

**BE**

Being responsible is our foundation. We know that we have a responsibility towards the people who are Grundfos, towards the innovative soul of Grundfos as well as towards the surrounding world. Whatever we do, we make sure that we have a firm and sustainable basis for doing it.

**THINK**

Thinking ahead makes the innovations possible. We encourage a certain Grundfos way of thinking which is founded upon the belief that everyone must contribute by using his or her judgement and foresight. We are looking for commitment and ideas in everything we do in order to make the best solutions. We think – and then we act.

**INNOVATE**

Innovation is the essence. It is the innovations that make Grundfos unique. We stand out because of our ability to constantly create new solutions to the ever-changing demands of the pump business. We meet every challenge and we are never afraid of taking the initiative – remaining true to our ideals calls for renewal. Innovation is the soul of Grundfos.



Industrial service  
systems and processes

# A broader approach to pump solutions

Grundfos is a leading international producer of pumps and pump systems. We supply some of the most reliable and cost efficient pumps, meeting virtually every need across a diversity of industrial applications. By carefully listening to our customers we continually make improvements to our pump solutions, which have given us a reputation as leaders in pump technology.

The Grundfos Industrial Solutions label symbolises a broad approach to pump solutions. Whether it involves cleaning, dosing, water treatment, water supply, wastewater, cooling, boiler feeding, heating, fire protection, general or sanitary processing, Grundfos Industrial Solutions is strongly committed to becoming the preferred supplier of pumps for your business.



**GRUNDFOS**   
**INDUSTRIAL SOLUTIONS™**

#### **PLANT SERVICE SYSTEMS**

Grundfos is a full-line supplier of pumps for plant service systems. We produce pumps for every facility in the industrial water circuit: Delivering water to the plant, moving the water inside the plant to where it's needed, e.g. for boiler feeding or cooling systems, and finally, leading the wastewater out of the plant to a treatment facility.

#### **GENERAL PROCESSING**

Grundfos supplies pumps for a wide range of general industrial processes, such as pumps for handling abrasive media, chemicals and particle-carrying liquids. Our CR pumps are available in countless configurations and materials, allowing them to adapt to almost any media.

#### **SANITARY PROCESSING**

Grundfos produces pumps for a wide range of sanitary processes, such as food, beverage and pharmaceutical manufacturing. Our range of sanitary pumps in high-grade, rolled and/or forged stainless steel can be fitted with a variety of features, which enable them to adapt to various pumping tasks.



# Adding performance to the industry

- + COOLING & AIR-CONDITIONING
- + BOOSTING & LIQUID TRANSFER
- + HEATING & BOILER FEEDING
- + WATER SUPPLY
- + WASTEWATER
- + WATER TREATMENT
- + FIRE PROTECTION
- + GENERAL PROCESSES
- + SANITARY PROCESSES

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### WORKING WITH GRUNDFOS IS A DECISION BASED ON QUALITY

As a systems service employee at Bayer Industry Service, I service, repair and install Grundfos booster systems for drinking and process water applications as well as a few other applications. One of the main priorities in our product selection is quality.

High quality and a high service level are our main reasons for working with Grundfos. Their delivery time for spare

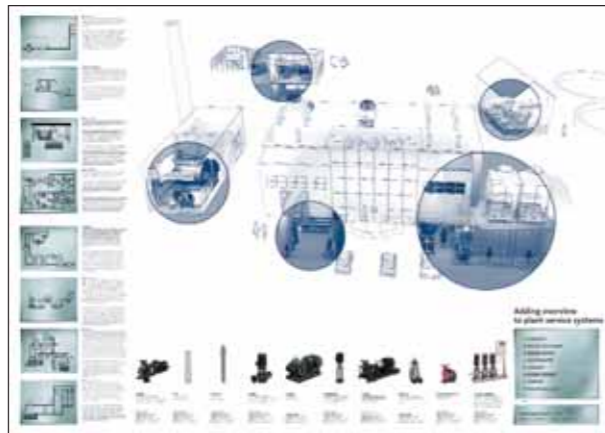
parts is short – and their service technicians are highly competent.

When searching for products and replacement parts, we use the user-friendly WinCaps tool. And our contact at Grundfos offers us valuable support in our work.

Mr. Martin Drewa,  
Bayer Industry Services

The key factor for all industrial pump solutions is reliability: The fact that you can trust your equipment and avoid downtime. But we go further. Adding performance to the industry is beyond reliability. It's providing the industries with stronger, more flexible and more intelligent pumps and pump systems.

