KNOLLREPORT
AT TROKAMED IN GEISINGEN

User report of KNOLL Maschinenbau GmbH

High pressure for maximum process reliability

TROKAMED produces sophisticated components for medical technology, such as this automatic trocar sleeve

Retrofittable LubiCool® high-pressure units from KNOLL enable automated precision machining

In order to manufacture complex, rotationally symmetrical precision components with deep bores and fine internal contours, the machines must be equipped with a high-pressure cooling lubricant (KSS) supply – especially if they are to run unattended. Medical technology manufacturer TROKAMED swears by the retrofittable units in the LubiCool® series from KNOLL Maschinenbau, which contribute to maximum process reliability with high-pressure pumps and belt filters.

."We supply 80 percent of the medical technology sector," explains Mauriz Ostendorp, Junior Production Manager at TROKAMED GmbH in Geisingen. "We primarily develop and manufacture endoscopic product solutions for the fields of laparoscopy, gynecology, and urology, which we sell worldwide under our own name, as well as a part of customer-specific developments. We see ourselves as a technology leader in this area."

TROKAMED has particular manufacturing strengths in tube processing. This expertise is required, for example, for the manufacture of trocars and similar medical instruments that are used to create and maintain access to the body. To do this requires tubes in a wide variety of shapes, some with flush holes, etc.

But this know-how is also required for precision engineering orders, which account for the remaining 20 percent of sales. "For high-precision components such as customer-specific thermal and measuring sensors, we have to machine thin-walled tubes with complex geometries to the highest precision," says Mauriz Ostendorp.

Whether for medical or precision engineering products, all components that are crucial for precision and reliability are produced in-house at TROKAMED. To this end, the company has at its disposal 13 CNC-controlled manufacturing centres, five laser labelling machines, assembly and cleaning systems, as well as a clean room on a production area of 3,000 m².

Yasin Kaya is responsible for the CNC section and pre-assembly: "On our modern sliding and fixed headstock lathes, mill-

ing-turning and turning-milling centres, as well as EDM machines, we can machine components with diameters ranging from 4 mm to 63 mm with high precision. This means that we can maintain shape, position, and dimensional tolerances of up to 4 µm during machining and can even perform high-gloss turning."

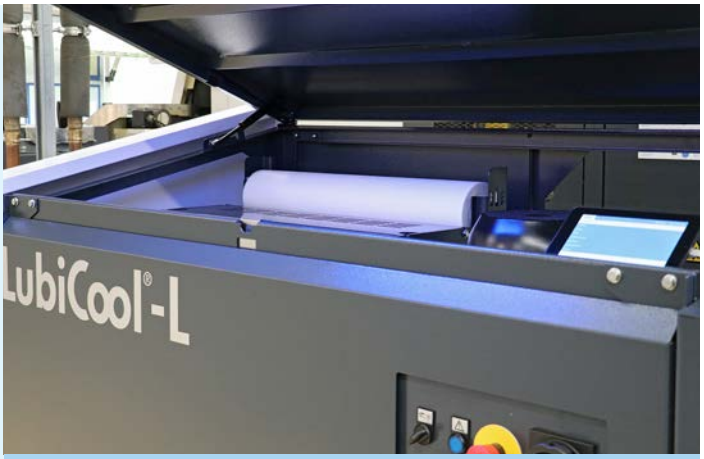
A high-pressure supply is essential in many cases

The CNC department manager attaches particular importance to the high-pressure cooling lubricant supply: "It ensures optimum chip removal, especially for deep drilling and fine machining. Tool wear and heat generation are reduced, which has a positive effect on the dimensional accuracy, repeatability, and the surface quality of our components. This enables us to ensure consistently high quality, even for demanding geometries and small tools.“

As a partner for KSS management, TROKAMED relies primarily on KNOLL Maschinenbau in Bad Saulgau. ”I have personally known KNOLL for a long time as the leading supplier of high-quality chip conveyors and cooling lubricant systems," says Yasin Kaya. "We have also had very good experiences with various KNOLL systems at TROKAMED since 2007. This is because it is part of our philosophy to purchase locally wherever possible. "Made in Germany" may cost a little more, but the quality is right and we have a contact person who advises us well and provides fast service when needed. This is 100 percent the case with KNOLL."

