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**FLEET**

# Maintenance

Best Practices for Maintenance Management

HOW TO IMPLEMENT  
NEW MAINTENANCE  
MANAGEMENT SOFTWARE

Page 24



## IS TECHNICIAN CERTIFICATION WORTH IT?

» Guide to Peak Performance

Qualified technicians do faster, higher-quality repairs, which means more uptime for fleets

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8



16



22

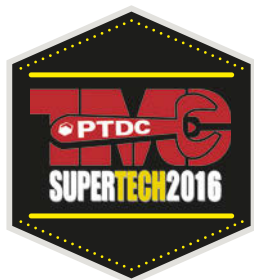


24

## COVER STORY

### 8 Is technician certification worth it?

Qualified technicians do faster, high-quality repairs for more uptime for fleets.



### 35 TMC SuperTech 2016

**SPECIAL REPORT »** An overview of the Technology & Maintenance Council's 2016 National Technician Skills Competition.

## FEATURES

### 16 HEAVY DUTY

An end to dead vehicle batteries?  
Ultracapacitor starting technology is taking a load off batteries

### 22 MEDIUM DUTY

Cost control begins when spec'ing new vehicles  
Vehicle design influences operational costs.

### 24 LIGHT DUTY

How to smooth the implementation of new maintenance management software  
Six pitfalls to avoid.

## DEPARTMENTS

### 6 UPTIME

Disruption is driving significant industry change.

### 28 INDEPENDENT SHOPS

Industry coding standard helps technicians ensure maintenance data integrity.

### 30 TIRE TACTICS

It's all about tire inflation.

### 32 REMAN/REPOWER/REBUILT

A simple solution to increase margins without sacrificing quality.

### 34 MANAGEMENT

It is our responsibility.

### 46 FLEET PARTS & COMPONENTS

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

### 48 TOOL & EQUIPMENT

A roundup of the latest tool and equipment offerings.

### 49 CLASSIFIEDS

Product and service offerings.

### 50 GUEST EDITORIAL

Which brake choice is right for your fleet?

*Cover photo courtesy of Navistar International*

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## WE'LL KEEP YOU COOL!

### **TA TRUCK SERVICE**

**MORE: BAYS. EXPERTISE. SOLUTIONS.**



By David A. Kolman, Editor

# Disruption is driving significant industry change

Are you preparing for possible consequences and challenges?

We are experiencing the acceleration of change and are being relentlessly affected by what has been dubbed the Age of Disruption. Advanced technologies are driving innovations that are bringing about significant and permanent change to disorderly life, business and the global economy.

This is the most rapid time of technological transformation ever, especially with regard to information. The role of digital, mobile and telematics technologies – which are being adopted at an unprecedented rate – is rapidly shifting from being a driver of marginal efficiency to an enabler of fundamental innovation and disruption.

This is having a massive impact on both the transportation and fleet maintenance industries.

## Digital Disruption

Digitalization is the cause of large-scale and sweeping transformations across multiple aspects of business. At the same time, it is representing a major source of risk.

Some industries have been much more impacted. The world's largest taxi company – Uber – doesn't own any taxis. The world's largest movie house – Netflix – owns no cinemas. The largest accommodation provider – Airbnb – owns no real estate. The world's most valuable retailer – Alibaba – has no inventory.

## Vehicles

Think about all that is going on within the trucking and vehicle maintenance industries. The Internet of Things (IoT) – a network of smart devices, sensors and the Cloud that allows the physical world and computer systems to interact directly, coupled with the proliferation of mobile sensors, is improving the efficiency and reliability of commercial vehicles. Manufacturers are accelerating their use of robots and automation in U.S. factories, and that is boosting productivity.

Highways are becoming intelligent and automated. There is the pioneering of autonomous (self-driving) vehicles and the testing of delivery drones.

At the Los Angeles marine-cargo facility, autonomous carriers are currently being used to move containers across the wharf and deliver them to waiting trucks and trains, and autonomous technology is being used to double the speed of loading and unloading container ships.

Then there is artificial intelligence and the evolution of cognitive computing – self-learning systems that use data mining, knowledge representation and reasoning and natural language processing to mimic the way the human brain works. Think IBM's cognitive computing system Watson. It "takes in" questions, searches its repository for information, develops and analyzes hypotheses and produces answers that are in natural language form.



**Advancing technologies, digitalization and disruptive innovation are significantly transforming the transportation and fleet maintenance industries. The challenge is how to prepare to ride the enduring waves of metamorphosis.**

*Photo from iStock*

## Blue-Sky Thinking

Nowadays, we are constantly running full speed just to try and keep up. There never seems to be time for considering where the acceleration of change is taking our industries and how we might cope with it.

Yet, the only way for an organization to remain viable and thrive is to plan for the future. As a former boss told me: "Planning is bringing the future into the present so that you can do something about it now."

Naturally, none of us has the ability to foresee the future. Nevertheless, we can think abstractly and employ creative thinking skills and behaviors to imagine what the future might look like and then conceive future business scenarios.

## Within 14 Years

Some projections of what could be by 2030 are offered in the book, *Clean Disruption of Energy & Transportation*, written by Tony Seba, an instructor at Stanford University's Continuing Studies Program. Among them:

- All new mass-market vehicles will be electric.
- All of these vehicles will be autonomous or semi-autonomous.

## Fleet Maintenance wants your photos

We are seeking photos of technicians working on vehicles, as well photos of vehicle maintenance shops "in action," for use within the publication.

Credit for any photos used will be given to the submitting company.

Submit your photos to David A. Kolman, editor, at [david@fleetmag.com](mailto:david@fleetmag.com).

Photos should be a minimum of 300 dpi and as large as possible.

- Up to 80 percent of highways will not be needed.
- Up to 80 percent of parking spaces will not be needed.
- The concept of individual car ownership will be obsolete.

Ponder the probable consequences that could arise from these five factors alone.

If you aren't already doing so, I highly recommend that you regularly block out time to brainstorm about how to deal with the disruptive innovations and advanced technologies that are bringing about significant and permanent change to our industries and organizations. The better prepared you are, the more you and your organization will be able to adapt and prosper.

I welcome your thoughts and comments.



Tune in to this exclusive bi-weekly newscast featuring *Fleet Maintenance* Editor David A. Kolman at: [VehicleServicePros.com/media-center/newscasts](http://VehicleServicePros.com/media-center/newscasts).

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# Is technician certification worth it?

By Josh Smith, Assistant Editor

**Qualified technicians do faster, higher-quality repairs for more uptime for fleets**

Technicians aren't the only ones who profit from earning industry certifications. Fleets, shop owners, customers and other drivers on the road all can benefit from continued technician training.

*Photo courtesy of Mack Trucks*

**W**ith the help of training certifications, technicians can make themselves a more attractive candidate for a job, advance in their current position and earn increased wages. However, technicians aren't the only ones who profit from earning industry certifications. In fact, fleets, shop owners, customers and other drivers on the road all can benefit from continued technician training.

Officials at the National Institute for Automotive Service Excellence (ASE) point out technicians can demonstrate their expertise by earning certifications. Additionally, employers can use ASE-certified technicians to attract more customers and produce high-

er-quality work. What's more, fleets that don't perform their own repairs can feel confident in the work performed on their vehicles by seeking out shops with qualified technicians.

*Continued page 10*





ASE ([www.ASE.com](http://www.ASE.com)) is an independent non-profit organization that has worked to improve the quality of vehicle repair and service by testing and certifying automotive professionals.

“For the technician, ASE certifications start as a way to differentiate themselves when the technician is new to the industry,” says George Arrants, program director, network training and recruitment, at WheelTime and WheelTime University. “Then, as they gain more experience, certifications can be used as a gauge to measure if they are staying up with technology and all of the changes associated with it.”

WheelTime ([www.WheelTime.com](http://www.WheelTime.com)) is an independent truck repair network that promotes objective quality measures.

Noting that ASE certifications may indicate a technician’s level of professionalism, Arrants says fleets can look at a technician’s certifications and make sure they assign the right person for the job. For example, if a technician is certified in truck electrical repairs, that person can be assigned to an electrical complaint like slow cranking or an intermittent lights issue.

“This, in turn, will save time with the diagnosis/repair process, saving the fleet time and money,” Arrants explains.

He adds that having the right person for the job provides the customer with a more efficient technician, saving time and money and giving them confidence the repair will be made correctly.

## PEAK PRODUCTIVITY

Fleets that perform their own repairs should use certified technicians to help ensure peak productivity, says Duane Tegels, diesel coordinator at WyoTech.

“A fleet’s job is to ultimately haul freight at the lowest possible cost. By running an efficient and proactive maintenance program, common repairs and vehicle downtime can be greatly reduced,” he states. “This starts with an educated repair team, which can be measured by the team’s certifications.”

WyoTech ([www.WyoTech.edu](http://www.WyoTech.edu)) – formerly known as Wyoming Technology Institute – offers college-level, career-oriented education in the automotive, diesel, motorcycle, watercraft and collision/refinishing industries.

Neglecting certifications limits a technician’s possible career advancements and lowers customer confidence and loyalty. That, says Tegels, ultimately impacts an organization’s bottom line.

“Training and holding an organization’s technicians accountable for knowing the changes in today’s technologies is vital to a good preventive maintenance plan,” he says.

Frank Conte, an education supervisor at Universal Technical Institute (UTI), believes technicians should be required to meet minimal training standards.

“We have a CDL program to make sure that commercial vehicle drivers meet minimum standards, so why are the technicians that attempt repairs on those vehicles not required to meet some minimum standard of competence?” asks Conte. “When you call a plumber or electrician, in most states, they have to be licensed to make repairs to your home. Why is the technician



**TA leverages the training and certification of its technicians by qualifying 12 of them each year to compete at the annual TMCSuperTech, an event that honors commercial vehicle technician professionalism and acknowledges the best of the best.**

*Photo courtesy of TA*

## One organization’s approach to technician training and certification

By David A. Kolman, Editor

Modern trucks have evolved to a level of technical complexity that forces truck service facilities to advance their approach to diagnostic, maintenance and service routines. This ever-evolving repair platform must include a more methodical and mechanically astute technician. Engine, truck and component manufacturers have added incentives to the mix by requiring technicians to obtain certifications for performing warranty work.

TA Truck Service works diligently to keep pace by adopting OE-level certification programs. It deploys a five-phased approach to help its technicians keep their skill and knowledge up-to-speed:

- Mentor Technician Program.
- Web-based and DVD training.
- Three U.S. training centers that deliver advanced instructor-led training.

- Vendor/supplier training delivered at its truck service facilities.

- Laser-like focus on getting technicians ASE certified.

The leadership at TA Truck Service believes that having certified technicians sets its service offerings apart from their competition. One of their major pillars is “Fix It Right” and they train entry-level to master-level technicians relentlessly towards that goal.

### NATIONAL COMPETITION

TA leverages the training and certification of its technicians by qualifying 12 technicians per year to compete at the annual TMCSuperTech. An elite competition, it brings together the best truck service and repair technicians from U.S. OEMs, trucking companies and repair facilities to compete nationally.

TA Truck Service conducts its

own internal multilayered competition in order to select the best of the best. These very accomplished technicians arrive at the TMCSuperTech event ready to compete.

TA produces a world-class video that documents the dedication of the technician to achieve the certifications and qualifications necessary to prepare for the TMCSuperTech. The video is passed along to tech schools and recruiting events to promote the professionalism and quality of its technicians, and that helps in recruiting top technical talent in the industry.

The TA Truck Service ([www.ta-petro.com/amenities/truck-repair-maintenance](http://www.ta-petro.com/amenities/truck-repair-maintenance)) network includes 242 truck service facilities, more than 1,000 repair bays and more than 3,000 technicians with ASE and TIA (Tire Industry Association) certifications.

## ASE CERTIFICATIONS

Currently, there are 49 ASE certification tests, spanning many areas of vehicle repair.

“There are a series of tests for medium/heavy truck, automobile, collision repair and refinishing, transit bus, school bus, truck equipment and parts specialists,” explains WheelTime’s Arrants, noting information about all tests is accessible through ASE’s website.

“They also offer Advanced-Level tests L1

*Continued page 12*

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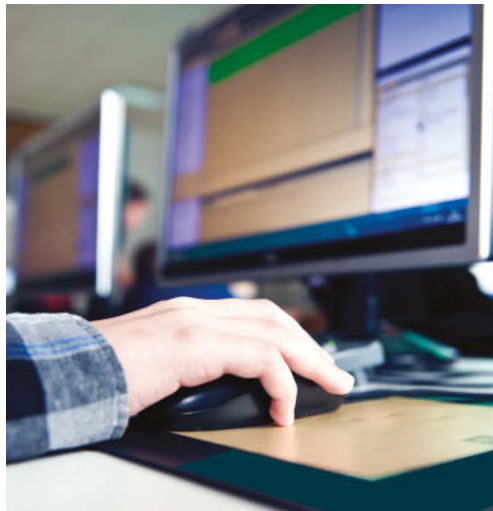
All of the certifications hold the same value, but technicians may get more out of a test series that directly relates to an area they encounter on a regular basis.

“Focusing on the areas/systems on the vehicles the technician is repairing should be weighted,” advises Arrants. “This provides the technician, employer and customer with an increased comfort level of this individual’s ability and knowledge.”

WyoTech’s Tegels says independent shops and small fleets have the largest challenges with gaining access to training and certifications, which makes ASE a good resource for their technicians.

“ASE is recognized on all levels of the industry for assisting with technician growth and certifications,” he says. “ASE has a path for students in pre- and post-secondary schooling, along with certifications a technician can gain after attaining two years of experience.”

“ASE certification is the only industry-wide certification that the technician can take from job to job,” adds UTTI’s Conte. “Shops should only hire certified technicians as a way to demonstrate their commitment to excellence and concern for their customers.”



**ASE is the only certifying body that is recognized across the entire industry. However, there are additional certifications available through manufacturers, OEMs and other industry associations.**

*Photo from iStock*

## OTHER CERTIFICATIONS

Vehicle manufacturers have training for their dealer organizations and some large fleets, which provides progressive training and certification, WyoTech’s Tegels explains. This allows them to essentially grow their technicians’ confidence and abilities.

“Manufacturers may have different names for levels of technicians,” says Tegels, “but the ultimate goal is to have a highly trained and educated technician representing their brand in hopes of gaining market share through the best customer experience.”

Mike Rossetti, director of service for Isuzu Commercial Truck of America – the distributor of Isuzu commercial trucks in the U.S. ([www.IsuzuCV.com](http://www.IsuzuCV.com)), points out when technicians are not certified, familiar or trained on a vehicle, it takes much longer for them to make a repair. “But more important is accurately repairing the vehicle to ensure the vehicle is fixed the right time.

“Today, uptime on our vehicle is critical. If the vehicles are down, and they’re not producing revenue for the customers, then everyone is losing – the end customer that would be receiving the goods and our customer who is actually utilizing our truck as a tool for their business,” adds Rossetti.

To improve familiarity with its vehicles, Isuzu allows all of its fleets to gain access to its Isuzu Truck University website.

“We have base training modules that are available for fleet’s technicians to take,” explains Rossetti. “If there are special, more advanced classes – like hands-on classes – they can attend our training centers. Or, at that point, we also

## Are your technicians Section 609 certified?

By David A. Kolman, Editor

If it’s hot outside, chances are there’s a work order in your shop that says: “A/C won’t blow cold air.” When you hand off that job ticket to a technician, he or she needs to be certified under Section 609 of the *Clean Air Act*, which specifically addresses the servicing of motor vehicle air conditioners.

“Most shop managers know that technicians need to be Section 609 trained and certified,” says Scott Watson, aftermarket account manager for Red Dot Corp. ([www.rdac.com](http://www.rdac.com)), a company that supplies HVAC units and all-makes parts for heavy duty vehicles. “But they’re not always sure they can prove it.”

It’s worth finding out.

Any person who services a mobile A/C system must be certified. “Servicing” includes repairs, leak testing and “topping off” systems, as well as any other repair that requires opening the air conditioner.

Having an uncertified technician can subject shop owners to fines up to \$37,500 a day by the U.S. EPA.

“Section 609 certification training is a way to make sure techs are compliant and also up-to-date on

how to handle various refrigerants, especially now that they may be dealing with refrigerants R-134a and R-1234yf,” Watson says.

### NOT A FORMALITY

Technicians must pass a 25-question written test at the conclusion of a training session. It is available in English and Spanish and the fee is nominal – around \$50, depending on who administers it. The test is open-book and it can be taken online or in a classroom.

When a technician passes (the minimum score is 72 percent), they receive a certificate and wallet card to show employers and EPA auditors. If they fail, they can take the test again.

Section 609 training should not be viewed as just a formality, Watson says. “The training focuses on the properties of mobile A/C refrigerants and the environmental consequences of venting them into the atmosphere. It is important for technicians to be aware of their responsibility to legally and safely handle refrigerant.”

### BEYOND COMPLIANCE

Certification has benefits that extend beyond compliance, observes

Watson, and notes that there are many reasons for maintenance managers to support Section 609 training and certification for their technicians. Chief among them:

**1. A much-needed refresher.** Section 609 certification can be the start of a larger conversation about how A/C works, including proper service intervals and best practices for detecting leaks and safely recovering and handling refrigerant.

For this reason, it’s an advantage to have an instructor conduct the course in person, he says.

“Certification is good for a lifetime but I know techs who sit in on courses every spring because they want a refresher on basic A/C concepts, components and service techniques before the summer hits,” says Watson.

**2. R-1234yf awareness.** As more vehicle manufacturers adopt R-1234yf, Section 609 training can help technicians understand and manage the switch.

“People know it’s bad to leak refrigerant into the atmosphere but they aren’t fully aware of the harm that ozone depletion can do,” says Watson. “R-1234yf is expected to

reduce automotive greenhouse gas emissions by 4 percent.”

Then there’s the dollars-and-cents rationale for properly recovering R-1234yf. At roughly \$30 an ounce, “you want to capture the maximum amount of refrigerant possible for warranty reimbursement,” he says.

Certification training also can help technicians recognize illegal modifications that would convert A/C systems and service equipment from R-1234yf to R-134a.

**3. Vehicle uptime.** Watson says everyone is happier and more productive when they’re in a comfortable work environment, drivers included.

“When the A/C is performing as it’s supposed to, drivers will treat the vehicle better and you’ll get more uptime as a result,” he notes. “Talk to your drivers about A/C performance and take care of routine maintenance now, before it turns into a repair that takes the truck out of service.

“Make sure your techs are Section 609 certified and that you have copies of their certificates on file. That way you can match them up with A/C work orders in the event of an audit. The EPA is watching.”

have trainers, like our fleet service reps, that will actually go to specific fleets ... and we can conduct training at their location on specific components.”

He adds that Isuzu’s fleet service managers are very technical and can conduct training sessions for fleets on a case-by-case basis.

Like ASE certifications, a technician stands to gain personally from acquiring more information through OE training. More certifications and more training means the technician can be more proficient in diagnosing and repairing vehicles in general.

“Technicians today, whether it be fleet or in a dealership or anywhere, as they increase knowledge and get more certifications, they’re overall compensation will usually rise right along with that,” Rossetti notes.

Fleets with certified technicians stand to gain from increased uptime because more repairs can be made in house.

“It’s imperative that they fix the vehicles right then and there instead of letting them back out and sending them to a dealer, or bringing them back in at a separate time for another technician who is more trained to go ahead and work on it,” Rossetti says.

He concludes that Isuzu and other OEMs can offer all the training they can. But the most important aspect is that technicians need to have the basic understanding and mechanical ability to actually make repairs.

“Basic electrical, basic brakes, basic suspension – things like that – are important to build that foundation so they can move on and increase their education on a specific product,” he says.

Equipment manufacturers who create components installed on over-the-road trucks often provide training events and certifications to dealers, fleets and independent shops.

According to Mario Sanchez, director of on-highway marketing communications, engine business, at Cummins, as technology, emissions and customer requirements change, the company’s product portfolios become more advanced.

As product complexity rises to meet these demands, the Cummins service provider network increases its need for trained technicians.

