An inside track to better fleet maintenance

Five easy tips that every fleet manager can start implementing today.



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Introduction

The main priority for fleet managers is simple — keeping truck equipment on the road as long as safely possible to produce revenue for their business. This is important because, according to the American Transportation Research Institute, maintenance costs have increased 60% since 2008, now equaling 16.7 cents per mile. At the same time, the more efficiently those trucks run, the better.

To accomplish this, you need to use the right equipment for the job and build a tailored program to maintain it properly. But, with so many evolving technologies and maintenance practices, what are the lowest hanging opportunity areas for you to further improve your program and become a revenue driver for your business?

We interviewed some of the industry's top experts to identify five key opportunities — ranging from fuel economy to remote diagnostics to lubrication — that fleet managers can easily implement to generate results.

1. Downspeed engines to increase fuel economy;
2. Properly specify your drivetrain to maximize powertrain efficiency;
3. Take advantage of new remote diagnostics technologies;
4. Consider extended life coolants;
5. Don't underestimate the value of used oil analysis insights.

1 Evangelist, J. (2018, October 18). Is it time to review your maintenance/repair strategy? Retrieved from www.fleetowner.com/ideaxchange/it-time-review-yourmaintenancerepair-strategy

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1. Downspeed engines for fuel optimization

As every maintenance manager knows, fuel expenditures represent the number one cost for fleets. And, there is a simple solution that can help manage fuel costs while keeping the engine running strong — downspeeding engines. John Moore, Volvo Trucks North America product marketing manager, shared Volvo's view on RPM optimization as a strategy to help fleets keep these costs under control:

"Volvo Trucks continues evolving its integrated drivelines to produce maximum efficiency blended with performance that drivers need to stay productive. By mating Volvo D11 and D13 engines with the Volvo I-Shift automated manual transmission, shift points along with engine RPM work in concert to optimize the engine sweet spot RPM with application and terrain, saving as much fuel as possible.

We continue to move the needle lower on downspeeding with turbo compound technology in the EPA17 D13 Turbo Compound family of engines capable of cruising at 65mph with an engine RPM of 1069. Performance is not sacrificed with peak torque available down to 900 RPM. A wider sweet spot provides optimum fuel efficiency across different operating speeds and driveline loads."

A general rule of thumb is that for every 100-RPM the engine speed is lowered at the vehicle's cruising speed equates to an approximate one percent improvement in fuel economy. The basic reason is that the engine is more efficient at converting the fuel energy into flywheel energy at slower speeds. Less is wasted on friction, pumping, and other engine losses.

The fleets that are implementing this approach are finding great success

Peter Nativo, vice president of fleet solutions at Oakley Transport, has seen this first-hand. Oakley Transport, which has been in the liquid bulk business since 1986, operates 535 trucks throughout the 48 contiguous states. He says:

"When you purchase a Volvo, which is our truck of choice, there is a sweet-spot indicator on the dash for shifting the truck, which drivers see while they're driving. They can monitor performance, which helps them reduce fuel consumption. We are also at about 90% automated transmissions in the fleet and the automatic transmission will shift at the optimized RPM to obtain the best fuel consumption. We use the Volvo built-in speed bonus program to give our drivers an additional 3 MPH if they stay in the sweet spot for their trip. Our trucks are governed at 65 MPH and with the bonus they can run 68 MPH.

We currently run auxiliary power units (APUs) on our entire fleet and have done so for years. This really helps us control fuel consumption. We can use the APU and burn about one gallon of fuel for every eight hours of run time as opposed to idling the truck engine. It also saves on engine wear and tear. For routing we use a system called NAVIGO through our Omnitracs and it is available on every truck for the best pre-planning to optimize routes."

The action

Talk to your original equipment manufacturer (OEM) or OEM dealer about RPM optimization for your specific equipment to see how they can save on fuel costs without sacrificing equipment performance or reliability.

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2. Properly specify your drivetrain to enhance powertrain efficiency

Another way to enhance powertrain efficiency is to spec the right drivetrain components for your application. Aaron Peterson, chief performance engineer for Navistar International, believes drivetrain configuration can be a major lever for greater fuel and power train efficiency. "I recommend that fleet managers stay abreast of new axle and transmission offerings that are entering the market. Most of these are focused on improving efficiency through higher efficiency bearings, lube management systems, gear tooth geometries, and finishes as well as weight reduction. Lighter-weight components will improve fuel efficiency."

Peterson adds, "To select the right components, you need to identify the truck's purpose and application, including road speeds and routes, GVW and GCW ratings, cruise speeds, terrain, high grades, road surfaces, and duty-cycle. All of these have an impact on drivetrain performance and service life. Because there are so many variables, it's best to work with your (OEM) or OEM dealer to determine the right drivetrain combination for your specific needs."

