



More crop per drop
with variable speed pumps

Dedicated to Modern Agriculture

When the times call for new thinking, American agriculture has always taken on new techniques to boost productivity. And now change is upon us again. The market for agricultural products is both more competitive and volatile than we have seen in decades. At the same time, local water resources are showing undeniable signs of stress. We need to use water more responsibly and get more crop per drop.

It is time to look to new solutions that can:

- reduce energy costs
- safeguard the water resource, and
- keep productivity at its best

Irrigation solutions for today

Our commitment to agriculture is unmatched. Grundfos offers the industry's broadest line of irrigation pumping systems. Our passion for perfection drives us toward designing the most intelligent solutions for today's growing challenges. Our pumping systems are efficient, tested for reliability and designed to work seamlessly with modern farming operations.

Innovative thinking for tomorrow

Grundfos continues to be one of the most innovative companies in a rapidly developing field. We continue to discover new ways of doing things and of refining proven successes. Ultimately, Grundfos will continue to raise the standards for irrigation pumping systems to meet the needs of modern, high-potential growers.

Grundfos is dedicated to bringing new perspectives to make American agriculture more competitive and more sustainable in a fast-changing world.



A formidable team for the future

We are never far away from the people who need us. Our local facilities and partners ensure that pumps, replacement parts and expert advisors are always close at hand. Grundfos can be found in all major agricultural centers in the USA.

To better serve farmers and irrigation system suppliers, Grundfos has brought in the Paco and Peerless product ranges to create a formidable line-up of pumping systems for irrigation.

Each company has a long-standing position and experience with agricultural applications. From deep-set turbines to surface boosting operations, we have the products and expertise to meet irrigation needs going forward. Our respective heritages and contributions put us in a unique position to understand the historical needs of the market and to help farming communities meet the challenges ahead.



PACO® PUMPS

**PEERLESS
PUMP**®

Modern pumping systems for modern irrigation systems

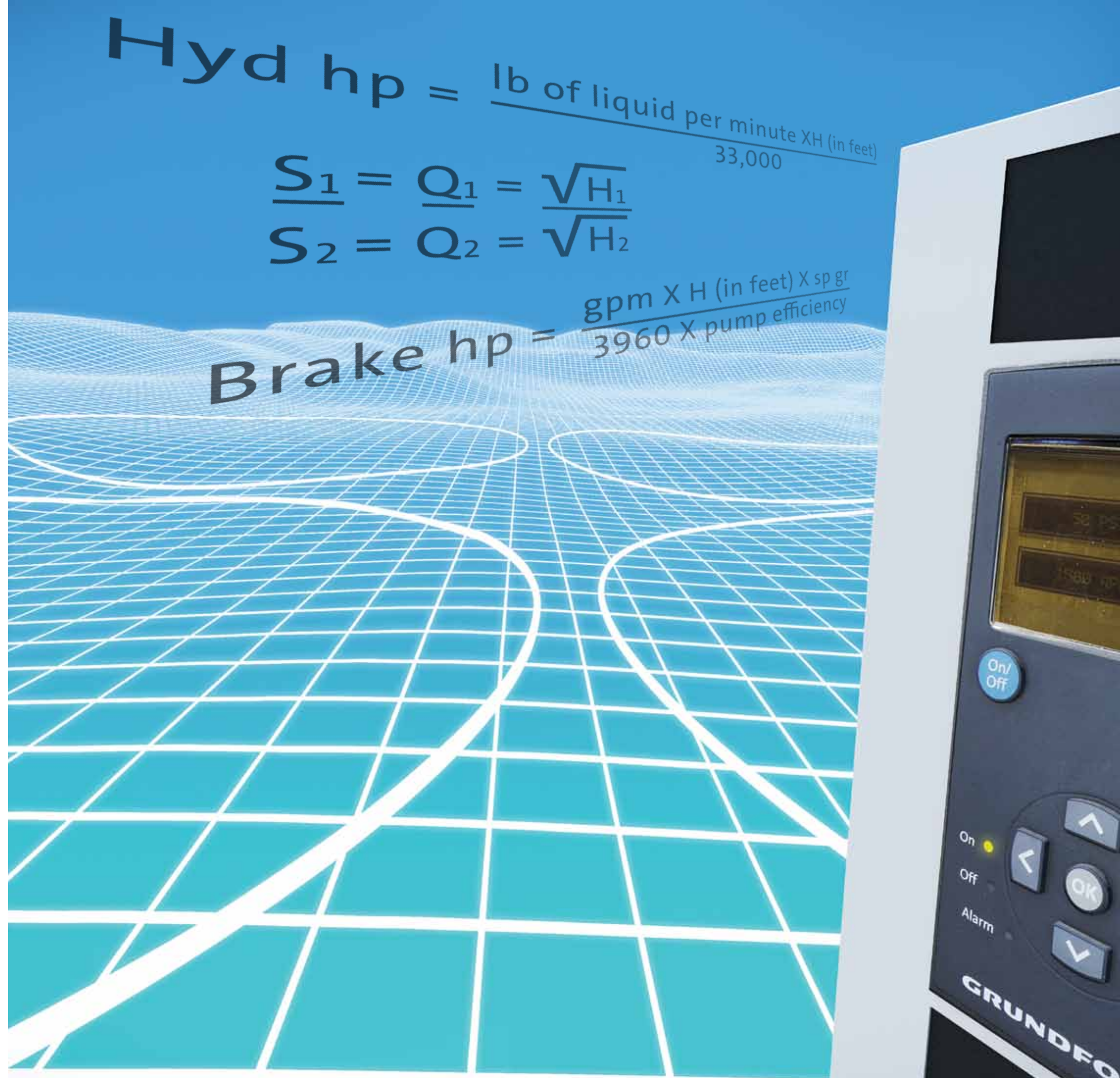
With the many changes in the market today's farmers cannot rely on the technology and practices of the past. In face of depleted water reserves, we must also acknowledge that water is a resource to be managed just as we do with the soil itself.