“Trade certifications standards differ from country to country, and in order for Cummins to ensure the competency of technicians, we require them to complete their product diag-

nosis and repair education through a combination of e-learning and hands-on activities via our global training centers,” Sanchez says. “Classes are led by factory-certified trainers, who have a wealth of information and are excellent resources to draw from.”

*Continued page 14*



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Cummins (www.Cummins.com) designs, distributes and services diesel and natural gas engines and related technologies, including fuel systems, controls, air handling, filtration, emission solutions and electrical power generation systems.

Sanchez explains having high standards ensures the company's customers receive the

same service, regardless of where in the world they service their engines.

"When an expert is diagnosing and repairing, they are able to isolate the problem safely, quickly and accurately, and provide timely and accurate repairs the first time, with decreased repeat failures," he says.

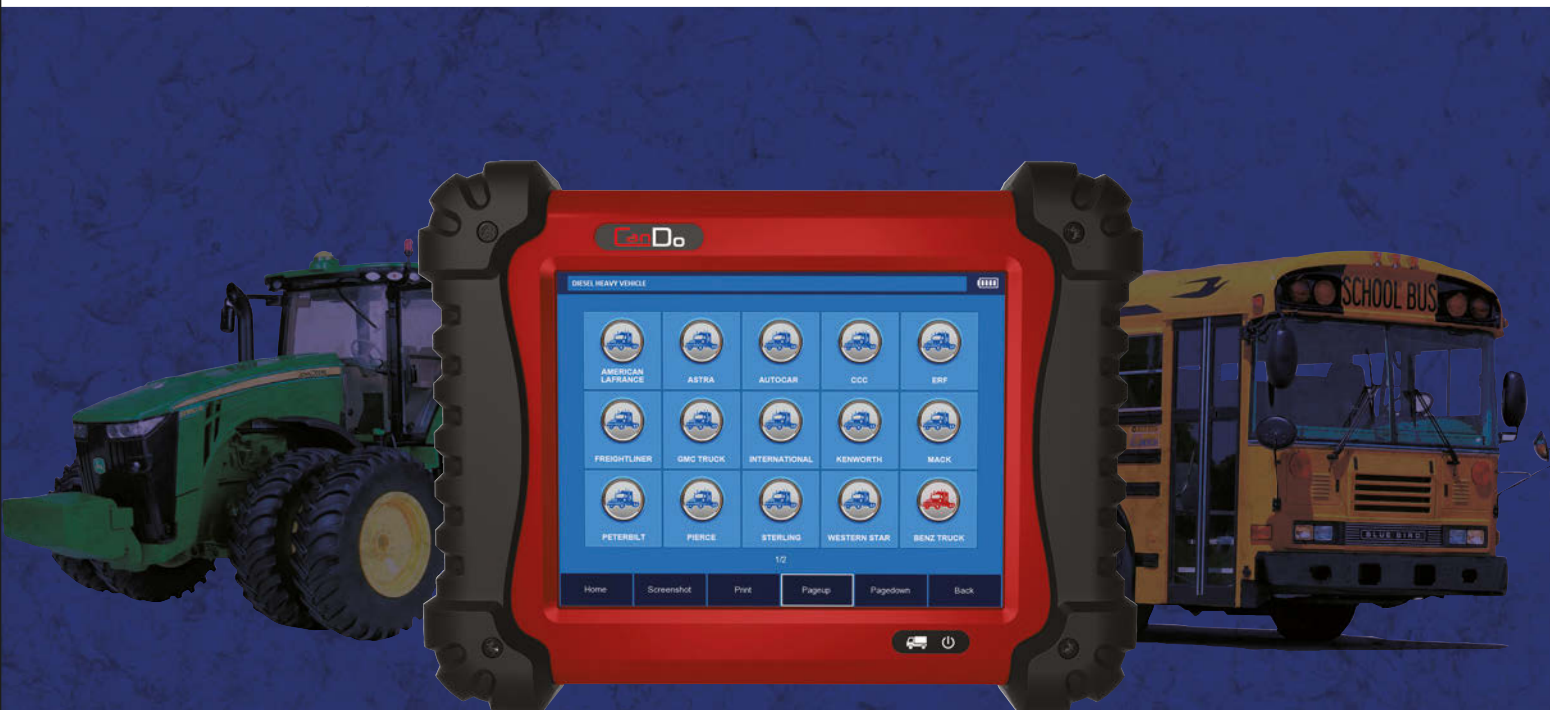
Again, a technician's familiarity with specific components leads to increased uptime for fleets as trucks can be repaired and put back in service quicker. What's more, says Sanchez, safety standards may be negatively impacted with technicians who are not comfortable working on the product. He explains inferior quality

work means greater costs over the long term and may lead to unscheduled repairs and lower vehicle availability.

Repairs that are done without following the prescribed procedures learned in training and through use of available literature, increase the chance for unnecessary risks, he adds, noting that an engine's warranty could be impacted as a result. "By qualifying technicians, you reduce this risk."

Cummins offers a multi-tiered approach to engine platform certification. Additionally, parts and service information can be found at Cummins QuickServe Online (quickserve.cummins.com).

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### INVEST IN EDUCATION

WyoTech's Tegels says he is often asked: What happens if I train my technicians, and they leave? The fear of fleets and shop owners is that they will invest in a technician's training and then lose that employee and correlating investment.

"My response to this is: 'What happens if you don't train your technicians and they stay?'" he says. "Technician training and certifications are expensive, but I believe they are not as expensive as not doing them."

**TECHNICIANS, SHOPS AND FLEETS** need to understand the industry is ever-changing.

ASE certifications require a \$36 registration fee. Most tests are \$37 each, while Advanced-Level tests are \$74 each. Recertification tests cost the same as the corresponding regular exams, with a \$111 price cap that limits test fees but not the number of exams that may be taken.

So, the most anyone would have to pay to recertify in a single registration window is \$147, say ASE officials, no matter how many recertification tests are taken.

Whether a technician, shop or fleet is absorbing these costs, the information is valuable.

“Technicians, and especially students, need to be able to continually learn new things,” says Wheel-Time’s Arrants. New information about components, diagnostic procedures and repair measures are all vital, as well as new rules and regulations regarding laws and how they affect the vehicle’s performance.

“New oils and coolants also must be kept up on to make sure that the correct fluids are being used and not cause harm,” he adds.

“Students and technicians should embrace becoming life-long learners and realize training is an opportunity to better themselves within their career and craft,” agrees Tegels.

UTI’s Conte stresses the importance of certification, too, and says: “Just do it.”

“The motoring public deserves it,” he says. “Currently there is no required certification to perform the annual safety inspections on heavy trucks. Technicians and shops, according to federal law, can self-certify. Only the industry can change that by policing itself and demanding better for ourselves.”

While technicians need to understand the industry is ever-changing and they must change with it, shops and fleets must understand this as well.

“They need to help their technicians with training. Help them with access to the appropriate service information applicable to what they are working on. This is no easy job,” says Arrants. “Certification

can be used as a part of this on-going training to test and gauge where the training is working, and where it can be improved upon.

“Certifications can be used as an add-on to payment plans, or a once-a-year bonus pay for the techs to be incentivized to continue with training/learning.” **FMX**



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# An end to dead vehicle batteries?

By Steve Sturgess, Automotive Journalist

## Ultracapacitor starting technology is taking a load off batteries

**U**ltracapacitor starting is a technology that has been around for two decades, used extensively as standby power in electronics and power generation. Now, this technology looks ready for prime-time. Fully productionized systems, with widespread distribution and mainstream installation, are making the battery-replacement capacitor starter system (CSS) a reality.

It's taking off in automobile engine stop-start systems as carmakers are seeking ways to reduce emissions and increase fuel economy by automatically shutting off the engine when the vehicle is

at rest and restarting it when the driver lifts off the brake.

Engine start-stop systems depend upon battery power to restart the engine as well as to keep elec-

trical accessories. A CSS supplements battery power with ultracapacitors.

Also known as supercapacitors, these are electrical components capable of holding hundreds of times more electrical charge quantity than a standard capacitor. What's more, ultracapacitors are generally lighter than batteries.

*Photo from iStock*

trical accessories. A CSS supplements battery power with ultracapacitors.

Also known as supercapacitors, these are electrical components capable of holding hundreds of times more electrical charge quantity than a standard capacitor. What's more, ultracapacitors are generally lighter than batteries.

Heavy truck OEMs have begun investigating the adoption of ultracapacitor starting technology in their efforts to meet the final *Phase 2 Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium and Heavy Duty Engines and Vehicles* which takes effect next year.

Ultracapacitors, when paired with batteries, immensely improve the reliability, efficiency and power of diesel engines, say officials with Ioxus ([www.ioxus.com](http://www.ioxus.com)), a developer and manufacturer of ultracapacitors and energy storage products. Ultracapacitors





help assure engine starting with no dependence on the state of charge of onboard batteries and perform well under less-than-ideal weather conditions, making the vehicle's operation more reliable.

Moreover, they say the application of ultracapacitors is economically beneficial because they extend the service life of a diesel engine's starting system and lessen maintenance expenses and fuel waste.

Ultracapacitors are partially taking the place of batteries for their light weight, high current delivery and ability to store energy for extraordinarily long periods. Now, big ultracapacitors are a reality for replacing some of the lead-acid batteries for starting heavy duty diesel engines.

## SYSTEM MANUFACTURERS

Currently, two manufacturers in the U.S. are in production, applying ultracapacitor starting systems to heavy trucks. One is Maxwell Technologies ([www.maxwell.com](http://www.maxwell.com)), a developer and manufacturer of ultracapacitor-based energy storage and power delivery solutions. It uses its symmetric ultracapacitors, developed for a wide range of applications, including those used in the Lincoln Continental stop-start unit.

The other company is Kold Ban International ([www.koldban.com](http://www.koldban.com)), a provider of engine starting solutions for heavy trucks and locomotives. It takes a different approach and uses asymmetric ultracapacitors.

Together, these two are pioneering and popularizing CSS in the heavy duty truck industry.

Asymmetric capacitors have a higher energy density than their symmetric counterpart due to increased capacitance and higher cell operating voltages.

## THE BASICS

Essentially, the ultracapacitor is a different type of electrical energy storage. A lead-acid battery uses reversible chemical reactions when charging and discharging. It generates heat in both directions, and generally, it is around 70 percent efficient. Because the batteries wear out with cycling, they last only around two to five years. Since the




**Unlike batteries, ultracapacitors maintain a more consistent power output in the face of extreme cold or hot temperatures.**

*Photo courtesy of Maxwell Technologies*

## Online Exclusive

The whitepaper, *How ultracapacitors improve starting reliability for truck fleets*, by Maxwell Technologies, can be found at:

 [VehicleServicePros.com/12210396](http://VehicleServicePros.com/12210396).

charge/discharge is chemical, batteries are temperature dependent.

A capacitor stores electrical energy physically as a charge on a plate. This physical process is around 98 percent efficient, can cycle millions of times and has a life of 15 years or more. The voltage at -40 degrees F is only a few percent less than at 80 degrees F.

Because the charged plates can discharge almost instantaneously, the ultracapacitor storage is perfect for starting systems that have a very high current demand over a short duration. Conventional lead-acid batteries are much better at steady, moderate current over long durations.

One of the problems today is that in their manufacture, lead-acid batteries must be compromised and over-sized to be able to provide high starting current.

The ideal setup with CSS is to substitute one or even two of the vehicle batteries with an ultracapacitor setup for starting and use the remaining lead-acid batteries – preferably an Absorbent Glass Mat (AGM) deep-cycle battery – to handle the other electrical loads like ECUs, lights and hotel loads in the sleeper.

## DIFFERENT SYSTEMS

Maxwell's Engine Start Module (ESM) is sized to do just that. Housed in a blue plastic box, the ultracapacitor stack and associated electronic controller are integrated and it has the standard Group 31 battery footprint. Weighing just 21 lbs, it offers a weight savings of approximately 40 lbs by replacing only one battery.

Rated at an equivalent 1,800 CCA (cold cranking amps), it can promptly start up a big-bore diesel engine, even down to -40 degrees F, in half the time a lead battery can.

In a Maxwell webinar, Jeff Brakley, the company's senior product manager, said that during the 2013 Polar Vortex that saw all 50 states experience temperatures from freezing to -40 degrees F, many customers using the Maxwell product found that ESM-equipped trucks would start when others with all-battery starting systems simply would not.

For many truckers, a winter no-start or a Monday morning no-start after leav-

*Continued Page 19*

# How clean is your vehicle fuel?

By David A. Kolman, Editor

A clean fuel storage tank ensures that the highest quality of fuel is ready for use in vehicles. Not only does high-quality fuel keep trucks on the road, it reduces the costs and downtime that can be associated with engine breakdown and repairs, negatively impacting a fleet's bottom line due to added expenses and reduced productivity.

When it comes to fuel storage, today's more expansive range of fuel formulations presents many challenges for a fleet," says Peter J. Cochefski, director at Ryder Fuel Services, a provider of fuel management programs that is a subsidiary of Ryder System. "One of the most significant is that the new fuels, such as ultra low sulfur diesel (ULSD), are more prone to contamination."

Ryder ([www.ryder.com](http://www.ryder.com)) is a provider of commercial transportation, logistics and supply chain management solutions.

## CONTAMINATION

The two most common contaminants in fuel – excessive dirt and water – are typically introduced into fuel during the transportation, delivery, mixing or storage processes, notes Cochefski.

"Water, the most common contaminant, may be introduced when moist air condenses on the fuel tank walls and condensation builds up within the tank, with this water working its way into the fuel mixture," he explains. "Fuel that contains excessive levels of water can see a reduction in its lubricating qualities. This can cause injector seizure and engine damage, in the process, sidelining the vehicle while the necessary – and costly – repairs are performed.

"Fungus and bacteria live in water" he adds. "When these organisms enter a fuel system they can affect sensitive rail injectors in diesel engines and plug fuel filters, reducing their life and causing premature wear, all of which

affect the life expectancy and overall on-road performance of the vehicles."

Particles of dirt, sediment and other solids have a similar effect on fuel injectors, causing them to wear out prematurely and leading to costly engine or fuel system failures, says Cochefski. Today's high-pressure rail injectors, which are standard components on most heavy duty, diesel-powered transport trucks, "are especially vulnerable to clogging from dirt and contaminants."

## A NECESSITY

Ryder's Cochefski stresses that fuel tank cleaning is a necessary part of fuel storage tank management. As such, the implementation of a proper fuel tank cleaning program and schedule is one of the most important things the owner or operator of an underground or aboveground fuel storage tank terminal can do to keep the fuel performing properly and the fleet rolling along.

"Over time, fuel storage tanks can accumulate particulates and moisture from repeated filling procedures," he says. "These particulates and moisture can significantly impact the performance of the fuel and, by extension, the fleet's engines."

Ensuring that the fuel remains as clean and contaminant-free as possible also creates a series of added benefits which allow a fleet to operate at peak efficiency for longer periods of time. Among them he cited:

- Improved fuel economy.
- Longer vehicle component life.
- Reduction in the replacement frequency of fuel filters and injectors and the need for engine maintenance.
- Prolonged injector life.

"The first step in guaranteeing that your fleet spends more time on the road and less in the maintenance bay is making sure that the fuel that powers it is of the highest quality possible," concludes Cochefski.

## Managing heat in engine replacement programs

By Bruce Kaplan, Product Development Manager, Thermal Structures

Most fleets are familiar with the laundry list of good reasons to replace engines in their fleets. The rule of thumb is that replacing an engine can effectively double the lifespan of a vehicle at a fraction of the cost of a new vehicle.

Newer engines typically bring along many of the benefits of a new vehicle, like improved fuel economy, reduced emissions, enhanced performance, greater durability and new warranty coverage for the most expensive part of the vehicle. Some of the biggest benefits of engine replacement are the things fleets don't have to deal with, like licensing fees, taxes and sky-high new vehicle insurance policies.

Plus, come tax time, engine replacements can be depreciated in the same year, while new vehicles have a four- to seven-year depreciation cycle.

So, it's no wonder that many fleet managers are using an engine replacement program to help their bottom line. But, there's one pitfall not to drop into.



**A view of a metal foil insulation blanket over an exhaust bellow within an engine compartment.**

*Photo courtesy of Thermal Structures*

### A COSTLY OMISSION

All too often, when it comes to the inventory of things fleets are planning for during an engine replacement program, heat management doesn't even make the list. This omission can lead to expensive, inconvenient and completely avoidable surprises.

New engines are subject to the same emissions regulations as new

vehicles, and stricter emissions regulations nearly always result in increased operating temperatures. That means when you retrofit a new engine into an older vehicle, it's likely that you're going to need to manage higher overall temperatures.

Dealing with more heat isn't a problem – when you plan for it. There are companies – like Thermal Structures – that are experts at cre-

ating high-performance thermal insulation for applications like heavy duty diesel engine replacements. With proper thermal insulation, heat is kept where it belongs: away from where it can do damage.

When you include the need for thermal insulation early in engine replacement project planning, it will typically represent a very small portion of the overall project cost and be easy to install as part of the engine retrofit. Some thermal issues can require on-engine insulation, but most can be resolved easily with simple heat shields.

### UNPLEASANT SURPRISES

If you wait until much later in the project, or if you don't plan for thermal insulation at all, you can be in for an unpleasant surprise. The newly retrofitted vehicles could be damaged by heat. But even if the issue is caught before the damage occurs, challenges could still present themselves.

There are a couple added sources of cost and headaches in these situations. First, the vehicle will have to be removed from service again and the recently upgraded engine and exhaust may have to be removed to install proper thermal insulation.

Second, because the retrofit may not have left much room for thermal insulation, more costly, thinner high-performance thermal insulation may be necessary, and the installation process for this tends to be much more difficult.

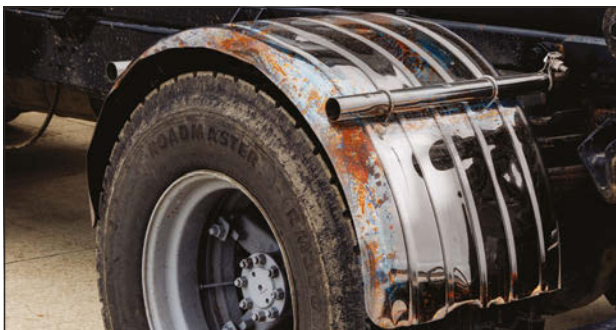
In the end, poor planning can significantly add to the cost of the project.

To avoid these headaches, involve a thermal insulation partner in the planning process. The earlier, the better.

Planning early for the heat protection needs of an engine retrofit will make sure your bottom-line savings don't go up in smoke.

Bruce Kaplan is the product development manager for Thermal Structures ([www.thermalstructures.com](http://www.thermalstructures.com)). A supplier of insulation and composite structures, the company specializes in custom fabricated insulation blankets, heat shields, fire shields, composite structures and metallic and silicone seals. Its insulation products are used in aerospace and industrial applications to protect engines, ducting, valves, mechanical equipment, sensors, electronics and wire harnesses.

## NICE TRY



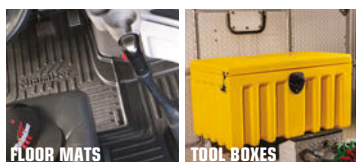
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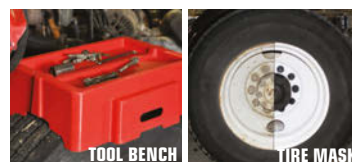


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ing some sleeper hotel load on over the weekend is a familiar and expensive scenario.

KBi's KAPower starting system has been designed from the beginning to be an ultracapacitor starting system for heavy trucks, says company vice president Jim Burke. Having been in the cold-start business for many years, "we really understand the demands of starting deep cold-soaked diesels."

The KAPower used to be slightly larger than Group 31 batteries because early ultracapacitors were sourced from Russia, because, he notes, Russians have been cold-starting big locomotive diesels for two decades using this technology.

**WITH THE STARTING LOAD** taken off batteries, their useful life is extended.

That created some issues for KBi. One was that some customers didn't want to deal with a unit with Russian-sourced components. Another was that truck battery boxes have become so tight that accommodating the KBi unit has had its problems.

The company has switched to a North American Saft-built nickel ultracapacitor and has a newly tooled unit with a Group 31 footprint. Saft ([www.saftbatteries.com](http://www.saftbatteries.com)) designs, develops and manufactures high technology batteries for the industry.

