

CUSTOMISED SOLUTIONS

Optimised for washing and cleaning

THE NEW CRE. MORE CUSTOMISABLE THAN EVER.

Get upgraded. Twice.

A double upgrade for your washing and cleaning pumps

Your first upgrade: The new CRE with three-phase motors

You already know the electronically controlled CRE pump range and how it combines reliability and efficiency thanks to the integrated frequency converter in its MGE motor.

You may also already know that the new generation of CRE pumps with three-phase, dual-voltage MGE motors from Grundfos has hit the market.

You have heard how they are:

- even more efficient
- even more robust
- offering a very wide power supply range
- incorporated with a duty/standby function
- improving stock management seriously.

You may even have heard that they are matched to different pump applications with a range of different functional modules. But there's even more in store for you.

Your second upgrade: Software to push the limits

The new MGE motors are good news for everyone. You, however, are a special case. The Grundfos experts have found ways to use sophisticated software to further customise the CRE range. And washing and cleaning applications have received special attention.

The new software options mean that your usual benefits:

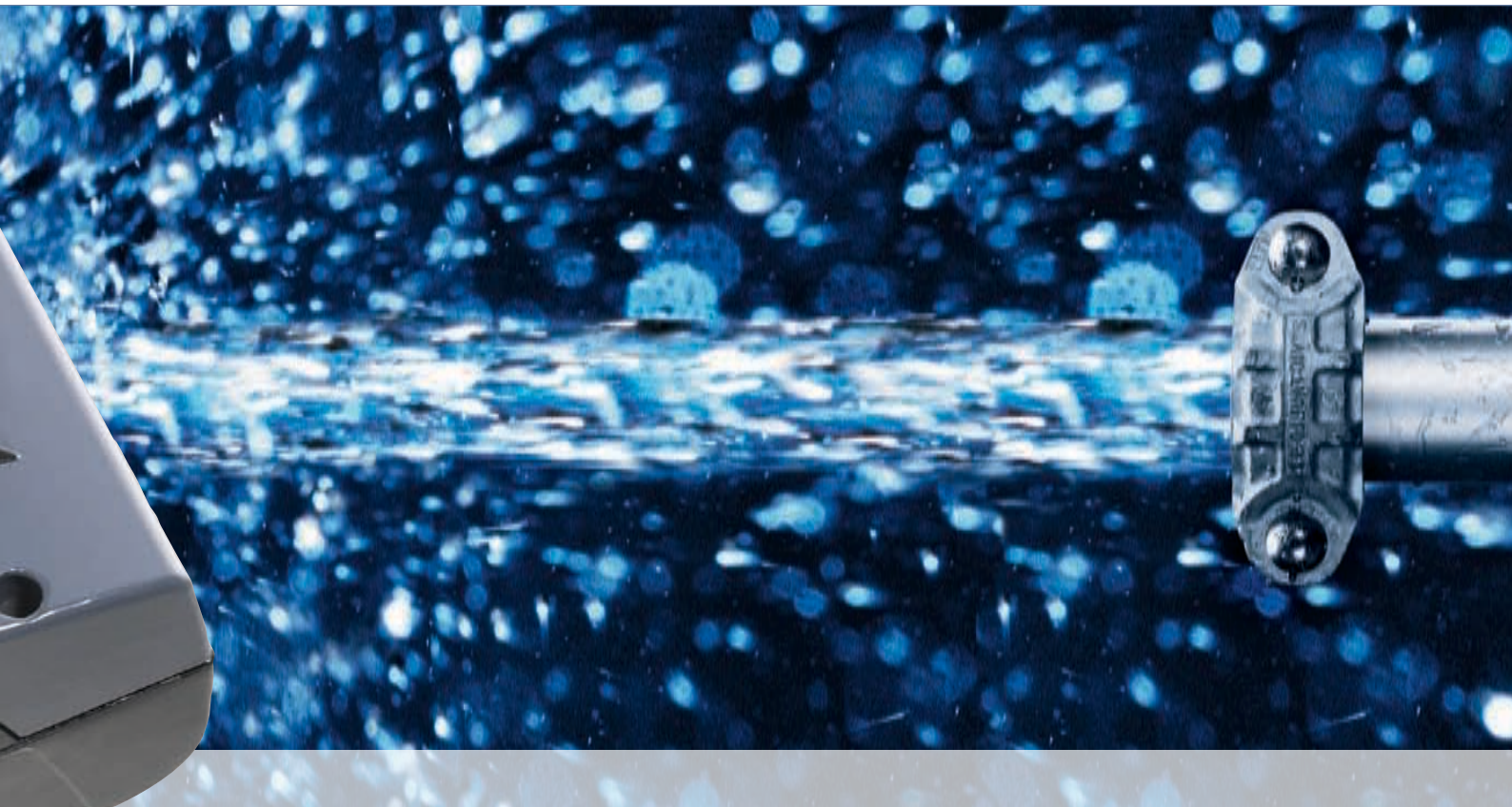
- Reliable, efficient operation
- Resistance to high temperatures and humidity
- Rapid response
- Intelligent operation