To get more crop per drop, everyone in the industry needs to pool knowledge and experience to make the American farming industry more competitive and sustainable. From a pumping perspective, Grundfos can contribute with expertise and technology that can ensure uniform coverage despite changeable conditions.

Save energy dollars with variable speed

Changing conditions above and below ground have an effect on the pressure and flow required from day to day and from season to season. A pumping system must be able to deliver the right amount of pressure and flow at the nozzle and ensure that energy costs don't eat away at profit margins. Variable speed pumps are one of the vital keys to such cost-effective irrigation.

Increase farm productivity. Use Grundfos variable speed pumping systems and expertise in any irrigation system.



$$\text{Hyd hp} = \frac{\text{lb of liquid per minute} \times H \text{ (in feet)}}{33,000}$$

$$\frac{S_1}{S_2} = \frac{Q_1}{Q_2} = \frac{\sqrt{H_1}}{\sqrt{H_2}}$$

$$\text{Brake hp} = \frac{\text{gpm} \times H \text{ (in feet)} \times \text{sp gr}}{3960 \times \text{pump efficiency}}$$

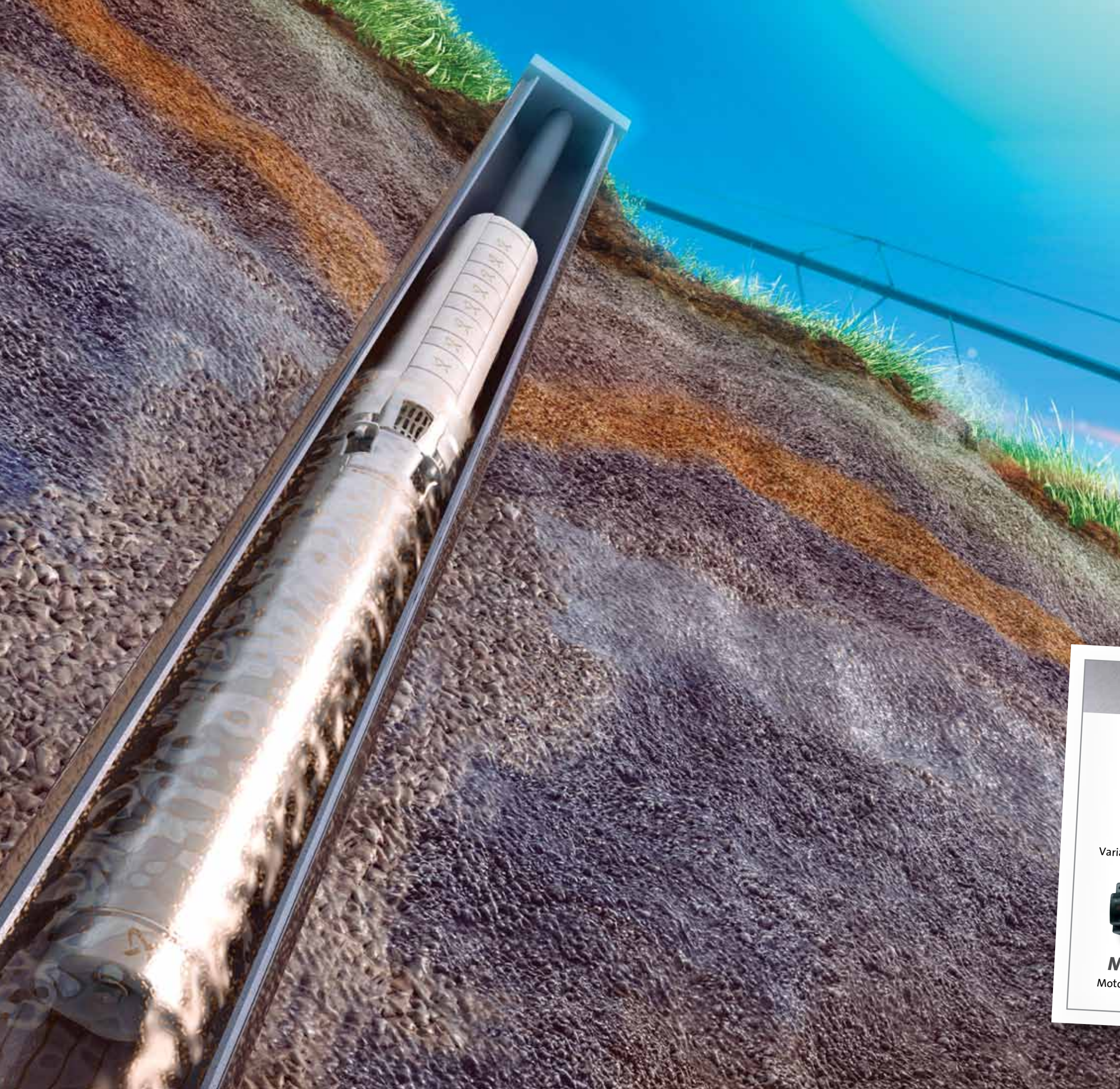
On/Off

On

Off

Alarm

GRUNDFOS



A reliable supply of groundwater

Our first priority is to ensure a reliable supply of sufficient water for the crop. Taking this commitment further, we offer to use our technology and insight to bring groundwater to the surface at the lowest possible cost.

Grundfos offers a proven range of durable, speed-controlled submersible pumps and vertical turbines. These are designed to deliver groundwater cost-effectively by reacting automatically to changing down-hole conditions. To suit each situation, we supply the expertise to ensure pumps and motors are applied correctly.

Additionally, monitoring and control systems further safeguard the reliable flow of water by protecting the pump from dry-running or power supply irregularities. All such components are pre-engineered for plug-and-play with Grundfos pumps and motors.

The proven pumping systems for changing down-hole conditions

Groundwater

- CU 321**
Variable Speed Drive
- MP 204**
Motor Protection
- CUE**
Variable Speed Drive
- SP**
Submersible Pump
- Peerless VTP**
Vertical Turbine Pump

