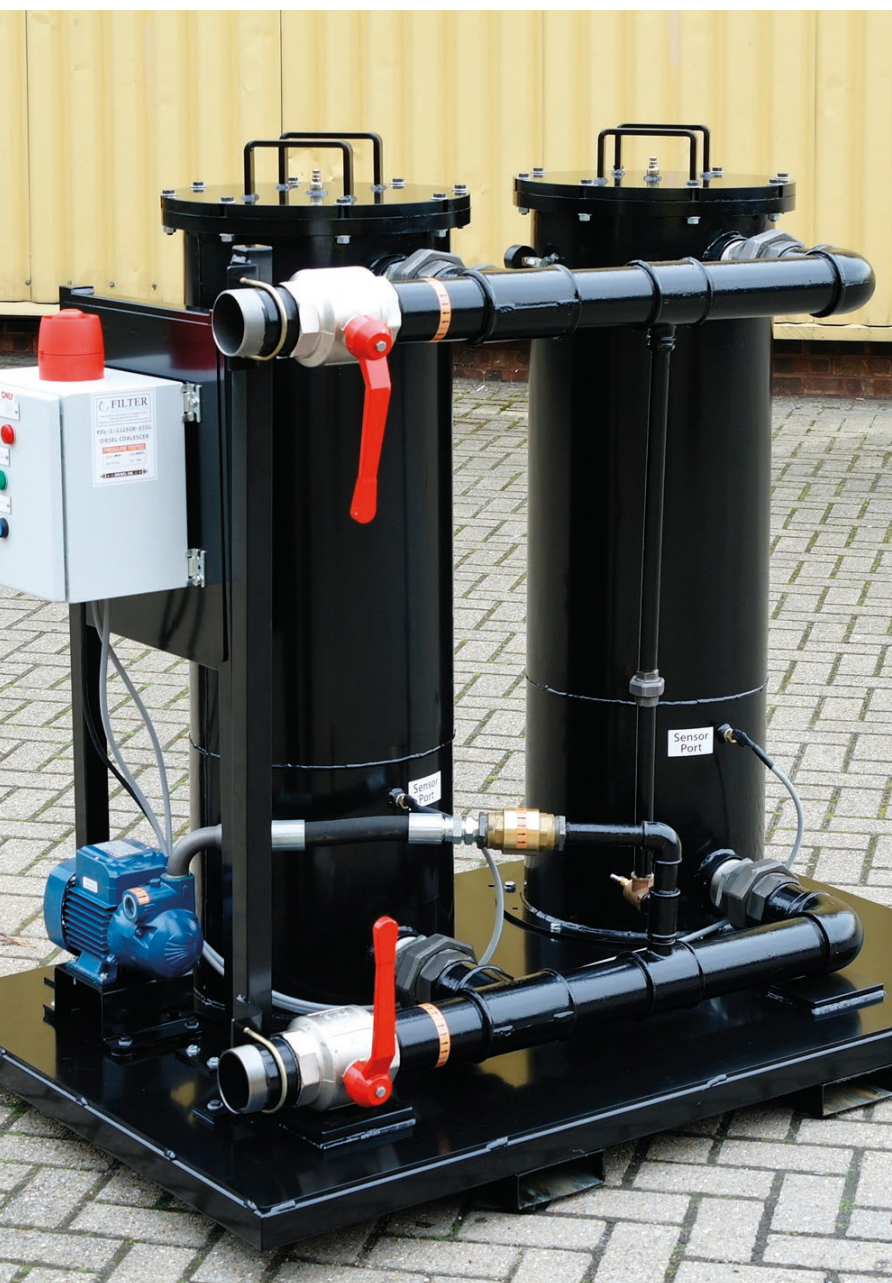




Diesel Polishing Systems



Call NOW on 01635 870250

Why is a fuel polishing station needed?

There are several possible areas to consider:

Fuel contaminated with water

Your fuel is likely to be contaminated with water when it is delivered. With the introduction of bio diesel things are not as straight forward as they used to be. In the past water in diesel would over time fall to the bottom of the tank out of harm's way. However at the start of 2011 the EU introduced a 7% bio diesel mix into ALL diesels. Unlike 100% diesel, bio diesel holds onto water droplets and hence keeps them in suspension throughout the tank. Large particles of water will become too heavy for suspension and fall to the bottom.

