

I was out on one of the coldest days of the year so far in late November, driving a Mack Pinnacle and had the chance to chat with Mack gearhead David Mckenna about some of the problems cold weather presents to fleet managers. Here's a tip he offered up: If you are experiencing frequent active diesel particulate filter regenerations, check to ensure the insulation on the exhaust pipe between the turbocharger and the DPF has not eroded, or that it's there in the first place.

Depending on the configuration of the truck, the exhaust may have to travel quite some distance between the heat source and the DPF and if this occurs when ambient temperatures are extremely cold, you'll notice an increase in DPF active re-gens and the duration of these regens. In the winter edition of Maintenance Matters, we'll explore all kinds of weather-

related issues that Canadian fleets must deal with and we'll have more handy tips.

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As for this edition, we'll be looking at natural gas and the maintenance implications for natural gas-powered trucks. On this topic, I chat with Scott Perry, who oversees Ryder's natural gas fleet. His experience with natural gas is abundant and he shares some insights on what fleets must be aware of when integrating natural gas trucks into their fleet.

The experts at Petro-Canada Lubricants Inc. have weighed in on the topic of soot and how it impacts fuel economy.

Michael Reimer of Decisiv writes about how CSA-related issues can be reduced by 75% simply through better pre-trip inspections. A good article to review and to share with your drivers if they are taking short-cuts during pre-trip inspections.

Brakes is always hot topic for maintenance managers, so we look at what is taking place in the field that's causing brake experts to lose some sleep. And as always, the Toolbox will feature new products that you may want to bring into your shop. As always, please feel free to write me at jmenzies@trucknews.com to let me know what you want to read about in the next Maintenance Matters.

What's it take to maintain a natural gas fleet? By James Menzies

We asked Scott Perry, v.p. supply management with Ryder, what fleets need to know about maintaining natural gas vehicles

Tn late October, C.A.T. made headlines by announcing it was adding 100 $oldsymbol{oldsymbol{\bot}}$ compressed natural gas (CNG)-fuelled trucks to its Montreal-based fleet. The trucks will be leased from, and serviced by, Ryder, which is in the process of equipping its Montreal shop to service the vehicles.

For C.A.T., a full-service lease arrangement allowed the carrier to benefit from the low cost of natural gas without having to invest in training its technicians to service the vehicles or retrofitting its shop to accommodate them.

Ryder now has a fleet of more than 500 natural gas vehicles and has retrofit many of its shops and even installed its own fuelling stations, to support those vehicles. We recently caught up with Scott Perry, v.p. of supply management with Ryder, to find out what fleets need to know about

maintaining natural gas-fuelled trucks and why a full-service lease may be an option to consider. *



MM: You're still very optimistic about the future of natural gas?

Perry: Yeah, we are. We think that it's going to be a piece of the commercial vehicle portfolio going forward. Our crystal ball is no clearer than anyone else's as far as what that adoption rate is going to look like. There are way too many global variables that can impact on that, up or down.

We're building the infrastructure to continue to support it. We're answering the requests from customers to help them convert their fleets over and giving them information so they can make good decisions. That's really the role that we're playing.

MM: How is the 12L Cummins ISX12 G performing for Ryder?

Perry: Very well. We've had a lot of success with it. It's a much different platform than what we experienced with the 8.9L. The 8.9L just really wasn't suited to perform in the heavy-duty space. even though we stretched the rubber band a little further than it was intended to go.

We've learned a lesson from that on keeping

it within the right application. That product performs fantastically in the lighter gross weight applications. The refuse, the transit, the beverage transport industry - we're seeing very good performance from it in those applications.

Whenever you get up into the higher mileage. higher GVW applications, especially when you get into rolling terrain or over mountainous areas, there's jut not enough horsepower to perform.

Conversely, the 12L has satisfied that need fantastically. We've gotten really good feedback from drivers and operators. Uptime has been very good, reliability is good. The opportunity is still there to work on fuel economy but I know that Cummins and Westport are focused on that as well.

MM: Sticking with the 12L, because I think that's primarily what we're going to see here in Canada, what have you seen on the maintenance side? I know it needs a special oil. What else is required on the maintenance side?

