

# FAST FORWARD

AN INSIDE  
LOOK  
AT THE  
FUTURE  
OF  
TRUCKING

**Mobil Delvac**

Brought to you by the editors of Truck News, Truck West & Fleet Executive, in partnership with Imperial Oil - Mobil Delvac.

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## Glimpse into the future

Over the past month I've sat transfixed with awe in the cab of the world's first road legal autonomous heavy duty vehicle, Freightliner's Inspiration Truck, as it maneuvered its way in highway traffic through the Nevada desert, its "driver" monitoring the controls but not touching the wheel. I've listened with rapt attention to engineers and designers from Volvo Trucks speak of the imminent emergence on our roads of truck platooning, where two or more trucks connect via vehicle-to-vehicle communications and then travel in a tightly packed convoy. I even heard of the possibility of tractor-trailer combinations where the trailer is smarter than the tractor and can operate independently to deliver itself to warehouse locations along the way.

I've read with interest about the lengths some carriers are going to attract drivers and technicians to the industry from non-traditional sources of labor and, more interestingly, the new approaches they're adopting to retain them.

We are on the cusp of great change. A decade from now the technolo-

gies, regulations, and human resource practices that drive our industry will be significantly different than what we know today.

We are about to move "Fast Forward" indeed and with this special supplement produced by the editors of Truck News, Truck West and Fleet Executive, in partnership with Imperial Oil – Mobil Delvac, we strive to provide you with an inside look at the future of trucking.

And there is more to learn in the months ahead. I encourage you to turn to the special Knowledge Centre entitled An Inside Look at the Future of Trucking we have created for you on [www.trucknews.com](http://www.trucknews.com) for more features and informative videos on the subject. We will be updating it regularly.

We've worked hard to produce a multi-media educational package that allows you to learn and thrive in the years ahead. I hope you find it a fascinating read.

**Lou Smyrlis**  
Publisher & Editorial Director



# FINDING AND KEEPING TOMORROW'S DRIVER:

## RETENTION, RECRUITMENT AND RAISING THE BAR

By Harry Rudolfs

Have you ever heard of a trucking company with its own daycare? Les Petits BouBous operated by and for employees of Transport Bourassa in Saint-Jean-sur-Richelieu, Que., provides spaces for 54 pre-schoolers, ages 8 months to 5 years, and there is a waiting list.

Blended families and working spouses are common among truckers, and having an inexpensive daycare near the workplace (open 6 am to 6:30 pm weekdays) makes life easier for Transport Bourassa families and gives them more options. To be fair, child care is well-subsidized by the Quebec government, but the initiative is indicative of the lengths some trucking companies are going to accommodate their drivers and families and a prime example of the lengths carriers can expect to go to attract tomorrow's driver.

Like some other carriers, Bourassa has gone to a 4-day, 10-hour work week to provide its regional and

city drivers with more home time. And long-haul drivers with children are given special consideration as well. "Some of our drivers are single dads who only get to see their kids every other weekend, so we make sure they get home on time," says Jacynthe Seguin, director of human resources for the company.

Challenger Motor Freight has a cafeteria that serves hot meals at its Cambridge, Ont. facility along with a bunk room and indoor fueling bay for drivers passing through the terminal. Kriska Transport of Prescott, Ont., keeps a fully-loaded refrigerator at its terminal along with laundry facilities, showers, a television room and computers for drivers who might be spending a night in the yard.

Making sure drivers are content is the norm among the top trucking employers. Some carry extra insurance to allow family members to ride along on occasion. Other companies permit drivers to keep pets with them in the cab, usually small dogs or cats, although I know a couple who share their sleeper with two large dobermans.



Driver comfort has come a long way over the decades, and fully loaded and accessorized rigs are becoming the industry standard. Tony Primiani, general manager of Sylvester and Forget comments, “We supply everything: late model Petes or Volvos, leather seats, fridge, micro, inverter, CB. All the driver has to bring with them is their personal stuff.” And Daniel Lefebvre, director of operations for Via Val Transport Inc., of St-Eustache, Que, understands that drivers want to drive something classy. “I just ordered six LoneStars. Our work is flatbed work and drivers want a truck that looks strong and tough.”

Needless to say, wages, bonuses and benefits are among the most important considerations, and Canada’s biggest carriers are frequently revising their pay scales to stay competitive. After consulting with employees across the country, Challenger drivers were split down the middle on how they wanted to be paid. “About 50% of the drivers wanted to see their pay mostly based on mileage, while the other half wanted to be paid by mileage and the number of events like drops and switches,” says Geoff Topping, director of re-

So as the last of the baby boomers gets set to retire, the nagging question remains, where are we going to find people to drive trucks in the next decade?

cruiting. “So we came up with two pay scales and drivers can choose which one suits them. We also recently announced our second pay increase this year and increased the Eastern seaboard premium.”

But retention is more of an overall strategy than merely the size of the pay packet. Driver recognition is a big part of the equation. Challenger has a one million and a two million mile club for its long service drivers, while other carriers like Bison and Yanke have similar programs.

Safety and compliance departments that offer regular safety and training sessions are crucial to the smooth operations of any carrier. Kriska Transport, for instance, has a variety of training modules and upgrades that can be tailored to suit a specific driver’s needs. As well, individual fuel mileages are tracked, and safety bonuses are paid quarterly.

“Retention is absolutely key”, according to Angela Splinter, executive director of Trucking HR Canada. “Retention is the new recruitment and successful carriers have some type of formal retention programs in place. It all ties in to the mentorship and coaching, as new recruits are looking for leadership and guidance from experienced drivers.”

Carriers partnering with driving schools are becoming more common in today’s trucking culture. These are usually schools with certified programs that involve extensive training time, both in classroom and behind the wheel. But once the graduates start work with the transport company, a mentoring and training program kicks in where the trainees are brought up to speed on the job’s requirements.

“We hire 30 to 35 drivers (yearly) directly out of driver schools and provide them with internships,” says Seguin of Transport Bourassa. “They are accompanied by a driver trainer for the first two weeks, and after that they start working on their own. But we supply them with their own dispatcher who works directly with them, talking with them after they have completed a run to find out if there were any problems. After three months, they are considered fully productive, but we always have a live dispatcher available to them 24/7.”