The KBi unit's asymmetrical ultracapacitors are simple, have no internal computer controls and use nickel carbon technology for its storage system. This means the complete unit is nearly twice as heavy as Maxwell's, acknowledges Burke, but it still saves around 20 to 25 lbs over a Group 31 lead-acid battery.

He says that the technology is robust and there is no issue with overcharging. Also, because of its simplicity, the battery will recharge in only 10 to 30 seconds even when fully depleted, which "is a big plus."

Maxwell's solution has a stack of modular ultra-

capacitors that are controlled by an electronic DC/DC converter. Providing there is at least 9V on the vehicle batteries, the capacitor stack can be charged to between 14.5V and 16.2V for a guaranteed start – which is more than the 11.3V a battery-based start requires. Less than 9V would disable ECUs, notes Maxwell's Brakley.

Both the Maxwell and KBi systems are recommended to be isolated from the main vehicle batteries once they have received their charge. The Maxwell ESM has a third terminal on the top which connects directly to the starter or the mag switch in the starter circuit.

*Continued Page 20*



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# 3 reasons truck batteries need backup support

By David A. Kolman, Editor

You don't know cold weather until your route takes you through Manitoba and Saskatchewan in the dead of winter, says Phil Clark, a contractor with a trucking company based in Missoula, Mont., who regularly drives through some of the coldest places in the Northern Hemisphere. "Whether I'm at home or out on the road, there's no worse feeling than waking up in the morning and realizing that my truck won't start.

"The right combination of cold night air, the energy drain from electronics in the cab and your unlucky circumstances cause your batteries to quit," he says. "In this situation, you need to call for a jump start and deal with the aggravation, delay and costs associated with it."

If this doesn't sound appealing, Clark says there is another strategy that can keep a truck running and help achieve peace of mind on the road: complementing the primary power source with ultracapacitor technology. "There are three reasons to admit your batteries are ready to call for backup."

## 1. Relying on batteries can feel like playing Russian roulette with your truck.

Even with the best driver and a sound battery maintenance program, the average lifespan of a truck battery is two years, notes Clark, who has more than 25 years of experience in the trucking business. "Beyond that point, you're taking a gamble every time you start your engine, since the cranking application is a high-power event.

"Because batteries are better at providing long-term energy than burst power, a less risky option would be to rely on an engine start module powered by ultracapacitors just for cranking the truck engine and letting the batteries focus on what they're good at.

"Aside from being well-suited for high power, ultracapacitors have long service life and perform well in a wide range of temperatures and environments, easing the constraints of the battery replacement cycle."

## 2. Ultracapacitors are cost effective. Depending on where it happens, a jump start can cost \$200 to \$500, he says, and "if you need a jump on a regular basis, that price adds up quickly, and that doesn't include the cost of lost time on the road.

"Ultracapacitors also can help reduce fuel costs, especially those from idling your engine all night in order to avoid cold-cranking in the morning. Ultimately, ultracapacitors pay for themselves by preventing delays, eliminating the need for jump-start services and reducing total cost of operation."

## 3. Peace of mind. Clark uses Maxwell Technologies' ultracapacitor-based engine starting product, Engine Start Module (ESM), to help him maintain his route and not worry about dealing with a truck that won't start.

The ESM "allows me to relax, meaning I can stop worrying about whether or not I'll be able to start tomorrow morning. Having confidence in your truck improves your quality of life as a driver."



The KAPower starting system uses asymmetric ultracapacitors and its internal cells are combined in series or parallel to achieve the desired voltage and power, with no internal electronics needed.

Photo courtesy of Kold Ban International

## DOES AWAY with the worry of a truck not starting.

In both cases, a completely discharged main battery will not affect the ability to start the vehicle. However, because of the difference between the symmetrical and the asymmetrical ultracapacitors, the Maxwell setup will drain down in three weeks, whereas the KBI setup may go as long as a year. The KBI ultracapacitor has no toxic materials or unstable Li-ion batteries inside, so it creates far less of a problem in shipping and handling.

## 24V CONFIGURATIONS

It should be noted that in both the KBI and Maxwell setups, the ultracapacitors are available in a 24V configuration. Burke of KBI says that currently 24V accounts for the lion's share of his company's business for use in other applications, but he sees trucking as a huge market for 24V.

According to Brakley of Maxwell, since the starter is isolated in an ultracapacitor system, it's possible to make that part of the electrical architecture 24V while keeping everything powered by the battery side at 12V. This same thought was shared by KBI's Burke.

Brakley says the idea is gaining traction at the truck OEMs who are looking at 24V start systems as the current draw is half for the same power. There are enormous savings in copper to be made in the downsizing of the cabling to the battery box if

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the starter cranks on a 24V circuit. Add to that weight savings – especially if ultracapacitors are used – and it becomes an attractive proposition.

Several years ago, a number of papers were presented at SAE (Society of Automotive Engineers) meetings on the need and benefit of going to a 42V architecture. The proliferation of electronics, electric power steering and other systems taken off the engine and powered electrically indicated that a shift to 42V (three-battery – three times the nominal 14V of a conventional six-cell lead acid battery) power may become necessary.

Improved electrical efficiencies, LED lighting and a lot more has taken the pressure off on the passenger car side. But in interviews with Russ Sukowski, manager of global innovation, Navistar International, on the topic of future fuel economy, he mentioned some of the technologies for 2017 and beyond would drive car and truck manufacturers towards 42V to 48V electrical systems.

Navistar ([www.navistar.com](http://www.navistar.com)) is a holding company whose subsidiaries and affiliates produce International brand commercial and military trucks, proprietary diesel engines and IC Bus brand school and commercial buses.

With the high electrical-demand passenger cars, this could be as near as 2017.

### SUM-UP

Looking ahead, it seems that the passenger car engine stop-start will drive towards a hybrid battery that has lead-acid, Li-Ion or another battery chemistry to drive the majority of electrical loads, possibly combined with an ultracapacitor module that could be integrated into the same case to handle the starter duties.

In heavy trucks, AGM lead-acid batteries may be around for a long while yet, combined with a Group 31 ultracapacitor setup and maybe a 24V starter circuit. After all, with the starting load taken off the lead-acid batteries, they will have – at a minimum – double their life today and remain the

economic best-bet.

Lastly, the application of ultracapacitors is very environmentally and economically beneficial because they prolong the diesel starting system's service life, reduce maintenance expenses and fuel waste, reduce CO2 and unrecyclable waste, plus increase engine life. **FMX**



Steve Sturgess is a long-time automotive journalist who specializes in the transportation industry. [www.stevesturgess.com](http://www.stevesturgess.com).



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# Cost control begins when spec'ing new vehicles

By David A. Kolman, Editor

## Vehicle design influences operational costs

**F**leet maintenance managers typically have direct input and responsibility on cost control. While they may not be the “captain” of their organization, their contributions can be extremely impactful on the overall operation, maintains Christopher Lyon, director of fleet relations, NTEA, the Association for the Work Truck Industry ([www.ntea.com](http://www.ntea.com)). Fleets are often the unsung heroes – viewed as a cost of doing business, he says. But in fact, “a properly run and managed fleet is actually an invaluable asset to the organization, and the potential is limitless. Professionals in a position to influence vehicle design can influence operational costs, and cost management can start with vehicle design.”

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For the most part, vocational trucks are not mass produced. Rather, they are purchased for a specific application or job function. As such, they often have detailed parameters and regularly require high levels of customization.

Inadequate research, paired with poor planning, generally results in a pitfall of unintended consequences and costs, observes Lyon. The way to avoid this is through proper vehicle design.

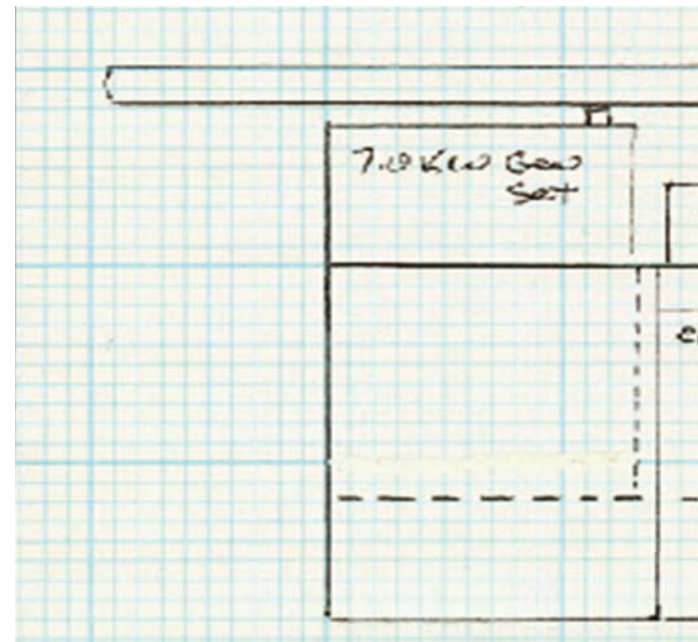
He says that with more time spent on the front end with a well thought plan can:

- Reduce initial acquisition costs.
- Lower maintenance costs.



When designing a vocational truck, carrying out competent research, along with proper planning, can avoid unintentional consequences and added costs.

Photo courtesy of Legacy Truck Equipment



A best practice is to put ideas on paper and visualize the end result. This can often highlight design conflicts.

Graphic courtesy of NTEA

- Improve vehicle productivity.
- Decrease direct and indirect operating costs.

### THE DESIGN PROCESS

“Cost control can be directly impacted by your vehicle design approach,” says NTEA’s Lyon. “These impacts will positively or negatively affect the bottom line of your next purchase.

“Before you begin your next vehicle design, research the application to fully understand the scope and requirements of the unit being purchased. Understand that you or your organization will have to live with the decisions for the life of the unit.”

In beginning the design process, he says it is important to “understand that there is no one right answer, as each organization’s dynamics can be fluid and require constant adjustment.

“Evaluating the performance and utilization of current vehicles can give insight into the functional requirements of your operation, while avoiding the pitfall of solely relying on what’s been done in the past.”

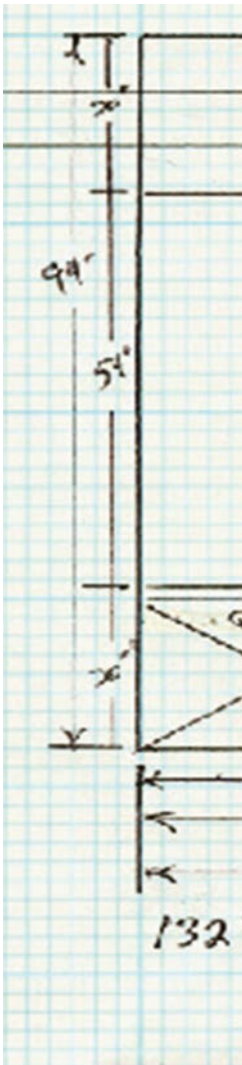
Lyon points out this is the first step to saving money.

“Requirements and equipment specifications often change from year to year,” he observes. “Advances and improvements in new technologies and regulations are constant.”

Therefore, it is wise to regularly review and reevaluate vehicle design and specs.

He stresses that the application should be completely defined. “Lacking a complete understanding of functional requirements will almost certainly guarantee less than satisfactory, and often costly, results.

“Identify critical design constraints. This requires a reality check. Will all the pieces fit?”



## Fleet vehicle costs have declined

The inaugural Element Fleet Total Cost of Ownership (TCO) Index shows that the total cost of having a vehicle fleet fell 14 percent from 2014 to 2015, and that companies with fleets experienced their lowest expenses in at least five years. The drop was attributed primarily to the decrease in fuel prices – one of the largest cost drivers.

The TCO Index was created by Element Financial Corporation ([www.elementcorp.com](http://www.elementcorp.com)) – one of North America’s leading fleet management and equipment finance companies. A proprietary annual look at major cost categories affecting vehicle fleets, it is intended to bring greater clarity to company vehicle expense for businesses, company officials say.

The cost categories include vehicle depreciation, interest expense, fuel and maintenance costs.

### INDUSTRY TRENDS

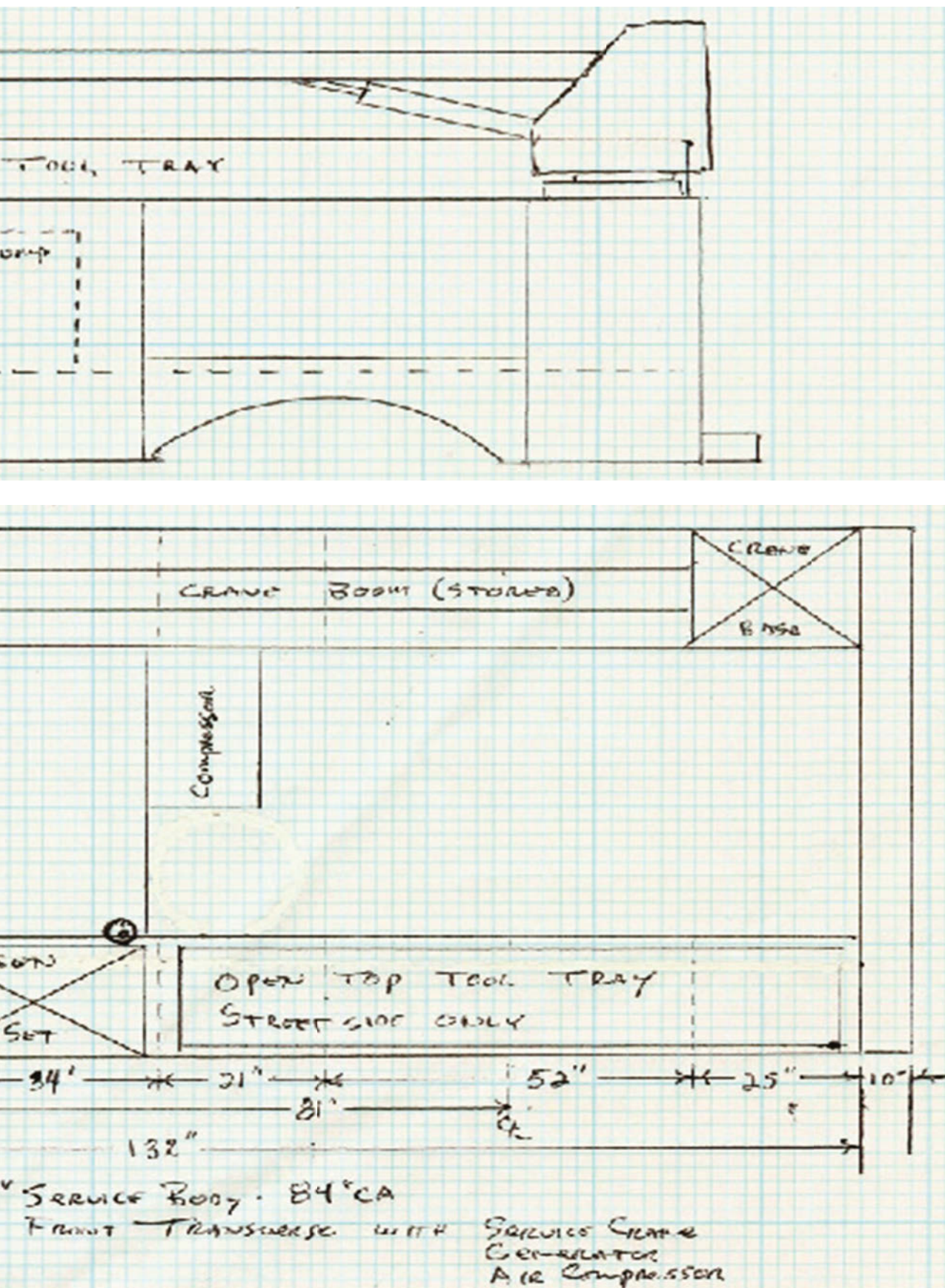
Looking at industry trends, the TCO analysis noted these key factors:

- Average U.S. fuel costs fell 29 percent, driven by the price of fuel – \$2.43 per gallon in 2015 versus \$3.36 the previous year – and improvements in vehicle miles per gallon.
- Depreciation costs rose 1 percent, attributed to a higher average initial cost of vehicles, and offset by continued strength in the resale market for vans and pickups.
- A 1 percent rise in average monthly maintenance costs, driven by an increase in unscheduled repairs (1 percent) and an increase in preventive maintenance (PM) expenses (4 percent).
- Tire costs remained static year over year.

### 2013

The Element Fleet TCO Index uses 2013 as the base year, with a starting value of 100.

The Index showed a drop in TCO for fleets to 96.8 in 2014 and then to 83.3 in 2015, a 14 point year-over-year decline.



“Put ideas on paper and visualize the end result,” he recommends, “as this can often highlight design conflicts.”

## REQUIREMENTS

All too often, the specification for a truck chassis is written first, says Lyon of NTEA. “Designing the second unit – for example, a utility or dump body – first is critical to following logical truck design. This is where the functional requirements are designed.”

Once this is completed, match the second unit to the chassis, he says. Take a moment and do a final sanity check. Did you identify everything – factors such as overall weight and dimensions and regulatory requirements and impacts?”

Another requisite is to keep the equipment users and maintenance stakeholders close in the design process, adds Lyon. Look at current vehicle productivity. Are units over- or under-utilized? Why?

Talk with maintenance personnel and review maintenance records to identify failure patterns and specific problems, he counsels. Also, visit with the equipment operators. Among the things to learn from them is whether the job environment they are working in affects vehicle design changes.

“Understand you will always have to make compromises,” he says.

“Finally,” concludes Lyon, “review and evaluate productivity after the unit has been in service to continue the cycle of improvement.” **FMX**

# How to smooth the implementation of new maintenance management software

By Bob Hausler, Vice President, Marketing and Technology, Dossier Systems, and John Davis, Principal Fleet Management Consultant, Dossier Systems

## Six pitfalls to avoid

**T**here are many reasons you may be on the path to implementing maintenance management software. One may be in response to fleet cost questions. You're tired of giving or receiving answers that begin with: "We think it's about..." "We don't have good reports," or even, "I just don't know." Or perhaps your budget just got blown up (again) because of an expensive breakdown that could have been avoided if the preventive maintenance (PM) was done on time.

Whatever the reason, you've concluded that it's time to move forward with some software. That's a good decision, and a big one, but it's only the beginning, as it brings with it some pitfalls that need to be avoided.

### **PITFALL #1:** "Once I get the software, I'm good to go"

Too often, once a fleet decides to get software, selects and buys/subscribes, it's believed things will be golden and start getting better. True, a fleet is on the right path, but at the start, not the end.

The first step is to choose your maintenance partner and software. Why do you need a maintenance partner? Because fleet software is deep. Chances are that you'll still be learning new things about it after using it for years. Whether you're starting new or switching, a partner who really knows fleet operations, maintenance,

shops, regulations, VMRS (Vehicle Maintenance Reporting Standards), etc., will be a huge asset -- as important as the software itself.

Where do you begin? You must make a clear statement of what you expect to achieve with your new software. At this point in the process, it's crucial to form a project team of stakeholders which should include everyone with a key role. Identify these people and departments, and review what you will need from them to operate the program effectively.

Make a list of the benefits they can expect to obtain to encourage their cooperation. Get their buy-in.

### **PITFALL #2:** "I'll have my IT person do the evaluation and pick something low cost and go from there."

This is not a slam on IT. In fact, IT is among the most important of your stakeholders. But it's absolutely critical that your fleet manager and maintenance manager, as well as the person responsible for profit and loss (P&L), feel comfortable with both your software partner and the software. For you to achieve your goals, your team will need to be working in the software, not around the software.

