

GRUNDFOS iSOLUTIONS FOR WATER UTILITY APPLICATIONS

GRUNDFOS iSOLUTIONS



be
think
innovate

GRUNDFOS 

TAKE THE SYSTEM APPROACH TO OPTIMISATION

Water supply and wastewater networks are critical installations where breakdowns and downtime can have serious consequences. This means you need an intelligent pump solution that ensures all processes run smoothly and that equipment is integrated in a way to reduce engineering and programming costs.

Grundfos iSOLUTIONS utilises intelligent technology to optimise how pumps, drives and controls, as well as measurement and communication units, work together as part of one system. For your system, the result is high energy reductions, component savings, better communication, trouble-free operation and more.

All this with simple control via your computer, tablet or smartphone.

Grundfos iSOLUTIONS brings the benefits of intelligent solutions to advanced pump systems and water technology

Autonomously optimise system performance:

Reacting to system performance data, adjusting to demands

Complete system overview and control:

Integrated user interface for the pumps and components, remote control from your device

Improved comfort and end-user satisfaction:

Safe water and perfect pressure at all taps

Improved reliability:

Reduced downtime and maintenance costs

High energy efficiency:

Reduced energy consumption, exceeding the standards you know today

Customer specific digital offerings:

Designed to match the exact needs of your operations

GRUNDFOS iSOLUTIONS



Water utility applications typically face a number of challenges, from rising energy costs and water loss to significant infrastructure investments. Grundfos develops and implements technologies to meet these challenges head on.

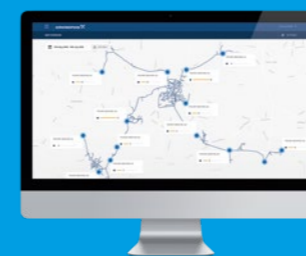
We offer intelligent products, solutions and services tailored and optimised for any water utility application to provide maximum reliability and resource efficiency. So, no matter the application, we can help you reduce system stress, downtime, maintenance and system complexity, while lowering life-cycle costs.

Grundfos iSOLUTIONS utilises intelligent pumps and connectivity to achieve a new level of system control, optimisation and predictability. Through dialogue and collaboration, we'll find the perfect solution for your water utility application.



INTELLIGENT PUMPS

Intelligent pumps can react and operate autonomously based on system demands to optimise the entire system's performance. They are easily connected with our CIM communication modules, which can connect all our motors with built-in frequency converters and controls to local SCADA systems or Grundfos Remote Management (GRM)/Grundfos iSOLUTIONS Cloud.



INTUITIVE CLOUD DASHBOARDS

If you have your own control system, such as SCADA, Grundfos iSOLUTIONS pumps and components can easily be integrated. When SCADA systems aren't present, we offer GRM/Grundfos iSOLUTIONS Cloud. It gathers system data into one intelligent and secure cloud platform that performs advanced data processing and delivers the output to simple and intuitive dashboards.



DIGITAL SERVICES ON DEMAND

Grundfos iSOLUTIONS also opens for full connectivity and a range of service packages within specific applications. GRM/Grundfos iSOLUTIONS Cloud includes remote access to operation mode and setpoint, historical data trending, alarms and warnings, as well as installation and application performance monitoring.

RAW WATER INTAKE

WIDELY VARIED WATER SOURCES. CHANGES IN SEASONAL OPERATING CONDITIONS.