Our expertise ranges from plant service systems to general and sanitary processing. No matter where you work – we provide a solution that will add performance to your industry.



This poster illustrates the range of applications and specifications of the Grundfos pumps used in plant service systems. If your poster has been removed, feel free to contact your local Grundfos sales company. For the relevant details, please visit our website [www.grundfos.com/industry](http://www.grundfos.com/industry)

## On one side there is...

### ... PLANT SERVICE SYSTEMS

The one thing all industrial productions have in common is a variety of water-based systems. This is where Grundfos can help you. We're a full-line supplier of quality pumps for service systems. Below you can get acquainted with some of our products:



**CR**  
**Pump principle:** Multistage centrifugal pumps, electronically controlled as option up to 22 kW  
**Material:** Cast iron and stainless steel  
**Flow, Q:** Max. 120 m<sup>3</sup>/h  
**Head, H:** Max. 240 m



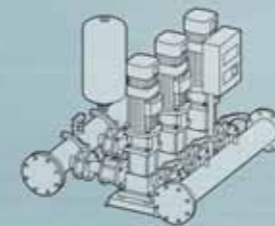
**TP**  
**Pump principle:** Single-stage centrifugal pumps, electronically controlled as option up to 22 kW  
**Material:** Cast iron  
**Flow, Q:** Max. 4500 m<sup>3</sup>/h  
**Head, H:** Max. 175 m



**SP**  
**Product types:** SP, SPA, SPG  
**Pump principle:** 4", 6", 8", 10", 12" submersible multistage pumps. Can be protected, monitored and controlled via CU3/R100  
**Material:** Stainless steel, cast iron, bronze  
**Flow, Q:** Max. 470 m<sup>3</sup>/h  
**Head, H:** Max. 670 m



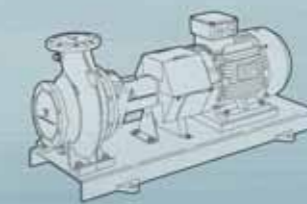
**SEG**  
**Pump principle:** Submersible grinder pump  
**Material:** Cast iron  
**Flow, Q:** Max. 18 m<sup>3</sup>/h  
**Head, H:** Max. 47 m



**HYDRO 2000**  
**Pump principle:** Complete pressure boosting systems – electronically controlled pumps as option up to 22 kW. External frequency converter up to 90 kW. Custom-built on request  
**Flow, Q:** Max. 540 m<sup>3</sup>/h  
**Head, H:** Max. 160 m



**MAGNA/UPE SERIES 2000**  
**Pump principle:** Circulator pumps, canned rotor type, electronically controlled  
**Material:** Cast iron or stainless steel pump housing and stainless steel impeller  
**Flow, Q:** Max. 90 m<sup>3</sup>/h  
**Head, H:** Max. 12 m



**NK**  
**Pump principle:** Single-stage, standard pumps, electronically controlled as option up to 22 kW  
**Material:** Cast iron or bronze  
**Flow, Q:** Max. 2000 m<sup>3</sup>/h  
**Head, H:** Max. 150 m



**NB**  
**Pump principle:** Single-stage, close-coupled, end-suction pumps, electronically controlled as option up to 22 kW  
**Material:** Cast iron, alternatively with bronze impeller  
**Flow, Q:** Max. 460 m<sup>3</sup>/h  
**Head, H:** Max. 96 m

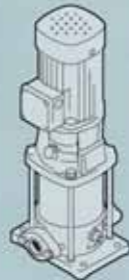
# On the other side there is...

## ... INDUSTRIAL PROCESSING

Industrial processing calls for pump solutions that are highly specialised. That's why we offer a wide range of pumps for general and sanitary processing. Take a closer look at our range.



**DMS/DME**  
**Pump principle:** Variable speed diaphragm dosing pump  
**Material:** Polypropylene, PVDF and stainless steel  
**Capacity, Q:** Min/max. 2.5 ml/h – 940 l/h  
**Pressure, p:** Up to 180 bar



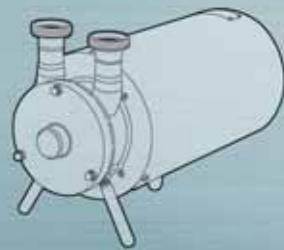
**CRN/CRT**  
**Pump principle:** Multistage, in-line centrifugal pumps, electronically controlled as option up to 22 kW  
**Material:** Stainless steel, titanium  
**Flow, Q:** Max. 120 m<sup>3</sup>/h  
**Head, H:** Max. 470 m



