Competence in machine tool industry

Principle of precision.
Competence area of machine tool industry: New structures for increased customer focus

Principle of competence.

**Varied program** Grundfos immersible, norm and block pumps are suitable for almost every application in the area of mechanical engineering. The spectrum ranges from cooling and lubrication of tools and component cool-down, water treatment during production process, all the way to filtration, drilling, washing or wire eroding. Thus, it is possible to cover every requirement within the scope of industrial production, from single-part production to complete production line.

**Excellently organised** Surviving in today’s competitive world and providing customers not only with outstanding products, but also with comprehensive service, require fully integrated concepts. For this reason we have set up a completely new machine tool business structure with customer service units as well as a dedicated machine tool sales force. For our discerning customers from the mechanical engineering sector, this organisation positions us as leading provider of systems and complete solutions, which are complemented by our optimal distribution and logistics structure. We also want you to benefit from the competence of a strong brand that offers everything from one source.

**Profound experience** The expertise and application skills gathered by us over decades are unparalleled on the market. In combination with the new machine tool business structure, they are the assurance that today - more than ever before - we are in a position to address the needs of your industry. With an extremely diversified, innovative product program – specifically tailored to the mechanical engineering sector – we provide you with customer-oriented systems solutions that meet highest expectations at all times.
Competence area of machine tool industry: All processes individually coordinated

Maximum reliability  Basic conditions in modern metal processing become increasingly more difficult, as demands on product quality, and thus the entire production process, grow continuously. This requires absolute reliability of cooling lubricant pumps, which is warranted by Grundfos in every respect. Regardless whether they are used for disposal or the actual production process, Grundfos pumps cover the complete application spectrum in production. In doing so, all components are optimally coordinated and can be precisely adapted to your individual requirements.

Perfect service  Grundfos stands for competence in all matters. In addition to pumps of exemplary quality and reliability, we also offer our customers a worldwide service network, should the need arise. In case of a malfunction, we are always in a position to provide quick and professional solutions, thus ensuring a smooth uninterrupted production flow.

Flexible dynamics  For a majority of our pumps we also offer electronic motors with integrated frequency converters, with a power range up to 22 kW. They can be individually controlled and dynamically adjusted at all times to the prevailing operating conditions. Thus, in addition to permanent optimal cooling of tools or workpiece, they also save an enormous share of operating power. They are particularly efficient to operate and contribute greatly to the reduction of total cost of ownership (TCO).
**Principle of performance.**

**Competence area of machine tool industry: Customised production**

**MTR(E), SPK(E)** The MTR and SPK series offer deliveries up to 1500 l/min and pressures up to 25 bar, and are all equipped with EF11 motor, in doing so they achieve up to 81% efficiency. Due to variable total lengths and capacity, both pump series — in addition to circulation of cooling lubricants — are also used as condensate or filter pumps, as well as in numerous industrial cleaning processes. Their cartridge-type shaft sealing can be replaced in a simple and quick manner, if necessary. Process optimisation is ensured by the design with integrated frequency converter, which provides the correct supply pressure during each processing step.

**MTS(E)** The newly developed MTS series for high pressure supply of machine tools proves its strengths especially during the production of filigree parts. Here, the three-spindle self-priming screw pump convinces with a delivery pressure up to 130 bar. Its high efficiency ensures a very low heat input into the cooling lubricant. In addition, the very wear-resistant system guarantees maximum reliability and minimum vibrations. This series can also be optionally supplied with integrated frequency converter.

**MTH/MTC** The immersible pumps of the MTH series are characterised by a very compact design, which is especially suitable for installation in flat containers. As multistage pump in segment design, it covers a very wide range of performances with delivery rates up to 130 l/min.
Competence area of machine tool industry: Optimal solution for each application

**NB** The single stage centrifugal pumps in close-coupled design of the NB series fulfill their task in an efficient and reliable manner. This requirement is ensured by the high hydraulic efficiency, in connection with the standard EFF 1 motors. The compact design of this series allows for use in a number of industrial applications, e.g. in parts cleaning machines, as filter pumps, or in cooling and air conditioning systems.

