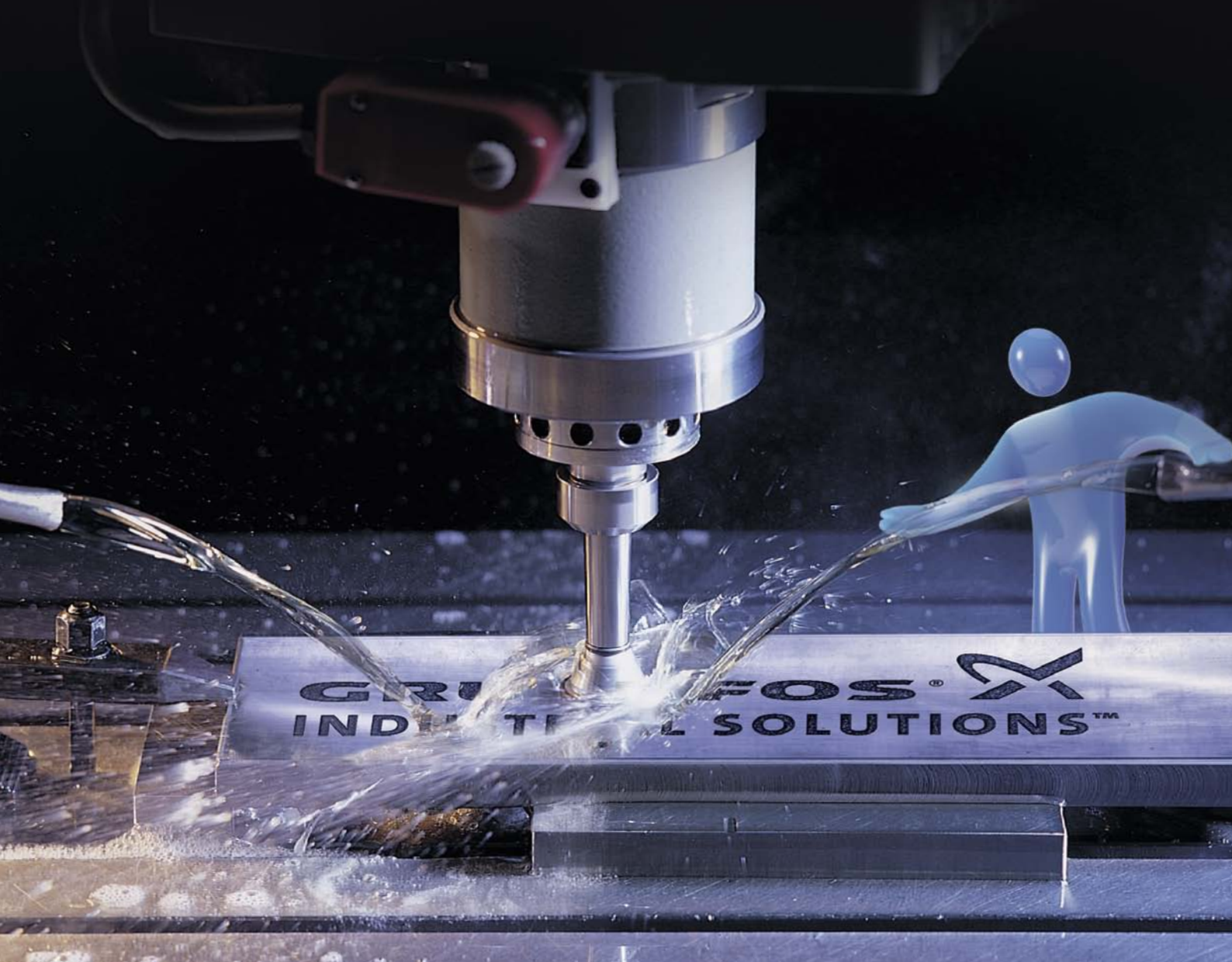


PRECISION AND FLEXIBILITY WHERE IT REALLY MATTERS





PUSH THE BOUNDARIES IN YOUR INDUSTRY

Are you looking for a pump solution that is as reliable as it is efficient? Grundfos' thoroughly tested range of pumps targeted at the machining industry is built on more than 60 years of experience within the pump business and specifically developed to operate flawlessly

in even the most demanding applications. Having provided industrial solutions for decades, we understand the challenges you face and are dedicated to using our expertise to optimise your production line. No matter where in the world you are.



