Managing your oil contamination

With our knowledge we engineer your ambitions

RMF SYSTEMS®

RMF Systems / Doedijns Hydraulics

The name RMF Systems has become synonymous with the latest developments in filtration technology. RMF filter units are the most complete and efficient filter series available today. Worldwide a great success in a huge range of hydraulic applications. The solution to contamination problems which cause more than 80% of all hydraulic malfunctions and component defects.

The filter units of RMF Systems have a large dirt and water collection capacity and are famous for their excellent filtration efficiency.
Costly main flow filters are protected and malfunctions are reduced to a minimum. Oil life is increased resulting in lower oil change frequency and less machine downtime.

The wide range of RMF products consist of: Air conditioners, By-pass units, Off-line units, Off-line units with water sorb, Heated Off-line units, Off-line units air driven, Vacuum dehydration units, Filter elements and By-pass lube oil units.

Doedijns organisation

The brand *RMF Systems* is registered, designed, developed and produced in-house by Doedijns Hydraulics B.V. in The Netherlands.
Doedijns Hydraulics is a leading manufacturer and supplier of fluid power solutions and one of the largest independent specialists in the Benelux in the field of hydraulics, measurement, control systems and oil management. Alongside sales of leading branded components, the organization specializes in the development, assembly, production, implementation and after-sales service of custom-made systems for the industrial, mobile, maritime and offshore industries.

Doedijns Hydraulics B.V. forms part of Doedijns International B.V. (head office in The Netherlands), an international force in the field of hydraulics, pneumatics and instrumentation.
Doedijns International is a healthy growing organization with more than 250 employees and several branches in Europe and Asia.

RMF team / worldwide distribution network

The products of our RMF Systems filtration programme find their way to the customers through a worldwide RMF distribution network.

Besides an excellent competitive, innovative product range and substantial technical & informative literature in a range of modern media, the sales support to our RMF distributors is provided by the RMF team of Doedijns Hydraulics. A highly qualified team with a wealth of experience and expertise.

The specialists of our RMF team are on hand to answer questions and address concerns on any aspect of oil management. They pay our distributors regular visits, are present on international exhibitions and provide an active education & training programme that aids the exchange of expertise.

General information RMF Systems

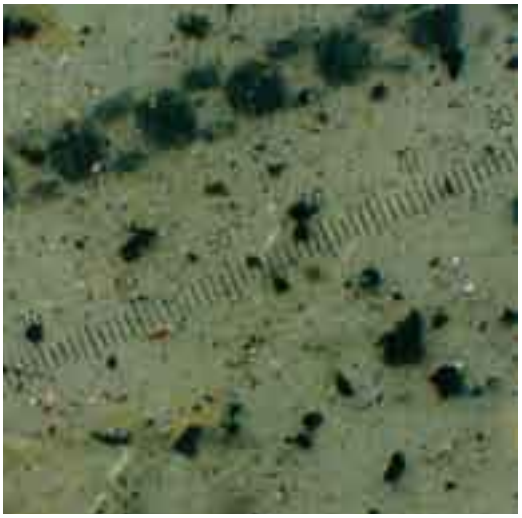
System contamination

In the hydraulic market it is an accepted fact that contamination causes 80% of all mechanical failures. This contamination results from the presence of solid particles such as metal, sand and rubber in oil.

Mainstream filters are incapable of removing the smallest particles, smaller than 2 micron (better known as silt). Fluctuations in the supply and the resulting changing conditions (flow and pressure surges) mean that these filters cannot carry out fine filtration; most of the silt remains in the system and affects the chemical composition of the oil.

Changes in temperature cause water vapour to condense, resulting in unwanted water in the oil. The presence of this free water helps to accelerate the deterioration of the oil.
The combination of water and small copper particles will also create a catalytic effect which can shorten oil life considerably.

All these problems lead to reduced oil usage life and increase component wear, maintenance cost and machine down time.
Removing silt and preventing the formation of free water can combat these problems and reduce the operating cost.



Microfiltration

At the heart of the RMF Off-line and By-pass filter is the unique micro filter element. This filter works according to the radial through-flow principle. As it has a filter fineness of 0,5 micron, it is able to remove the smallest of contamination particles (silt) from the oil.

The filter material is composed primarily of cellulose, which is produced by a special wrapping method. This material is capable of retaining solid particles and absorbing water. This helps to prevent the chemical deterioration of the oil and the formation of various acids and sludge.

A complete range of fibre glass pleated elements in 1, 3 and 5 micron is also available, including high water retention elements.

Air conditioning

Water vapour in reservoirs condenses due to temperature changes and cause not only oxidation of the oil, but can also lead to serious mechanical wear in the system.

Standard air breathers remove a certain amount of solid particle contamination from the air but allow water vapour to pass through.
The special RMF 'Air conditioners' ensure that incoming air is first dried and then filtered, allowing only clean dry air to enter the reservoir.