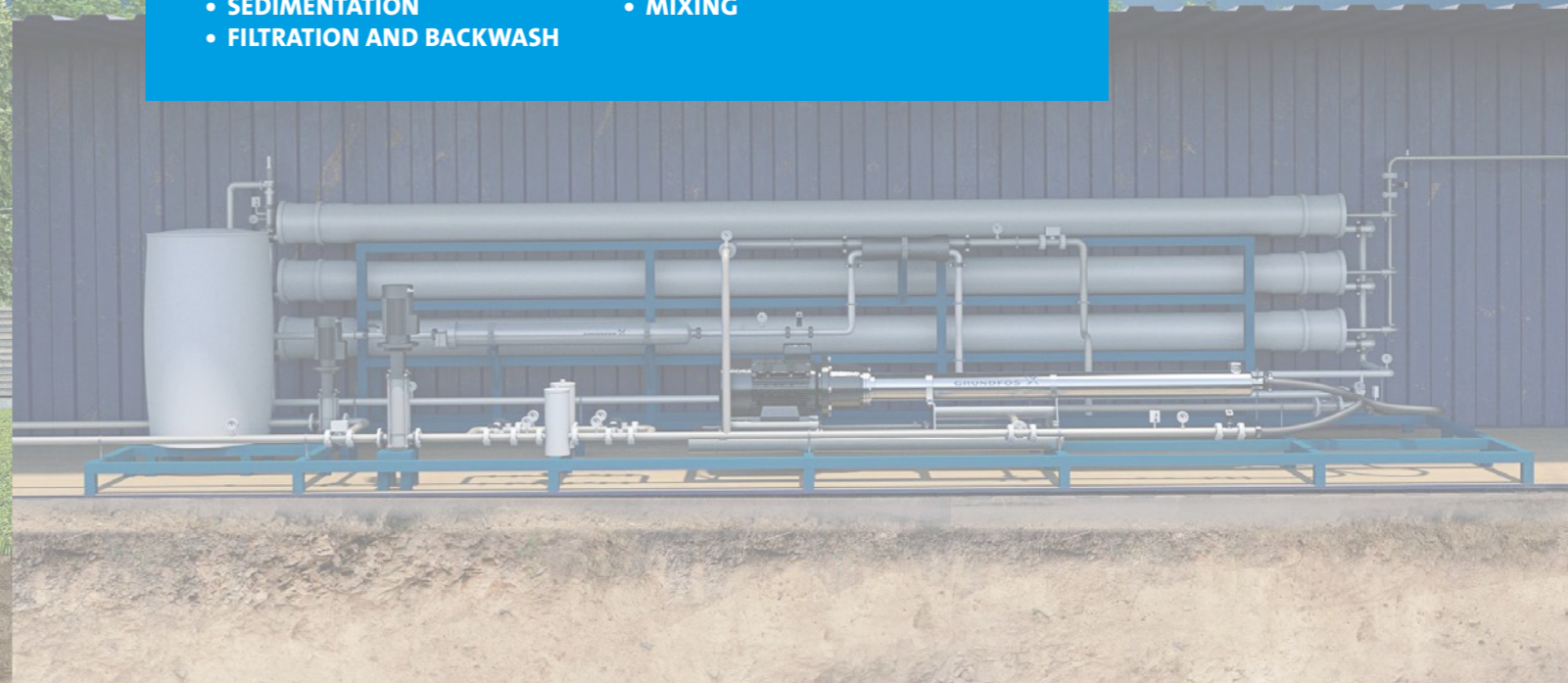
- GROUNDWATER
- SEAWATER
- RIVERS
- LAKES



DRINKING WATER TREATMENT

SAFE AND CLEAN WATER SUPPLY. FAST RESPONSE TO CHANGING SITUATIONS.

- DESALINATION
- CHEMICAL TREATMENT
- FLOCCULATION AND AERATION
- SEDIMENTATION
- FILTRATION AND BACKWASH
- DISINFECTION
- WATER RESERVOIRS
- INTERSTAGE PUMPING
- MIXING



Sourcing treatable water is the first step in any water supply system. Increasing supply capacities to meet continuing population growth demands more sustainable pump system solutions. Along with a wide range of pump models for water intake applications, Grundfos offers intelligent control systems to achieve the utmost eco-friendly system operation to meet ever-changing intake requirements at the lowest possible energy consumption.

GRUNDFOS iSOLUTIONS

RENEWABLE ENERGY SOURCES

This solution comprises a borehole pump powered by renewable energy source and including the right control and automation system. Such a turnkey solution benefits rural places with no access to the electrical supply grid.

NETWORK PUMPING CONTROL

Multiple external input signals can be connected to the pump controller to allow interaction between pump stations and equipment. GRM/Grundfos iSOLUTIONS Cloud enables coordination between multiple pump stations within the distribution system to provide network pumping control in order to optimise and harmonise the complete system of intake pump stations.