Perry: There are a couple competing factors whenever you're comparing operating expenses



between diesel and natural gas. You've already called out one, a different specification of oil that's required. While that's a nuisance, it's a small change in the overall variable. It is a cost driver.

The frequency of those oil drain intervals is something that we're seeing being shorter than what we would find with traditional diesel products. That requires more touches of the vehicle, more planned service events, more time with the vehicle being out of service.

It definitely has to be taken into account. Spark plugs, of course, the spark-ignited combustion cycle is something that's new and different.

The benefits are, it doesn't have a very complicated aftertreatment system that you would see with a diesel product. We take the pros with the cons and really try to net that out. Net, we still see a little higher maintenance burden because of the variables I listed

MM: Is it too early to say what your life expectancy is for this engine compared to a diesel?

Perry: It is. We rely heavily on the engineering design of the manufacturers. We look at B50 and B10 lifes when we're trying to understand how long we're running. Our business model is built around not running the engine until its death.

We run its first economic life then we sell it into the secondary market with a significant amount of life left in it. That's how our lease portfolio remains balanced and how we support the flow of products into that used vehicle seller's market.

We're pretty confident from what we're seeing from the design and reliability elements, from an engineering perspective, that it will operate very well in our portfolio out to 700,000 or 800,000 miles but there's no doubt in my mind that it's a million mile-plus engine.

MM: I've heard conflicting reports on what's required to retrofit a shop. Some say it's very expensive, there's a lot involved. I've heard others say you need a methane detector and a fan and not much more. What is involved in servicing the vehicles?

Perry: While the standards are a little gray and a little ambiguous and subject to a little interpretation, there's not a lot of debate on how they should be interpreted in terms of things like the number of air

exchanges per hour within a facility and how to calculate the amount of air based upon the volume of the facility and the rate at which it should be turned over.

A fan absolutely doesn't give a facility - I've heard the same - but it doesn't give the facility the infrastructure that's required to really meet that standard. I think it's five air exchanges per hour based on the US standard and the Canadian standard is the same.

The methane detection (system) is absolutely required. The conversion of the electrical and lighting systems is something under the electric code. We want to make sure we're eliminating the potential for any type of ignition source.

I've stressed potential because you would have to have a release of natural gas vapors for them to accumulate at a mixture within the air that it even creates the potential for there to be an ignition and a fire. That's what we're trying to prevent through good maintenance procedures when we're working on the vehicles to making sure we have the appropriate controls within the facility.

Our standard at Ryder has been that we want to build and upgrade our facilities to meet or exceed those standards. You don't cut corners in this area. This is an area, whenever you look at the safety of your employees, the safety of your customers and the safety of the general public, the industry really can't afford to have a setback because someone cut a corner.

If you'd like to read the complete interview with Scott Perry, you can find it here.

SOOT:It's standing between you and better fuel economy

Brought to you by the experts at Petro-Canada Lubricants Inc.

In transportation, every minute counts. So does every dollar. Even the slightest rise in the cost of fuel has the potential to lower profits. With that in mind, original equipment manufacturers have pursued new ways to improve fuel economy, through more aerodynamic design for example, and by building smaller, lighter engines. Fleet managers are paying critical attention to loads, tire pressures and driver training. Yet one of the least considered threats to fuel efficiency remains something as old as the diesel engine itself. That problem is soot.

Even in today's most advanced engines, which run on ultra-low sulphur fuel, soot can have a significant impact on engine performance. In fact, as engine loads get heavier and drain intervals are extended further and further, the relevance of soot has never been greater.

"Our research has shown that soot is just as prevalent now as it was years ago," says Barnaby Ngai, transportation oils category portfolio manager at Petro-Canada Lubricants. "Today's tough operating conditions can produce and retain more soot than ever before and soot can affect costs across the board."

Though soot can have negative effects on fuel economy, effective soot control can improve your engine performance, extend the life of your lubricant and its properties, and effectively maintain or even improve your overall fuel efficiency.

How soot saps performance

Because of the impurities in diesel fuel,

inefficiencies in the combustion cycle, and high engine temperatures, soot and other by-products, such as nitrogen oxides (NOx), are produced. While most soot exits through the engine's exhaust system, or is trapped in the diesel particulate filter, a percentage is absorbed by the engine's lubricant.

