PRESS RELEASE

Filtration of fuel with MAHLE automatic filters

The compact MAHLE Automatic Vario-filter system AF 173 GM respectively AF 113 GM is specially designed to perform the specific filtration tasks of big diesel motors and gas turbines. A speed controlled pump, sucking the oil from the day tank or the bunker, supplies the filter system with fuel (Gasoil, MDO). This filter can be cleaned during on-going operation, so that the filtrate flow of the inline pressure filters needs not to be interrupted or essentially reduced. These automatic filters require no disposal measures as opposed to consumable filter material, for example. By using a new type of filter mesh, the MAHLE filters achieve an extremely good cleaning result.

The filter-system consists of:

- Automatic-filter AF 173 GM respectively AF 113 GM,
- Transfer-pump (20-120 l/min),
- Control of the cleaning operation and
- Option: Oil-Recovery-System with filter Pi 1975 E incl. sludge tank and fuel-recovery-pump (5,6 l/min).

There is a downwards tangential flow around the immersion pipe via the outer intake chamber. This reduces the load on the filter element. This results in the pre-deposition of coarse and heavy particles through settling in the collecting cone. Cross flow and precision residual separation takes place on the filter material via the intake chamber.
The filtrate flows out of the filter at the top, on the opposite side of the inlet connection.

After a differential pressure threshold has been reached or after a pre-determined interval, the segmented element is turned in the opposite direction for brief cleaning by an electric motor. Both, the external pressure valve and the cleaning valve are opened at the same time. The cleaning is carried out by using either compressed air or filtered fuel (during tests at site compressed air from the existing air supply system was used). In case of AF 113, the cleaning is carried out by using the differential pressure between the filtrate side (operating pressure) and the cleaning channel (atmospheric pressure), which should be at least 1 bar.
The segments pass the external cleaning channel in sequence, and the nozzle is alternately opened and sealed. When the nozzle is sealed, the integrated external pressure reservoir is pre-loaded, so that when the nozzle is opened, an outward pressure pulse causes the deposited particles to be cleaned off the filter material in each individual segment. One revolution is sufficient to clean all segments through the cleaning valve.
The residue in the collection cone is transported out through the drain valve. This discharge process can be done during off-time or during operation.
The fuel-sludge is supplied to the sludge tank via a collector. As option, this tank can be used as a sedimentation tank for the fuel sludge or as a reservoir for a recovery system, using a deep-bed filter. In this recovery-tank, the level is controlled by level switches. By the recovery filter, the particles are trapped down to the size of 3 – 5 microns.

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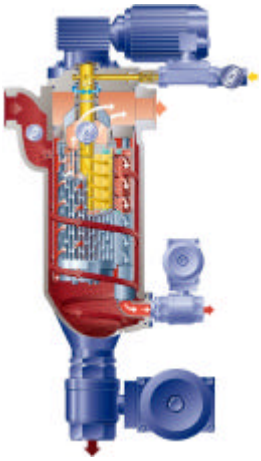
By returning the oil from the recovery tank to the inlet of MAHLE Vario filter, an additional safety aspect is fulfilled. In case of malfunction of the fuel recovery filter, no sludge can be filled to the filtered fuel because it will be returned to the recovery tank immediately.

A top-level switch is the overflow alarm for the recovery-tank. In case of activation, an alarm will be set and the pump will be switched off.
An air breather on the recovery tank protects the oil system from ambient pollution.

The MAHLE – Vario – Filter- System is used in the application of Fuel-Oil-Filtration as well as Lubrication-Oil –filtration on diesel engines, used in Marine technology and power generating technology.



Picture 1: Automatic Filter AF173

Picture 2: MS Phantom with AF 173 M

Picture 3: Demonstration plant

Picture 4: Tug boat BREMEN with AF 113 M

Manfred Schnell/ 3 IVP