Full-range machining industry solutions

Grundfos is the leading global manufacturer of pumps – a position we have earned through commitment and an urge to constantly push the boundaries for pump technology. This has provided us with unsurpassed know-how and a product range which is second to none. Specifically for the machining industry we offer pumps for:

- > Machine tool
- > Cooling
- > Filtration
- > Part washing
- > Automotive

So regardless what your industrial application needs are we have a solution that will meet your expectations – and hopefully even exceed them.

Dedicated competence all over the world

In addition to our extensive global presence, Grundfos has established machining industry competence centres around the world, offering easy access to application specialists who are dedicated to your specific industrial area. This allows you the benefit of having just one contact person for your entire pump portfolio. This person will have detailed knowledge about your applications and your requirements and will as such be able to work closely with you on development projects. Should you decide to move your production abroad, we “move” with you, offering you expert advice all over the world in the language of your choice.



Benefit from a multitude of Grundfos strengths:

- Global presence**
 - > If you move, your regional contact person remains the same, allowing you to continue the dialogue in your local language
- Close relationships**
 - > You have one contact person for your entire pump portfolio
- Professional support**
 - > You receive world-class service, know-how, technical support and logistics
- Innovative solutions**
 - > Our in-depth knowledge about your applications and requirements ensures outstanding solutions

ONE SUPPLIER COVERING THE ENTIRE PROCESS

When you team up with Grundfos, you benefit from much more than high-quality pumps and unsurpassed global service. You are also free from the hassle of having to deal with numerous suppliers for various application areas. As the world's no. 1 in pumps, Grundfos is capable of providing unmatched solutions for every one of your industrial applications. All our pumps can be adapted

and configured to meet your individual needs, and we are only happy to customise a solution that perfectly matches – or even exceeds – your requirements. Customisation has always been as much a Grundfos trademark as high quality products. And we constantly raise the bar in both areas, determined to offer you top-of-the-line solutions that will set you apart from the competition.

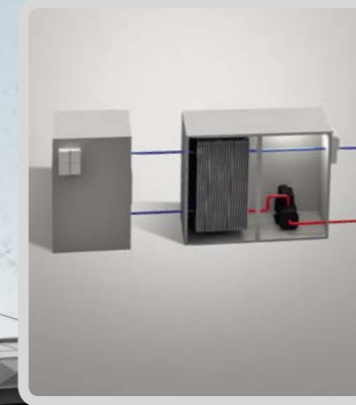
Machine tool



Machine tool

The machine tool pump range offers accuracy, stability and minimum heat impact.

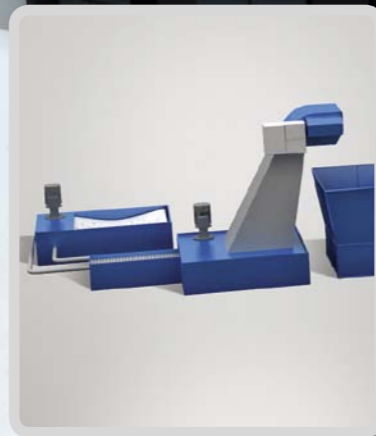
Chiller



Chiller

The Grundfos range includes numerous efficient solutions for cooling applications, based on a variety of media.

Filtration



Filtration

Our open impeller pumps are ideal for powerful chip removal in all filtration applications.