... become even more pronounced. And are joined by new ones. Read on to learn more.

More wants more ...

Water treatment specialists can derive great benefits from the full range of Grundfos products for Water treatment applications. Highlights include the Grundfos Alldos dosing pumps that enable e.g. efficient oxygen binding. The full water treatment portfolio for measurement and control is also worthy of note.



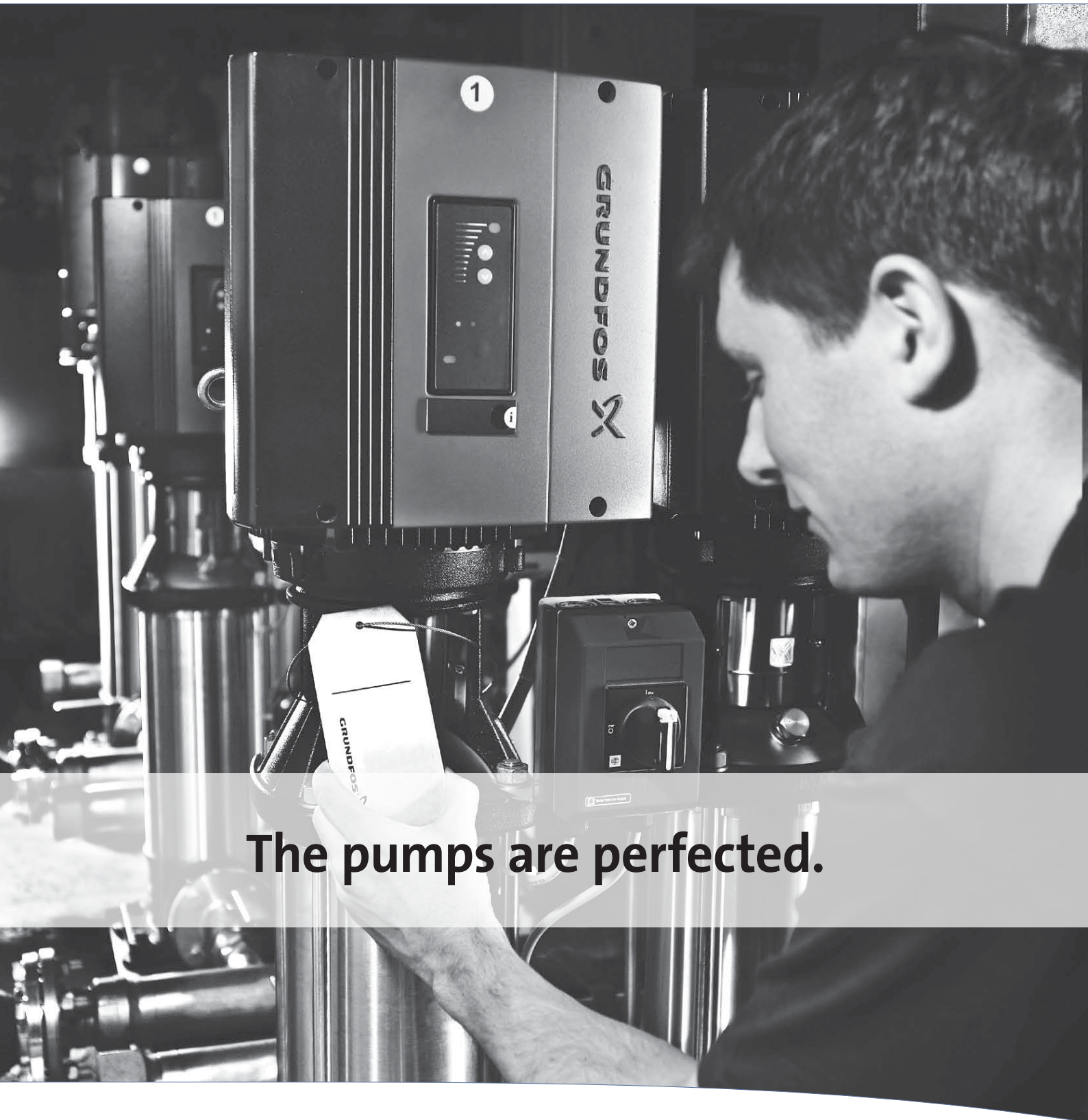


Software to solve challenges

Customised software helps you overcome the challenges of washing and cleaning applications – sometimes by letting you use pumps you didn't think would do the job.

| Challenge | Solution | See page |
|-------------------------------|---|------------|
| Limited space | Over-synchronous operation ($\approx <6000$ rpm) let you use smaller pumps | 5 & 8 |
| High temperatures | Better tolerance of ambient temperatures, e.g. thanks to automated derating | 5,8-9 & 11 |
| Pressure spikes | Gentler starts and stops, no water hammer, and no overheating | 5 |
| Rough environments | Better response to wet, damp or changeable environments | 7 |
| Response times/variable loads | Preset the desired speed or pressure and let the pump handle the rest | 6 |
| Inaccurate nozzle action | Computer-controlled nozzles respond exactly to your needs | 9 |
| Resonance | Customised software can help dampen resonance | 5 |





The pumps are perfected.

Having optimised virtually all physical aspects of the pump, it's time to see what some more brainpower can do.

Now we go for complete control.

Sophisticated code optimises your pumps

After decades of development work, the mechanics of your Grundfos pumps and motors are virtually as good as they can get. So our design team went on to harness the power of computers.

Always adapting, always efficient

Little digital wonders work tirelessly to analyse input and make small adjustments all the time, helping you create a system that works better. It's that simple on the outside. But rather complex on the inside.

The next pages point out some of the main benefits that customised software can bring to washing and cleaning tasks. For more about the software itself, turn to "The Science Bits" on p. 10.



Save space in more ways than one

The right software will let you use a smaller pump than usual – see the following pages for details – but the new motors in the CRE range also have other, space-saving advantages: All controls are integrated in the motor, so you can customise the pump's user interface to your needs. All you need outside is short-circuit protection.