"When left uncontrolled, soot particles in engine oil tend to agglomerate, forming clumps as rock-hard as diamonds that can scratch and score the inside of your engine," explains John Pettingill, DURON products specialist, Petro-Canada Lubricants. "These dangerous soot agglomerates can significantly affect an engine's efficiency and power output."

Pistons that are scored because of soot clumps in the lubricant can leak fuel and air during the compression cycle, reducing an engine's horsepower. Fuel efficiencies can also be undermined when valve train components experience similar damage and wear. When injection and timing valve components are compromised, it can retard the fuel injection timing and cause even more soot generation – a continuous cycle of trouble.

The plot thickens

Soot clumping can adversely affect the viscosity of engine oil. While many modern diesel engine lubricants have some form of additives (known as dispersants) to help reduce clumping, without the proper soot fighting formulation soot can build up over time and actually thicken the engine oil.

What does this mean for your engines? When engine oil thickens it causes viscous drag, which increases the energy needed to move the oil and hinders the lubricant from effectively reaching and protecting the critical components of the engine. Without proper protection your engine can experience increased wear, become less efficient and experience lower fuel economy as a result.

"The goal with viscosity and maintaining good fuel economy is to achieve the right High Temperature High Shear (HTHS) viscosity," says Pettingill. "By controlling soot and achieving the correct HTHS level, you can improve your engine efficiency, keep your fresh oil properties longer and better maintain fuel economy over the life of the oil."

Turning to thinner oils

When you start with a lower viscosity oil there is less impact on performance when the oil experiences

thickening for any reason – soot, temperature range, etc. And it only makes sense that these thinner oils can naturally flow better, with less energy needed through the engine, which can improve the overall engine efficiency. For this reason, there is a growing trend in the industry to switch to thinner, lower viscosity fluids to help improve fuel economy.

Though as Ngai explains, there is some hesitation around the effectiveness of these fluids.

"We've heard fears from many fleet managers about the quality of protection in lower viscosity oils," says Ngai. "But with an engine oil like DURON-E 10W-30, fleet managers can benefit from using a lower viscosity oil for better fuel economy, and still effectively protect the critical components of their engines."

In field trials, Petro-Canada demonstrated that DURON-E 10W-30 provided similar protection to DURON-E 15W-40. DURON's advanced soot control helps ensure low wear on critical engine components, which can extend engine life and increase the potential for greater fuel economy.

From soot to sludge

When left unmanaged, soot can cause thickening and contribute to sludge formation. Once a filter becomes covered in sludge, the blockage causes high differential pressure across the filter, forcing it into bypass mode and allowing unfiltered oil to circulate through the engine. Sludge accumulation on the cylinder head deck can potentially lead to an increase in valve guide wear. This sludge also causes further harm for the piston rings.

Using the wrong engine oil can result in sludge and carbon gumming up the groove where the ring runs and preventing free movement within the cylinder. This can lead to a condition called blowby, where unburned fuel and gases pass by the rings and blow into the crankcase,



robbing the engine of power, decreasing fuel economy, increasing oil consumption and the chance of serious engine failure.

How to fight back

So, what can you do to minimize the effects of engine soot and maximize fuel economy?

"There are two principal points to consider when selecting a heavy duty engine oil," says Ngai. "How pure is the oil and how effective is the dispersant?"

The greater the purity of the base oil used, the higher the viscosity index and the thermal and oxidative stability. The higher the purity, the lower the volatility and better are the overall capabilities of the fluid at low temperatures. Recent research has also shown that dispersant performance is enhanced by the purity of the base oil. Ultra-pure base oils can help improve soot dispersion efficiency, allowing the engine oil to better disperse soot for the same amount of dispersant additive.

Petro-Canada's DURON-E is formulated with 99.9% pure base oils and blended with proprietary additives to micro-disperse soot particles and prevent clumping. Based on a comparison of Mack T-11 test results, DURON-E Synthetic 10W-40 outperformed competitors in protecting engines from abrasive wear that can have an adverse effect on fuel economy.

"DURON-E disperses up to 220% more soot than the industry standard," says Ngai. "This means engines are better protected from soot-induced wear and can operate with increased efficiency."