LEVEL CONTROL

Direct level control of inlet and outlet water level. This ensures either constant level for eco-friendly reservoirs like stable conditions at downstream channel or buffer tank. Level control also allows defined level ramps to achieve desired boundary conditions for further raw water treatment processes.

CONTINUOUS ENERGY OPTIMISATION

The multi-pump controller (MPC) in combination with variable frequency drives enables continuous energy optimisation during changing pumping conditions. Up to six pumps, working in parallel can be put into a group with the objective of optimising total energy consumption for the pump station.

BACKFLUSHING

To mitigate settling of sand and silt in borehole pump parts in a special environment, the check valve of the pump can be relocated to the well head in order to achieve proper backflushing of the pump after pump stop.

Drinking water treatment is technology-driven and heavily regulated. For this reason, you need a partner who, in addition to supplying pumping, dosing and disinfection solutions for each stage of the water treatment cycle, is able to offer packaged solutions for the entire water treatment process. Grundfos offers complete solutions, including membrane systems and, of course, the controls to make it work together.

GRUNDFOS iSOLUTIONS

COMMUNICATION & SYSTEM MANAGEMENT

Intelligent controllers offer system monitoring and connectivity directly to overall process control through a variety of industrial standard communication bus systems. Processes not directly related to pump operation can also be monitored and controlled through available digital and analogue I/Os. GRM/Grundfos iSOLUTIONS Cloud links everything together by allowing remote control and status update via smart phone and internet.

EFFECTIVE BACKWASHING

The external signals from differential pressure sensors would trigger backwash pumps to make reverse flow. Backwashing in water treatment plants would be an automated process, run by programmable logic controllers (PLCs).

CONTINUOUS ENERGY OPTIMISATION & FLOW CONTROL

When a constant flow rate for a process is required, the multi-pump controller in combination with variable frequency drives will enable continuous energy optimisation to meet the demand by controlling pump speeds and combining multiple pumps according to their specific performance characteristics using a multi-pump controller.

LEVEL CONTROL

Constant level control allows stable operating conditions of process tanks to ensure treatment results and protect the pumps against off duty point operation.

DOSING & DISINFECTION SYSTEMS

The range includes intelligent dosing pumps and skids, full-vacuum chlorine gas (Cl₂) dosing systems (Vaccuperm), sodium hypochlorite (NaOCl) electro-chlorination systems (Selcoperm), chlorine dioxide (ClO₂) preparation and dosing systems (Oxiper) and UV disinfection systems, with accessories for measurement, control and photometric water analysis to ensure complete control of disinfection processes.

WATER NETWORKS

**RELIABLE WATER DELIVERY.
OPTIMISE ENERGY CONSUMPTION.**

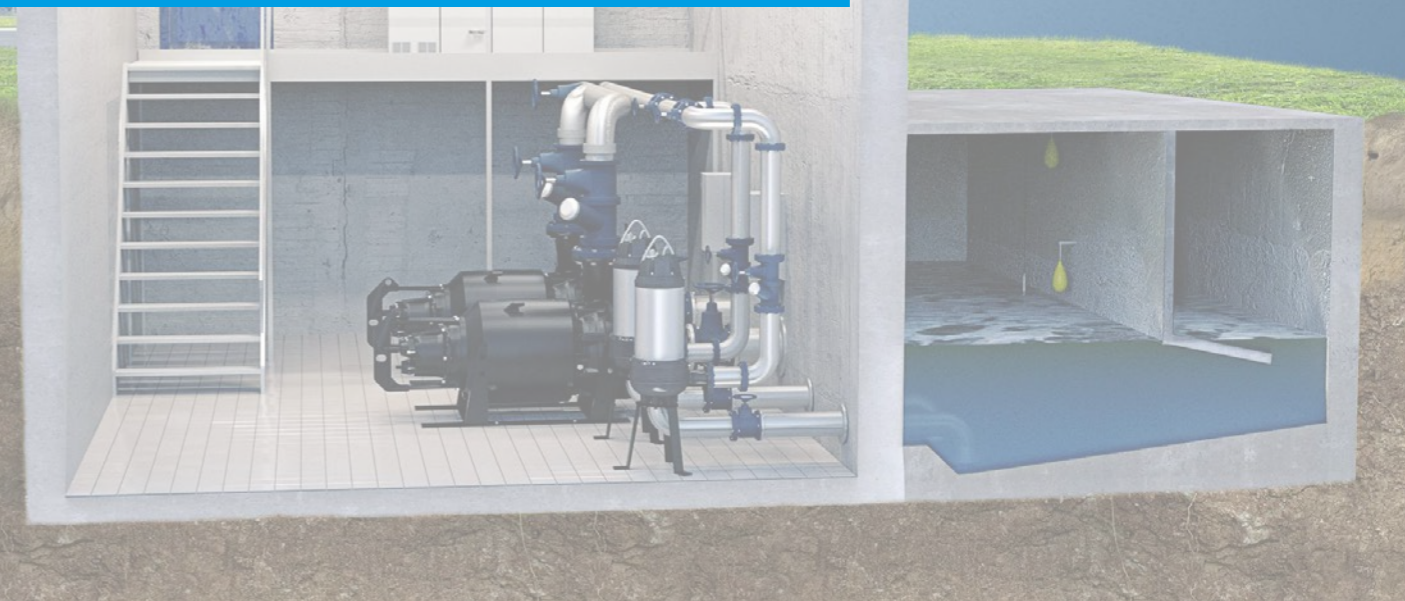
- PUMPING STATIONS
- LEAKAGE REDUCTION
- PRESSURE MANAGEMENT
- ENERGY OPTIMISATION