Resist the urge to buy the lowest price. Some people feel that since they are currently using a whiteboard or Excel to track maintenance, any maintenance software will be a step up. While that may be true, consider the investment you



**While new software brings many benefits to any organization, there are often headaches as well. However, problems can be avoided by properly preparing for the implementation process.**  
*Photo from iStock*

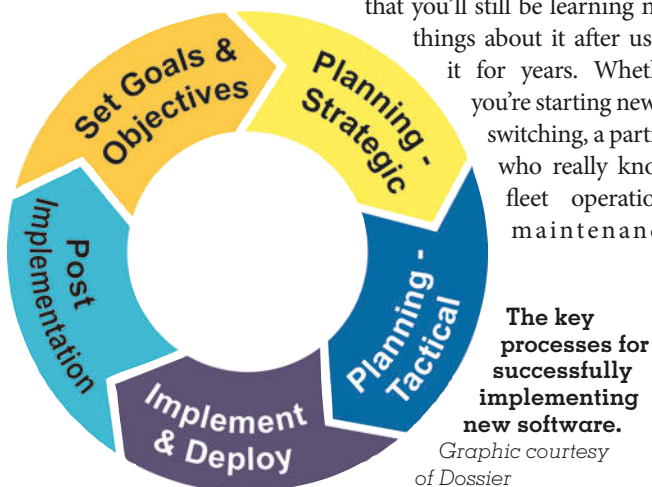
will make in planning, setup, configuration and training. In the long run, the cost of changing to a more capable product later certainly will outweigh the initial cost savings.

Plus, as your maintenance processes mature, you may find yourself frequently bumping the ceiling of a low-end product, especially in the reporting and analysis area which is critical for driving business results – reduced cost/mile, improved fuel efficiency, safety and reliability, increased warranty reclamation from both parts and OEMs, etc.).

If you have significant budget constraints, consider a hosted Software-as-a-Service (SaaS) solution. The up-front cost is typically much lower, plus all of the IT is off of your plate.

Make sure your stakeholders agree on future as well as present goals, and that your partner and software can help you achieve them. For example, your near-term goals may be to reduce breakdowns and violations. However, once you have that under control, you may want to start comparing asset ownership costs for different OEMs, and benchmarking your technicians against Standard Repair Times (SRTs). Be sure that what you choose can carry you into the future.

Once you make the choice and kick things off,







how do you take it from purchase to implementation to fully operational and getting results and ROI? Think back to Pitfall #1. Choosing software is just the beginning. Now is the time to really bring your stakeholder team and maintenance partner to the table and make a plan. One of the first considerations is: avoid Pitfall #3.

### **PITFALL #3:**

**“The software costs more than I had planned/budgeted, so I’ll cut training out of the project. The vendor told me throughout the process that their system was easy to use anyway.”**

This may be the worst mistake of all. A good maintenance partner will not just have great software, but also knowledgeable people who help you with best practices, as well as guide you through the design and setup of the software. You should consider them part of your stakeholder team.

Your stakeholder team should define the project plan. Don’t let those words scare you. It doesn’t need to be complicated. Everyone needs to understand their roles and responsibilities.

Tasks, target dates and expectations should be identified and documented. Even if it’s only a bullet list, you need a written plan with everyone understanding the expectations and timelines. It will make your implementation go much smoother and get you moving toward measurable results much sooner.

Your plan should address:

- The purpose and goals of the new system. Everyone needs to understand the reasons that the system was purchased, the benefits you expect to receive and how to get there. Recognize that to leverage the system for improvements, your processes and procedures, including shop floor workflow, will likely change. Your team needs to be engaged and on board, not fighting or resisting. Involve them up-front.
- Identify the expectations and the reservations or concerns of the team members.
- Get specific tasks identified. Identify dependencies. Assign target dates and an owner for each task.
- Define which staff and groups will have access to the system and with what security. Most systems have a vast array of functions with many security settings. It is best to work this out with your maintenance partner in advance of actually setting up user accounts in the next phase.
- IT considerations, if you are installing on premise on your own server(s). Implementing multi-user software will be more complex than installing a program on your local PC. Be sure that your IT team understands the platform and security requirements of your new software and coordinates with your maintenance partner’s support team.

*Continued page 26*

## It is more than just features

By David A. Kolman, Editor

With the appropriate software, the burden of maintaining and servicing a fleet can be lessened. Software automates a range of tasks to reduce time-consuming chores and costs, plus works to increase shop efficiency and productivity.

Among other things, fleet maintenance software can help with:

- Maintenance planning.
- Maintenance, service and repair tracking of individual assets.
- Technician performance measurement.
- Parts and inventory purchasing, management and planning.
- Assets and parts warranty management.
- Shop management.
- Operations support and budgeting.

### **ESSENTIALS**

When looking for fleet maintenance software, there are several must-haves, say the providers. These include:

- **Ease of use.** The software should be well organized, easy to learn and have an intuitive user interface.
- **Flexibility and scalability.** It should have the ability to modify the functionality of an application to meet specific business needs, as well as add new functionality to meet a fleet’s needs and requirements as it evolves over time.
- **Compatibility.** Any new software should be able to work together with current software without having to be altered to do so.
- **Integration.** When software can be integrated into other information systems, information can be shared and that leads to wiser business planning and decision making.

### **THE VENDOR**

Beyond the software itself, another important consideration is finding the right software vendor. At a minimum, this evaluation ought to include:

- **References.** Ask for references in your industry and check with these customers to learn about their service experiences. Also search the Internet for reviews on vendors.
- **Background check.** How many years has the company been in business? Does it have strong capabilities and credibility?
- **Support.** What type of customer service and support does the vendor provide and offer?
- **Training.** What type of training is offered?
- **Technical support.** What type of technical support is provided? Is this part of the software package?
- **Upgrades.** How well is the software supported through maintenance releases, updates and upgrades? How are these accomplished?

It is wise to “test drive” any new software before making a purchase, advise fleet maintenance software suppliers. Trying out a software’s features, benefits and usability will help determine if it “feels right” for your operation.

## PITFALL #4:

**“We’ll get the maintenance staff planned first and come back to the accounting stuff afterward.”**

If any data will be passed from maintenance to your business system(s), this should be considered as part of your plan. Payroll, payables, receivables and cost accounting frequently consume maintenance/cost data.

Even if the connection will be a second phase of the implementation, it’s good to identify the strategy up front so that the proper considerations are put into your new maintenance system. For example, if different VMRS part codes will map to GL (general ledger codes) in your accounting system, it’s best to have that planned so your inventory can be coded properly when it is set up.

A solid library of flexible, out-of-the-box reports is a must for a good maintenance product. Learning about them and how to use them should be a keystone of your training program.

However, if you are replacing an existing system, there may be certain reports or management tools

that are used throughout your organization. In some cases, it may be easier to recreate a few such reports in your new system in addition to the standard reports. If this is the case, be sure that your maintenance partner has included creation of these custom reports for you in their scope.

Of course, the fact that you “always did it that way” may not mean it’s the best way. Work with your maintenance partner to determine the best path forward.

Remember, reports, dashboards and analysis tools that help you track and understand KPI’s and other business metrics are one of the main reasons to invest in software in the first place.

## PITFALL #5:

**“We spent a lot of time on this plan. Now we just need to follow it to the letter.”**

Having built a great plan is a huge plus, but you need to be aware that some things will not go according to the script. Also, since being involved in a project may be new to some on your team, you need to have regular reviews at each step of

the process. You will need to be flexible without compromising the important elements of your strategy that you worked hard to develop.

By this point in the process, your software should be up and running. If your plan addressed the issues identified earlier, this stage mostly should involve loading data because the decisions have already been made. You will make some decisions on the fly, but this is where your plan pays dividends.

- **Initial data.** In loading the initial data for your fleet operation, you will need information on the vehicles and equipment, vendors for service or parts and your parts that you keep on hand. There are two ways in which to populate your master data into a new system. One is by manually entering information and the other is to import the data from spreadsheets. Both ways works and both options have merit. The decision typically depends on the quantity and quality of your data.
- **Users.** Set up users according to your organization and plan. If necessary, adjust individual user permissions as needed.
- **Maintenance parameters.** Set up maintenance



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nance parameters, such as PMs, warranties, standard repairs, SRTs, personnel, etc.

- **Training.** As noted earlier, this is key to your success. Train before, during and after. Not everyone needs the same level of training, however, training is imperative because it keeps everyone on a common playing field, delivers more consistent information and provides a path from which to make better decisions.

Be careful of the telephone or 15-minute web-based training models. Word-of-mouth passed from one new user to another also does not typically provide full training as they are just learning themselves.

Ongoing training allows you to grow into the system, have a chance to work with the system and make changes along the way. Remember that you have to have data in the system before you can have reports from the system.

**PITFALL #6:**  
**“We have everything up and running. We’re done.”**

Implementation is not just loading the software, training the staff initially and going live on the shop floor. It is an ongoing working relationship with your staff and your maintenance partner’s staff.

Your staff will change, your management will require additional or different information and reporting and your software partner will release new versions and features over time. Knowledgeable support should be only a phone call away.

Start over. Part of the post-implementation process is to identify what-ifs and next steps. Business needs change, and no one will ever call and ask if you would like to spend more on managing the fleet. Plus, your fleet technology is getting more complex with new emissions equipment, telematics, onboard electronic logging, etc.

All of these things mean that you need to use your maintenance software more effectively to both demonstrate the real cost of operating your fleet year over year, as well as identify potential areas for savings. Once you

have the basics running smoothly, identify opportunities to use your software to be more cost efficient and productive, then use this same model to implement your next strategy.

This is another area where a good choice of maintenance partner and software will pay dividends. You always want to have the tools to facilitate a program

of continuous improvement and be able to effectively meet new challenges and succeed. **FMX**

Bob Hausler is the vice president of marketing and technology for Dossier Systems and John Davis is principal fleet management consultant for the company. Dossier ([www.dossiersystem-sinc.com](http://www.dossiersystem-sinc.com)) is a provider of intuitive fleet maintenance management software solutions for the surface transportation industry.

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Jack Poster,  
VMRS Services Manager,  
Technology & Maintenance  
Council (TMC)

# Industry coding standard helps technicians ensure maintenance data integrity

VMRS takes the guesswork out of collecting maintenance repair data on the floor

There's an old saying: "It all starts on the shop floor." When it comes to equipment repair orders, these words ring true. In order for a fleet to operate smoothly, maintenance data must be precise and repair orders complete.

The responsibility for timely and accurate service information starts with technicians. They are a maintenance operation's first and best hope in collecting the correct data. If the wrong information is collected on the repair order, eventually the wrong information will end up as being factual. Garbage in, garbage out.

Fleets cannot maintain their equipment with anecdotal information. Facts are needed to ensure proper business decisions. Fortunately, there's an industry standard that helps take the guesswork out of collecting maintenance repair data on the floor.

The Vehicle Maintenance Reporting Standards (VMRS) were developed more than 40 years ago as a standard coding convention for universally tracking maintenance costs and functions. In other words, it was intended to be the "shorthand" of maintenance reporting.

Developed under the auspices of the American Trucking Associations and managed by its Technology & Maintenance Council, VMRS puts everyone on the same page and speaking the same language. VMRS can help any maintenance shop reach its full potential and profitability.

## Clarity in Reporting

Clarity is extremely important when it comes to equipment maintenance reporting. There are numerous ways to describe what work was performed and why a certain part failed. Most employees prefer a short, precise method when entering data on a repair order.

Technicians are paid to repair equipment, not dwell on filling out complicated repair orders. VMRS can help speed up the process.

The VMRS codes help eliminate the need for extensive written communications with all the inherent problems of miscommunication normally associated with the written word. The coding structure encompasses most equipment found within today's transportation activities, including trucks, tractors, trailers, forklifts, shop equipment, off-road and utility vehicles. If it needs maintenance, VMRS can help.

Describing the work performed on a repair order can be a difficult task for many technicians. Too many choices can lead to frustration and incorrect data. VMRS brings continuity to



**With a standard method for recording work that was performed and why a certain part failed, confusing descriptions are eliminated and there is consistency throughout any maintenance organization.**

*Photo courtesy of TMC*

## VMRS cuts through the jargon that can encumber maintenance operations.

the repair order process. With VMRS, a fleet can operate multiple maintenance shops and receive consistent data throughout the organization.

## Code Keys

VMRS is organized into code keys, which are data sets/elements or "buckets" of individual codes that describe a given function. For example, one such "bucket," Code Key 18: Technician Failure Code, contains more than 90 codes that alpha-numerically describe the apparent failure of a suspect component as determined by the technician /supervisor. These include:

- 04 Dented.
- 10 Bent.
- 14 Cracked.

- 18 Leaking.
- 21 Misadjusted.
- 25 Out of Balance.
- 27 Overheating.
- 95 Requires Program Update.

Code Key 15: Work Accomplished Code contains more than 45 codes used to describe the labor that was performed. There also are codes for preventive maintenance (PM) levels. A few of these code examples are:

- 01 Adjust.
- 03 Replace with New.
- 32 Torque.
- 33 Tighten.
- 45 Resurface.
- 46 Regenerate on Vehicle.

Code Key 33: Component Code, a nine-digit number, describes any part imaginable on a vehicle, no matter how small or large. The first three numbers identify its originating system; next three, its assembly; and last three, the part itself.

Technicians can use VMRS to make an alpha-numerical coded sentence, usually as part of a maintenance management software program. For example, suppose the technician spots a manually-adjusted front wheel bearing that's out of adjustment and then adjusts it to within 0.001" to 0.005" endplay as per OEM specification. VMRS describes that consistently using Code Keys 15, 18 and 33 (component) in just 13 digits: 018-001-002 21 01.

**What is it?** Code Key 33: Component Code 018-001-002; stands for Bearing Assembly, Cup and Cone – Front Steer Wheel, Outer.

**What's wrong with it?** Code Key 18: Technician Failure Code 21; stands for Misadjusted.

**What was the correction?** Code Key 15: Work Accomplished 01; stands for Adjust.

The codes are a brief description of labor tasks that make it easy for a technician to choose the proper work that was performed on any type of equipment.

## Control of Costs

Jarit Cornelius, director of maintenance for Nashville-based truckload carrier Sharp Transport – a panelist on the VMRS Study Group session at the 2015 TMC Annual Meeting in Nashville – explained that VMRS is the ideal tool to help fleets gain complete control of their costs.

He stated that VMRS allows the user to precisely track repair data for use in forecasting, set a realistic budget, identify if and where training is needed for technicians, proactively schedule maintenance

procedures and identify key costs to effectively reduce expenses and increase the bottom line.

Cornelius said Sharp Transport views VMRS as its number one tool responsible for leading the improvement in efficiency of its maintenance department. The fleet has created best practices, developed reports and implemented solutions through VMRS that continue to contribute to fleet operations and its bottom line.

Also on the panel was Michael Riemer, vice president of products and channel marketing for Decisiv, a provider of Service Relationship Management (SRM) solutions for commercial assets. He said VMRS can help sort Big Data – the collection and sifting of large amounts of information – which can become confusing and chaotic if you don't have structure to it. Trying to understand unstructured information is extremely difficult, but VMRS provides a solution.

He added that VMRS is not just for components, but also can explain a fleet's assets, service events, repair operations, as well as the physical components that are being impacted. Moreover, Riemer said Decisiv applies VMRS to the practical application of regular business activities, increasing the ability for the manager to "slice and dice" data across a wide variety of areas, and that provides a better overall picture of a shop's capacity and total efficiency.

### Consistency

VMRS provides consistency throughout any maintenance operation, whether you have one shop or 20. Think of VMRS as the musical notes of maintenance repairs. It puts everyone on the same page, playing the same notes. It has been the standard since its introduction in 1970 and continues to be an integral part of all types of maintenance related businesses.

VMRS is much more than numbers. It's a standard method of recording daily maintenance operations that helps save them time and complete a repair order in a standard fashion.

Gone are the days of con-

fusing labor descriptions and different descriptions of the parts used on a repair. VMRS cuts through the jargon that can hinder any maintenance operation. VMRS is the known advantage in collecting maintenance information. **FMX**

Jack Poster is the VMRS services manager for TMC ([www.trucking.org/Technology\\_Council.aspx](http://www.trucking.org/Technology_Council.aspx)), North

America's premier technical society for truck equipment technology and maintenance. As such, he is caretaker of the VMRS coding convention, working with fleets, OEMs, software firms and all users of VMRS to ensure the integrity of the codes. TMC is a technical council of American Trucking Associations ([www.trucking.org](http://www.trucking.org)) – the largest national trade association for the trucking industry.

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By Al Cohn,  
Director, New Market Development  
& Engineering Support,  
P.S.I. (Pressure Systems International)

# It's all about tire inflation

## Common mistakes to avoid to optimize tire performance

Commercial truck tires are the number one maintenance cost for fleets, so they are taken very seriously. With the average price of a radial steer or drive tire in the \$500 range and trailer tires about \$425, a fleet can spend nearly \$10,000 for 18 tires.

Even if the same fleet is retreading its drive and trailer tires, the cost still will be in the \$6,000 to \$7,000 range per vehicle.

A successful tire program will keep the tire cost per mile in check. A poorly thought through tire program can become a financial disaster.

Tires are designed to carry the vehicle load at a specific tire inflation pressure. Air is what really carries the load. Molded onto the sidewall of every commercial truck tire is the maximum load the tire can carry at a specific inflation pressure.

### Typical Mistake

A common error is to inflate the tire to the maximum tire pressure. The correct procedure is to inflate the tire to the recommended tire pressure based on the worst case load scenario that the vehicle or tire will experience.

Every tire manufacturer includes on their website the official load/inflation tables for every tire size and load range. These tables are also broken down into a "single" and "dual" tire category. Regardless of tire make/model, the load/inflation tables are identical.

If your fleet is running light loads, 85 psi might be the recommended pressure for a 295/75R22.5 LR G tire. Meanwhile another fleet may find that 110 psi is the correct pressure, since they are hauling heavy steel products.

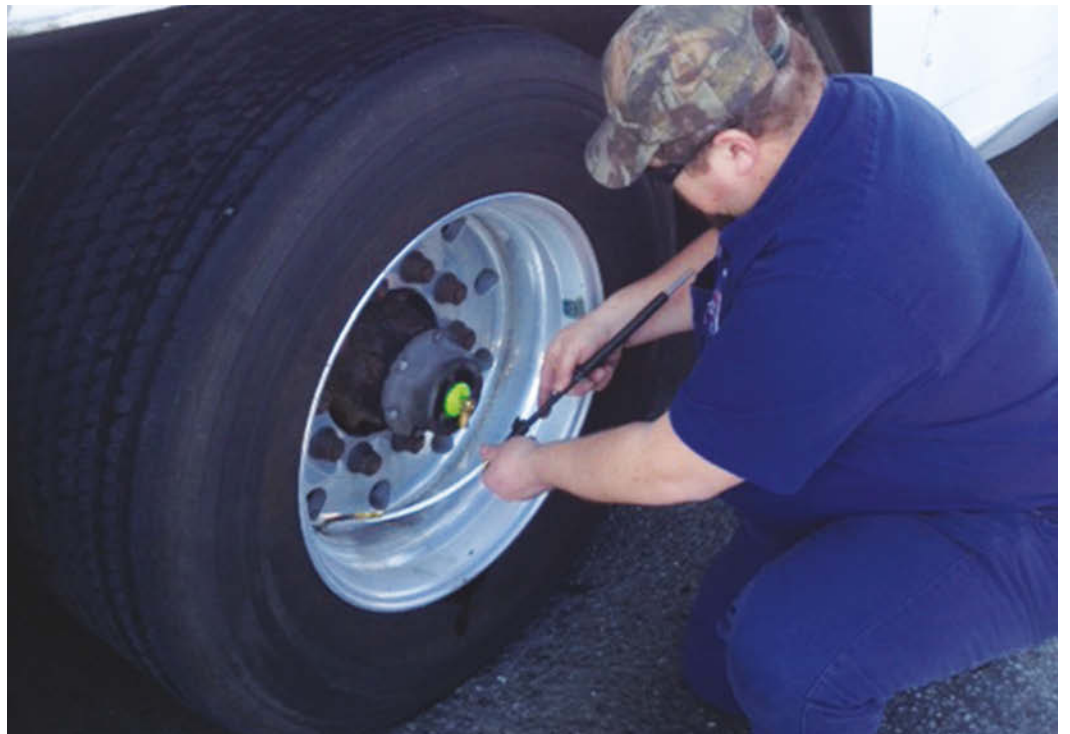
Even though tire experts have been preaching how important it is to maintain proper tire pressure for more than 30 years, tire underinflation is still a major issue facing fleets. Why is it still an issue? There are many reasons:

- It takes way too long to manually check 18 or more tires with a gauge.
- You have to bend down and reach inside the wheel well to check the inside duals. That's not good for the back, and you get dirty.
- Losing valve caps is an issue.
- Tire pressure gauges are notorious for being inaccurate. Brand new, out of the box tire pressure gauges – regardless of vendor – are accurate to only +/- 3 psi. This means that a 100 psi tire can read 97 psi with one gauge and 103 psi using another.