Suppliers not storing fuel efficiently

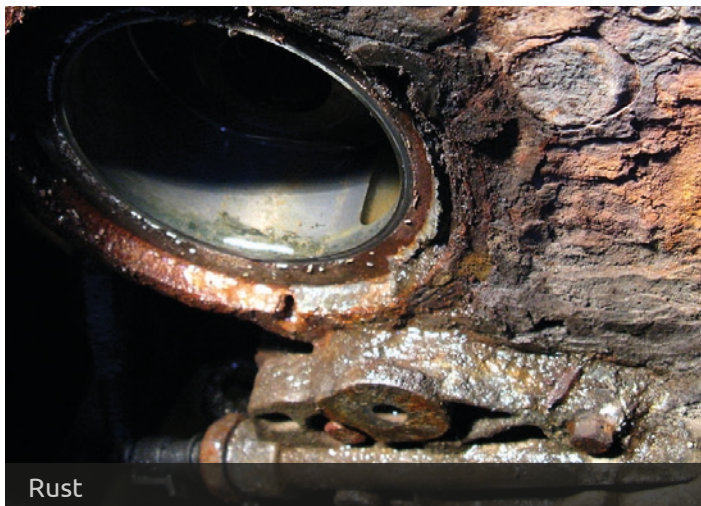
Some fuel suppliers allow contamination of the fuel because their storage facility is inadequate. This may be because the supplier is unaware or ignorant of how fuel can become contaminated, particularly in 3rd world countries where fuel handling and storage is unregulated.

Condensation

Naturally occurring condensation is prevalent in warmer climates where the days are hot and the night's cold. In the UK this problem occurs from Spring to Autumn.

Newer engines are more sensitive to water in fuel

New engines with tight emission controls and common rail systems are very sensitive to water in fuel. Removal of water from diesel is ESSENTIAL.



Rust

What are the Dangers of contamination?

Water in diesel will harm your engine:

Micro organisms feed on diesel

Low sulphur diesel allows micro organisms to flourish in their ideal habitat, water. The micro organism feeds on diesel. Once established it replicates rapidly and appears as a dark sticky mass in your tank. If allowed to pass up the fuel suction line a breakdown is almost certain. The organism is sticky and can reduce the id of a fuel line, smothers filters and is very difficult to remove without total disassembly.

Extended contamination renders fuel dangerous

In addition it has been shown in very recent studies that the chemical nature of the diesel changes if subjected to the organism for long durations, rendering the diesel dangerous to use. The lubricating makeup of diesel is vital for the longevity of the engine fuel system. Apparently this lubricating quality is negatively affected by the organic matter and long term use of affected diesel will damage the delicate fuel system.

Water will cause rust and system failure

If water is allowed to pass through the filtration stages on the engine and enter the high pressure fuel system failure is only a matter of time rather than a possibility. It only takes one flake of rust to ruin an injector pump or injector. Dirt and dust is contained within the prefiltration but rust can occur after this inside the fuel pump.



Diesel bug residue

Better Than ISO 4406 18/16/13 Cleanliness

Fuel is the No.1 cause of breakdowns

In our experience working with leading UK plant hirers dirty diesel has always seen to be the number one cause of engine breakdowns. Not so long ago they were mainly caused by inappropriate diesel fuel handling. Nowadays improved fuel tank design and fuel handling policies have helped to reduce problems however fuel is still 'King' when it comes to stopping your engine.

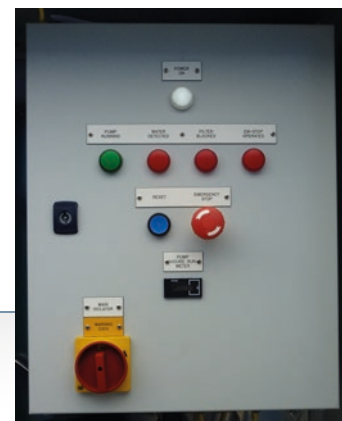
New fuel regulations in 2011 resulted in more water & organic growth in ALL diesel. Now organic matter has its ideal environment which is water brought in through bio content and the chemical used to kill it (Sulphur) has been virtually removed Diesel bug, diesel virus is now the main cause of breakdowns.

Coalescing Filter Technology

- The fuel flows from the inside of the filter outwards through the inner element. Tiny water droplets cannot pass through the inner element and so they join together to form larger droplets which are repelled by an additional layer of chemically treated media. The water runs down the element where eventually is collected in a separate compartment inside the housing. All free standing and emulsified water is collected in this way. The outer filter element removes debris down to a size of 5 µm.
- Out of specification alarm is activated when fuel quality drops below a pre-specified level. This may be useful to highlight problems with newly supplied fuel that is out of specification.

