Albania
English
50Hz

GRUNDFOS SOLUTIONS
For Industry

WATER TREATMENT

Water Intake / Supply / Transfer

Water Treatment

Wastewater Treatment & Reuse

TEMPERATURE CONTROL

Industrial Heating

Industrial Cooling

INDUSTRIAL PROCESSES

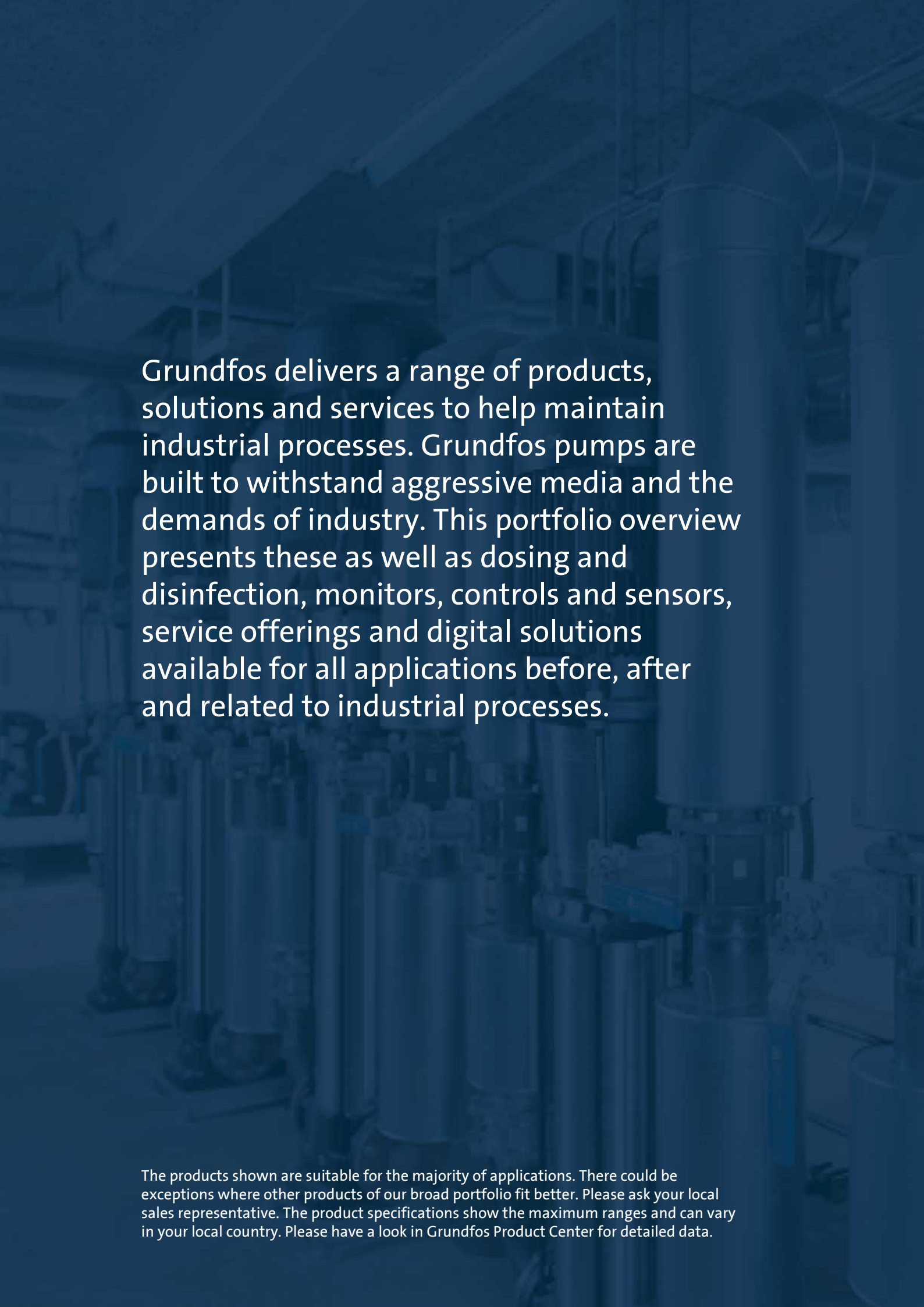
Machining

Cleaning Processes

Process Fluid Transfer

GRUNDFOS

Possibility in every drop



Grundfos delivers a range of products, solutions and services to help maintain industrial processes. Grundfos pumps are built to withstand aggressive media and the demands of industry. This portfolio overview presents these as well as dosing and disinfection, monitors, controls and sensors, service offerings and digital solutions available for all applications before, after and related to industrial processes.

The products shown are suitable for the majority of applications. There could be exceptions where other products of our broad portfolio fit better. Please ask your local sales representative. The product specifications show the maximum ranges and can vary in your local country. Please have a look in Grundfos Product Center for detailed data.

Service & Solutions

By taking a greater responsibility for the operation and efficiency of your pumps, we allow you to focus your attention on what is important to you rather than worrying about your pumps.

We bring peace of mind to you by minimisingdowntime, optimising performance and helping you contribute to a more sustainable world.

We add value through:

- Enhanced asset management
- Energy and water savings
- Digital services

Service Agreements	Repair Services	Operation Services	Optimisation Services
Customized Service Agreement	Spare Parts	Installation	Training
Standard Service Agreement	Repair	Extended Warranty	
		Laser Alignment	
		Inspection	
		Commissioning	

Optimisation Services

Training

Repair Services

Spare Parts	With Grundfos original spare parts, you get more than just spare parts. You get the right spare part solutions and service kits with these benefits:	• Increased efficiency • Greater reliability / minimised downtime • Documented performance • Fast delivery
Repair	**Downtime is inconvenient and expensive so to minimise this,** we offer two types of repair service: on-site and workshop repair.	**Workshop repair:** Workshop repairs are the ideal choice for smaller pumps that can be shipped easily. **On-site repair:** Having our service technician come to you to do on-site repair is the best option for large installed pumping systems.

Service Agreements

Customized Service Agreement	**A Customised Service Agreement is tailor-made to suit your needs**. Pick and mix from our extensive service offering and pay only for what you need. The customisable service agreement gives you direct access to Grundfos professionals and our trusted partners for the selected service offerings.	**Choose elements across:** • Repair services • Operation services • Optimisation services
Standard Service Agreement	**A Standard Service Agreement consists of one or two yearly inspections by a qualified service technician.** The service technician checks your equipment, assesses the need for repair and/or preventive maintenance.	**The check includes:** • Equipment check • Inspection report covering pumps, motors, wear partsand integrated controls • Recommendations for performance optimisation, if required

Operation Services

Installation	**We offer Installation by a skilled service technician to ensure correct installation according to I&O manual.** This will ensure that your Grundfos pump achieves optimal performance.	**Installation includes:** • Delivery to your facility • Installation and mounting on the correct type of base • Mechanical work, incl. alignment of pipes and flanges • Electrical installation • System start-up
Extended Warranty	**How you benefit from our Extended Warranty** • Peace of mind: up to 5 years of warranty • Easy overview: clearly defined warranty terms and conditions throughout warranty period • Fast response: well-defined contacts and short response time in case of warranty claims	**See how the Grundfos Extended Warranty works for you!** • 12, 24 or 36 months of additional warranty coverage • Insurance against defects in materials or workmanship • Same terms and conditions as standard warranty • Well-defined contacts and short response time in case of warranty claims • Can be purchased with pump or along with Service Contract
Laser Alignment	Alignment between pump and motor can cause unnecessary wear and damage other parts of the system. To significantly reduce these risks, we offer Laser Alignment to ensure 100% accuracy.	**Benefits:** • Prolonged lifetime, less wear and tear • Lower noise level • Lower lifecycle costs
Inspection	Your whole system is analysed according to a specific checklist by expert personnel. This gives you an overview of any adjustments or spare part replacements necessary to improve your system and provide financial benefits.	**Benefits:** • Reduce energy consumption • Reduce operating costs • Prolong lifetime • Pumps run at peak performance
Commissioning	Expert service technicians verify that the installation is consistent with I&O manual, and that everything is set up correctly. This will ensure that your pumping system is running as efficiently as possible.	**Benefits:** • Grundfos-approved installation • Reduced operation costs • Eliminated wear on pumps • Prolonged lifetime

Service offerings

Service agreements and offerings covering operation, repair and optimisation as well as digital offerings are shown for the equipment categories relevant for the specific application.

	Multistage Pumps	Single-stage Pumps	Circulator Pumps	Submersible Groundwater Pumps	Submersible Wastewater Pumps	Hydro Boosters	Dosing Pumps	Disinfection Systems
Optimisation Services								
Training	○	○	○	○	○	○	○	○
Repair Services								
Spare Parts	●	●	●	●	●	●	●	●
Repair	●	●	●	●	●	●	●	●
Service Agreements								
Customized Service Agreement	●	●	●	●	●	●	●	●
Standard Service Agreement	○	○	○	○	○	○	○	
Operation Services								
Installation	●	●	●	●	●	●	●	●
Extended Warranty	○	○	○	○	○	○	○	○
Laser Alignment		○						
Inspection	●	●	●	●	●	●	●	●
Commissioning	●	●	●	●	●	●	●	●

● Available ○ Special conditions and limitations

Water Intake / Supply / Transfer

A production plant needs water to operate. Grundfos offers a complete portfolio of pumps to reliably supply water to the plant; the right amount, at the right pressure and at the right time. Whether the source is a well, mains or a river or lake, and no matter the quality of the water, Grundfos has efficient and high-quality equipment that supplies and transfers the water as needed, with no surprises.

"Not only have we seen an immediately improved water supply with stable and constant pressure; we have been able to monitor and trend the flows, enabling continuous improvements on our processes."

