

Changing Emissions Standards

By Blaine Ballentine

Tightening environmental legislation has forced engine changes that have required changes in engine oils. The current changes to diesel engines do not require any new oil specifications. Here is a summary of changes to diesel engines and how it does not affect you.

In 2002 tightening NO_x emissions standards caused diesel engine manufacturers of on-road engine to add EGR (Exhaust Gas Recirculation) and issue a new oil standard (API CI-4). In 2007 tightening particulate emissions standards caused diesel engine manufacturers of on-road engines to add DPFs (Diesel Particulate Filters) and issue a new oil standard (API CJ-4). Now that 2010 is here, we have even tighter NO_x emissions causing diesel engine manufacturers to add DEF (Diesel Exhaust Fluid) systems, but this time there is no new oil standard. Next year the 2007 emission requirements against on-road diesel engines take effect against off-road diesels.

Since we do not have enough 3-letter acronyms yet (LOL), the 2010 trucks use SCR (Selective Catalyst Reduction).

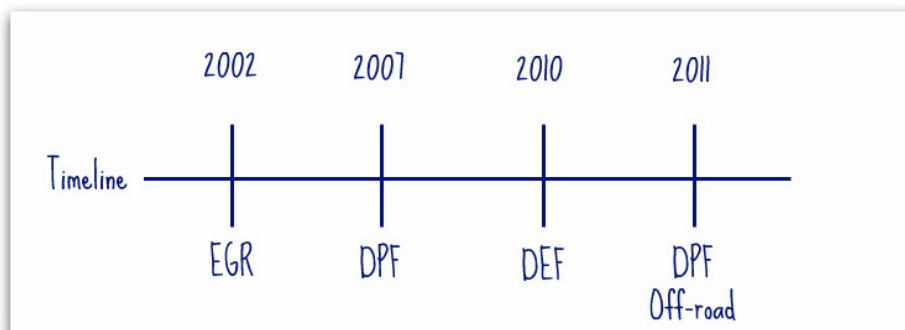
The SCR is to convert nitrogen oxides into nitrogen and oxygen. SCR uses urea, yes, the active ingredient in urine and fertilizer, to make the chemical conversion.

The urea is injected into the exhaust stream as a solution called Diesel Exhaust Fluid. It is held in a small onboard tank and DEF consumption is only about 2% diesel fuel consumption. So theoretically, the truck will need 2 gallons of DEF for every 100 gallons of diesel fuel.

Notice the DEF is injected into the exhaust. This makes it a real non-event for Cen-Pe-Co. There are no compatibility issues with the engine oil or any of our diesel fuel additives. From an oil or a fuel additive formulation standpoint, there are no changes from the 2007 engines.

Oil drain intervals may vary slightly from 2007 models in that soot level is normally the limiting factor for our oil customers. The SCR engines

do not require as high of a level of EGR, so they should not load soot into the oil as quickly as the previous generation and they may achieve slightly



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better fuel economy. So, potentially, SCR engines allow longer drain intervals.

There is one exception among North American manufacturers that is not using SCR and that is Navistar. Navistar is using higher levels of EGR to reduce NO_x. This may cause soot to accumulate more quickly in the crankcase, potentially necessitating shorter oil drain intervals.

Still, these are not changes for us. Duty cycle, load, crankcase capacity, and even driver habits influence drain intervals. We always recommend oil analysis with extended drains to establish safe intervals.

In 2011, the 2007 on-road regulations take effect for off-road equipment. Off-road equipment will have Diesel Particulate Filters like their on-road counterparts, and some will also use DEF.

Again, these changing emissions laws will be almost a non-event for us. We are already recommending Cen-Pe-Co Extreme Duty Oil for DPF engines. It is just that DPF engines are coming to off-road and more of our customers will be affected. We anticipate that beginning in 2011, as our off-road customers buy a new piece of equipment, they will switch all of their equipment from Cen-Pe-Co S-3 Oil to Cen-Pe-Co Extreme Duty as many of our on-road customers have done since 2007.

Changes are coming to diesel equipment, but Cen-Pe-Co lubricants and fuel additives are already in place and are still the best choice for improving fuel economy, reducing wear, and saving money.

References:

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Introducing... Hy-Torque 85W-140

We are proud to announce that Cen-Pe-Co Hy-Torque Gear Lube Red with Temp Tac is now available in SAE 85W-140. It fits in our line between the SAE 80W-140 Synthetic Blend and SAE 140.