Jim Terry of Tri-State Truck & RV knows how important it is to select the right engine oil for the job. Dissatisfied with the major branded product they had been using, Terry was intrigued to see if DURON-E would be able to meet the tough demands of today's on-road fleets. Tri-State tested DURON-E 15W-40 on two of their service trucks to determine the potential benefits and immediately noticed a significant difference in performance.

"After looking over the oil analysis reports, cost savings and field trial data on our own service trucks, we made the switch," says Terry. "DURON-E allowed us to save a significant amount of money and provide savings to our customers as well."

Better protection saves money

Choosing the right lubricant can also help you maintain fuel economy through more efficient and reliable engine performance.

Let's look at the basics. A truck with better fuel economy is typically less demanding on the lubricant than one with poorer fuel economy, given the same oil consumption rate. Decreased fuel economy can be caused by higher soot loading of the lubricant and, from observation, can create a vicious cycle of harm for engines, including premature engine wear, increased change-outs and downtime, increased sludge...the list goes on.

By choosing a higher quality engine oil that handles soot better, fleets are able to effectively maintain fuel economy, confidently extend drain intervals with the use of an oil analysis program, protect against engine wear and reduce overall maintenance and downtime. To put it another way, fighting soot saves money.

The final word on soot and your fuel economy

It's clear that soot can have drastic effects on the performance of your engine, and ultimately your bottom line. When soot is allowed to clump, it can damage engine components, affecting function and causing premature wear. Soot can increase viscosity levels and create harmful sludge. All of this can lead to decreased engine efficiencies, increased oil consumption, becoming a drain on fuel economy and the possibility of serious engine failure.

By managing soot with a high quality engine oil like DURON-E, you can effectively maintain your fuel economy and improve the life of your engine.

¹ DURON-E Synthetic 10W-40 effectively controls and disperses more sootwhile minimizing viscosity increase, according to the MACK T-11 test.



How to reduce CSA maintenance violations by 75% through better inspections By Michael Riemer

OSA violations not only cost you money from the fines they generate – they also cost you customers if your scores lead shippers to take their business elsewhere.

But what if you could reduce your maintenance-related CSA violations by 50-75%? Jeff Langloss, federal program manager for the Federal Motor Carrier Safety Administration in Texas, thinks that's a real possibility.

Speaking at the Great American Trucking Show this summer in Dallas, Langloss said many of the violations found during roadside inspections were easily avoidable if pre-trip inspections had been done properly.

He reviewed CSA violation records from 10 Texas-based fleets. There were 4,296 violations, and 3,309 – or 76.3% – should have been discovered during drivers' pre-trip inspections, Langloss believes.

In its annual roadside inspection blitz this June, the Commercial Vehicle Safety Alliance (CVSA) took 18.7% of the 73,475 trucks it inspected out of service primarily for brake-related violations. Brakes accounted for 46.2% of the out-of-service citations, while tire and wheel violations made up 14% and lighting 13.5%.

Langloss believes too many drivers are doing a poor job inspecting vehicles and filling out Driver Vehicle Inspection Reports (DVIRs), or they simply aren't doing the inspections at all.

While it's unrealistic to eliminate all maintenance-related CSA violations, there are steps you can take to dramatically reduce them. Consider these five tips:

- 1. Align pre-trip inspection forms with roadside inspections: The first step in avoiding a CSA violation is to make sure your pre-trip inspections include the areas that CSA inspectors look at. Compare a roadside inspection form to your current pre-trip inspection form to make sure you have essential elements covered. Adjust your form as needed to more closely align with what the CSA monitors.
- 2. Use mobile inspections: Although there's no guarantee that drivers will do their required pre-trip inspections, the easier you make it for them to complete those inspections quickly, the more likely they are to