### Reason for Air Loss

There are really only four reasons why any tire will lose air:

1. **Osmosis.** Depending on tire make/model, tires will lose 1 to 3 psi per month through osmosis. Tires are similar to a balloon. You inflate a balloon and, by the next day, the air has dissipated through the membrane via osmosis.
2. **Tread area punctures.** Tread area punctures is the number one reason why tires lose air. Tires can be checked manually before leaving



**Even though tire experts have been preaching how important it is to maintain proper tire pressure for more than 30 years, tire underinflation is still a major issue facing fleets.**

*Photo courtesy of P.S.I.*

### AIR is what really carries the load.

the yard in the morning and can pick up a nail just moments later. The common #20 penny nail can lead to a loss of air of several psi per day and, in a few days, you will have a significantly underinflated tire.

3. **Sidewall impact breaks.** Hitting the curb with the right outside trailer tires while making a turn can lead to a sidewall impact break and a sidewall rupture.
4. **Leaking valve stems and cores.** Overtightening valve cores can result in air loss. There is a torque specification of 4 in/lbs for a valve core. There are several suppliers that sell a valve core torque wrench pre-torqued to 4 in/lbs.

### A Bad Thing

Why is tire underinflation a bad thing? Tires are designed to run at a specific inflation pressure based on the worst case load. When tires run underinflated, the sidewalls flex significantly, leading to excessive heat buildup. Heat is the worst enemy of any tire. High heat leads to reduced retreadability, reduced mileage and kills fuel economy.

Irregular tire wear increases because the tire footprint becomes significantly longer and distorted. The longer and hotter footprint tends to pick up more puncturing objects.

There is never any good news when tires run underinflated.

A truly bad scenario is when the inside dual is running at 70 psi and the outside dual at 100 psi. The tire revolutions per mile are quite different between the two tires. The result is one tire scrubbing and bouncing to keep up with the other tire, and irregular wear develops.

When a tire is not running smoothly and evenly, the fuel economy drops dramatically.

### Trailer Tires

Trailer tires are the poorest maintained tire wheel position for many reasons. Drivers check the steer tires regularly (and maybe a few drive tires), but trailer tires are typically neglected.

The common solution used by the majority of fleets is the use of automatic tire inflation systems (ATIS) for their trailers. These systems simply add air to the tires whenever the pressure drops below what is set in the system's control box.

ATIS technology has been around for more than 20 years and is a proven, low maintenance, short ROI solution to keep trailer tires at the optimum pressure all the time. In addition to maximizing tire removal miles, fuel economy and retreadability, these systems dramatically reduce tire related roadside service calls.

Another feature of these systems is that they can be specified on new trailers and also can be retrofitted on existing equipment.

Working with your tire professional is always a good idea when optimizing your fleet's tire program. **FMX**

Al Cohn is the director of new market development and engineering support at P.S.I. ([www.psitireinflation.com](http://www.psitireinflation.com)). The company provides automatic tire inflation systems along with customer valued services and tire maintenance-related solutions.



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By John Chalifoux, President and COO, Motor & Equipment Remanufacturers Association (MERA)

## A simple solution to increase margins without sacrificing quality

Remanufactured parts offer a range of benefits

Successful companies look for ways to decrease operating expenses while maintaining, or improving, the quality of their products or services. However, this can be difficult to deliver because the old idiom, “You get what you pay for,” often applies.

Simple solutions that offer great value can be the answer for companies seeking to realize an increase in customer attraction while improving bottom-line results.

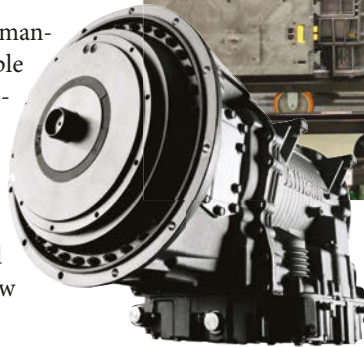
When it comes to fleet maintenance, remanufactured (or reman) parts can be a simple solution for diverse repair and maintenance needs. Because they are produced in a factory setting and utilize a standardized industrial process, remanufactured parts are returned to same-as-new (or better) condition and performance, and they carry warranties similar to that of new replacement parts.

Additionally, remanufactured parts incorporate engineering, quality and testing standards, but they cost only 70 percent, on average, as compared to new parts.



**Above, produced in a factory setting and utilizing a standardized industrial process, remanufactured parts are returned to same-as-new (or better) condition and performance, and they carry warranties similar to that of new replacement parts.**

*Photo courtesy of Bendix*



**Numerous remanufacturing companies are fully authorized by OE manufacturers to remanufacture and service their parts.**

*Photo courtesy of Allison Transmissions*

Effective fleets looking to take advantage of these inherent cost savings – while preserving their reputation for reliability and exceptional service – should look to reman for their supply chain needs first. Savvy fleet businesses can then price their services to deliver favorable margins, all without compromising quality or customer expectations.

### Reduce Downtime and Comebacks

The availability of quality remanufactured parts can help fleets reduce both downtime and comebacks, which is crucial for not only effective maintenance scheduling, but also helping increase technician proficiency and customer satisfaction. The use of remanufactured parts can help a fleet do the job right, the first time, on time.

What many fleets may not know is that numerous remanufacturing companies – if not all original equipment suppliers – are fully authorized by OE manufacturers to remanufacture and service their parts.

For instance, TransAxle ([www.transaxle.com](http://www.transaxle.com)) – a premier supplier of remanufactured transmissions, axles and hydraulic components – sells Allison Transmissions that are remanufactured in TransAxle’s Allison-authorized facility ([www.allisontransmission.com](http://www.allisontransmission.com)). TransAxle products are

also authorized by Eaton ([www.eaton.com](http://www.eaton.com)) and others to perform work that will meet or exceed original specifications. This recognition allows TransAxle to offer some of the best warranties in the business.

The producers of remanufactured parts stand behind their work. With a reman part, customers can be assured that the part has like-new quality, performance and warranty coverage, offering peace of mind should any problems arise. In essence, a reman part offers the same benefits of a new replacement part, but it does so at a lower cost.

It is always important to know the quality of your parts, because it is essential for fleet maintenance managers and technicians to protect their own reputations for high-quality work.

### Approved Quality

Through the leadership of MERA, the remanufacturing industry received further distinction in October 2015 when President Obama signed S. 565, *Federal Vehicle Repair Cost Savings Act of 2015*. It required federal agencies to prioritize the use of remanufactured parts when servicing the federal civilian vehicle fleet.

In addition, Michigan, Connecticut and several other states have introduced, or signed into law, legislation similar to these federal guidelines for their statewide fleets.

Even though remanufactured parts are qualified and vetted by the federal government, many fleets, when looking to source reman parts for their own needs, still need to know the names of quality suppliers. As an industry resource, MERA



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can help identify the reputable companies – each of which is peer-reviewed before membership approval – that produce high quality remanufactured parts.

Fleets looking to learn more about remanufactured parts are encouraged to contact MERA.

## Growth through Sustainability

Fleets using remanufactured parts are also investing in a sustainable future – whether it be for manufacturing jobs, where most remanufacturing is done locally, or the circular economy, by reducing waste and recycling key natural resources. By making remanufactured parts a primary supply source, fleets offer like-new performance and economical pricing, as well as market their company as a sustainable operation. Reman then becomes a means to attract new customers.

Depending on their business operations, medium and heavy duty fleets cite their use of reman parts when seeking ISO 14001 certification (environmental management systems). As end-users, fleets looking to become sustainable through remanufactured parts implementation can take comfort in the fact that many of their up-stream parts suppliers have achieved certification.

For example, Bendix Commercial Vehicle Systems ([www.bendix.com](http://www.bendix.com)) – a supplier of remanufactured brake shoes, valves, air dryers, compressors and electronics for nearly four decades – maintains ISO 14001 certification for each of its manufacturing facilities.

By being held to higher industry environmental standards, remanufactured parts are a sound choice both economically and environmentally.

## The Reman Solution

Fleets that mandate the purchase of remanufactured parts as the primary replacement and repair option for their vehicles can deliver exceptional quality to their customers. Fleets also can meet their

financial goals by using reman to increase their operating margins and achieve favorable business outcomes. Furthermore, fleets can market to customers invested in sustainability and the circular economy.

Put it all together and one can see how remanufacturing is a simple solution. **FMX**

John Chalifoux, is president and chief operating officer of the Motor & Equipment Remanufacturers Association (MERA), the industry association for remanufacturers that produce parts that are “Manufactured Again” ([www.mera.org](http://www.mera.org)). MERA is the remanufacturing and sustainability division of the Motor & Equipment Manufacturers Association ([www.mema.org](http://www.mema.org)) MEMA, which has been advocating on behalf of the motor vehicle supplier industry since 1904.

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By Joel Levitt,  
Director of International  
Projects, Life Cycle  
Engineering

# It is our responsibility

The need to cultivate our successors

We have a small window that is closing fast. The first baby boomers are 70 and the last ones will reach retirement in only 15 years. Our successors are taking over or are in training to take over. We want them to be successful.

It is our job, our responsibility, even our duty, to accelerate the development of leadership. If we do this to the best of our ability, our successors will be ready.

This upcoming group is smart and tech savvy. They are better prepared for automation and deep-level computer control than we are. It is not primarily knowledge that we need to impart, nor skills and abilities, although this certainly is important.

We need to transmit something of our attitude, our judgment and of our pride in good products and in solid machines.

There are already classes in knowledge, skills, processes and procedures. There are very little programs available about attitudes, judgement and pride.

## Mentor

One antidote is personal. It is called mentoring. Mentoring is a special relationship between a senior person (the mentor) dedicated to the business and development of the person being mentored.

The story of Mentor comes from Homer's *Odyssey*. It is the story of Odysseus' 10-year trip home after the fall of Troy. When Odysseus, king of Ithaca, went off to fight the Trojan War,



he entrusts the care of his household to Mentor, who serves as teacher and overseer of Odysseus' son, Telemachus.

The word "mentor" evolved to mean trusted advisor, friend, teacher and wise person.

According to Emory University's Learning and Organizational Development: "Mentoring is a fundamental form of human development where one person invests time, energy and personal know-how in assisting the growth and ability of another person."

Workers benefit from mentoring because they receive advice and guidance from those with greater knowledge and experience. Those workers then make fewer mistakes and become more productive.

Photo from iStock

## IT HELPS motivate and engage employees.

Mentors show confidence in the mentee. Sometimes the only thing a person needs is for someone to believe in them. In the movie *Joy*, the only person that believed in Joy was her grandmother. In the face of universal negativity in Joy's family, her grandmother's confidence was enough to carry her through.

Mentors also make introductions to people who might be useful to the mentee, provide resources for projects and help create and manage opportunities.

## Benefits

A well-mentored person has an increased comfort level in their job and life. This comes from the enhanced relationship with reality. Plus, they tend to be more effective than they once were.

Their increased effectiveness comes from knowing what is important and what is less important.

All of this tends to enable them to have more fun at work.

For the mentor, there is a feeling of satisfaction from making a contribution to someone's life.

For my next column, I will discuss how to get started as a mentor. **FMX**

Joel Levitt is director of international projects for Life Cycle Engineering ([www.lce.com](http://www.lce.com)), an organization that provides consulting, engineering, applied technology and education solutions that deliver lasting results. Previously, he was president of Springfield Resources ([www.maintenancetraining.com](http://www.maintenancetraining.com)), a management consulting firm.

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## What They Do

Mentors provide counsel. They might advise patience when that is needed or action when that is needed.

Mentors teach a person to "see" and properly evaluate reality. They provide context for what is going on at the company. They afford a big picture view to help the mentee understand a current crisis more clearly. They can be a mirror so that the mentee can "look" and see themselves in the future.

Furthermore, mentors help the mentee be prepared and help them avoid being blindsided by events or people.

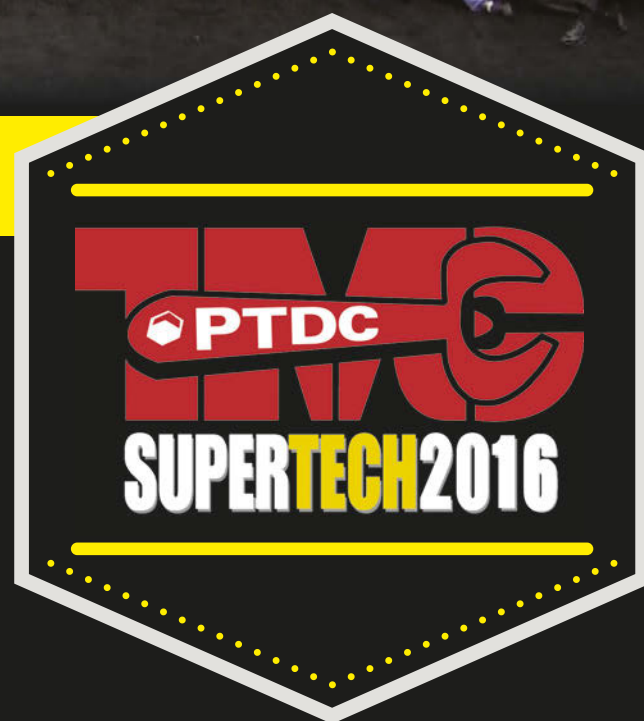
Mentors listen deeply and powerfully to the mentee. Listening closely, and without filters or concerns (sometimes called innocent listening), will help the mentee get stronger and more mature.

This kind of listening is like putting fertilizer on a garden. It makes it grow.

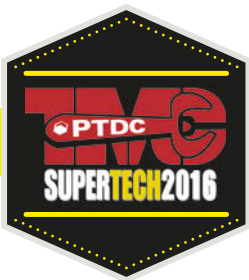


THE 12TH ANNUAL NATIONAL TECHNICIAN SKILLS COMPETITION

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- » Invitation
- » Competition Framework
- » Professional Technician Development Committee (PTDC) Training Fair
- » Technology & Maintenance Council (TMC) Fall Meeting
- » TMC Membership



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**TMC MEETINGS**

**RALEIGH, NC**  
September 18-22, 2016  
2016 Fall Meeting & National  
Technician Skills Competition  
Raleigh Convention Center

**NASHVILLE, TN**  
Feb. 27- March 2, 2017  
2017 Annual Meeting & Exhibit  
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# TECHNOLOGY & MAINTENANCE COUNCIL

*TURNING EXPERIENCE INTO PRACTICE*

July 1, 2016

Dear Trucking Industry Professional:

As TMC Executive Director, I invite you to attend the Technology & Maintenance Council's 2016 Fall Meeting, Sept. 18-22, at the Raleigh Convention Center in Raleigh, N.C. 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 2016 Fall Meeting — **Crafting Maintenance & Technology Solutions** — centers around finding answers to the environmental, economic and regulatory challenges that face our industry. Many of our educational sessions will address these topics, as explained in the enclosed meeting promotion.

In addition, TMC is holding North America's 12th annual **National Technician Skills Competition** September 18-21. The event — called **TMC SuperTech 2016** — will feature professional commercial vehicle technicians competing for top honors and valuable prizes as they demonstrate their diagnostic abilities through a series of skills stations. Organized by TMC's Professional Technician Development Committee (PTDC), the TMC SuperTech 2016 competition will start Sunday evening and conclude Tuesday evening. Awards will be given to the top three technicians and skills station winners during Wednesday's Awards Luncheon. All meeting attendees are welcome during the hands-on skills portion of the contest, so stop by and see what TMC SuperTech 2016 is all about. This year also features our third Student Technician Skills Competition, TMC FutureTech 2016, thanks to the sponsorship of Velociti.

In conjunction with TMC SuperTech 2016, the Council is offering the **PTDC Technician Training Fair**. The Fair will offer hands-on training sessions in areas such as aftertreatment system maintenance, filter technology fundamentals, and fan clutch operation and maintenance. The training fair will be held on Wednesday, Sept. 21.

For details, please review the material provided in the enclosed brochure, or visit TMC's website: <http://tmc.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 2016 Fall Meeting. We look forward to seeing you in Raleigh.

Sincerely,

Carl Kirk  
TMC Executive Director



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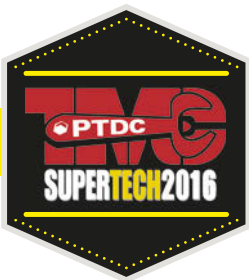


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# TMC competitions bring out the best in professional and student technicians

By Robert Braswell, Technical Director, Technology & Maintenance Council

## It's easy to get technicians registered

### COMPETITION FRAMEWORK

The Technology & Maintenance Council (TMC) is once again looking for the industry's best technicians. Think you know someone that's up to the challenge? If they have what it takes to place their diagnostic and problem solving skills up against trucking's best of the best, then they should be a part of TMC SuperTech 2016.

If you know an up-and-coming student technician that really shines, encourage them to compete in TMC FutureTech 2016 – the National Student Technician Competition.

Built for professionals, TMC SuperTech 2016 marks the 12th anniversary of the National Technician Skills Competition – an event designed to determine the industry's top technicians through a variety of troubleshooting tests and skills challenges.

Organized by TMC's Professional Technician Development Committee (PTDC), the national TMC SuperTech competition recognizes truck technicians and promotes the career opportunities for this important industry role. The competition showcases the skill and knowledge of trucking industry technicians and increases the visibility of available career opportunities.

"Given the pace of technological change, being a heavy truck



**The Hands-On Skills Challenge** portion of the National Technician Skills Competition is a series of 25-minute-long stations that cover key diagnostic skills areas. Each station has its own set of challenges.

*Photo courtesy of Marsh Galloway, TMC*

technician is truly one of the most challenging and skilled jobs in our economy," says Carl Kirk, executive director, TMC. "The knowledge base that these folks have to master is truly amazing. It's entirely appropriate that TMC honors the best of the best of our industry."

Comprised of a broad collection of experienced fleets, equipment suppliers and service providers, TMC ([www.trucking.org/Technology\\_Council.aspx](http://www.trucking.org/Technology_Council.aspx)) is the only industry association that is focused solely on truck technology and maintenance.

Using their real world experience, members work together to create the industry's best practices in truck technology and maintenance to help improve trucking equipment and transportation efficiencies throughout North America.

TMC is a technical council of American Trucking Associations ([www.trucking.org](http://www.trucking.org)) – the largest national trade association for the trucking industry.

Eric Vos of FedEx Freight was named TMC SuperTech 2015 National Technicians Skills Competition Grand Champion. FedEx Freight technicians Brian Blevins and Josh Nordick placed second and third, respectively.

### EXPANDED QUALIFYING ROUND

This year's TMC SuperTech features an expanded qualifying round which includes, not only a written test, but also a series of hands-on skills challenges just like those featured in the final TMC SuperTech Hands-On Skills Challenge.

This year, the contestant orientation and written qualifying test will start on Sunday, Sept. 18 at 6 PM. Qualifying rounds will be held Monday, Sept. 19 from 8 AM to 4 PM.

The Hands-On Skills Challenge Final Rounds will be held on Tuesday, Sept. 20 from 8 AM to 4 PM.

Here is how to get involved in TMC SuperTech 2016:

#### Step 1 - Register

Any technician employed in the trucking industry may register for

## TMC FutureTech 2016

TMC is hosting its second annual National Student Technician Competition – TMC FutureTech. Velociti, a global provider of technology deployment services, is the competition's official sponsor for 2016.

TMC FutureTech 2016 consists of a set of skills stations for technician students to be held during TMC SuperTech 2016 on Tuesday, Sept. 20. Winners will be announced at Wednesday's TMC Industry Awards Luncheon, which is open to both contestants and meeting attendees.

Student registration is limited to 80 individuals for TMC FutureTech 2016. The student competition registration fee is \$200. The registration cutoff is Aug. 15.