Use the right lubricants to maximize the performance of these components

According to Peterson, lubrication is a critical tool to help get the most out of these newer drivetrain components.

"Transmission and rear axle lubricants have been advancing in recent years, which improves fuel efficiency and extends the life of key drivetrain components." According to Aaron Peterson, chief performance engineer for Navistar International, "These new lubricants leverage newly developed additive packages, which produce thinner protective barriers to minimize friction (heat) and manage the ever-increasing torque that downsped drivetrains transmit to keep trucks moving."

Paul Cigala, application engineer for Commercial Vehicle Lubricant at ExxonMobil, agrees: "The biggest benefit comes from the engine oil. In the past, higher viscosity oils were used in axles, but now there are lower viscosity products that provide fuel economy benefits," says Cigala. Lower viscosity oil can actually add up to a 2.5% to 3% benefit. In addition, lower viscosity oil in the transmission can increase fuel economy by 1.5-2.5%.

Cigala continues, "Coupled with technology, such as a new product offered by Detroit Diesel, there is the possibility to further increase fuel economy. Because of all the options these days, it is important that fleets work with their OEMs to find the right specifications for their equipment."

The new API CK4/FA-4 oil classifications will likely provide an opportunity for further ODI extensions. FA-4 oils could provide another 0.5-1% fuel economy benefit if there are engine manufacturers that would allow their use. Currently only Detroit Diesel offers a factory fill option with FA-4 oil.

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Fleets are seeing these benefits first hand. Chris Emrich, director of maintenance for Armellini Express Lines, is looking to leverage new technologies to enhance his own maintenance practices. Armellini is a large floral carrier that has a long history of innovative shipping services. Established in 1945 by Jules and Sarah Armellini, the fleet remains family owned and operated. It runs 167 power units, which includes a mix of International Prostars, Volvos and Peterbilts.

"Our established lubricant maintenance interval is every 12,500 miles. This parameter was set in place when I took over. With the newer greases offered, I'm looking into possibly extending these intervals. I look for proven quality. The last thing I can afford is to have components fail prematurely due to inferior products. As for our new equipment, we just spec'd the new Meritor RPL25 driveshafts that carry a five year, 500,000 mile warranty."

Don't forget about drivers

Driver training is still one of the most critical components to achieving optimal fuel economy, so it's important to continue to train and educate them. When drivers have a clear understanding of how the entire powertrain operates, they will be able to drive in a way that helps optimize fuel economy. When specifying a truck's design, be sure to keep driver experience levels in mind, too.

The takeaway

Make sure you're up to date on all the latest drivetrain technologies and that you're specifying your truck drivetrains to meet your specific needs. This will help improve overall freight efficiency and make more money for your business.

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3. Take advantage of new remote diagnostics technologies

Predictive maintenance is not easy. There is so much data available today that sometimes, too much information can make it hard to properly extract insights and make better equipment maintenance decisions.

Instead, you may want to stick with the tools and data that get you what you need to know quickly and efficiently. Consider programs that integrate into your existing equipment maintenance programs.

Remote diagnostics can deliver deep vehicle performance insights. Fleets can gain access to a variety of vehicle performance data including engine diagnostics. Users have information about overall fleet health. Designed for a variety of roles in a fleet, real-time fault event notifications are delivered through the portal, which helps drivers make informed decisions within minutes as to whether or not to keep the truck on the road or pull into a service location.

For example, Scott Barraclough, Mack technology product manager, says that their equipment comes with integrated onboard telematics equipment that is able to feed data directly to a customers' third-party provider of choice in order to help develop a predictive maintenance program.

"For customers who choose not to work through a third-party provider, fleet managers can partner with companies like Mack that provide real-time vehicle utilization data enabling fleets to create their own simplified predictive maintenance programs," says Barraclough. "For smaller fleets (50-100 vehicles) Mack offers Premium Maintenance Plans covering the engine, aftertreatment, and chassis for terms from 1 year/100K miles up to 5 years 500K miles. If one of these plans is not the perfect fit for the customer, a custom plan can be created to meet their specific needs."

Other platforms

Fuel and safety analytics can help fleets identify behaviors, root causes and key insights on fuel consumption and safety performance. For small fleets (50-100 vehicles), options such as Detroit Connect Virtual Technician from Detroit Connect Analytics come standard with Detroit engines. The platform allows fleets and owner-operators to know within minutes when their vehicles experience engine aftertreatment and/or Detroit Assurance fault events, the severity of the fault and when or where it occurred, and how to best fix the issue causing the fault so that they can make informed service decisions. For small fleets, remote connectivity allows a single view of the entire fleet. The mobile app offers many of the same features as the portal, making it easy for fleets of all sizes to gain insights about fleet health, fault event diagnostic information and fault history.