Calvin Winch, Engineer, Operations Development GB & I, Britvic Soft Drinks Ltd

Monitors, Controls and Sensors

Communication Interfaces - **CIM/CIU**

Communication Interface Module/Communication Interface Unit is the range of communication options from Grundfos. They enable you to connect your product to the wide range of field bus standards.

Motor Protection - **MP 204**

MP 204 protects the motor against overload, dry running and incipient motor defects based on many parameters like: supply voltage, phase sequence or harmonic distortion. It disconnects the contactor if, for example, the current exceeds the preset value. It can be used stand-alone or for example incorporated in a Control DC.

Motor Protection - **Control MP 204**

Pump controller system designed for water utility market. Complete protection of one pump.

Pump control - **Control CUE**

Grundfos Control CUE is a series of external frequency converters designed for speed control of a wide range of Grundfos pumps. The Frequency converter is delivered installed in a cabinet with main switch, circuit breaker, and an optional filter. Power range: 2.2 kW - 90 kW.

Pump control - **CU 200, 300, 301**

The control units are designed for communication, monitoring and control of submersible pumps. The CU 200 is suitable for the SQFlex system, it also enables the connection of a level switch. The CU 300 is suitable for SQE submersible pumps in various applications, the CU 301 for SQE in constant pressure applications.

Pump control - **Control MPC**

Control MPC controls up to six identical pumps connected in parallel. It uses advanced algorithms to optimise performance and minimise energy consumption

GROUND WATER INTAKE

Level Control - **LC 232 / LC 242**

LC 232 / LC 242 level controllers offer a comprehensive range of features for groundwater installation, monitoring and control of one or two pumps.

Flow Sensors - **MAG 3100, 5100, 8000**

Several variants of the Mag Flow system are available, depending on needed requirements and specifications. In general, the system consists of a flow meter and a transmitter of choice. MAG 3100 covers all the applications which the other industry specific sensors do not cover.

Pressure Sensors - **ISP40, ISP44**

Grundfos ISP40 and ISP44 are robust industrial pressure transmitters which can be used in a wide temperature range and portfolio of wet medias including corrosive properties. They can also handle some degree of water hammering.

Temperature Sensors - **ITS**

ITS is an integrated temperature sensor from Grundfos Direct Sensors. It is fully compatible with wet, aqueous media and based on MEMS sensing technology in combination with the corrosion-resistant Silicoat® coating technology on the sensor chip.

Temperature Sensors - **Danfoss MBT 3270**

The MBT 3270 is an easy and cost-effective way to equip our MGE and CUE control products with a robust temperature measurement possibility. The sensors are resistance based with a Pt 100 output.

SURFACE WATER INTAKE

- The Hydro MPC optimises the energy consumption by determining the most efficient speed and required number of pumps.

Pumps

Endsuction close coupled single-stage pumps - **NB/NBE**

End-suction close-coupled pumps according to EN 733. The pump has an axial suction port, radial discharge port, horizontal shaft and a back pull-out design enabling removal of the motor, motor stool, cover and impeller without disturbing the pump housing or pipework.

Flow max.: 1401 m³/h	**Head max.: 177 m**
Liquid temperature: -25..120 °C	**p max.: 16 bar**

Endsuction long coupled single-stage pumps - **NK/NKE**

Standard pumps according to EN 733. The pump has an axial suction port, a radial discharge port and horizontal shaft. It is of the back pull-out design enabling removal of the coupling, bearing bracket and impeller without disturbing the motor, pump housing or pipework.

Flow max.: 1401 l/s	**Head max.: 177 m**
Liquid temperature: -25..120 °C	**p max.: 16 bar**

Horizontal splitcase pumps - **LS**

Grundfos LS is a horizontal, single-stage or double-stages, between bearings, split case pump. The axially split design allows easy removal of the top casing and access to the pump components without disturbing the motor or pipe work.

Flow max.: 9503 m³/h	**Head max.: 238 m**
Liquid temperature: 0..100 °C	**p max.: 25 bar**

Service offerings

- **Customized Service Agreement**
- **Laser Alignment**
- **Commissioning**

Monitors, Controls and Sensors

Communication Interfaces - **CIM/CIU**

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Motor Protection - **MP 204**

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Pump controller system designed for water utility market. Complete protection of one pump.

Pump control - **Control CUE**

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SURFACE WATER INTAKE

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Level Control - **LC 232 / LC 242**

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Service offerings

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SEAWATER INTAKE

Pumps

Endsuction close coupled single-stage pumps - **NBG/NBGE**

Close-coupled pumps according to ISO 2858. Flanges are PN 16 with dimensions according to AS2129 table E. The pump has an axial suction port, radial discharge port, horizontal shaft and a back pull-out design enabling removal of the motor, motor stool, cover and impeller without disturbing the pump housing or pipework.

Flow max.: 4184 m³/h **Head max.: 230 m**
Liquid temperature: -25..140 °C **p max.: 25 bar**

Endsuction close coupled single-stage pumps - **NB/NBE**

End-suction close-coupled pumps according to EN 733. The pump has an axial suction port, radial discharge port, horizontal shaft and a back pull-out design enabling removal of the motor, motor stool, cover and impeller without disturbing the pump housing or pipework.

Flow max.: 1401 m³/h **Head max.: 177 m**
Liquid temperature: -25..120 °C **p max.: 16 bar**

Endsuction long coupled single-stage pumps - **NK/NKE**

Standard pumps according to EN 733. The pump has an axial suction port, a radial discharge port and horizontal shaft. It is of the back pull-out design enabling removal of the coupling, bearing bracket and impeller without disturbing the motor, pump housing or pipework.

Flow max.: 1401 l/s **Head max.: 177 m**
Liquid temperature: -25..120 °C **p max.: 16 bar**

Customised Solutions - **Custom-Built Pumps**

Customised pumps to meet specific application challenges (temperatures, pressures, difficult liquids) or installation requirements (ambient conditions) not covered by the standard pump range. It is a modular platform built on stocked components. For more information please contact Grundfos sales.

Monitors, Controls and Sensors

Level Control - **LC 232 / LC 242**

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Temperature Sensors - **ITS**

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- Hydro MPC E and Multi E help meet energy targets and are ready for future growth as it can deliver min and max flows keeping a high efficiency in mind. Additionally, the system can be delivered with a standby pump that can be easily used as a duty pump and by that extend the flow significantly.

Pumps

Endsuction close coupled single-stage pumps - **NB/NBE**

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Horizontal splitcase pumps - **LS**

Grundfos LS is a horizontal, single-stage or double-stages, between bearings, split case pump. The axially split design allows easy removal of the top casing and access to the pump components without disturbing the motor or pipe work.

Flow max.: 9503 m³/h **Head max.: 238 m**
Liquid temperature: 0..100 °C **p max.: 25 bar**

Monitors, Controls and Sensors

Communication Interfaces - **CIM/CIU**

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Motor Protection - **MP 204**

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Pump controller system designed for water utility market. Complete protection of one pump.

Pump control - **Control CUE**

Grundfos Control CUE is a series of external frequency converters designed for speed control of a wide range of Grundfos pumps. The Frequency converter is delivered installed in a cabinet with main switch, circuit breaker, and an optional filter. Power range: 2.2 kW - 90 kW.

SUPPLY & TRANSFER

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Pressure Sensors - **ISP40, ISP44**

Grundfos ISP40 and ISP44 are robust industrial pressure transmitters which can be used in a wide temperature range and portfolio of wet medias including corrosive properties. They can also handle some degree of water hammering.

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Temperature Sensors - **Danfoss MBT 3270**

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Systems

Booster Systems - **Hydro MPC, Hydro Multi-E**

Advanced and energy efficient pressure boosting system for boosting of clean water. Available with 2 - 6 (2 - 4 for Multi-E) parallel connected pumps, integrated advanced controller and all necessary fittings.

Flow max.: 1464 m^3/h	**Head max.: 161 m**
Liquid temperature: 0..60 °C	**p max.: 16 bar**

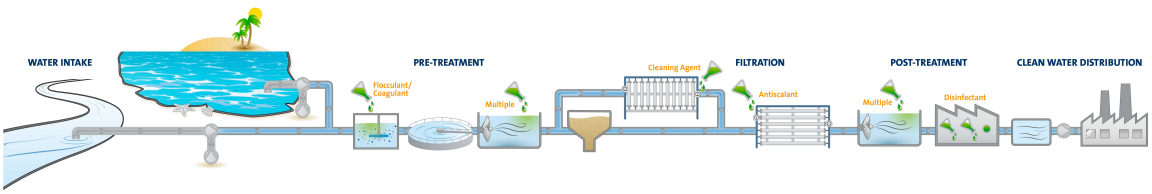
Water Treatment

Grundfos has an extensive range of water treatment pumps and solutions for the entire water treatment cycle from intake and distribution to handling of wastewater. Water treatment is technology-driven and heavily regulated, and pump, dosing and disinfection solutions have been designed to meet every demand and comply with regulations. Grundfos has years of water treatment application experience and guarantees the perfect match between component and sub-system, whether you are looking for packaged solutions or individual pumping products for each stage of the treatment process.

"Our small reverse osmosis 1000 lit./h system with activated carbon and softener for pretreatment. Thanks to Grundfos 'smart' pump we are controlling RO only with pump, there is no additional controller or PLC needed."

Feller

Vladimir Kruljac, CEO FELLER d.o.o.



- Bubble formation due to **outgassing chemicals** like sodium hypochlorite could lead to inefficient and unreliable processes. With **FLOW CONTROL** in DDA dosing pumps this can be eliminated.
- **Measurement of pulsating flows** can be challenging for conventional flow meters. With **FCM** this functionality is **integrated in DDA dosing pumps** simplifying the installation with **less components**.
- **All relevant approvals**, certifications and documentation is **included** in our prefabricated **dosing skid systems** ready to install.