"TMC's Professional Technician Development Committee organizes skills competitions to further our

efforts to promote careers for professional commercial vehicle technicians in all segments of the trucking industry," says Carl Kirk, executive director, TMC. "For 2016, TMC is able to continue the National Student Technician Competition thanks to Velociti's willingness to return as the official sponsor of this valuable industry service."

Daniel Hanna, a student at Forsyth Technical Community College, was the winner of last year's TMC FutureTech. Jonathan Kelly of Southside Virginia Community College, finished second, and Karl Kerutis of WyoTech Blairsville, placed third.





TMC's National Technician Skills Competition. The entry fee for TMC technician members is \$250. The entry fee for non-member technicians is \$350, and that includes TMC technician membership for the balance of 2016.

The entry fee is waived for verified champions of 2016 state trucking association technician skills contests.

More than 25 state organizations hold competitions at the state level. If your state trucking association or company is interested in holding its own preliminary SuperTech-styled event as a means of selecting finalists for the TMC SuperTech, refer to TMC's *How to Conduct a Technician Skills Competition* brochure. It can be downloaded at <http://tmc.trucking.org>. A short video about the TMC SuperTech also can be viewed there.

#### Step 2 - Come to Raleigh

TMC SuperTech 2016, held in conjunction with TMC's 2016 Fall Meeting, will take place at the Raleigh Convention Center in Raleigh, N.C., Sept 18 to 21. Competitors should plan to arrive on Sunday, Sept. 18 to receive their TMC SuperTech credentials, attend the contestant orientation and take the qualifying written test.

#### Step 3 - Compete in the qualifying rounds

All contestants will compete in qualifying rounds on Monday, Sept. 19. These consist of several hands-on skills pre-qualification tests.

*Continued page 40*

## TMC SuperTech Grand Champions

The past winners of TMC's annual National Technician Skills Competition:

**2015** – Eric Vos, FedEx

Freight, Boise, Idaho

**2014 & 2013** – Mark

McLean, Jr., FedEx Freight, Montgomery, N.Y.

**2012** – Christopher Barnett, Ryder Systems, Hebron, Ky.

**2011 & 2010** – Jeff Schlecht, Omaha Truck Center, Norfolk, Neb.

**2009** – Christopher Tate,

Mohawk Truck, Seneca, N.Y.

**2008 & 2007** –

Bryan Lewis, Wal-Mart Transportation, Sutherland, Va.

**2006** – Tyson W. Sontag, McKee Foods Transportation, Gentry, Ark.

**2005** – Steve Talmadge, Premier Truck Centers, Fultondale, Ala.

## Sponsors of the TMC SuperTech

These organizations have supported the annual National Technician Skills Competition since the first one in 2004.

- ACOFAS (American Council of Frame and Alignment Specialists)
- Aperia Technologies
- ASE (National Institute for Automotive Service Excellence)
- ArvinMeritor
- Bandag
- Bendix
- BorgWarner
- CARQUEST Auto Parts
- Con-way Freight
- Consolidated Metco
- Cornwell Tools
- Counteract Balancing Beads
- Cummins
- Daimler Trucks North America
- Dana
- Davco
- Dearborn Group Technology
- Decisiv
- Delco Remy
- Delmar Cengage Learning
- Detroit Diesel
- Donaldson Company
- East Penn Manufacturing
- Eaton
- Engine City Technical Institute
- FedEx Express
- FedEx Freight
- FedEx Ground
- *Fleet Maintenance Magazine/Southcomm Business Media*
- Fontaine International
- Fontaine Trailer
- Freightliner Trucks
- Gates Corporation
- Goodyear
- Great Dane Trailers
- Haldex
- HD America
- HDA Truck Pride
- Hendrickson
- Holt Caterpillar
- Hunter Engineering
- Imperial Supplies
- International Truck and Engine
- Interstate Battery Systems
- J.B. Hunt
- JOST International
- K-Line Industries
- Lincoln Technical Institute
- Mac Tools
- Mack Trucks
- Matco Tools
- Maverick Transportation
- Maxon Lift Corporation
- Maxwell Technologies
- McKee Foods Transportation
- Meritor
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- Nashville Auto-Diesel College
- Natural Gas Vehicle Institute
- Navistar
- NEXIQ Technologies
- Noregon Systems
- Peak Commercial & Industrial
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- Penske Truck Leasing
- Peterbilt Motors
- Petro Lube
- Reliance Supply
- Royal Purple Long Rider
- Rush Truck Centers
- Ryder
- SAF-Holland USA
- SKF
- Snap-on
- St. Louis Community College
- Stemco
- Sullivan Training Systems
- TA Truck Service
- Team Torque
- TESlite
- Tiger Tools
- Timken
- TMW Systems
- *Transport Topics*
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- Truck Pride
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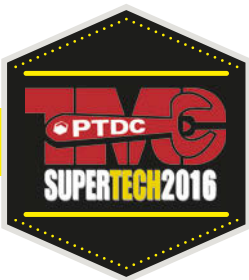
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There will be a total of 12 skills stations in Monday's qualifying round. Each station, featuring table-top equipment mock-ups, will be divided into 10 substations. Each station rotation will last 25 minutes.

The 12 stations will be:

1. Lighting.
2. Fasteners.
3. RP (Recommended Practice) Manual.
4. Electrical Diagrams.
5. CSA Compliance.
6. Electrical.
7. Safety & Environmental.
8. Wheel End.
9. Torque.
10. Precision Measuring.
11. Coolants/DEF.
12. CNG Safety.

**Step 4 - Attend the TMC SuperTech 2016 Reception**

After the qualifying rounds, it's off to the TMC SuperTech 2016 Reception, at which the names of the contestants who will compete in the finals on Tuesday, Sept. 20 are announced.

A maximum number of contestants (the limit is tentative, subject to change, depending on available resources) will advance to compete in Tuesday's Hands-On Skills Challenge.

Certified grand champions from state trucking association contests



**TMC SuperTech is a two-day event specifically designed so technicians can exhibit their knowledge, skills and aptitude with medium and heavy duty commercial vehicles. This is done through a series of both written and hands-on problem-solving and diagnostic tests and challenges, designed to evaluate both theory and practical application.**

*Photo courtesy of Marsh Galloway, TMC*

will be included in the Hands-On Skills Challenge automatically.

**Step 5 - Compete in the finals**

On Tuesday from 8 AM to 4 PM, qualifying contestants will compete in a series of stations, covering the following diagnostic skills areas. (The final list of skill stations is subject to change.)

- Electrical/Electronics.
- Brakes.
- Starting and Charging.
- Tires and Wheels.
- Wheel Ends.
- Vehicle Control Systems.
- Engine (Hardware).
- Engine (Electronics).
- Steering/Suspension.
- PMI (pre-trip maintenance inspection).
- Drivetrain.
- Service Information.
- Fifth Wheel.
- HVAC.

Lunch will be provided for all contestants, judges and other registered guests. Spectators are welcome on the competition floor.

**Step 6 - Attend the training fair and awards luncheon**

The PTDC Training Fair will be held on Wednesday, Sept. 21.

The winners of TMC FutureTech and TMC SuperTech will be announced and trophies and prizes presented during TMC Industry Awards Luncheon, also being held on Sept. 21. Awards for both competitions will be given for first, second and third best in the overall competition, and for those with the best skills station scores. **FMX**

Robert Braswell is the technical director of the Technology & Maintenance Council (TMC), North America's premier technical society for truck equipment technology and maintenance professionals. He also serves as the community manager for TMC Connect, the organization's social networking and collaborative work platform.

**TMC SuperTech 2016 schedule**

**SATURDAY, SEPT. 17**

9 AM - 6 PM  
TMC SuperTech 2016 competition setup.

**SUNDAY, SEPT. 18**

9 AM - 5 PM  
Registration desk open.  
10 AM - 6 PM  
TMC SuperTech 2016 competition setup.  
2:30 - 4 PM  
Professional Technician Development Committee (PTDC) judges meeting on the competition floor.  
4:30 PM - 5:30 PM  
PTDC meeting.  
6 PM - 8 PM  
TMC SuperTech 2016 contestant orientation and qualifying written exams.

**MONDAY, SEPT. 19**

6:45 AM - 6 PM  
Registration desk open.  
8 AM - 11:25 AM  
TMC SuperTech 2016 preliminary station qualifying rounds.  
11:25 AM - 12 PM  
TMC SuperTech 2016 lunch break.  
12 PM - 4 PM  
TMC SuperTech 2016 preliminary station qualifying rounds continues.  
6:45 PM - 7:45 PM  
TMC SuperTech 2016 Welcome Reception and Hands-On Skills Challenge finalists announcement.

**TUESDAY, SEPT. 20**

6:30 AM - 8 AM  
Buffet breakfast.  
7 AM - 5 PM  
Registration desk open.  
7:30 AM - 4 PM  
TMC FutureTech 2016 competition.  
8 AM - 4 PM  
TMC SuperTech 2016 Hands-On Skills Challenge. Lunch will be approximately at 11:40 AM - 12:10 PM.

**WEDNESDAY, SEPT. 21**

6:30 AM - 5 PM  
Registration desk open.  
6:30 AM - 7:30 PM  
Buffet breakfast.  
7 AM - 10:30 AM  
PTDC Technician Training Fair. Sessions at 7 AM - 8 AM; 8:15 AM - 9:15 AM; 9:30 AM - 10:30 AM.  
12:45 PM - 2:45 PM  
TMC Industry Awards Luncheon.

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# PTDC offers hands-on training for fleet personnel

By Josh Smith, Assistant Editor

## These training sessions qualify for NATEF continuing education credits

### PTDC TRAINING FAIR

Like last year, all TMC Fall Meeting attendees and TMC SuperTech2016 and TMC FutureTech2016 competitors are invited to attend the Professional Technician Development Committee (PTDC) Training Fair. The event consists of a series of hands-on training sessions designed for technicians, shop supervisors and fleet managers.



TMC meeting attendees and TMC SuperTech competitors are encouraged to take advantage of the Professional Technician Development Committee training sessions, designed expressly for technicians and shop supervisors.

Photo courtesy of Marsh Galloway, TMC

A group within TMC, PTDC promotes and enhances the professionalism of commercial vehicle technicians.

The training offered during the PTDC Training Fair qualifies for continuing education credit units accepted by the National Auto-

motive Technicians Education Foundation (NATEF) – a non-profit organization dedicated to improving the quality of automotive technician training programs nationwide at secondary and post-secondary, public and proprietary schools ([www.natef.org](http://www.natef.org)).

## SESSIONS

A trio of training sessions will be held Wednesday, Sept. 21. The three sessions are held concurrently during three time blocks – 7 AM to 8 AM; 8:15 AM to 9:15 AM; and 9:30 AM to 10:30 AM – to maximize the number of training opportunities.

### TRAINING SESSION 1 – Diesel Exhaust Fluid (DEF) and Aftertreatment Systems

This session is designed to educate technicians on the fundamentals of selective catalytic reduction (SCR) technology and its use of diesel exhaust fluid (DEF). Presenters will provide definitions and terminology of SCR systems, offer guidelines on DEF storage and handling and discuss important maintenance information for dosers, diesel oxidation catalysts, particulate filters, SCR catalysts and other aftertreatment components.

### TRAINING SESSION 2 – Filter Technology Fundamentals

This session will provide a comprehensive overview of filter technologies, including air intake, oil and fuel filtration systems. Applicable TMC Recommended Practices (RPs) will be covered during the training session.

### TRAINING SESSION 3 – Fan Clutch Technology Overview

This session will provide a comprehensive overview of fan clutch systems, including air-actuated on and off systems, viscous, modulating and electromagnetic, as well as the latest electronically controlled systems. Additionally, the presenters will talk about fan clutch operation, parts identification and routine failures. This session will apply to products from all fan clutch manufacturers. **FMX**

  
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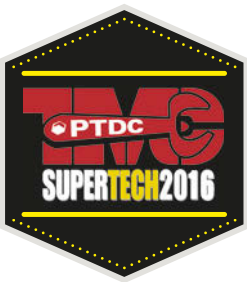
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# How fleets can craft maintenance and technology solutions

By Josh Smith, Assistant Editor

## TMC's 2016 Fall Meeting includes educational sessions to keep attendees informed on the latest vehicle technologies

### TMC FALL MEETING

Constant attention to detail and carefully crafted solutions are vital when it comes to meeting the demands of today's world of transportation. Shipper expectations, government regulations, technological advances and CSA (Compliance, Safety, Accountability) compliance issues offer challenges that fleets must overcome. Fleets must scrutinize the investments they make in their operations and vehicle maintenance programs.

Many fleets turn to the Technology & Maintenance Council (TMC) to help them make business decisions on maintenance and spec'ing issues.

That is why TMC officials feel the theme for this year's annual fall meeting, *Crafting Maintenance and Technology Solutions*, is appropriate.

That meeting is set for Sept. 18 to 22 at the Raleigh Convention Center in Raleigh, N.C. It is being held in conjunction with TMC SuperTech 2016, the National Technician Skills Competition. This is an event designed by TMC to determine the industry's top technicians through a variety of troubleshooting tests and skills challenges.

Made up of a broad collection of experienced fleets, equipment suppliers and service providers,

TMC ([http://www.trucking.org/Technology\\_Council.aspx](http://www.trucking.org/Technology_Council.aspx)) is the only industry association that is focused solely on truck technology and maintenance to help improve trucking efficiencies across North America. TMC is a technical council of America Trucking Associations ([www.trucking.org](http://www.trucking.org)) – the largest national trade association for the trucking industry.

TMC's 2016 Fall Meeting offers a comprehensive collection of educational sessions designed to keep fleets' maintenance personnel up to date on vehicle technology.

### TECHNICAL SESSIONS

Three different technical sessions aimed to bring technicians up to



**Panel discussions allow meeting attendees to hear from several people knowledgeable about a specific issue and who present information and discuss their views and experiences.**

*Photo courtesy of Marsh Galloway, TMC*

speed on a variety of topics will be held Sept. 20, 21 and 22. Each session is 90 minutes in duration.

### The evolution of engine coolants

Over recent years, engine coolants have changed and have become more diverse. With the introduction of exhaust gas recirculation (EGR) technology, more demand is placed on the engine's coolant system than before. Coolant system components also have changed, creating some OEM factory fill challenges and changes.

Knowing the difference between today's coolant's diversity of technologies and colors is vital to protect the coolant system.

Attendees at this session will learn what technologies are being used for factory fills by truck manufacturers and why their choices are

important to a fleet's operation. Panelists also will address coolant identification, labeling, testing, color (on the truck and in the bottle), as well as offer recommendations for coolant maintenance.

Successful conversion procedures from conventional OAT (organic acid technology) to OAT-NF (Nitrite Free) coolants will be described from the fleet and supplier perspective.

### A deep dive into vehicle and component corrosion

For years, aggressive corrosion caused by various ice-clearing chemicals has been a maintenance problem for many equipment users. The use of magnesium chloride- and calcium chloride-based products is associated with increased incidence of corrosion.

During TMC's 2016 Annual Meeting, which was held earlier this year, the group's Corrosion Control Action Committee presented an overview of TMC's comprehensive manual that addresses various aspects of vehicle corrosion. Now elevated to study group status, the



With the theme, *Crafting Maintenance and Technology Solutions*, TMC's 2016 Fall Meeting is focused on providing informational sessions to keep attendees abreast of the latest vehicle technologies and maintenance practices.

Photo courtesy of Marsh Galloway, TMC

new S.17 Corrosion Control Study Group will present an in-depth look into corrosion issues. Fleet and supplier panelists will present case studies of specific corrosion issue.

Attendees at this session will learn the latest strategies for dealing with vehicle corrosion through live demonstrations.

#### Retention failure analysis: practical strategies for managing technician turnover

Because a major concern for many fleets is recruiting and retaining quality technicians, TMC's Professional Technical Development Committee (PTDC) will present an in-depth look at several factors impacting this issue and what fleets can do to effect positive changes within their organizations.

Among other things, panelists will:

- Address what needs to be done to attract and integrate millennials into the workforce.
- Look at strategies to manage turnover due to retirements.
- Share how to use education, training and other tools to reduce technician turnover.
- Address generational diversity and strategies for dealing with ageism in fleet operations.
- Discuss how technicians are prepared in trade school and how that compares to industry needs.

## STUDY GROUP SESSIONS

TMC Study Groups are standing committees that identify problems and challenges facing motor carriers and other truck equipment users. These groups, which are long-term in nature, study a specific sector of truck technology or management.

Study group meetings taking place at TMC's 2016 Fall Meeting include:

#### 48V electrical systems: how do we get there?

This meeting will consider the advantages of migrating to 48V electrical systems and what kind of sustained commitment from the industry is necessary to adopt them. Presenters will share findings from a new TMC information report on the subject, and engineers from the industry will explore this transition.

#### Tire repair specifications to reduce roadside failures

This session will focus on advances and changes in truck tire repair procedures that are designed to reduce failures. Attendees will be shown how to set repair specifications, analyze scrap tire repair failures, inspect repair providers and limit exposure to repair failure downtime.

#### Next generation engine oils (PC-11): what it means for 2017

The latest updates on the upcoming oil specification will be shared during this session. Subjects to be covered include:

- Details of the new formulations.
- Guidance in identifying new oil classes.
- How new engine design changes prompted the need for new oil packages.
- What to do in case new formulations are accidentally mixed.

#### Implementing effective preventive maintenance inspection strategies

This session will offer a live demonstration of TMC's recently updated Recommended Practices on Preventive Maintenance Inspection (PMI). Members of TMC's Educator Committee will walk attendees through the new PMI sequence and provide tips for improving PMI programs. Attendees also will receive a complimentary copy of one of TMC's new PMI manuals.

#### Electronic stability control: sooner or later, your fleet will have it

The new *Federal Motor Vehicle Safety Standard (FMVSS) 136* will require Electronic Stability Control (ESC) on truck tractors and certain buses with a GVWR of more than 26,000

lbs with the hopes of preventing up to 2,329 crashes, 858 injuries and 60 fatalities annually. Those in attendance at this session will learn what to expect from ESC technology when it comes to operation, maintenance, repair and diagnostics.

#### Electrification of trailers, shorepower and how to set it all up properly

TMC's S.7 Trailers, Bodies and Material Handling Study Group is developing a recommended practice (RP) on how to specify, purchase and install plug-in electrical connection infrastructure with a focus on safety and interoperability issues. Panelist at this session will cover hardware, safety, cord management and communication options, in addition to systems required for charging pallet jacks and trailer unloading systems. Attendees also will hear about what recommendations are being proposed for electric-powered transport refrigeration units and how it could impact operations.

#### Implementing green architecture for fleet operations

Some businesses, including trucking companies, are recognizing a need for green building techniques in planning future property investments. Attendees at this session will learn how fleets can incorporate green architecture principles to reduce their carbon footprint and save money. Presenters will explain various aspects of developing a sustainability plan or report.

#### Electronic logging devices: operational awareness

Representatives from the Federal Motor Carrier Safety Administration (FMCSA) will provide insight on the process of implementing the Electronic Logging Device (ELD) mandate. Panelists will include fleet representatives who will discuss implementation strategies, important operational considerations and training issues. There also will be an update on TMC's development of a RP on electronic onboard recorders (EOBRs) and ELDs.

#### Hydraulic system component failure analysis

This session will address common causes for hydraulic pump and power source failures, along with measures to prevent and correct these issues. Panelists also will offer failure analysis recommendations based on RP 1514. For complete details on the 2016 Fall Meeting, phone 703-838-1763. **FMX**

## Other TMC meeting sessions

Other events taking place during TMC's 2016 Fall Meeting include:

**TMC SUPERTECH 2016:** Trucking's 12<sup>th</sup> annual National Technician Skills Competition.

**PTDC TECHNICIAN TRAINING FAIR:** TMC's Professional Technician Development Committee (PTDC) is conducting three training sessions for technicians, shop supervisors and fleet managers. Those sessions are:

- Diesel exhaust fluid and after-treatment systems.
- Filter technology fundamentals.
- Fan clutch technology overview.

**TMC TOWN MEETING AND FLEET OPERATORS' FORUM:** During the Town Meeting, TMC presents information about what's happening within the organization. The Fleet Operators' Forum allows fleet attendees to bring up equipment problems that they have been unable to resolve.