There is a limited market for these really thick gear lubes. Thicker is not always better. For example, our Hy-Torque SAE 80W-90 will practically always lower temperatures in the axels of highway trucks when replacing anything W-140. High viscosity oils just cannot carry the heat away as fast in high speed applications. However, SAE 80W-140 and/or 85W-140 are the preferred grades for low speed, high load applications, such as differentials, planetaries, and hubs on some types of off-road equipment.

Even though 80W-140 and 85W-140 sound as though they are similar, their formulations are very different. You can think of the 80W-140 formulation almost like a multi-vis engine oil. We start with a neutral and build viscosity with a polymer. The 85W-140 formulation is more like an SAE 20W engine oil in that it contains a pour point depressant, but no polymer. Our SAE 85W-140 is the stronger formulation because it is made mostly with bright stock which cannot be sheared or crushed as easily as polymer and has much better heat resistance than neutral.

Your recommendations for which viscosity grade of Hy-Torque should be based on manufacturers' recommendations and ambient temperatures. As a rule of thumb, SAE 85W-140 works down to about 10 degrees F., and 80W-140 is good to about -15 degrees.

So, if your client's equipment never moves when the ground is frozen, SAE 85W-140 is the better choice. It has superior film strength and better heat resistance. A lubricant should never be purchased based on price, but the lower price of 85W-140 compared to 80W-140 is just icing on the cake.

Central Petroleum Company is a specialty lubricant manufacturer that endeavors to make the best lubricants possible. Cen-Pe-Co Hy-Torque Red with Temp Tac SAE 85W-140 fills the gaps between SAE 80W-140 and SAE 140. One size does not fit all, which is why we have different sizes, but in many low speed, high load applications, Cen-Pe-Co's new 85W-140 is just right.

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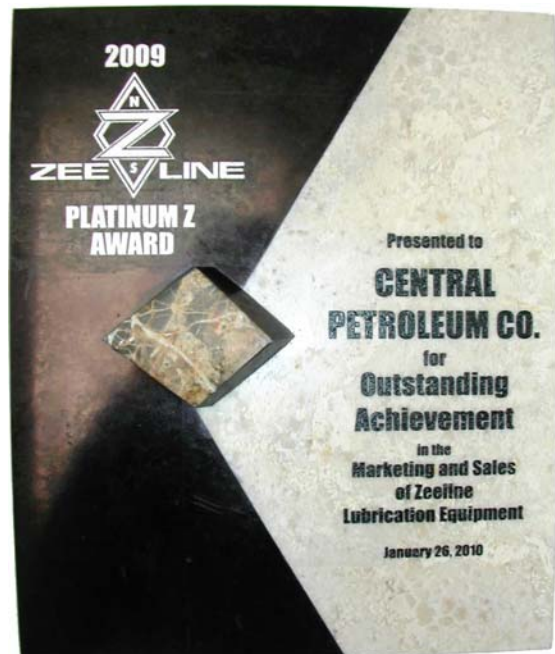
The farmer's body language would say "not another salesman today . . . not now!" Don would know his name from the mailbox and say "Hi George, I'm Don Utter from Webster City and I work for Cen-Pe-Co. I can see you are busy right now. I don't want to do anything more than shake your hand and introduce myself. Here's my business card and I'll leave it with you." After getting a quick reaction from the farmer, Don would say "*I might ask you one favor, George . . . when you are finished planting in the next couple of weeks and things quiet down, would it be alright if I stop back and show you what we have to offer with Cen-Pe-Co?*" More than likely, the farmer would relax, realizing that this Cen-Pe-Co guy seems friendly and is just here to introduce himself. More times than not, he would invite Don back to visit on another day. As Don would wish him a safe planting season and walk away, the farmer would think to himself "Now, that's a nice salesman. He knew I was busy and did not take a lot of my time". Bottom line, Don would leave a favorable impression with someone who had previously been a stranger and, guess what - *Don now had an invitation to stop back and show him Cen-Pe-Co products.* No more intimidation – this farmer invited me back!

Don made it a goal to introduce himself to as many farmers as possible that Spring. When your average call lasts only two minutes, you can compile a long list of people each day. The more stops he made, the more fun he started to have and he knew he was going to be successful in starting a lot of new customers in the near future. He even found that occasionally a farmer would be broke down in the field and have time on his hands waiting for repairs to arrive. He would say "So what is Cen-Pe-Co and what have you got?" He would invite him to stay for awhile and might lead to a sale right then and there.