WASTEWATER NETWORKS

**SYSTEM OPTIMISATION.
EASY AND EFFICIENT CONTROL.**

- SEPARATED AND COMBINED SEWAGE NETWORKS
- STORAGE/RETENTION TANKS
- PRESSURISED COLLECTION SYSTEMS AND LIFTING STATIONS
- PREFABRICATED AND CONSTRUCTED PUMP STATIONS



Reliable, efficient and safe distribution of drinking water in municipalities is the first priority of any water supplier. For existing systems, there is potential for major energy savings and reduction of non-revenue water. The Grundfos Demand Driven Distribution (DDD) solution fully utilises these opportunities and contributes to running your distribution network in the smartest way.

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NETWORK PUMPING CONTROL

Multiple external input signals can be connected to the pump controller to allow interaction between pump stations and equipment. GRM/Grundfos iSOLUTIONS Cloud enables coordination between multiple pump stations within the distribution system to provide network pumping control in order to optimise and harmonise the complete network.

CONSTANT NETWORK PRESSURE

Grundfos' DDD is a total solution for pump control and pressure management in water networks. With DDD we are able to deliver substantial reductions in energy consumption as well as on losses caused by water leakages (non-revenue water).

LEVEL CONTROL

Regulation of levels in head tanks and storage tanks to ensure a continuous supply to meet varying demand. Level control ensures energy optimised filling of storage tanks and minimises water losses between the pumping station and the tank.

ACTIVE TRANSIENT PROTECTION

Smooth start/stop and changeover control of pumps keeps transients low in the entire piping system. This reduces effect of water hammer and prolongs service life of all pressurized equipment.

DRY-RUN PROTECTION

To avoid overheating and damage caused by dry running of pumps, Grundfos Liqtec dry-run protection device is integrated in the pump to detect lack of water and over-limit liquid temperature and protect the pump. Temperature and flow sensors are also available for protection of other dry mounted pumps.

CONDITION MONITORING

Grundfos Condition Monitor provides a unique user interface which is accessible via any web browser. The complete overview of installations and data analytics increases system uptime, allows you to plan ahead and carry out maintenance when convenient and offers easy integration.

Reliable and efficient collection and transportation of wastewater is increasingly important in modern societies. Grundfos offers market-leading high efficiency wastewater pumps and equipment to meet the demand. Our state-of-the-art control and monitoring solutions enable full optimisation of pumping systems and offer smart solutions for existing and new systems to maximise system capacity while minimising maintenance requirement.

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COMMUNICATION & SYSTEM MANAGEMENT

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NETWORK PUMPING CONTROL

System controllers and GRM/Grundfos iSOLUTIONS Cloud work together to enable coordination between multiple pump stations and provide network pumping control in order to optimise and harmonise pump stations within the same catchment. Storage capacity of the system is fully utilised and energy consumption optimised during normal operation and emergency.