- get done. Moving from a paper-based inspection to an electronic one that can be completed using a mobile device should increase accuracy and completion rates.
- 3. Audit DVIR compliance: There's an old adage that you need to measure what you want to manage. This is true with DVIRs, and is easy once you switch to electronic inspection forms. It's simple to determine who's completing inspections, who's glossing over them and who's ignoring them. Use this information to reward or discipline drivers.
- 4. Capture DVIR results in a centralized system tied to your maintenance processes: Having the results of all DVIRs in one central system allows you to spot problem areas across the fleet. For example, if drivers are constantly recording low tire pressure, you can take steps to get to the root cause of the problem and correct it. Data from electronic inspection forms should flow into your maintenance management program. Most importantly, make sure this data is available to your service and maintenance team in the context of how they do business today (see #1 above you don't need yet another place to look).
- 4 .Cross-check CSA violations with DVIRs: If you receive a violation, go back and look at recent inspection forms. Did the driver note any concerns about the component that resulted in a violation? If so, why wasn't the problem corrected in your shop? If not, perhaps the driver needs a refresher on conducting a proper inspection. Langloss suggests having a maintenance technician walk around a truck with each driver showing him what to inspect and how to do it properly. He believes if you do this once a year, you'll experience a significant drop in CSA maintenance violations.

Take the next step

Look at the above list and determine which areas are most relevant for your fleet operation. Making a few changes in your pre-trip inspection process could put you in a position to pass inspections with flying colours.

Michael Riemer is vice-president of products and channel marketing for Decisiv and a recognized commercial fleet industry thought leader. Michael has authored dozens of articles covering fleet maintenance, regulatory compliance, utilization and availability. He is also a frequently requested speaker and commentator in online and print interviews. For more information and blog entries from Michael, visit www.Decisiv.com.





TWO MISTAKES WHEN IT **COMES TO YOUR BRAKES**

By James Menzies

There are a couple things bothering L brake experts these days. One is the prevalence of relined, rather than remanufactured, brake shoes. While remanufacturing restores a brake shoe to OE-quality, relining often simply involves applying a new lining to a shoe that may not be suitable for a continued service life.

"Probably half or if not more of the brake shoes out there are relined. not remanufactured, and we really distinguish between those two terms." said Frank Gilboy, product line manager, remanufactured wheel-end products. with Bendix. "Relining is literally just... stripping off the lining and putting on another piece of lining and not really



addressing any of the problems with the shoe itself."

The remanufacturing process, on the other hand, involves a thorough inspection, coining of the shoe, blasting of the show, a new coating is applied and in the end it is restored to original condition. This is all done using highly sophisticated equipment that costs millions of dollars and only shoes that meet the manufacturer's criteria are submitted for remanufacturing.

A relined brake shoe that is not well mated to the new lining can suffer cracking and other issues that will result in a shortened service life and/or poor braking performance, according to Joe Kay, director of engineering, North American brakes, Meritor.

The other issue that's a concern to brake manufacturers is the use of shoddy friction material that doesn't comply with the reduced stopping distance (RSD) requirements implemented in 2013.

"It's insane, the amount of flavours of friction that are out there today," said Gilboy. "You could have the perfect brake shoe, have a brand new piece of OE steel and you could put some garbage friction on it and still have issues...one doesn't work without the other."

Peter Freeman, senior project manager, aftermarket with Meritor, echoed those concerns. He said fleets must be more cognizant than ever about what friction material they are placing on their vehicles. It's especially important to use like material across an axle and to replace it at the same time, to ensure compatibility of the braking system.

The safest choice is to replace friction material with the same product that was removed.

"When you get our brakes on a new vehicle that has our brand of friction material on it and you start taking that friction material off and putting something else on, you are going to affect the stopping performance of that vehicle," Freeman warned. "There are already some competitive aftermarket linings coming out – including some from offshore – that are claiming to be just as good as OEM RSD friction, but the fact is, that aftermarket lining has never been tested by an OEM."





Mitchell 1 updates software for 2014 model year trucks

Mitchell 1 has updated its suite of Web-based software programs for medium- and heavy-duty trucks, providing repair information, trouble code procedures and labour time estimating for 2014 model year trucks. The information covers diagnostic and repair instructions for all makes off Classes 4-8 trucks. The service is provided at Tractor-Trailer.net, Medium-Truck.net and Repair-Connect.net.

Mitchell 1 says it keeps its software current throughout the year, updating it with the latest information from new vehicles. It also offers thousands of colour wiring diagrams to help solve complex electrical problems. TruckLabor is the first comprehensive labour time estimating product for medium and heavy trucks. More info can be found at www.mitchell1.com.

