iDV ENGINEERING

SAYECK INNOVATIONS

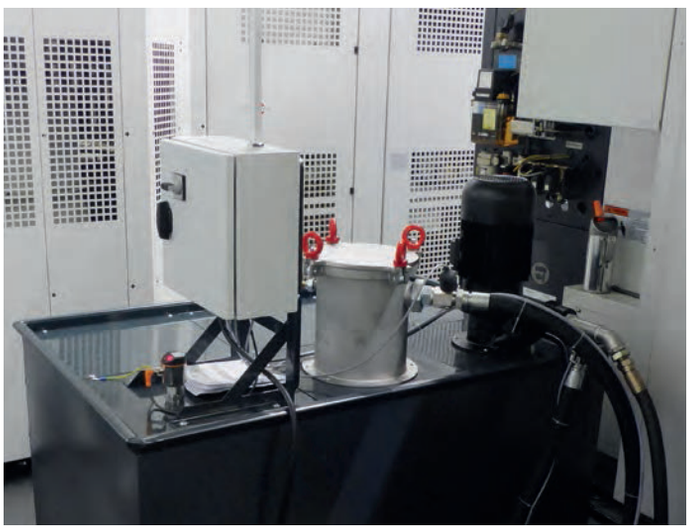
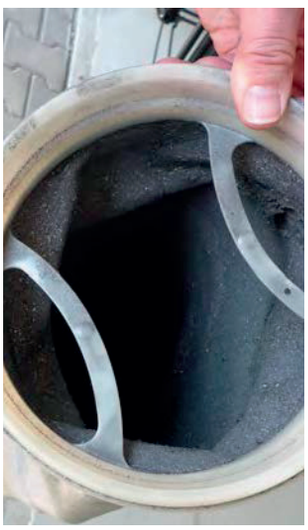
100% Made in Germany

Competitive advantage microfiltration

reduce costs

increase quality

protect the environment


SK40-675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Halve costs, improve quality

You too can benefit from it!

We help operators of CNC cutting machines their cooling lubricants Maintaining in perfect condition at optimal cost, improving quality and cut maintenance costs in half.
On the next few pages we will show you how to:

· avoid health problems among your employees
· ensure the availability of your machines
· increase the service life of your tools
· Improve surface finish by up to 300%
· save at least 75% of the costs for maintenance, replacement and disposal

The spectrum of materials ranges from various aluminum alloys to free-cutting steel, Tool steel and stainless steel through to copper-based alloys. When it became apparent at the beginning of 2016 with the entry into micromachining that the Machines existing cooling lubricant circuits meet the requirements for an environmentally friendly and technologically leading production could only insufficiently fulfill, began me and my team to look for up-to-date solutions. These should also be apart the best possible of the generally customary measures with the least possible effort achieve effect.

After a good year of research and development, a process has been available since 2017 will meet expectations at an extremely favorable price-performance ratio has surpassed by far.

Both in micro-machining and in the production of mirror finish surfaces without repolishing, a practically particle-free cooling lubricant is a prerequisite for a safely controllable process and the best possible results.

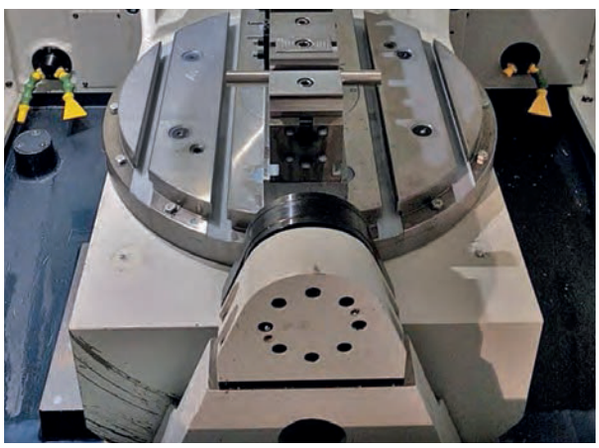
In addition, we were able to observe in our own production that microfiltration Cooling lubricant permanently in a very good, practically new condition receives. Except for the usual refill quantities for discharge and evaporation are next to the Regular filter changes mean that no maintenance is required.

A practically odorless production and thus optimal health protection Next to noticeably clean machines, employees are the most visible effect of microfiltration.

