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Machine Tool Coolant Filtration

siga filtration
OptimalSeparation

COOLANT FILTRATION

Maintenance and disposal of coolants is a significant cost for the metalworking industry.

In the absence of filtration, machine coolants can quickly accumulate large metal chips and small (<100 micron) particles.

A large number of these abrasive particles are invisible to the naked eye and will cause premature failure of tools, damage nozzles, reduce coolant life and negatively impact surface finish.

Considering the cost of coolant changes, rejected parts, tools and machine breakdowns, a well-designed coolant filtration system will pay for itself quickly and continue to provide cost savings long after it is installed.

BENEFITS OF FILTERING MACHINE COOLANT

- **Longer coolant and machine life**
- **Less equipment down time**
- **Improved production rate**
- **Reduced rejections and defective parts**
- **Improved surface finish**
- **Longer tool life**
- **Reduced consumables costs**
- **Reduced coolant disposal costs**
- **Avoid rough cuts**
- **Discourage bacterial growth**

CHOOSING THE RIGHT FILTER

Filter Life: A correctly sized filter should provide reasonable life between change-outs. When designing a machine coolant filtration system, care must be taken to take total sump volume (x number of sumps) into account in case of offline filtration. Online filtration systems should be designed against flow rate. Other factors influencing life are viscosity, particle concentration and tramp oil or grease in coolant. An incorrectly sized filter will block prematurely, generate back pressure and reduce flow rate resulting in unplanned maintenance.

Filtration particle size: This depends on the machining job and available tolerances. In some applications it may be necessary to use a series of progressively finer filters in order to achieve the desired level of particulate removal e.g. parts for aerospace industry.

Chemical compatibility: All materials in contact with coolant must be fully compatible to avoid deterioration and coolant contamination.

Online or offline filtration: Must be taken into account at the time of sizing filters.

Viscosity of coolant: For a same sized filter, water based coolants will generate a much lower pressure drop as compared to oil based coolants. A larger filtration surface area for oil based coolants is therefore recommended.

Maintenance requirements: A correctly sized filtration system should require very little maintenance and provide reasonable life between filter change-outs.

Construction: Sharp metal chips can damage filter media, causing by-pass and filter failure. A robust filter construction will keep the particles trapped and retain structure even under tough operating conditions.

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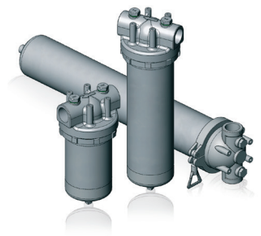
SOLUTIONS

Siga Filtration can offer a range of low maintenance industrial solutions for coolant filtration. These range from inline filtration to fully customised filtration systems for both online and offline filtration.

CARTRIDGE FILTRATION SOLUTIONS

Inline 1FU Cartridge Filter Housing

- Inline design for easy installation
- Removal of dirt and chips from cutting fluid
- Industrial grade 304 Stainless Steel construction
- Coolant compatible materials – 304SS and Viton
- High pressure rating – up to 25 bar
- Operating temperature – up to 80˚C
- Threaded or optional clamped closure
- 1" BSPF connections
- Available in 5", 10", 20" & 30" lengths
- Optional DP Gauge to indicate cartridge change-out



acuraMultiflow Filter Cartridges

- Remove large chips and small particles down to 0.5 micron
- Reduce component wear
- High efficiency filtration, significantly more efficient than strainers
- High dirt holding capacity
- Coolant compatible PP material
- No additives or binders
- Rigid structure to withstand hydraulic shock and eliminate particle unloading
- Easy removal from filter housing

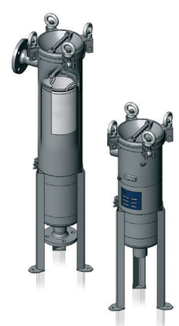
BAG FILTRATION SOLUTIONS

ALSI Compact Bag Filter Housing

- Space saving compact design
- Industrial grade 304 Stainless Steel construction
- Coolant compatible materials – 304SS and Viton
- Pressure rating – up to 10 bar
- Operating temperature - up to 90˚C
- 1 ½" BSPF connections
- Quick release clamped closure (bolted closure available)
- Available in bag sizes 3 (4" x 9") & 4 (4" x 14")
- Optional DP Gauge to indicate filter change-out

BFOS High Flow rate Bag Filter Housing

- Ideal for high flow rate/large volume coolant filtration
- Strong 304SS construction with bolted closure
- Coolant compatible materials of construction
- Supplied on adjustable legs for easy installation
- Available in bag sizes 1 (7" x 16") & 2 (7" x 32")
- Optional DP Gauge to indicate filter change-out



acuraBag Filter Bags

- Remove large chips and small particles down to 0.5 micron
- High flow rate & long service life
- High dirt holding capacity
- Reduce operating costs
- Available in Polypropylene & Polyester
- Chemical compatibility
- Strong welded construction to withstand damage from chips
- Filtration ratings down to 0.5 micron to suit all types of finishing requirements

PBH Plastic Bag Housing

- Economical solution for low pressure systems
- Inline connections for easy installation
- Option to filter with felt or mesh bags
- Complete kit with changeout gauge, drain valve and spanner
- Pressure rating - up to 6.2 bar
- Temperature rating – up to 38˚C

MAGNETIC FILTRATION SOLUTIONS

Filtration units can be supplied with high strength magnetic assemblies to remove ferrous particles. Magnet assemblies provide high flow rate, low pressure drop, do not block over time and can be installed inside filter bags to provide a dual solution for removal of particles and large metal chips. Magnetic rods are supplied inside metal sleeves for easy cleaning and maintenance.

MOBILE TROLLEY UNITS AND SPECIAL DESIGNS

- Fully custom built to suit customer requirements
- Especially suitable for offline filtration or inactive systems
- Can be supplied on a trolley with wheels or a free standing skids
- Can be supplied with pumps, gauges & hoses
- Can be supplied with multiple filtration units to reach desired filtration levels

Siga Filtration offers filtration solutions for water, HVAC, metalworking, process, beverage, chemicals, paints & inks industry. Our filters process fluids in installations throughout the world.

All our Stainless Steel filter housings are designed according to AD2000 and comply fully with EU Pressure Equipment Directive (PED). In addition to our standard range, we also design and build filter housings to specifications.

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