Even technologies that are not designed purely for maintenance applications can provide valuable data. For example, the data from electronic logging devices (ELDs) can be integrated into other systems and provide various types of truck performance-related information back to the fleet while the vehicle is on the road, which helps fleets respond to issues such as an alert to check engine lights or other key equipment diagnostics.

The takeaway

There are lots of options when it comes to remote diagnostics technologies, but fleet managers should focus on technologies that are easily integrated into their existing maintenance practices and that give them actionable insights. OEMs and third parties are critical partners in this process.

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4. Consider extended life coolants

According to a major municipal fleet manager that oversees 100 trucks, keeping vehicles on the road and limiting down time is always important. But, when your fleet's trucks are sent out to repair downed power lines, they need to be ready at a moment's notice. Because of this, their fleet has to start up every day without fail and stay in service for as long as it takes to get the job done. So, they rely on high-quality components and good maintenance practices to keep those vehicles ready to go – including when it comes to coolants.

Today's diesel engines are complex, and any sort of mixing of coolant, engine oil or water will harm them. This is why early detection of leaks from the radiator, hoses or EGR cooler is important, and they need to be addressed immediately.

As part of the major municipal fleet manager's maintenance practices and procedures, the fleet's drivers inspect their vehicles and write up a report on issues that need attention. In addition, when it comes to staying ahead of repairs related to heavy-duty diesel engines, they have found that high quality extended life coolants provide the best value. They provide top quality protection and extended coolant life, which can add up to significant cost savings. The bottom line is if you get more out of a product, why wouldn't you buy it?

The takeaway

Look toward using extended life coolants for your trucks to help ensure that your equipment keeps running strong over the long haul.

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5. Don't underestimate the value of used oil analysis

Used oil analysis (UOA) can be a critical tool that helps enhance maintenance practices in two ways:

- ☐ Helps identify and prevent catastrophic failures by detecting emerging equipment problems.
- ☐ Optimize oil drain intervals to help enhance vehicle availability.

Delivering insights that help identify equipment issues EARLY

Many fleets are hesitant to invest in UOA, but Darry Stuart, President and CEO of DWS Fleet Management services, works with hundreds of fleet managers a year and believes the investment is well worth it: "Used oil analysis can help provide vital engine history. For instance it can identify problems such as a coolant leak into the oil, which indicates an ERG cooler failure, or if there is silica in the oil there could be an air filter or system issue. The presence of iron and/or copper may or may not be a concern since it could reflect the characteristics of engine operating conditions. This type of information is valuable because it helps fleets monitor the effectiveness of their PM programs." However, just conducting oil analysis isn't enough.

"Understanding the oil analysis results is the key to success." Stuart adds, "While oils are better today than they have ever been, there is still a time and place for used oil analysis. Fleets can benefit by working with their suppliers to help identify the kinds of questions they should be asking and what the answers to those questions mean for their operation."

Early detection of these problems can help fleets avoid costly road service calls and downtime.

Using these insights to extend maintenance service intervals

UOA analysis information also helps fleet managers safely optimize oil drain intervals beyond more conservative OEM recommendations – which in turn helps keep trucks on the road longer.

"Everyone's duty-cycle is not the same, so leveraging UOA data helps build a case for change," says ExxonMobil's Cigala. "We know there are opportunities to extend drains safely with OEM support and to eventually get approval for that extra benefit primarily because oils are more robust than they were in the past. In addition, the oil formulations are now built around new engine technologies and specifications, which make them more tolerant of higher engine temperatures because they have better oxidation stability and viscosity control."

New lubricant technologies have helped make the case for extended oil drain intervals.

"Lubricant suppliers now offer lower viscosity CK-4 and FA-4 engine oils that are providing more opportunities for drain interval extensions, about 10,000-15,000 miles longer across the board depending on duty-cycle. Over the last eight to nine years, we have also seen longer oil drain intervals for transmissions and rear axles because of higher-quality products and mostly synthetic base stocks to give them longevity."

But, just because an engine can go to an oil drain interval of 60,000 miles, that doesn't mean it fits into a fleet's service interval schedule. That's why it's important to build a partner-based relationship with your lubricant supplier. Anybody can supply product, but the goal should be finding a supplier that works closely with OEMs and understands how to leverage UOA results to give your fleet a competitive edge.

The takeaway

UOA is well worth the investment—it can help you prevent costly, unscheduled downtime and give you the data you need to extend maintenance service intervals. Tap into the expertise and OEM relationships of your lubricant suppliers, working with them as a true business partner.

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5 Easy tips every fleet manager can implement today

According to the American Transportation Research Institute, maintenance costs have increased by 60% since 2008, now equaling 16.7-cents per mile. For an inside track to a more profitable operation, consider these five tips to help reduce costs, increase efficiency, and minimize unnecessary downtime:



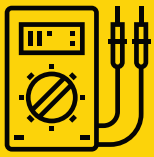
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