Pumps

Customised Solutions - **Custom-Built Pumps**

Customised pumps to meet specific application challenges (temperatures, pressures, difficult liquids) or installation requirements (ambient conditions) not covered by the standard pump range. It is a modular platform built on stocked components. For more information please contact Grundfos sales.

Service offerings

Customized Service Agreement

Commissioning

Monitors, Controls and Sensors

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Systems

Dosing Skid Systems - **DSS and Systems**

There are applications and installations that require a completely unique Engineered to Order (ETO) solution for project based work. The custom DSS may be constructed in nearly any configuration and include any dosing pump offered by Grundfos. The Custom ETO systems are reliable solutions built with Grundfos quality and sure to meet your project needs.

Service offerings

Customized Service Agreement

Commissioning

PHYSICAL TREATMENT

- High **pressure demands** can be fulfilled **with a compact pump design** (less stages) by operating at **over-synchronous speed**. Factory configured CRE's with **reinforced chambers** and impellers can be an option. The motor size must be adjusted accordingly.
- Our variable frequency drives (VFD) can **automate backwash** through the use of sensors, so that **no PLC is needed** in simple filtration systems.
- The **DDA FCM** can **accurately dose** the **right amount of chemicals** so that the membranes are clean and protected, while the **DID** probes and controller can **adjust** the dosing pump **based on changing water quality parameters**.

Pumps

Endsuction close coupled single-stage pumps - **NB/NBE**

End-suction close-coupled pumps according to EN 733. The pump has an axial suction port, radial discharge port, horizontal shaft and a back pull-out design enabling removal of the motor, motor stool, cover and impeller without disturbing the pump housing or pipework.

Flow max.: 1401 m³/h **Head max.: 177 m**
Liquid temperature: -25..120 °C **p max.: 16 bar**

Endsuction long coupled single-stage pumps - **NK/NKE**

Standard pumps according to EN 733. The pump has an axial suction port, a radial discharge port and horizontal shaft. It is of the back pull-out design enabling removal of the coupling, bearing bracket and impeller without disturbing the motor, pump housing or pipework.

Flow max.: 1401 l/s **Head max.: 177 m**
Liquid temperature: -25..120 °C **p max.: 16 bar**

Endsuction long coupled single-stage pumps - **NKG/NKGE**

Standard pumps according to ISO 2858 with axial suction port, a radial discharge port and horizontal shaft. It is of the back pull-out design enabling removal of the coupling, bearing bracket and impeller without disturbing the motor, pump housing or pipework.

Flow max.: 1401 m³/h **Head max.: 231 m**
Liquid temperature: -25..140 °C **p max.: 25 bar**

Horizontal multistage pumps - **BM**

High pressure booster modules are used for boosting, liquid transfer and circulation in systems under a high static pressure. Modules of different sizes can be combined and connected either in series or in parallel to meet exact Q/H requirements.

Flow max.: 280 m³/h **Head max.: 430 m**
Liquid temperature: 0..45 °C

Horizontal multistage pumps - **BMS**

The Grundfos BMS range consists of hp (high pressure) and hs (high speed) versions. BMS hp are suitable for industrial and water supply applications where the inlet pressure is high. BMS hs enables the creation of high pressure.

Flow max.: 343 m³/h **Head max.: 1053 m**
Liquid temperature: 0..40 °C

Horizontal multistage pumps - **BMSX**

A BMSX booster system consists of a BMS hs high-speed pump, a BM hp high-inlet-pressure pump and an isobaric pressure exchanger. It has a unique design dedicated to seawater and brackish water desalination.

Customised Solutions - **Custom-Built Pumps**

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Optimisation services - **Energy Optimisation Offering**

A Grundfos Energy Check or Energy Audit will help you find hidden savings in your pump installation. It can also help to reduce your operating expenses and reach your sustainability targets.

PHYSICAL TREATMENT

Monitors, Controls and Sensors

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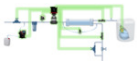
Systems

Application-specific bundles - **iSOLUTIONS for Reverse Osmosis (iRO)**



Standardised plugandplay kits for low pressure reverse osmosis systems. Standardised solutions are available in six prepackaged kits consisting of Grundfos components selected to cover the requirements of different flow and pressure systems.

Dosing Skid Systems - **DSS and Systems**

There are applications and installations that require a completely unique Engineered to Order (ETO) solution for project based work. The custom DSS may be constructed in nearly any configuration and include any dosing pump offered by Grundfos. The Custom ETO systems are reliable solutions built with Grundfos quality and sure to meet your project needs.

Disinfection Systems

Gas Warning Systems - **DIA-G**

DIA-G gas warning systems monitor the concentration of dangerous gasses with up to two gas sensors. The range also includes accessories like battery backup, horn and flashlight to complete the installation. Available monitoring parameters: chlorine, chlorine dioxide, hydrochloric acid, ammonia and ozone.

DISINFECTION

- Oxiperm Pro offers onsite production of chlorine dioxide, that **avoids chemicals transport**and unnecessary handling.
- **Chlorine dioxide** has a **high efficiency** at a **broad pH range**, while it does not react with organics to form THMs or ammonia nitrogen.

Monitors, Controls and Sensors

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SEA WATER DESALINATION

- By bundling the BMS hs, BMS hp and pressure exchanger, **energy consumption can be reduced** to as low as 2 kWh/m³ of produced water – with capacities up to 1,500 m³/day.
- A product range designed for its environment with **resistant components** made of super duplex stainless teel, polymer and ceramic.
- **Protect** your **membranes** with **accurate dosage** of chemicals with the DDA FCM, while being able to react to water quality changes with the DID probes and controller.

Pumps

Endsuction close coupled single-stage pumps - **NBG/NBGE**

Close-coupled pumps according to ISO 2858. Flanges are PN 16 with dimensions according to AS2129 table E. The pump has an axial suction port, radial discharge port, horizontal shaft and a back pull-out design enabling removal of the motor, motor stool, cover and impeller without disturbing the pump housing or pipework.

Flow max.: 4184 m³/h **Head max.: 230 m**
Liquid temperature: -25..140 °C **p max.: 25 bar**

Endsuction close coupled single-stage pumps - **NB/NBE**

End-suction close-coupled pumps according to EN 733. The pump has an axial suction port, radial discharge port, horizontal shaft and a back pull-out design enabling removal of the motor, motor stool, cover and impeller without disturbing the pump housing or pipework.

Flow max.: 1401 m³/h **Head max.: 177 m**
Liquid temperature: -25..120 °C **p max.: 16 bar**

Endsuction long coupled single-stage pumps - **NK/NKE**

Standard pumps according to EN 733. The pump has an axial suction port, a radial discharge port and horizontal shaft. It is of the back pull-out design enabling removal of the coupling, bearing bracket and impeller without disturbing the motor, pump housing or pipework.

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Flow max.: 1401 m³/h **Head max.: 231 m**
Liquid temperature: -25..140 °C **p max.: 25 bar**

SEA WATER DESALINATION

Horizontal multistage pumps - **BM**

High pressure booster modules are used for boosting, liquid transfer and circulation in systems under a high static pressure. Modules of different sizes can be combined and connected either in series or in parallel to meet exact Q/H requirements.

Flow max.: 280 m³/h **Head max.: 430 m**
Liquid temperature: 0..45 °C

Horizontal multistage pumps - **BMS**

The Grundfos BMS range consists of hp (high pressure) and hs (high speed) versions. BMS hp are suitable for industrial and water supply applications where the inlet pressure is high. BMS hs enables the creation of high pressure.

Flow max.: 343 m³/h **Head max.: 1053 m**
Liquid temperature: 0..40 °C

Horizontal multistage pumps - **BMSX**

A BMSX booster system consists of a BMS hs high-speed pump, a BM hp high-inlet-pressure pump and an isobaric pressure exchanger. It has a unique design dedicated to seawater and brackish water desalination.

Customised Solutions - **Custom-Built Pumps**

Customised pumps to meet specific application challenges (temperatures, pressures, difficult liquids) or installation requirements (ambient conditions) not covered by the standard pump range. It is a modular platform built on stocked components. For more information please contact Grundfos sales.

Optimisation services - **Energy Optimisation Offering**

A Grundfos Energy Check or Energy Audit will help you find hidden savings in your pump installation. It can also help to reduce your operating expenses and reach your sustainability targets.

Service offerings

Laser Alignment

Monitors, Controls and Sensors

Communication Interfaces - **CIM/CIU**

Communication Interface Module/Communication Interface Unit is the range of communication options from Grundfos. They enable you to connect your product to the wide range of field bus standards.

Communication Interface - **MI 301**

Grundfos remote controls used for installation, data monitoring, fault information and configuration of Grundfos pumps and systems, by radio or IR connections.

SEA WATER DESALINATION

Motor Protection - **MP 204**

MP 204 protects the motor against overload, dry running and incipient motor defects based on many parameters like: supply voltage, phase sequence or harmonic distortion. It disconnects the contactor if, for example, the current exceeds the preset value. It can be used stand-alone or for example incorporated in a Control DC.

Motor Protection - **Control MP 204**

Pump controller system designed for water utility market. Complete protection of one pump.

Pump control - **Control CUE**

Grundfos Control CUE is a series of external frequency converters designed for speed control of a wide range of Grundfos pumps. The Frequency converter is delivered installed in a cabinet with main switch, circuit breaker, and an optional filter. Power range: 2.2 kW - 90 kW.

Pump control - **Control MPC**

Control MPC controls up to six identical pumps connected in parallel. It uses advanced algorithms to optimise performance and minimise energy consumption

Flow Sensors - **MAG 3100, 5100, 8000**

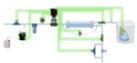
Several variants of the Mag Flow system are available, depending on needed requirements and specifications. In general, the system consists of a flow meter and a transmitter of choice. MAG 3100 covers all the applications which the other industry specific sensors do not cover.