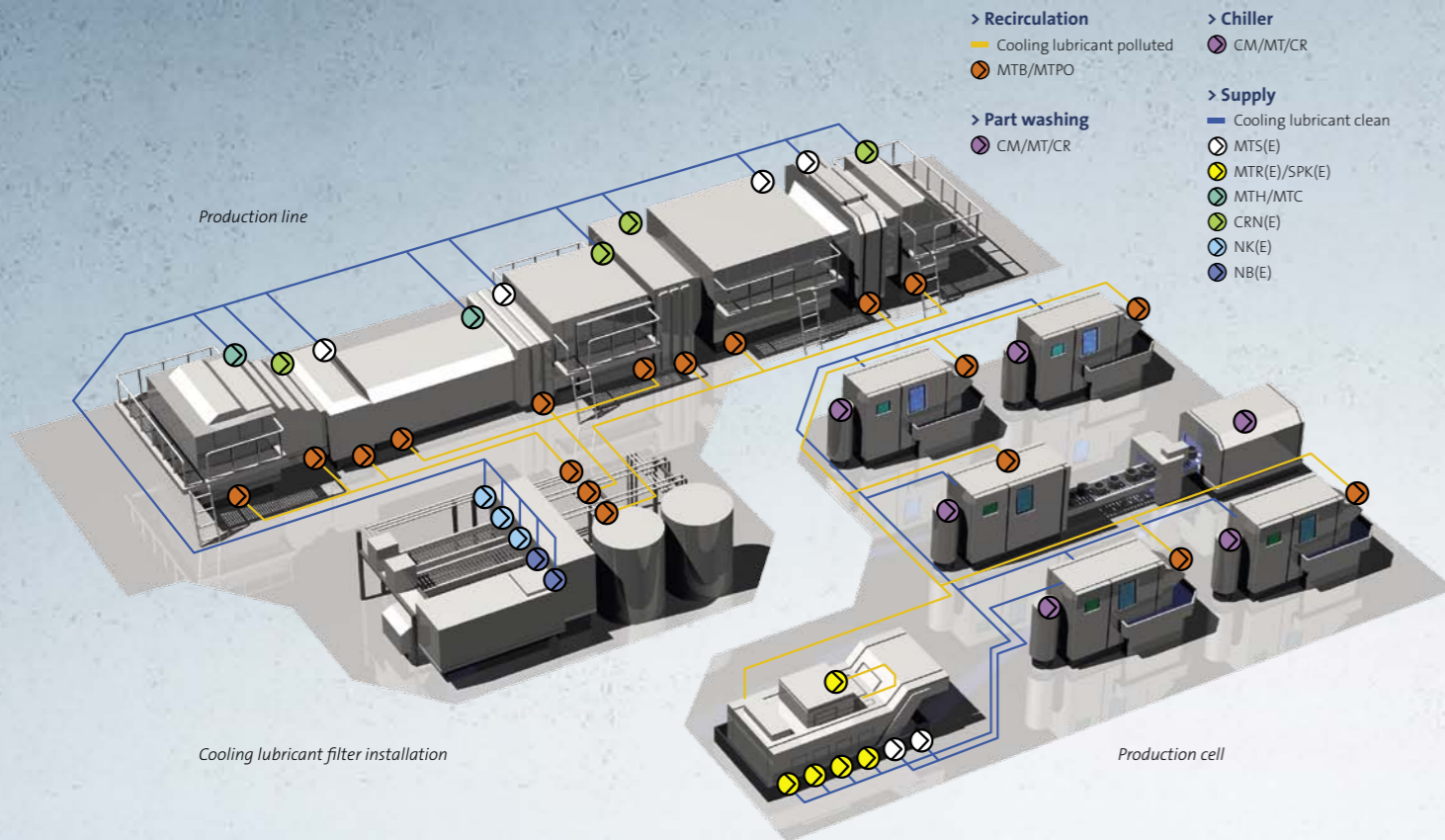
Part washer



Part washer

Choose a compact, immersible pump from Grundfos' range of part washer solutions for a perfect fit into your application.

ADVANCED SOLUTIONS FOR DEMANDING SURROUNDINGS



Every application in the machining industry is covered by a robust Grundfos product. Whether you are looking for a pump for production purposes, we are able to provide you with a choice of top-of-the-line solutions.

On top of an impressive range of high-quality pumps, we offer a wide array of motors, speed-controls and monitors, which will efficiently optimise your processes – and your energy consumption.

