC IR-2021-1: North American Trailer Rental/Lease Company Survey Report—Next Generation Trailer Expectations*, an analysis of smart trailer technologies currently employed by North American trailer rental/lease companies, is available at [tmc.trucking.org/blog/future-truck-information-reports](http://tmc.trucking.org/blog/future-truck-information-reports).

TMC's June 2021 study identified refrigerated carriers as early adopters of technology driven by the need to track temperatures and the high cost of failures. This new study provides extensive data on typical trailer configurations, refrigerated trailer life, transportation refrigeration unit expectations, challenges for technology, return on investment decision criteria, and more.

The initial study showed that refrigerated fleets were more likely than other carrier types to adopt new electronics technology on the trailer. For instance, whereas the data at that time suggested less than 25% of trailers had trailer-tracking electronics, 65% of refrigerated trailers had the same technology, and some with more for controlling the transportation refrigeration unit.

**Why conduct an in-depth survey of refrigerated fleets?**

"In short, it's because we expect as much change in technology for the trailer in the next 30 years as we've seen in the tractor in the last 30 years," said co-principal investigator Paul Menig, CEO of Business Accelerants. "The effort started in early 2019 with a panel discussion at one of our many industry trade association meetings. This led to the formation of two task forces at TMC to look at the electrical architecture needed in the future on the trailer and how the connection to the tractor will need to change. Twenty-five years ago, I was involved in discussions for the trailer connection as the trailer ABS regulation came into effect in 2001. So, to start this effort, we did a short survey to find out where fleets are today with using one and two connectors. As expected, the percentage of trailers with more than a single connector has grown considerably." Menig has more than 40 years of engineering experience in truck manufacturing during his tenures at Eaton Transmission and Daimler Truck North America.

## Why conduct an in-depth survey of refrigerated fleets?

From this emerged the rationale to launch an analysis of smart trailer technologies currently employed by North American trailer rental/lease companies. Placing a laser-focus on the refrigerated trailer sector has proven useful at learning important insights on the early adoption of smart trailer technology.

**What drives the refrigerated carriers to invest in technology?**

"It's probably not a surprise that it is regulations," said Menig. "The key regulations are food safety rules, specifically the Food Safety and

Modernization Act. Already this year, the FDA has issued 44 recalls. The second most important rule is the California Air Resources Board (CARB) rules for transportation refrigeration units. Sixty-nine percent of the trailers covered by the survey are already CARB compliant. Given the life of a trailer, the carriers wanted to get a head start on this regulation."

This latest TMC information report provides a wealth of information for fleets and suppliers to help them benchmark specifications and practices over a wide range of areas.

"I believe the value they will gain from benchmarking best practices and specifications will be worth the initial cost of the report and time invested in studying it," said co-principal investigator Charles Willmott, WillGo Transportation Consulting. Willmott has extensive experience in the trailer business with leadership positions at the Strick Companies, XTRA Corporation, and Solomon Tri-Modal.

The report reveals valuable lessons with respect to carrier perceptions of smart trailer technology benefits, challenges, opportunities, and disappointments. For example, survey data indicates carriers hold a high expectation of receiving tangible improvement from smart products in numerous areas of operational efficiency; however, their views on the life cycle and maintenance of smart products or the proper integration of smart data with the carrier TMS is more reserved. Some of the biggest disappointments identified with smart technology include equipment failures, battery life, and issues with replacement parts.

The report dives into a number of important topics including how smart trailer data is used, what influences smart technology investment, how fleets establish ROI metrics, and carriers' future plans for smart trailer technology.

TMC thanks several companies that helped create the survey, reaching out to fleets and getting information out to the industry.

**• Level 1 Outreach Sponsors:** Clariance Technologies and Wabash recognized early on the importance of the survey and helped with reviewing the survey questions.

**• Level 2 Outreach Sponsors:** Peterson Manufacturing, Cal/Amp, and Orbcomm helped get the word out to the industry through an April 27 webinar, during which the report was released.

A recording of TMC's introductory webinar on the report is available through TMC. To purchase the full version of the information report, call TMC at (703) 838-1763 or email [tmc@trucking.org](mailto:tmc@trucking.org).



**Robert M. Braswell**  
EXECUTIVE DIRECTOR OF THE  
TECHNOLOGY & MAINTENANCE  
COUNCIL (TMC)

Robert M. Braswell is the Executive Director of the Technology & Maintenance Council (TMC), North America's premier technical society

for truck equipment technology and maintenance professionals. TMC is a technical council of American Trucking Associations (ATA), the largest national trade association for the trucking industry. Braswell has served TMC since 1992. He can be heard each Tuesday at 10 AM EST/9 AM CST on Tech Talk with TMC on SiriusXM Radio's The Dave Nemo Show, channel 146.