Cummins releases new mobile app

Cummins announced it has released a mobile app for Apple iOS devices to customers who want on-the-go access to Cummins part options and engine dataplate information for 15 million Cummins Engine Serial Numbers. The new mobile app is called QuickServe Online and is available as a free download.

"The QuickServe Online mobile app puts Cummins parts and service information right in the hands of our customers, with easier access than ever before, allowing them to find the most accurate information faster and getting them back on the road quicker," said Mike Champlin, director – information products, Cummins new and recon parts.

Interested customers can find the mobile app in the Apple App Store by searching for: QuickServeMobile.

"We will continue to update and enhance the QSOL app to meet our mobile customers' needs. We are also developing a version of the app for Android(TM) devices, to be released in the near future," said Champlin.

Eaglehook fall restraint system being harnessed by truck fleets

Since releasing its device last April, Eaglehook has been lauded by the trucking community for helping improve safety.

The Eaglehook is a system that was developed to restrain workers from falling from atop transport trailers while engaged in maintenance or repairs.

Early adopters of the product have great things to say.

Anne McKee, executive vice-president of Trailer Wizards said, "Eaglehook has made it easier for our employees to be protected in those situations where fall arrest is not possible."

Canada Cartage also added: "The Eaglehook was our shops' solution to fall restraint when it comes to trailer roof repairs."

Online training course available for vehicle lift operators

A new online course developed by the Automotive Lift Institute (ALI) is now being offered in Canada through Workplace Safety & Prevention Services (WSPS). It is geared for operators of vehicle lifts and recommended for all operators and independent shops.

"Members of a number of Ontario's automobile associations told us about a widespread need and demand for lift training that meets stringent North American standards," said WSPS' Norm Kramer, a health and safety consultant. "Accidents involving hoists are among the top three issues facing this sector. In fact, between 2009 and 2011, there have been seven fatalities in the auto service industry related to lifting and jacking vehicles."

The ALI's Lifting it Right: 2014 Online Edition costs US\$29 and covers: lift types; the lifting and lowering process; and lift maintenance. Shop managers can access training records of their staff online. You can access the course online here



TRP expands line of replacement parts

TRP has announced its newly expanded offering of replacement parts including turbochargers, power steering pumps and windshield washer fluid.

"Truck operators spend so much of their time on the road, the last thing they want to do is spend more time looking for reliable replacement parts," said Jeff Hughes, TRP development manager. "With TRP's recent parts additions, operators and fleet managers can find more of the parts they need to get back on the road fast. And by using our award-winning website, TRPParts.com, it's even easier to find the right part, regardless of make or model."

TRP's new non-remanufactured turbochargers are available with no core charge and are designed for more durability with an improved turbo life. The new power steering pumps decrease steering effort and increase vehicle safety, while the windsheid wash uses natural cleaning agents.

"TRP's windshield wash is a great choice for operators looking for all-season performance. It offers freeze protection to -30 degrees Fahrenheit, so it's suited for all range of climates," Hughes said.

For more information, visit www.TRPParts.com.



Keller Equipment Supply to distribute EnviroLube

Integrated Lube Services announced it has reached a deal with Keller Equipment Supply to distribute its EnviroLube vehicle service trench system to the Western Canada market. The EnviroLube is built of fiberglass and steel and has several advantages over traditional vehicle lifts or concrete service pits, the companies claim.

The EnviroLube is built in 12-ft. long modules that can be configured in different designs for trucking. transit and automotive service. A steel rail along the top edge of the unit allows for rolling jacks and drain



carts and an attachment point for a safety cover.

Floor surfaces are made of fiberglass grating for a non-slip surface and to allow spilled oil and other fluids to drain to an integral sump. The interior is bright white with an easy-to-clean gel-coat finish combined with built-in lighting to make chassis inspections fast and efficient.

Integrated Lube Services founder Jerry Steele said the system prevents oil-saturated work surfaces, groundwater intrusion and soil contamination, while eliminating the need for vehicle lifting. It can be installed in new facilities or retrofit into existing ones. The sections are set in place on a concrete pad about six feet below the service area floor. The EnviroLube is anchored to the slab and then encased in concrete. It comes with a built-in stair system with non-slip treads.

Subgrade chases are used to route oil, air, electrical and ventilation lines. Installation takes about one week. For more info, visit www.integratedlubeservices.com.