Case study: Microfiltration in CNC machining

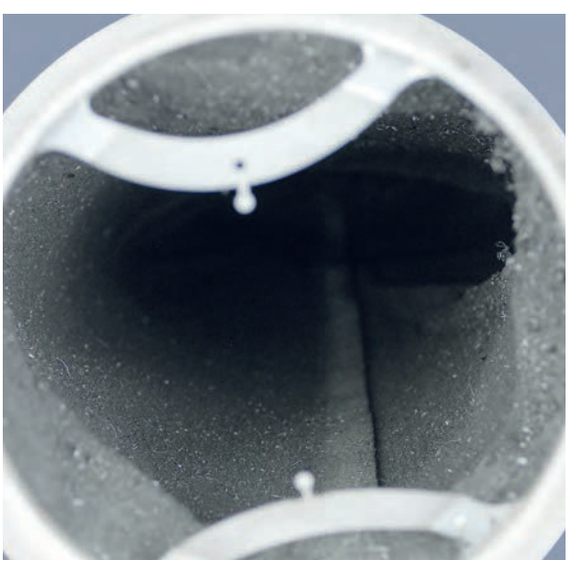
Effects on machine cleanliness and cooling lubricant service life

Modern CNC machine tools are included associated with high investments, which only at permanently reliable operation and minimal maintenance costs are recovered be able. A key factor will be but often overlooked: the cooling lubricant.
Even if it is only a few percent of the total cost constitutes, he nevertheless influences a good 90% of the machining processes and plays an essential role in corrosion protection, the chip removal and workpiece cooling and tool. The cooling lubricant also plays a role an essential role in terms of tool life and surface finish.



Even after years: no deposits in the processing room

Therefore, the relevant regulations of the trade associations require an immediate Exchange of the remedy as soon as there are signs of biological colonization (pH value, smell, color, consistency). This can very quickly lead to multiple the cooling lubricant has to be replaced every year, especially since most effective disinfectants can now only be used in a legal gray area.
Band filter systems or police filters with mesh sizes ranging from 25 µm to over 100 µm are able to capture the visible suspended matter (limit of visibility with a bare eye: approx. 50 µm) to restrain; however, they are largely ineffective when it comes to Su pended matter and microorganisms below 25 µm. But precisely these superfine ones Particles are responsible for breaking up emulsions and causing them to settle during longer downtimes unmix. Even the well-known ones Mud edges in the tanks mostly consist of such fine particles.



Chips and suspended matter from the filter on the path to the tool were intercepted

The micro filter systems from IDV engineering filter to particle sizes of 1 µm and finer. That has – in a positive sense – dramatic consequences: In the machine shown above is now the same Emulsion since commissioning (Dec. 2016) mostly in 2-shift operation, without showing even signs of aging demonstrate. The emulsion shows a stable pH value is still finely dispersed and smells like should smell fresh emulsion. Apparently the supplementary quantities are sufficient (as compensation for the unavoidable discharge via chips and aerosols), to permanently compensate for any aging processes. This emulsion was in a similar machine initially noticed as rather sensitive and had to be changed every 4 months.

for permanent compensation of aging processes. This emulsion was in a similar machine initially noticed as quite sensitive and had to be replaced every 4 months. To avoid calcification and accumulation of nitrates, evaporation loss is reduced supplemented with fully desalinated water (from a reverse osmosis system), which is to be expected also results in consistently stable, low values in this respect.

This means that a microfilter system is more than amortized in just 12 months, even without considering other positive effects. Another advantage of microfiltration is the filter's ability to remove limescale soap (slightly oily, water-insoluble, beige to gray substance) before forming hard-to-remove deposits in the machine together with suspended substances. The machine (along with 2 others) is in operation at IDV engineering and can be viewed after arrangement. Other examples include the Spinner TTS65 triplex turning center and the Spinner U5-1520 (our oldest machine that led to the development of this filter technology) in our facility.

All three machines are exclusively equipped with the EM5000-VA as the only filter. In addition to the standard 1 µm cartridge, we also use ULTRA Absolute (0.2 µm), if necessary, to emerging microbiological repel the colonization of early stage.