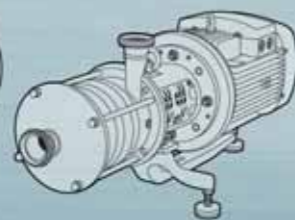
**SE1/SEV**  
**Pump principle:** Submersible, SuperVortex or single channel wastewater pumps  
**Material:** Cast iron, stainless steel  
**Flow, Q:** Max. 313 m<sup>3</sup>/h  
**Head, H:** Max. 45 m



**Euro-HYGIA®**  
**Pump principle:** Single-stage sanitary pump, electronically controlled as option up to 7.5 kW  
**Material:** Stainless steel  
**Flow, Q:** Max. 130 m<sup>3</sup>/h (250 m<sup>3</sup>/h on request)  
**Head, H:** Max. 75 m



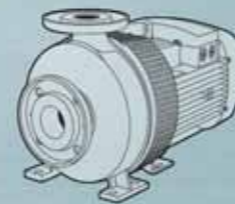
**SIPLA**  
**Pump principle:** Self-priming sanitary pump, electronically controlled as option up to 7.5 kW  
**Material:** Stainless steel  
**Flow, Q:** Max. 90 m<sup>3</sup>/h  
**Head, H:** Max. 50 m



**Contra**  
**Pump principle:** Multistage sanitary pump, electronically controlled as option up to 7.5 kW  
**Material:** Stainless steel  
**Flow, Q:** Max. 55 m<sup>3</sup>/h  
**Head, H:** Max. 170 m



**MAXA**  
**Pump principle:** End-suction process pump, long or close-coupled, electronically controlled as option up to 7.5 kW  
**Material:** Stainless steel  
**Flow, Q:** Max. 800 m<sup>3</sup>/h  
**Head, H:** Max. 97 m



**MAXANA**  
**Pump principle:** End-suction process pump, long or close-coupled, electronically controlled as option up to 7.5 kW  
**Material:** Stainless steel  
**Flow, Q:** Max. 140 m<sup>3</sup>/h  
**Head, H:** Max. 97 m

# Adding value to general processing

- + REDUCED POWER CONSUMPTION
- + CUSTOMISED SOLUTIONS
- + RELIABILITY
- + REDUCED DOWNTIME

=

**GRUNDFOS**   
**INDUSTRIAL SOLUTIONS™**

Improving general processing is all about adaptability and innovation. At Grundfos we give you both. Our extensive range of pumps for general processing provides you with customised solutions for your industry. And we're constantly developing new technical features that make handling various media even more efficient.