Photo: TMC

## National Technician Skills Competitions

List of skills stations (subject to change)

### SUNDAY

#### Heavy-Duty Day 1 Track

- HD1 ASE written test
- HD2 RP manual
- HD3 Wiring diagrams
- HD4 Lubricants & fuels
- HD5 Coolants & DEF
- HD6 Drivebelts
- HD7 Electrical circuits
- HD8 Fasteners
- HD9 Precision measuring
- HD10 Service information
- HD11 Cybersecurity
- HD12 Trailer lighting

### MONDAY

#### Heavy-Duty Day 2 Track

- HD15 Brakes
- HD16 Wheel end
- HD17 Fifth wheel
- HD18 Liftgates
- HD19 HVAC
- HD20 Tire & wheel
- HD21 Tractor PMI
- HD22 Starting & charging
- HD23 Steering & suspension

#### Trailer Track

- T1 ASE written test
- T2 Drivebelts & hydraulics
- T3 Trailer wheel end
- T4 Precision measuring
- T5 Trailer fasteners
- T6 Trailer PMI
- T7 Trailer alignment
- T8 Roll-up doors
- T9 Trailer lighting
- T10 LMV/Trailer liftgates
- T11 Central tire inflation
- T12 Trailer electrical corrosion
- T13 Trailer ABS
- T14 Holding pen

#### Light/Medium Truck Track

- LM1 ASE written test
- LM2 Fasteners
- LM3 Wiring diagrams
- LM4 RP manuals
- LM5 Coolants & DEF
- LM6 Precision measuring
- LM7 Electrical circuits
- LM8 Lubricants & fuels
- LM9 Wheel end
- LM10 EVAP systems
- LM11 LMV preventive maintenance
- LM12 LMV/Trailer liftgates
- LM13 LMV aftertreatment
- LM14 Holding pen

#### Future Tech 2022 Track

- FT1 ASE written test
- FT2 Fasteners
- FT3 RP manuals
- FT4 Wiring diagrams
- FT5 PMI
- FT6 Electrical circuits
- FT7 Lubricants & fuels
- FT8 Precision measuring
- FT9 Coolants & DEF
- FT10 Trailer lighting
- FT11 Trailer wheel end
- FT12 Aftertreatment
- FT13 Hydraulics & drivebelts
- FT14 Holding pen

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- 2006 — Tyson Sontag
- 2007 — Bryan Lewis
- 2008 — Bryan Lewis
- 2009 — Christopher Tate
- 2010 — Jeff Schlecht
- 2011 — Jeff Schlecht
- 2012 — Chris Barnett
- 2013 — Mark McLean, Jr.
- 2014 — Mark McLean, Jr.
- 2015 — Eric Vos
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- 2021 — Christopher Tate



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**Educational sessions**

**→ TECHNICAL SESSIONS**

**CAN Bus Troubleshooting: We Can Fix It!**

**Technical Session #1  
Wednesday, Sept. 28  
8 – 9:30 AM**

With today's commercial vehicles becoming more complex and vertically integrated, technicians are finding themselves more frequently having to diagnose, troubleshoot, and repair vehicle networks.

The most prevalent in use today is the Controller Area Network, or CAN bus. CAN allows on-vehicle Electronic Control Modules (ECM) to "talk" to each other. It's been around for 30 years and is now a legislated element of automotive (OBD-II) and commercial vehicle diagnostics (J1939). The number of CAN buses on vehicles are increasing as well as the necessity to teach technicians how to troubleshoot and repair these networks.

During this session, we will do a basic introduction to CAN and the next generation of CAN called CAN Flexible Data Rate (CAN FD). There will be a live demonstration showing how to use free TMC RP 1210 and SAE J2534-compliant applications to perform initial triage of the vehicle network. We'll also provide a live demonstration on how to do

physical troubleshooting of a CAN bus using a digital multimeter.

Attend this session and see how the information provided by the CAN bus and simple Volt-Ohm measurements can make vehicle databus diagnostics easier and less troublesome.

**EPA / CARB Emissions and Greenhouse Gas: Changes for 2024 and Beyond**

**Technical Session #2  
Thursday, Sept. 29  
7:45 – 9:15 AM**

When it comes to emissions and greenhouse gas (GHG) regulations, change is the only certain constant, and the next round of updates to both federal and state emissions requirements are sure to be even more challenging than those fleet managers have already experienced.

Beginning in 2024, the California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (EPA) will no longer share the same nitrogen oxide (NOx) regulations for heavy-duty, diesel-powered on-highway commercial vehicles. This divergence will add complexity to an already challenging mix of regulations governing traditionally powered vehicles.

Attend this technical session as our expert panel will present what

changes are taking place for NOx, particulate matter (PM), and GHG beginning in engine model year 2024. This technical session will also cover pertinent topics on changes to product useful life, emissions warranty, and clean idle labels. We will also investigate which states have publicly committed to—or are intending to follow—CARB's new regulations. We'll also provide an overview of what's coming in the next regulatory transition for 2027 and beyond.

If your fleet relies on conventional diesel-powered equipment, this is a session you won't want to miss.

**→ STUDY GROUP SESSIONS**

**How to Spec Today's Alternators for Your Fleet's Application**

**S.1 Electrical Study Group  
Wednesday, Sept. 28  
9:45 – 11:15 AM**

When it comes to electrical power demand, today's commercial vehicles are ravenous.

Today's alternators are expected to supply 200-300 amps or more of direct current to power the wide range of electrical features that equipment users now demand. Is your alternator specification keeping up with the times?

Equipment users generally agree that many current alternator terminal sizes, especially the 1/4" ground terminal, are insufficient to handle the mechanical mounting and connection requirements of larger cables. There also exists strong preference for different output and ground terminal sizes to help prevent miswiring to the alternator.

Attend this session as our panel of experts delves into what fleet managers need to know to properly spec alternators for the latest generation of commercial vehicles. We'll cover how to spec for anticipated vehicle loads, mounting considerations, pulley diameters and ratios, and alternator output speeds and ratings.

The importance of industry standardization will also be addressed. Various TMC and other industry recommended practices will be covered, including those pertaining to drive standardization, mounting recommendations, and terminal standardization.

