Run Clean

Tier IV Emissions Requirements and the guidelines, as outlined by the World Wide Fuel Charter, are raising the standards for cleanliness and water removal. Specifically, to meet the new engine and charter requirements, suppliers must guarantee that there is less contamination and lower water content in their fuels. Ultra Low Sulfur Diesel (ULSD15) is now the standard diesel fuel being supplied and with the reduction of sulfur, in order to protect the higher pressure injectors, ULSD fuels require the addition of lubricity enhancing surfactants (additives) such as biodiesel. These additives reduce the fuel water separation (coalescing) performance of previously acceptable diesel fuel water separators by up to 40%. In short, a coalescing unit that was previously 99% efficient in removing water is now roughly 68% efficient.

For this reason, HYDAC Technologies has introduced its new ultra high efficiency coalescing media. When coupled with the highest efficiency particulate media, we can guarantee that the fuel delivered to the injector is both clean and dry, achieving existing published engine manufacturers specifications.

Today’s standard, engine mounted diesel particulate and coalescing filters (fuel water separators) can no longer do the entire job. The fuel must be filtered and dewatered at every stage of the transport chain – from production in the refinery to the end user. To comply with the high quality requirements it is essential to monitor particle contamination and water content.

The HYDAC Technologies product range includes the filters, fluid conditioning units and sensors necessary to do this. For every step of the process – from production to consumption – we provide specific products for optimum diesel fuel conditioning and monitoring.

TIER IV Off-highway Engines Requirements

EPA announces rules to reduce emissions from non-road diesel engines by more than 90% over 11 years (Tier III & IV) Full Tier IV Engines are being shipped with new fuel cleanliness requirements and enhanced water level removal needs.

Ultra Low Sulfur Diesel (ULSD15) became standard for all diesel fuel in the US, Canada and Europe. Fuel that worked in Tier III Engines, doesn’t meet the needs of the new Tier IV Engines. Injector manufacturers advise: No warranty coverage due to improper fuel filtration.

All-Round Protection

Refinery Fuel Transportation Secondary Storage Tank Main Storage Tank

Air Breather Coalescing Filtration Bulk Fuel Treatment Fuel Treatment (point of use) On-Board Fuel Treatment
Advancements in engine technology, to meet the new standards, require cutting-edge fuel filtration and polishing to meet the following challenges:

- Fuel injectors operate at high pressures to achieve emissions standards (30,000 psi+)
- Injector nozzles openings as small as 2 μ wide (40 μ is visibility limit with human eye)
- Requirements for diesel fuel based on ISO Code cleanliness levels (min. 18/16/13 at storage, to 12/9/6 at the injector)
- Requirements for water removal from fuel (levels down to 200 ppm)

*Diesel Fuel Analysis Kits available for fuels with dye.*

**Diesel Fuel Treatment from Delivery to Point of Use**

In addition to reaching the stricter EPA guidelines, fuel cleanliness has other important benefits for the end-user:

- Diesel Engine performance and reliability improvements
- Lower Diesel Engine maintenance costs and downtime
- Lower fuel consumption and less air pollution
- No loss of horsepower due to water

**Bulk Diesel Fuel Filtration**

Coalescing filtration can be a highly effective method to remove water from diesel fuels. Water is typically introduced into the fuel supply by condensation. Water in a vehicle fuel system can reduce lubricity, causing seizure of close tolerance parts and increased wear. Water in fuel storage tanks causes rust and promotes microbial growth. Today’s high pressure (30,000+ psi) common-rail, fuel injection systems have tighter tolerances and require high efficiency water removal.

HYDAC’s Bulk Diesel Filters and systems provide exceptional, 99.5% single-pass diesel purification to protect the latest in high pressure and diesel injectors that require fuel with particulate filtration down to 1 micron.

**BDC – Bulk Diesel Cart**

- 25 gpm
- Incorporated BDS technology with additional bag filter
- Independent, mobile unit with pump and motor drive
- Helps protect expensive, vital engine components against failures caused by water contaminated fuel
- Great for kidney loop clean-up of contaminated reservoirs and single pass transfer

**BDF1/2 – Bulk Diesel Filter**

- 16-32 gpm
- In-line unit
- Particulate filtration at 1 or 3 microns
- Fully synthetic, patent-pending coalescing (fuel/water separation) media requires minimal change outs

**BDS – Bulk Diesel Skid**

- 70 gpm and up
- In-line unit
- New fuel/water separation media technology in a three-phase element construction for high efficiency, single-pass removal of free-water in Ultra-low Sulfur Diesel (ULSD) and blends
- For use in single-pass fuel dispensing or multi-pass reservoir clean-up and continuous maintenance
On-Board Diesel Filtration - Why is it Required?
Mobile machines and commercial vehicles are subject to the toughest working conditions all over the world. To ensure continuous operation of vehicles and to protect both the engine and the drive system from damage, optimum diesel fuel conditioning is particularly important. With our on-board diesel coalescing/particulate filter (HDP), HYDAC offers a modern system for diesel filtration which protects vehicle manufacturers and operators from failures, breakdowns and expensive service interventions.

Diesel Fuel Filters

HDP-HT and HDP-BC (On-Board)
- First-class contamination retention due to highly effective and stable water separation on the clean-side for the entire life of the filter element.
- Life-long efficiency, because at element change, the water separation stage is also replaced at the same time.
- Excellent water separation (achieved by using first class materials) greater than 95% to ISO/CD 16332.

Fuel Condition Monitoring and Final Polishing
In order to be able to guarantee the quality of the filtration and dewatering carried out over the whole process chain, both the particle contamination and the water saturation of the diesel must be checked regularly.

The HYDAC contamination sensor (CS1220) and water sensor (AS3008) can be used to monitor both levels. From the measurements collected it is possible to check and evaluate the entire transit path of the diesel in respect of required cleanliness and water content values, and if necessary, appropriate measures can be devised to optimize the diesel conditioning.

Protection by Filtration
Efficient fuel filtration should achieve an ISO cleanliness class of 12/9/6, or better. Machine users and OEMs demand application-specific filter systems and elements with the highest possible contamination retention capacities, coupled with compact dimensions, compatibility of the elements with biodiesel fuels and environmentally-friendly disposal.

Protection by Dewatering
Consumers with large tanks which are only seldom used and in which the diesel is stored for a long time (emergency diesel generators) are particularly prone to heavy deposits of contamination in the form of particle contamination on the tank floor as well as to raised water content in the tank (due to condensation).

Furthermore, free water remaining in the tank over a long period gives rise to diesel bug (formation of micro-organisms such as types of bacteria, algae, fungi, etc.) which can also clog the filter and diesel fuel system. For these reasons, diesel fuel must be coalesced (the water must be filtered efficiently in a single pass from the fuel) to insure that the water content is below 200 ppm water content (for on-road diesel fuel only).

For more information, please contact filterSystemsproducts@hydacusa.com