Kriska has hired hundreds of drivers out of driving schools through Ontario’s Commercial Tractor Trailer Driver Apprenticeship Program. The company is one of the biggest users of the CTTDAP which sets benchmarks for driver competence and takes about one year to complete (2,000 hours). This is a fairly new program affiliated with the Ontario Ministry of Colleges and Universities and can include several weeks of instruction with one of Kriska’s 16 driver trainers.

Kriska’s work is mostly north/south, involving border crossings. Company scouts fan out to driving schools to explain what a driving job with the company entails. “Usually, out of a whole class there are only a few graduates who fit our expectations,” says recruiting manager Caroline Blais. “Sometimes there might be one, other times none.”

The industry continues to struggle to attract young drivers. As the profession doesn’t appear on young people’s radar, they overlook the excellent opportunities and wages that are available. Young people are also under the misapprehension that you have to be 25 to drive a big truck, but this is not the case: international carriers require drivers to be 21 to cross the border, but otherwise there is no impediment for an 18 year old to get a Class A or Class 1 licence.

To compound the problem, the industry is aging faster than the national average, and the graduates emerging from driving schools are not young either, quite often they’re mature adults looking for a new direction. So as the last of the baby boomers gets set to retire, the nagging question remains, where are we going to find people to drive trucks in the next decade?

“That’s the \$64 million question,” says Les Rozander, director of contractor optimization for Trimac. “There’s a whole host of different ideas—carriers are trying to be more flexible, changing work patterns so drivers have more home time, more shuttles, switches and regional work. There’s been a lot of discussion about Ontario having to commit to mandatory training (for drivers). This is a good first step but we’ve still got a long way to go.”

Rozander suggests some under-represented communities like aboriginals and women might be a possible source of future drivers. Currently, people seeking a second career and retirees from the Canadian military are considered to be good prospects.

“Ideally, a new three-year program being developed at NorKam High School in Kamloops, BC, by the BCTA and the ministry of education could work in conjunction with something like Ontario’s apprenticeship program. Interested high school students are steered towards a transportation career and have a position waiting for them at the end of their studies,” says Rozander. “The best way to attract young people is by adopting formal training and recognition of the profession as a trade.”



# AN UNTAPPED RESOURCE

**Women Truckers—making inroads in a male-dominated industry**

**By Harry Rudolfs**

Women represent a great untapped resource for Canada's trucking industry. They are 48% of the nation's work force but only a small number choose to drive truck. At least part of the problem is the perception that trucking is man's work. Since women haven't traditionally done this job, they don't really consider it a career option. Child care complications, issues such as personal security and lack of washroom facilities are often cited as other factors. But women have long since become the majority in school bus transportation. So how can trucking culture become more inclusive so that women are comfortable behind the wheel of a big truck?

Flexibility is top of the list. "One of the biggest attractions about our organization to females may simply be that working here will allow them to be home every night," says Dakota Phillips, administrative assistant at Rebel Heart Trucking. Her company hauls water and aggregates in the Edmonton area, and has a very large component of female drivers, about 20%, compared to an industry-average of 3%.

Phillips points out that the situation is slightly different in Alberta, since men and women are used to working side by side in heavy industry, and she suggests that promotional material should show both men and women do-

ing trucking jobs. "Just depicting males and females doing the same job in advertising can make it easier for young people to see themselves in that position," she says.

"Whenever our company is actively advertising Commercial Driver positions (career websites, social media, radio, etc.), I generally get anywhere from 50-150 resumes sent to my inbox daily, with an approximate quarter being from women," writes Phillips via email. "Rebel Heart does not specifically look to recruit female drivers, but we are more than eager to offer them the same chance at interviews and positions as men, as we've been quite lucky to have better overall retention with our female drivers."

Jennifer Ducharme currently has a dedicated run for Mackie Transportation between Whitby, Ont., and Pt. Huron, Mich. She got into trucking after being laid off as a dispatcher during the recession of 2008. "I had hit rock bottom and was going through a divorce," she says. "But the first place I worked after driver school, I was

given a patient, kind, intelligent woman instructor who built up my confidence and helped me a lot. I'd definitely like to sit down with Penny and tell her I've been to 46 states."

Ducharme has some advice for women starting out in trucking. "Talk to another woman about the job. If there's nobody where you work you can contact Women in Trucking at their website and they can put you in touch. And take all the courses and training that you can. It will help you with your confidence. I never worry too much about my own safety, but when I'm on the road I text my boyfriend every night from where I stop."

Jasvinder Sangha owns a 2013 Volvo 64T with her husband Manjit. They work on the open board for Mackie and stay out four or five days at a time. She admits that getting her licence and going on the road with her husband in 2001 raised some eyebrows. "My mother-in-law was not ready for this," she says. "I had two boys 8 and 9 and she didn't want me to be away. Now they are university age and it's no problem. All the men in my family and my husband's family are involved in trucking so that helped. Now I have a sister-in-law who wants to drive by herself."

Canadian carriers are definitely interested in recruiting and hiring women drivers. Initiatives like Women With Drive, sponsored by Trucking HR Canada, are working to make the industry more accessible to female drivers. And as mentioned above, just having a female driver-trainer on staff to act as a mentor can make a world of difference to a young woman learning the ropes.

"Women generally don't want 'special treatment' in the workplace (maybe just a separate washroom in the shop!), especially in a male dominated industry; they just want to be equals - receive fair treatment, hours, and pay," concludes Dakota Phillips of Rebel Heart Trucking. 🍷



# TOMORROW'S TECHNICIANS

## How to find'em, train'em and keep'em

By James Menzies

Today's trucks are highly complex and the shops that service them increasingly high-tech, but it would be wrong to think that's what's scaring young people from pursuing careers as heavy-duty technicians.

"If you're working on a piece of equipment that's got four or five on-board computers, you've got to know your stuff. But I see a lot of people getting hung up on that," said Colin Ruthven, chair of the Heavy Equipment Technician Programs at the Northern Alberta Institute of Technology. "The guys entering the trade, who grew up in our digital age, take to that technology like ducks to water."

