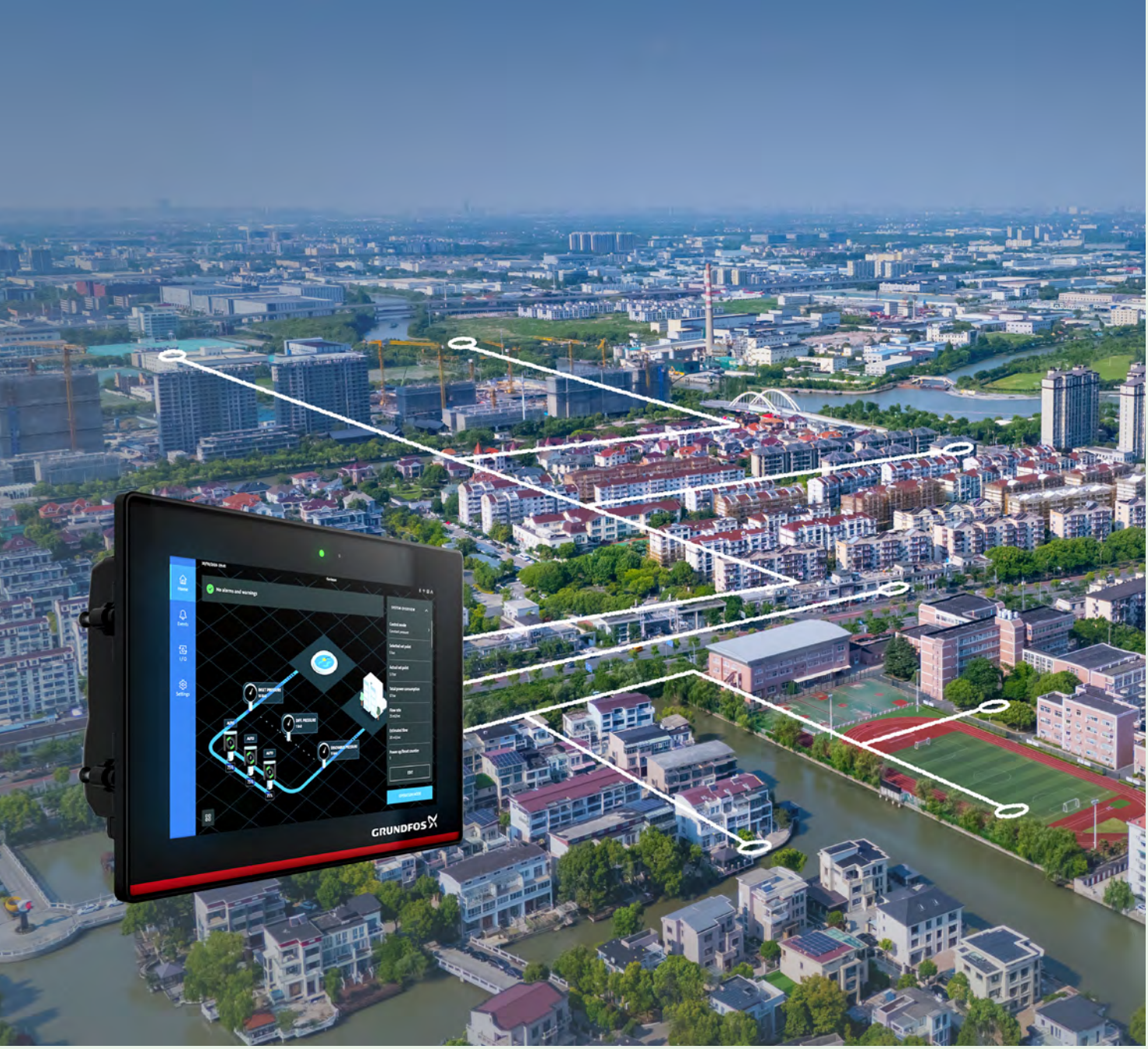


GENIECON boosts your water systems with intelligent control for an energy-efficient future

GRUNDFOS

Possibility in every drop

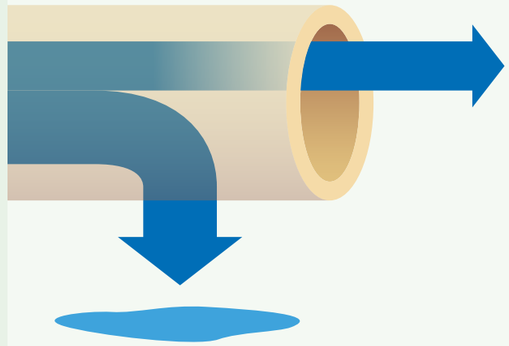
Boost your water distribution with smart pump control — securing reliable, efficient supply