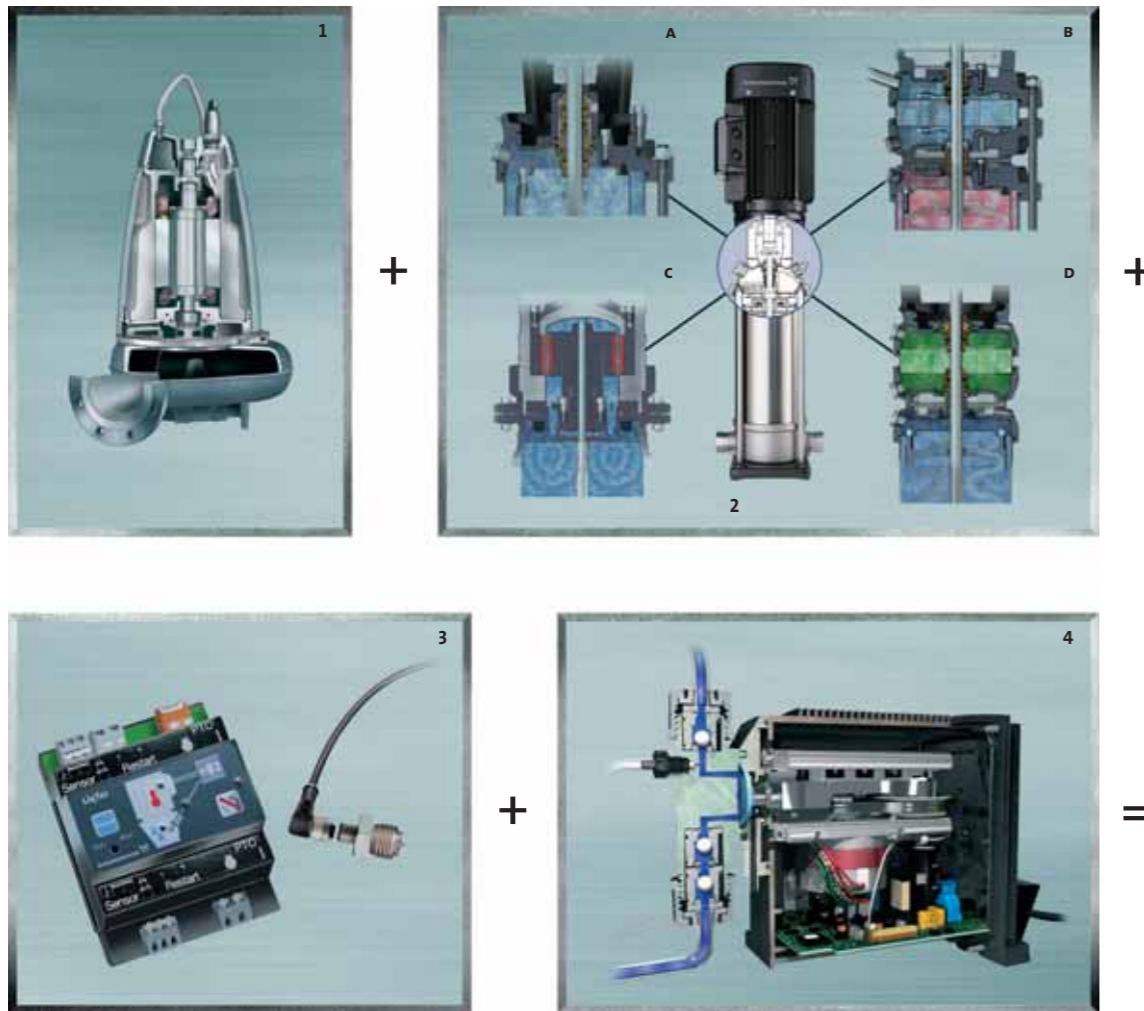
In reality this means that your pump solution will be more efficient and more reliable due to the customised fit. The innovative design of Grundfos pumps will not only ease operation and reduce power consumption; it'll also give you less downtime and hence reduce service costs.

# Adding little wonders to pump technology...

# ... getting big results in processing

At Grundfos we're constantly improving pump technology in order to make our pumps more efficient and more reliable. Our aim is to optimise every part of the pump from materials and hydraulics to motors and electronics. The result of our effort is not only to build innovative pumps – it's to give you the best possible pump solutions for your industry.

Grundfos Industrial Solutions is about giving you the best there is. Our range of pumps for plant service systems and processing can be adapted to any specified configuration and has the most innovative features for enhancing pump performance. And it all adds up. The sum of our labour is a range of pumps that will avoid pump failure, reduce downtime, ease operation and reduce service time. In the end, it's the small wonders of technology that brings you the biggest impact on performance.



### 1 SEI/SEV

The SEV/SE1 (SuperVortex/single channel impeller) pumps are designed for trouble-free operation in the most demanding applications. Due to the design of the motor with a solid aluminium stator housing, heat from the motor windings will be transferred downwards and into the pumped liquid. The pumps can operate continuously without any cooling liquid in dry pit or submerged installation and without motor

modifications. This capability allows for a very low stop level in the pit and thereby reduces sludge and odour problems from the pump pit and it results in less construction work, too.

stainless steel gives up. Adding in the rubber and shaft seal variants, motor specialities and customised solutions the number of industrial pump variants exceed one million configurations. This includes configurations to handle everything from water to very corrosive, hardening, crystallising, toxic or even explosive liquids. A few sealing configurations below.

### A DOUBLE SHAFT SEAL (TANDEM)

The double shaft seal in tandem consists of two mechanical shaft seals mounted in tandem. One seal is placed behind the other in a separate seal chamber. Quenching liquid systems are used for several reasons, such as to absorb leakage, to protect against dry-running, to stabilise the lubricating film, etc. Tandem is recommended for use with crystallising, hardening or sticky liquids.

### B AIR-COOLED TOP

The Grundfos air-cooled top is specially designed to handle hot water up to 180°C. To keep the temperature down around the shaft seal, a special air-cooled shaft seal chamber is fitted onto the pump. This enables the pump to handle high temperature liquids problem-free, 24 hours a day. All of this with only one shaft seal and no use of external cooling water.

