gespasa®
FLUID TECHNOLOGY

FUEL MICROFILTRATION

- Microfiltration of foreign bodies
- Water absorption
- Maximum vehicle protection

The importance of microfiltration

GESPASA is in the market manufacturing solutions for the fuel transfer, filtering, measurement and control since 1974.

With a wide solution range for the automotive and minery filtration giving solutions to the problems caused by the DIESEL contamination.

The GESPASA filters are designed for the elimination of particles, free or emulsified water, bacteria and sulphur.

Eliminating particles

To eliminate the particles of the fuel is highly profitable. With microfiltered Diesel, the fuel injectors are kept clean, optimising the combustion. In case of having dirt injectors, there is a power loss and an increase of the motor consumption.

The fuel injectors and cilinders are damaged causing expensive breakdowns and an increase of the consumption and the lubricant damage.

Removing the water

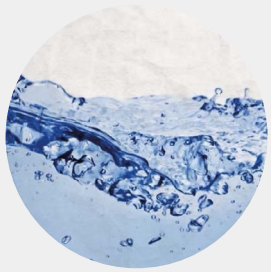
The GESPASA filters of absorbent paper are monitor filters that completely block the supply when the filter is water-saturated.

It is said the presence of water reduces the motor power among 10 to 15 percent, increasing the consumption in the same proportion.

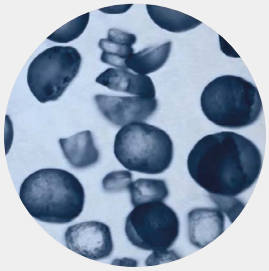
To eliminate the water will improve the combustion and avoid the bacteria growth. When the bacteria are in a tank, its elimination is highly expensive as, though the tank is cleaned superficially, is required to eliminate them with a bactericide.

The enemies of your motor

Bacteria



Free or Emulsified water



Foreign bodies

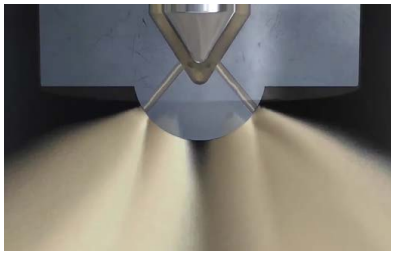
The importance of microfiltration

Economical benefit

It avoids the power reduction, the consumption increase and the breakdowns in your motor.

Environmental benefit

A combustion of microfiltered Diesel drastically reduces the emission of polluting substances.



Clean injector

Dirt injector

What are the manufacturers of vehicles and machinery asking you?

Nowadays, the Diesel vehicles work with "Common Rail" systems that work at highly pressures.

The foreign bodies in the fuel are highly harmful for this type of motors and it is very essential to microfilter the fuel in order to get the code ISO 18/16/13, at least, in the supply point.

At the same time, today, there is mixture in the fuels among 7 to 15 percent of biodiesel (depending on the country). The biodiesel makes easier the appearance of water, bacteria and foreing bodies.

ISO 4406 cleaning codes		
Quantity of particles by ml of fluid		
ISO Code	Minimum	Maximum
1	0.01	0.02
2	0.02	0.04
3	0.04	0.08
4	0.08	0.16
5	0.16	0.32
6	0.32	0.64
7	0.64	1.3
8	1.3	2.5
9	2.5	5
10	5	10
11	10	20
12	20	40
13	40	80
14	80	160
15	160	320
16	320	640
17	640	1,300
18	1,300	2,500
19	2,500	5,000
20	5,000	10,000
21	10,000	20,000
22	20,000	40,000
23	40,000	80,000
24	80,000	160,000
25	160,000	320,000
26	320,000	640,000
27	640,000	1,300,000
28	1,300,000	2,500,000

FG-70 / FG-100

DIESEL · PETROL · BIODIESEL

FG-70

FG-70 · 10 µm · water absorbent	663300000

94,6 L/MIN

1"

0.91 kg

101x93.4x280 mm
LxWxH (approx.)

APLICATION

- It removes particulates like dirt, dust and rust.
- It is suitable for petrol, diesel, biodiesel blends up to B20 and ULSD (Ultra Low Sulfur Diesel) application.

TECHNICAL FEATURES

Max. Flow	94.6 l/min
Inlet/outlet connection	1" BSP
Cartridge	10 µm · Water absorbent
Cartridge thread size	1"-12 UNF
Max. working pressure	3.4 bar
Max. diff. pressure	1.7 bar

FG-100

FG-100	39023
FG-100G	39071
FG-100BIO	39024

105 L/MIN

1"

2.27 kg

218x300 mm
ØxH (approx.)