Temperature Sensors - **ITS**

ITS is an integrated temperature sensor from Grundfos Direct Sensors. It is fully compatible with wet, aqueous media and based on MEMS sensing technology in combination with the corrosion-resistant Silicoat® coating technology on the sensor chip.

Systems

Application-specific bundles - **iSOLUTIONS for Reverse Osmosis (iRO)**



Standardised plugandplay kits for low pressure reverse osmosis systems. Standardised solutions are available in six prepackaged kits consisting of Grundfos components selected to cover the requirements of different flow and pressure systems.

Booster Systems - **Hydro MPC, Hydro Multi-E**

Advanced and energy efficient pressure boosting system for boosting of clean water. Available with 2 - 6 (2 - 4 for Multi-E) parallel connected pumps, integrated advanced controller and all necessary fittings.

Flow max.: 1464 m³/h	**Head max.: 161 m**
Liquid temperature: 0..60 °C	**p max.: 16 bar**

Dosing Skid Systems - **DSS and Systems**

There are applications and installations that require a completely unique Engineered to Order (ETO) solution for project based work. The custom DSS may be constructed in nearly any configuration and include any dosing pump offered by Grundfos. The Custom ETO systems are reliable solutions built with Grundfos quality and sure to meet your project needs.

SEA WATER DESALINATION

Service offerings

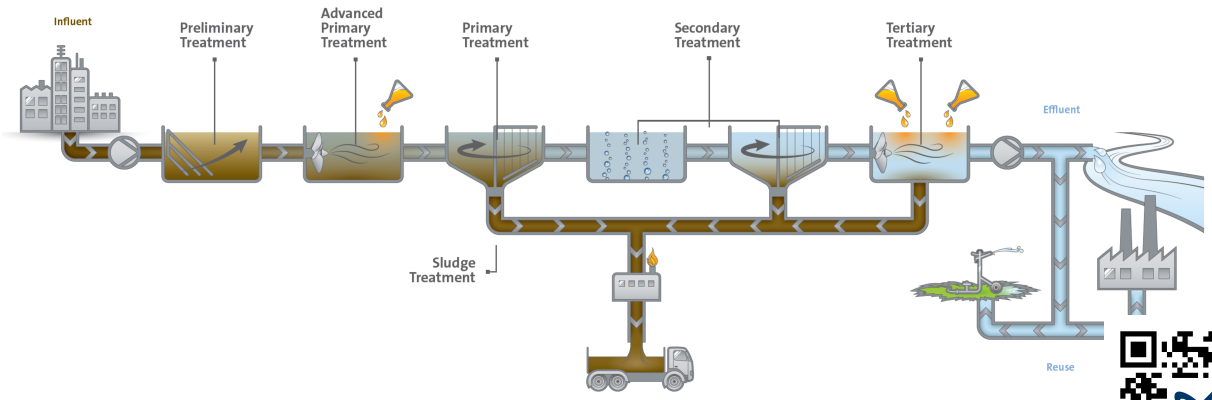
Laser Alignment

Wastewater Treatment & Reuse

Handling wastewater is a crucial part of any industrial water solution, and pumps play a key role in every application. Often, wastewater in industrial applications can be unpredictable, and an industrial wastewater solution must be tough enough to deal with everything from grit and grease to large particles. Wastewater pumps need to be efficient, reliable and intelligent to handle these changing wastewater qualities. You also need to be certain that the water leaving the system is of the right quality before it enters the sewer or the environment.

"As you know, chemicals are always a big risk. So for us it was very time-saving and stress-saving to get a complete dosing solution from Grundfos. We got the full cabinets with the dosing pumps, all the piping, the valves, everything was included, so we were very happy with that. In addition, the Grundfos pumps have a software with flow control. And that guarantees that you're dosing what you need to be dosing."

Bryan de Bel, Project Manager with turnkey WWTP contractor Pantarein (about Carlsberg Frederica project)



WASTEWATER TRANSFER

- Grundfos prefabricated pumping stations are cost effective and flexible, with already built-in components such as pumping and cables.
- Grundfos SEG, SL and SE wastewater pumps have built in **AUTOADAPT** to adjust to operating conditions.
- Grundfos **dedicated controllers** control up to 6 wastewater pumps to provide continuous energy optimization according to duty point.
- The **anticlogging function** on the **DC controller** stops the pumps from blocking by acting during abnormal events.
- Grundfos packaged pumping stations with **LC controller and CIM** communication can provide: **Real time pump control and alerts** (high level, pump failures, warning logs, dry run etc).
- **Vortex pump** and **S tube reduce clogging** issue for high solid with larger length.

Pumps

Submersible wastewater pumps - **S**

The S pumps are a range of free-flow channel impeller pumps specifically designed for pumping sewage and wastewater in a wide range of municipal and industrial applications.

Flow max.: 6793 m³/h **Head max.: 116 m**
Liquid temperature: 0..50 °C

Submersible wastewater pumps - **AP/APG**

AP pumps are designed for pumping wastewater, sludge-containing water, groundwater and sewage. APG are equipped with cutter system for grinding solids into small pieces.

Flow max.: 46 l/s **Head max.: 68 m**
Liquid temperature: 0..40 °C

Service offerings

Customized Service Agreement

Commissioning

Monitors, Controls and Sensors

Motor Protection - **MP 204**

MP 204 protects the motor against overload, dry running and incipient motor defects based on many parameters like: supply voltage, phase sequence or harmonic distortion. It disconnects the contactor if, for example, the current exceeds the preset value. It can be used stand-alone or for example incorporated in a Control DC.

Pump control - **Control DC**

Grundfos Control DC is a control system designed for installation in municipal wastewater transportation installations, commercial buildings or network pumping stations with up to six wastewater pumps. Advanced control and data communication are also possible.

Flow Sensors - **MAG 3100, 5100, 8000**

Several variants of the Mag Flow system are available, depending on needed requirements and specifications. In general, the system consists of a flow meter and a transmitter of choice. MAG 3100 covers all the applications which the other industry specific sensors do not cover.

WASTEWATER TRANSFER

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Customized Service Agreement

Commissioning

CHEMICAL TREATMENT

- CU 382 control unit handles number of analogue/digital input/output for control and monitoring of water quality and accordingly have dosing control (example: pH control, ClO_2 dosing, Cl dosing etc.).
- Polydos for **coagulation/flocculation**: Compact and flexible installation of a **fully integrated system** including material handling, preparation and maturing, and solution dosing.

Agitators

Mixers - **AMD, AMG, SMD, SMG**

Grundfos mixers are designed for mixing, i.e. homogenisation and suspension of low/medium viscosity liquids in small tanks and pumping stations.

Liquid temperature: 0..60 °C

Pumps

Endsuction close coupled single-stage pumps - **NB/NBE**

End-suction close-coupled pumps according to EN 733. The pump has an axial suction port, radial discharge port, horizontal shaft and a back pull-out design enabling removal of the motor, motor stool, cover and impeller without disturbing the pump housing or pipework.

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Monitors, Controls and Sensors

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Motor Protection - **Control MP 204**

Pump controller system designed for water utility market. Complete protection of one pump.

Systems

Dosing Skid Systems - **DSS and Systems**

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BIOLOGICAL TREATMENT

- SE/SL come in three hydraulic concepts for **different wastewater contamination levels** (semi-open, closed and free flow impellers). The product range is designed for its environments, with extreme durability that covers aggressive environments.
- Grundfos **mixers and flowmakers** keep particles evenly distributed in the wastewater and sludge and can be controlled with Grundfos variable speed drive for optimised energy efficiency.
- The Aerojet can help to **avoid odour problems** during wastewater storage and keep the treatment process running. Since it is submersed, no harmful aerosols are dispersed into the surroundings.

Agitators

Flowmakers - **AFG**

The Grundfos range of horizontal, planetary gear drive AFG flowmakers are designed for flowmaking, i.e. keeping liquids moving in low/medium viscosity liquids. Fitted with motors of 1.5-7.5 kW.

Liquid temperature: 0..40 °C

Mixers - **AMD, AMG, SMD, SMG**

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Liquid temperature: 0..60 °C

Recirculation pumps - **SRG**

Grundfos SRG recirculation pumps are designed for the pumping of sludge from one tank to another in sewage treatment plants and for other pump applications involving a high flow rate and low head.

Flow max.: 1450 l/s **Head max.: 2 m**
Liquid temperature: 0..40 °C

Pumps

Endsuction close coupled single-stage pumps - **NB/NBE**

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PHYSICAL TREATMENT

- **High pressure** demands can be fulfilled with a **compact** pump **design** (less stages) by operating at **over-synchronous speed**. Factory configured CRE's with reinforced chambers and impellers can be an option. The motor size must be adjusted accordingly.

Pumps

Endsuction close coupled single-stage pumps - **NBG/NBGE**

Close-coupled pumps according to ISO 2858. Flanges are PN 16 with dimensions according to AS2129 table E. The pump has an axial suction port, radial discharge port, horizontal shaft and a back pull-out design enabling removal of the motor, motor stool, cover and impeller without disturbing the pump housing or pipework.

Flow max.: 4184 m³/h **Head max.: 230 m**
Liquid temperature: -25..140 °C **p max.: 25 bar**

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Horizontal multistage pumps - **BM**

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Flow max.: 280 m³/h **Head max.: 430 m**
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Horizontal multistage pumps - **BMS**

The Grundfos BMS range consists of hp (high pressure) and hs (high speed) versions. BMS hp are suitable for industrial and water supply applications where the inlet pressure is high. BMS hs enables the creation of high pressure.

Flow max.: 343 m³/h **Head max.: 1053 m**
Liquid temperature: 0..40 °C

Horizontal multistage pumps - **BMSX**

A BMSX booster system consists of a BMS hs high-speed pump, a BM hp high-inlet-pressure pump and an isobaric pressure exchanger. It has a unique design dedicated to seawater and brackish water desalination.