"According to Yasin Kaya, this was an important reason why TROKAMED decided in 2020 to have two new Miyano-Citizen fixed headstock lathes delivered, each with a LubiCool®-L high-pressure unit. TROKAMED also had the two SP-23 and

The new KNOLL LubiCool®-L (front left) was easily retrofitted on the Nakamura turning/milling centre.



TROKAMED had the new LubiCool®-L high-pressure station retrofitted on a large turning/milling centre. The cover conceals a powerful pump, an efficient belt filter, and the touchpad for the user-friendly control system.

TROKAMED uses the Nakamura Super NTJX turning/milling centre to manufacture complex, rotationally symmetrical components for medical instruments, as well as precision engineered special parts. A high-pressure supply of cleaned cooling lubricant is essential here.

(From right to left) Mauriz Ostendorp and Yasin Kaya emphasize the cooperative partnership with KNOLL (represented here by Matthias Wachter).

SV-20R automatic sliding headstock lathes, purchased from Star Micronics in 2023 and 2024, equipped with LubiCool® units, but these were in size M.

Perfectly cleaned cooling lubricant

Matthias Wachter, the KNOLL sales representative responsible for TROKAMED, explains: “Since 2019, we have been offering the LubiCool®-M mobile high-pressure station for use on metal-cutting machine tools, especially for automatic fixed and sliding headstock lathes.” First of all, this system cleans the KSS – whether oil or emulsion – using the efficient KNOLL KF belt filter. With a filter fineness of up to 25 µm, it ensures the purity of the cooling lubricant required for high-pressure applications and, thanks to its high filter quality, prevents the concentration of ultra-fine particles in the medium circuit.