Warranty on clean tools and tool holders only tools highest accuracy

Effect of microfiltration on the most common production processes

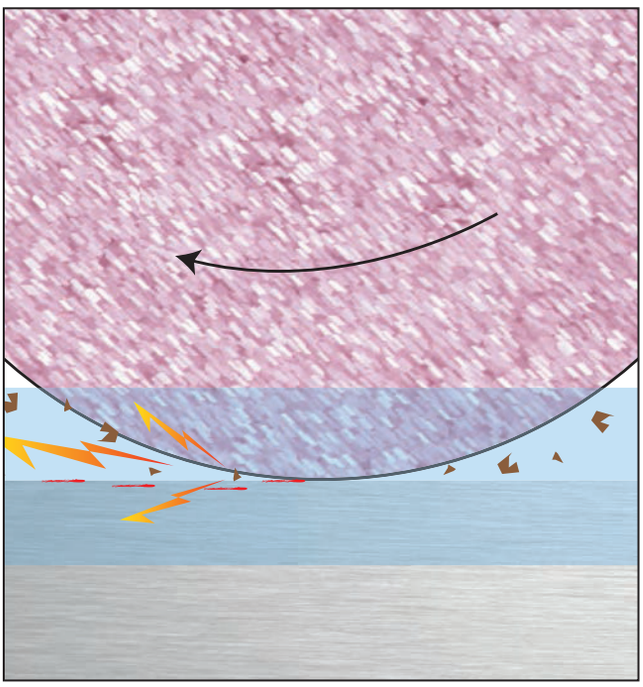
Machine tools and tools have seen tremendous growth in recent decades development has passed and so have cooling lubricants. new cutting materials, high-precision controls and highly developed oils and additives have mechanical engineering catapulted into a class of performance and tolerance that was unattainable just a few decades ago rails.

However, this development also requires a new class of cleanliness for the participants in the process Cooling lubricants, without which these services are simply not possible. Little has changed here since the 1980s last century, which means that this one in particular In this area there is a huge potential waiting to be used. The cleanliness of the cooling lubricant has a direct impact on the reliability of the process, Quality and costs in all processes that use circuits with cooling lubricant occur.

However, the appearance of cooling lubricants is often deceiving condition. However, particles below 50 µ m are no longer visible to the naked eye, they are the proverbial sand in the teeth wheels of your produ tion. Common surface finishes and tolerances are now quite a lot below the order of magnitude of these particle sizes. It's like trying to polish the lid of your car with construction sand. What are the effects of suspended substances on individual processes of machining and molding are explained on the following pages. Microscopic images shown are of all made by machines that are manufactured in reputed industrial companies in relevant process areas have been and are being used. In all cases we succeeded by microfiltration achieving a huge improvement in process reliability and product quality - in most cases less than 1% of system costs.

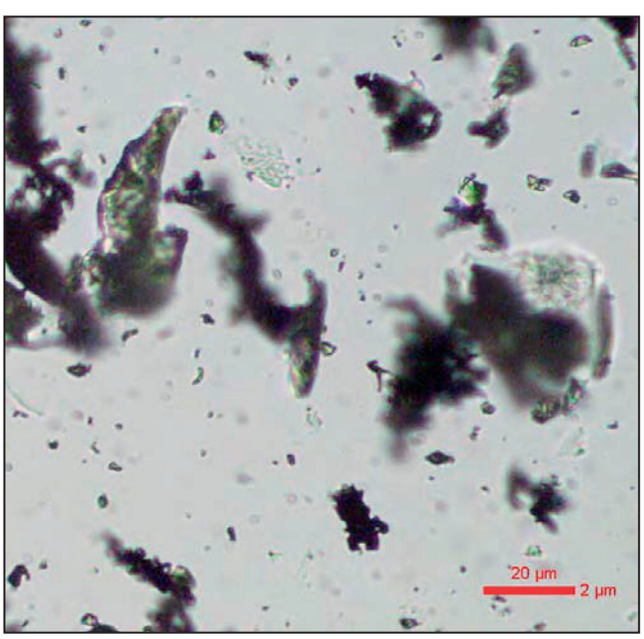
Ribbons

Perfect surfaces Up to 250% longer treatment intervals



Particles are removed from the surface by grinding time
The grinding wheel is cracked

Suspensions and particles damage the surface and the grinding wheel



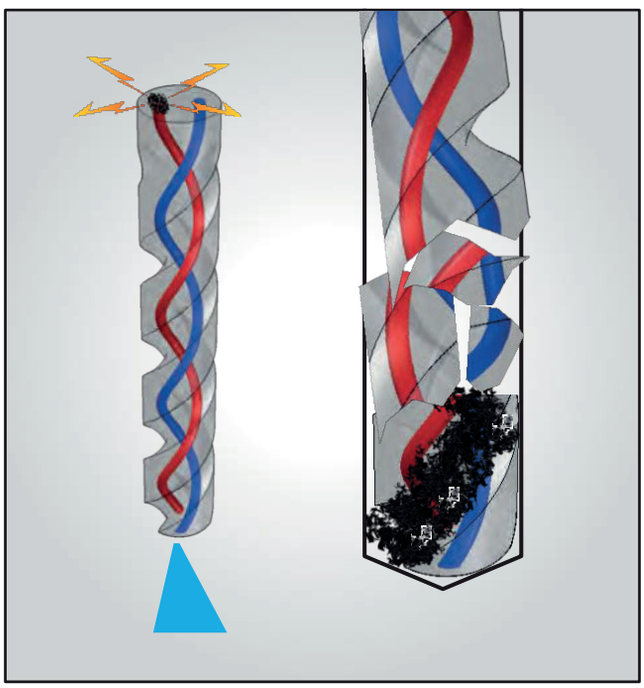
Cooling lubricant sample from ongoing large-scale production.
Particle sizes well above the desired ones
Tolerances and surface finishes, despite central
filter system! The high number of hard ones is striking
grinding wheels from the dressing process