**MTPO** Single stage, self-priming recirculation pump in closed-coupled design, with mechanical seal. Its special construction makes the MTPO suitable for delivery of highly aerated emulsions and oils. Maximum delivery is 350 l/min.

**CR/CRN/CRNE HS** The normal-priming multistage centrifugal pumps in inline-design are series equipped with EFF 1 motors, and convince by highest efficiency and unsurpassed reliability. Thanks to numerous raw material variants, like air-cooled top and MAC-drive, they have a particularly diverse application spectrum. Cooling water circuits, washing plants, industrial circulation systems, as well as general pressure increase applications belong to their application area. Furthermore this series is applicable as a filter pump for reconditioning of cooling lubricant.

**MTA** The lower performance range up to 100 l/min and delivery heights up to 10 m are attended to by immersible pumps of the MTA series. Their robust construction with open stainless steel impeller makes them suitable for media with increased viscosity and corrosiveness, as well as for high solids content. This is why the MTA series is preferred for cooling lubricant supply during lathing and parts cleaning.

**NK** The NK cast iron pumps perform their task in an efficient and reliable manner, especially for delivery of large quantities of water. Thus, they achieve up to 2000 m³/h at an operating pressure of max. 16 bar, making the norm pumps suitable for a number of industrial applications, like central installations for cooling lubricant reconditioning. Their specific process design permits easy removal of motor and impeller, without requiring additional work on the pump housing.

**MTB** The single stage, normal-priming recirculation pump in closed-coupled design is equipped with a mechanical seal and is preferably applied in parts cleaning and washing systems, cooling lubricant disposal, and waste water treatment. Particle sizes up to 20 mm ball diameter can be safely delivered with the SuperVortex impeller. The maximum delivery is 1500 l/min.
During processing, many production processes in mechanical engineering require a variety of delivery data (flow/pressure), depending on tools. To optimally meet these requirements, Grundfos supplies electronically controlled E-pumps with integrated frequency converters.

**Principle of quality.**

Competence area of machine tool industry: Absolute minimal heat input

**Efficient and powerful.** Pumps with integrated frequency converter offer additional benefits:
- Individual adjustment to required operating point
- Multi-voltage range of 3 x 380-480 Volt, 50/60 Hz mains side
- cURus and CE certification – as a standard
- Motor connection via unique plug and play system
- Controllable through sensors for pressure, flow, temperature and the like (0-10V or 4-20 mA)
- Adjustable via remote control E500

This means specifically for the machine tool industry:
- Lower heat input into cooling lubricant
- Reduced cooling efficiency
- Increased process safety
- Lower operating costs

**Intelligent application.** The E-pumps can be integrated into innovative production processes without any problem. The analogue and digital inputs permit individual control, e.g. depending on tool magazine assignment.

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**Principle of efficiency.**

Efficient and powerful

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MTRI pumps are resistant against aggressive electrolytes.

The Grundfos Pomona MTPO 23 series is a renowned manufacturer of top-quality self-priming centrifugal pumps. This series is designed for applications where the delivery of electrolyte solutions and coolants is required. The pumps are resistant to pollutants containing cooling lubricants and can handle aggressive media such as acidic and alkaline substances. Stability against salts and corrosion is very high: the media can be alkaline, acidic, or a combination of both.

Diesel engines will value the precision of the superfine nozzles for modern common rail systems. The Pomona MTPO 23 series is the perfect solution for this process; in doing so, the material structure and the quality of the finished parts are maintained. The pumps are designed to deliver cleaning agents in washing stations and to ensure the support for its international customer base. And spare parts supply – thus Extrude Hone VMB can guarantee the optimal operation of its customers.

Customer: Die neue Grundfos Industriedivision und die Systemtechnik Hydrauliksysteme in Beckum, and diverse specialised pump solutions: "When performing deep hole drilling, the pump automatically reduces its speed. Important: If the pump operates at reduced speed, the heat output to the cooling lubricant is also reduced. The advantage aspect: If the pump operates at reduced speed, the heat output to the cooling lubricant is also reduced. The advantage of this is that less, thus no separate cooler must be switched on.