### C MAGNETIC-DRIVE PUMP (MACDRIVE)

The zero-leakage, custom-built pump with magnetic drive (MAGdrive) is recommended for pumping hazardous or aggressive liquids. It protects the surrounding environment and the people working in close vicinity to the pump.

### D DOUBLE SHAFT SEAL (BACK-TO-BACK)

Double seals mounted "back-to-back" increase the safety of handling toxic, aggressive and explosive liquids. The double seal protects the surrounding environment and the people working near the pump.

Back-to-back seals are ideal for handling abrasive or sticky liquids, which would wear out, damage or block a mechanical shaft seal under normal circumstances.

### 3 LIQTEC

The Grundfos LiqTec dry-running sensor avoids unnecessary downtime due to pump failure. It stops the pump immediately if there is no presence of liquid in the pump. The sensor is easily inserted through the pump casing close to the shaft seal. The LiqTec also serves as overheating protection of the motor and can furthermore act as zero-flow protection that stops the pump in case of overheating.

### 4 DIGITAL DOSING

The motor-driven connection rod remains in contact with the diaphragm throughout the discharge/suction cycle. This keeps the diaphragm under control at all times securing full stroke length in the entire dynamic range which is covered by only nine models from 2.5 ml/h to 940 l/h. The full stroke length makes the pumps less vulnerable to built-up of gasses in the pump head, thereby improving precision and priming capabilities.

A unique digital display enables the operator to have full control over the pump and thus by pressing a button to change the pump performance without having to recalibrate the pump, saving valuable time and potential savings of chemicals.



# Adding excellence to sanitary processing

- + UNIQUE HYGIENIC DESIGN
- + HIGH-GRADE STAINLESS STEEL
- + CUSTOMISED SOLUTIONS
- + CERTIFIED PRODUCTS
- + REPAIR & SERVICE FRIENDLY

=

**GRUNDFOS**  
INDUSTRIAL SOLUTIONS™

Pumps for sanitary processing within the food, beverage and pharmaceutical industries are subject to strict safety standards. Grundfos' sanitary range is designed specifically to meet the hygienic design criteria outlined in these safety standards.

The use of AISI 316L (1.4404) rolled and/or forged stainless steel ensures a homogeneous pore-free surface as opposed to cast material. Where required, fully drainable models are available.

Depending on the actual application and pumped media, single or double mechanical shaft seals are available to secure trouble-free operation. The double shaft seals can be supplied as "tandem" or "back-to-back" versions. The single mechanical shaft seals applied are inboard seals mounted in an optimum position in the product flow to ensure lubrication, cooling as well as CIP and SIP capability. Standard materials are carbon/stainless steel and EPDM – other materials are available on request.

A variety of connection options is available, such as SMS, RIT, DIN, ISO, and TRI-clover. Special sterile threaded fittings and flanges can be supplied on request.

We acknowledge the demand in the market for short downtime by offering products that are repair and service friendly and by providing easy access to hydraulic parts.



**CERTIFIED PERFORMANCE**  
Grundfos' sanitary pumps are certified by their hygienic design and this acknowledgement complies with the particularly strict hygiene requirement within the food, beverage and pharmaceutical industries.

## GRUNDFOS SANITARY PUMPS HANDLE MEDIA WITH HIGH VISCOSITY

Nordzucker, based in Nordstemmen Germany, is a leading producer of sugar and a supplier of natural sweeteners. Their core business includes extraction and processing of sugar for the food industry as well as a wide variety of sugar products for the retail industries and for household use.

### THE SITUATION

Before Nordzucker discovered Grundfos' sanitary pumps, which are designed by Hilge, they were experiencing various problems, primarily due to the high viscosity of the sugar, which made it complex to process.

Nordzucker was looking to improve several parts of their sugar process, e.g. the process in which the liquid sugar was transferred through the system, the evaporation process throughout production, risk of crystallisation in the shaft seal due to the thickness of the sugar, etc.

### THE GRUNDFOS SOLUTION

With Grundfos' certified, sanitary, stainless steel product range, they were capable of helping Nordzucker ease the amount of problems they were experiencing throughout production.

Apart from the fact that the Grundfos sanitary pumps are highly reliable and repair and service friendly, Nordzucker strongly appreciated the unique hygienic design used, which would help reduce the time spent on cleaning. Furthermore, the mechanical sealing system available was valuable in order to ensure lubrication, cooling and CIP capability.

### THE OUTCOME

Today, 80% of the pumps for liquid sugar at Nordzucker are Grundfos sanitary pumps, such as Euro-HYGIA®, Contra, MAXANA and SIPLA, which now all play an important part in the daily processes carried out at Nordzucker.