HYDROGEN SULPHIDE SOLUTION

The heart of the Grundfos Hydrogen Sulphide Solution is an advanced control algorithm, installed in GRM/Grundfos iSOLUTIONS Cloud. The SMART Digital dosing pump ensures highly accurate chemical dosing, even at varying flow patterns. In this way, the amount of chemicals dosed is continuously adjusted to the current system demands.

CONTINUOUS ENERGY OPTIMISATION & FLOW CONTROL

With an intelligent control algorithm, the multi-pump controller in combination with variable frequency drives enables continuous energy optimisation while handling varying inflow. The controller can control up to six pumps to optimise total energy consumption of the station.

LEVEL CONTROL

Automatic variation of pump start/stop levels helps to minimise build-up of 'grease ring' and sediment inside pump sumps while maintaining the necessary storage capacity during peak flow periods. For storage/retention tanks, aeration jets, mixers and drainage, pumps can be coordinated to maintain aerobic conditions, re-suspend sedimentation during emptying and clean out the tanks afterwards.

AUTOADAPT

AUTOADAPT intelligent pumps automatically adapt to system configuration and continuously changing operating conditions without using any external sensors or control.

ANTI-CLOGGING

Actively monitors pump loading during operation and attempts clearing if an abnormal condition is detected. Configurable periodic pump down of the wet well helps eliminate sedimentation and reduces clogging.

FLOW CALCULATION

Accurately calculate inflow and outflow continuously to determine the working condition of the pumps and provide historical data for system trend analysis.

WASTEWATER NETWORK OPTIMISATION

Grundfos iSOLUTIONS Cloud for Wastewater Networks is a cloud-based solution to optimise operation and ease expansion or repair of your wastewater network. With a detailed understanding of pumps, pumping stations and sensors in your network, we have designed a range of modules that fit the pumping stations in your network, working on any equipment installed.

WASTEWATER TREATMENT

COMPLEX PROCESS. HARSH OPERATING ENVIRONMENT.

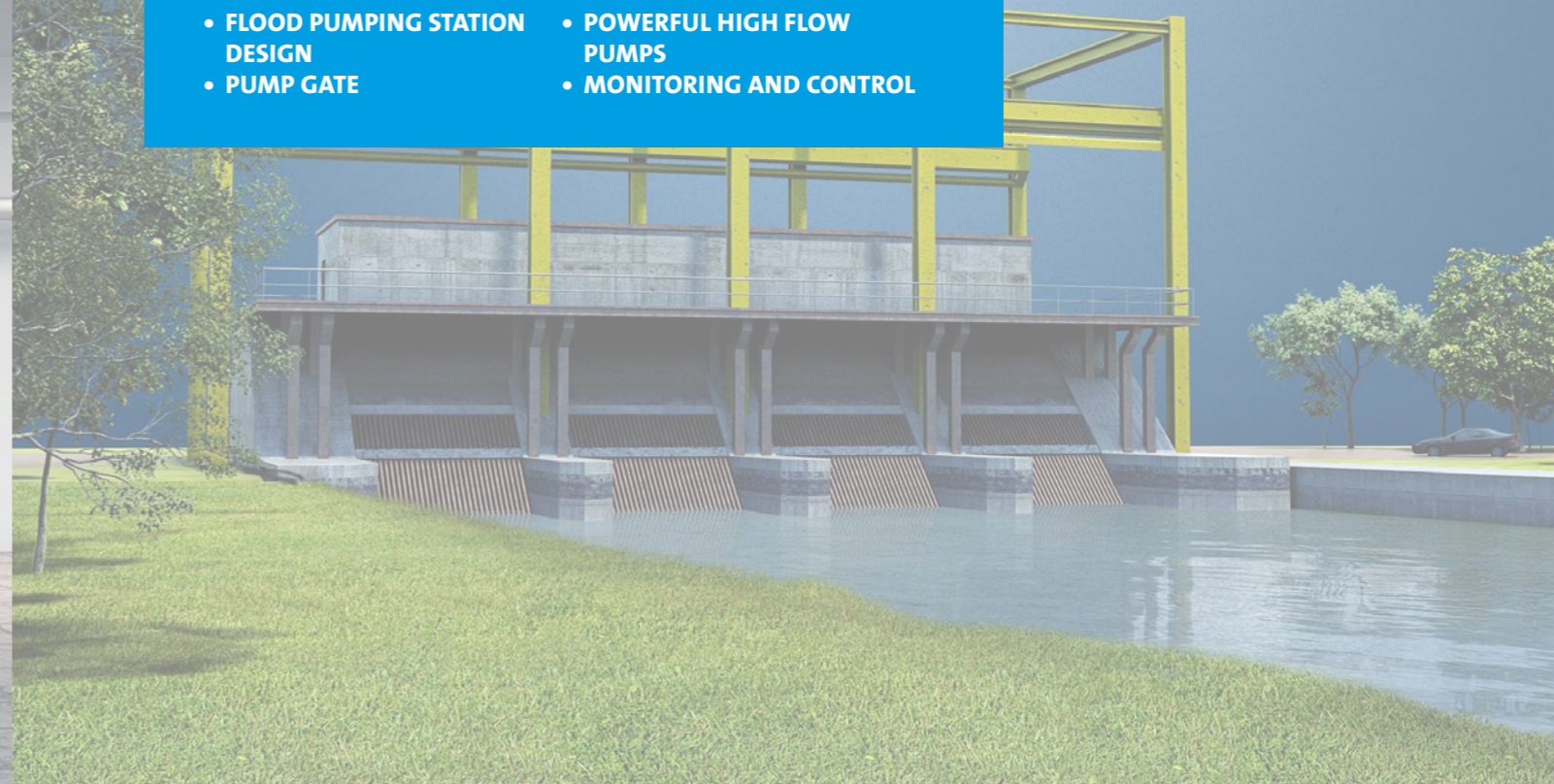
- PRE-TREATMENT
- PRIMARY TREATMENT
- CHEMICAL TREATMENT
- BIOLOGICAL TREATMENT
- TERTIARY TREATMENT
- SLUDGE TREATMENT
- WATER REUSE