Service offerings

Laser Alignment

PHYSICAL TREATMENT

Monitors, Controls and Sensors

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Systems

Booster Systems - **Hydro MPC, Hydro Multi-E**

Advanced and energy efficient pressure boosting system for boosting of clean water. Available with 2 - 6 (2 - 4 for Multi-E) parallel connected pumps, integrated advanced controller and all necessary fittings.

Flow max.: 1464 m^3/h	**Head max.: 161 m**
Liquid temperature: 0..60 °C	**p max.: 16 bar**

Dosing Skid Systems - **DSS and Systems**

There are applications and installations that require a completely unique Engineered to Order (ETO) solution for project based work. The custom DSS may be constructed in nearly any configuration and include any dosing pump offered by Grundfos. The Custom ETO systems are reliable solutions built with Grundfos quality and sure to meet your project needs.

Service offerings

Laser Alignment

DISINFECTION

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Disinfection Systems

Gas Warning Systems - **DIA-G**

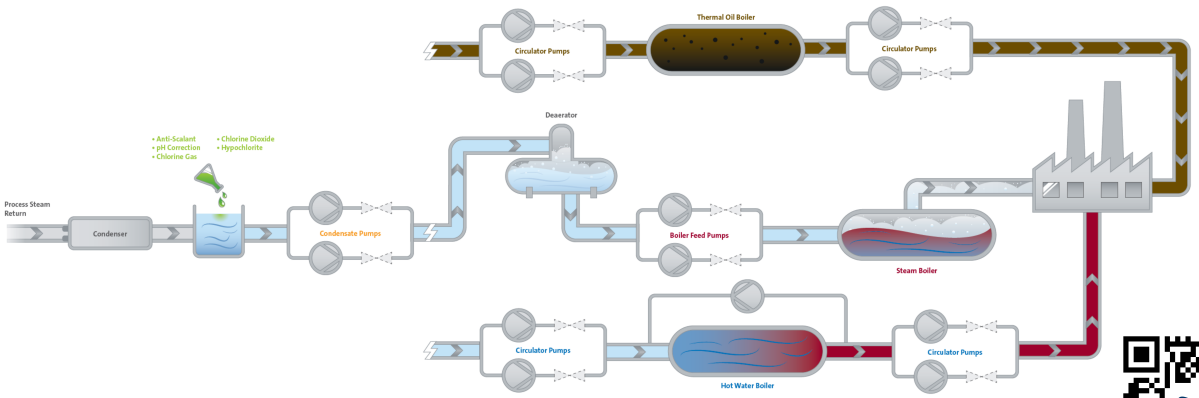
DIA-G gas warning systems monitor the concentration of dangerous gasses with up to two gas sensors. The range also includes accessories like battery backup, horn and flashlight to complete the installation. Available monitoring parameters: chlorine, chlorine dioxide, hydrochloric acid, ammonia and ozone.

Industrial Heating

Grundfos supplies thoroughly tested, variable frequency drive-controlled pumps that optimise the boiler feed process. Designed with low NPSH, these solutions cater to systems with poor inlet conditions. This ensures cavitation-free operation even outside the pump's normal duty range. The Grundfos air-cooled top shaft seal solution eliminates the need for external cooling in high-temperature applications.

"We're seeing a greater energy efficiency of the boiler, gas usage, steam quality is better, control of level is better. No failure rates. No problems whatsoever."

Scott Curran, Maintenance Team Leader, William Grant & Sons' Girvan Distillery



BOILER SYSTEM

- **Low NPSH** versions (oversized impeller in 1st stage) for boiler feed pumps can better handle poor inlet pressure and hot water.
- Some installations result in same temperatures in the feed pumps as in the boiler. With **air-cooled top** the shaft seals are protected.
- **Direct boiler feed** with speed-controlled pumps replaces the modulating valves and leads to lower energy consumption, less stress on components and better steam quality.
- Stable operation with **pump curve compensation** for low flows with Grundfos frequency converters.
- Using a **level sensor** in the boiler for optimum level leads to better steam quality, efficiency and reliability.
- **MAGdrive** or **double shaft seal** to prevent from air entering the pump in duty/stand-by configurations.

Pumps

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Close-coupled pumps according to ISO 2858. Flanges are PN 16 with dimensions according to AS2129 table E. The pump has an axial suction port, radial discharge port, horizontal shaft and a back pull-out design enabling removal of the motor, motor stool, cover and impeller without disturbing the pump housing or pipework.

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Inline single-stage pumps - **TP/TPE, TPD/TPED**

Grundfos TP/TPE pumps are single-stage, close-coupled in-line centrifugal pumps with mechanical shaft seal and primely for applications such as heating/cooling/district energy. TPD/TPDE pumps are the twin-head version.

Flow max.: 4374 m³/h	**Head max.: 139 m**
Liquid temperature: -40..150 °C	**p max.: 25 bar**

Customised Solutions - **Custom-Built Pumps**

Customised pumps to meet specific application challenges (temperatures, pressures, difficult liquids) or installation requirements (ambient conditions) not covered by the standard pump range. It is a modular platform built on stocked components. For more information please contact Grundfos sales.

Optimisation services - **Energy Optimisation Offering**

A Grundfos Energy Check or Energy Audit will help you find hidden savings in your pump installation. It can also help to reduce your operating expenses and reach your sustainability targets.

Service offerings

Customized Service Agreement

Commissioning

BOILER SYSTEM

Monitors, Controls and Sensors

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Pump control - **Control CUE**

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Pump control - **Control MPC**

Control MPC controls up to six identical pumps connected in parallel. It uses advanced algorithms to optimise performance and minimise energy consumption

Pressure Sensors - **ISP40, ISP44**

Grundfos ISP40 and ISP44 are robust industrial pressure transmitters which can be used in a wide temperature range and portfolio of wet medias including corrosive properties. They can also handle some degree of water hammering.

Temperature Sensors - **Danfoss MBT 3270**

The MBT 3270 is an easy and cost-effective way to equip our MGE and CUE control products with a robust temperature measurement possibility. The sensors are resistance based with a Pt 100 output.

Systems

Application-specific bundles - **iSOLUTIONS for Boiler Feed**

With customised software, the variable speed Grundfos CRE pumps can operate outside their set pump curves for unrivalled performance in boiler feed systems.

Booster Systems - **Hydro MPC, Hydro Multi-E**

Advanced and energy efficient pressure boosting system for boosting of clean water. Available with 2 - 6 (2 - 4 for Multi-E) parallel connected pumps, integrated advanced controller and all necessary fittings.

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BOILER SYSTEM

Service offerings

- Customized Service Agreement
- Commissioning

HEAT DISTRIBUTION

- For high temperatures the shaft seals can be protected with **air-cooled top**.
- The MAGNA3 features a **built-in heat energy meter** that can monitor system heat energy distribution and consumption to **reduce** high **energy demand** caused by system imbalances.

Pumps

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Circulator pumps - **MAGNA**

The Grundfos MAGNA circulator pumps are designed for heating and cooling applications in commercial buildings. The pumps are available in both cast-iron and stainless-steel and as twin-head variants. The pumps are maintenance-free due to the canned-rotor type design.

Flow max.: 81 m³/h **Head max.: 19 m**
Liquid temperature: -10..110 °C **p max.: 16 bar**

Customised Solutions - **Custom-Built Pumps**

Customised pumps to meet specific application challenges (temperatures, pressures, difficult liquids) or installation requirements (ambient conditions) not covered by the standard pump range. It is a modular platform built on stocked components. For more information please contact Grundfos sales.

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Monitors, Controls and Sensors

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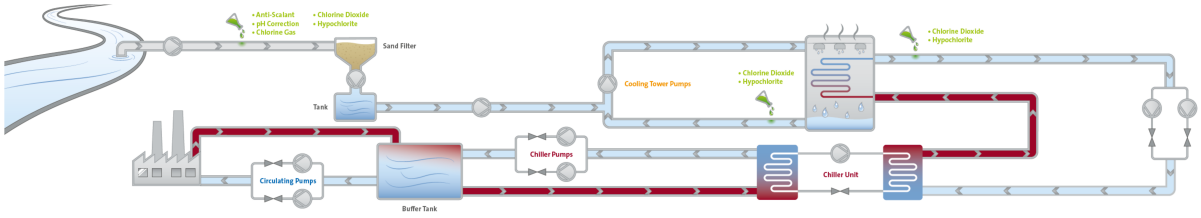
Liquid temperature: 0..60 °C	**p max.: 16 bar**

Industrial Cooling

As the demand for industrial production grows globally, so too does the demand for cooling. In almost every industrial facility, ensuring the right temperature for machines and processes is essential to production efficiency, reliability and quality. Grundfos offers pumps and solutions equipped with variable frequency drive motors and sensors to create a complete solution that can improve operational efficiency and achieve greater OPEX savings.

"With 40 to 60% energy savings on every project that we're going for, then all the projects are being approved as quick as they're suggested."

Daniel Gray, Energy and Sustainability Manager, Suntory Beverage & Food GB & I



COOLING TOWER

- Cooling tower **fans** can be intelligently **controlled by MPC** controllers.
- The **cooling tower** with all its devices can be **run with** the **pump controller** without the need of another controller.
- **Differential temperature control** (according to return temperature) based on RPI+T sensors can significantly reduce OPEX.
- **Onsite chlorine dioxide production will** eliminate biofilm / legionella risk, improving the safety and efficiency of the cooling tower.
- Grundfos iSOLUTIONS (DID + DDA) can automate the **blowdown process**, which leads to lower OPEX through less water and energy consumption.
- When **biocides** reach a defined lower threshold, the **DDA**automatically and accurately adjusts the dosing rate with up to 75 % chemical savings.
- For **scaling and fouling control** the SMART Digital DDA with DDA can maintain a fixed flow and send alarms in case of e.g. low amount of chemicals. Chemical cost can be reduced.

