



Fuel-Water separator for diesel, petrol and jet fuel



Diesel fuel is organic from origin and therefore a breeding soil for bacteria/microbes, yeast and moulds.

Also due ever increasing amounts of hygroscopic (= water-absorbing) bio-fuels in the current diesel (in 2011 in the EU already 7%), heavy pollution in the form of bacteria (strings) and residues occur ever more frequently.

The bacteria live and thrive in the zone between the water at the bottom of the tank and the diesel fuel above that water. The bacteria use the oxygen from the water and the hydrocarbon from the fuel to grow. Dead bacteria and their waste products sink to the bottom of the tank as residue (also called sludge). This residue contains nitric acid which in turn causes corrosion in the tank and in the fuel system.

At the same time, the quality of the fuel – especially for common rail engines – has become increasingly important, because pollution in the fuel can cause serious engine damage in no time at all. Clogged injectors can no longer perform optimal and produce an interrupted fuel spray.



Broken pistons



As this fuel spray also has a secondary function which is to cool down the pistons, these may get overheated. Holes in the pistons and even broken pistons can be the result of this disrupted cooling.

On top of that: up to 90% of all fuel which is being pumped from the tank to a pre-chamber diesel engine runs back to the fuel tank. With a common rail engine these amounts are even higher and here the fuel is also used to externally cool down the injectors, so the return fuel has a much higher temperature (up to 60°C). This implicates that the returned fuel is heating up the fuel in the tank to undesirable temperatures (depending on the volume of that fuel). Especially such higher temperatures are a blessing for the bacteria as it stimulates their growth to such an extent that the bacteria count doubles every 20 minutes and that is precisely how the negative spiral is established!

The bacteria accumulate in groups - so called colonies – and are visible as slimy strings which can cause costly damage and dangerous situations (stalling of the engine). They clog up fuel filters in no time and even partly pass through these filters. The damage they can cause when they have passed the filter is even more devastating. If such a slimy string reaches the fuel injector, it will partly or completely block the injector, which causes immediate engine damage and loss of productive time.

Worldwide operating insurer LOYDS claims that bad, polluted fuel causes up to 90% of all engine damage and failures!
The conclusion can only be, that much can be gained by using a good filtration/separation system!

Solutions:

Option 1: There are additives for diesel fuel which can destroy/kill approximately 25 – 50% of all bacteria types which are found in diesel fuels. Once these bacteria have survived the additive, they become resistant and every next treatment will have less effect.



Option 2:



Sample of diesel fuel
with advanced bacterial
growth

Fuel →
Micro-organisms →
Water →



Specific properties of the **Micro-Separator**:

- Tests show that up to **99,9997%** of the free water is separated from the fuel.
- Collects all sludge (strings of bacteria) in the bottom part of the separator, thus preventing that this ends up in the diesel filter or engine
- No rotating or otherwise moving parts.
- Once mounted, the Micro Separator will last an (engine) life time.
- No insert filters which need to be renewed.
- Filters out particles to a size of 75 µ (micron).
- Filters out even sand and corroded particles thus protecting the engine.
- The fuel tank will continuously get flushed with clean fuel, which improves the condition of all of the fuel in the tank.

The required maintenance is limited to periodical draining off the sludge and water from the bottom part of the Micro-Separator. Experience from users in the field has shown that this only needs to be done with each service-interval.

The system in this shape has proven its reliability in the USA for well over a decade now. Among others the US Coast Guard and military vehicles use the separator with remarkably good results

How does the Micro-Separator work?

The Micro-Separator makes use of a cleaning process based on two well-known principles: centrifugal force and coalescence; first the incoming fuel is forced into a rotary motion through conductor plates to the bottom compartment. In this first cleaning phase the speed of the fluid is brought back to a minimum and water drops and other parts which are heavier than the diesel fuel are separated from the fuel, without causing an emulsion. The separated pollution and the water are collected at the bottom of the separator until these are drained. In the secondary phase, the fuel runs through three ceramic elements, the "coalescor". Eventual remainders of pollution and the water drops 'unite' in this phase and are fed back to the bottom of the Separator.

The fuel which is now clean and pure again will ignite better and improves the efficiency and reliability of the engine. The Micro-Separator must be mounted between the fuel tank and the fuel filter and is therefore the first line of defence for the fuel system.

Symptoms which will tell you, that mounting a Micro-Separator is a must to protect your installation:
Diesel fuel spreading a sulphuric smell (smell of rotten eggs), fuel is dark coloured, 'muddy' and slimy, the engine is not responding immediately, corrosion in fuel tank and other components and/or fuel filters and fuel system is clogged.

Type	Dimensions Ø X height mm.	Connection	Capacity ltr./hr.
3X5	76 x 150	1/4" BSP	100
3X8	76 x 305	1/2" BSP	750
5X12	120 x 340	3/4" BSP	2,700
5X16	135 x 570	1" BSP	3,600
8X20	190 x 660	1½" BSP	9,000
8X29	190 x 900	2" BSP	12,500
8X47	190 x 1400	2" BSP	17,500

All Micro-Separator units come with a mounting support/bracket

All Micro-Separator units come with a 5 year warranty !