The skills gaps that tend to exist with today's entry-level technicians are more often the basic fundamentals, Ruthven explained, noting they tend to overlook simple solutions such as a ground fault or electrical problem in the pursuit of something more complicated.

"They chase more complex solutions like a faulty emissions system when in reality, the issue is as simple as a plugged air filter," he explained.

Today's entry-level heavy-duty technician is usually comfortable with technology and often enjoys working with computers more than turning actual wrenches. Employers need to understand technology is not overly daunting to young technicians, and focus on some of the other ways they can make the career more attractive and rewarding to new entrants, Ruthven said.

Mark Belisle, president of Navistar Canada, agrees that to attract technicians in the future, shops will have to develop a long-term plan and not rely on traditional methods such as poaching existing talent from competitors or hoping walk-ins will show up at the door, resume in hand, to fill the void. He knows. He did a quick straw poll of Canadian International Trucks dealerships and concluded very quickly they are collectively short about 200 heavy-duty technicians today.

"I think this is probably going to be the difference between those dealers and those fleets that continue to grow and really elevate their level of success, and those that flounder and go away over time," he said. "You need a long-term plan for your technicians. You've got to build a pipeline all the way, in my mind, from the schools in your local neighbourhoods all the way through to getting apprentices, to getting those apprentices trained, to getting those apprentices up to speed, and then building a career path for them that gets them to where they want to go. It's a three- to five-year vision in order to make that happen; you can't just start that overnight."

The reality, however, is that developing technicians to fill today's needs as well as those of tomorrow, is a costly proposition.

"Apprenticeship is expensive," acknowledges Edwin Roeder, director of transport maintenance with Loblaw's Canada. "It can be frustrating as hell. But I do encourage fleets to hire an apprentice because if we don't hire, train and give back, the shortage (of technicians) is going to kill this industry."

Marc Poland, service manager with Volvo dealer Sheehan's Truck Centre, said it costs the dealership more than \$40,000 to develop each of its Volvo Master Technicians. This accounts for additional schooling, lost revenue when they're in training, transportation and other expenses. And technicians today and in the future are also more expensive to equip with the tools they need to do the job. It's no longer simply a matter of 'bring your own wrenches.'

"Laptop computers are generally part of the repair process," Poland said. "Normally what happens is, the truck comes in, and one of the first things we're doing is connecting it to a laptop."

Quality tools and equipment and clean, safe working environments will be crucial to attracting the next generation of technicians, Navistar's Belisle claims.

"The perception out there is that it's a dirty job," he said. "I think a lot of shops have changed today. A lot of shops you go into today are beautiful, clean shops, well lit, the floors are clean and everything's polished. It's a great work environment. Heated floors. I think those dealers and fleets that are going to be successful are going to have the nice shops. They're going to have an environment that people want to come to work in and they're going to be happy to come there, whether it's that they have a gym in the back or they have a really nice clean place to work or a great lunchroom. There's a lot of different ways to attract people and to keep them there and those that invest in having all those great workplace environments are going to be successful."

But even though the work environment in many cases has improved and the job offers above-average pay - with many seasoned technicians pulling in six-figure incomes after overtime - the numbers still tell a troubling story. Belisle, citing 2011 data, pointed out only 0.7 people are entering the trade for every one who retires or leaves for other reasons.

"So, for every 1,000 people that retire, only 700 are coming back into the trade today," he said.

One of the barriers that has yet to be overcome is that the people young folks turn to for career advice - their parents and guidance councilors - are often eager to push them in a different direction. Informing parents and educators of the transformation

## Employers need to understand technology is not overly daunting to young technicians, and focus on some of the other ways they can make the career more attractive and rewarding to new entrants

that has occurred within the trade and educating them about the income that can be earned and the career opportunities that exist, remains a challenge in a society predisposed to thinking a university education is paramount to enjoying a rewarding career.

"That's a huge challenge," acknowledged NAIT's Ruthven. "The councilors at the junior high and high school levels, what's their background? They all come from a university background and their message is, if you want to be successful, do as I did and go to university."

Sheehan's Truck Centre has gone to great lengths to overcome this. Poland, citing a survey that found 60% of parents would not encourage their children to consider a career in the trades and 71% of students claimed their guidance councilors didn't encourage a career in the trades, has tried to access these kids directly, knowing they're the future of the industry.

"I've even gone so far as to take a brand new, fully-loaded Volvo down to a school and have the kids go through it and see it, just to try to get some interest in it," he says. This approach really resonates with young people, Ruthven agrees.

"One of the things that is still lost on a lot of people is the tactile rewards (of the trade)," he agreed. "If you can be the guy standing back at the end of the day, watching that piece of equipment roll out of the shop that you fixed with your bare hands - put back together and repaired - that's usually rewarding, as opposed to pushing paper across your desk all day."

The ideal technician of the future, according to the Ruthven, will be a problem-solver, someone who enjoys working through challenges. Ideally they'll have done well in Grade 12 math and physics, but English skills are equally important, he added. "You need to have strong communication skills." The ability to work in a team environment is also something employers should look for.

But at the end of the day, Ruthven added, to be successful, "It's got to be something they love and enjoy."

When they get into the shop, provide them with variety, adds Al Thompson, coordinator of the truck and coach programs at Centennial College.

"They don't want to be shelved in the corner, just doing a job. They don't want to be the oil change person for the rest of their lives," he points out.

Once you find new technicians who are a good fit, Poland said it's important to treat them well. Compensate them better than the industry average if you hope they'll stick around and offer them continuous training and advancement opportunities.

"I can't put enough stress on the importance of keeping your people, versus trying to hire people and then hoping they work out," he said. "It's much easier to grow and retain a technician than it is to hire a good one. Make sure you're in touch with your people in order to meet their expectations."



# In demand skills: Five tips for hiring and training your future workforce

By James Menzies

Heavy-duty truck technicians are leaving the industry more quickly than they're being replaced and the only way to reverse this trend is to attract more young people to the trade and to work harder to ensure their success.

Here are five tips from professional educators and employers on how to hire the right technicians for your business's future needs and how to effectively develop those professionals into long-term employees and future leaders.

