Pioneering green data centers

Efficient water solutions for effective data flow

Cool your data center and meet your sustainability and redundancy goals with our high-efficiency, energy-saving water solutions.

est. 1947
DUFF co.
When you need it now... or don't know how

GRUNDFOS
Possibility in every drop

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The rising demand for data centers

Data centers power our digital world, and as demand for data grows, so does the need for more sustainable and efficient solutions. Evolving technologies like Artificial Intelligence (AI), machine learning, and high-performance computing (HPC) are increasing rack densities, adding to the challenge of cooling and water management.

Grundfos develop reliable, energy-efficient pumping and water solutions to help data centers move towards achieving their sustainability goals. With a global presence and over 80 years of experience, we deliver standardised solutions that meet industry demands while adapting to regional and local requirements.

[1] https://ourworldindata.org/ghg-emissions-by-sector

Why Grundfos?

We are the first water solutions company with a Science-Based Target-approved Net Zero goal

By 2030

Reduce absolute Scope 1 and Scope 2 Greenhouse Gas (GHG) emissions by 50%

Reduce absolute Scope 3 GHG emissions by 25%

By 2050

Reduce absolute Scope 1, Scope 2, and Scope 3 GHG emissions by a minimum of 90%

Our solutions help data centres by bringing down the PUE and WUE to the most ambitious sustainability targets

Source

Whatever your water source, we have an efficient system to get your water to where it is needed.

At the right flow, at the right pressure and at the right time.

Treat

We ensure your water source is of the correct quality for your distribution systems.

In the most efficient way, utilising fewer chemicals, reducing waste, whilst maximising quality.

Distribute

Within water distribution, ensuring the right flow, at the right pressure, at the right delta T and at the right time is our prerogative.

Doing it the most energy-efficient and water-saving way is our mission.

Discharge

Maximising water reuse in your systems and minimising waste is our focus within the discharging process.

Therefore, our drainage systems can be incorporated into rainwater harvesting units or water reuse systems.

PLATINUM Top 1% ecovadis Sustainability Rating JUN 2024

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

6 CLEAN WATER AND SANITATION

13 CLIMATE ACTION

Solving critical data centre challenges

At Grundfos, we believe it's possible to cool data centers without warming the planet. That's why we share a sense of responsibility with the data center industry that drives us towards ever more energy-efficient solutions, helping you exceed your own sustainability goals.

Our dedicated specialists can guide you through our existing solutions or assist in designing bespoke systems tailored to your needs. Together, we can build data centers that support the future without compromising the planet.

Speed and agility

Our solution

- Present in **55+** countries
- **500+** authorised service partners
- **4** distribution centres globally

Uptime

Our solution

- **Quality certification:** ISO 9001, ISO 14001, ISO 45001
- **Split case pumps** are fully compliant with the **ISO 9906** standard and offer a **Grade 1U option** for **tighter tolerance**
- **11** testing facilities worldwide
- **100%** pumps testing at the manufacturer's factory