**FLEET TALK/SHOP TALK:** TMC's Fleet Talk is a dialogue open only to fleet attendees. Topics of interest that emerge from Fleet Talk will be addressed at Shop Talk for open discussion before the entire council.

Shop Talk, open to all registered attendees, is a chance to learn and share the tricks of the trade from the industry's best experts. Shop talk includes the Fleet Operators' Forum Wrap-up as well.

**TMC TASK FORCES:** These meet to develop industry recommended practices, information reports and position papers covering every aspect of Class 2 to 8 commercial vehicle maintenance, specification and maintenance management.

**TMC NEW TECHNOLOGY PRESENTATIONS:** These presentations are designed to inform attendees of features or applications of new components, tools, services and technologies without engaging in blatant merchandising, advertising or harmful competitive references.

**TMC FUTURETECH 2016:** TMC is hosting its second annual National Student Technician Competition – TMC FutureTech. The event is designed to promote career opportunities as commercial vehicle technicians.

**TMC SOCIAL EVENT:** The Fall Meeting's annual buffet dinner will have a NASCAR theme. NASCAR inspired games will include linked Daytona Simulators, an eight-car Stock Car Challenge and a Pit Stop Challenge.

# How to remain mainstream in your field

By Janet Howells-Tierney, Director of Council Development, Technology & Maintenance Council

## Membership in TMC can help

### TMC MEMBERSHIP

Repairing heavy duty equipment has become a more complex process in the last decade, with intricate technology becoming ingrained in every system of the vehicle. To stay on top of today's equipment maintenance – and to prepare for future technology – shop managers need to take every opportunity to train, read manuals and network with their peers.

One effective way to tame the demanding maintenance beast while keeping an eye on the future, is to become a member of the Technology & Maintenance Council (TMC). TMC's more than 2,300 members include technicians, educators, suppliers, OEMs and fleet maintenance professionals.

TMC members are responsible for the maintenance of more than 1.5

million pieces of equipment across North America and they have relied on the TMC for 60 years to keep their trucks in top working order and their operations on budget.

Council members participate in 15 diverse Study Groups that cover maintenance and engineering issues in all the systems of heavy duty vehicles. TMC's Study Groups encompass more than 100 Task Forces whose



At the various events and functions, TMC members have the opportunity to train, share information and network with their peers. Photo courtesy of Marsh Galloway, TMC



**Membership in TMC – which is composed of fleet maintenance professionals, technicians, educators, suppliers and OEMs – is a good way to not only stay on top of today's equipment maintenance, but to prepare for future technology.**

Photo courtesy of Marsh Galloway, TMC

volunteer members identify and recommend industry standards.

### RPs

The result of the Council's Study Group and Task Force work is an endless source of information about truck equipment maintenance, shop management and spec'ing, entitled TMC's 2016-2017 Recommended Practices Manual.

TMC's Recommended Practices (RPs) are available online to members and on a searchable compact disk – a handy feature since there are more than 450 individual RPs, many with illustrations. While much of the RP development is accomplished during TMC meetings held twice a year, members also have 24-7 access to TMC Connect (<http://TMConnect.trucking.org>), an online collaborative platform which includes a searchable RP Library.

Along with the committee work, each TMC meeting features in-depth educational sessions that cover the major issues of today and tomorrow.

TMC RPs break down difficult repairs – such as the heavy duty exhaust or regeneration system – into digestible portions. For example, individual RPs under Study Group 3 (S-3) Engines provide a roadmap of preventative maintenance procedures for diesel particulate filters (DPFs) (see RP 355A), as well as guidelines for selective catalytic reduction (SCR) technology and its use of diesel exhaust fluid (DEF) (see RP 360).

### BROAD RANGE OF SUBJECTS

TMC's RPs also simplify a maze of terms and dashboard codes for its user network. Today's heavy duty equipment includes multiple computer components and the RPs don't shy away from addressing the most complicated systems while keeping an eye on future technologies and advancements. Recent RPs have addressed a multitude of equipment maintenance issues related to brakes, lighting systems, onboard vehicle electronics and corrosion, to name a few.

As the industry's trailblazers in "Thought Leadership," TMC continues to work with OEMs to create standards that ensure the truck of the future is the most efficient to operate and maintain.



## TMC Recommended Practices Enter Appeal Period

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

- Proposed RP 137D(T), *Antilock Electrical Supply From Tractors Through the SAE J560 Seven Pin Connector*. This RP specifies the power that is to be made available at end of the seven-conductor electrical cord from the tractor (or front of the trailer) for the trailer's antilock braking system (ABS) through both the stop lamp and dedicated power circuit.
- Proposed RP 170A(T), *Chassis-To-Body Electrical Interface Guidelines For Vocational/Refuse Trucks*. This RP provides the vocational/refuse industry a common electrical interface connection that is environmentally sealed, contains all required electrical circuits and is located in a standardized location.
- Proposed RP 177 (T), *Solar Power For Commercial Vehicles*. This RP offers general information on solar power components used in 12- and 24-volt systems for commercial vehicles.
- Proposed RP 206C(T)V2, *Radial and Bias Tire Puncture (Nail Hole) Repair Procedures*. This RP offers guidelines for performing puncture (nail hole) and reinforced shoulder repairs in medium-duty (Class 6-8) truck and bus radial and bias tires.
- Proposed RP 209F(T), *Tire and Rim Safety Procedures*. This RP offers safety guidelines for tire and wheel servicing, installation and demounting.
- Proposed RP 235B(T), *Guidelines For Tire Inflation Pressure Maintenance*. This RP addresses the relationship between inflation pressure and tires, and provides a practical guide for better understanding the issues that stem from failing to address this issue properly in everyday fleet operations.
- Proposed RP 370(T), *Natural Gas Vehicle Specification and Implementation Guidelines*. This RP offers guidelines for specifying and implementing engines using either compressed or liquefied natural gas as its primary fuel.
- Proposed RP 432B(T), *Engine Off HVAC Performance Requirements For Truck Cabs With Sleepers*. This RP establishes performance requirements for engine-off heating, ventilation, and air conditioning (HVAC) systems in order to achieve driver thermal comfort in both winter or summer rest periods.
- Proposed RP 438A(T), *Engine Off HVAC Performance Requirements For Truck Cabs Without Sleepers*. This RP establishes performance requirements for engine-off HVAC systems in order to achieve driver thermal comfort in both winter or summer rest periods.
- Proposed RP 441A(T), *Electrified A/C System Performance Specifications, Requirements, and Testing Criteria For Hybrid/Electric, All-Electric and Conventional Trucks*. This RP offers guidelines for selecting an electrified A/C system by means of a standardized test used to compare factory-installed systems.
- Proposed RP 540(T), *Proper Pilot Review Guidelines*. This RP offers guidelines for conducting a proper pilot review tractors, straight trucks, trailers, and a variety of other trucking industry equipment.
- Proposed RP 625A(T), *Brake Drum and Lining Compatibility*. This RP offers maintenance and inspection guidelines to promote brake drum and lining compatibility on Class 7-8 vehicles equipped with S-cam air brakes.
- Proposed RP 629A(T), *Brake Lining Contamination*. This RP identifies grease- and oil-contaminated lining conditions and provide guidelines for lining evaluation caused by such contamination.
- Proposed RP 651A(T), *Steer Axle Maintenance Guidelines*. This RP establishes guidelines for the maintenance and inspection of non-driven, steer axle systems and suspensions and associated components.
- Proposed RP 655A(T), *Drive Axle Maintenance Guidelines*. This RP offers guidelines for drive axle nomenclature, maintenance practices and procedures.
- Proposed RP 1404A(T), *Wiring System Standards For the Light- and Medium-Truck Chassis/Body Interface*. This RP is designed to help light- and medium duty truck chassis and body manufacturers standardize the truck chassis-to-body wiring interface on commercial vehicles.
- Proposed RP 1410A(T), *Maintenance Guidelines For Automatic Transmissions in Light/Medium/Specialty Trucks*. This RP offers general guidance on preventive maintenance and repair for automatic transmissions (having a torque converter) used in light- and medium-duty and specialty trucks.
- Proposed RP 1432(T), *Service and Utility Truck Body Safety Features*. This RP provides guidelines for safety- and ergonomic-related features used on service and utility truck bodies.
- Proposed RP 1611(T), *Parts Acquisition For Service Providers*. This RP is designed to help parts and service personnel ensure that all available resources are considered when sourcing an out-of-stock item needed to execute a repair.

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 of *Fleet Maintenance*, the following RPs are now open to the 90-day appeal process. Written appeals can be sent to TMC Technical Director Robert Braswell, 950 N. Glebe Road, Arlington, VA 22203. Phone: (703) 838-1776; rbraswel@trucking.org

## TMC Task Forces to Meet September 19, 2016 in Raleigh, N.C.

The following Task Forces of the Technology & Maintenance Council (TMC) will meet in open session on Monday, September 19, 2016 at the Raleigh Convention Center in Raleigh, N.C. Task Force meetings are scheduled for approximately one hour and will take place between 8 am and 4 pm. Parties wishing information on how to attend specific Task Forces should contact TMC headquarters at (703) 838-1763 or visit <http://tmc.trucking.org>

- |   |   |   |  |
|---|---|---|--|
| <p><b>S.1 Electrical</b></p> <ul style="list-style-type: none"> <li>RP Updates</li> <li>RP 141 Update (Trailer ABS Power)</li> <li>Liftgate Voltage Drop Test Procedure (Joint S.1/S.7)</li> <li>S.1 RP Quick Reference</li> <li>Video Camera/Sensor Connector Cabling Guidelines</li> <li>Electrical Infrastructure Safety and Interoperability for High-Power Electrical Refrigeration</li> <li>RP 129A Update (Starting &amp; Charging Procedures)</li> <li>Standards for Establishing Alternator Efficiency</li> <li>Liftgate Electrical Usage Profile (Joint S.1/S.7)</li> <li>Alternator and Cable Sizing for Auxiliary Batteries</li> <li>Solar Power for Commercial Vehicles</li> <li>RP 154 Update (Guidelines for Wiring Harness Routing, Clamping and Protection)</li> </ul> <p><b>S.2 Tire &amp; Wheel</b></p> <ul style="list-style-type: none"> <li>RP Updates</li> <li>Jacking and Lifting New Tractors</li> <li>Tire Fitment Recommendations for 6x2 Tractors</li> <li>Utilizing Lean Principals to Develop a Tire Program</li> <li>Aerodynamic Wheel Covers</li> <li>Tire Maintenance Guidelines for Agricultural and Low-Use Vehicles</li> <li>Non-Destructive Casing Inspection Use of Scalloped/Star-Shaped Hubs with Disc Wheels</li> <li>Tire Asset Management (Cradle to Grave)</li> </ul> <p><b>S.3 Engine</b></p> <ul style="list-style-type: none"> <li>RP Updates</li> <li>RP 334A Update (Extended Oil Drain Intervals)</li> <li>Diesel Exhaust Fluid Tank Design Guidelines</li> <li>LNG/CNG (Joint S.3/S.11 Task Force)</li> <li>RP 319A Update (Supplemental Coolant Additives)</li> <li>RP 338 Update (Extended Service Interval Coolants)</li> </ul> | <ul style="list-style-type: none"> <li>RP 326 Update (Recycled Engine Coolant)</li> <li>RP 351 Update (Coolant Color Standardization)</li> </ul> <p><b>S.4 Cab &amp; Controls</b></p> <ul style="list-style-type: none"> <li>RP Updates</li> <li>RP 428A Update (Guidelines for Vision Devices)</li> <li>RP 433 Update (Truck Washing &amp; Cleaning Guidelines)</li> <li>RP 439 Update (Minimum Performance Criteria for APU and Gensets)</li> <li>Power Management Strategies for In-Cab (CPAP) Medical Devices</li> </ul> <p><b>S.5 Fleet Maintenance Management</b></p> <ul style="list-style-type: none"> <li>RP Updates</li> <li>VMRS Codes Committee</li> <li>Vehicle Lock-out/Tag-out</li> <li>LNG/CNG New Facility Development</li> <li>CNG Fuel System Inspections</li> <li>Access to Repair</li> <li>Developing Key Performance Indicators</li> <li>Cost Per Mile Standardization</li> </ul> <p><b>S.6 Chassis &amp; Brake Systems</b></p> <ul style="list-style-type: none"> <li>RP Updates</li> <li>RP 633 (Effects of Drivetrain Torsionals) Update</li> <li>Proper Diagnosis of S-cam Out-of-Service Criteria</li> <li>Rear Suspension Inspection Procedure</li> <li>RP 607B Update (S-cam Brake Inspection)</li> <li>RP 640B Update (Alternative Wheel Bearing Adjustment)</li> <li>RP 648 Update (Troubleshooting Ride Complaints)</li> <li>ECBS/ABS Diagnostics</li> </ul> <p><b>S.7 Trailers, Bodies &amp; Material Handling</b></p> <ul style="list-style-type: none"> <li>RP 746 Update (Drawbar Length)</li> <li>RP Updates (S.7)</li> <li>Liftgate Voltage Drop Test Procedure (Joint S.1/S.7)</li> <li>RP 717A Update (Guidelines for Infrared Thermographic Testing</li> </ul> | <ul style="list-style-type: none"> <li>of Insulated Trailers)</li> <li>RP 732 Update (Rear Impact Guard Repair)</li> <li>RP 754 Update (Liftgate Charging and Power Circuits)</li> <li>RP 755 Update (Alternative Liftgate and Material Handling Charging Methods)</li> <li>Liftgate Electrical Usage Profile (Joint S.1/S.7)</li> </ul> <p><b>S.11 Sustainability &amp; Environmental Technology</b></p> <ul style="list-style-type: none"> <li>Cost Modeling for Aerodynamic Devices</li> <li>RP 1107 Update (Drivetrain Specification)</li> <li>Alternative Energy Implementation Methods</li> <li>SmartWay Activities</li> <li>LNG/CNG (Joint S.3/S.11 Task Force)</li> <li>Future Energy Conservation (Joint S.11/Future Truck) 55 vs. 65+ Technical Report Update</li> <li>RP 1115 Update (Fuel Economy Benefit Claims)</li> </ul> <p><b>S.12 On-Board Vehicle Electronics</b></p> <ul style="list-style-type: none"> <li>Electronic Onboard Recorders (EOBR)</li> <li>RP 1210C Update (Windows API)</li> <li>RP 1220 Update (Collision Warning /Adaptive Cruise Control)</li> <li>RP 1222 Update (Vehicle Stability Control)</li> <li>Connected Vehicle</li> <li>RP 1210 Compliance</li> <li>RP 1226 Messaging Standardization</li> </ul> <p><b>S.14 Light- &amp; Medium-Duty / Specialty Trucks</b></p> <ul style="list-style-type: none"> <li>RP 1431 Update (Fuels and Motive Energy Label)</li> <li>RP 1513 Update (In-cab Controls for Refuse Trucks)</li> <li>Diesel Particulate Filter/Diesel Oxidation Catalyst Maintenance for Light-Duty Diesels</li> <li>Guidelines to Consider for Contracting LMV Maintenance</li> <li>Work Platform Hybridization</li> <li>Backup Alarm Maintenance, Location &amp; Service</li> </ul> | <ul style="list-style-type: none"> <li>RP 1421 Update (Truck/Body Wiring Harness Standardization)</li> <li>Technician and Bucket/Utility Truck Safety</li> </ul> <p><b>S.16 Service Provider</b></p> <ul style="list-style-type: none"> <li>Service Event Data Transparency</li> <li>Parts Core Management for Service Providers</li> <li>Mentor Development</li> <li>Shop Workload and Prioritization</li> <li>Implementing TMC RPs in Fleet &amp; Service Provider Operations</li> <li>Safety Guidelines for Mobile Maintenance</li> </ul> <p><b>S.17 Corrosion Control</b></p> <ul style="list-style-type: none"> <li>Corrosion of Engine and Underhood Components</li> <li>Cab &amp; Control Corrosion Control</li> <li>Chassis &amp; Undercarriage Corrosion Control</li> <li>Hydraulic Brake Systems Corrosion Control</li> <li>Corrosion and Its Impact on Vehicle Safety</li> <li>Corrosion and Its Impact on Exhaust and Emission Systems</li> <li>Corrosive Impact of Wash Solutions</li> </ul> <p><b>Educator Committee</b></p> <ul style="list-style-type: none"> <li>Curriculum Development</li> <li>Educator Involvement</li> <li>PMI Manual Updates</li> <li>NATMI Curriculum Advisory</li> </ul> <p><b>Future Truck Committee</b></p> <ul style="list-style-type: none"> <li>Future Electrical/Electronic Systems</li> <li>Future Tire Reliability/Durability</li> <li>Future Cab and Driver Interface</li> <li>Sensor-Enhanced Maintenance</li> <li>Automated Driving and Platooning</li> <li>Future Virtual Training</li> <li>Future Energy Conservation (Joint S.11/Future Truck)</li> <li>Future Trailer Productivity</li> <li>Future Chassis and Brake Systems</li> </ul> |
|---|---|---|--|

## ADDITIONAL BENEFITS

While TMC's work to develop best equipment maintenance practices is a major focus, there are many other benefits of being a member. For example, TMC members enjoy a wide range of discounts on fuels, tires and new and used trucks through the TruckersB2B program.

Also, TMC's technical staff produces numerous publications and periodicals to keep members up-to-date on trucking industry regulations and maintenance parts recalls.

The primary focus of TMC's staff and working members is to increase efficiencies in the upkeep of heavy duty equipment and that goal is accomplished every day with better training, clearly written manuals and network opportunities.

If you have trucks and you aren't a TMC member, then you're working harder than you have to.

For more information, or to join TMC, go to <http://jointmc.trucking.org> or email [tmc.trucking.org](mailto:tmc.trucking.org).



Janet Howells-Tierney serves as the director of council development for TMC ([www.trucking.org/Technology\\_Council.aspx](http://www.trucking.org/Technology_Council.aspx)) – the only industry association that is focused solely on truck technology and maintenance. She is responsible for the recruiting and building of TMC membership, and also functions as the communications link for TMC for Council activity.



# Fleet Parts & Components

## CLASS 6 MEDIUM DUTY TRUCK

The **Isuzu 2018 FTR** has been introduced to the Class 6 medium duty truck segment. The FTR will be powered by the company's 4HK1-TC 5.2L turbocharged 4-cylinder diesel engine. The powerplant will be mated to an Allison 2000 Series automatic transmission. The engine carries a B10 durability of 310,000 miles. Available with aluminum 50-gal or 100-gal fuel tanks, eight wheelbase configurations will accommodate bodies from 16' to 30'. The cab features a clean back-of-cab design. The FTR will feature a low-cab-forward design to increase visibility and improves maneuverability. The FTR cab has wide step and wide-opening doors. The interior offers a suspension driver's seat among other features.



VehicleServicePros.com/12215364

## DESIGNED TO LAST LONG

The **Optronics HLL88/89 Series DOT-compliant high and low beam sealed LED headlamps** are designed to replace standard 4" by 6" sealed beam halogen and HID headlamps. Their light output is whiter than their incandescent counterparts for greater visibility. They are also designed to last long and be energy efficient, and they are well-suited for use with 12VDC or 24VDC systems. They have also received an IP69K rating.



VehicleServicePros.com/12224075

## PERFORMANCE FOR A VARIETY OF APPLICATIONS

The **Dana 44 front axle**, an addition to its Crate Axle program, delivers performance for a variety of applications, including off-road vehicles, forklifts, pickup trucks, pushback tugs, rock crawler buggys and small mining shovels. The Dana 44 front axles offer OE-quality throughout along with 5/16" thick wall tubing for increased axle strength, according to the company. The axles do not include brackets or brakes, allowing for customization to meet the customer's specific application. The axles feature Spicer nickel chromoly axle shafts designed for optimal strength and performance; Spicer Life Series (SPL) 1350 U-joints with triple-lip seals and full-circle clips for protection and retention; choice of selectable locking electronic or open differential; Spicer gearing with expanded after-market gear ratios: 3.73, 4.10, 4.56, 4.88, 5.13 and 5.38; an optimized pinion angle for lifted vehicles; and an increased gross axle weight rating (GAWR).