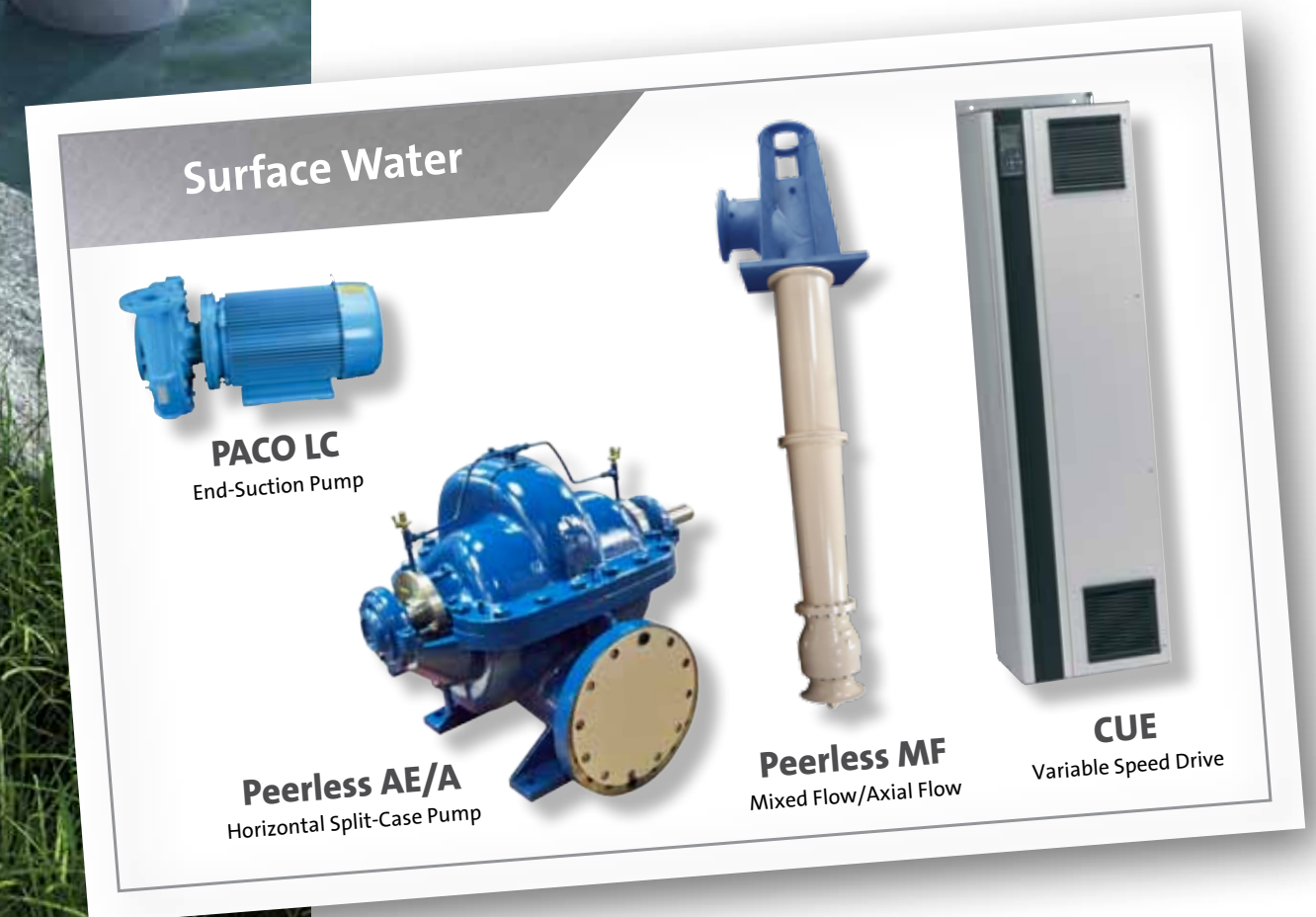


Cost-saving water intake

The rises and falls in water level essentially change the specifications for a pumping system because these variations change the head. A single speed pump dimensioned to lift from the lowest water level will burn energy dollars when the level is high. A variable speed pump is on the other hand able to adjust its speed to compensate for changes in water level for the benefit of overall farm productivity.

With Grundfos' assistance, farmers will get a system that will balance intake with changing water levels and demands to ensure against dry-running, cavitation and motor failure.

***Variable speed drive =
Optimal head and flow +
more water per Hp***





Safe and precise chemigation

Chemigation and fertigation systems can be individual but from where we stand the principles are the same every time: Safe, precise dosing and a uniform mix in the water line can be felt on the bottom line. With Grundfos dosing and metering equipment, efficient and effective use of chemicals is made simple.

For handling any chemical, Grundfos has pump technology that is easy to adjust and maintain. Our corrosion-resistant dosing pumps are ideal for injecting nutrients and chemicals. They dose concentrated and ready-to-use chemicals evenly and precisely into the line, and will automatically adjust dosages in response to changing flow. Out in the field, the crop will receive the desired and uniform concentration of nutrient and pest-control chemical. The right amount in the right place at the right time.

We can also advise on relevant safety procedures, back-flow prevention, etc. in relation to local regulatory constraints.

Even for new users, safe precise chemical dosing is made simple.

Dosing Pumps



DDA, DDC, DDE
SMART Digital Dosing Pumps

DME
Digital Dosing Pumps



Get the coverage you intended

We let the farmer and the irrigation system designer make the decisions to ensure the most profitable yield. Then, we use our perspective on things to make sure they get what they intended.