Off-line filters

RMF Off-line filter units can be applied to every imaginable industrial application where hydraulic or lubrication systems are present. An integrated pump-motor unit draws fluid out of the tank, filters it and pumps clean oil back into the system.

Off-line filters can continue to work even when the main system is not in use. Element change can also be done without interfering with the main system. The standard range offers filter units for reservoirs with a capacity of up to 11,000 litres.
Choices of electrical or air motors are available to suit all industrial requirements and a large selection of filter elements makes it possible to customize the unit to every specific application. If required pre-filters can fitted to every type.
Units are very simple to install.

Over the years, RMF Systems have developed considerable experience in cleansing hydraulic and lubrication systems, helping to keep them clean and reduce down time. Successful applications can be found in the following industries:
- steel;
- plastic injection moulding;
- power generation;
- marine;
- pulp & paper;
- cement;
- flight simulator.

Heated Off-line filters

The 'Heated unit' is a unique progression of the Off-line filter series. The filtration of high viscosity oils, in both hydraulic and lubrication systems, is an almost impossible task for fine filters as the thickness of these oils 'block' almost all normal filters.

The RMF Heated unit warms the oil in a specific manner, allowing the viscosity to be reduced to a level which will permit fine filtration without the oil being exposed to too high temperatures that could cause overheating and burning of the oil, rendering it useless.

An internal labyrinth in the heater tube ensures that the fluid has a long duration of stay to increase contact time with the heating element, achieving maximum possible temperature transfer.
An adjustable thermostat allows exact temperature settings while a maximum thermostat prevents overheating.

The Heated units have proved their worth over a long period and are frequently applied to:
- gearbox-lubrication systems;
- wind power drive systems;
- outdoor hydraulic systems;
- marine hydraulic systems.

By-pass filters

The RMF By-pass filter units are especially designed for mobile applications in the hydraulic and/or transmission systems.
In the absence of a pumped system, the oil is drawn from the main system by means of a specially designed and integrated pressure compensated flow control valve. The amount of oil extracted from the main system at any time is insignificant ensuring that it will not affect the working of the main system.
Most commonly used biodegradable oils in the mobile sector are suitable for filtration with RMF filter elements.

The By-pass filters can also be equipped with special spin-on water absorbing pre-filters. They can accommodate a range of different filter elements to suit any specific requirement.

Over the years, RMF Systems have developed considerable experience in cleansing hydraulic and transmissions systems, helping to keep them clean, extend equipment life and reduce cost of ownership (operating costs).

Successful applications include:
- excavators;
- wheel loaders;
- forestry machines;
- asphalting machines;
- cement mixers;
- aircraft ground support equipment;
- sugar cane harvesters;
- agricultural machines.

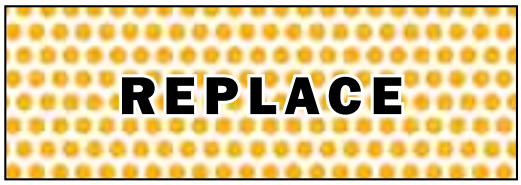
Air conditioners

Standard air breathers remove a limited amount of solid particle contamination from the air, but allow water vapour to pass through.
RMF 'Air conditioners' (desiccant breathers) are highly effective in removing both solid particles and water vapour from the air.

The RMF 'Air conditioner' allows tanks to breathe clean, dry air.
The revolutionary Z-R gel granules dry the air before it enters the oil tank. This dry air is then filtered by a 3 micron fibre glass (replaceable) spin-on air filter. The air which enters the oil tank is then clean and dry.

The uptake of moisture can be observed by the change in colour of the indicator granules in the Z-R gel. They turn from ruby red (active) at the beginning to a very light orange at saturation (replace). The Z-R gel granules are completely replaceable, non toxic and non carcinogenic.
An optional contamination indicator shows when the air filter is in need of replacement.

RMF 'Air conditioners' can be applied to hydraulic drive systems, gearboxes, diesel storage tanks and a wide variety of other uses. Examples of successful RMF 'Air conditioner' applications can be found in the:
- steel industry;
- paper industry;
- cement/concrete industry;
- petrochemical industry;
- aircraft industry;
- wind energy industry.



Filter elements

The principal of the RMF Systems filters is based on the unique original filter elements. With a choice of filter fineness down to 0,5 micron they have the capacity to remove even the smallest of dirt particles from the oil. RMF Systems offers a wide range of elements in micron sizes, filter media and fluid compatibility. Combi-elements (water and solid particle retention) complement the unique range.