**Root Cause Failure Analysis for Tire and Wheel Maintenance Issues**

**S.2 Tire & Wheel Study Group  
Wednesday, Sept. 28  
9:45 – 11:15 AM**

Tires and wheels represent some of the biggest costs a fleet has when it comes to vehicle maintenance. Getting a handle on tire and wheel expenses is critical to proper cost control for today's commercial vehicle operations.

However, yesterday's methods for complaint, cause, and correction may not be sufficient for today's operations. Relying on parts swapping when issues arise represents little more than reactive maintenance.

TMC's S.2 Tire and Wheel Study Group has produced the best collection of condition analysis, specification, and maintenance information in the trucking industry. Couple to that the latest tools for root cause failure analysis and you have the core elements of a world-class tire and wheel fleet maintenance program.

Attend this session and learn from our panel of experts how best to solve complaint, cause, and correction issues when it comes to tire and wheel maintenance in commercial vehicle operations. If you can only attend one session during TMC's 2022 Fall Meeting, this one will likely justify your week's investment.



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## Spec'ing and Technician Training Guidelines for Advanced Driver Assistance Systems (ADAS)

**S.5 Fleet Maintenance Management Study Group**  
**Thursday, Sept. 29**  
**9:30 – 11 AM**

Advances in vehicle safety technology—called Advanced Driver Assistance Systems (ADAS)—can help reduce the number of vehicle crashes, injuries, and deaths. Many of today's vehicles can be specified with ADAS technologies that monitor driver input and the environment around the vehicle. These ADAS-equipped vehicles may also automatically brake or steer the vehicle if the driver does not act to avoid the collision.

Now that fleets and owner-operators have become more aware of the capabilities of these systems, guidelines for specifying and maintaining ADAS are gaining interest. TMC is in the midst of developing several recommended practices on the subject as part of its role in the Federal Motor Carrier Safety Administration's (FMCSA) Tech-Celerate Now Program.

During this session, panelists will describe the work being done within TMC on developing RPs for spec'ing and technician training of ADAS. Information will be shared from the fleet, vehicle manufacturer, component supplier, and service dealer perspective.

If your operation is considering utilizing ADAS technologies in your next round of vehicle acquisitions, this session is a must.

## Effects of Downsampling on Today's Braking Systems

**S.6 Chassis & Brake Systems Study Group**  
**Wednesday, Sept. 28**  
**1:15 – 2:45 PM**

New federal fuel economy and greenhouse gas standards for medium-duty and heavy-duty vehicles have prompted truck manufacturers to turn to "downsampling" to squeeze more miles out of every gallon.

Downsampling reduces engine speed to save fuel. For every 100 rpm reduction in engine speed (at 65 mph), as much as 1.5% fuel is saved. Instead of cruising at around 1,450 rpm as did older models, today's trucks operate consistently in a more efficient range between 1,100 and 1,200 rpm—or lower—while still satisfying the same horsepower demand.

There are some drawbacks to downsampling, however. Faster axle ratios and reduced engine speed puts significantly higher torque stresses on the drivetrain—by as much as 30%. This means greater stress and reduced life expectancy of the axle, driveshaft, inter-axle shaft, and U-joints.

Does downsampling affect today's drum and disc brake systems? If downsampling results in less engine retardation, the foundation brakes may take on more braking responsibility and that could lead to accelerated, albeit normal, wear. Other issues may center around changing maintenance schedules—even increased driver-perceived noises since downsped trucks are generally quieter.

Attend this session and learn how downsampling may be impacting your vehicles' brakes and what you need to do about it.

**Talking Straight With Your Trailer: Direct-to-Trailer Diagnostic Communication**  
**S.7 Trailers, Bodies & Material Handling Study Group**  
**Thursday, Sept. 29**  
**9:30 – 11 AM**

For years, trailers were considered to be rather primitive when it came to diagnostic capabilities. But now, a number of manufac-

turers and diagnostic adapter providers are offering solutions that allow for direct-to-trailer diagnostic communication.

One diagnostic tool provider, for example, offers a new trailer adapter that allows analysis of trailer ABS issues no matter what ABS brand or software is used. There are also devices that allow for a direct-to-trailer connection with a battery/secondary power source that energizes the trailer's seven-pin connector for diagnostics independent of a tractor. There are also a host of telematics for the emerging generation of smart trailer systems that fleets can leverage for direct diagnostic information.

Is your operation taking full advantage of these cutting-edge tools that can simplify trailer maintenance? Attend this session and learn how your maintenance operation can start talking "straight" to its trailers.

**Critical Maintenance Considerations for Electric Vehicles (EVs) and EV Support Equipment**  
**S.11 Sustainability & Environmental Technologies Study Group**  
**Wednesday, Sept. 28**  
**1:15 – 2:45 PM**

Electric vehicles are gaining a great deal of attention in the commer-

cial vehicle sector because of the potential advantages they offer for improved energy efficiency, reduced emissions, and national energy security. EV adoption, however, does present fleet managers a number of challenges, not the least of which is how to maintain EVs as compared to conventionally powered trucks and tractors.

The spectrum of electric vehicle solutions for commercial applications covers a wide range, depending on the vocation and vehicle class. Class 3-6 applications may use hybrid electric, plug-in hybrid electric, or all-electric (battery-electric) systems. Larger applications may be all-electric or hydrogen-hybrid electric.

We're all familiar with preventive maintenance schedules and specifications for conventional vehicles, but how does it work with EVs?