Pumps

Endsuction close coupled single-stage pumps - **NBG/NBGE**

Close-coupled pumps according to ISO 2858. Flanges are PN 16 with dimensions according to AS2129 table E. The pump has an axial suction port, radial discharge port, horizontal shaft and a back pull-out design enabling removal of the motor, motor stool, cover and impeller without disturbing the pump housing or pipework.

Flow max.: 4184 m³/h	**Head max.: 230 m**
Liquid temperature: -25..140 °C	**p max.: 25 bar**

Endsuction close coupled single-stage pumps - **NB/NBE**

End-suction close-coupled pumps according to EN 733. The pump has an axial suction port, radial discharge port, horizontal shaft and a back pull-out design enabling removal of the motor, motor stool, cover and impeller without disturbing the pump housing or pipework.

Flow max.: 1401 m³/h	**Head max.: 177 m**
Liquid temperature: -25..120 °C	**p max.: 16 bar**

Endsuction long coupled single-stage pumps - **NK/NKE**

Standard pumps according to EN 733. The pump has an axial suction port, a radial discharge port and horizontal shaft. It is of the back pull-out design enabling removal of the coupling, bearing bracket and impeller without disturbing the motor, pump housing or pipework.

Flow max.: 1401 l/s	**Head max.: 177 m**
Liquid temperature: -25..120 °C	**p max.: 16 bar**

Inline single-stage pumps - **TP/TPE, TPD/TPED**

Grundfos TP/TPE pumps are single-stage, close-coupled in-line centrifugal pumps with mechanical shaft seal and primely for applications such as heating/cooling/district energy. TPD/TPDE pumps are the twin-head version.

Flow max.: 4374 m³/h	**Head max.: 139 m**
Liquid temperature: -40..150 °C	**p max.: 25 bar**

Horizontal splitcase pumps - **LS**

Grundfos LS is a horizontal, single-stage or double-stages, between bearings, split case pump. The axially split design allows easy removal of the top casing and access to the pump components without disturbing the motor or pipe work.

Flow max.: 9503 m³/h	**Head max.: 238 m**
Liquid temperature: 0..100 °C	**p max.: 25 bar**

Optimisation services - **Energy Optimisation Offering**

A Grundfos Energy Check or Energy Audit will help you find hidden savings in your pump installation. It can also help to reduce your operating expenses and reach your sustainability targets.

Monitors, Controls and Sensors

Motor Protection - **MP 204**

MP 204 protects the motor against overload, dry running and incipient motor defects based on many parameters like: supply voltage, phase sequence or harmonic distortion. It disconnects the contactor if, for example, the current exceeds the preset value. It can be used stand-alone or for example incorporated in a Control DC.

Motor Protection - **Control MP 204**

Pump controller system designed for water utility market. Complete protection of one pump.

COOLING TOWER

Pump control - **Control MPC**

Control MPC controls up to six identical pumps connected in parallel. It uses advanced algorithms to optimise performance and minimise energy consumption

Pressure Sensors - **ISP40, ISP44**

Grundfos ISP40 and ISP44 are robust industrial pressure transmitters which can be used in a wide temperature range and portfolio of wet medias including corrosive properties. They can also handle some degree of water hammering.

Temperature Sensors - **Danfoss MBT 3270**

The MBT 3270 is an easy and cost-effective way to equip our MGE and CUE control products with a robust temperature measurement possibility. The sensors are resistance based with a Pt 100 output.

Systems

Booster Systems - **Hydro MPC, Hydro Multi-E**

Advanced and energy efficient pressure boosting system for boosting of clean water. Available with 2 - 6 (2 - 4 for Multi-E) parallel connected pumps, integrated advanced controller and all necessary fittings.

Flow max.: 1464 m^3/h	**Head max.: 161 m**
Liquid temperature: 0..60 °C	**p max.: 16 bar**

Dosing Skid Systems - **DSS and Systems**

There are applications and installations that require a completely unique Engineered to Order (ETO) solution for project based work. The custom DSS may be constructed in nearly any configuration and include any dosing pump offered by Grundfos. The Custom ETO systems are reliable solutions built with Grundfos quality and sure to meet your project needs.

CHILLER/EVAPORATOR/CONDENSER/COOLING WATER DISTRIBUTION

- In chiller units, setting to **constant temperature** (with E-motor) instead of constant pressure (with regulating valve) **saves energy** and smaller pumps can be used (running faster).
- The **viscosity of glycol and brines** changes with the liquid temperature. Grundfos pumps can be supplied with **oversized motors** that efficiently cope with higher load.
- **Critical cooling processes** require that the **temperature does not deviate**. Grundfos speed-controlled pumps make sure that the temperature is held constant.
- Low temperatures in installations can cause **water condensation** in the motor **at standstill**. With Grundfos **integrated motor heaters** condensation is completely avoided.
- To **prevent deformation** because of **thermal expansion** CRN versions are recommended for **low-temperature applications**.
- On the **secondary side** usually ice water, glycol, brine or alcohol-water are used as cooling liquid. This can be best handled with **stainless steel pumps**.

Pumps

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Flow max.: 4374 m³/h	**Head max.: 139 m**
Liquid temperature: -40..150 °C	**p max.: 25 bar**

Circulator pumps - **MAGNA**

The Grundfos MAGNA circulator pumps are designed for heating and cooling applications in commercial buildings. The pumps are available in both cast-iron and stainless-steel and as twin-head variants. The pumps are maintenance-free due to the canned-rotor type design.

Flow max.: 81 m³/h	**Head max.: 19 m**
Liquid temperature: -10..110 °C	**p max.: 16 bar**

Horizontal splitcase pumps - **LS**

Grundfos LS is a horizontal, single-stage or double-stages, between bearings, split case pump. The axially split design allows easy removal of the top casing and access to the pump components without disturbing the motor or pipe work.

Flow max.: 9503 m³/h	**Head max.: 238 m**
Liquid temperature: 0..100 °C	**p max.: 25 bar**

Customised Solutions - **Custom-Built Pumps**

Customised pumps to meet specific application challenges (temperatures, pressures, difficult liquids) or installation requirements (ambient conditions) not covered by the standard pump range. It is a modular platform built on stocked components. For more information please contact Grundfos sales.

CHILLER/EVAPORATOR/CONDENSER/COOLING WATER DISTRIBUTION

Monitors, Controls and Sensors

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Motor Protection - **Control MP 204**

Pump controller system designed for water utility market. Complete protection of one pump.

Pump control - **Control MPC**

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Liquid temperature: 0..60 °C	**p max.: 16 bar**

Machining

Machining processes such as grinding, turning, milling, boring, sawing, wire cutting and spark erosion lie at the heart of industrial manufacturing, where accuracy, economy and reliability count for everything. The Grundfos range of immersible machine tool coolant pumps and high-pressure pumps for machining processes offer unsurpassed accuracy and stability to make sure that nothing interferes with these delicate processes. Integrated variable frequency drives can be optionally supplied for increased system efficiency and flexibility. Our immersible pumps suitable for machine tool applications offer a tank-mounted design, and our dry-installed multi-stage pumps are also well-suited for machine tool applications.

"Grundfos has handled the changeover to the horizontally mounted end-suction pump with open impeller very professionally. You could already tell that the people are at home in the machine tool industry."

Ralf Dörr, Process Planning Gearboxes, ZF Saarbrücken

CLEAN SIDE

- For installations with **limited space** (i.e., installation in cabinets or machine centers) **high rpm versions** with over-synchronous operation can be suitable and provide the required flow and head, with a more compact pump design.
- **Leaking pumps** may lead to contamination and costly downtime. MTR pumps eliminate this risk with **drainage back to tank** (DBT).
- When **multiple duty points** are needed, E-pumps and sensors can speed up and slow down pumps to fulfil larger Q/H areas, and thereby replace 2 - 3 pumps or control valves with one E-pump.
- For global OEMs **stock costs** can be **reduced** with our IE5 E-motors providing multiple **approvals** and 50/60 Hz in one pump.
- The immersible pumps can be adjusted in length to accommodate different tank designs.
- The pumps are available in complete **stainless-steel** execution for **special applications.**
- The MTH/MTHE pumps are designed with **compactness** in mind increasing the ease of installation.

Pumps

Endsuction close coupled single-stage pumps - **NBG/NBGE**

Close-coupled pumps according to ISO 2858. Flanges are PN 16 with dimensions according to AS2129 table E. The pump has an axial suction port, radial discharge port, horizontal shaft and a back pull-out design enabling removal of the motor, motor stool, cover and impeller without disturbing the pump housing or pipework.

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Service offerings

Customized Service Agreement

Commissioning

Monitors, Controls and Sensors

Communication Interfaces - **CIM/CIU**

Communication Interface Module/Communication Interface Unit is the range of communication options from Grundfos. They enable you to connect your product to the wide range of field bus standards.

Motor Protection - **MP 204**

MP 204 protects the motor against overload, dry running and incipient motor defects based on many parameters like: supply voltage, phase sequence or harmonic distortion. It disconnects the contactor if, for example, the current exceeds the preset value. It can be used stand-alone or for example incorporated in a Control DC.

CLEAN SIDE

Motor Protection - **Control MP 204**

Pump controller system designed for water utility market. Complete protection of one pump.

Pump control - **Control CUE**

Grundfos Control CUE is a series of external frequency converters designed for speed control of a wide range of Grundfos pumps. The Frequency converter is delivered installed in a cabinet with main switch, circuit breaker, and an optional filter. Power range: 2.2 kW - 90 kW.