## 1 Look for the diamonds in the rough

When employers are looking for a new entry-level technician, too often they are fixated on the academic performance, according to Colin Ruthven, chair of the Heavy Equipment Technician Programs at the Northern Alberta Institute of Technology.

However, some of the most successful technicians didn't sport the best grade point average in the class, yet thrived with some proper tutelage in the right shop environment.

"(Employers) think the new guy they hire needs a Mensa-level IQ and so when they're looking to hire, they're looking for the top guys rather than the diamond in the rough that they can invest some time in and train and bring along," said Ruthven. "Hire that guy, put him in the wash bay, the lube bay, let him spend some time there and find a good journeyman to mentor him and bring him along."

## 2 Hire for the future

When looking to hire a technician, don't just ask yourself if they'll make a good mechanic, but also what other roles they can develop into in the future. That's the advice of Al Thompson, coordinator of the truck and coach programs at Centennial College.

"We have to start thinking, this is not a job we're hiring for, it's a career," he said. "You have to figure out where these people are going to be in one year, two years, five years and 10 years and then do a gap analysis - what skills do they need, what skills do they have? - and develop them."

Try to visualize new technicians in more senior roles, such as branch manager, and give them the tools and training they need to get there, Thompson suggested.

"This is one of the weakest parts of our business," he added. "We haven't spent a lot of time succession planning or strategic planning."

## 3 See and be seen

Lloyd De Merchant, the 2014 Volvo Trucks Canada Maintenance Manager of the Year, emphasizes the importance of being present on the shop floor - not holed up in an office.

"If you're not walking the floor, how can you pat them on the back?" pointed out De Merchant, who now oversees maintenance for Midland Transport. "When I was coming up through the industry...there was not a lot of patting on the back. You called a technician in when he did something wrong. I can tell my people my door's always open, but do you think they're going to come up here? When I'm in the shop, they'll talk to me. It helps me understand my technicians and the emotions in the shop. If they're stressed or they're tired or they have something going wrong at home - that's what I care about."

## 4 Train, train, train

Technology on today's trucks is increasingly complex and evolving rapidly. Technicians need to be given the training tools that will allow them to stay up to date.

"Electrically in my fleet, on any given day - and in reasonably good weather - 8% of my power units are down due to electrical issues," said Edwin Roeder, director of transport maintenance with Loblaw's Canada. "Throw a little bit of cold weather into that and you can be at 12-15% of your power units down on any given day. It doesn't matter how technical the truck is at that point - if it can't do its work, it's no good to anybody, and if we can't fix it, that's an even bigger challenge."

Roeder said a technician's ability to get those trucks back in service is "all about training...training and patience on an employer's part to allow these people to get better at what they do."

Centennial College's Thompson added this goes beyond referring technicians to a service manual. He noted reading and comprehension are often the most significant skills gaps that exist with today's technician. They learn better by being shown how to do a job, whether it be in person or by video.

"They learn by doing," he said.

## 5 Lead them to the trade

In order to keep pace with attrition and fill the void that's being left by retiring technicians, employers need to be more proactive about reaching out to young people and encouraging them to consider the trade.

"We need more people sent to our doors," said Centennial's Thompson. "We can't train them if they don't come to us."

Mar Poland, service manager with Volvo dealer Sheehan's Truck Centre, suggested reaching out to high school and co-op students.

"Technicians don't grow on trees," he said, "but you can plant some seeds and nurture them to grow. I find it really beneficial to get in touch with the local high schools so they can tell me if they have somebody that's suitable."



# PC-11

## may require new oil strategies in the shop

### **Only one of two categories within PC-11 is expected to be backwards-compatible**

By James Menzies

One of the greatest challenges for technicians and maintenance managers is keeping pace with the rapid change of technology. Another example of this will come in December, 2016, with the introduction of the PC-11 heavy-duty engine oil category.

The new category will bring potential fuel savings to fleets, but could also bring some added complexity to the shop. That's because there will be two sub-categories within the new standard and it's expected only one will be backwards-compatible.

Stephanie Jaworski, senior field technical advisor with Mobil Delvac, says the changes are required to keep pace with requirements from governments in the US and Canada to improve the fuel economy of heavy-duty vehicles and to reduce greenhouse gas emissions.

"The lubricants industry responds to changes mandated by OEMs who must respond to the EPA in terms of emission and fuel economy standards," Jaworski explained. "For PC-11, the next proposed commercial vehicle oil category, the major focus is on fuel economy, due to NHTSA regulations aimed at reducing the greenhouse gas emissions and improving average fuel economy."

Within PC-11, there will be a high temperature/high shear viscosity category and another for low high temperature/high shear viscosities, which will bring fuel economy benefits. The high temp/high shear category, will be a direct replacement for today's oils and will be backwards-compatible with existing equipment but it's expected the fuel economy oils will only be compatible with new engines.

This means fleets will have an important decision to make: forego the

fuel economy benefits of the low high temperature/high shear oil in favour of simplicity and the ability to stock a single oil. Or carefully plan and manage a two-oil strategy, so that fuel economy is maximized on newer engines while older engines in the fleet continue to get the protection they require from high temperature/high shear oils.