TECHNICAL FEATURES

	FG-100 / FG-100G	FG-100BIO
Filtration	Diesel and pretrol 5 µm (micron)	Biodiesel 25 µm (micron)
Water separation	By water-repellent filtering paper with water decanting 93%	-
Volume	2 litres	
Transfer Capacity	105 l/min	
Top	Aluminium	
Vessel material	Transparent plastic	
Head material	Aluminium	
Inlet/outlet	F1" BSP flanges or threads	
Installation	in the suction or the delivery of the pumping kit	
Max. working pressure	5 bar	
Glass breaking pressure	8 bar	
Maximum working depressurisation	-0.5 bar	
Temperature	-10 ºC to +50 ºC	
Drain valve	Yes	

FG-150A

DIESEL · PETROL · BIODIESEL

Microfilter of 10-litre capacity

FG-150	66050*
FG-150BIO	66051*
FG-150A · water absorbent	66053*

*housing + cartridge

160 L/MIN

1½"

8 kg

260x435 mm
ØxH (approx.)

APPLICATION

- The FG-150 filters are suitable for the particle microfiltration and the water absorption in a dispenser for the fuel supply.
- The filter is supplied with the filtering element installed.
- Because of its transparent vessel, it is shown the amount of the inner liquid. The polluted fuel and the foreign bodies, kept between the filtering cartridge and the transparent glass, can be extracted through the manual lower valve.
- It has built in a vacuum gauge.

EASY FILTER REPLACING

- Unscrew the 10 screws of its top. Replace the filter, assuring the joint is hermically closed to avoid any leak.

TECHNICAL FEATURES

	FG-150	FG-150BIO	FG-150A
Micronage	5 µm (micron) WATER DECANTATION	25 µm (micron)	15 µm (micron) WATER ABSORBENT
Volume	10 litres		
Max. Flow	160 l/min		
Filter cover	Aluminium		
Vessel material	PA transparent plastic		
Inlet/Outlet	F1 1/2" BSP		
Installation	in the suction or the delivery of the pumping kit		
Max. working pressure	4 bar		
Glass breaking pressure	8 bar		
Max. working depressurisation	-0.5 bar		
Temperature	-10 ºC to +50 ºC		
Automatic degasser	Yes		

FG-300 / FG-450

DIESEL PETROL BIODIESEL

Filters of particles and water absorbent

FG-300/2,5 · F2" · 2,5 µm	66194-CF0003
FG-300/3 · water absorbent with aluminium housing · F2" · 3 µm	661900400
FG-300/5 · water absorbent with aluminium housing · F2" · 5 µm	661900300
FG-300/15 · water absorbent with aluminium housing · F2" · 15 µm	66192
FG-300/50 · F2" · 50 µm	66191
FG-450/15 · water absorbent with aluminium housing · F2" · 15 µm	663700000
FG-450/50 · F2" · 50 µm	663700100

APPLICATION

- These filters are suitable for particle microfiltration and, depending on the model, the water absorption.
- It is possible to drain through the manual drain valve placed in the microfilter bottom.
- Suitable for the microfiltration of diesel, petrol, kerosene, AVGAS, JET A-1, in general, hydrocarbon liquids.
- Differential manometer that shows the filter saturation level.
- The microfilter is supplied with the filtering element installed.

EASY FILTER REPLACING

- Unscrew the 6 screws of its top. Replace the microfilter, assuring that the joint is correctly placed to avoid any liquid leak.

FG-300

300 L/MIN

2"

FG-450

450 L/MIN

2"

FG-300 / FG-450

DIESEL PETROL BIODIESEL

Housings

	FG-300	FG-450
Filter cover and heading	aluminium	aluminium
Filter body	aluminium	AISI-304 stainless steel
Volume	15 litres	30 litres
Flow	300 l/min	450 l/min
Manometer	differential manometer	differential manometer
Inlet/Outlet connections	F2"	F2"
Drain Valve	manual lower drain valve	manual lower drain valve
Installation	in the suction or the delivery of the pumping kit	in the suction or the delivery of the pumping kit
Maximum working pressure	6 bar	6 bar
Max. housing pressure	10 bar	10 bar
Size ØxWxH (approx.)	254x312x670 mm	254x312x1,150 mm
Weight (approx.)	17 kg	27 kg