TMC is working on many of these issues across more than a dozen Council Task Forces. We're developing, for example, new tire, lubricant, leak detection, and coolant maintenance guidelines for this new type of commercial vehicle. Attend this session and learn all about the various considerations fleet managers must know regarding EVs and EV support equipment. It's not as straightforward as you think.

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# Equipment coding for the future

Equipment maintenance has seen a lot of changes over the years, but VMRS is still the tried-and-true method of tracking maintenance repairs.

By Jack Poster

**Vehicle Maintenance Reporting Standards** (VMRS) codes continually reflect the many changes that occur in equipment maintenance. ATA's Technology & Maintenance Council (TMC) works directly with vehicle manufacturers, parts manufacturers, fleets, and software firms when adding new codes to the VMRS standard—that's what keeps VMRS relevant and vital for all users. VMRS is a structured coding system that provides the discipline to operate in today's point-and-click world.

Since 1970, the purpose of VMRS has been to provide a vital communication link between maintenance personnel, computers, and management. It establishes a "universal" language for fleets, original equipment manufacturers (OEMs), industry suppliers, computers, and those people whose responsibility it is to specify, purchase, operate, and maintain equipment.

Developed by and for equipment users under the auspices of the American Trucking Associations, VMRS provides the discipline necessary for industry segments to communicate with each other. VMRS is the shorthand of maintenance reporting, eliminating the need for extensive written communications with all the inherent problems of miscommunication normally associated with the written word.



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TMC continually includes new VMRS codes for updated and emerging technologies. In 2002, collision avoidance system codes were added. In 2006, lane departure and exhaust aftertreatment codes were added to the VMRS universe.

Many times, new codes are added prior to the release of technology. For example, Selective Catalytic Reduction System (SCR) codes were added in 2008, two years prior to being mandated. TMC worked with several OEMs to develop the codes and have them ready for general use.

In recent months, lane keep assist and other Advanced Driver Assistance System (ADAS)

codes were added to VMRS, as well as codes for a fifth wheel electronic sensor coupling system. VMRS codes were also added to reflect the newer antifreeze compounds found in today's equipment. These include organic acid technology (OAT), nitrite-free OAT, and hybrid OAT types of coolant.

There are also codes for newer aerodynamic devices such as wheel covers and splash guards, as well as for trailer rear tail extender assemblies and trailer walking floor assemblies.

TMC is currently collaborating with several manufacturers on developing VMRS codes for electric vehicle (EV) components. To date, there are more than 380 EV codes in the VMRS Code Key 33 Component Code database. And that number is increasing on a regular basis. All EV codes will contain "Electric Vehicle" in the part description, making it easier to differentiate EV parts from traditional vehicle components.

It's vital to have the manufacturing community's support and assistance when entering codes for new and emerging technologies since adding new VMRS codes is truly a collaborative effort. As new technologies are introduced, TMC will continue to make sure that VMRS contains the codes needed for implementation and general use by all concerned.

There's more to VMRS than the nine-digit Component Code; there are also Code Keys for describing asset types, labor functions, and part failures, among others. A new Code Key was recently added for recording tire position using four data points: axle type, axle sequence, left/right position, and inner/outer/center orientation. The new Code Key request came from key industry stakeholders who decided that implementing VMRS is an important part of their business model.

There have been a multitude of changes in the trucking and transportation industry in the past fifty years, and VMRS has been there as an important part of equipment maintenance. Fleet managers have always relied on VMRS to provide them with the best method for producing maintenance reports. It is imperative that VMRS contains codes for the latest technologies.

Equipment maintenance has seen a lot of changes over the years, but VMRS is still the tried-and-true method of tracking maintenance repairs. VMRS will continue to chart new horizons as equipment maintenance continues to evolve. VMRS will be there for future generations as it has for the past 50 years.



## TMC Recommended Practices enter appeal period

The Technology & Maintenance Council (TMC) of the American Trucking Associations is proposing adoption of the following Recommended Practices.