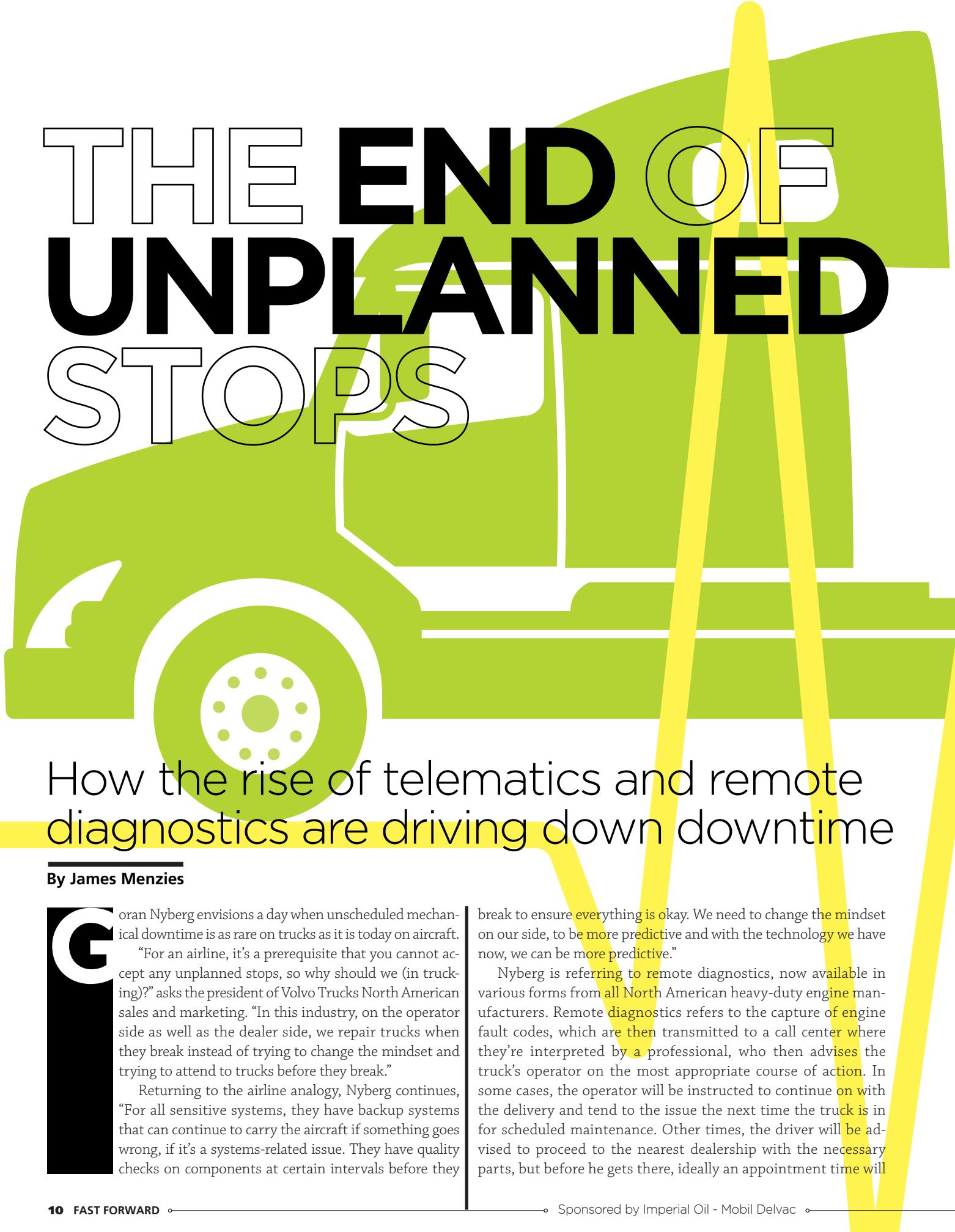
Managing two oils within a shop can be done - but may require some technician and driver training to ensure only the appropriate oil is put into the fleet's vehicles.

PC-11 is also expected to usher in the more widespread use of lower-viscosity engine oils, which have proven to bring significant fuel economy improvements while also maintaining wear protection requirements. Many fleets are using 10W-30 and 5W-30 heavy-duty engine oils today, having been convinced wear protection isn't sacrificed. Moving from a 15W-40 engine oil to a 10W-30 has provide fuel savings of about 1.6% for some carriers.

Because a lower-viscosity engine oil is thinner, there is less friction within the engine and less resistance to movement. An often-used analogy is to imagine swimming through water rather than honey. It requires less energy to move through water because of its thinner viscosity.

There are other benefits to lower-viscosity engine oils as well. They boast greater cold-weather startability, drawing less energy from the batteries, starter and alternator when cold-cranking the engine.

So while there's nothing to fear about PC-11 and there's lots to gain in terms of performance and fuel economy, technicians and maintenance managers will want to start thinking about how they'll manage the new category oil when it comes to market late next year. 



# THE END OF UNPLANNED STOPS

## How the rise of telematics and remote diagnostics are driving down downtime

By James Menzies

**C**oran Nyberg envisions a day when unscheduled mechanical downtime is as rare on trucks as it is today on aircraft. “For an airline, it’s a prerequisite that you cannot accept any unplanned stops, so why should we (in trucking)?” asks the president of Volvo Trucks North American sales and marketing. “In this industry, on the operator side as well as the dealer side, we repair trucks when they break instead of trying to change the mindset and trying to attend to trucks before they break.”

Returning to the airline analogy, Nyberg continues, “For all sensitive systems, they have backup systems that can continue to carry the aircraft if something goes wrong, if it’s a systems-related issue. They have quality checks on components at certain intervals before they

break to ensure everything is okay. We need to change the mindset on our side, to be more predictive and with the technology we have now, we can be more predictive.”

Nyberg is referring to remote diagnostics, now available in various forms from all North American heavy-duty engine manufacturers. Remote diagnostics refers to the capture of engine fault codes, which are then transmitted to a call center where they’re interpreted by a professional, who then advises the truck’s operator on the most appropriate course of action. In some cases, the operator will be instructed to continue on with the delivery and tend to the issue the next time the truck is in for scheduled maintenance. Other times, the driver will be advised to proceed to the nearest dealership with the necessary parts, but before he gets there, ideally an appointment time will

already have been arranged and a service bay will be available.

This emerging technology is the single most effective weapon in the war against downtime, and the industry is just now scratching the surface of what can be achieved through remote diagnostics. Probably sooner than you think possible, remote diagnostics will evolve into 'predictive' diagnostics, where the technology can be used to warn of potential problems before the Check Engine light even comes on.

"We have far more data we can use now to be more predictive," Volvo's Nyberg explains. "Customers need to understand with an alternator that is 46 months old, when the dealer says that alternator is coming to the end of its life, that it's time to change it and that the right thing to do is to change it before it breaks. We don't fix it until it breaks, normally in this industry."