Application	Boring	Sawing	Milling	Grinding	Spark erosion	Wire cutting	Turning	Chilling	Part washing	Filtration
CM						●		●	●	
CR (E)					●			●	●	
MTA	●	●	●	●						●
MTB (E)										●
MTH	●		●	●	●	●	●	●	●	●
MTR (E)	●		●	●	●	●	●	●	●	●
MTS (E)	●		●	●			●			
NB/NK (E)			●	●				●		●
SPK (E)	●		●	●	●	●	●	●	●	

All pumps are available with frequency converters, particularly suitable in applications where a high degree of process control is important.



Machine tool

Grundfos' range of high-pressure pumps offers unsurpassed accuracy and stability to make sure that nothing interferes with the delicate machining process. Equally important, high efficiency ensures a remarkably low heat input into the cooling lubricant. Integrated frequency converters can be optionally supplied for increased system efficiency and flexibility. Pumps suitable for machine tool applications are the immersible MTH, MTS, MTR and SPK, offering a tank mounted design. In addition, CR and CM are also suitable.

Filtration

Reliable filtration is crucial in top quality machine tool applications, prolonging the life of the tool as well as preventing chips from damaging surfaces or tolerances. MTA and MTB with open impellers are ideal for chip conveying into the filtration system, while the single-stage NB range is suitable for large central systems.

Part washer

The Grundfos range includes pumps suitable for corrosive media and media with a high content of particles. Our frequency converted pumps with high-efficient motors ensure that systems operate under the best possible conditions with low-energy consumption. Pumps suitable for this application are MTB, NB and all immersible pumps.

Chiller

The reliable and thoroughly-tested range of pumps for chillers offers a particularly diverse application spectrum. It covers cooling water circuits, washing plants, industrial circulation systems as well

as general pressure increase applications. All pumps can be supplied with an E-motor to increase efficiency and perfectly control any process. Pumps suitable for this application are CM, CR and all immersible pumps.

MACHINE TOOL SUB APPLICATIONS

Wire cutting

In wire cutting it is essential that the media are clean. Grundfos offers a range of pumps made entirely of stainless steel to prevent corrosion. This results in a more accurate process and a longer lasting filter. As a steady temperature is required for wire cutting operation, the process will benefit from a Grundfos E-solution.

Boring

Grundfos is capable of providing the exact pressure and flow required for different materials, bore diameters and tool speeds in both through boring and blind boring. Our flexible range includes pumps with pressure of up to 130 bar, required for the deep blind hole boring.

Milling/Turning

The Grundfos range easily meets the individual cooling requirements of different materials in milling and turning – from low flow and low pressure to high flow and high pressure. The pumps can be supplied in different lengths and customised to fit specific tank sizes. In fact, the modular construction of our pumps allows for more than 1,000,000 individual configurable variants.

SIMPLY RELY ON US FOR EFFICIENCY

Experience shows that on average the purchase price of a pump amounts to as little as 5-10% of total life cycle costs – while as much as 85% stems from the energy the pump uses during operation. This is why one of Grundfos' main objectives when developing new products is to ensure low-energy consumption. And why we are eager to share our extensive know-how and experience with you before, during and after the purchase of a pump.



As a world market leader in intelligent pumps and pump systems, it is only natural that Grundfos pays great attention to operational efficiency – for the benefit of both our customers and the environment. Every year, we devote 5% of turnover to research and development to ensure constant improvement.



Improve efficiency with an E-solution

Grundfos' E-solutions are ideal in variable load operations and in applications where a high degree of process control is important. The "E" is synonymous with energy-savings, yet the advantages of innovative speed controlled pumps go much further. Specifically for the machining industry, E-solutions lead to:

- > Lower heat input into cooling lubricant
- > Increased cooling efficiency
- > Increased process safety
- > Flawless operation
- > Lower operating costs
- > Flexible interface dedicated to the machining industry

On top of this, the perfectly configured pump, motor and built-in frequency converter are easily installed thanks to a unique "plug and play" principle.