FLOOD CONTROL

LARGE FLOW CAPACITY. FAST AND RELIABLE RESPONSE.

- FLOOD PUMPING STATION DESIGN
- PUMP GATE
- POWERFUL HIGH FLOW PUMPS
- MONITORING AND CONTROL



The process of removing contaminants from wastewater discharged from domestic, industrial or commercial premises as well as surface run-off is essential for modern cities of any size. Grundfos supplies equipment for mechanical, biological, and chemical wastewater treatment, together with sophisticated control and monitoring system to enhance system control and reliability in a harsh working environment.

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COMMUNICATION & SYSTEM MANAGEMENT

Intelligent controllers offer system monitoring and connectivity directly to overall process control through a variety of industrial standard communication bus systems. Processes not directly related to pump operation can also be monitored and controlled through available digital and analogue I/Os. GRM/Grundfos iSOLUTIONS Cloud links everything together by allowing remote control and status update via smart phone and internet.

BIOLOGICAL PROCESS OPTIMISATION

Through monitoring of key parameters and control of major equipment like air blowers, recirculation pumps, dosing equipment, mixers, etc. to optimise the treatment process.

FLOW AND LEVEL CONTROL

Constant flow and level control according to process requirements ensures stable operation and minimises process interruption, while accurate proportional control is essential for proper treatment.

CONTINUOUS ENERGY OPTIMISATION

Whenever more than one pump is required in any process, the multi-pump controller in combination with variable frequency drives will enable continuous energy optimisation during changing pumping conditions. Up to six pumps working in parallel can be put into a group with the objective of optimising total energy consumption of the system.

DOSING SYSTEMS FOR EFFLUENT AND WATER REUSE

The range includes intelligent dosing pumps and skids, dosing of flocculation chemicals, disinfectants and polymers, and accessories for measurement, control and photometric water analysis to ensure complete control of disinfection processes.

As a pump manufacturer, our contribution to the flood control relates primarily to flood risk management. Through new technology, constant product development, services and solutions, we continuously seek to meet the changing needs of the market and our customers. In terms of flood control: we start where nature stops.