With reams of data about the life cycles of various components now being collected and analyzed, dealers will in the future be able to more accurately advise fleets on how long they should expect parts to last. Replacing them in the shop near the end of their anticipated lifespans will reduce breakdowns, tow bills and the added cost of repairing trucks far from home.

When it comes to engine oil and filters, sensors will be able to monitor their condition and communicate to the operator via remote diagnostics, the real-time condition of the oil or filters. This will provide fleet owners with the ability to extend service intervals and save money by no longer draining oil or pulling filters prematurely based on industry standard recommendations.

"If you go back 20 years ago, you got your oil changed, they put a sticker on the side of the windshield that said you better be back here in 5,000 kilometres and everybody believed that," explains Mark Belisle, president of Navistar Canada. "Well today, the oil change is determined by your vehicle and you can go 14,000, 16,000, 18,000 kilometres between oil changes. It depends on your use. That sort of change is going to happen in the trucking industry, thanks to the evolution of diagnostics."

Matthew Pfaffenbach, head of telematics with Daimler Trucks North America (DTNA), says the concept of remote diagnostics itself is not new, but its application in the trucking industry is.

"The concept of it is really quite old," he explains, noting technicians and engineers have for a long time been capturing diagnostics data from the engine's control units by plugging into the ECUs using their computer or diagnostic tools. "There was always this concept of, wouldn't it be great if we could take that data and transmit it back to Detroit and do it from our desk? It was the advent of cellular communications and the reduction in costs of those communications that facilitated bringing the concept to reality."

The benefits of remote diagnostics are already beginning to be felt by the fleets. Conal Deedy, director of connected services with Volvo Trucks North America, says customers have seen a 71% decrease in diagnostic time and a 22% reduction in repair times compared to traditional processes. Daimler's Pfaffenbach said these figures are tricky to substantiate because "you have to have the same type of equipment equipped with and without remote diagnostics services and you have to have access to a fleet's maintenance records and downtime."

Even so, Daimler recently did a study with a large fleet and concluded that by using Virtual Technician, it was able to improve uptime by 6% and slash repair costs by 20%.

"A major part of that is, you get a more accurate diagnosis," he says. "Sometimes if you don't have good information, you repair what you believe is the cause, send the truck back out and find out you didn't fix it and have to put more time into that particular repair. With Virtual Technician, we are able to get a more accurate diagnosis the first time."

Currently, every remote diagnostics solution in the market monitors fault codes generated by proprietary engines. Most cover aftertreatment systems. Some now monitor transmissions too, and others are being rapidly expanded to cover fault codes generated by third-party components, such as braking systems. The opportunities to expand the technology are nearly endless - everything with a sensor has the potential to one day be monitored through remote diagnostics.

"We have placed our focus on where the biggest need is - the engine and aftertreatment," says Pfaffenbach. "But we're able to capture a fault code event from any component on the chassis that has a controller that reports diagnostic events."

Adds Volvo's Deedy: "The combination of connectivity and vehicle computerization will drive a fundamental shift in how the industry thinks about uptime, by affording the opportunity to prevent component failures rather than just respond to them. Our vision is the capability to determine the best time to replace a component for maximum life without a failure and to establish schedules based on customers' specific duty cycles."

When will all this happen? Bill Kozek, president, North America Truck and Parts, said the ability to predict the failure of say, an alternator, through Navistar's OnCommand Connection is "less than two years away."

Of course having all this predictive data at hand is only useful if the fleet has the resources to stay on top of it and respond to what the systems are reporting. And the dealers have a role to play too, by ensuring commonly required parts are always stocked and that the systems are in place to efficiently get a truck in, get it fixed and get it back out on the road.

"We've got to do it all together," Kozek said. "We can be really good at it (as an OEM) but if the dealer body's not, that's not good. Ultimately the customer won't see the value in it."

"You need a dispatcher for watching fault codes, just like you need a dispatcher for dispatching trucks," Belisle adds, of the fleet's role. "If no one's looking at (the data) at the fleet level, it really is a lot of stuff that's not providing any value to anybody."

While there is still much to figure out in terms of how fleets and dealers can best utilize remote diagnostics and how great the potential is to reduce or eliminate downtime, the vision, for Nyberg at least, remains an airline-type performance.

"I think we've only scratched the surface on connectivity and the benefits this can bring us," he says. "We need to look at trucks and trucking in a different way. We need to focus on uptime and make sure we do whatever we can to make sure we don't have any unplanned stops." ☉

# ACTIVE SAFETY TECHNOLOGY IS EVOLVING

## SOMETIMES FASTER THAN REGULATIONS

By James Menzies

The trucking industry's rapid shift in recent years from passive to active safety systems has not only saved lives, but significantly reduced costs for fleets. And we may just be scratching the surface of what active safety systems can achieve.

Passive safety systems such as seatbelts and collapsible steering columns were intended to reduce fatalities and the severity of injuries once a crash has occurred, but did nothing to prevent them from happening in the first place. However, active safety systems - which can intervene when a crash is imminent and prevent it from happening altogether - are seeing widespread adoption because of their ability to not only save lives, but also to deliver a tangible return on investment.

"The demand for passive safety systems is not market-driven," says Wilfried Achenbach, senior vice-president of engineering and technology with Daimler Trucks North America. "They came with some cost and sometimes an ambiguous or negative payback because it only becomes engaged after the vehicle is involved in a collision. Active safety systems become engaged prior to a potential collision, hopefully to avoid the collision altogether."

Examples of active safety systems include anti-lock braking systems (ABS), electronic stability control (ESC) and adaptive cruise control (ACC). Achenbach says the North American trucking industry has reached a tipping point, and customers are now demanding - and paying for - active safety systems.

"We have crossed the tipping point in market penetration and market acceptance of active safety systems," he said.

Some of the more commonly spec'd active safety systems employed by fleets today include:

**Electronic Stability Control:** Sensors detect when a truck rollover or other out-of-control situation is imminent and then apply the necessary brakes to bring the unit back under control before the crash occurs.

**Lane Departure Warning:** A camera recognizes lane markings and sounds an alarm or provides a haptic (vibration) warning to the driver if the truck strays from its lane without the turn signal activated. This is especially effective at reducing crashes resulting from driver fatigue or distraction.