Guaranteed optimisation before you buy

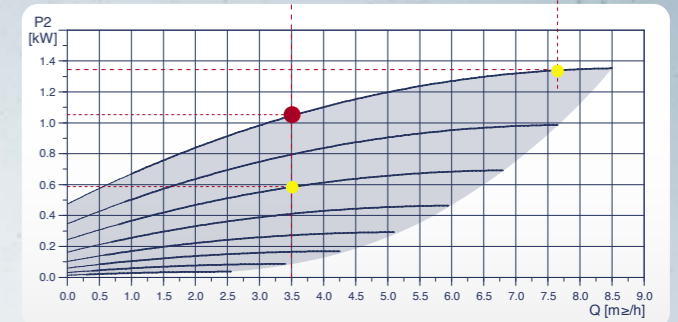
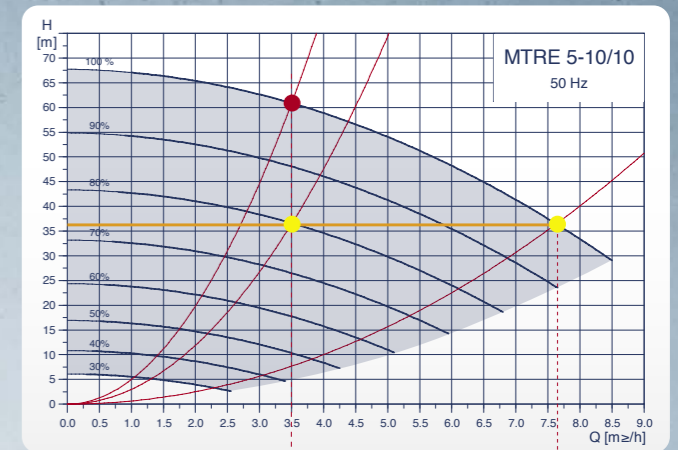
Why waste energy and money, when a potential problem in your system can easily be diagnosed? Grundfos' pump audit determines in no time if and where energy losses are occurring, and suggests what you need to do to remedy the situation. In short, a pump audit is your guarantee that you will in fact benefit from replacing your existing pumps, offering:

- > Energy savings
- > Optimisation of pump set-up
- > Suggestions as how to remedy existing flaws
- > Reduced CO₂ emissions

Intelligent warning sets new standards

The reliable CR-monitor effectively eliminates frequent inspections and unnecessary periodic maintenance of your pumps. Through monitoring and supervision of critical parameters in a process, the intelligent monitor is able to predict pump failures long before they occur. Additional benefits are:

- > Reduced maintenance costs
- > Unexpected, costly downtime reduced to an absolute minimum
- > Warnings are issued well ahead of time to your phone, computer or SCADA system



Grundfos E-solutions efficiently reduce energy consumption while maintaining optimum performance.



PROVEN BY LEADING MANUFACTURERS

A STRONG PARTNERSHIP STREAMLINES PROCESSES

A shared passion for excellence made Grundfos the natural choice when Charmilles, the world's leading supplier of systems to the tool and mould-making industry, went looking for a new pump partner. The complex processes carried out by Charmilles equipment require a great deal of pump technology for cleaning, cooling, feeding and flushing. Over a span of two decades, Grundfos has introduced several new products to accommodate rigorous quality requirements and a natural desire for optimisation. Charmilles originally used two

different pump types to meet both European and US standards. A close cooperation with the Grundfos team made it possible to supply exactly the required 50/60 Hz pump, greatly improving logistics. In much the same way, the number of pumps needed in Charmilles' EDM and wire-cutting equipment was reduced from 30 to just 6!