Problem

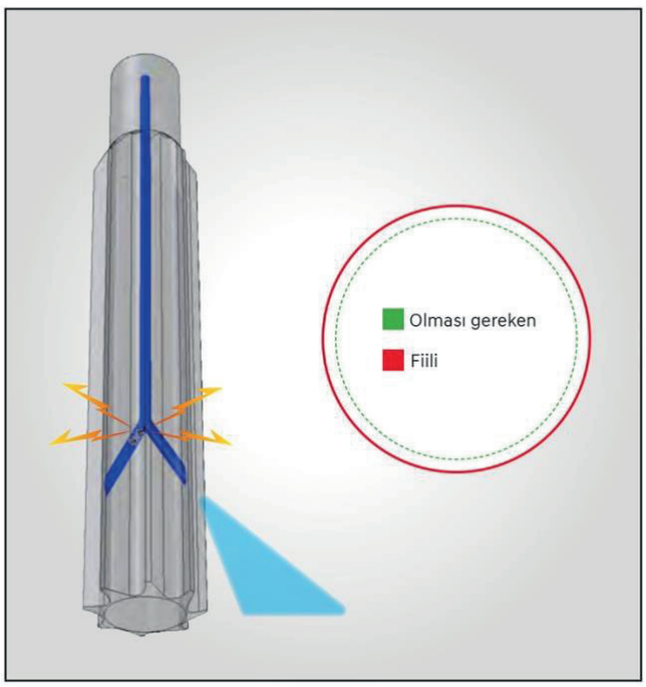
- Damage impurities in the coolant and clog the grinding wheel
- Frequent dressing drives up costs and wastes valuable production time
- Poor surface quality and adhesive Particles lead to complaints
- Time-consuming parts cleaning ties up capacity and causes avoidable costs
- The finest suspended particles (1-20 µm) are not visible to the naked eye

Machining in general

Reliable internal cooling - stable processes



Drill breakage due to clogged cooling channels



Tolerance errors due to clogged cooling channels

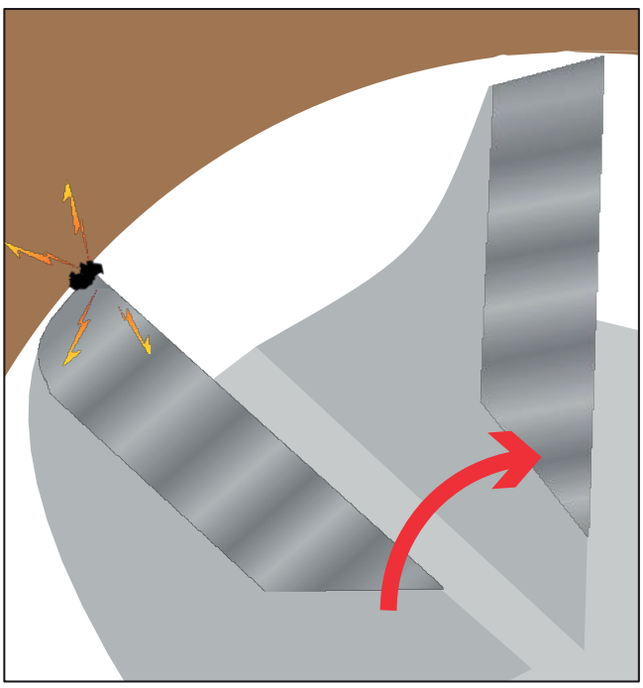
Cooling lubricant sample from ongoing large-scale production.
Particle sizes well above the desired ones
Tolerances and surface qualities, despite the band filter system!