**Adaptive Cruise Control:** Radar measures the distance to the vehicle in front of the truck and then applies the brakes and/or accelerator to maintain a safe following distance. Since it can activate the service brakes, it's effective at reducing rear-end collisions when cruise control is turned on.

**Active Brake Assist:** Provides the same features and benefits of adaptive cruise control, whether or not the truck's cruise control is active.

**Sign recognition:** A new option available for the first time this year, Bendix Wingman Fusion offers sign recognition capabilities. Cameras mounted in the cab read the speed limit signs along the highway and warn the driver when the posted speed limit is exceeded by 5 mph or more. A more egregious speed violation is recorded and transmitted back to the fleet owner or safety manager to help enforce speed control.

All the above technologies working together form the basis of autonomous trucks - those that under certain conditions and environments can drive themselves without driver input. Freightliner in May was the first truck manufacturer to introduce a road-legal autonomous truck dubbed Inspiration. Nevada was the first jurisdiction in the world to license the vehicle for use on public roads.

In addition to the safety systems described above, the Inspiration Truck adds autonomous steering so it can drive itself down the highway when in Highway Pilot mode. Autonomous trucks

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for the foreseeable future will still require a driver - but by taking control from the driver in monotonous driving situations, safety should be improved.

While it will be some time before autonomous trucks are common on North American roadways, the technology exists, has been well tested and promises to significantly improve highway safety, since 90% of all truck crashes are the result of driver error.

“The autonomous vehicle technology we are showcasing in the Freightliner Inspiration Truck will help reduce accidents, improve fuel consumption, cut highway congestion, and safeguard the environment,” said Dr. Wolfgang Bernhard, board member for Daimler AG overseeing trucks globally. “In an autonomous truck the system never gets tired, never gets distracted.”

Another potential safety benefit attainable through the use of autonomous trucks is truck platooning, where three or more trucks can connect via vehicle-to-vehicle communications and then travel in a tightly packed convoy. The lead truck’s braking and acceleration will be communicated to the following trucks so that each truck in the platoon brakes and accelerates in unison. Average fuel savings can be as much as 5-9% in a truck platoon, since less air becomes trapped between the vehicles causing turbulence for the following trucks.

Safety is also expected to improve since the trucks travelling in a platoon will be able to ‘talk’ to each other in real-time.

Volvo Trucks North America is also intrigued by the benefits of truck platooning, and recently took a financial stake in Peloton Technologies, a truck platooning pioneer.

“Volvo Trucks has long been a leader in offering advanced technology to our customers, and we were the first OEM to lead a platoon,” said Goran Nyberg, president of Volvo Trucks North America. “We look forward to working with Peloton Technology as they work on a platooning solution that will improve safety and fuel efficiency, while also combating the costs associated with congestion.”

Truck platooning was demonstrated last year at the ITS World Congress in Detroit, Mich. The trucks in the demonstration travelled within 13 metres of each other, which seems counterintuitive

to truck safety. However, the quick reflexes of the technological system prevented any risk of rear-end collisions while contributing to greater fuel economy.

Truck platooning on major highways, however, remains a few years away – at least.

“The big picture is two or three years out for lane-keeping, parking assist, traffic assist and technologies like that. Then manned vehicle platooning,” said Bill Kahn, Peterbilt principal engineer and manager of advanced concepts. “Then we step out a little bit farther and we give the truck the ability to manoeuvre around items. Stepping out a bit farther, that’s when we get the possibility of the truck being able to drive urban duty cycles with input from the driver.”

In some instances, truck safety technology is outpacing regulatory change. The autonomous truck introduced by Freightliner is for now limited to freeways and interstates in Nevada, because no other states or provinces have approved its use.

The use of small cameras in place of mirrors, with screens that display the view located inside the cab, has the potential to improve visibility while also improving aerodynamics, as demonstrated by Daimler through its \$80-million SuperTruck project. However, regulations still require traditional-styled mirrors to be mounted on the exterior of the vehicle.

“The current law mandates how we achieve the visibility goal,” explained Sean Waters, director of compliance with Daimler Trucks North America, adding fuel economy can be improved 1.5% by eliminating exterior mirrors while also providing the driver with greater visibility of the truck’s surroundings. “It requires us to have a mirror and in this case, the law has not caught up with the technologies. Mirrors should be an option.”

Regulatory change moves slowly, but technological change does not. Truck safety systems are making major advancements and progressive fleets are beginning to see the value in investing in such technologies. While an uncrashable truck may never be invented, the advanced active safety systems available today and in the near future have come close to achieving this. 🍋

# SUCCESSFULLY OPTIMIZING OIL DRAIN INTERVALS REQUIRES THE RIGHT PLANNING PROCEDURES

**E**stablishing an optimized oil drain interval is a lengthy process. It can be labor and time intensive. But the potential benefits can be exceptional.

In addition to helping to save money on maintenance costs, a successful, extended oil drain interval program can help trucks and commercial equipment run more miles or operate longer with each gallon of oil, which is good for a company's bottom line and the environment.

As a senior field technical advisor for Mobil Delvac, Stephanie Jaworski knows that when trying to extend oil drain intervals, having positive results are a direct result of having the right process in place.

"Our ultimate goal is to help identify the oil drain interval that will yield the lowest total operating cost without sacrificing engine reliability – or the resale value of trucks," Jaworski said. "But it's important to understand that each fleet's needs, equipment, and maintenance protocols are different."

That's why Jaworski says she and her team seek to customize drain interval targets for each fleet they work with.

For example, Jaworski and her colleagues worked with the maintenance team at Danfreight Systems (DFS), a Quebec-based fleet that specializes in refrigerated transport and operates more than 130 tractor trailers, the majority of which are Peterbilt's with PACCAR MX-13 engines.

Working together, Jaworski and her colleagues helped to determine a lubricant solution capable of helping the company reduce both operating costs and environmental impact.

"Our analysis of the fleet's operations supported the recommendation that switching from a conventional, mineral-based engine oil to Mobil Delvac 1TM ESP 0W-40 synthetic diesel engine oil, would deliver significant benefits for the DFS fleet," Jaworski said.