Read more about industrial solutions on www.grundfos.com/industry

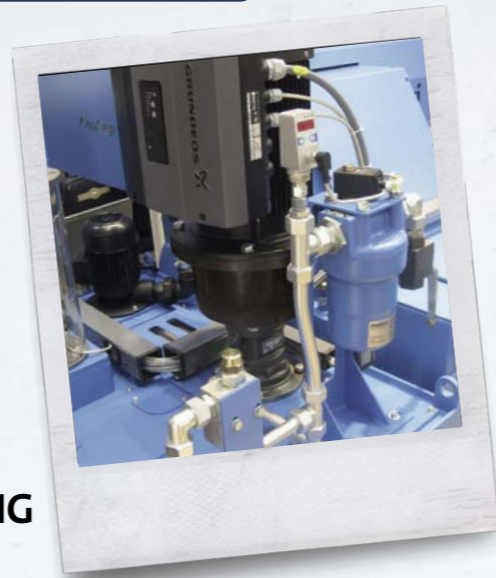


E-SOLUTION SIGNIFICANTLY REDUCES OPERATING COSTS IN COOLING LUBRICANT PROCESS

Replacing high-pressure pumps driven by a fixed-speed motor with Grundfos' E-solutions increased process efficiency and reduced operating costs by up to 75% at Mayfran, the world's leading specialist in the handling of swarf and cooling lubricants during machine tool operations. This was the impressive result of a joint development between Mayfran and Grundfos, which successfully combined a Mayfran controller with a Grundfos MTSE screw pump fitted with a speed-controlled MGE motor. The pump and controller

automatically adjust to the pressure/volume flow requirements of different drills. As well as an impressively high delivery pressure of up to 130 bar, the controlled cooling lubricant pump guarantees a high level of reliability and minimal vibration.

Read more about industrial solutions on www.grundfos.com/industry



MTR PUMPS RESIST AGGRESSIVE ELECTROLYTES

After using two pump suppliers, Extrude Hone VMB GmbH now relies solely on Grundfos when building machinery for electrolytic deburring and shaping of metallic precision parts. ECM technology places extremely high demands on the pumps, which makes Grundfos' robust MTR series ideal. The immersion pumps with stainless steel heads efficiently convey everything that flows into and out of an ECM system, ensuring reliable operation at all times. Although the pumps are speed controlled, the frequency converter is

placed away from the process to avoid corrosion from the salt fumes. On top of being highly satisfied with the pumps, Extrude Hone VMB also expressed satisfaction with Grundfos' response time to queries and the meticulous analysis and expert recommendations provided in the event of a problem.

Read more about industrial solutions on www.grundfos.com/industry

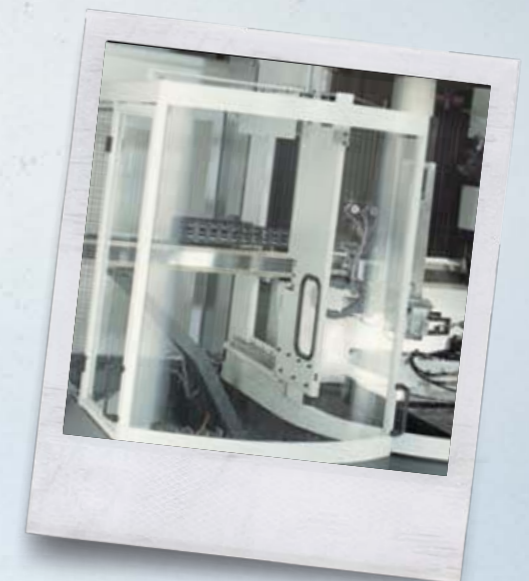


VARIABLE SPEED PUMP CUTS PROCESSING TIME

The Walter Maschinenbau GmbH, a leading global manufacturer of metal processing solutions, benefited significantly from Grundfos' variable-speed immersible pump in their grinding machines. Conventional grinding machines usually operate with a cooling lubricant supply, which is constant at 7 bar – with a correspondingly longer processing time due to the slower feed rate. The compact Grundfos MTRE pump offers a solution with a two-stage programming process: "Flute grinding" takes place at an increased pressure of

20 bar, while subsequent "clearance angle grinding" operates at 7 bar. According to the Walter Maschinenbau GmbH, this two-stage process efficiently reduces grinding time by 20%, offering the user a significant competitive advantage.

Read more about industrial solutions on www.grundfos.com/industry



THE TRULY GLOBAL SUPPLIER



Grundfos is the world's leading manufacturer of pumps and widely recognised for quality, efficiency and reliability. No matter where in the world you are located, a dedicated Grundfos specialist is on standby to assist you, ensuring professional counselling and optimum support in the local language.

Unsurpassed global service

Offering an array of service centres on every continent, Grundfos provide one of the most closely-knit service networks available in the pump business. And at every single location you are guaranteed to receive Grundfos' well-known high level of quality.