Pump control - **Control MPC**

Control MPC controls up to six identical pumps connected in parallel. It uses advanced algorithms to optimise performance and minimise energy consumption

Temperature Sensors - **Danfoss MBT 3270**

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Service offerings

Customized Service Agreement

Commissioning

DIRTY SIDE

- The MTA pumps are available in **different immersible lengths** to accommodate different tank designs.
- The MTA pumps are designed **without shaft seal** to increase service life.
- The NBG/NKG pumps are built according toISO 5199/2858. The impeller is designed according to the **super vortex principle**; thus, chips and fibers up to 25 mm will not clog up the pump.
- The NBG/NKG pumps are available in different materials with a broad range of shaft seal combinations to accommodate almost any customer requirement.

Pumps

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Pump control - **Control MPC**

Control MPC controls up to six identical pumps connected in parallel. It uses advanced algorithms to optimise performance and minimise energy consumption

Cleaning Processes

Part washing applications are notoriously demanding, as they often use aggressive liquids, high temperatures and high pressures. Using conventional pumps, this would result in bulky installations where the motor's power is not fully utilised. Wash and clean applications in the food processing industry, such as slaughterhouses and breweries, place restrictions on the physical size of the pump, as the equipment either is installed in a cabinet or fitted on a trolley moved by hand.

"By adjusting the pump capacity to the actual pressure required, a saving of 90 percent in energy consumption and energy costs was achieved. In the case of the parts cleaning system under consideration, these measures save 51,410 kWh of electricity per year and thus costs of around 6,200 €. With a total investment of only 3,800 €, this results in a return on investment of over 100 percent. The efficiency measures developed can in principle be extended to numerous comparable plants, enabling the company to tap further savings potential."

Özkan Karakurt, WPS/WSE, Mercedes-Benz plant Untertürkheim

FOOD

- **High pressure** demands can be fulfilled with a **compact** pump **design** (less stages) by operating at **over-synchronous speed**. Factory configured CRE's with reinforced chambers and impellers can be an option. The motor size must be adjusted accordingly.
- **Flow** demand can **change fast** with large variations. **Ramp and control trim** can **take stress from**the **pumps**.
- **Standstill motor heaters** are recommended **for very cold ambient temperatures** to **reduce condensation**. Drain holes might also need to be opened.

Pumps

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Liquid temperature: -25..120 °C **p max.: 16 bar**

Horizontal multistage pumps - **BMS**

The Grundfos BMS range consists of hp (high pressure) and hs (high speed) versions. BMS hp are suitable for industrial and water supply applications where the inlet pressure is high. BMS hs enables the creation of high pressure.

Flow max.: 343 m^3/h **Head max.: 1053 m**
Liquid temperature: 0..40 °C

Service offerings

Customized Service Agreement

Commissioning

Monitors, Controls and Sensors

Communication Interfaces - **CIM/CIU**

Communication Interface Module/Communication Interface Unit is the range of communication options from Grundfos. They enable you to connect your product to the wide range of field bus standards.

Communication Interface - **MI 301**

Grundfos remote controls used for installation, data monitoring, fault information and configuration of Grundfos pumps and systems, by radio or IR connections.

FOOD

Motor Protection - **MP 204**

MP 204 protects the motor against overload, dry running and incipient motor defects based on many parameters like: supply voltage, phase sequence or harmonic distortion. It disconnects the contactor if, for example, the current exceeds the preset value. It can be used stand-alone or for example incorporated in a Control DC.

Motor Protection - **Control MP 204**

Pump controller system designed for water utility market. Complete protection of one pump.

Pump control - **Control CUE**

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Pump control - **Control MPC**

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Systems

Application-specific bundles - **iSOLUTIONS Compact Performance**

The most compact and cost effective full featured CRNE range possible sized to utilize full power in the primary operating area, often saving a motor size compared to traditional motor sizing. iCP is the perfect choice when avaliable space is tight and efficiency is paramount.

Booster Systems - **Hydro MPC, Hydro Multi-E**

Advanced and energy efficient pressure boosting system for boosting of clean water. Available with 2 - 6 (2 - 4 for Multi-E) parallel connected pumps, integrated advanced controller and all necessary fittings.

Flow max.: 1464 m³/h	**Head max.: 161 m**
Liquid temperature: 0..60 °C	**p max.: 16 bar**

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Commissioning

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Liquid temperature: 0..40 °C

Customised Solutions - **Custom-Built Pumps**

Customised pumps to meet specific application challenges (temperatures, pressures, difficult liquids) or installation requirements (ambient conditions) not covered by the standard pump range. It is a modular platform built on stocked components. For more information please contact Grundfos sales.

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NON FOOD

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Temperature Sensors - **ITS**

ITS is an integrated temperature sensor from Grundfos Direct Sensors. It is fully compatible with wet, aqueous media and based on MEMS sensing technology in combination with the corrosion-resistant Silicoat® coating technology on the sensor chip.

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Process Fluid Transfer

Process liquids are liquids that are used in industrial processes for various purposes, such as cooling, heating, cleaning, chemical reactions or as ingredients. Examples of process liquids include water, oil, acids (e.g. hydrochloric acid and sulfuric acid), bases (e.g. sodium hydroxide and potassium hydroxide), and solvents (e.g. ethanol and methanol). These liquids are used in a wide range of industries, including food and beverage, chemical, pharmaceutical, and manufacturing. Certain requirements to the pumps are important to consider when pumping process liquids such as temperature, viscosity, corrosion/chemical resistance and safety. Grundfos offers the right standard and customised solutions for a wide range of applications.

- For high-viscous liquids precautions must be taken to ensure that the motor of the pump is not overloaded. The viscosity of a pumped liquid depends strongly on the liquid temperature. We offer CR pumps with oversize motors for stable operation.

Pumps

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Liquid temperature: -25..120 °C	**p max.: 16 bar**

Endsuction long coupled single-stage pumps - **NKG/NKGE**

Standard pumps according to ISO 2858 with axial suction port, a radial discharge port and horizontal shaft. It is of the back pull-out design enabling removal of the coupling, bearing bracket and impeller without disturbing the motor, pump housing or pipework.

Flow max.: 1401 m³/h	**Head max.: 231 m**
Liquid temperature: -25..140 °C	**p max.: 25 bar**

Service offerings

- **Customized Service Agreement**
- **Laser Alignment**
- **Commissioning**

Monitors, Controls and Sensors

Communication Interfaces - **CIM/CIU**

Communication Interface Module/Communication Interface Unit is the range of communication options from Grundfos. They enable you to connect your product to the wide range of field bus standards.

Pump control - **Control CUE**

Grundfos Control CUE is a series of external frequency converters designed for speed control of a wide range of Grundfos pumps. The Frequency converter is delivered installed in a cabinet with main switch, circuit breaker, and an optional filter. Power range: 2.2 kW - 90 kW.

Motor Protection - **Control MP 204**

Pump controller system designed for water utility market. Complete protection of one pump.

Pump control - **Control MPC**

Control MPC controls up to six identical pumps connected in parallel. It uses advanced algorithms to optimise performance and minimise energy consumption

Temperature Sensors - **Danfoss MBT 3270**

The MBT 3270 is an easy and cost-effective way to equip our MGE and CUE control products with a robust temperature measurement possibility. The sensors are resistance based with a Pt 100 output.

Pressure Sensors - **ISP40, ISP44**

Grundfos ISP40 and ISP44 are robust industrial pressure transmitters which can be used in a wide temperature range and portfolio of wet medias including corrosive properties. They can also handle some degree of water hammering.

Temperature Sensors - **ITS**

ITS is an integrated temperature sensor from Grundfos Direct Sensors. It is fully compatible with wet, aqueous media and based on MEMS sensing technology in combination with the corrosion-resistant Silicoat® coating technology on the sensor chip.

Flow Sensors - **MAG 3100, 5100, 8000**

Several variants of the Mag Flow system are available, depending on needed requirements and specifications. In general, the system consists of a flow meter and a transmitter of choice. MAG 3100 covers all the applications which the other industry specific sensors do not cover.

Communication Interface - **MI 301**

Grundfos remote controls used for installation, data monitoring, fault information and configuration of Grundfos pumps and systems, by radio or IR connections.

Motor Protection - **MP 204**

MP 204 protects the motor against overload, dry running and incipient motor defects based on many parameters like: supply voltage, phase sequence or harmonic distortion. It disconnects the contactor if, for example, the current exceeds the preset value. It can be used stand-alone or for example incorporated in a Control DC.

Systems

Booster Systems - **Hydro MPC, Hydro Multi-E**

Advanced and energy efficient pressure boosting system for boosting of clean water. Available with 2 - 6 (2 - 4 for Multi-E) parallel connected pumps, integrated advanced controller and all necessary fittings.