We make no compromises. But we still save you money.

Getting the right, customised E-pump solution may let you save money on the initial investment. Obviously, a small pump is cheaper than a large one. Also, sensors of your choice can be connected easily and directly to the pump, eliminating the need for separate control cabinets.

You get a solution that's more compact, easier to install, and perfectly integrated. Best of all, you get Grundfos quality, but you actually pay less.



Getting pump performance right on target

Customised software can greatly increase the pump's RPM, allowing you to get the high pressure you need from a smaller pump. Without pressure spikes.

The rules don't apply to you any more

Making your pumps more focused.

Using customised software means you can bend the rules for what your pumps can do. Quite simply, the software instructs the pump to do only the things it needs for the job at hand – nothing else.

More RPM. More pressure. Smaller pump

When we turn to washing and cleaning tasks, the pump does not need to perform across the full pump curve. In effect, only a narrow band of the pump curve is necessary, and customised software created by Grundfos lets the CRE pump operate within that band with perfect precision. This can practically double the pump's RPM.

The increased speed translates into greatly increased pressure, making the pump do things it normally couldn't do. To put it in popular terms, it lets you get more pressure for your "buck". See page 9 for a curve and size comparison

No pressure spikes

Software can give you more gentle starts and stops, carefully adjusting ramp-up to avoid water hammer. This also means that you avoid "dead head", i.e. situations where insufficient flow would cause the pump to overheat. You get better performance and greater reliability in one go.

Withstand rough environments

The CRE is very robust in itself, and its updated electronics let it withstand temperatures up to 65 degrees Celsius. With customised software, the automated derating option responds to excessive heat by having the pump operate at lower power. Similarly, the use of local inverters makes it easier for the pump to appropriately respond to wet, damp or changeable environments. A tough pump just got tougher.