Spare parts when you need them

Cooperation with international express transport companies ensures that Grundfos spare parts can be delivered anywhere in the world in the shortest possible time, efficiently reducing the risk of downtime in your production.

Dedicated competence centres

Grundfos has dedicated machining industry competence centres in Europe, Asia and the US, offering easy access to application specialists. So wherever your business is located, you are only a phone call away from expert knowledge about your specific industry and the challenges you face.

Leading by example

As a global company, Grundfos never compromises on social and environmental responsibilities. Our commitment to the wellbeing of our employees and the environment is evident in every aspect of our production and maintenance and every year we devote significant resources to making a difference in both areas.

Grundfos facts:

- > 80 sales and service companies in 45 countries
- > 580 certified service partners worldwide
- > 18,236 employees
- > Over 16 million pumps produced every year
- > 5% of annual turnover dedicated to research and development

RELIABILITY EVERY STEP OF THE WAY

Quality is and has always been a Grundfos cornerstone. From the earliest stages of product development right through to customer service and support, we are dedicated to providing you with reliable and highly efficient solutions.

Tested according to your needs

Driven by innovation, Grundfos has a well-established and thoroughly tested process that offers the perfect foundation for development:

- > Before we recommend a solution, we go through the customer's specific requirements, making sure that we fully understand them
- > Once we have decided on a solution, we subject it to rigorous testing under the most extreme conditions, including possible working environments

This dedication and constant attention to detail is what enables us to provide our customers with exactly the products and solutions they need. Every time.



Dedication leads to excellence

Grundfos' ceaseless quest for excellence means that our customers can rest assured. When they buy Grundfos they buy superbly built products:

- > Thoroughly tested production facilities ensure the best possible basis for manufacturing high-quality products
- > Specially trained personnel are capable of bringing to life the innovative products designed by the development team

Naturally, all Grundfos production facilities meet the strictest environmental standards.

We are where you are

As a trusted supplier we understand the importance of reliability. Our global operation means that help, after-sales service and support are never more than a phone call away. Grundfos is always ready to offer full assistance, backed by comprehensive knowledge and long-term experience. On every continent and in your language.



WebCAPS – ALL THE INFORMATION YOU NEED IS ONLINE

Grundfos WebCAPS is an online product selection tool, yet it offers much more than that. The site includes all the product-related information you could ever need:

Catalogue

- > More than 140,000 product numbers. Includes all the products available in your region, complete with technical information, drawings, descriptions, performance curves, etc.

Literature

- > Find everything from data booklets through installation and operating instructions to product brochures. The newest version is always available.

Service

- > The place to find service instructions (including video tutorials), service parts lists, assembly drawings, etc.

Sizing

- > Enter your system requirements for instant recommendations. Includes Life Cycle Cost calculations.

Replacement

- > Enter the make and model of your old pump for an instant replacement recommendation.

CAD drawings

- > Download DXF and DWG files as required.



For offline use, WinCAPS is a CD-ROM version of WebCAPS. Contact Grundfos to order.

WebCAPS facts:

- > Catalogue – 36,000 monthly visits
- > Literature – 60,000 monthly document downloads
- > Service – 7,000 monthly visits
- > Sizing – 19,000 monthly visits
- > Replacement – 3,800 monthly visits
- > CAD drawings – 12,000 monthly downloads

GRUNDFOS MACHINING INDUSTRY SOLUTIONS

Reliability, efficiency and quality are all obvious trademarks when you choose Grundfos as your pump supplier. Our complete range of pump solutions for the machining industry is built on solid know-how and a constant desire to push the boundaries for innovative pump technology. As the world's number 1 in pumps, we guarantee that you will be backed by application specialists every step of the way – from the initial purchase through implementation to subsequent service and support. And the benefits of dealing with Grundfos go further:

- > Support in your local language
- > Spare parts delivered as soon as possible
- > 80 sales and service companies in 45 countries
- > Access to comprehensive documentation and web tools
- > Dedicated machining industry competence centres in Europe, Asia and the US

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