1 cartridge 2 cartridges

Available cartridges

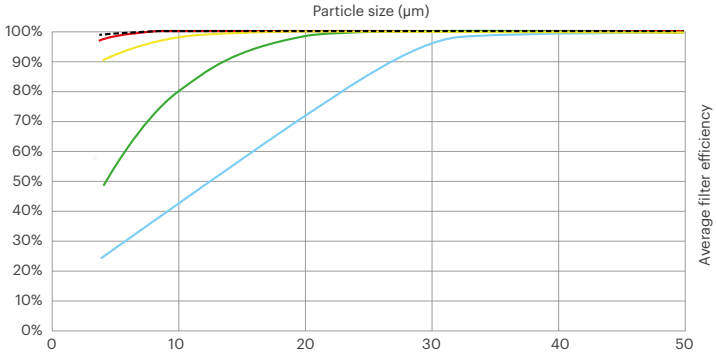
FG-300-450/2.5 $ß_{2.5} \geq 1000$ **Certificate according to ISO 16889 & DFE*	Glass microfibre	802700044	-----
FG-300-450/3 $ß_{10} \geq 1000$	Water absorbent paper	661908002	—
FG-300-450/5 $ß_{20} \geq 1000$	Water absorbent paper	661908003	—
FG-300-450/15 $ß_{30} \geq 1000$	Water absorbent paper	661908000	—
FG-300-450/50 $ß_{50} \geq 1000$	Paper	661908001	—
Mesh prefilter · 100 µm	Stainless Steel	661903004	
Mesh prefilter · 200 µm	Stainless Steel	661903010	

OPTIONAL

The metallic cabinet protects the microfilter physically and visually.

Colour customisation.

AVERAGE EFFICIENCY

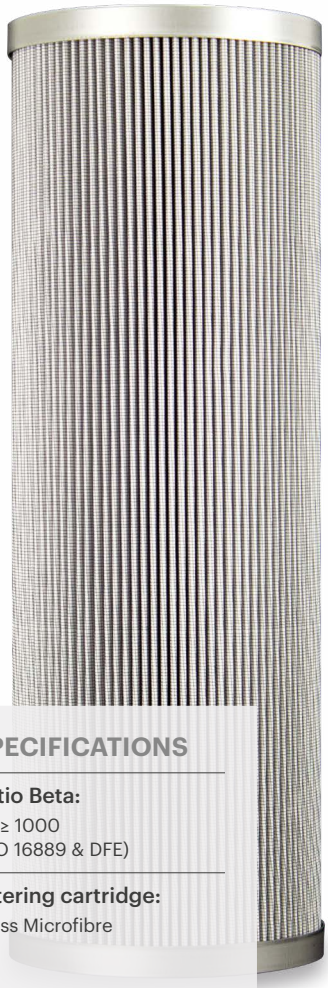


FG-300 / FG-450

DIESEL · PETROL · BIODIESEL

Available cartridges

GLASS MICROFIBRE



SPECIFICATIONS

Ratio Beta:
$ß_{2,5} \geq 1000$
(ISO 16889 & DFE)

Filtering cartridge:
Glass Microfibre

WORKING LIMITS

Change recommended in:
1.8 bar · 25 psid

Maximum Temperature:
121 °C · 250 °F

Collapse ratio:
10.6 bar · 150 psid

PAPER

SPECIFICATIONS

Ratio Beta:
Depending on the model

Filtering cartridge:
Paper or water absorbent paper

WORKING LIMITS

Change recommended in:
1.8 bar · 25 psid

Maximum Temperature:
107 °C · 225 °F

Collapse ratio:
7 bar · 100 psid

STAINLESS MESH

SPECIFICATIONS

Filtering cartridge:
Mesh of stainless steel of de 100 or 200 µm

Standard configuration

DIESEL PETROL BIODIESEL

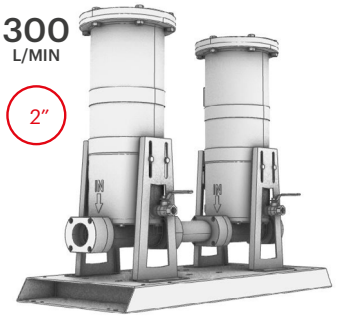
It is possible to assemble the filters in series or parallel to create your configuration or, if you prefer, we can make it for you. If you have a special configuration, please ask. We can manufacture it according your requirements, dimensions, etc.

We have the following standard configurations:

FG-300x2

300 L/MIN

2″



FG-450x2

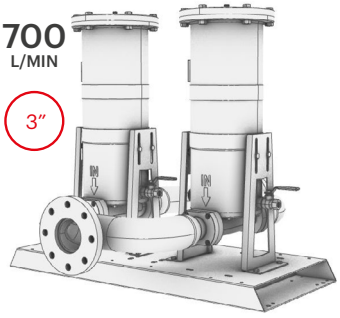
450 L/MIN

2″

FG-700

700 L/MIN

3″



FG-700x2

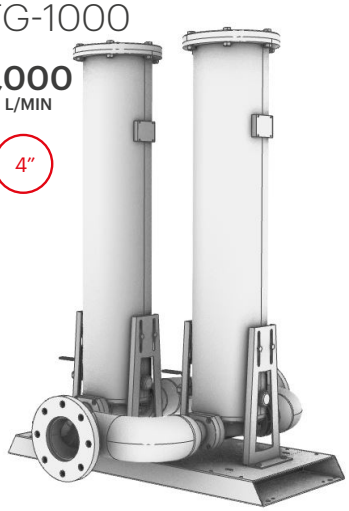
700 L/MIN

3″

FG-1000

1,000 L/MIN

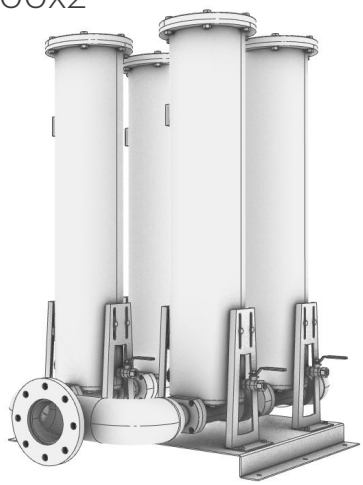
4″



FG-1000x2

1,000 L/MIN

4″



Remember the concepts of filtration when making your configuration:

- 2-phase filtering means to lengthen the life of the filtering media and you will get the better filtration efficiency. The first cartridge will be water absorbent, cheaper and less efficient. This will catch the bigger particles, avoiding the second filter, of better efficiency, is saturated too much. You will length the life of your cartridges, getting the better efficiency in the filtration.
- Filtering at a lower flow than the filter limit, you will increase the capacity of particle retention getting a better filtered fuel. Assembling two filters in parallel, you are increasing the double of time the fuel is in touch with the filtering media, increasing the capacity of particle and water retention.

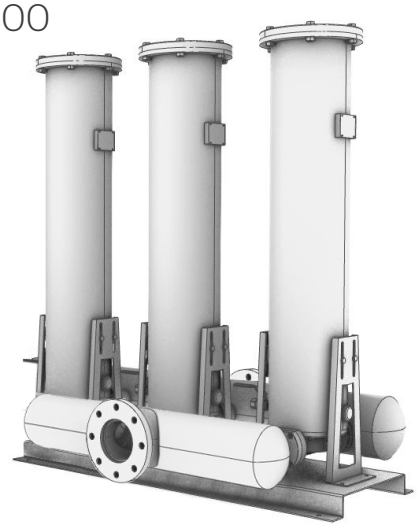
Standard configuration

DIESEL PETROL BIODIESEL

FG-1400

1,400 L/MIN

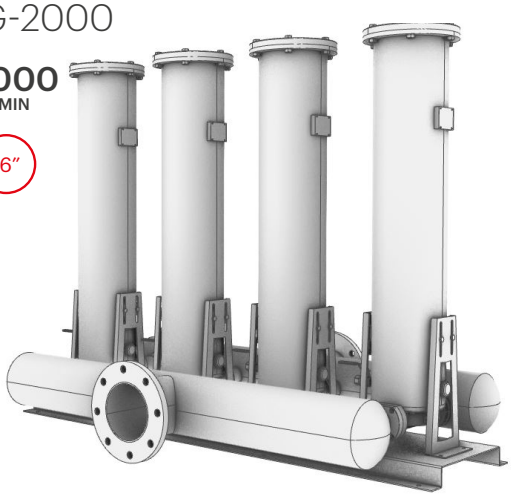
4”



FG-2000

2,000 L/MIN

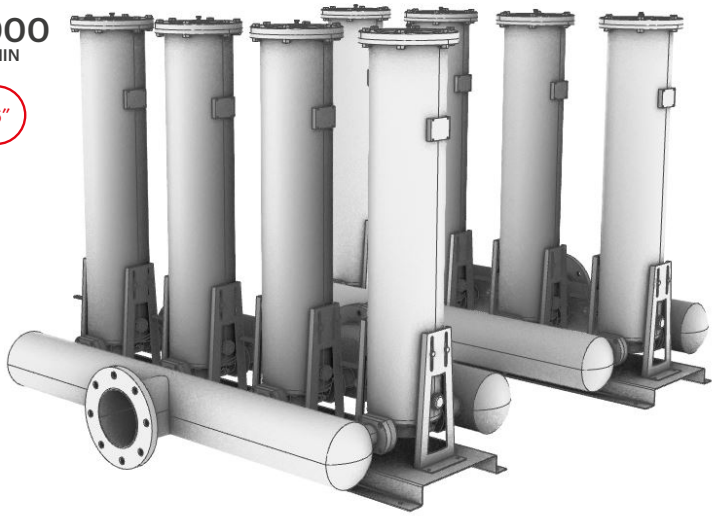
6”



