Diesel Fuel Filters

HYDAC
Run Clean

Tier IV Emissions Requirements and industry guidelines, like the ones outlined by the World Wide Fuel Charter, are raising the standards for diesel fuel cleanliness and water content. Specifically, to meet the new engine requirements, end-users must ensure that contamination levels are below equipment manufacturer requirements. 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 additives surfactants, in addition to biodiesel being added to fuels to meet renewable fuel initiatives. These additives and biodiesel content 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 ensure that the fuel delivered to the diesel injection system is both clean and dry, meeting or exceeding 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. In order 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, filtration systems, and condition monitoring equipment 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
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 below 200 ppm)

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

In addition to reaching the stricter 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 reduced emissions

**Bulk Diesel Fuel Filtration**

Coalescing filtration can be a highly effective method to remove water from diesel fuels. Water can be introduced into the fuel supply through leaks and ambient humidity. Water in a vehicle fuel system can reduce lubricity, causing erosion of injector material, seizure of close tolerance parts and increased wear. Water in fuel storage tanks promotes microbial growth, creating an acidic corrosive contamination in fuel systems. 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 performance, whether used for single-pass removal of contamination in fuel transfer and dispensing applications, or when used in fuel polishing systems to provide long term fuel conditioning.

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**BDC – Bulk Diesel Cart**
- For fuel polishing of contaminated reservoirs and single pass fuel transfer
- 25 or 70 gpm (95 or 265 L/min)
- Incorporated BDS technology with additional bag filter
- Mobile unit with self priming pump and continuous duty motor drive
- Helps protect expensive, vital engine components against failures caused by contaminated fuel

**GHPF and GHCF - GeoSeal High-Flow Particulate and Coalescing Filters**
- For fuel dispense, transfer, or polishing applications
- 100 gpm (379 L/min) particulate, 25 gpm (95 L/min) coalescing
- Filters require minimal clearance with bottom serviced housings, making them ideal for enclosure installations
- Fully synthetic particulate and coalescing (fuel/water separation) media reduces element service.

**BDS & LVH - Bulk Diesel Skid & Housings**
- For use in high flow fuel filtration systems
- 70 - 951 gpm (265 - 3,600 L/min)
- In-line, high performance filtration solution
- New fuel filtration media technology for high efficiency, single-pass removal of water and particulate in Ultra-low Sulfur Diesel (ULSD) and biodiesel blends
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 equipment uptime and reduce maintenance and repair costs, optimum diesel fuel conditioning is critical. With our on-board diesel coalescing/particulate filter (HDP), HYDAC offers a modern system for mobile diesel fuel systems which protects equipment manufacturers and operators from unscheduled downtime, costly repairs, and performance loss.

Diesel Fuel Filters

HDP and HDPD (On-Board)
- Fuel pre-filtration and water separation for diesel engine applications.
- Single or duplex solutions with flow ratings exceeding 475 gph (1800 L/hr)
- Water removal on the clean side of the filter media ensures high efficiency through the entire element life
- The HT model's exclusive Automatic Water Drain technology operates without interruption of engine operation and operator intervention

Fuel Condition Monitoring
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 FCU 1315 is a field-ready contamination monitoring tool that can be used to monitor both levels. From the measurements collected it is possible to check and evaluate the entire life cycle path of the diesel in respect of required cleanliness and water content values, and if necessary, appropriate solutions can be implemented to meet the customer's requirements.

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 HYD.catalog@hydac-na.com