

Oil Trends And Developments

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An oil company executive talks about the latest trends in oils and lubes for commercial vehicles, looks at oil and the 2010 engines and clears up some common misconceptions about oil.

This issue the Executive Perspective focuses on developments in oils and lubricants and what might be coming in the future. Dr. Fran Lockwood, senior vice president, Research & Development, Ashland Consumer Markets (Valvoline), shares her thoughts on this important subject.



SD: What are the latest trends in oils and lubricants for today's commercial vehicles?

FL: The conversation we have with our customers is always about how to reduce cost of ownership. We are seeing continuing emphasis on extending oil drain intervals and improving fuel economy.

It also is part of our job to educate our customers about trends that might impact them either positively or negatively. One of those big trends is the increasing use of bio-diesel and how that affects engine performance. Then with the 2010 model year, we have new regulations for NOx reduction and we are going to see the adoption of selective catalytic reduction (SCR) technology to reduce NOx.

SD: How is oil impacted by bio-diesel fuels?

FL: The biggest issue with bio-diesel is increased fuel dilution of the engine oil. It emphasizes the need for a robust product that provides a sufficient film thickness in the lubricated contacts. Also, we strongly recommend ongoing oil analysis programs which quickly can give the operator feedback as to what degree of fuel dilution he might be experiencing with specific engines.

SD: Will there be a new oil formulation to go with the 2010 engines?

FL: As it currently stands, both the engine manufacturers and the American Petroleum Institute (API) are in agreement that the API CJ-4 engine oil category that we now have is more than adequate for the upcoming changes in exhaust emissions regulations. In fact, with SCR, the amount of exhaust gas recirculation is not as aggressive, so it actually will decrease the load on the engine oil to some extent.

The way SCR works is a urea solution is introduced into the catalyst system to reduce NOx to nitrogen and water. The benefit is that you don't need as aggressive exhaust gas recirculation. What exhaust gas recirculation does is cools the combustion process so that you make less NOx and in doing so you actually can hurt fuel economy. By going to SCR you don't have to be as aggressive with EGR and you can manage the NOx levels in a very direct fashion.

However, the vehicle operators will have to buy an additional fluid to put into their trucks. There is a balance point there. Most manufacturers have voted for the improved fuel economy associated with SCR and the very complete reduction of NOx that can be obtained.

They believe the balance point is such that it actually is a net improvement in cost compared to what the very aggressive EGR method would have to be to attain the same level of NOx reduction.

There will be some sparring in the marketplace as to which is the better system. I think the majority of OEMs clearly have voted for SCR. And from the oil point of view, that is a good thing. It is less challenging from the engine oil point of view than very advanced EGR.

SD: What are the most common misconceptions about oils and lubricants?

FL: The biggest thing that we hear is that people feel that the CJ-4 category is inferior to the previous API performance category. And actually the CJ-4 category was designed to be a significant upgrade over the CI-4 and the CI-4 Plus lubricants that we had previously. It is designed to provide better shear stability of the lubricant, improved piston deposits, better oil consumption and equivalent valve train and bearing protection and soot control. It actually is a very strong package.

SD: Why do people have the erroneous opinion of CJ-4 oils?

FL: The concern was on the total base number or TBN of the lubricant. With the CJ-4 category and the advent of diesel particulate filters, there was a desire to reduce the amount of materials that might deposit on the particulate filter. As a result, the TBN of the lubricant had to be controlled and different materials were introduced to give additional capability to neutralize acids in the oil.

In the U.S., with the low sulfur diesel fuel that we have available today, you don't need the amount of neutralization capability that you needed when you had a large amount of sulfur, which was making sulfuric acid that had to be neutralized.

In the past people always had been taught higher TBN and that is where this myth comes from. But now the fuel has changed. Everything has changed.

SD: Can you talk about what you see for oil in the future?

FL: It is clear that we are going to see a continued drive to improve fuel economy and that will be a collaborative effort between the oil manufacturers and the engine manufacturers, because the engines also will have to tolerate lower viscosity products in order to do that.

SD: Are you seeing that it is necessary for engine manufacturers and oil companies to work together?

FL: Our primary focus always has been on extended drain intervals and overall wear protection, but what we have found with these new formulations is that we have been able to maintain all of that plus introduce the element of improved fuel economy. We think that is still the key.

Now going forward, we think there is a strong desire to drive toward lower viscosity for even better fuel economy and it is very helpful for the oil manufacturers to provide prototypes for the engine developers to work with and that is what we do.

SD: What is Valvoline doing specifically in the area of fuel economy?

FL: The most exciting new thing that Valvoline is doing is working very actively on fuel economy.

We've completed a very large statistically designed program examining the fuel economy of our 5W-40 Valvoline Premium Blue Extreme engine oil.

We were able to prove—with a statistically based 95 percent confidence level of proof—up to 3 percent maximum improvement in fuel economy using the 5W-40. Depending on the fuel prices, that could make this product a very good investment.

The test methodology we used was the SAE J1321 test method, which is the only US EPA SmartWay recognized test method.

The test uses matched trucks, one with the baseline oil and then with the test oil, that run over a test course and measure fuel economy. They run on the Interstate, but it is a controlled piece. It was run at an outside test laboratory.

This is the common method that has been recommended for truck fuel economy. We are pretty excited about working with fleets to test 5W-40 to improve their fuel economy.