FG-2000x2

2,000 L/MIN

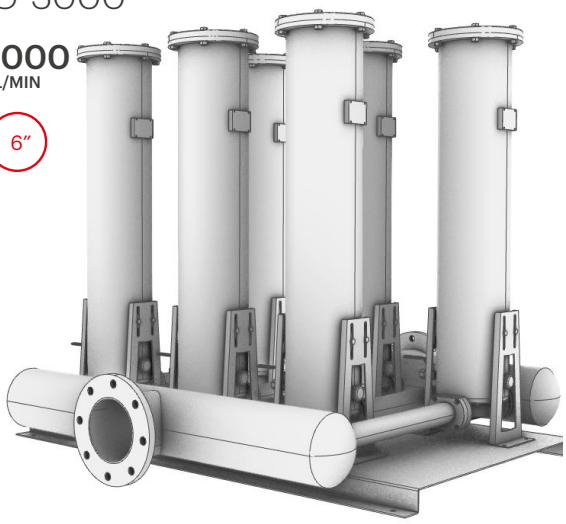
6”



FG-3000

3,000 L/MIN

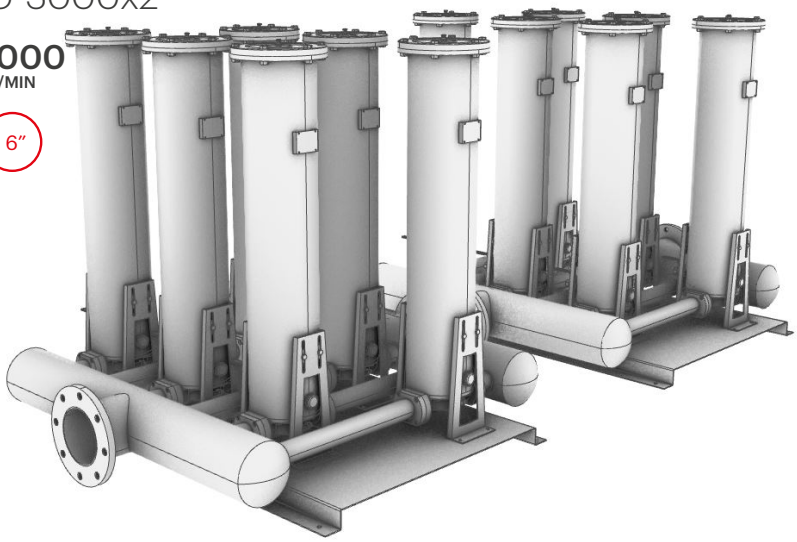
6”



FG-3000x2

3,000 L/MIN

6”



Fuel Treatment System

DIESEL PETROL

Fuel Treatment System

150 · Fuel Treatment System

150 EExd · Fuel Treatment System

300 EExd · Fuel Treatment System

300x2 EExd · Fuel Treatment System

450x2 EExd · Fuel Treatment System

APPLICATION

- Automatic fuel treatment system for tanks.
- Automatic and programmable on and off, to remove water and microparticles. It performs a homogenisation and oxygenation of the fuel. It prevents the creation of bacteria, algae and mildew that can damage the installation and vehicles or machines to which it is supplied.

The importance of installing a fuel treatment system

- It avoids the creation of sludges in the tank bottom.

  With a periodical filtration, the particles and water in suspension are eliminated, avoiding its sedimentation. It prevents from an expensive tank cleaning. To clean the tank it is required to stop the installation, completely empty the tank, degas it and clean it manually. It is a very expensive and high-risk process.
- It avoids the creation of bacteria.

  The creation of bacteria in diesel tanks is increasingly common. This is due to that currently the regulations allow mix diesel with 7 percent of biodiesel. This increases the presence of water and the consequent appearance of bacteria. Bacteria are very difficult to eliminate and cause problems in the machines to which it is supplied and in the installation itself.
- It protects the machines or the vehicles that use the fuel.

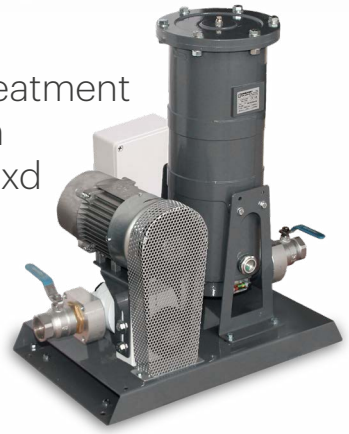
  The modern systems of combustion are very sensitive to the microimpurities. The diesel must be microfiltered in order to protect the injectors.