WUE

Our solution

- Water treatment and distribution **that reduces water footprint**

PUE

Our solution

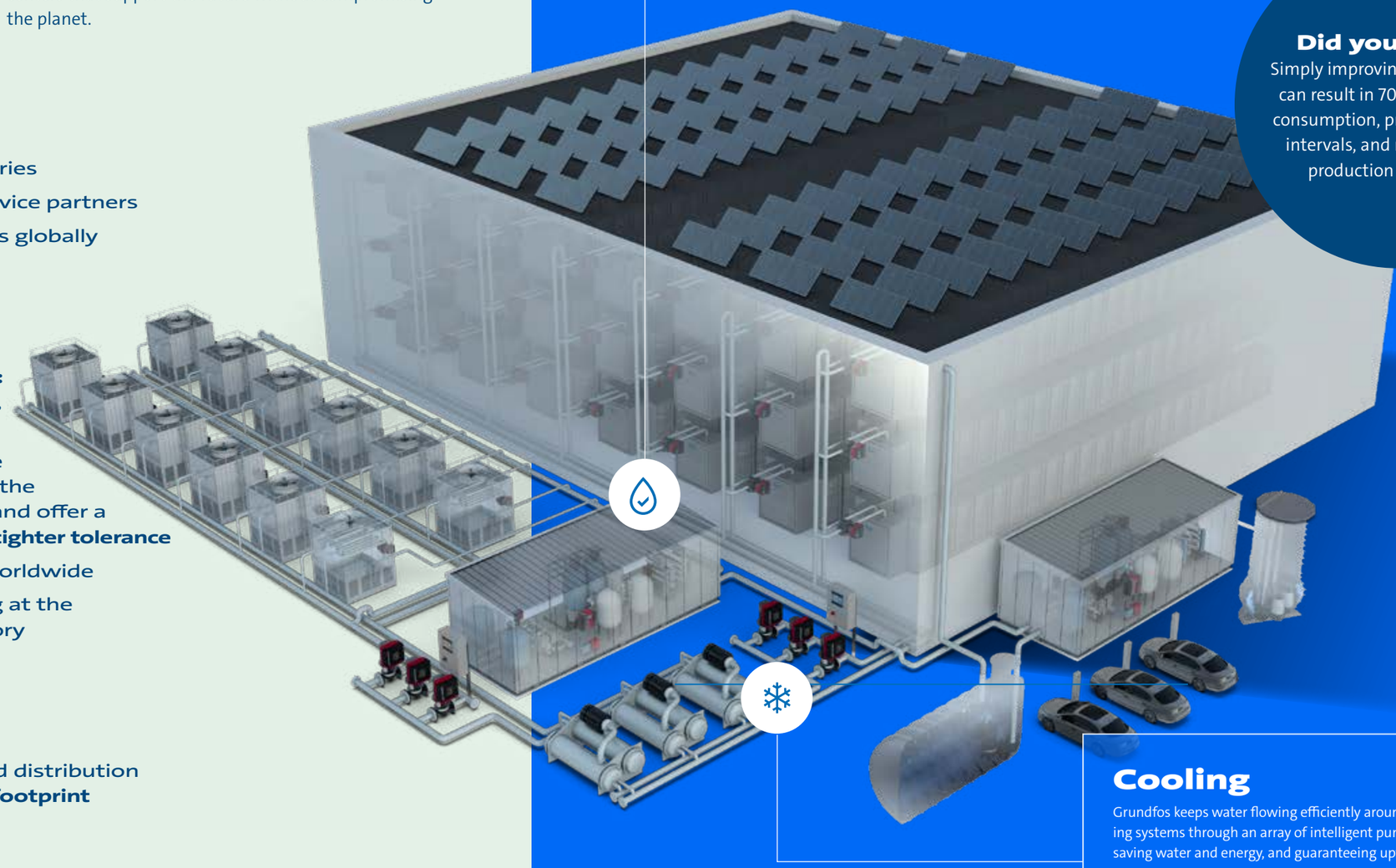
- **Energy optimisation** through system controls and innovative digital solutions
- Best-in-class efficiency with **IE4/5 standards**

Water treatment and distribution

Efficient solutions for sourcing, distributing, treating and discharging water all contribute to optimising your data center's PUE and WUE and reliably integrating into your monitoring systems.

- Efficient distribution from any source
- Superior treatment to combat legionella
- Turnkey wastewater solutions
- Easy BMS & SCADA integration

Did you know?
Simply improving pump controls can result in 70% lower energy consumption, prolonged service intervals, and reduced risk of production downtime [1]



Cooling

Grundfos keeps water flowing efficiently around air or liquid cooling systems through an array of intelligent pumps and sensors, saving water and energy, and guaranteeing uptime.

- Smart pumps, up to IE5 efficiency
- Redundancy 2N+1 uptime
- High density liquid cooling
- Easy commissioning & monitoring

[1] North Caroline Department of Environmental Quality | http://savewaternc.org/Documents/water-efficiency-business.pdf

Air and liquid cooling systems and our solutions

Our air and liquid cooling solutions are designed to maximise energy efficiency and minimise environmental impact, ensuring your data center operates at peak performance.

Air cooling systems

Air cooling is the traditional data center cooling method, relying on pumps and controls. Our cutting-edge pumping technology ensures efficiency, reliability, and water savings—helping your data center meet its sustainability goals.

Liquid cooling systems

Liquid cooling is gaining momentum worldwide, with solutions like Cold Plate, Immersion, and RDHx being continually developed. At Grundfos, we're dedicated to advancing sustainable water and pump solutions to meet these evolving challenges.

Hybrid cooling solutions

Hybrid cooling, a combination of air and liquid cooling, is expected to grow to meet the diverse needs of modern data centres. We've integrated our pump, control, and sensor technologies with our fluid management expertise to deliver robust and versatile pumping solutions for this complex cooling system.

