

# TILLQUIST



Diesel  
Filtration  
Solutions

A NEW ERA IN

FILTRATION PERFORMANCE AND INNOVATION



## Filtration for Diesel Fuel Distribution Systems



## Improve and Extend Injector Life Lower Maintenance Cost

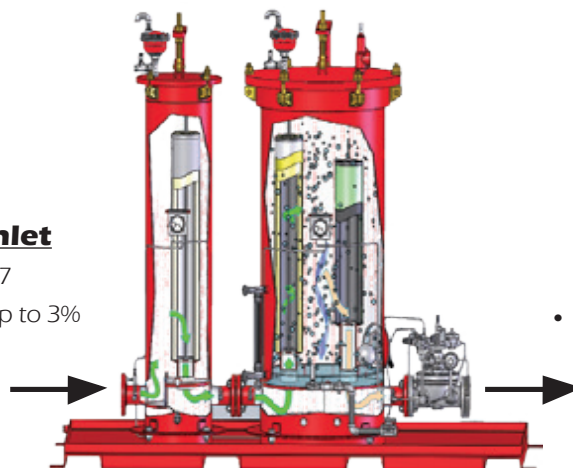
Diesel fuel cleanliness requirements continue to become more and more stringent. Because of increasing exhaust emission standards, fuel system injection pressures exceed 2,000 bar. Higher injector pressures improve atomization and reduce emissions. The downside is accelerated wear by abrasives in the fuel. The most common contaminants in fuel are dirt and water. These contaminants typically come into play during the transportation and storage of the fuel. Water can be introduced when warm moist air condenses on the wall of the tank. Water can reduce lubrication qualities of the fuel and cause injectors to seize. Water also provides a medium for the growth of bacteria and fungus. When present in a fuel system, bacteria/fungus can cause premature plugging of fuel filters. Solids, such as dirt and sediment, have a negative effect on injectors causing premature wear and failures.

The key factors to increasing the life of your fuel systems are removal of water and debris from the fuel. Major manufacturers of diesel powered equipment are requiring the fuel to meet an ISO standard of 16/13/11 and in this case, less is better.

PECOFacet Diesel Filtration products can help you meet these requirements with cost effective solutions for cleaning your diesel fuel supply. Our experience provides a wealth of knowledge in all types of filtration applications.

### **Typical Diesel Inlet**

- ISO Code 21/19/17
- Water concentration up to 3%



### **Diesel Outlet**

- ISO Code 16/13/11
- Water concentration less than 100 ppm

Packaged Filtration System containing  
Model M & VCS Housings



## Large Volume Bulk Storage Systems



Receipt Filtration



Storage



Transfer Filtration

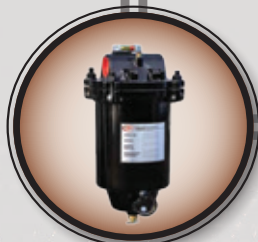


Point of Use

**As today's diesel engines become more advanced, it is critical to keep the diesel fuel supply to the engine as free from debris and water contamination as possible. Poor diesel fuel filtration can cause damage to fuel injectors and fuel pumps and result in engine failures and down-time.**



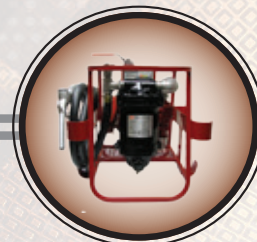
## Small Volume Systems



Receipt Filtration



Storage



Transfer Filtration



Point of Use



## Microfilter Model M

- ASME code carbon steel
- Remove solid contaminant
- Utilize models FA, FI, FIS, M or CIF cartridges
- Thermal pressure relief valve
- Direct reading differential pressure gauge
- Automatic air eliminator and manual vent valve
- Manual drain valve



## Filter Water Separator Model VCS

- ASME code carbon steel
- Coalesces and removes water
- Utilize coalescer models CA, CB or CR cartridges
- Utilize separator models SP, SS or ST cartridges
- Thermal pressure relief valve
- Liquid level gauge
- Direct reading differential pressure gauge
- Automatic air eliminator and manual vent valve
- Manual drain valve

## Fuel Handling

All components for the fuel distribution system can make a difference in the fuel quality. If not already in place, a fuel maintenance policy should be adopted, with consideration given to all facets of the distribution system.

## Receipt Filtration

During the offloading process and prior to entering the storage tanks, fuel should be filtered to remove debris and water.

## Transfer Filtration

As a last line of defense, fuel should be filtered to assure clean, dry fuel into your equipment.

## Packaged Filtration Systems

PECOFacet's Packaged Filtration Systems offer maximum performance with a pre-assembled unit providing the most needed accessories.

