

How good fuel quality indicators are key to superior fleet performance



At the core of your fleet lie your engines: if they run well, your fleet runs well. A key contributor to their performance is fuel, but not all fuels are crafted the same, and not every fuel will suit every engine. What makes them different? How can you tell if you're getting the right fuel that fits your fleet?

Consider a cup of coffee. It gives people a boost in the morning, but not all coffee is prepared the same way. Different water temperatures, filter types and even pressure during the brewing process can change a mere coffee into *the perfect cup*.

The same applies to fuel. While it's easy to get caught up in the function of fuel alone, we also need to pay enough attention to how it treats our engines. The difference between a passable fuel and a good quality one means a better-running engine and optimized performance for drivers. The result is an efficient fleet that keeps costs low and returns high for your business.

Fuel fit for your engine



Two key parts of a diesel engine are a fixed cylinder and a moving piston. The engine works by compressing air in the cylinder. The vehicle's computer sends a signal for the air to be sprayed with fuel at a measured rate, the piston compresses the mixture and the mixture ignites. This burning – or internal combustion – is a chemical process that releases energy from a combination of fuel and air. The expanding gases from combustion push the piston, which then drives the powertrain that in turn moves the vehicle's wheels.

Variation on that basic process is what makes a difference in the optimization of an engine. You may witness this difference on a long drive. A fuel with higher density can provide an improvement in fuel economy due to the higher energy content per gallon of fuel.

But a dense fuel does not always mean a better ride: an overly dense fuel could potentially result in a lower cetane number, which can impact the cold-start of the engine.

This is just one example of a fuel quality that can affect engine performance. A high-quality fuel balances fuel density in relation to other fuel dimensions for optimized combustion and vehicle operations.



In countries with seasonal cold temperatures or altitude differences, where the temperature at sea level and at higher elevations may differ, the cloud point in a fuel will become important. Cloud point is the temperature at which wax crystals begin to form in the fuel. These crystals can be caught by the fuel filter and cause major operability problems in a vehicle amidst cold temperatures. Cold filter plugging point (CFPP) additives can be blended into the fuel to enhance low temperature fuel filterability. CFPP additives can be

blended into the fuel to enhance low temperature fuel filterability. CFPP additives work by changing the shape of the wax formed, allowing improved flow through the filter.



Factors affecting fuel performance may also occur from issues that arise between fuel production and delivery. For example, improper storage along the supply chain may lead to increased water in the tanks due to condensation or environmental conditions like rain, which can contribute to microbiological growth at the fuel-water interface. These microbes may produce acids which make the fuel corrosive to an engine or other parts of a fuel system. In addition, microbiological growth can lead to filter plugging. Over time, this can hurt performance and result in more instances of vehicle maintenance.

Proper storage and maintenance procedures are critical to reducing water contamination and propensity for microbiological growth.

Understanding your fuel



There are multiple ways to gain an indication of how a fuel can deliver at scale and in the long run for your particular set of needs. To meet buy-sell agreements or any existing government regulations, the quality of fuels are typically tested and reported in a Certificate of Quality (COQ), which reflects the acceptable range for the agreements or government standards for that particular fuel. The COQ may contain information about the fuel's makeup, including water content, fuel density and CFPP.

However, the COQ only covers the fuel at the time of production. A lot can happen during the long process between production and delivery, which is why it's important to ensure that your vehicles are receiving fuel from a high quality fuel supplier with a reputable experience in supply chain management.



Esso's approach to ensuring the quality of its fuel and its characteristics is based on the knowledge and feedback of customers within its global network. This works in tandem with a manufacturing and testing process honed by experience and expertise, which helps to keep quality consistently high.



Raw materials and operating conditions that produce a fuel may differ, but a good supplier keeps fuel output consistent. **An investment in high quality fuel is an investment in your fleet** – it ultimately can help increase your bottom line, decrease downtime, protect your engine, and keep business running smoothly.

To learn more about fuel products that can provide the best benefits and opportunities for your business, please approach your Esso sales representative, who will be happy to answer any questions you have about fuel products, production or delivery.