

The New World of Advanced Diesel Filtration

Tier 4 emissions requirements and the guidelines, as outlined by the World Wide Fuel Charter, are raising the standards for fuel cleanliness and water removal. In order to meet the new engine and charter requirements, suppliers must be able to 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, ULSD fuels require the addition of lubricity enhancing additives (surfactants). These additives and biodiesel blends reduce the fuel/water separation performance of previously acceptable diesel fuel/water separators by up to 40%. In short, a fuel/water separator unit that was previously 99% efficient in removing water is now roughly 68% efficient.

For this reason, Schroeder Industries has introduced its new ultra high efficiency coalescing media. When coupled with our high efficiency particulate media, we can guarantee that the fuel being used by diesel powered equipment is both clean and dry, achieving existing published engine manufacturers' specifications.

Today's standard engine mounted diesel particulate and 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 stringent fuel quality requirements, it is essential to monitor particle contamination and water content.

The Schroeder Industries 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.

New, TIER 4 Off-Highway Engines Requirement

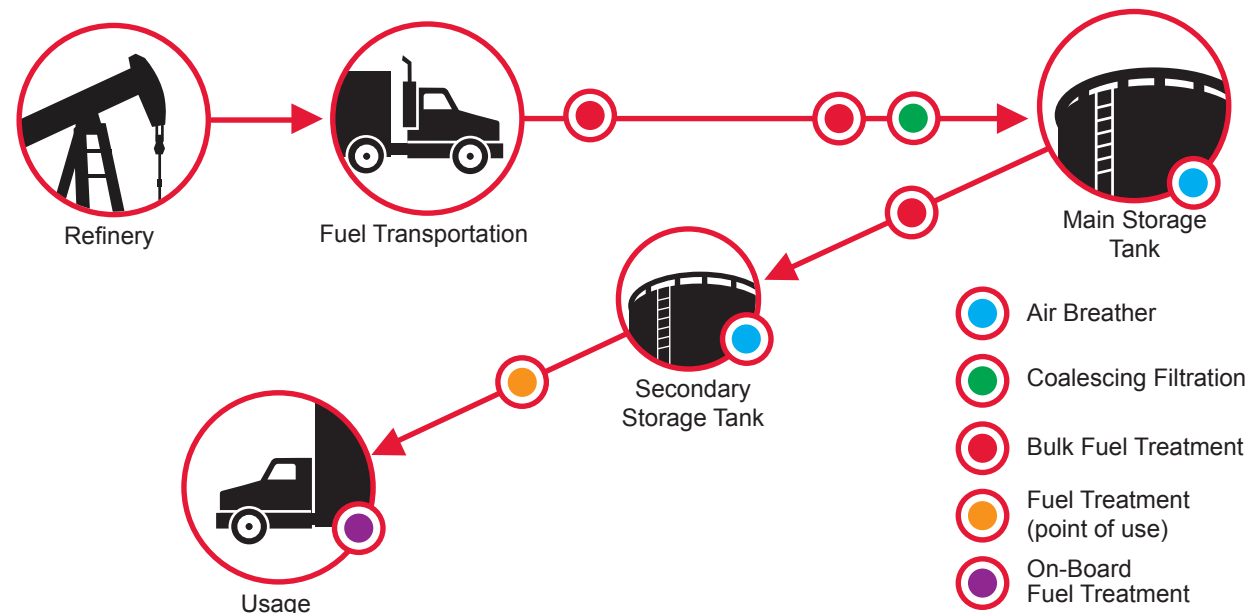
EPA announces rules to reduce emissions from non-road diesel engines by more than 90% over 11 years (Tier III & IV)

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



Run Clean

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 + [2070 bar +])
- ◆ Injector nozzle tolerances as small as 2 µm wide (40 µm is visibility limit with human eye)
- ◆ Requirements for diesel fuel based on OEM and Worldwide Fuel Charter Recommendations (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 Treatment from Delivery to Point-of-Use

In addition to reaching the stricter EPA guidelines, fuel cleanliness has a host of other important benefits for 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 wear and 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's 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 + [2070 bar +]) common-rail, fuel injection systems have tighter tolerances and require high efficiency water removal.

Schroeder's bulk diesel filters and systems provide exceptional, 99.5% single-pass diesel filtration efficiency to protect the latest in high pressure diesel injectors that require fuel with particulate filtration down to 1µm.



BDC

Bulk Diesel Cart | BDC

- ◆ 25 or 70 gpm (95 or 265 L/min)
- ◆ Incorporated BDS technology with additional bag prefilter
- ◆ Mobile unit with self priming pump and continuous duty 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



ICF BDF1 BDF2

Bulk Diesel Filter | ICF and BDF

- ◆ 16 - 32 gpm (60 - 121 L/min)
- ◆ Bulk, in-line particulate and water removal
- ◆ Particulate filtration at 1 or 3 µm utilizing Excellement® synthetic Z-Media® element
- ◆ Fully synthetic, patent-pending coalescing (fuel/water separation) media requires minimal change outs when protected by our high efficiency particulate filtration upstream



LVH BDS

Bulk Diesel Skid | LVH and BDS

- ◆ 70 gpm - 951 gpm (265 L/min - 3,600 L/min)
- ◆ In-line, high performance filtration solution
- ◆ 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), Schroeder offers a modern system for diesel filtration, which protects vehicle manufacturers and operators from failures, breakdowns and expensive service interventions.

DIESEL FUEL FILTRATION

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DIESEL FUEL FILTRATION



On-Board Diesel Filters | HDP-HT and HDP-BC

- ◆ First-class contamination retention due to highly effective and stable water separation on the clean-side for the entire life of the filter element
- ◆ The water separation and particulate removal are contained in a single element package
- ◆ Excellent water separation (achieved by using first class materials) greater than 95% efficient according to ISO CD 16332

Fuel Condition Monitoring

In order to be able to guarantee the quality of the filtration carried out over the whole process chain, the particle contamination of the diesel must be checked regularly.

The Schroeder TestMate® Contamination Monitor (TCM) and FluidControl Unit (FCU 1315) can be used to monitor these levels. From the measurements collected, it is possible to check and evaluate the entire transit path of the diesel in respect to required cleanliness, and if necessary, appropriate measures can be devised to optimize the diesel conditioning.

Test Kits



TestMate®
Contamination
Monitor | TCM



HY-TRAX
Manually Controlled
Fluid Sampling
System



FluidControl Unit |
FCU 1315

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 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, the water must be removed efficiently in a single pass from the fuel to ensure that the water content is below 200 ppm water content.



For more information, please contact fuelfiltrationmanager@schroederindustries.com



Quantifiable Results

Lower Overall Operating Cost

Improved Reliability