Problem

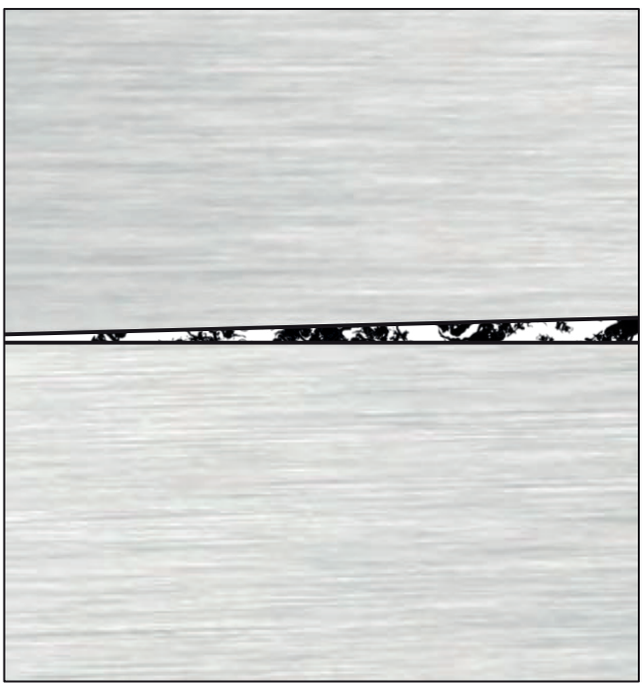
- Impurities in the coolant clog cooling channels
- Clogged reamers lead to "inexplicable" Tolerance errors and rejects
- Interrupt unpredictable tool life the production and destroy expensive workpieces
- Rotating unions and seals are destroyed by sharp-edged particles
- Tool turret blocked by flooded chips
- Cause damaged rotating unions high repair costs

Polishing milling / zero-point clamping systems

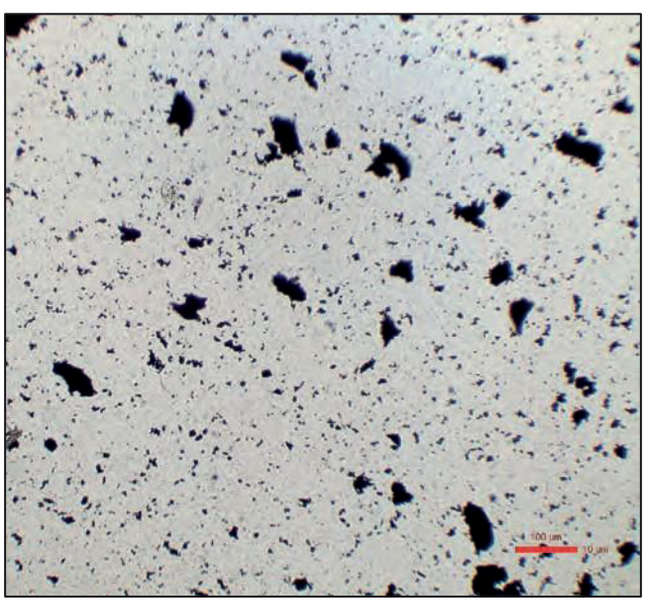
Perfect surfaces - highest precision



polishing milling:
Unclean surfaces due to dirt



Zero-point clamping systems: Deposited contamination affect the precision



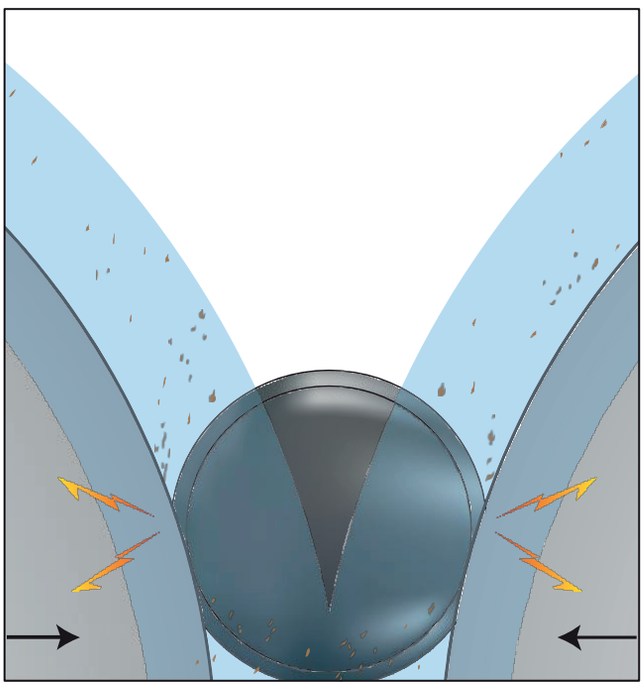
Cooling lubricant sample from ongoing large-scale production.
Particle sizes well above the desired ones
Tolerances and surface qualities, despite the band filter system!