Clean water access drives human progress
As communities grow and infrastructure demands increase, smart transportation of clean water becomes paramount. Advanced boosting technology is no longer optional — it's essential. Grundfos MPC systems with GENIECON revolutionize water delivery by offering unmatched performance and a user-friendly interface, ensuring a reliable water supply while optimizing energy consumption in various application areas:

- Ground water
- Water supply
- Water treatment
- Booster substations
- Irrigation systems

Optimise your system with multiple pumps
Water systems need to meet varying demand at different times of the day, with the requirement fluctuating significantly. Efficiency is key across different flow levels. Using multiple pumps, rather than a single large pump, is more cost and energy efficient in this scenario. Multiple pumps enable your water management system to be more efficient and provide only the required flow rate. This helps save energy, especially when the demand is low during most of the day. Multiple pumps also offer backup and redundancy options.

Did you know?



Water lost through leaks in pipes and the network can make up 8-60% of total supply, depending on system condition.*

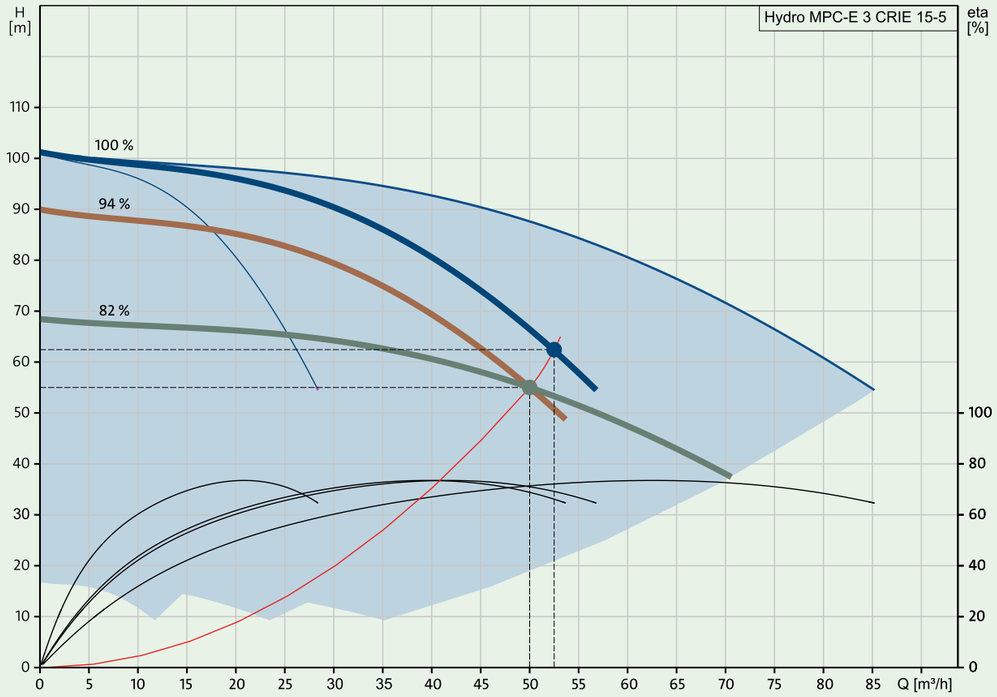
Intelligent control for superior system performance
Efficiency and energy savings start with advanced, intelligent control. Grundfos GENIECON, our next-generation intelligent control unit, is designed for seamless operation of parallel-connected pumps. With its robust control and monitoring capabilities along with intuitive interface and real-time analytics, GENIECON enables you to ensure that your system operates at peak efficiency, whatever the demand.

Maximise pump efficiency with smart flow management
The method for evaluating the number of pumps that should be running is unique in the Hydro MPC.
Using this unique approach, the system calculates the optimal number of pumps required at any given time.
The pump curve data loaded into the controller helps determine the estimated flow rate more precisely.
GENIECON controls number of pumps and speeds required based on curve data, flow rate, pressure, and power requirements. This ensures that you get the optimal output for efficient, future-proof operations.

Save energy with proportional pressure control
The flow-to-pressure ratio is connected. Decreased flow lessens friction in the pipes as well, so the pressure value could be reduced processionally. By combining a variable frequency drive (VFD) with proportional pressure control, your system can actively manage and reduce friction losses. This delivers substantial energy savings and increased operational efficiency.