Better response to variable loads

Thanks to rapid PI regulation, customised software means that you can preset the desired speed or pressure and let the pump handle the rest.

Dampened resonance

Washing and cleaning solutions often involve sheet iron cabinets, so system resonance can be a concern. Customised software can have a dampening effect, very effectively reducing resonance from within the system.

Low noise = less insulation

Dampened water noise also means you need less insulation. A knock-on effect of the reduced need for insulation is better, easier cooling in system, which in turn means easier overall handling. And it all starts with the right sequence of ones and zeroes.

Nozzle control, too

Customised software can be used for precision control of nozzles, too. You want high-pressure to wash down surfaces and flush away dirt, but e.g. foam should be added at lower pressure. We can make the pump software open the appropriate nozzles as you wish. You avoid separated steps in performance and ensure that the pump never lags behind, and you won't relinquish any control – the nozzle control function can be set to work in conjunction with buttons as desired.

Physical adjustments? Not a problem!

Of course, some minor adjustments to the pump itself might be called for – for example, we may use different ball bearings to maintain the long lifetime you expect from a CR pump. As the CR is designed to be fully customisable, you won't notice any of these changes; all you'll see is that you can get your pumps to deliver pressure you never thought possible. Or use a smaller pump to achieve the same results.

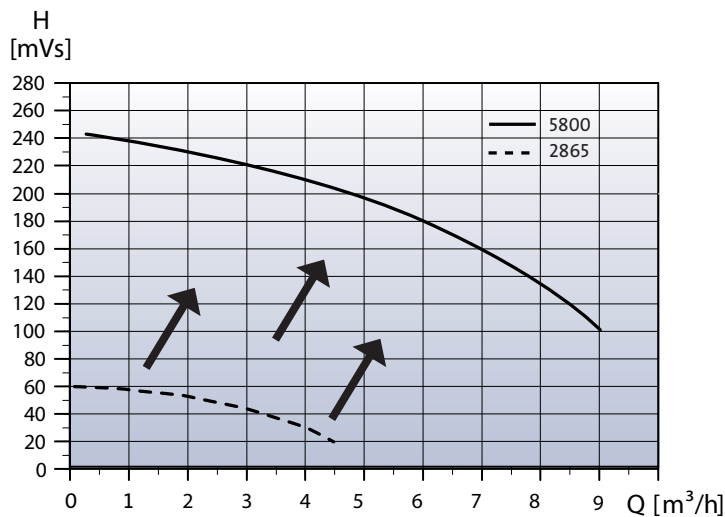


Save space with computer power

It's well-known that frequency converters allow for over-synchronous operation – i.e. to make the pump operate at more than 50 Hz. With the right software in the pump, you can push the benefits of over-synchronous operation even further.

By fiddling with the electronics, our experts keep the pump precisely within the operating window you need, never allowing it to overheat or be worn down. Basically, the software persuades the pump to spend its strength when you need it – and holds back when you don't.

The most visible result is that you can use a smaller pump. See the curve below for a comparison.



The right software shifts the pump curve so you get over-synchronous operation – which means you can use a smaller pump to get the power you need. As this curve clearly shows, the difference in size can be considerable.

Optimise your cabinet designs

By teaching a smaller pump to deliver more pressure, we give you the chance to design more compact and elegant cabinets for your cleaning equipment. For those who prefer wagon-type designs, their solutions will be shorter and easier to handle around corners.



A real-life case

Sometimes, an example can put things into perspective. So here's one. A Grundfos customer was very interested in reducing the space taken up by the pumps they used for cleaning, so we created a separate GSC (Grundfos Software Communication) file especially for them. The software almost doubled the pump's RPM.

To prevent the excessive wear that such over-synchronous operation would normally entail, we added different ball bearings for greater strength, put in a different ventilator to ensure reliability, and the solution was ready.

This solution not only doubled the pumps' performance – it also allowed the customer to dispense with a control cabinet, opting instead for sensors coupled directly to the pump.

The result was better performance, easier and more compact installation, and more advanced monitoring and control features. It's no wonder the solution soon spread to many other companies in the region ...

Don't forget that you can pass on the benefits of a customised solution to your clients. If they have special requirements or challenges, talk to us. Maybe we can change things just a few lines of code.