Problem

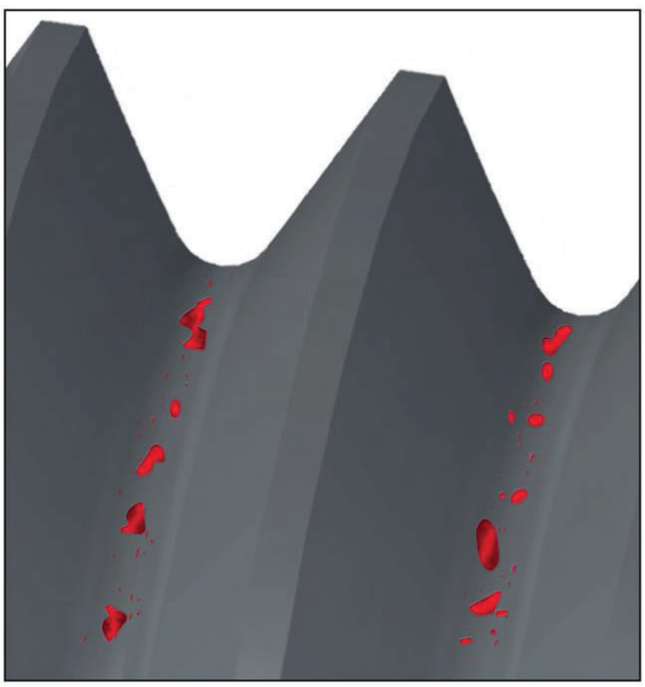
- Damage impurities in the coolant surfaces and affect the precision
- Desired surface finishes not achieved despite flawless tools
- Precision clamping systems exhibit "inexplicable" tolerance error
- Deposits lead to avoidable Malfunctions in automation systems
- The finest suspended particles (1-20 µm) are not visible to the naked eye

Thread rolling and burnishing

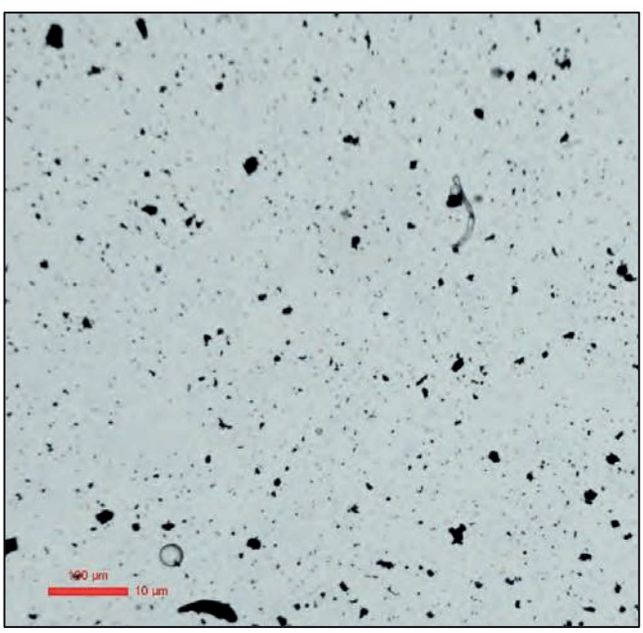
Perfect surfaces - highest precision



With the cooling lubricant, suspended matter becomes Workpiece conveyed and rolled into the surface



Dirty surfaces lead to complaints and make things more difficult cleaning and wear out the tools



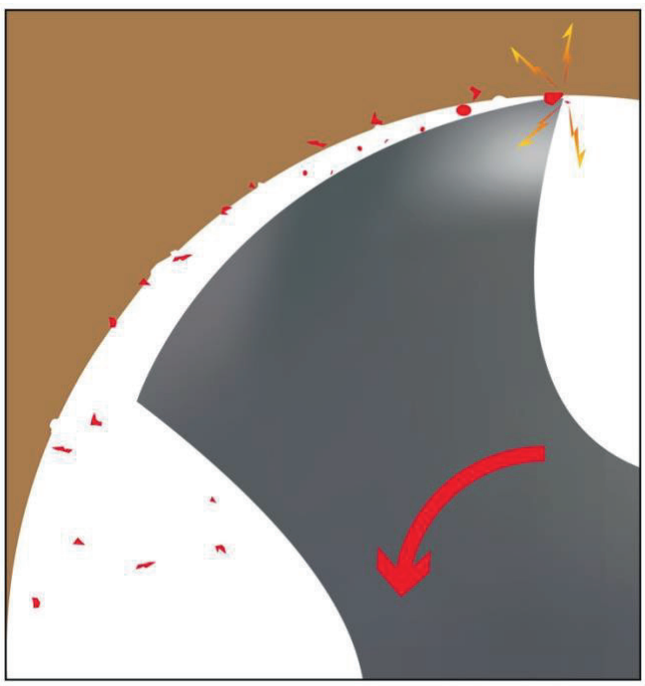
Cooling lubricant sample from ongoing large-scale production.
Particle sizes well above the desired ones
Tolerances and surface finishes.