Don Utter organized that list of farmers who gave him an invitation to stop back and show them Cen-Pe-Co products. *They liked that Cen-Pe-Co salesman with the smile on his face who was courteous and respected their time.* A high percentage of the *prospects* turned into *customers* that spring. It was that one strategy that laid the foundation for Don's success in Cen-Pe-Co as those customers led to hundreds of others in the years to come. The rest is history for Don with thousands of orders and millions of dollars in business . . . and a long, successful career that continues today.



We recently received the marble plaque pictured to the left from National Spencer, the manufacturers of our lubrication equipment. Cen-Pe-Co had the biggest increase in sales for 2009 of any of National Spencer's distributors. The sales growth is primarily due to your success in selling reel systems for dispensing oil. Great job!



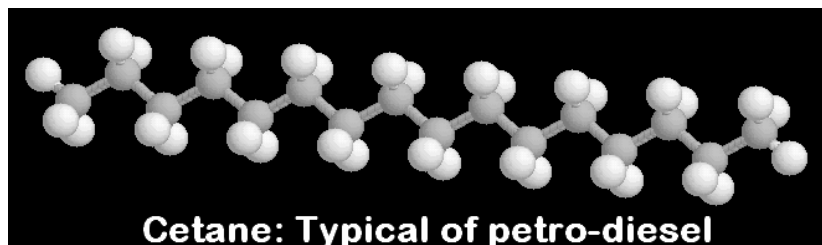


By Kaysha Ballentine-Wells

Cetane, while a topic frequently mentioned in articles in the *Central News*, has never been clearly explained. The simplest definition is that cetane number is a measure of combustion quality. It measures the time between the start of fuel being sprayed into the combustion chamber (injection) and the start of combustion (ignition) of that fuel. A higher cetane number indicates a shorter ignition delay, so sooner ignition. However, it is important to note that, in and of itself, cetane number is not an indication of fuel quality. For example, kerosene generally has a higher cetane number than #2 diesel, but less energy (BTUS), which causes fuel consumption to suffer.

The cetane number of a fuel can be experimentally determined by burning fuel in a special research engine and increasing the pressure within in the combustion chamber until the delay is a given amount of time. Whichever mixture of cetane (hexadecane) and isocetane (2,2,4,4,6,8,8-heptamethylnonane) has the same ignition delay as the test fuel is used to determine the cetane number (ASTM D-613). Most states require the ASTM D975 standard, which sets the minimum cetane number a diesel fuel can have at 40. Diesel fuel in the US generally has a cetane number in the 42-45 range. In Europe the minimum cetane number is 51 and can be as high as 60. Asia's average cetane number is also higher than the US.

Cetane Index (CI) is a calculated value based on the density and distillation range of a fuel. The most commonly used method is the "4-point method" (ASTM D4737), which uses calculations based on density, 10%, 50%, and 90% recovery temperatures. However, cetane index numbers do not take into consideration cetane improving additives, so cannot provide an accurate measure of



total cetane in any treated fuel. While an engine's performance can be related to its cetane number, the cetane index is really only an estimate of the base fuel's cetane number before treatment. The cetane number of any fuel should be equal or greater than that fuel's cetane index. Therefore, do not rely on a cetane index test to measure the increase in cetane from a cetane improving additive, such as Cen-Pe-Co DieselMax. However, the actual cetane test (ASTM D-613) will show the improvement.

Combustion takes place during 30 degrees of rotation, so assuming 1800 RPM, it takes place during only one one-hundredth of a second. Running with fuel with a low cetane can cause startup problems, increased engine deposits, and increased engine wear. If the cetane number of a fuel is too low, combustion will not begin until a large amount of fuel is in the combustion chamber. When combustion finally does occur, the fuel explodes violently all at once, causing a knocking sound. Cetane improver prevents this by causing the fuel to ignite sooner.

Cetane improvers work by breaking down into components that make the fuel burn sooner and smoother. How a fuel responds to cetane improvers depends on the individual characteristics of that fuel and on the cetane level. Since timing was retarded with EGR engines to reduce NO_x, raising cetane is like advancing the timing, which leads to better fuel efficiency. In addition to improving fuel efficiency, using a cetane improver, such as the ones found in Cen-Pe-Co DieselMax, Super Diesel Klenz, or PowerFlo Klenz can reduce exhaust emission, reduce misfire, reduce white smoke, improve cold start, reduce noise, and reduces warm-up time.

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Stability of BioDiesel and the "Iodine Value." Brevard Biodiesel. <http://www.brevardbiodiesel.org/iv.html>