Reduce non-revenue water
Non-revenue water, water lost through leaks in the network and pipes, can account for up to 8-60% of total supply depending on the condition of the water system. With proportional pressure control, pressure is automatically reduced during low-demand periods. This helps decrease wearing of pipes, reduces leaks, and cuts down on non-revenue water – lowering both energy use and maintenance costs.

*Source: The Danish Environmental Protection Agency. https://eng.mst.dk/water/drinking-water/preventing-water-loss



A **Two pumps 100% speed**
Q = 52.5 m³/h, H = 62 m
n = 2 x 100% / 3595 rpm
Eta pump = 69.1%, P2 = 12.81 kW

B1 **Two pumps 94% speed**
Q = 50 m³/h, H = 55 m
n = 2 x 94% / 3389 rpm
Eta pump = 68,8%, P2 = 10.87 kW

B2 **Three pumps 82% speed**
Q = 50 m³/h, H = 55 m
n = 3 x 82% / 2948 rpm
Eta pump = 73.4%, P2 = 10.19 kW

Maximise energy savings with pump management

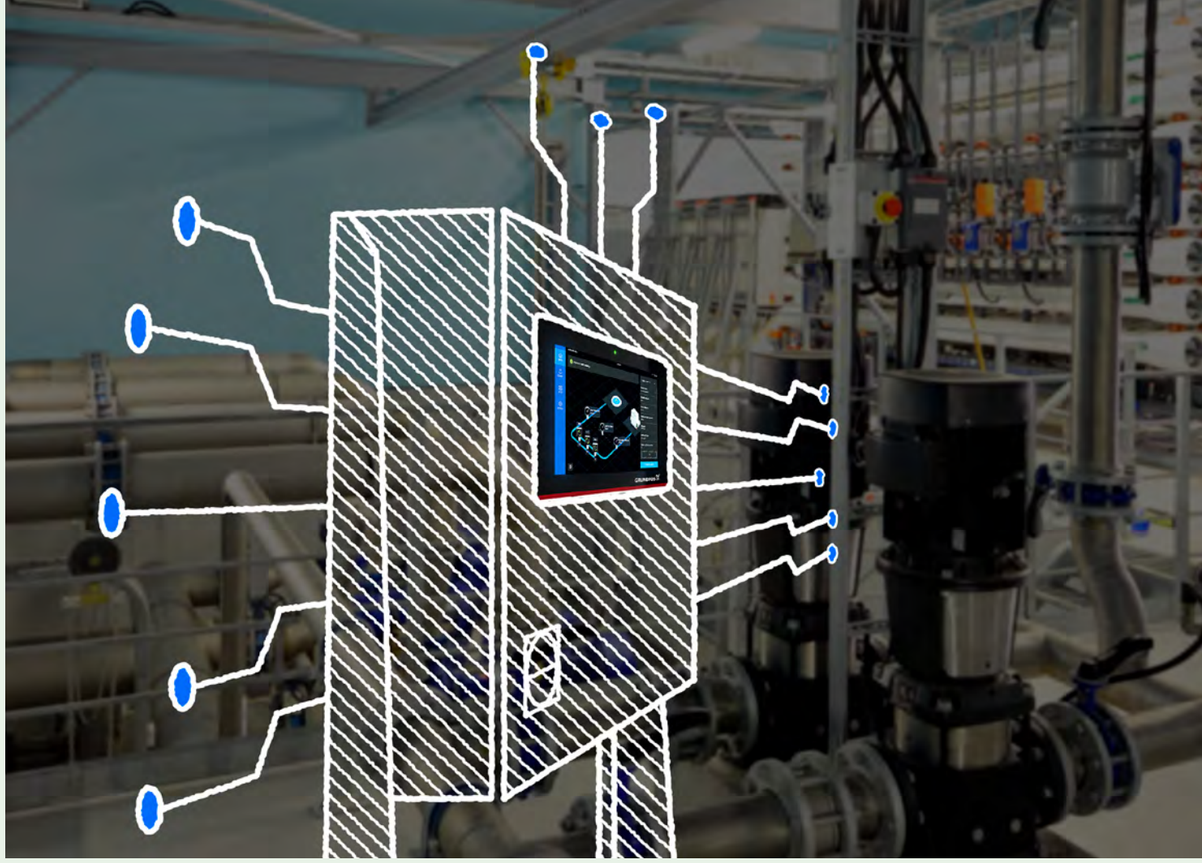
Systems today often use on/off pump solutions based on capacity and do not consider operating efficiency. Operating costs can be optimised by running the most efficient combination of pumps. The figure above, shows how three pumps (B2) in operation can reduce the energy at a particular operating point over two pumps in operation even when two pumps could meet the requirement based on capacity alone with reduced speed (B1) and even with fixed speed (A).

