

Contamination in Hydraulic and Pneumatic Systems

August 2011 Paper



“Contamination” Awareness

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FLOWTECH
EXCEEDING EXPECTATIONS



Contamination in Hydraulic and Pneumatic Systems

Foreword

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit.

The liquid is both a lubricant and a power transmitting medium.

The presence of solid contaminant particles in the liquid, interferes with the ability of the hydraulic fluid to lubricate and causes wear to the components.

The extent of contamination in the fluid has a direct bearing on the performance and reliability of the system and it is necessary to control solid contaminate particles to levels that are considered appropriate for the system concerned.

Prevention is always better than a cure and is highly effective in keeping hydraulic systems operational. Prevent the ingress of contamination, by human error and embark on a planned contamination control program to eliminate all sources of contaminants, **including filtering new oil**.

In pneumatic fluid power systems, compressed air is not without its problems, with all systems suffering from performance and reliability issues. Almost all of these can be directly attributed to "**contamination**".

After generation, compressed air can typically have up to **ten different contaminants** present as it enters the distribution system, i.e. water vapour, micro-organism, atmospheric dirt and oil vapours.

Products are available from Flowtech to help with the removal of contamination. First we need to identify the different types of contamination in the system. We can now examine the purification technologies for its removal.



Hydraulics

Tank Top Filters

- Designed for return lines, mounted on the top of the tank.
- Return line filtration offers overall protection to the hydraulic system and prevents contaminants entering into the tank via return line.



Pressure Filters

- Used to protect high-cost components on the pressure side of the hydraulic system.



Hydraulics

Filler Breather

- Essential for any hydraulic system.
- Prevents airborne contaminant entering the hydraulic oil tank.



Spin-on Filter

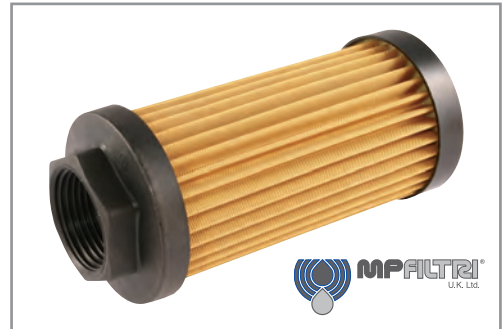
- Utilised in low pressure systems either in return or suction applications.
- Excellent low cost/low maintenance and great dirt holding capacity.



Hydraulics

Suction Strainers

- Situated in the tank before the inlet of the pump and responsible for protecting the pump and preventing contaminant entering the hydraulic system.



Portable Filtration and Transfer Unit

- The ideal tool for transferring new oil into tanks and decontaminating oil by removing suspended particles.



Pneumatics

Main Line Filtration

Grade AO

- High efficiency general purpose protection.
- Particle removal of down to 1 micron, including water and oil aerosols.

Grade AA

- High efficiency oil removal protection.
- Particle removal of down to 0.01 micron, including water and oil aerosols.

Grade AAR

- High efficiency dust filtration.
- Dry particle removal down to 1 micron.

Grade ACS

- Oil vapour and odour removal.
- Maximum remaining oil vapour content 0.003mg/m³ at 21°C/0.003ppm(w) at 70°F.



Pneumatics

General Purpose Filters

- High efficiency water and particle removal.



Pneumatics

Oil Removal Filters

- High efficiency oil and particle removal.



Oil Vapour Removal Filters

- Absorbing type activated carbon element removes oil vapours and most hydrocarbon odours.



Pneumatics

Timed Electronic Drain Valves

- Contaminated water removal.