Product Specification

- Better than ISO 4406 18/16/13 polishing performance.
- 56 lpm flow rate.
- 2 Stage filtration.
- Emulsified water removal 99% per SAEJ1488.
- Free water removal 99% efficiency per SAEJ1839.
- Contaminate removal efficiency B5=100 (5 µm).
- Sounding beacon to alert the user of high water level.
- 7-day timer for automatic recirculation of bulk tank fuel.
- Pressure differential gauges to indicate level of blockage in the filter element.
- Powder coated frame.
- Available with or without weather canopy.
- 1" BSP inlet and outlet ports.
- Available in 110 & 240 VAC.



On average our systems achieve a greater level of fuel cleanliness that is considered laboratory & aerospace specification. This requires an ISO Code of 15/13/9 or better.



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Mobile or static diesel fuel polishing systems.

So what is the big deal?

Ok, we have explained that bio diesel holds onto water. Tiny dormant organic spores can be found everywhere waiting for the right environment to hatch. Just like a seed all it takes is some water to start life and like any living organism they require food. And guess what? These guys feed on diesel and feel like they are 'Living The Dream' inside your diesel tank.

Once they have established in the tank they propagate into a black snotty sludge. They are very sticky and easily block filters and reduce the ID of a fuel line. This type of contamination is often referred to as Diesel Bug, Diesel Virus or Diesel Fungus.

To remove it you need a product like ours – read more opposite.



If there was ever a time
where fuel cleaning was
necessary...

...it is NOW

Our Solution: Mobile Buggy

Using our mobile buggy
we are able to firstly:

- Remove not only the free standing water (i.e. water already separated from the diesel), but also the emulsified water (i.e. fine water droplets mixed into suspension with the diesel).
- Having removed the water we have removed the living environment for micro organic growth.

The second stage of filtration is to remove solid particles (i.e. dust, sand, floating debris etc). Our filters remove the debris to a size of 5 microns (a human hair is typically 100 microns). After which the diesel fuel is fit for combustion on mechanical or common rail engines.

Filter Technical Specifications:

- 20 or 56 lpm flow rate using a self priming vane pump.
- 3 Stage filtration
 - The diesel passes through the "Filter-less filter" first and most of the free standing water is removed along with a small percentage of debris. We call this free filtration because there are no ongoing element costs.
 - Emulsified water removal 99% per SAEJ1488
 - Free water removal 99% efficiency per SAEJ1839
 - Contaminate removal efficiency B5=100 (5 microns)
- The unit stops pumping diesel when water has accumulated in either of the two filter housings. The pump will not start again until the water has been drained out of the filters.
- Flashing beacon to alert the user of high water level.
- 10" pneumatic wheels for easy site use.
- Pressure gauge to indicate level of blockage in the filter element.
- Powder coated frame
- 5m delivery and suction hoses
- Suction hose strainer
- 5m power cord
- Available in 110 & 240 VAC



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High flow Systems 300 to 600 lpm

In this design there are three functions:

1 Polishing of diesel in day tanks

Use the system to transfer fuel from a day tank to your bulk tank with the benefit of filtration. You can order a system to be equipped with a priming pump of 100 lpm.

The filtration capacity of the system results in dust, dirt and other solids being removed down to a size of 5 microns, which is the same size as a human blood cell.

The orifices on a diesel injector can be 100-150 microns in diameter and 50-100 on very new engines, therefore no objects in the fuel can be large enough to block an injector. The system removes not only free standing water but also emulsified water to standards SAEJ1488 & SAEJ1839.

2 Fuel recycling function

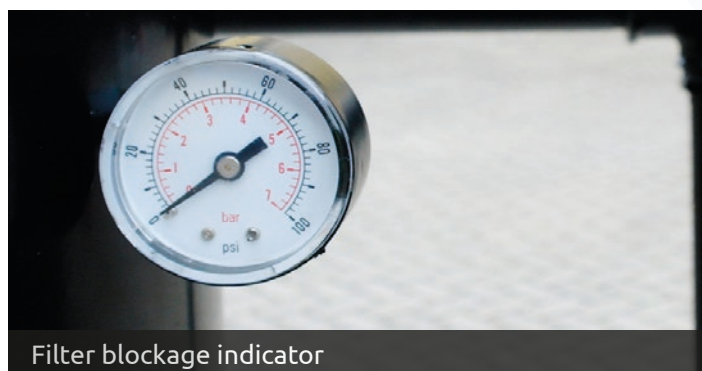
Even though the diesel is cleaned before it enters the tank we have included a 7 day timer. This can be programmed to run every day for as long as required, or even run all the time.

By recycling the fuel in the bulk tank we can remove condensation build up and organic growth associated to that. The pump is connected to an outlet of the bulk tank.