Problem

- Damage impurities in the coolant the surface
- Premature tool wear increases the Costs
- Poor surface quality due to pressed particles
- Elaborate cleaning of parts drives up costs
- The finest suspended particles (1-20 µm) are not visible to the naked eye

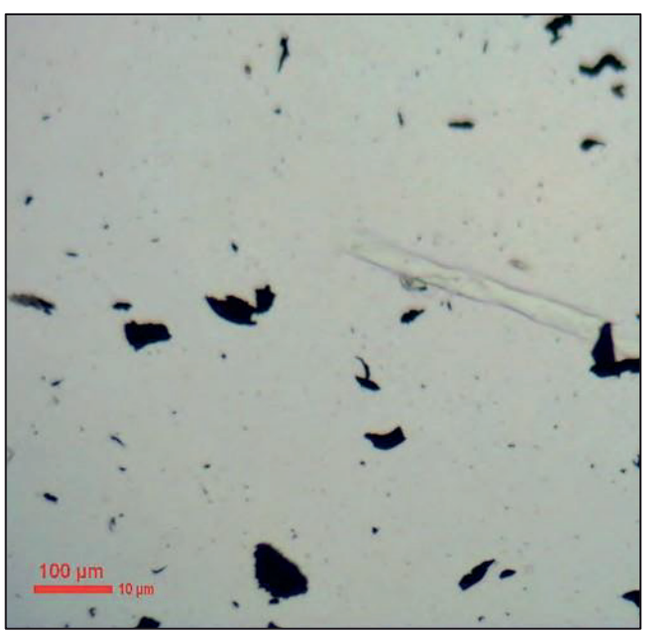
Thread cutting and forming

Perfect threads - minimal costs



Particles damage the tap when reversing and lead to cutting edges breaking off

Damage pattern with high particle load, cutting edge fractures and damage to the tap due to jamming particles



Cooling lubricant sample from ongoing large-scale production.
Particle sizes well above the desired ones
Tolerances and surface qualities, despite the band filter system!

Problem

- Damage impurities in the coolant the cutting edge primarily when reversing
- Premature tool wear increases the Costs
- Poor thread quality and pressed-in ones Particles lead to complaints
- Unexpected breakage of drill leads to interruption of operation and expensive waste
- The finest suspended particles (1-20 µm) are not visible to the naked eye

EM 5000-VA

Filter system for cooling lubricant care / cooling and heating circuits

dimension

1230 / 530 / 530 mm H/B/T

Execution

· 100% stainless steel for maximum durability
· Base with casters and drip tray
· Ventilation for quick and safe start-up
· Manometer for constant saturation control
· Shut-off valves for clean cartridge changes

Extras

Various filter inserts (see page 18 onwards)
· electronic surveillance
· Pumps for high-volume by-pass
· Can be used before or after the band filter
· Adapter for all common threads/connections

Scope of application

Our standard filter system for
· Large heating and cooling circuits
· Machine tools
· Medium and high dirt load
· Drinking and service water treatment

EM 5000-T

Filter system for cooling lubricant care / cooling and heating circuits

Dimension tank 300 l
yak. 800 / 826 / 616 mm H/B/T

Dimension tank 800 l
800 / 1185 / 791 mm H/B/T

Execution

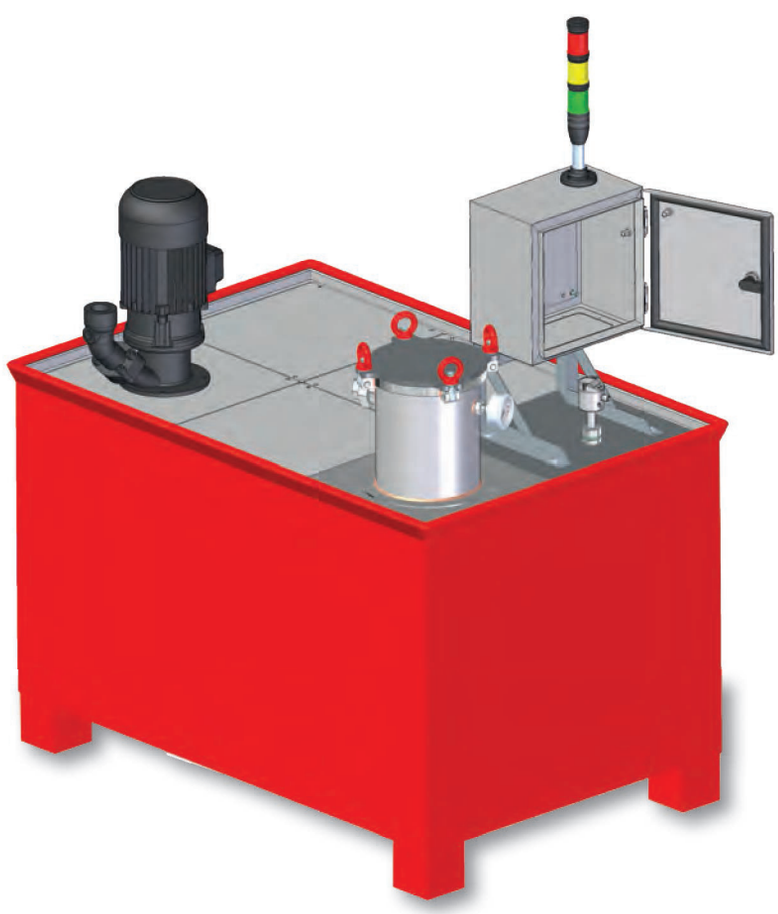
· Manometer for constant saturation control
· Shut-off valve in the inlet
· Nominal size 1" or 1 1/2"
· Electronic monitoring of the KSS level in the chip conveyor and in the tank
· Signal tower for a clearly visible display of the operating status
· Multi-stage protection against overflow
Compact format: 1/1 Euro pallet (800 liters) or 1/2 Euro pallet (300 liters)