The Science Bits

More about what software can do for you

Customised software enables you to embed exactly the functionalities you want in your pumps. And to change the way they perform.

Details for those who want them

For those interested, this “Science Bit” section gives those with a keen interest in technical matters a little more information on how software can give you a dedicated system upgrade.

Creative software. Made for you.

The latest advances in software allow us to create completely customised solutions with very compact object code. Basically, that means our designers are free to think creatively about how your systems can be improved. And because it's all done with software, they can target your challenges very, very specifically, making the hardware do exactly what is best for you. Nothing else.

Get different results out of the same pumps

Essentially, we change the hardware without touching it – or touching it only very little. You won't see any difference. Your installations remain the same. But it feels like you have a different, more powerful and more accurate pump installed.

How it works

Our intelligent solutions are developed in several stages. First, we inject the basic software – the OS, if you like. We then add a number of operation parameters (known as a GSC file – Grundfos Software Communication) via GENI. These instructions may include operating speed, motor size, etc. This information cannot be changed by you.

We then add the user interface, telling the pump how it should interpret and respond to sensor signals. This is followed by the careful development of a second GSC file with detailed pump and sensor information. The new GSC file, which is where the completely dedicated customisation comes in, is embedded in both the front and back ends of the motor's “brain”.

When the pump reaches you, you can communicate with it via e.g. the R100 remote unit. To make life simple for you, your options will be restricted to those that are useful to you

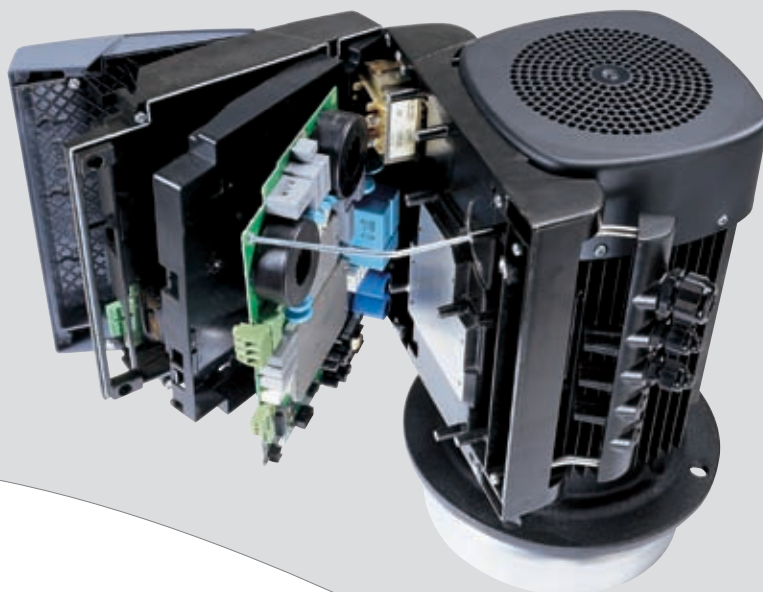
– e.g. setting the pump for a soft start.

Get your very own solution

As you might imagine, you can have codes made just for you. We will check out your system and find out exactly what your pumps need to do to – for example delivering maximum pressure in short, sharp bursts. Then we set them up to respond to sensor inputs by increasing or decreasing their speed. You can't get performance more accurate than that.

You're welcome!

Customised software does more than optimise efficiency. It also essentially puts down the welcome mat and say “Come on in!” You get the functionalities you want embedded into the motor. And access to the data you want. Some customers prefer to let the MGE handle the operation loop, while others go for different control options. You can get it all from Grundfos.



The CR range from Grundfos

Grundfos was the first company ever to develop a multistage in-line pump. The present-day CR pump series is the most extensive in-line pump programme on the market and remains second to none. With many innovative features unique to Grundfos, CR pumps provide superior reliability and the lowest possible cost of ownership to customers worldwide.

Customisation made easy

In order to meet all customer requirements with complete precision, Grundfos has developed a unique mix-and-match approach to customised pumps. The elements of the CR range can be combined any which way to create the solution that is exactly right for you.

Grundfos: a pump for every purpose

Impressive as the CR range is, Grundfos offers much more. A complete range of pump solutions means that all applications – industrial and domestic – can benefit from the Grundfos touch.

Customers can always rely on our complete dedication to quality and service.