When using a conventional pump, only 30% of the pump capacity is used for each machine tool. With the Pomona MTPO 23, the rated capacity of the pump can be used. According to the number of machine tools running, the requirement decreases accordingly – even the pump can be replaced without disassembly of the pump. The cartridge mechanical seal can be replaced without losing the cooling lubricant.

Delivery of abrasive, gas-containing cooling lubricants

MTRI: Application: Delivery of Electrolyte Solution and Coolants to Machine Tools

Grundfos offers the Pomona MTPO 23 series. This is a new system in the area of self-priming centrifugal pumps. The pumps are designed for applications where the delivery of electrolyte solutions and coolants is required. The pumps are resistant to pollutants containing cooling lubricants and can handle aggressive media such as acidic and alkaline substances. Stability against salts and corrosion is very high: the media can be alkaline, acidic, or a combination of both.

The Pomona series are designed for the individual requirements of different type of pumps. The Pomona MTPO 23 series is the perfect solution for this process; in doing so, the material structure and the quality of the finished parts are maintained. The pumps are designed to deliver cleaning agents in washing stations and to ensure the support for its international customer base. And spare parts supply – thus Extrude Hone VMB can guarantee the optimal operation of its customers.

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Constant pressure for machine tools

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Delivery of abrasive, gas-containing cooling lubricants

Deep hole drilling: Powerful chip disposal

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Competence area of machine tool industry: Tried, tested and proven

Customer-specific solutions

Due to their compact design, Grundfos MT products can be integrated in the cooling lubricant tank and chip conveyor in a simple and space-saving manner, at various immersion depths. The modular design makes more than 100,000 individually configurable variants possible.

Technical top performances

Each detail of our pumps contains the innovative Grundfos expertise. Our impellers, for instance, are laser welded and thus create extremely good flow behaviour and minimum friction loss. The floatingly mounted seal ring reduces the leakage loss inside the pump to an absolute minimum. The unique cartridge seal is extremely wear-resistant, and also very easy to replace.

High efficiency, low costs

Due to optimal hydraulics, Grundfos pumps offer a significantly higher degree of efficiency, reducing energy consumption and heat input into the cooling lubricant by 15 to 20%. This results in a significant reduction of operating costs over the entire service life of the installation, especially when considering that 85% of the overall costs stem from energy consumption. During actual operation, this can also cause smaller cooling requirements. Maintenance periods are reduced due to the easily replaceable cartridge seals and the application of standard tools.

Grundfos Industry: A strong industry partner

Tradition and greatness

Grundfos was founded in 1945 by the visionary and inventor Poul Due Jensen. His personal values have accompanied the Grundfos success story. Today, the company is worldwide presented as full range supplier of pumps and pump systems by more than 70 companies. The corporate group, with its headquarters in Denmark, has more than 14,500 employees around the globe, which produce annually over 10 million pumps, thus generating a sales volume exceeding 2 milliard Euro.

Philosophy

"Be – Think – Innovate" are our company principles in short. Our philosophy inspires itself. As world market leader in the field of cooling lubricant pumps, Grundfos offers a comprehensive range of specialized pumps. In addition to maximum product quality, our exceptional vertical integration is an important assurance of unparalleled Grundfos quality. In-house research and development centres are specifically set up to continuously expand our innovation potential in the process, excellently trained, competent employees are our best calling card in the market.

Logistics and distribution

The Grundfos logistics concept is designed for top performance. Our standard pumps are generally in hand due to high stock availability, for instance via E-Trading (EDI) or our web shop. The in-house distribution network is supported worldwide by ten logistics centres. A central, efficient spare parts supply in all European countries is ensured by the Grundfos spare parts centre in the Netherlands.

The worldwide presence of Grundfos guarantees an extensive distribution and service organization. Our customers in the machine tool sector are attended by a globally positioned network of specialists.