

Fuel Filtration FACT SHEET



! The Importance of Fuel Filtration

Whilst diesel fuel is the engine's energy source, it also performs several other key roles:

- **Cooling** – by circulating through the injection system and absorbing unwanted heat
- **Lubrication** – by separating the moving components in the fuel feed and injection pumps
- **Cleansing** – by transferring contaminants to the Fuel Filter(s), where they are removed

! Fuel contamination - the biggest enemy

The enemies of diesel fuel are:

- **Dirt and sediment** – when present in the fuel system, they will result in blockage of the filter and increased wear within the fuel system.
- **Water** – is the greatest concern because it is the most common. It can be introduced into the fuel during the refueling process: through condensation inside the fuel storage tank, or due to poor house-keeping practices. The effects of water in diesel fuel can be serious, causing injector tips to blow off, corrosion and reduced fuel lubricity, resulting in premature wear to pumps and injectors.
- **Organic contaminants** – Asphaltines and paraffin wax, which are residual components from the refining process, will block screens, strainers, filters and even hoses.

! Advanced Fuel Management Systems

To meet today's stringent emission regulations, fuel system injection pressures are extremely high to achieve better and cleaner combustion. As a consequence, clearances between the moving parts and the higher number of very small nozzle holes found in injectors all need improved protection from erosion. 50% of the worldwide diesel fuel supply does not meet OEM specifications for cleanliness; particles greater than 4 microns in size are known to cause wear to these sensitive systems. By way of calibration, human hair is typically 50 to 70 microns in diameter, a red blood cell is 8 microns and bacteria are typically 2 microns. The smallest particle which can be seen by the human eye without any magnification is 40 microns! To meet these demanding requirements, much finer filtration requires special media. Fleetguard offers a full range of media types in a variety of micron ratings:

- **Fuel filter media** – cellulose, synthetic media and StrataPore™
- **Fuel water separator media** – treated cellulose and StrataPore™

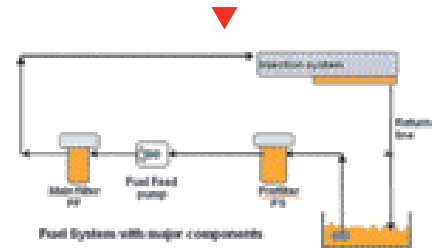
The Fleetguard Product Solution

There are two types of Fuel filter:

- **Fuel/Water Separators (FS)** – Separate water from the fuel and remove large contaminants
- **Fuel Filters (FF)** – Remove the smaller contaminant particles from the fuel

The Cummins Filtration fuel product line also includes:

- Fuel Strainers (in-tank and inline) to capture very large particles
- Fuel Processors (Fuel Pro™, Diesel Pro™, Industrial Pro™, Sea Pro™)
- Modular Fuel Water Separators and priming pumps
- Slow release, lubricity-enhancing Fuel Filters
- Fuel Heaters, Water Sensors and Restriction Indicators
- A full range of FF and FS replacement products covering the many varieties of filter designs found in the market place



50% of fuel used worldwide does not meet the ISO 4406 18/16/13 (2.500 particles /1ml / @4µm©) fuel cleanliness standard.



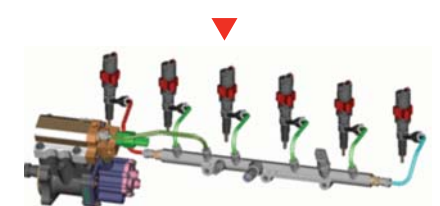
Classic: Metal Spin-On Fuel Filter



Economic: New generation composite type Fuel/Water Separator with serviceable cartridge element



Advanced: All-in-One remote mount Fuel Management System



State-of-the-Art: High Pressure Common Rail Fuel Injection System

Check your knowledge about Fuel Filtration

1 What types of contaminants can be found in diesel fuel?

- a) Performance enhancing chemicals and biodiesel
- b) Dirt & sediment, water and organic contaminants
- c) Cold weather cloud and pour point depressants

2 What are the functions of the FS filter?

- a) To separate water from the fuel and remove large contaminants
- b) To separate free water from emulsified water
- c) To ensure the correct level of free water in the fuel

3 Why do we need finer filtration for modern diesel engines and how it is achieved?

- a) To prevent the ingress of water into the injection system through the use of a Fuel/Water Separator
- b) Because modern engines have a higher power output than older engines. This is controlled through the use of slow release lubricity enhancing fuel filters
- c) The clearances between the moving parts and the very small nozzle holes found in injectors all need appropriate protection from abrasive wear which is achieved by using media with a tighter micron rating

Answers:
1 b
2 a
3 c

Other Fact Sheets available:



Air Filtration
LT36178



Lube Filtration
LT36180



Hydraulic Filtration
LT36182



Coolant
LT36181