Cellulose elements

The RMF Systems cellulose filter elements are unique in their design. They consist of several hundred layers of long fibre cellulose which are wound on a perforated center tube. The micro filter element works as a fine filter through which oil passes radially, from the outside to the inside, trapping solid particles throughout all the layers of cellulose. The long fibre cellulose is also capable of absorbing water, adding the benefit of water removal from the oil. RMF Systems cellulose elements are extremely efficient and have a large dirt holding capacity. The perforated centre tube has a removable steel support spring inserted, which can easily be removed after element replacement. Once the steel support spring is removed the element contains no metallic parts and can simply be incinerated.

Fibreglass elements

RMF Systems offers a range of fibreglass filter elements in a fineness of 1 micron and 3 micron. The micro filter element works as a fine filter through which oil passes radially, from the outside to the inside. RMF Systems fibreglass filter elements (conventional pleated construction) are extremely efficient and have a large dirt holding capacity. The fibreglass elements are suited for all RMF Systems filter housings (except the size 20 housing) and are compatible with most commonly used hydraulic and lubricating fluids, including biodegradable fluids. The fibreglass filter elements are also suited for water based fluids. The fibreglass filter elements are particularly suited for gearbox applications where high viscosity fluids limit the use of the cellulose elements.

Water sorb filter inserts

RMF Systems offers a specially designed water sorb combination filter element: water absorbing and particle retention. This pleated filter element with a fineness of 5 micron has layers of polymers in between layers of fibreglass, creating a unique media to remove both water and solid particles. The Water sorb combi-elements are suited for all RMF Systems filter housings (except the size 20 housing) and are compatible with most used hydraulic and lubricating fluids, including biodegradable fluids. The water sorb combi-elements are not suited for water based fluids.

Water sorb spin-on elements

RMF Systems offers a specially designed spin-on filter, the H_2O Sorb for water absorbing and particle retention. This spin-on filter element with a fineness of 20 micron is constructed of a unique medium containing water absorbing polymer which chemically bonds water.
The spin-on element can be used as a pre filter in combination with most RMF Systems filter housings (except the size 20 housing). They are compatible with most commonly used hydraulic and lubricating fluids, including biodegradable fluids.

The advantages of RMF Systems

Less malfunctions

The tolerances between moving parts in servo valves and proportional valves are constantly reducing. The result is that even the smallest amounts of silt can cause damage to the system. RMF filters remove this silt.

Protection of expensive main stream filters

RMF Systems filters are applied in By-pass or Off-line configurations and constantly clean the oil from the reservoir. The oil which reaches the main stream filter is therefore cleaner and allows longer usage life of this expensive filter. The main stream filter then acts primarily as an emergency filter.

Less frequent oil changes

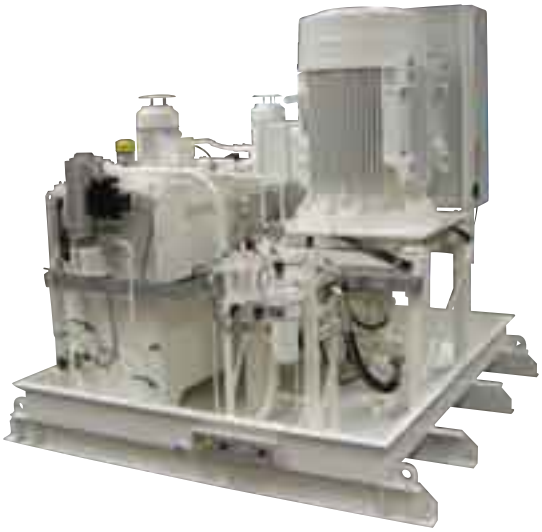
Increasingly strict environmental laws in the area of oil changes, oil storage and the disposal of used oil lead to corresponding cost increases. RMF filters mean less oil changes, and therefore less costs.

Extended usable life of the oil

Frequent oil changes are generally the result of chemical deterioration of the oil caused by the oil oxidation process. This process is brought into action by the presence of silt. If water is also present, this acts as a catalyst and the oxidation process is accelerated. RMF filters remove silt AND water from the oil.

Less machine down time

Reduction of defects caused by worn components and less frequent oil changes mean an increase in production time.



RMF characteristics in short

The oil filters have:

- a filter fineness of 0.5 micron;
- large particle collection capacity;
- high filtration capacity due to depth effect;
- large water absorption capacity;
- a full range of filter elements.

RMF Systems filters:

- do not adversely affect viscosity or additives;
- do not remove additives;
- reduce the oxidation process;
- reduce the forming of acids;
- SAVE COSTS.

Measuring points

To facilitate quality control of the oil, the RMF By-pass and Off-line oil filters are equipped with two quick connect measuring points to which a particle counter can be attached. This offers the possibility of measuring the oil cleanliness level on-site and under working conditions.
The measuring points also allow oil samples to be drawn for external analysis.

The solution

RMF Systems offer the most complete and efficient filter series available today. RMF Systems is THE solution to your contamination problems: simple to fit, equipped with extremely efficient filters and offering the opportunity for simple control of oil cleanliness.

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