Based on the expected range of water needs, we will design the pumping system that will deliver an even flow and pressure to each nozzle along the pivot. Standard functionality in our variable speed drive compensates for the varying degrees of head loss in the line that is caused by variable flows. This protects against the risk of pipe burst, minimizes leakage losses and keeps energy costs down. And if end-guns are part of the picture, our design will ensure unchanged pressure and irrigation uniformity right along the pivot.

***A new perspective on pivot irrigation
to get more crop per drop***

Pivot Pressure Boosting



PACO LC
End-Suction Pump



Peerless AE/A
Horizontal Split-Case Pump



CUE
Variable Speed Drive



Uniform application in precision systems

From where we stand, we can see how constant pressure is vital for ensuring uniform application throughout each zone in the system. As zones cut in and out, variable speed pumps compensate for the variations in flow to ensure constant pressure, while keeping operating costs down at the same time.

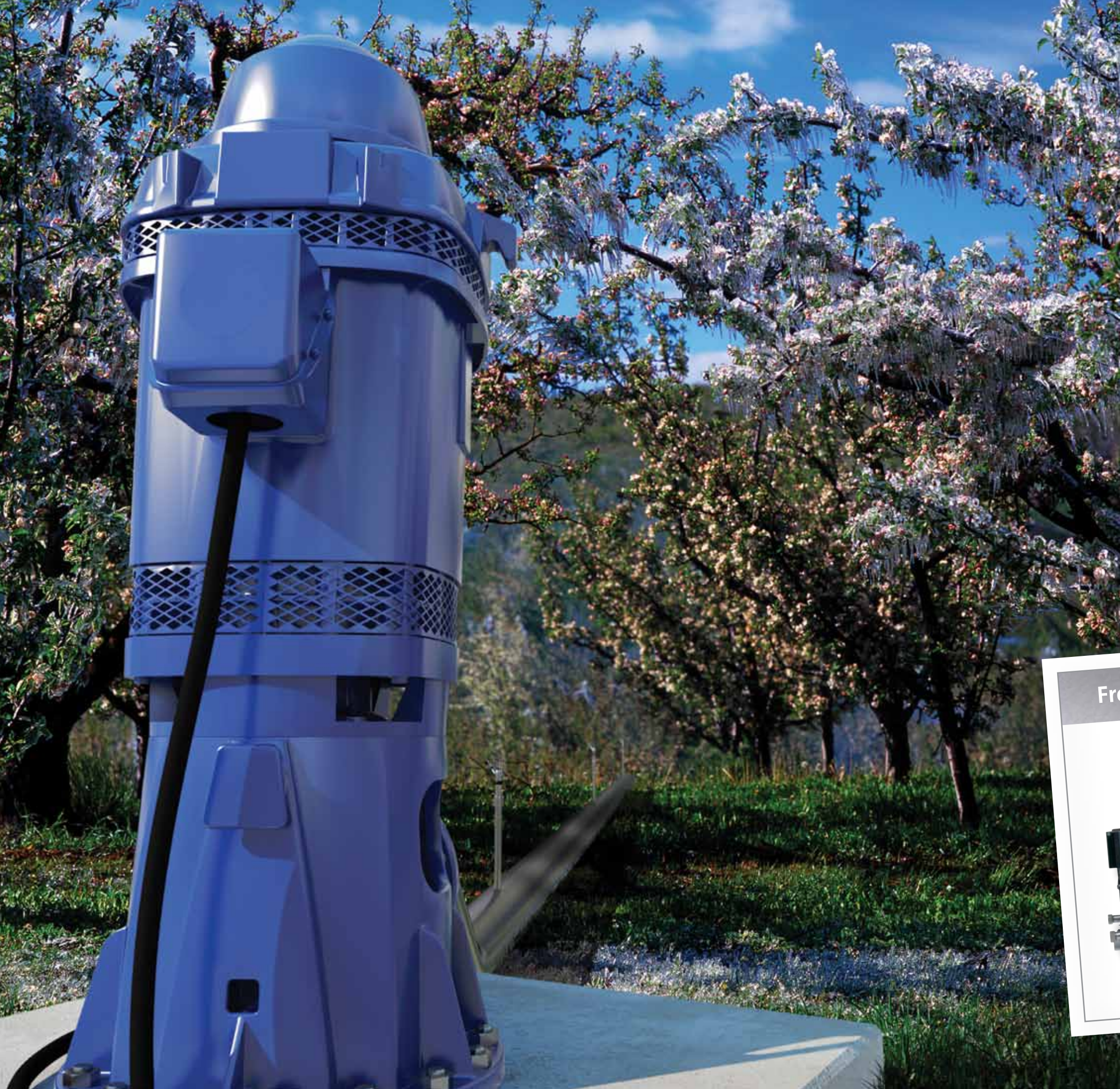
The variable speed drive on Grundfos pumps can also monitor the pump's energy consumption. This data can be used to detect when the sand filter needs cleaning.