GRUNDFOS iSOLUTIONS

FLOOD MITIGATION CONTROLLER

Flood Mitigation Controller (FMC) is a solution aimed at automatic operation and control of flood protection system using wire/wireless network. This control includes not only the pumps but also all other electrical and mechanical equipment in the pump station (i.e. Actuated valves, screens, Generator sets, etc.)

CONTINUOUS ENERGY OPTIMISATION

Whenever more than one pump is required, the multi-pump controller in combination with variable frequency drives will enable continuous energy optimisation during changing pumping conditions. Up to six pumps working in parallel can be put into a group with the objective of optimising total energy consumption of the system.

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NETWORK PUMPING CONTROL

Multiple external input signals can be connected to the pump controller to allow interaction between pump stations and equipment. GRM/Grundfos iSOLUTIONS Cloud enables coordination between multiple pump stations within the controlled area to provide network pumping control and overview in order to optimise and harmonise protection efforts.

LEVEL CONTROL

Reliable level monitoring for flood control management is crucial in order to safeguard a city against unusually wet weather at all stages, from operating pumps to controlling screens and floodgates.

GRUNDFOS iSOLUTIONS IS TAILORED TO YOUR SPECIFIC NEED AND APPLICATION

IRRIGATION

**CONTROLLABLE DISTRIBUTION.
ADAPTATION TO TERRAIN.**

- SURFACE IRRIGATION
- LOCALISED IRRIGATION
- FIXED SPRINKLERS
- TRAVELLING IRRIGATORS
- SUB-IRRIGATION
- IN-GROUND IRRIGATION



Grundfos offers a large variety of pump solutions that come with intelligent control systems to optimise irrigation efficiency. The right solution for given water sources and certain crop demands is the key to a reliable irrigation system. Remote monitoring and control features provide the possibility for continuous surveillance, analysis and regulation of the entire irrigation process.

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CONTINUOUS ENERGY OPTIMISATION & PRESSURE CONTROL

Pumps with integrated frequency drives allow direct and easy constant pressure control anywhere downstream corresponding to system demand. This ensures even flow distribution for optimum coverage and, at the same time, minimises water and energy consumption.

LEVEL CONTROL

Monitors and controls the irrigation system according to source water level and the optimum soil moisture level for crop growth. Track trends and analyse water table level for better system control to maximise available resources.

CONSTANT FLOW

The desired constant flow rate of an irrigation system is achieved by controlling pump speeds and combining multiple pumps according to their specific performance characteristics using a multi-pump controller.

RENEWABLE ENERGY SOURCES

This solution comprises a borehole pump powered by renewable energy source and including the right control and automation system. Such a turnkey solution benefits rural places with no access to the electrical supply grid.

ACTIVE TRANSIENT PROTECTION

Smooth start/stop and changeover control of pumps keep transients low in the entire piping system. This reduces the effect of water hammer and prolongs service life of all pressurized equipment.

DRY-RUN PROTECTION

To avoid overheating and damage caused by dry running of pumps, Grundfos Liqtec dry-run protection device is integrated in the pump to detect lack of water and over-limit liquid temperature and protect the pump. Temperature and flow sensors are also available for protection of other dry mounted pumps.



FULL-RANGE OF INTELLIGENT PUMPS

We provide a full-range of intelligent pumps and systems for all water supply and wastewater applications.

CONTROLS AND OTHER COMMUNICATION DEVICES

Our pumps are intelligently combined with communication components like controls, drives, sensors and more, to optimise your specific system needs.

EASY SYSTEM INTEGRATION

All this enables a solution that is efficient and a fully integrated part of the communication suite with any communication platform.

Global reach. Local presence.

Grundfos is a global leader in advanced pump solutions and a trendsetter in water technology. We offer a full range of intelligent pumps, motors, drives, sensors and controls designed to optimise pump systems in all applications. By combining pump system expertise with vast application knowledge, we tailor solutions to match your specific demands.

Our mindset might be global, but with more than 50 local sales divisions and 23 production companies, our presence is indeed local. With Grundfos as your partner, you can expect premium solutions, face-to-face consultancy and unmatched service.

To learn more go to
www.grundfos.com/market-areas/water