3 Control panel with alarm & day timer functions

Each of the filter housings is equipped with a water sensor which is constantly looking for water. Upon a high level moment the unit will stop the recycling pump and sound an alarm.

The alarm and pump will not return to normal running until the water is removed from the filter housing.



Common Water Removal Methods

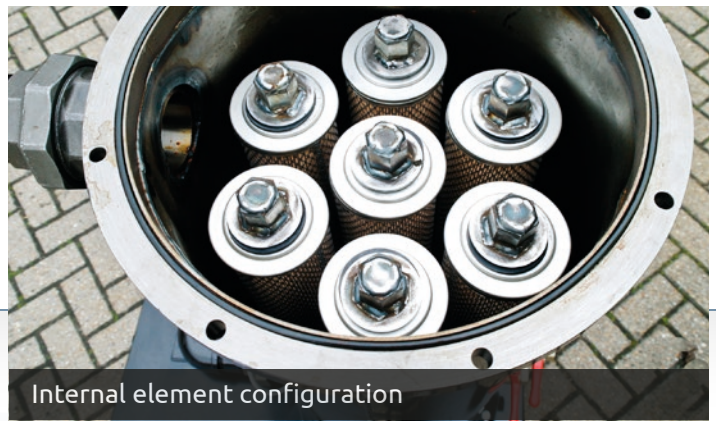
Many devices on the market claim to remove 100% water, however without a coalescing filter element this would be very difficult to achieve. Non coalescing filters use the following methods: Centrifugal action, static deflection or chemically treated pleated paper. All of these methods are effective at removing large water droplets or free water, but they have little or no effect on emulsified water. Many fuel systems are plagued with emulsified water and very little evidence of free water.

How our Coalescer Works

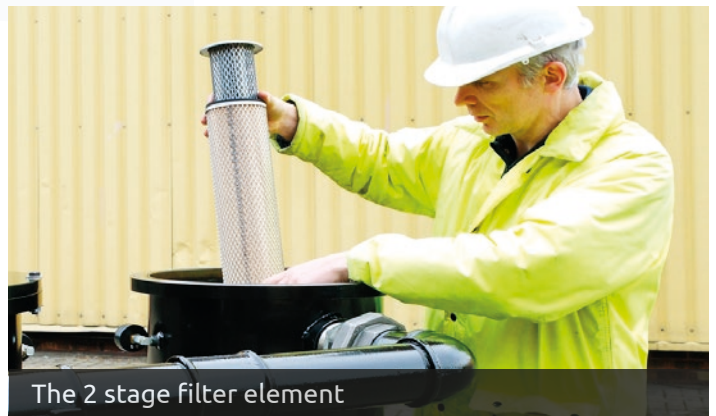
The fuel flows from the inside of the filter outwards through the inner element. Tiny water droplets cannot pass through the inner element and so they join together to form larger droplets which are repelled by an additional layer of chemically treated media. The water runs down the element where eventually is collected in a separate compartment inside the housing. All free standing and emulsified water is collected in this way. The outer filter element removes debris down to a size of 5 microns.

Technical Specifications

- 300 to 600 lpm maximum flow rate.
- Automatic fuel bypass for pressures greater than 70 psi.
- 2 Stage filtration
- Emulsified water removal 99% per SAEJ1488
- Free water removal 99% efficiency per SAEJ1839
- Contaminate removal efficiency B5=100 (5 microns)
- Sounding beacon to alert the user of high water level.
- 7 day timer for automatic recirculation of bulk tank fuel.
- Pressure gauges to indicate level of blockage in the filter element.
- Powder coated frame.
- Available with or without weather canopy.
- 2" to 3" BSP inlet and outlet ports.
- Available in 110 & 240 VAC.
- Safe working pressure 70 psi.



Internal element configuration



The 2 stage filter element



Canopied versions also available

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How much does a Diesel Breakdown Cost you?

On average how many breakdowns per year per asset would you expect? General feedback from our customers is that on average they experience 5-10 fuel related breakdowns per year at a labour cost of £100-£150 each. Any parts that are used will be added to this cost. So it would seem on average per asset the yearly cost of fuel related breakdowns could be anywhere from £500 - £1500.

Hire or Buy a Solution to reduce your breakdowns

The enclosed pages illustrate some of our most common fuel polishing designs. Protection from emulsified water and solids starts at only £305 and is easily interchangeable from asset to asset. Perhaps you have one batch of contaminated diesel and need only hire a unit for a week rather than buy. Let us know how many litres you need to clean and we can suggest an appropriate system that'll get the job done in the timescales given. We have systems for hire that can pump 56 litres per minute and are either static, or on wheels for easy moving.



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