Description of points on system curve:

A Convention control (fixed speed).
Wasted energy: 12,61kW,
compared to 10,19 kW in scenario B2
Additional system stress.
Higher OPEX

B1 Reduced speed to meet the duty point
Standard solution

B2 Inteligent Geniecon control
(energy optimised variable speed)
Energy savings, lowest total value: 10,19 kW
Reduction in system stress (longer service life)
Reduction in OPEX



Future-proof your operations with the intelligent GENIECON controller

Hydro MPC is equipped with best-in-class pumps and motors. And with the advanced GENIECON controller – the brain behind the system – you can take your operations to the next level:

- **Improved operational efficiency, resulting in reduced energy consumption.**
- **Customise the control system to your specific requirements and applications**
- **Monitor performance and energy consumption with precision**
- **Connect effortlessly with SCADA and other digital systems for complete integration**
- **Stay ahead with remote access and regular firmware updates, ensuring your system remains up to date**

Control and monitor with precision and ease

Unmatched reliability and system optimisation
Precision in control and monitoring is critical for reliable performance of your pump systems. GENIECON offers intelligent connectivity and control with tools to continuously monitor and optimise system performance.

- **Quickly identify and resolve potential issues before they become problems with advanced alarm and warning logs**
- **With flow estimation and multi-sensor control, identify how to optimise system performance and efficiency**
- **Get real-time insights for better control and operational decisions**

Streamlined operations with flexibility and ease
Operating complex systems shouldn't mean complex operations. GENIECON offers an intuitive, flexible interface with Grundfos Connect. The smart, next-gen cloud-connection simplifies how you control your entire pump system, enabling you to easily select components, set parameters, and manage operations in real-time.

- **Customise the controller to your specific needs, with user-defined access, configurable status displays, and a screensaver showing critical information**
- **Get a uniform user experience across all platforms, whether you're on-site or accessing the system remotely**
- **Meet fluctuating demand efficiently with multi-pump configurations**
- **Improve operational resilience and reduce total cost of ownership**

Future-proof your water infrastructure with smart connectivity and energy-optimised operations

Intelligent connectivity and security
In today's connected world, your pump system needs to not only be connected to other systems but also be adaptable to evolve with your future needs. GENIECON is designed to just that as it integrates seamlessly with other systems via digital connectivity and stays up to date.

- **Control other components via a wide range of protocols seamless integration with SCADA systems**
- **Manage your system from anywhere via PC or mobile devices with secure connectivity**
- **Enable efficency through remote monitoring, control, and diagnostics of Grundfos systems with the Grundfos GO mobile platform**
- **Keep your system up to date with the latest firmware updates, adding new features as they become available**

Energy-efficient operations to meet net-zero goals
Pump systems account for a significant portion of global energy use. GENIECON is designed with advanced algorithms and smart controls to reduce energy consumption and minimise control pressure while optimising performance. GENIECON helps achieve energy efficiency without compromising performance, delivering both sustainability and cost savings.

- **Efficiently manage multi-pump systems with intelligent cascade control, optimising pump operation for maximum energy efficiency**
- **Reduce energy consumption with a proportional pressure function that adjusts pressure based on system demand, minimising friction losses within pipes**
- **Automatically stop the system during low flow periods to prevent energy waste**
- **Save energy and reduce emissions with an intelligent controller**

About Grundfos

Grundfos develops, produces and sells pump solutions, which help reduce water-related challenges globally. We create research and product development based solutions to meet growing demands of customers and the outside world for minimising the consumption of resources as well as the emission of CO_2.

Our solutions, including innovative products such as GENIECON, CR pumps, Grundfos Connect and Grundfos Analytics, deliver reliable and efficient water transport in diverse applications in water supply and irrigation.

To minimise energy consumption, several pumps are equipped with intelligent built-in electronics ensuring that the pumps provide no more no less than what is needed.

Visit Grundfos.com to explore our full range of energy-efficient pump solutions.

Grundfos
– a new era of intelligent pump systems

Hydro MPC
A complete plug-and-pump system, which is proven for efficiency and ready to take your operations to the next level.

GENIECON
The next-generation of intelligent control unit for your pump system that enables optimise your booster systems, reduce energy consumption and achieve your net-zero targets.

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