The all new
3X5



the 3X5 is supplied with
hose connectors for
Ø 8 mm.fuel hose

3X8



5X12



Models 3X8 and larger are supplied with
internal BSP ports for the fuel line

Selection table fuel purifier

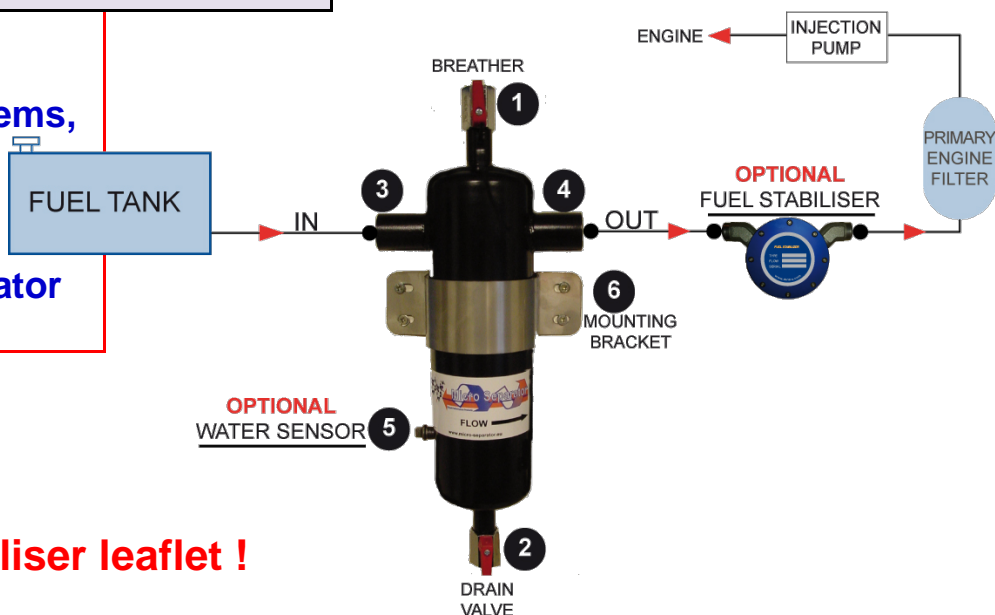
Type	Connection	Suitable Fuel-Stabiliser	Flow in litre/hour	Length of housing in mm. without valves	Diameter Ø in mm.	Weight in kg.	For pre-chamber diesel engines max. HP	for commonrail diesel engines max. HP	Max. tank volume in ltr.	The selection of the correct model is determined by a number of factors: volume of the tank (as indication of the possible amount of pollution) the volume of the Micro-Separator unit, the flow capacity of the Micro-Separator and the flow capacity of the Fuel-Stabiliser
3X5	1/4"	w/o	100	150	76	1,5	80	50	300	With alarm sensor for tank volumes < 500 ltr.)
3X5	1/4"	5-29	50	150	76	1,5	80	50	300	Pay attention to max. flow (with modern engines: consumption + volume used for cooling)
3x8	1/2"	w/o	750	305	76	2,5	175	100	500	With alarm sensor for tank volumes < 1,000 ltr.)
3x8	1/2"	5-29	110	305	76	2,5	175	100	500	Pay attention to max. flow (with modern engines: consumption + volume used for cooling)
5x12	3/4"	w/o	2,700	390	120	7	400	250	1,000	With alarm sensor for tank volumes < 1,500 ltr.)
5x12	3/4"	30-200	750	390	120	7	400	250	1,000	Pay attention to max. flow (with modern engines: consumption + volume used for cooling)
5x12	3/4"	200-500	1,900	390	120	7	500	325	1,000	With alarm sensor for tank volumes < 1,500 ltr.)
5x16	3/4"	w/o	3,600	570	135	13	600	400	3,000	With alarm sensor for tank volumes < 4,000 ltr.)
5x16	1"	200-500	1,900	570	135	13	600	400	3,000	Pay attention to max. flow (with modern engines: consumption + volume used for cooling)
8x20	2"	w/o	9,000	660	190	24	*	*		
8x20	2"	500-1500	5,600	660	190	24	*	*		
8x20	2"	1500-2500	9,000	660	190	24	*	*		
8x29	2"	w/o	9,000	900	190	34	*	*		
8x47	1½"	w/o	17,500	1,400	190	40	*	*		

* Correct Micro-Separator for each individual installation calculated on request

Also available:

Alarm kit / water sensor,
universal for 6 - 24 Volt systems,
supplied with cables.

Fits straight on Micro-Separator
port.



Read also our Fuel-Stabiliser leaflet !