Fuel Treatment System 300x2 EExd

150 L/MIN

Fuel Treatment System 300 EExd

150 L/MIN



Fuel Treatment System 450x2 EExd

150 L/MIN

Fuel Treatment System

DIESEL PETROL

TECHNICAL FEATURES

	Flow (l/min)	Cartridge*	Viewer	Dimensions	Weight
150 · Fuel Treatment System	45 l/min	15 µm water absorbent	-	550x260x500 mm	19 kg
150 EExd · Fuel Treatment System	45 l/min	15 µm water absorbent	-	550x260x500 mm	22 kg
300 EExd · Fuel Treatment System	140 l/min	15 µm water absorbent	Visual saturation viewer	670x400x760 mm	67.5 kg
300x2 EExd · Fuel Treatment System	140 l/min	50 µm + 15 µm water absorbent	Visual saturation viewer	1,000x400x760 mm	84.5 kg
450x2 EExd · Fuel Treatment System	140 l/min	50 µm + 15 µm water absorbent	Visual saturation viewer	1,000x400x1,240 mm	104.5 kg

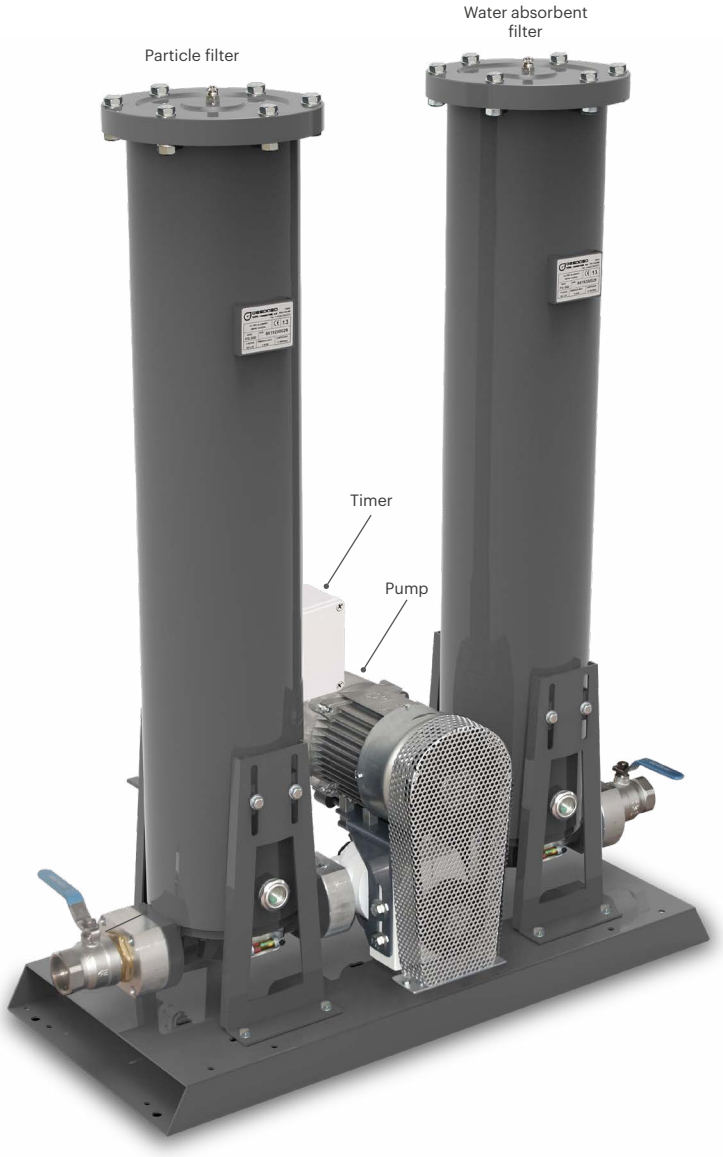
*There are other filtering elements available (refer to table 'Available cartridges' in the page 6 of this file).
Available single-phase and triphase motors

Composed of

Pump
Self-suction with self-adjusting blades
Filters
1 filter for particles + 1 water absorbent filter
Timer
ON/OFF Timer
IP-55 switchboard composed of:
Main MCB
Differential switch
Individual motor-guard switch
ON/OFF switch with removable key
Multifunction timer

Optional

Particle meter
Particle meter for the measurement of the fuel quality in the inlet and outlet of the filtering kit
Filter saturation sensor



LGN-65

DIESEL PETROL

Water suction of the tank bottom, fuel extractor and solid and liquid extractor

LGN-65	48032-CF00000

APPLICATION

1. Water suction of the tank bottom

- The pneumatic extractor-vacuum cleaner is especially suitable for suctioning the water, mud and impurities that are close to the suction tube in all type of tanks. The water suction is made without turbulences preventing the water from suspension.
- It points out because of a quick suctioned liquid separation, by pressurisation and decanting, returning the clean liquid to the same tank and the polluted one to the authorised tanks.