- Proposed RP 110E(T) Low-Tension Cable for Heavy-Duty Truck-Tractor Wiring Systems—This RP addresses requirements covering up to 60 volt direct current (Vdc) low-voltage electrical cable for heavy-duty tractor and trailer applications.
- Proposed RP 166A(T) Low-Voltage Primary Electrical Cable Specification for Heavy-Duty Electrical Repair—This RP defines the proper terminology and specifications for a universal, low-voltage (maximum 60 volts) primary wiring cable that meets the performance requirements needed for servicing heavy-duty truck, tractor, or trailer electrical systems.
- Proposed RP 177A(T), Solar Power for Commercial Vehicles—This RP offers information on solar power components used in multi-voltage systems for commercial vehicles.
- Proposed RP 410C(T), Seat Belt Assembly, Inspection, and Maintenance Procedures—This RP provides a formal procedure for inspecting and maintaining vehicle seat belt assemblies in cab and sleeper berth applications.
- Proposed RP 417B(T), Selection Guidelines for Pneumatic Tractor-Trailer Hookup Lines—This RP offers selection guidelines for coiled and straight pneumatic tractor-to-trailer hookup lines used on Class 7-8 combination vehicles.
- Proposed RP 435B(T), Installation and Inspection Guidelines for Pneumatic and Electrical Tractor-Trailer Hookup Lines—This RP offers installation and inspection guidelines for coiled and straight pneumatic tractor-to-trailer hookup lines used on Class 7-8 combination vehicles.
- Proposed RP 436C(T), Air Conditioning System Performance Requirements for Truck Cabs With and Without Sleepers—This RP helps equipment users select an air conditioning (A/C) system that best suits fleet operational needs by means of a standardized test used to compare factory-installed systems.
- Proposed RP 442B(T), Standardization of Speedometer and Tachometer Signals—This RP establishes a standard vehicle speed signal and frequency and a standard engine speed signal and frequency that can be used by any electronic device on a heavy-duty vehicle requiring the knowledge of ground speed/distance or engine revolution information.
- Proposed RP 443A(T), In-Cab Cleaning and Deodorizing Guidelines—This RP offers guidelines for the in-cab cleaning and deodorizing of commercial vehicles.
- Proposed RP 444A(T), Placement and Structural Requirements for Heavy Truck Navigation/Communication Devices—This RP provides guidance to vehicle manufacturers in the mounting provisions for installation of mobile communications systems such as Electronic Logging Devices (ELDs) and navigation devices on medium- and heavy-duty trucks.
- Proposed RP 503C(T), Standardization of Training Aid Materials—This RP establishes guidelines for the development of audio-visual/multimedia training programs for the trucking industry.
- Proposed RP 520A(T), A/C System Refrigerant Flushing—This RP covers flushing material, equipment, and procedures for flushing vehicle cab A/C systems in service, repair, or retrofit operations.
- Proposed RP 528A(T), Technician Certification Program Guidelines—This RP offers guidelines for planning, designing, and implementing a technician development program that encourages professional development through technical certification.
- Proposed RP 531A(T), Parts Inventory Management Guidelines—This RP helps fleet management better manage parts inventory to maximize vehicle utilization and part return on investment.
- Proposed RP 536A(T), Guidelines for Technician Exposure to Road Deicing Chemicals—The purpose of this RP is to offer protective guidelines to technicians who may come in contact with road deicing chemicals during the course of vehicle maintenance.
- Proposed RP 539A(T), Workflow Practices and Metrics for Unscheduled Repair Events—The purpose of this RP is to establish standard workflow procedures and practices for addressing unscheduled repair events involving commercial vehicles.
- Proposed RP 546(T), Criteria for Commercial Vehicle Technician Apprenticeship Programs—This RP offers guidelines for developing an apprenticeship program for the development of medium- and heavy-duty commercial vehicle technicians.
- Proposed RP 547(T), Guidelines for Advanced Driver Assistance System (ADAS) Nomenclature—This RP provides a glossary of terms for Advanced Driver Assistance System (ADAS) technologies available for installation in commercial vehicles.
- Proposed RP 624C(T), Lubricant Fundamentals—This RP describes different types of lubricants used in commercial vehicles.
- Proposed RP 646A(T), Driveline Fastener Preventive Maintenance—This RP provides guidelines for driveline fastener preventive maintenance.
- Proposed RP 648A(T), Troubleshooting Ride Complaints—This RP offers procedures to identify the "root cause(s)" of vehicle ride complaints and guidelines to help address these issues.
- Proposed RP 652A(T), Service and Inspection of Air Disc Brakes—This RP offers guidelines for the service and inspection of air disc brakes used on medium- and heavy-duty vehicles.
- Proposed RP 664(T), Wheel End Thermal Event Mitigation—This RP helps fleet personnel prevent wheel end thermal events—i.e., fires—from occurring during commercial vehicle operation.
- Proposed RP 805A(T), Parts Vendor Performance Evaluation—This RP helps fleet maintenance managers choose vehicle parts vendors in a fair and impartial manner.
- Proposed RP 806B(T), Service Vendor Performance Evaluation—This RP assists fleets in making objective decisions when choosing among competing vendors.
- Proposed RP 809A(T), Guidelines for Electronic Repair Orders—This RP provides guidelines for standardizing the transmission and capture of electronic repair order transactions.
- Proposed RP 1208E(T), PC Selection Guidelines for Service Tool Applications—This RP addresses the acquisition and use of off-board personal computers (PCs) for vehicle diagnosis, repair, and maintenance management.
- Proposed RP 1217B(T), Tractor-Trailer Interface Guidelines—This RP defines the minimum requirements for a new and optional replacement/supplemental connector for the SAE J560 connector.
- Proposed RP 1221A(T), Guidelines for Lane Departure Warning Systems—This RP provides guidelines for the selection and specification of a lane departure warning system (LDWS) used on Class 7-8 combination vehicles.

Any party may submit a written request of appeal of a proposed Recommended Practice (RP). However, the request must be received by the Technology & Maintenance Council within 90 days of publication of this notice. If no appeals are made at the end of the 90 days, the RP will be formally adopted by TMC. (The suffix "T" indicates an RP is proposed.) With the printing of this issue, the following RPs are now open to the 90-day appeal process. Written appeals can be sent to TMC Technical Director Jack Legler, 80 M Street, SE, Suite 800, Washington, DC 20003. Phone: (703) 838-7956; jlegler@trucking.org.

## TMC Task Forces to meet September 27, 2022, in Cleveland, Ohio

The following Task Forces of the Technology & Maintenance Council (TMC) will meet in open session on September 27 at the Huntington Convention Center of Cleveland in Cleveland, Ohio. Task Force meetings are scheduled for approximately one hour and will take place between 8 AM and 4 PM Eastern. For information on how to attend specific Task Forces, contact TMC headquarters at (703) 838-1763 or visit <http://tmcfall.trucking.org>.