Since making the transition to a synthetic engine oil more than two years ago, the company has reported that it has successfully extended oil drain intervals to 100,000 km for the majority of its fleet, reducing fuel consumption and lowering maintenance costs.

Used oil analysis results have shown that even with the extended oil drain intervals, the engines have exhibited normal wear patterns, with some parts of the engines exhibiting no wear at all.

Jaworski says, the Imperial Oil team uses a comprehensive, data driven approach that employs a wide range of tools and expertise to support fleets that want to extend oil drain intervals, including:

- **State-of-the-art lubricant technologies, laboratories and facilities;**
- **Data-driven methodology and analytical tools;**
- **Specialized engineering services;**
- **Dedicated and experienced engineers; and,**
- **Close working relationships with leading OEMs.**

Typically, Jaworski said, the work occurs across four distinct phases, which are central to Imperial Oil's approach to optimizing oil drain intervals. They include:

**Stage 1: Feasibility analysis** A thorough analysis of the fleet's current duty cycle and maintenance practices helps determine different optimized oil drain interval scenarios that should be tested in order to quantify potential cost savings and sustainability-related benefits. At this stage, the key items evaluated are:

- **The type of application the fleet is used for;**
- **Climates and terrains in which the equipment is operating;**
- **The equipment type, age, and emission compliance;**
- **Experience of the maintenance staff; and,**
- **If available, the fleet's used oil analysis history.**

This is also a time to engage the fleet's OEM partner/s. Doing so, right from the start, can play a critical role in helping understand any engine warranty and policy implications of the extended drain intervals.

**Stage 2: Field test** A series of in-service testing programs, which may continue for a year or more, can help determine whether the fleet or company can operate efficiently between the proposed, targeted service intervals.

**Stage 3: Evaluating results** A thorough data analysis will help ensure that the service interval recommendations are safely achievable.

**Stage 4: Ongoing program maintenance** Periodic reviews and continued customer education will help ensure that business objectives are being achieved and program protocols are being followed. 🕒

*To learn more on how the team behind Mobil Delvac approaches the process of optimizing oil drain intervals, go to:*

[www.youtube.com/watch?v=GZwhgeDnCRI](http://www.youtube.com/watch?v=GZwhgeDnCRI)

*Did You Know? Imperial Oil is an affiliate of ExxonMobil.*

# NATURAL GAS DEVELOPING A FOLLOWING

While adoption rate has slowed, some Canadian fleets are all-in on natural gas

By James Menzies

**K**elly Hawes doesn't want to hear there's no benefit to running natural gas trucks. As he sees it, Hawes, president of Vancouver Island-based Cold Star Freight, the savings are great enough that it's almost as though the gas company is giving him free trucks.

"The way I put it, with 40% savings on 40 trucks, that means I could buy a natural gas truck in cash every three months with the savings," Hawes said. "I can't do that with the margins I had before. The other way to look at it is, if I wanted to put that kind of money on my bottom line, the amount of top line revenue that I would have to grow is in excess of \$5 million in sales, which means more staff, more drivers, more buildings, more everything. Or I could buy new trucks, which I need already."

Hawes is one of this country's strongest proponents of natural gas-powered trucks. He has been converting his fleet over to natural gas for the fuel savings, the environmental benefits, the ability to run quieter trucks on early morning deliveries in neighbourhoods and with a long-term view that eventually diesel prices will once again spike and natural gas prices are projected to remain stable and significantly lower.

Hawes opted for the Cummins ISX12 G engine in Mack Pinnacle tractors and became the first trucking company on Vancouver Island to run natural gas-powered trucks, delivering food products to the Island. However, the movement, despite progressive leaders like Hawes, is taking longer than some anticipated, thanks in part to softening diesel prices and the absence of a 15-litre natural gas engine in Canada.

ACT Research acknowledged in a recent paper that market penetration of natural gas trucks is falling short of expectations made two years ago. Original projections were for natural gas trucks to account for 5% of the Class 8 truck market in North America, but ACT now says that projection is "optimistic."

"With the price differential between diesel and natural gas narrowing, the ROI to convert from diesel to natural gas is moving in the wrong direction: payback periods are lengthening," said Ken Vieth, ACT's senior partner and general manager.

Stephanie Jaworski, senior field technical advisor with Mobil Delvac, agrees diesel will remain the predominant fuel source used by the trucking industry for the foreseeable future, but still sees a bright future for natural gas.

"We do see that diesel will continue to be the most common and widely used engine technology for a number of

years to come," Jaworski said. "However, long-term, we see the global trend toward natural-gas engines continuing to grow."

Natural gas engines require a special oil and Imperial Oil last year moved to fill this need with introduction of its Mobil Delvac CNG/LNG 15W-40 engine oil, designed for use in spark-ignited CNG and LNG engines. "Mobil Delvac CNG/LNG 15W-40 protects against wear, oxidation and nitration, which can result from the high operating temperatures found in natural gas engines," Jaworski said. "Tests have also shown that CNG/LNG 15W-40 can help operators extend oil drain intervals for their natural gas-powered engines."

While the lack of a 15-litre natural gas engine and falling diesel prices may have caused interest in natural gas to wane, several fleets are finding the ISX12 G is suitable for their application, even though it's limited to a GCW of 80,000 lbs. One such fleet is C.A.T., which has ordered 100 trucks powered by the ISX12 G and will use them to serve a lane between Montreal, Que. and Laredo, Texas. It is currently waiting for the complete network of fuelling stations along the route to be finished.

Ryder System is one of North America's largest users of natural gas trucks and Scott Perry, vice-president with supply management, is charged with overseeing that fleet. He said the ISX12 G is proving to be a reliable and productive engine for fleets that can stay within its 80,000-lb GCW limitations.

"We've gotten really good feedback from drivers and operators (of the ISX12 G)," Perry said. "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."

Perry's convinced that, even though diesel has come down in price, there's still a place for natural gas.

"We think that it's going to be a piece of the commercial vehicle portfolio going forward," he said. "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." ☺

**Natural gas engines require a special oil such as the Mobil Delvac CNG/LNG 15W-40 engine oil, for spark-ignited CNG and LNG engines.**





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