2. Fuel vehicle extraction

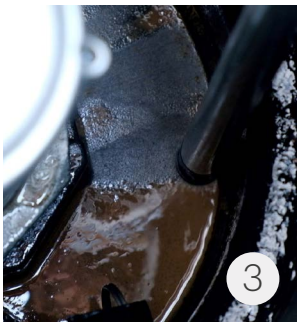
- Quick and effective solution to those vehicles that have supplied the wrong fuel: diesel instead of petrol or vice versa.
- The suction is made through Ø12x9 mm or Ø8x6 mm probe that is placed into the vehicle tank.

3. Container cleaning

- It is suitable for the liquid and mud suction in the petrol station containers.
- The kit easily suctions mud, hydrocarbon water an dirt there is in the container bottom.

36.45 kg

550x510x1,140 mm
LxWxH (approx.)



Tank filtration

FilKit FG-100

Kit for the filtration of small private tanks as heating systems, generators, etc.

50
L/MIN

1″

FilKit Lube

Kit intended for the filtration of solid foreign bodies and the water absorption in lubricants.

20
L/MIN

1″

Tank Filtration Kit

Kit for filtration tanks of charging centres or service stations. With a periodical microfiltration it is avoided the foreign bodies, mud and water presence. So the bacteria apparition is reduced.

150
L/MIN

2″

150
L/MIN

2″

How to achieve the maximum filtration with the filters?

The quality of the filtration in the filter outlet will depend on the fuel quality in the inlet and how the installation has been configured.

Concepts for a good filtration:

Time of filtering

The more the fluid is in touch with the filtering cartridge, the more particles are retained on them. The time of filtering will be determined by the fluid that flows through the filter. More flow, less filtration capacity.

For example, in a FG-300 filter, the efficiencies are shown at a maximum flow of 300 l/min. The efficiency beta will be higher than those indicated if we work at less flow.

Filtering surface

The more filtering surface is, the more time the fluid is in touch with the filtering cartridge, improving the filtration.

Filtration by phases

Although any filter can be assembled individually, it is advisable to assemble them in line to avoid saturating too quick the more restrictive filtering cartridge that is also the most expensive. Usually it is advisable to assemble a filter with efficiency: Beta 1000 at 10 or 20 µm (micron).

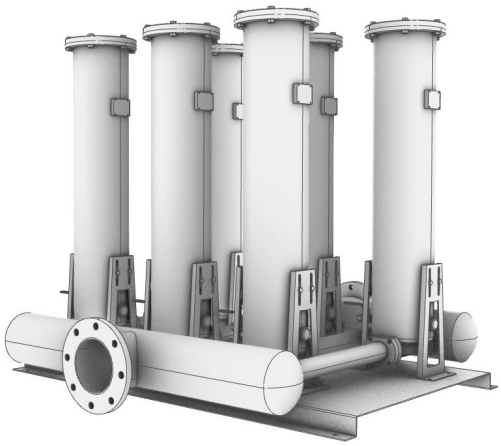
To mount several in-line filters significantly increases the life of the different filtering elements, being highly profitable in the short or medium term according to consumption.

Cyclic fuel treatment system

Without a doubt, the best method of filtration. It maximises the concept of increasing the time of filtration (time which the particle is in touch with the filtering cartridge) and the filtration by phases. Each cycle of filtration is equivalent to assemble a new unit of filter.

Evaluating the appropriate treatment plant will depend on the fuel consumption and its filling cycle. The treatment systems can be sized in capacity and flow. We have standard models for the fuel treament from 9,000 l/h to 90,000 l/h.

With the cyclic microfiltration the emulsified water will be also eliminated 100 percent and the bacteria appearance, the sludges and the water in the tank bottom will be avoided.