- Systems are available starting at flow rates of 190 lpm
- System can consist of a combination M & VCS housing or SuperFlex™ & VCS housings or just SuperFlex housings.
- Contains an automatic discharge control valve with pilot float control
- Pilot (based on float position) can open the automatic water drain and /or close the discharge control valve to prevent water from being sent down stream
- Manual valves on the inlet/outlet provide skid system isolation during filter cartridge change-outs



## Fuel-Gard® VF-21SB/22SB

- Versatile and light weight – depending on cartridge selection the housing can be used as a pre-filter (micronic solids removal), coalescer (water separation) or monitor (water absorption)
- In-line design with 38mm in/out connections
- 10 bar design pressure
- Lightweight Aluminum and Steel construction – Powder coated for corrosion protection
- Differential pressure indicator
- Water sight glass
- Swing bolt quick opening closure
- Housings contain a single cartridge with simple replacement
- Requires only a 51mm base clearance for cartridge change-out



## SuperFlex™

- Versatile – depending on cartridge selection the housing can be used as a pre-filter (micronic solids removal), coalescer (water separation) or monitor (water absorption)
- Economical, ASME code carbon steel housings designed for 250 psi
- Solid contaminant removal utilizing models FA, FI, FIS, M or CIF cartridges
- Solids and water removal using coalescer cartridge CC-23-7 and separator cartridge SS412FC, SS422FC or SS432FC
- Thermal pressure relief valve
- Liquid level gauge
- Direct reading differential pressure gauge
- Automatic air eliminator and manual vent valve
- Manual drain valve

### FILTRATION EQUIPMENT SELECTION

Flow Rate	Equipment
≤ 114 lpm	<ul style="list-style-type: none"> <li>• In-Line Fuel-Gard® Models VF-21SB/22SB</li> <li>• Portable Fuel Filtration Unit</li> </ul>
114 - 379 lpm	<ul style="list-style-type: none"> <li>• Superflex™</li> </ul>
≥ 379 lpm	<ul style="list-style-type: none"> <li>• Microfilter Model M</li> <li>• Filter Water Separator Model VCS</li> </ul>

**Model M & VCS** housings work in combination to remove solid contaminants and water from fuel. The housings can handle flow rates of 379 lpm and higher making them an ideal solution for large volume bulk storage systems.

The **SuperFlex™** housing is a great choice for flow rates from 114 to 379 lpm. The housing provides a small, economical footprint with flexibility of use. Depending on the cartridge choice, the housing can be used as either a microfilter or a filter water separator.

For applications where fuel is directly pumped into the equipment without bulk storage, the **Fuel-Gard® VF-21SB/22SB** can be directly connected in-line for flow rates up to 114 lpm. If no pump and motor are available at site, then the **Portable Fuel Filtration Unit** is an option. The unit comes complete with a VF-21SB housing, fueling nozzle and pump/motor combination to provide a complete packaged unit that can be easily transported.



## Portable Fuel Filtration Unit

- For use when no pump or motor are available at site
- Unit includes fuel nozzle, pump/motor combination and Fuel-Gard® VF-21SB filter housing
- Can operate on 12 VDC (76 lpm) or 120 VAC (57 lpm) power
- VF-21SB housing contains a single cartridge with simple replacement
- Low cost design
- Performance requirements achieved in a single pass
- Easily transported from one job to the next

## KONTAKTA OSS GÄRNA FÖR MER INFORMATION

Hugo Tillquist AB  
 Mejl: [info@tillquist.com](mailto:info@tillquist.com)  
 Telefon: + 46 8 594 632 00



### World Headquarters

PECOFacet (US), Inc.  
 Wolters Industrial Park  
 P.O. Box 640  
 Mineral Wells, Texas 76068

Phone: 940-325-2575  
 Toll Free: 800-877-7326  
 Fax: 940-325-4622

### Fuels Technology Center

PECOFacet (Oklahoma) LLC  
 5935 S 129th E Ave, Suite A  
 Tulsa, OK 74134

Phone: 918-272-8700  
 Toll Free: 800-223-9910  
 Fax: 918-272-8787

### Visit our website to find:

- An office location near you
- Associated housing & cartridge information

For inquires email to:  
[tulsa@pecofacet.com](mailto:tulsa@pecofacet.com)

## ISO CODES AND WHAT THEY MEAN TO YOU

The International Organization for Standardization has developed a common test method ISO 4406 for coding the level of contamination by solid particles. It is being used by both engine and fuel system manufacturers to determine the acceptable cleanliness level of the fuel.

ISO 4406 uses a series of three numbers divided by slashes to correlate to a range of particle counts per 1 mL of fluid at three specific micron sizes (4, 6 and 14).

Fuel Quality	ISO 4406 Code	Code Breakdown
Typical Fuel Supply unacceptable cleanliness level	21 / 19 / 17	<b>21</b> = 10,000 to 20,000 particles/mL fluid sample are at a size of 4 microns and larger <b>19</b> = 2,500 to 5,000 particles/mL fluid sample are at a size of 6 microns and larger <b>17</b> = 640 to 1,300 particles/mL fluid sample are at a size of 14 microns and larger
Manufacturers Recommended Fuel Supply acceptable cleanliness level	16 / 13 / 11	<b>16</b> = 320 to 640 particles/mL fluid sample are at a size of 4 microns and larger <b>13</b> = 40 to 80 particles/mL fluid sample are at a size of 6 microns and larger <b>11</b> = 10 to 20 particles/mL fluid sample are at a size of 14 microns and larger

	Particles/mL		
	CODE	MORE THAN	UP TO
	23	40,000	80,000
	22	20,000	40,000
	21	10,000	20,000
	20	5,000	10,000
	19	2,500	5,000
	18	1,300	2,500
	17	640	1,300
4µm	16	320	640
	15	160	320
	14	80	160
6µm	13	40	80
	12	20	40
14µm	11	10	20

**YOUR  
 CONTAMINANT  
 MANAGEMENT  
 PARTNER<sup>SM</sup>**