LSV

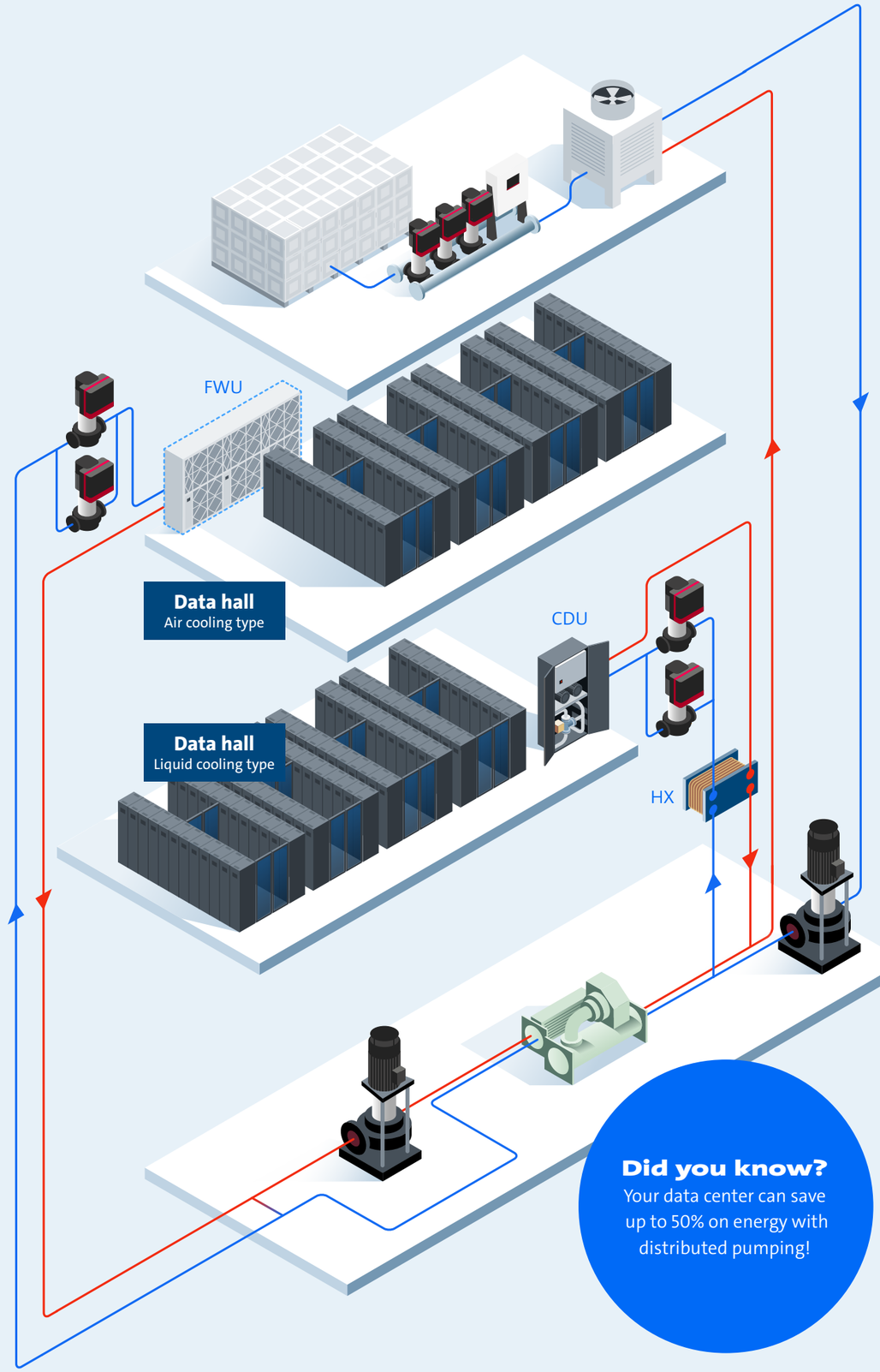
- Enhanced flow and best-in-class efficiency with IE3/4 motor
- Easy servicing of seal and bearing
- Optimised hydraulic performance
- Split case pump

TP/TPE

- Optimised hydraulics for high efficiency
- Top-pull-out design for easy service dismantling
- Inline single stage pumps

Hydro MPC-E

- Booster system with frequency-controlled pumps
- Maximum efficiency with MGE IE5-rated motors
- Provides full speed control for all CR pumps
- Booster set



Water reuse systems and our solutions

While carbon emissions and electricity often dominate discussions about data center sustainability, water usage is equally critical and is seen as the next major challenge. As a limited resource, water management is essential for more sustainable operations.

Data centers consume large amounts of water for cooling, making effective water management and reuse practices key to enhancing sustainability. By reducing reliance on municipal supplies, adopting circular water solutions, and recycling or repurposing water, data centers can lower consumption, improve water and energy efficiency, and reduce operational costs. At Grundfos, we offer integrated technologies and solutions that enable circular water solutions, reuse, and recycling for data centers.