### S.1 Electrical

- Fifth Wheel Ground Strap Maintenance Guidelines
- Electrical Diagnostics Incorporating Lab Scopes
- Advanced Battery Technology
- Next Generation Tractor-Trailer Interface
- Rear-facing LED Out-of-Service Criteria
- Wireless Charging Standards & Recommendations
- Chassis to Body Electrical Interface Guidelines for Construction Trucks (Joint S.1/S.14)
- RP Updates (S.1)

### S.2 Tire & Wheel

- RP Updates (S.2)
- Use of Telematics for ATIS and TPMS
- Considerations for Tires on Commercial Electric Vehicles
- Tire Maintenance Considerations for Light Commercial Vehicles (Joint S.2/S.14)
- Tire Conditions Analysis Guide for Light Commercial Vehicles (Joint S.2/S.14)

### S.3 Engine

- RP Updates (S.3)
- Leak Detection Guidelines for Electric Vehicles
- Lubrication for Electric Vehicles
- Coolants for Electric Vehicles
- RP 317B Update (Fuel Filtration/Water Separating Devices)
- RP 339A Update (Maintaining Fuel/Water Separators)
- RP 367 Update (Fuel Filters: Complaint, Cause, Correction)
- RP 341A Update (Diesel Fuel Additives & Winter Operability)
- CNG Post-Collision and Thermal Events

### S.4 Cab & Controls

- RP Updates (S.4)
- Odometer Synchronization
- RP 430 Update (Guidelines for Collision Warning)
- RP 404B Update (Truck & Tractor Access Systems)
- Conversion of Rear View Mirrors to Cameras
- RP 420B Update (HVAC Service Life Requirements)
- In-cab Gas Detectors

### S.5 Fleet Maintenance Management

- RP Updates (S.5)
- VMRS Codes
- Cybersecurity Issues
- Technician Apprenticeship Standards
- Technician Training for Advanced Driver Assistance Systems (ADAS)
- Electric Vehicle Pre-Trip Inspection
- Health Ready Components Standards
- RP 511/520 Update (Refrigerant Recovery/Flushing)
- RP 518 Update (Fuel Station Planning)
- Hiring Military Personnel
- Root Cause

### S.6 Chassis & Brake Systems

- RP Updates (Brake-Related RPs)
- RP Updates (Chassis -Related RPs)
- Towing Electric Vehicles
- RP 624B Update (Lubricant Fundamentals)
- RP 628C Update (Aftermarket Brake Lining Selection)

### S.7 Trailers, Bodies & Material Handling

- RP Updates (S.7)
- Interior Van Trailer and Box Wash-out Procedures
- RP 755A Update (Alternative Liftgate/Material Handling Charging Methods)
- Brake-Activated Pulsating Lamps
- Upper Coupler and Kingpin Repair
- Next Generation Trailer Electrical Architecture
- Exploring Trailer Voltage Drop for Current & Future Demands

### S.11 Sustainability &

#### Environmental Technology

- RP Updates (S.11)
- RP 1109B Update (Type IV Fuel Economy Test Procedures)
- Electric Terminal Tractor Implementation Considerations
- Fleet Expectations and Guidelines for Spec'ing EVs
- Understanding Electric Vehicle Efficiency Performance
- Charge Cycle Optimization and Energy Management for Battery Electric Vehicles
- Energy Conservation/Industry Sustainability Update
- SmartWay Activities
- Recommendations for Developing Charging Station Infrastructure for Commercial Fleet Operations

### S.12 Onboard Vehicle Electronics

- RP Updates (S.12)
- RP 1226 Messaging Standardization
- Open Wireless Vehicle Diagnostic Adapter API
- CAN Bus Troubleshooting
- Open Telematics API

### S.14 Light- & Medium-Duty and Specialty Trucks

- Vocational Duty Cycles for Aftertreatment Systems
- VMRS Code Development for Specialty Vehicles
- Lumen Ratings Definition for White LED Worklamps
- RP Updates (S.14)
- Chassis to Body Electrical Interface Guidelines for Construction Trucks (Joint S.1/S.14)

### S.16 Service Provider

- Service Provider Standards of Excellence
- Digital Data Exchange and Management
- Proper Vehicle Lifting Procedures and Equipment
- Implementing TMC RPs in Fleet & Service Provider Operations
- When to Trade or Keep a Vehicle (S.5/S.16)
- RP Updates (S.16)

### S.17 Collision & Corrosion Control

- Refinishing to Maximize Adhesion
- Frame Correction

- Heavy-Duty Collision Repair Roadmap
- Corrosion Manual Update
- Corrosion of Non-Ferrous Materials on Chassis & Suspension
- Cab & Control Corrosion Control

### S.18 Automated Vehicles

- Automated Vehicles
- ADAS Selection and Specification
- Platooning
- Automated Truck Inspection and Enforcement Technician & Educator Committee—

- Fostering State Competitions
- Curriculum Development
- Electrified Vehicle Technician Training Future Truck Committee—
- Future Electrical/Electronic Systems (Joint S.1/FT)
- Future Trailer Productivity
- Future Tire Reliability/Durability
- Augmented and Virtual Training
- Future Cab and Driver Interface
- Future Chassis and Brake Systems
- Future Integrated Vehicle Health Mgmt.