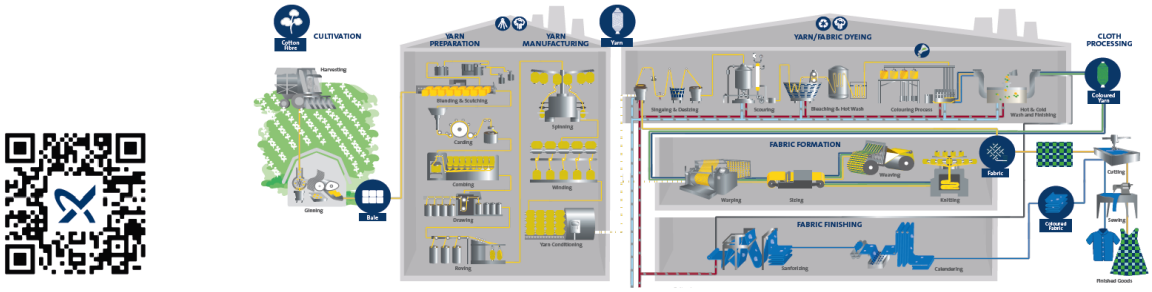
Flow max.: 1464 m³/h	**Head max.: 161 m**
Liquid temperature: 0..60 °C	**p max.: 16 bar**

Service offerings

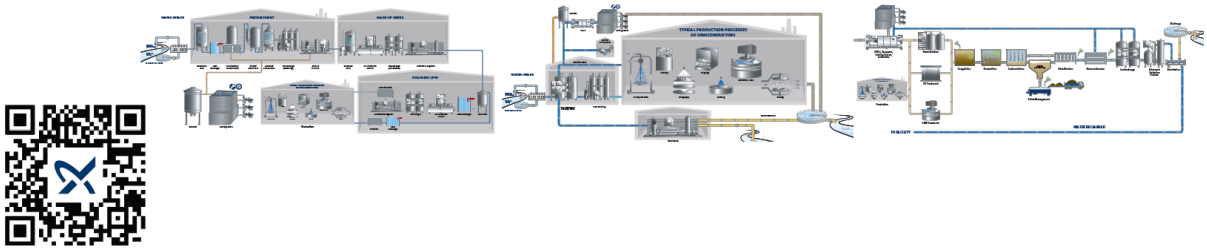
- **Customized Service Agreement**
- **Laser Alignment**
- **Commissioning**

Process Charts

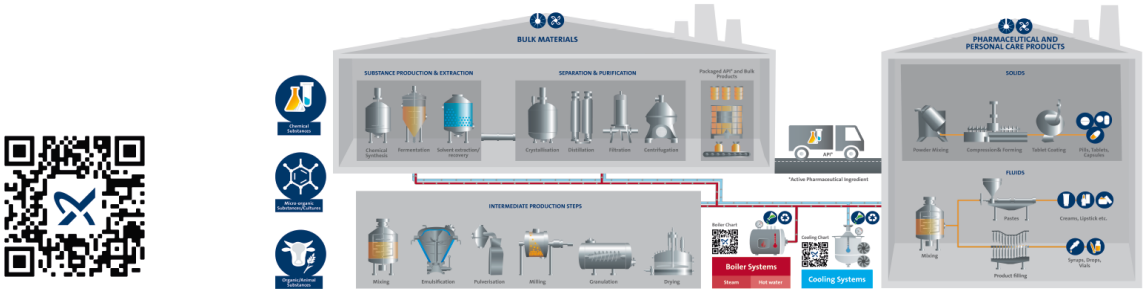
Grundfos Products in Textile



Semiconductor Production Process

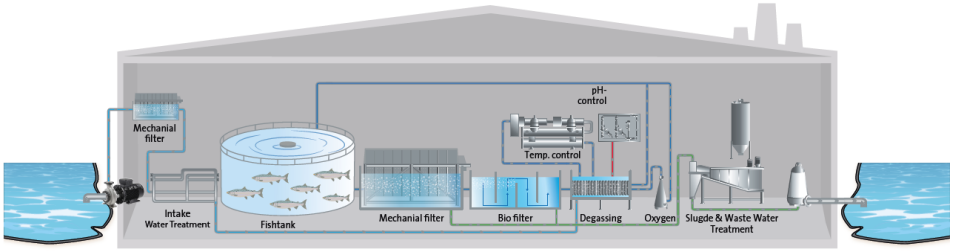


Pharmaceuticals and Personal Care Products

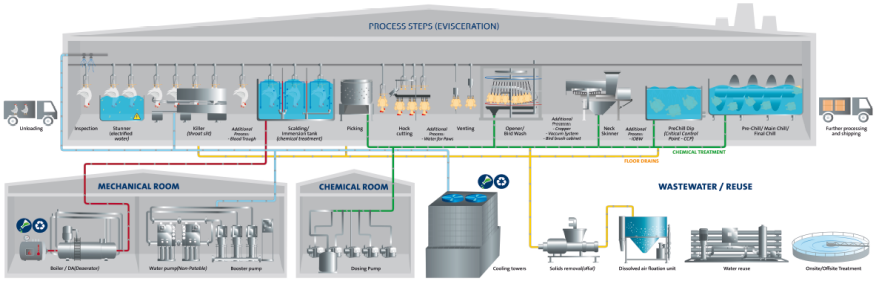


Food & Beverages

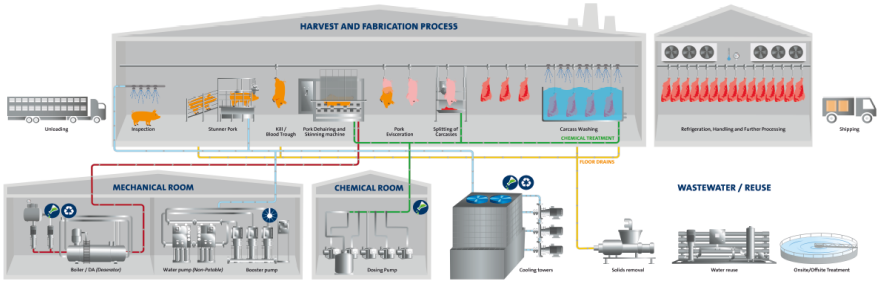
GRUNDFOS PRODUCTS IN AQUA CULTURE



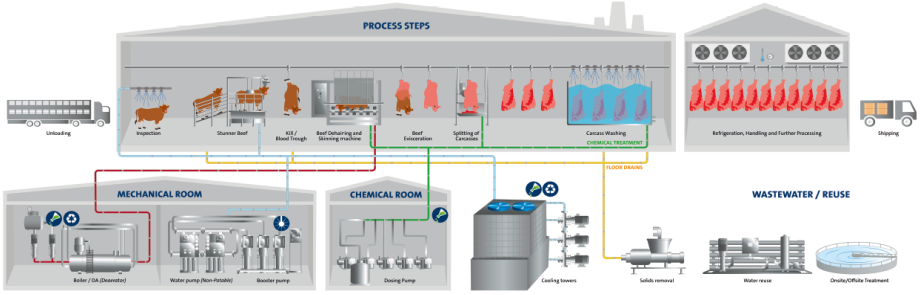
GRUNDFOS PRODUCTS IN POULTRY



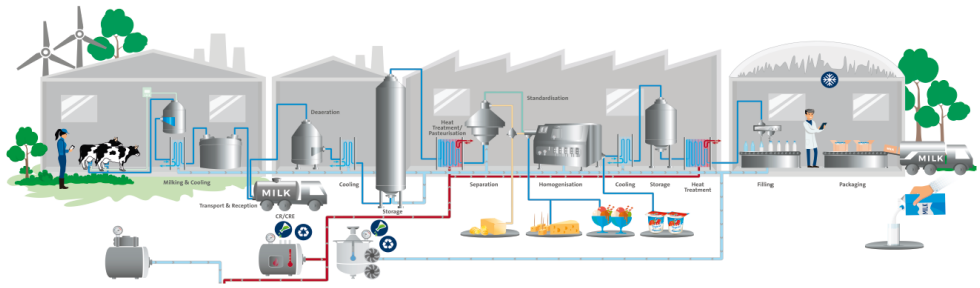
GRUNDFOS PRODUCTS IN PORK



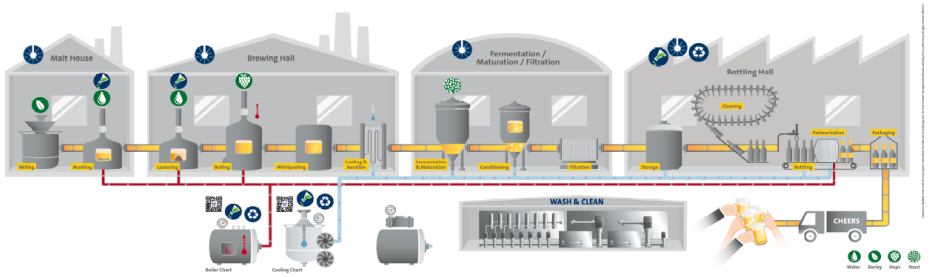
GRUNDFOS PRODUCTS IN BEEF



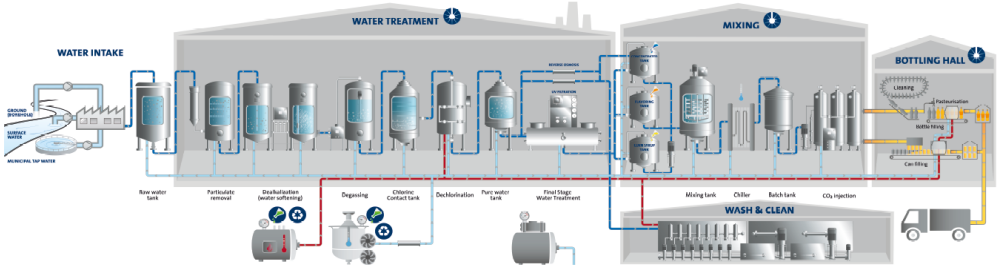
GRUNDFOS PRODUCTS IN DAIRIES



GRUNDFOS PRODUCTS IN BREWERIES

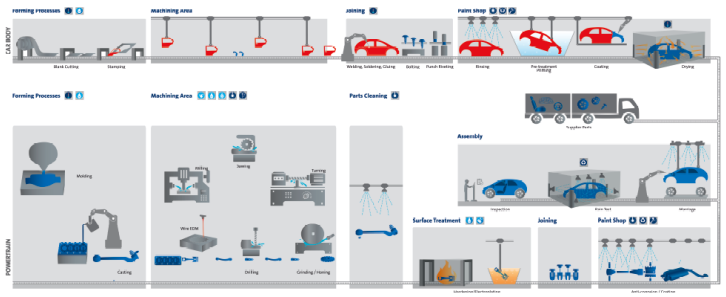


GRUNDFOS PRODUCTS IN SOFT DRINKS



Mobility

GRUNDFOS PRODUCTS IN AUTOMOTIVE



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PDF generated:
2023-06-30

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