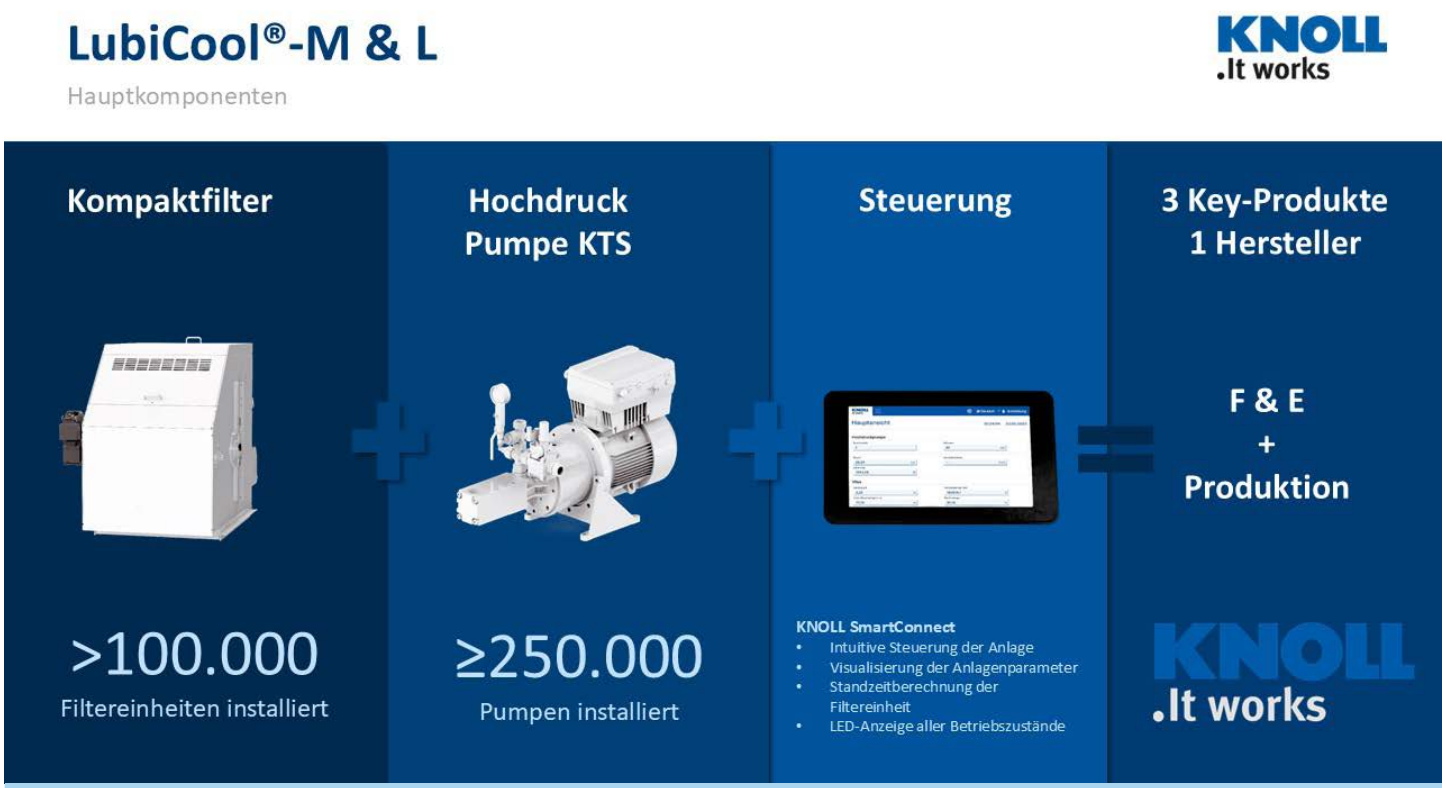
Secondly, the LubiCool®-M supplies the lathe with high pressure. “For the supply, we use a KNOLL KTS screw pump, which provides pressure up to 150 bar and a flow rate of up to 30 l/min,” says Matthias Wachter. "We produce 12,000 KTS pumps per year. This pump has proven itself many times over and ensures an extremely long service life as well as process reliability."
The KNOLL LubiCool®family also includes the smaller S size units and the large L variants, which are installed at TROKAMED on the Miyano automatic fixed headstock lathes. The latter are designed according to the same principle as the LubiCool®-M, but offer a larger tank capacity and a flow rate of up to 100 l/min when machining with oil.

An all-around clean solution

Mauriz Ostendorp, who is responsible for production, is impressed by the LubiCool®units used: “It's not just the fundamental advantages of the high-pressure supply that we appreciate; the compact design is also important for us because space is at a premium in our production facility.” He also mentions the attractive housing of the units and the tight-fitting cover, which only needs to be opened for service and maintenance purposes: “This ensures cleanliness in the hall.”

This industrial engineer sees another strength in the compact filter with filter fleece, which is suitable for all materials. "We process stainless steel, titanium, brass, aluminium, and plastics. Lightweight materials are particularly problematic when using filter cartridges or bag filters, as these have to be replaced very frequently, often after just a few weeks. This is not the case with filter fleece.“

Yasin Kaya agrees and reports from practical experience: ”Our SP23 sliding headstock lathe has been running around the



Concentrated expertise: The LubiCool®-M and -L units contain tried-and-tested components, developed and manufactured by KNOLL.

clock for nine months. Machining brass and stainless steel parts. Only 25 m of the 80 m filter roll has been used. But even with the other LubiCool®units, we only have to change the fleece perhaps once a year, which means only about five minutes of machine downtime."

LubiCool®-M units supply the two SP-23 and SV-20R automatic sliding headstock lathes from Star Micronics with cooling lubricant as required.

The integrated touchpad enables the monitoring and visualisation of the most important operating data for the system.

Worthwhile retrofitting

All KNOLL LubiCool®units are not only suitable for original machine equipment, but also for retrofitting. “We have a somewhat older Nakamura turning/milling centre, a Super NTJX, which was previously equipped with three different, unregulated high-pressure pumps and a flat bed filter,” reports Yasin Kaya. “This system was no longer state-of-the-art, so we wanted to replace it with a LubiCool®system. When we contacted KNOLL, they suggested that we become a test customer for the new LubiCool®-L."