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For more information visit [FleetMaintenance.com/21268377](http://FleetMaintenance.com/21268377)



## » Engineered with heavy-duty extruded aluminum housings

The **UCL45 Series LED Utility, Scene, Work Lights**, Nos. UCL45CH12BB and UCL45CH24BB, from **Optronics International** come with an IP65 rating for dust and water resistance. The lights are robotically assembled using solid-state, surface-mounted diodes soldered directly to the lamp's printed circuit board. The 12" model, No. UCL45CH12BB, features a 4,500-lumen output, while the 24" model, No. UCL45CH24BB, features a 9,000-lumen output. Both lamps are engineered with heavy-duty extruded aluminum housings, with an integrated mounting bracket, stainless steel end-cap fasteners, and a highly durable powder coating finish that's available in black or white.

For more information visit [FleetMaintenance.com/21270662](http://FleetMaintenance.com/21270662)



## » Available in 1,000-, 1,500-, and 2,200-lb. payload options

The **CargoGlide** from **DECKED** is a heavy-duty sliding bed platform that makes loading, unloading, organizing, and accessing gear more efficient. CargoGlide rolls forward out of the truck bed from its locked position, extending past the end of the bed by as much as 100%. CargoGlide comes in 1,000-, 1,500-, and 2,200-lb. payload options, with either 75% or 100% extension of the tray available. CargoGlide is available for most full-size and mid-size trucks and cargo vans.

For more information visit [FleetMaintenance.com/21270669](http://FleetMaintenance.com/21270669)

## » Features multi-stage cooling and heating

The **EVantage Battery Thermal Management System (BTMS)** from **Modine Manufacturing Company** gives customers full control of battery temperature in all environments. With multi-stage cooling and heating, the EVantage BTMS optimizes the temperature range for an entire bank of batteries with a single unit while minimizing power draw. EVantage Thermal Management Systems are designed to operate as plug-and-play systems, controlled through CAN bus communications, and include a preprogrammed master controller for automated operation.

For more information visit [FleetMaintenance.com/21270678](http://FleetMaintenance.com/21270678)



## » For Dodge Ram 2500 2010-04, 3500 2009-04, and 4000 2009-05

The **Turbocharger and Gasket Kit**, No. 667-243, from **Dorman Products** is designed to replace the original equipment on specific vehicle years, makes, and models—Dodge Ram 2500 2010-04, Dodge Ram 3500 2009-04, and Dodge Ram 4000 2009-05—to reliably restore engine performance. This turbocharger is built to match the performance of original equipment and comes with a turbocharger and gasket kit. It has undergone fit, performance, and corrosion testing to ensure longevity and reliability. It is recommended to also replace oil and coolant inlet and drain tubes (not included) to ensure turbo function.

For more information visit [FleetMaintenance.com/21270688](http://FleetMaintenance.com/21270688)



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# TOOLS & EQUIPMENT

A roundup of the latest tool and equipment offerings.



### » For use on Mack and Volvo suspensions

The **ESCO Leaf Spring Socket**, No. 40309, is designed for use on Mack and Volvo suspensions. The socket is machined with precision to ensure accuracy and consistency and is finished with an anti-corrosive black oxide finish to increase corrosion resistance. It's compatible with a 1/2" drive.

➔ For more information visit [FleetMaintenance.com/21236730](http://FleetMaintenance.com/21236730)



### » Includes 2", 4", and 6" chrome extensions

The **Matco Tools 4-pc 1/4" Drive Ratchet and Extension Set** features a nine-position flex head to ensure a locked desired position for optimal access. Precision made and hand assembled in the U.S., chrome extensions in the set include 2", 4", and 6" lengths for easy access in confined areas. Available in blue, red, orange, and green ratchet grips.

➔ For more information visit [FleetMaintenance.com/21249603](http://FleetMaintenance.com/21249603)



### » Can be folded to stand as a floodlight

The **KTI 3-in-1 Underhood Telescoping Light**, No. KTIXD5039C, fits hood widths from 48" to 77" and has two detachable worklights, emitting a total of 1,500 lm. Made from lightweight aluminum, the light weighs 4.4 lbs. Additionally, the underhood light has a run-time of up to six hours and can be folded to stand as a floodlight.

➔ For more information visit [FleetMaintenance.com/21254533](http://FleetMaintenance.com/21254533)

### » Two separate guns for switching between steel and aluminum welding

The **Car-O-Liner CDR1 Workstation** contains the equipment and materials needed to perform light to medium collision damage repair quickly and efficiently. The CDR1 is mobile and has a small footprint. It features the CR235 Combi Spotter, which has two separate guns for easy switching between steel and aluminum welding operations. The workstation is available in three versions. The Level 1 cart includes the CR235 Combi Spotter, plus separate drawers with steel and aluminum repair tools, and the Level 2 cart features an additional drawer for glue pull repairs. The Level 3 cart includes a drawer for pneumatic push pull repairs, plus another drawer for holders.

➔ For more information visit [FleetMaintenance.com/21249601](http://FleetMaintenance.com/21249601)



### » Works with almost any digital multimeter

The **Electronic Specialties LOADpro and Back Probe Kit**, No. 187, is designed to help technicians diagnose electrical problems. The kit includes LOADpro test leads, LOADpro tip adapters, flexible silicon back probes, spoon probe curved back probes, large crocodile clips, and push-on alligator clips. The test leads allow users to instantly load the circuit to see if current can flow and can work with almost any digital multimeter. LOADpro is able to find high corrosive resistance, shorts to ground, and open circuits quickly and easily by simply just reading the voltage, the company said.