Nordzucker's Technical Manager, Johannes Henze, comments, "The downtime has been reduced significantly and we are very pleased with our Grundfos pumps. Their service is fast and they are great at proposing solutions that fulfil our needs in the best way. Our experience tells us that compared with other pump suppliers Grundfos pumps have a higher quality in terms of efficiency, reliability and repair and service friendliness".

### 1 GAP-FREE SEAL AREAS

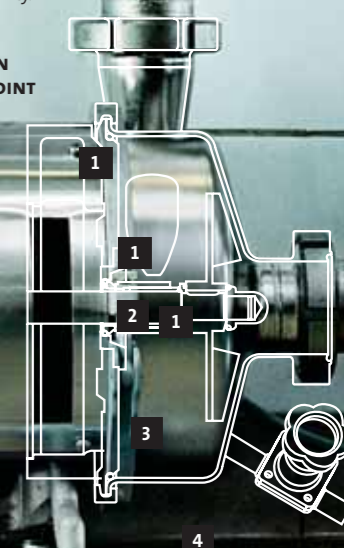
Corners and edges must be rounded off. Gaps, surface faults (cracks and scratches) must be avoided. Embossing and socket head screws should not be used.

### 3 DEAD END-FREE PUMP CASING

### 2 SHAFT SEAL

Shaft seals are mounted in an optimum position in the product flow to ensure lubrication, cooling and CIP and SIP capability.

### 4 CASING DRAIN AT LOWEST POINT



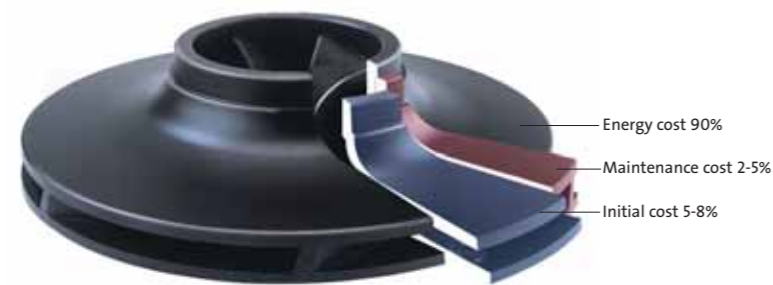
# Adding know-how to your industry

Grundfos is more than just pump solutions. It's over 50 years of accumulated expertise and technological insight. We are your sparring partner in all matters concerning plant service systems and industrial processing.

Grundfos has often pioneered pump technology and manufacturing techniques that have been adopted by various other pump manufacturers further down the line. At Grundfos, the pumps of tomorrow are planned for today.

## FOCUS YOUR ENERGY ON MINIMISING LIFECYCLE COST

There is money to be saved by focusing on the energy cost. During the entire life of a pump, 90 % of the overall cost comes from energy consumption. That's nine times more than the initial price and the cost of maintenance. Grundfos makes an all-important difference.



We're constantly striving to make our pumps more user friendly, reliable and energy saving. This is to ensure that the environment as well as our customers benefit from our improvements. For years now, we've experienced a growing demand for pumps that are electronically controlled. As a result of this demand, we now offers a wide range of E-pumps (electronically controlled pumps) to our customers. This enables the user to adjust the performance so that it fits with a specific demand. This not only provides convenience for the user – it saves a great deal of energy, too.

So when you are working with Grundfos you get more than just a pump.



### THE RIGHT CHOICE

WebCAPS is a computer-aided pump selection programme that gives you access to every bit of information relating to Grundfos pumps. Visit [www.grundfos.com](http://www.grundfos.com) and click on WebCAPS. All you need to do is to enter your required flow and head and we'll then guide you through the selection and dimensioning process.

### GETTING IT FAST

Grundfos is represented in more than 80 countries – so you can count on getting fast service no matter where in the world you are. We provide full service around the clock and because we're always fully stocked you can rely on a fast and efficient service from us.

### BEING RESPONSIBLE

Choosing Grundfos as your preferred pump supplier means choosing a company that has high standards as to social and environmental responsibility. Our concern for our employees and the environment is evident in every aspect of our production and maintenance.

### DOCUMENTATION

Via our website you can access information regarding Grundfos pumps. Here you'll find detailed information including 3D technical drawings, installation manuals and technical documentation. Visit [www.grundfos.com/industry](http://www.grundfos.com/industry)