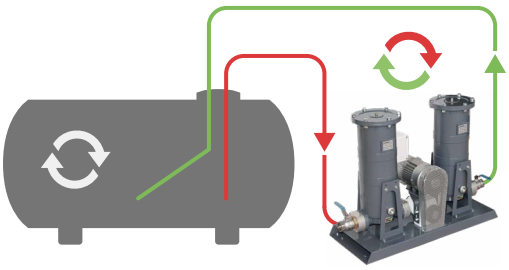


FG-450/2.5 + /3

$ß_{10} \geq 1000 + ß_{2.5} \geq 1000$

FG-450/2.5 + /3 + /15 + /50

$ß_{50} \geq 1000 + ß_{30} \geq 1000 + ß_{10} \geq 1000 + ß_{2.5} \geq 1000$



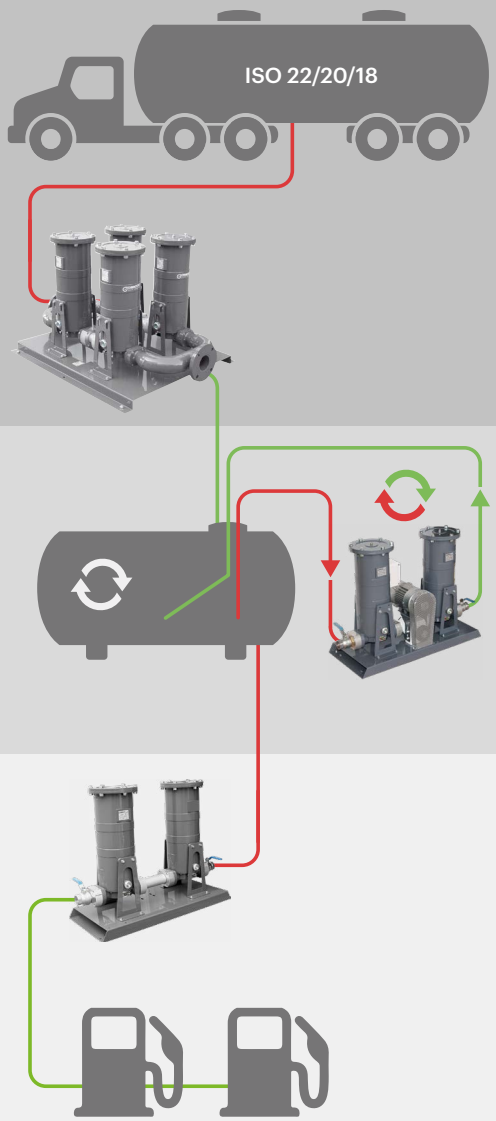
Example of an approach for a mining company with high consumption

BULK FILTRATION: FILTERS IN THE DISCHARGE

High flow impact filter in two phases:

2x $ß_{50} \geq 1000 + ß_{30} \geq 1000$

- This filter will stop the 80 percent of the particles higher than 14 µm (micron) according to code ISO 4406.
- In this phase the big particles are eliminated that saturate quicker the more restrictive filters.
- Eliminating the heavy particles, the life of the other phase filters is lengthened, improving their output and the decantation and sludge creation are reduced.
- The second absorbent filter will eliminate the 98 percent of the emulsified water.



FUEL TREATMENT PLANT: PERIODIC MICROFILTRATION

$ß_{30} \geq 1000 + ß_{20} \geq 1000$

- The water is totally eliminated, avoiding the risk of the bacteria appearance.
- The fuel is moved, avoiding the sedimentation and creation of sludges.
- More filtration cycles, less number of solid foreign bodies.

ESSENTIAL: RESTRICTIVE MICROFILTRATION

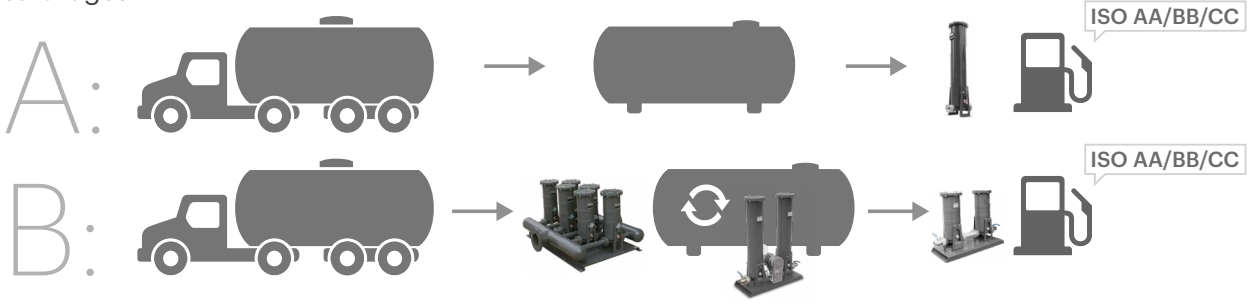
$ß_{10} \geq 1000 + ß_{2.5} \geq 1000$

- With the final filtering cartridge, Beta 1000 to 2.5 of glass microfibre, it is achieved a code 11 whatever is the inlet quality.
- With the previous phases, the higher foreign bodies are eliminated, extending the life of the most restrictive filtering cartridge.

The aim of this proposal is to use the cheap paper filtering cartridges to get the higher filtration and use a microfibre cartridge only for the final phase in order to eliminate the smaller foreign bodies.

Depending on the consumption of each installation, you must look for the balance between the first investment in housings and installation and the recurrent consumption of the filtering cartridges.

A or B?



FUEL MICROFILTRATION

Ref. 20210623.V4

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