➔ For more information visit [FleetMaintenance.com/21253849](http://FleetMaintenance.com/21253849)



### » Low-profile, flathead design

The **Milwaukee Tool M18 FUEL 5" Flathead Braking Grinders** are designed to handle tough grinding and cutting applications. Generating 11A corded power, the M18 FUEL 5" Flathead Braking Grinders deliver 8,500 rpm for maximum sustained power. The low-profile, flathead design provides accessibility in tight spaces to complete a cut or grind an edge. The grinders feature a RAPIDSTOP brake for enhanced user safety, stopping most wheels in less than two seconds. They are available with either a paddle switch (No. 2886-20) or a slide switch (No. 2887-20). Tool-free guard adjustments provide fast guard installations and adjustments.

➔ For more information visit [FleetMaintenance.com/21250815](http://FleetMaintenance.com/21250815)



### » Performs vacuum and pressure brake bleeding, transmission refilling, and more

The **Mityvac MV7100 Series Fluid Evacuators/Dispensers** are designed for use in vehicle service and heavy-duty trucking applications but are also suitable for agricultural, marine, industrial, and small engine repair service. With assorted accessories, one tool is able to perform multiple tasks including vacuum and pressure brake and clutch bleeding, transmission refilling and top-off, cooling system evacuation and dispensing, engine oil and power steering fluid reservoirs, diesel fuel system priming, and more.

➔ For more information visit [FleetMaintenance.com/21254534](http://FleetMaintenance.com/21254534)

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» Navistar has a comprehensive dealer network with more than 5,900 technicians that also requires recruitment and retention efforts.

Photo: Navistar

### Connecting employees

The industry must change the perception of a technician being looked at as a so-called “grease-monkey” or “mechanic.” A technician career in today’s industry requires knowledge in cutting-edge technology and diagnostics. This starts and ends with ensuring technicians are knowledgeable in their skillsets and have the option to explore more technologies in-depth.

Just like any good relationship, communication and transparency are required. Providing transparency on company operations, culture, and benefits from the time of hire throughout a technician’s career has exponential value. Having a comprehensive onboarding and training process to ensure technicians feel comfortable and connected to their peers and managers also creates a culture of trust.

Education is important for all, not just rookies. Fostering the development of existing employees through open communication from management and regular training to continue to advance skills showcases the critical need to learn and stay on top of the quickly changing technologies in the industry.

Younger generations are becoming less fond of accumulating debt to attend traditional four-year schools and want a more direct path toward a career where they can earn a living while learning the skills they need. This provides the perfect opportunity for apprenticeship programs.

With an apprenticeship, technicians have a chance to experience hands-on learning with experienced peers. They get to see the day-to-day operations of a dealership from the inside and feel the experience firsthand rather than hearing about it from a professor. On top of training with traditional diesel vehicles, apprentice technicians should get the opportunity to work on the latest innovations across the industry, like electric vehicles.

### Looking ahead

Technicians will continue to be at the front and center of keeping the transportation industry running, and it falls to those closely involved in every level of recruitment and retention to provide them with the tools they need to be successful.

Continued industry partnerships between service providers and educators will be key. That’s done through fostering relationships and providing the necessary tools and equipment to facilitate and learn proper service processes. It will be critical to reach the younger generation entering the workforce who are native technology users, through gamification and in-bay tools such as virtual reality and augmented reality, to encourage interest in the industry. ■

# How to build a solid technician pipeline

## Attract and retain technicians for your operations with solid partnerships and processes.

In the commercial vehicle industry’s ongoing challenge of finding and retaining qualified technicians, employers, OEMs, fleets, and technical schools all play an important role in ensuring engagement. Everyone in the industry must work together to create continued visibility and education of the trades, foster partnerships between service providers and educators, and appeal to more young technically minded individuals. This helps to establish a pipeline of technicians who are passionate about starting and maintaining a solid career in the commercial vehicle industry.

### Creating a pipeline

Finding and recruiting technicians is a national issue with a local solution. A major focus of combating the technician shortage means providing dealers responsible for servicing

commercial vehicles the tools and knowledge to develop relationships at a local level with high schools and technical schools. When service providers work directly with educators to develop these programs, it establishes a pipeline of future employees who have the proper training in the fields they are being hired for. While new hires do not yet have the necessary industry experience, programs like this provide proper training that helps with their professional development.

It’s critical to communicate with dealers to understand their needs and be able to provide supportive resources, including creating local connections to a direct source of technicians. When service providers and educators communicate and work together, both can benefit. Service providers share training needs and resources that can be utilized to educate students, and educators benefit by creating local connections to establish job placement and mentorships after graduation from technician programs.

To put down a foundation for a pipeline, Navistar worked to develop a program that works closely with educators, called the TECH EmPOWERment program. Created in 2020, this program provides service managers throughout the dealer network with solutions and tools to build a solid culture to attract, engage, retain, and empower technicians.

The program provides an opportunity for the dealer network to partner with accredited trade schools for equipment donations and recruiting. Dealers also donate vehicle equipment and tools to these partner trade schools, which are used to train incoming technicians. It is essential technicians have experience servicing vehicles with current and upcoming technologies rather than the same hands-on tools schools may have been using for decades.



**Ana Salcido, Navistar**  
TECHNICIAN RECRUITMENT MANAGER

Ana Salcido is the Technician Recruitment Manager for Navistar, supporting technician recruitment, hiring, and retention for the International and IC Bus dealer networks. Salcido joined Navistar in 2012, performing various roles in the company’s Aftersales organization, the Service Products Support Team, the Employee Resource Groups, and served as the Graphic Development Manager. Salcido earned her Bachelor of Arts in International Business from the Instituto Tecnológico y de Estudios Superiores in Monterrey, Mexico.

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