Matthias Wachter explains the background: "Last year, we further improved the functionality of the LubiCool®-L in order to better supply larger machines, such as turning/milling centres. This means that the system is equipped with a larger compact filter, which provides more filter surface area. We have also increased the tank capacity by 40 litres to what is now 430 litres. In addition, there is the option of using a second high-pressure pump."

TROKAMED was happy to test the new LubiCool®-L variant, as according to Yasin Kaya, it fits the requirements profile perfectly and can be seamlessly integrated into existing processes. In addition to a high-pressure pump, those responsible opted for an additional low-pressure pump for flushing as optional equipment. “We have also integrated cooling via plate heat exchangers,” mentions machining specialist Kaya. "This is essential for us. Since our workforce operates in a single shift and our machines run unmanned overnight, a stable temper-

Retired: This high-pressure station with a flat bed filter had to make way for the significantly more compact and powerful KNOLL LubiCool®-L.

ature of the cooling lubricant is crucial for process reliability and dimensional accuracy."

Mauriz Ostendorp points out another aspect: “The integrated solution with plate heat exchangers not only ensures constant cooling, but also supports our combined heat and power plant by feeding back the waste heat – which makes both ecological and economic sense.”

Worthwhile retrofitting

The integration of the new LubiCool®-L into the Nakamura Super NTJX went smoothly, virtually plug & play. “Our goal was to increase process reliability, optimize tool service life, and to further improve the quality of the components,” explains Yasin Kaya. "We have definitely achieved that. We have also saved a lot of space compared to the previous solution. Our oil is now much cleaner, and there is also no oil sludge in the tank.“ Matthias Wachter adds: ”We were able to verify the improvements in our Bad Saulgau laboratory. The residual dirt in the dirt tank fell from 123 mg/l to 37 mg/l and in the clean tank from 46 mg/l to 23 mg/l."

Machining specialist Kaya highlights the seven freely selectable pressure stages in the NC program as a particular advantage: “They allow us to select the optimum pressure from 10 to 80 bar for every machining operation and every tool, which improves cutting values and saves energy.” This requires the optional pump frequency control offered by KNOLL. According to Yasin Kaya, it is definitely an investment that pays off. He expressly praises the overall package – the quality of the components used, the user-friendliness, the low maintenance requirements, and "the exemplary service offering. From the initial consultation to the ongoing support, we feel that KNOLL provides us with excellent support at all times."

For milling centres that require a larger volume of cooling lubricant, KNOLL offers an open high-pressure system with a greater filter and tank capacity. TROKAMED had the recently delivered automated Häberle Robodrill Plus-K equipped with this system.

TROKAMED produces sophisticated components for medical technology, such as this resectoscope working element

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AT TROKAMED IN GEISINGEN

Premium partner for medical technology and precision engineering

TROKAMED was founded in 1984 by Ernst Hengstler and taken over by Karlheinz Tröndle in 1996. This family-run, medium-sized company employs 90 people who develop, design, and manufacture customized solutions in its two core areas of expertise: medical technology and precision engineering. In the field of minimally invasive surgery, TROKAMED is known as an OEM partner for high-quality instruments for laparoscopy, urology, gynecology, hysteroscopy, as well as arthroscopy. This includes both its own highly innovative products and customer-specific product solutions. The company is certified according to the ISO 13485 medical technology standard and has international approvals such as those from the FDA USA, FDA Korea, and others.

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KNOLL Maschinenbau GmbH

KNOLL is the leading provider of conveyor systems, filtration units and pumps for metal processing. These transport and separate chips and cooling lubricants. The comprehensive product range offers systems for decentralised or centralised applications. KNOLL'S Automation Division deals with solutions for challenging assembly and logistics tasks. These include stationary transport systems with chain and roller conveyors. The integration of handling units (robots, cobots) and transport robots (AGVs) enables flexible systems to be created from a single source.

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