Extras

Various filter inserts (see page 18 onwards)
· Automatic switching between two filter cartridges for 24/7 operation
· Can be combined with chip collection tank
· Flushing gun and high-pressure pumps up to 80 bar
Integration of the controller into the process control technology (TCP/IP, Ethernet)

Scope of application

Our maxi filter system for
· Volume increase for thermal
Stabilization for plants
· Grouping of several machines
· Decoupling of sensitive machines
from the central system



In-tank filter EM 5000-T

Filter system for cooling lubricant care / cooling and heating circuits

Execution

· Manometer for constant saturation control
· Shut-off valve in the inlet
· Nominal size 1" or 1 1/2"
· For space-saving installation in existing ones Tank systems or storage tanks

Extras

Various filter inserts (see page 18 onwards)
· Use as a bypass system with its own pump
· Electronic monitoring

Scope of application

· Inexpensive, space-saving alternative for dry installation (EM 5000-VA)

Opportunities for EM 5000-VA / -T

Colours

· Red (default)
· Dark blue (default)
· Anthracite (default)
· As desired

Our offer for the initial installation:

· 1 month trial period with full money back guarantee

item number	Suitable filter cartridges (explanation from page 18)	Price in €/piece (plus VAT)
15091	**Standard in packs of 10/€70 each**	74,00
15088	**ULTRA ABSOLUT 0,2 µm**	189,00
15089	**NANO ABSOLUT 0,5 µm**	149,00

Our little one is big · Filter system EM 1600-VA

Filter system for cooling lubricant care / cooling and heating circuits

Dimension

approx. 740 / 190 / 250 mm H/W/D

Execution

- 100% stainless steel for maximum durability
- Wall mount / tiltable
- Ventilation for quick and safe start-up
- Manometer for constant saturation control
- Shut-off valves for clean cartridge changes

Extras

- Various filter inserts (see page 24 onwards)
- Electronic surveillance
- Adapter for all common threads/connections

Scope of application

- Automatic saws, drills,
  Mechanical machine tools
- Schools and training workshops
  (low machine usage)
- Ancillary units and flushing guns up to 3 m³/h
- Heating and cooling water circuits up to 5 m³/h
- Drinking and service water treatment up to 5 m³/h
- Pre-filtration of osmosis systems
- Police filters in lubricant supplies

Possibilities for our EM 1600 model

Colours

- Red (default)
- Dark blue (default)
- Anthracite (default)
- As desired

Our offer for the initial installation:

- **1 month trial period with full money back guarantee**

Overview accessories

item number	Suitable accessories for EM 5000-VA / T	Price in €/piece (plus VAT)
15091	**Filter cartridge standard in a pack of 10/70 € piece filter cartridge Total 700 €**	74,00
15088	**Filterpatrone ULTRA ABSOLUT 0.2 µm**	189,00-
15089	**Filterpatrone NANO absolute 0.5 µm**	149,00-
15115	**Magnetstab 32 x 500 HiForce**	849,00-
15060	**Ølabsorber OE1400**	29,95-

item number	Passendes Zubehör für EM 1600-VA	Price in €/piece (plus VAT)
15070	**filterpatrone Standard Mini im 10er Pack/30 € Stuck Total 300 €**	32,99-
15071	**Filterpatrone NANO ABSOLUT Mini**	119,00-
15122	**Magnetstab 22 x 250 Hi Force**	595,00-

Sie wollen mehr wissen zum Thema Mikrofiltration, oder erfahren,
wie die Lösung für Ihre konkrete Situation aussehen kann?

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