VehicleServicePros.com/12215092



## ELECTRO-DEPOSITION COATING PROTECTS AGAINST CORROSION

The **TSE Brakes UL-Disc Air Brake Actuators** are designed for transportation equipment using air disc brakes. The full immersion electro-deposition coating inside and out and an exclusive powder-coating finish protect against corrosion. Plus the main spring adds a proprietary UL base coating for added protection, and a steel APR plate is e-coated to eliminate corrosion degradation. A self-guided pressure plate assures consistent alignment of the spring, providing smooth operation and less wear. The bushing assembly provides center seal that traps lubricant for extended service, reducing center section leaks and brake drag. Premium diaphragms feature high quality contaminant-resistant rubber reinforced with nylon fabric. The all-steel design provides durable, air tight center section to eliminate leaks, structural failures and prevent galvanic corrosion.

VehicleServicePros.com/12219054



## EXPANDED TO INCLUDE ROTORS AND PADS

The **Bendix line of Fleet MetLok Brakes** has been enhanced to provide improved friction performance and coverage, and it has expanded to include rotors as well as pads. Designed for use in severe duty applications, Bendix Fleet MetLok semi- and low-metallic brake pads feature friction formulations for noise-free performance, fade and heat tolerance, durability and excellent stopping in demanding applications. They also feature a three-layer shim, burnishing compound to reduce break-in time and a hardware kit when applicable. The Fleet MetLok rotors are built with alloyed carbon performance castings, which provide thermal stability and strength, and ensure safe operation in all driving conditions. They are coated with a proprietary heat-resistant SurfaceLok coating, which extends rotor life by reducing corrosion.

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## ADJUSTABLE STORAGE BOX FOR CUSTOM FIT

The **Transfer Flow 70-Gallon Toolbox and Fuel Tank Combo** is designed for 1999 to 2016 Ford, Ram and GM full-size diesel trucks. It sits on the bed-rails, and has an adjustable storage box that adjusts to the depth of a short bed or long bed pickup for a custom fit. The storage area ranges from 5-1/2 to 9 cu. ft. The toolbox tank is made from 14-gauge aluminumized steel for strength and rust resistance. It's baffled in two places on all four sides to reduce fuel slosh, and is powdercoated black for a durable finish. An aluminum diamond plate lid comes standard with the option of having it powdercoated black. The fuel fillneck is located inside the locking storage compartment – keeping fuel secure.

VehicleServicePros.com/12219566



## DELIVERS UP TO 5,000 LBS OF LEVELING CAPACITY

The **Air Lift LoadLifter 5000 adjustable air spring kits**, No. 57233 and **LoadLifter 5000 Ultimate adjustable air spring kits**, No. 88233, work with the vehicle's existing suspension to deliver up to 5,000 lbs of leveling capacity. The air springs eliminate sagging and bottoming out when towing or carrying heavy loads, while providing a safe, comfortable ride. LoadLifter 5000 Ultimate offers all the benefits of the LoadLifter 5000, but its exclusive internal jounce bumper provides added shock absorption and extra protection for heavy loads. The jounce bumper also allows the air springs to be safely operated with zero air pressure. These offerings are now available for 2013-2016 Ram ProMaster 1500, 2500 and 3500 model rear-wheel-drive vehicles.

VehicleServicePros.com/12224069



## ALLOWS FOR FOUR-SEASON OPERATION

The Buyers Products SaltDogg Municipal Dump Spreader (MDS) combines a dump body with a spreader that allows for four-season operation. The MDS is offered in 10', 12' and 14' lengths with 36" sides and a 4" tailgate. The body is constructed from heavy gauge, 304 stainless steel for corrosion resistance and durability. Its roll-formed sides and cross-memberless design assists material flow and offers an exceptional strength-to-weight ratio. The MDS also limits protrusion into the body cavity and allows for higher material capacity.

VehicleServicePros.com/12184814



## WHITE AND BLACK PRIMERS ADDED

Two colors have been added to the PPG Delfleet Essential commercial paint system. The low VOC epoxy primer is available in white (No. ESU481) and black (No. ESU482) in addition to the company's traditional gray primer. Each is compatible with Delfleet Essential basecoats and single-stage topcoats. The primers, with strong adhesion and corrosion-resistance qualities, are flexible and suitable for use with a range of substrates

VehicleServicePros.com/12219157



## SMARTWAY-VERIFIED TIRE AVAILABLE IN MULTIPLE SIZES

The Yokohama Tire Corp. 108R regional all-position/steer tire is SmartWay-verified and comes in sizes 295/75R22.5, 285/75R24.5, 11R24.5 and 11R22.5. With a deep, 22/32nd tread depth and 16-ply construction, the 108R offers a five-rib tread design that offers longer, more stable service life and enhances water dispersion and overall traction on the road.

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## AVAILABLE IN 1/2" AND 3/8" SIZES

The Florida Pneumatic AIRCAT Nitrocat Stubby Impact Wrenches, Nos. 1056-XL and 1076-XL, are available in 1/2" and 3/8" sizes. The Nitrocat provides 550 ft/lbs of torque at a free speed of 9,000 rpm. The 2.5-lb, 4.25" tools can perform work in restricted areas and they have an internal silencing system to reduce noise levels. The trigger-mounted, combined-power management/reverse switch provides control, and the grip provides comfort and balance. The Nitrocat Stubby Impact Wrenches both offer the patented comfort handle grip and silencing technology.

VehicleServicePros.com/12165642



## DRAWER LINERS AND TOP MAT INCLUDED

The Homak 36" H2Pro Series 8 Drawer Top Chest features a HMC high-security tubular locking system, replaceable ball-bearing drawer slides, full-length aluminum drawer pulls and full-extension gas struts. This top chest also includes drawer liners and a top mat. This toolbox features eight drawers of varying sizes and is available in blue (No. BL02036081), black (No. BK02036081) and red (No. RD02036081). Homak offers an eight-year limited warranty.

VehicleServicePros.com/12165579



## 360 DEGREES OF ROTATION

The Big Ass Mobile Light Stand offers 360 degrees of rotation, so technicians can get bright, direct light under the hood, under the vehicle or wherever else they need it. The LED fixtures are made from heavy duty extruded aluminum for durability. Diffused lenses prevent harsh glare and are removable for cleaning. Light outputs of 10,000 to 26,000 lm are available, with CRI and color temperature that mirror natural daylight.

VehicleServicePros.com/12206605

## VIDEO WHEEL BALANCER

A video wheel balancer for cars and light trucks, the Hofmann geodyna 8250P, from Snap-on Equipment, features fully automatic data entry via scanner and smartSonar, the pinpoint easyWeight laser, integrated wheel lift and a touchscreen interface. This balancer automatically indexes the wheel to the correction position depending on balancing mode once the operator selects the amount of unbalance, and the Power Clamp pedal-operated electro-mechanical clamping system firmly holds the wheel in place. A patented ergonomic wheel guard saves space in the shop while keeping the handle positioned at a comfortable height. High-accuracy laser technology measures the degree of deviation from a perfect circle, enabling match-mounting to improve roundness and reduce geometric vibrations.

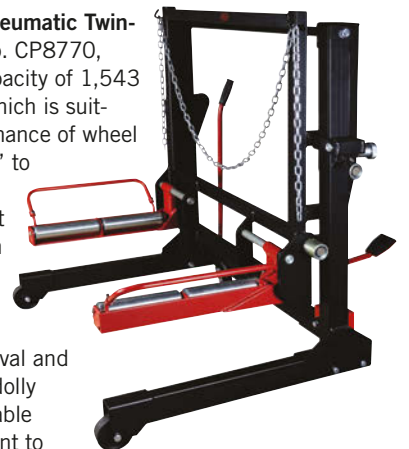
VehicleServicePros.com/12192715



## LIFTING CAPACITY OF 1,543 LBS

The Chicago Pneumatic Twin-Wheel Dolly, No. CP8770, has a lifting capacity of 1,543 lbs (700 kg), which is suitable for maintenance of wheel diameters 21.4" to 50.5" (545mm to 1,280mm). It features a chain attachment to provide safe wheel balancing during removal and transport. The dolly includes a turnable wheel attachment to ensure the wheels are balanced safely, as well as eight large rollers with automatically adjustable angles to ease the handling of tires with deep treads. The dolly offers four large swivel wheels with brakes to assist in moving the equipment into position. The dolly is EC and ASME certified, and includes a double action hydraulic piston positioned on the side to enable easy access to the operating area.

VehicleServicePros.com/12174296



## LASER-BASED MACHINE VISION SYSTEM

The Hunter Road Force Elite quickly performs both traditional wheel balances and Road Force measurements. The laser-based machine vision system determines wheel dimensions and wheel run-out measurements, which eliminates data entry errors. The Road Force Elite utilizes a loaded roller, which applies up to 1,250 lbs of force against the tire to measure the assembly as it would perform under the weight of the vehicle. The company's Force Matching feature guides the technician to index and match the lowest spot on the rim with the spsdfest spot on the tire to capture the best possible ride. The load roller also automatically measures lateral force with StraightTrak, which diagnoses and solves tire pull.

VehicleServicePros.com/12204027



## AVAILABLE FOR IPAD USERS

The Peterbilt Model 579 Configurator App allows customers to build their own Model 579 on their iPad, choosing from a range of specs, colors and configurations. The app, free for iPads through the Apple App Store, allows users to choose a truck or a tractor, a day cab or sleepers, different hood lengths, exterior colors and bright packages, powertrain and other key components. Additionally, users can utilize the full range of fairings and closeouts to build Peterbilt's the aerodynamic and fuel efficient Model 579 EPIQ. Once a truck is built, the app allows it to be saved or e-mailed.

VehicleServicePros.com/12215374

## ENCAPSULATES WATER MOLECULES

The Kinetic Fuel Technology K100 Diesel Fuel Treatment and Stabilizer encapsulates water molecules in ULSD, bio-diesel and home-heating fuels, providing a complete burn. The fuel treatment eliminates water, cleans injectors, lubricates, dissolves sludge and revitalizes old fuel. The cetane and mileage booster offers an anti-gel formula, which eliminates microbe growth. The U.S.A.-made product is available in 8-oz, 32-oz, 5-gal and 55-gal containers to treat a range of 60 to 55,000 gallons of fuel.

VehicleServicePros.com/12185125





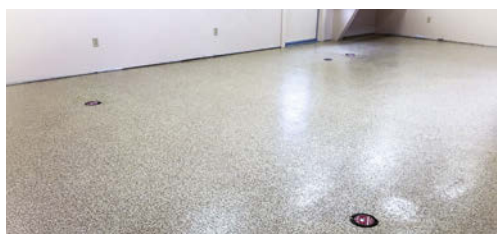
## INCLUDES DROP-FORGED STEEL COMPONENTS



The **OTC Multipurpose Bearing and Pulley Puller Set**, No. 4534, is designed to help technicians pull bearings, alternators, generators, power steering and crankshaft pulleys, timing gears and harmonic balancers.

The set includes drop-forged steel components that are hardened for long life, reliability and durability, according to the company. The contents of the set include two forcing screws, two cross-bar yokes, two clamp bolts, three pairs of puller jaws, one pair of jaw pins with ball spring and three pairs of capped bolts. Everything is housed in a blow molded plastic storage case.

VehicleServicePros.com/12154897



## HIGH-PERFORMANCE FLOOR TOPCOAT

The **Coatings for Industry Wearcoat**, No. 481HP, a high-performance floor topcoat, resists yellowing over the long term. Ideal for settings subject to damaging sunlight, Wearcoat 481HP was formulated from inception to be both anti-yellowing and fade-resistant. Developed as the go-to option for indoor/outdoor applications, extensive testing has demonstrated that it should prove ideal for garages, hangars or other areas exposed to UV rays. The fade-resistant Wearcoat 481HP topcoat provides a seamless floor with resistance to an array of hazards.

VehicleServicePros.com/12217576

## COOLS UP TO 5,625 SQ. FT.

The **Portacool Jetstream 270** provides intense cooling power with air-flow that can be felt up to 100 yards away. With built-in handles and heavy duty casters, the mobile Jetstream 270 can cool large garages and shops, plus it is equipped with the company's KUUL Comfort evaporative media. The device cools up to 5,625 sq. ft., delivering air at 22,500 cfm and at a velocity of 26 mph. The liquid-level indicator has an automatic pump shut-off, and the large drain allows for easy, effective cleaning. The 90" high by 79" wide by 41" deep unit has a 65-gal reservoir, is made in the U.S.A. and comes with the Portacool Protect lifetime warranty on evaporative cooler hosing against manufacturing defects as well as a three-year warranty on all electrical components.

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By Jim LeClaire,  
National OEM Sales  
Manager, OEM Business,  
Webb Wheel Products

# Which brake choice is right for your fleet?

The ramifications of foundation brake selection

The advent of the new National Highway Traffic Safety Administration (NHTSA) stopping distance rule (Phase 1 implementation, August 1, 2011, FMVSS-121) mandated a 30 percent improvement in air braking performance for the vast majority of new heavy trucks in operation. Since then, fleets have been weighing their options regarding the appropriate brake components to use to:

1. Meet the requirement.
2. Maintain a reasonable cost per mile ratio.

Wheel end choices associated with whatever foundation brakes a fleet decides upon will have ramifications long after initial spec is added to new vehicles. Most fleets basically have three choices:

1. Stay with a standard drum brake configuration, if that option meets the new regulation.
2. Beef up drum brake performance by using premium wheel end packages and/or wider brakes.
3. Switch to disc brakes.

## A System

Today, like anything on a commercial vehicle, the brake package is a system, and that system has to meet the customer's needs and, at the same time, meet all FMVSS 121 standards. It can't be stressed enough that an individual fleet's unique operation profile will make the difference as to what brake product is right for them.

For over-the-road linehaul fleets, a standard drum brake package from the OEM may be the best answer, whereas a "grossed out" tank or a steel flat or paper roll hauler may need a premium package, or even disc brakes, to get to the trade or maintenance cycle they want.

If a fleet prefers to stay with what they know – drum brakes – there are ways to make that option a reliable choice that will meet the two previously noted criteria: best performance and total cost of ownership.

## Drum and Lining Combination

It is paramount to spec and maintain the right drum and lining combination for your operation because the lining and mating surface of the drum work in tandem.

Close coordination between drum and lining manufacturers have produced materials that, when working together, can stop a vehicle shorter and faster than ever before. The idea is to operate at the best temperatures and friction co-efficient where wear and noise are as close to zero as possible.

If you stay with drum brakes, spec'ing a premium drum, like Webb's Vortex Unlimited, can help add performance and reduce operating costs. Its



This drum, with less than 30,000 miles, shows early wear from aggressive friction material.

Photo courtesy of Webb Wheel

## THE TRADEOFF to aggressive linings may not make sense.

patented design features external cooling ribs that conduct heat away from brakes, which can extend the life of the brake drum by an extra 25 percent.

Friction manufacturers can offer aggressive linings, which definitely help with stopping, but at what cost? If that aggressive lining means you have to change drums more often, the tradeoff may not make sense. You can run aggressive and long-living friction, but eat the mating surface in a week or a month.

Life of the drum (mating surface) is made and broken in the friction surface area, so you need to be certain you've got the right package of drum and lining.

There are many quality friction materials with great life/wear characteristics, and good drum suppliers are constantly testing the life of their drums with multiple combinations of linings. At the end of the day, you should feel comfortable that the drum and lining combination you're getting as first fit is right for your fleet.

Make sure you know who the manufacturers are, where the products are made, if test procedures and data are reliable and if they will support you after the sale.

## Stay with it

Once you have the right combination of drum and lining spec'd for your vehicles, it is best to stay with it through the life of the vehicle. Uptime means everything to the bottom line of a fleet. If you save pennies on replacement parts rather than staying with what you know works could, and likely will, end up costing you.

"Penny wise and pound foolish" seemed to be a good axiom to use here but to be sure, we looked up the meaning which is: "to be extremely careful



Pictured here is a worn brake drum.

Photo courtesy of Webb Wheel

about small amounts of money and not careful enough about larger amounts of money." That larger amount of money is what you lose when your trucks or trailers are down for maintenance rather than delivering product.

## Maintenance

Even with the best drum and lining combinations, regular maintenance is required to maximize performance and minimize cost. Additionally, brakes and their components are right at the top of Federal Motor Carrier Safety Administration's Compliance, Safety, Accountability (CSA) program's penalty measures and roadside inspection out-of-service infractions.

Therefore, it's vitally important that whether you stay with drum brakes or make the switch to disc brakes, you make the right decisions about the individual components that make up the system and maintain them religiously using quality replacement parts.

Webb offers "Training in a Box" as well as on-site training about wheel end maintenance for fleet technicians.

Jim LeClaire is the national OEM sales manager for the OEM business unit of Webb Wheel Products. He has more than 25 years of industry experience, beginning his career as a vehicle technician. He has served in many capacities, including field service and warranty management, engineering support, advisement in fleet operations and maintenance and various sales and management roles. Webb Wheel ([www.webbwheel.com](http://www.webbwheel.com)) manufactures hubs, brake drums and rotors for medium and heavy duty trucks, trailers and buses. It is a Marmon Highway Technologies/Berkshire Hathaway Company ([marmonhitech.com](http://marmonhitech.com)), which, together with its subsidiaries, supports the highway transportation industry worldwide with a wide range of high-quality products and services.

## Online Exclusive

A comprehensive *Installation, Service and Safety Instructions Manual* from Webb Wheel can be found at:

[VehicleServicePros.com/12202069](http://VehicleServicePros.com/12202069)

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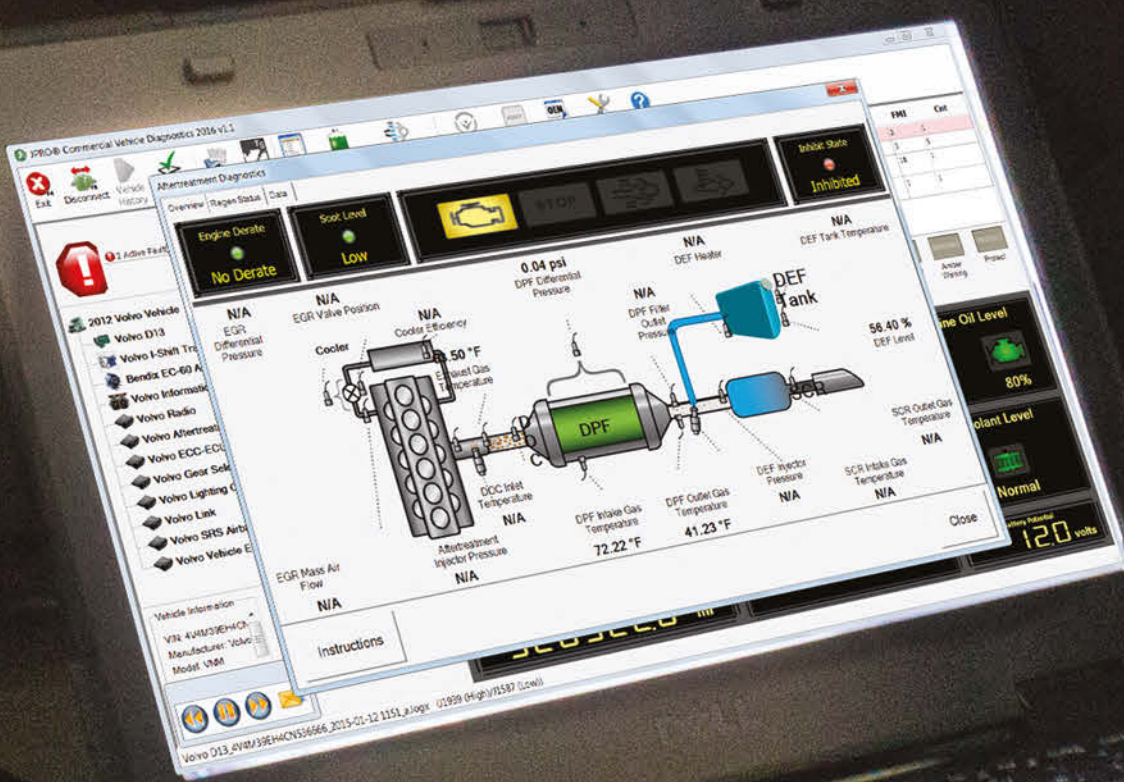
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