In precision irrigation systems, Grundfos can also integrate chemical injection equipment that ensures a uniform mix in the line.

Our fully integrated systems react automatically to changing conditions

Drip & Micro Spray

- BoosterpaQ**
Pressure Boosting System
- CUE**
Variable Speed Drive
- PACO LC**
End-Suction Pump
- CME**
Horizontal Multi-Stage Pump
- CRE**
Multi-Stage In-Line Pump



Automated systems for frost protection

Unforgiving as frost can be, growers must be able to rely on an effective frost protection system that starts automatically when temperatures fall. To ensure this and the necessary shielding layer of ice, our pumping systems can be the determining factor.

From our perspective the principles for ensuring this are the same as any other watering and irrigation system. By delivering water at the correct and constant pressure, our pumping systems deliver a uniform cloud of moisture that will cover and protect every surface of the crop.

Temperature sensors, data communication, and automation are easily integrated for reliable pump operation. And an alarm will be sent directly to the farmer if anything is amiss.

***A uniform cloud of fine mist
that covers every surface***



More crop in every drop

Wherever pumps are used on a farm, Grundfos can design a pumping system that enhances productivity. Our objective is to make it simpler for you to get more crop per drop.

No matter how big or small the application, we can deliver the necessary pressure and flow. Variable speed pumps and easily integrated controllers automatically react to changing conditions and demands to keep running costs down. Each component in the system is pre-engineered to work seamlessly with the next.

So next time a pump is needed, ask us how our systems would be better at boosting farm productivity.

Reliability

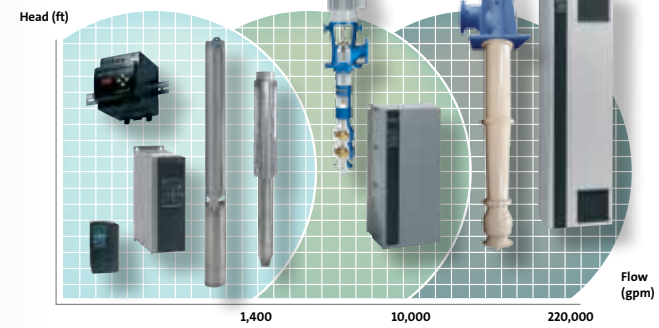
Cost-effectiveness

Water management

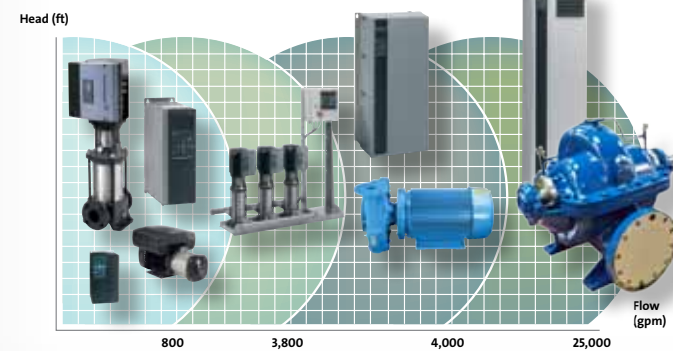


Performance Range

Groundwater Systems:



Surface Systems:



Responsible stewardship and good business

Grundfos is guided by a desire to use technology in innovative ways to support a growing and fast-changing world. We are conscious of the impact our activities can have on people and the environment, and this is precisely why we put sustainability first. From our perspective, sustainability is a healthy mix of responsible stewardship, common sense and good business.

- To be sure that we have enough irrigation water tomorrow, we should look to more efficient water use today.
- By reducing energy costs on pumping systems, we play our part in conserving resources and making American farmers more competitive on local and global markets.

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