Cooling towers
Although water-intensive, cooling towers are suitable for water reuse. Recycling water for cooling tower make-up reduces consumption and operational costs while offering a strong return on investment and a short payback period.

Rainwater harvesting
Rainwater harvesting provides a more sustainable, cost-effective solution for cooling water needs that reduces the reliance on municipal supplies. With proper storage and treatment, water security and resilience can be greatly enhanced.

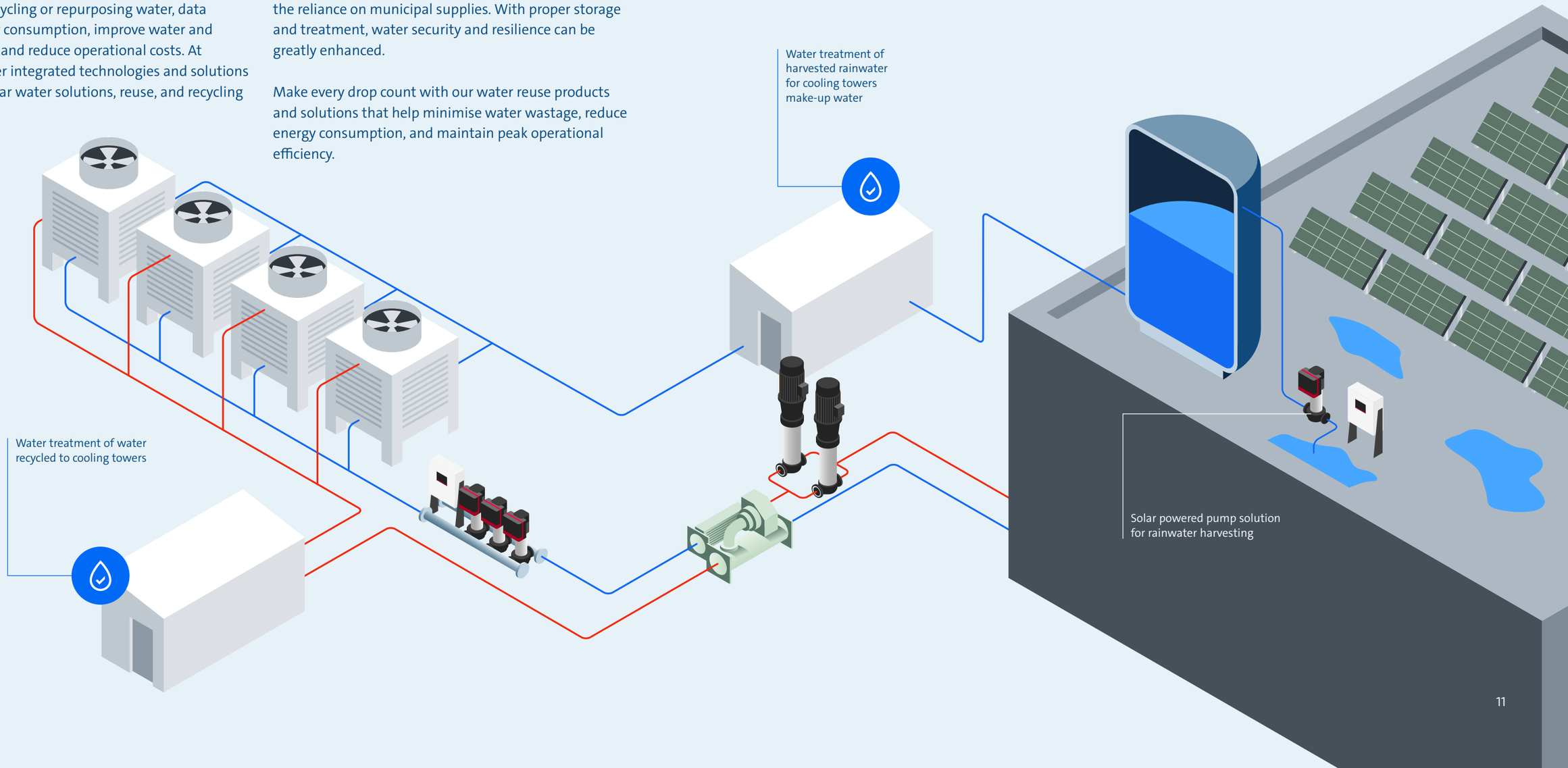
Make every drop count with our water reuse products and solutions that help minimise water wastage, reduce energy consumption, and maintain peak operational efficiency.

CR Flex

- In-line multi-stage solar pump
- Designed for renewable energy supply
- Ideal for rainwater harvesting

RSI

- Solar power inverter
- Use renewable energy as the primary energy source
- For pumps up to 250kW



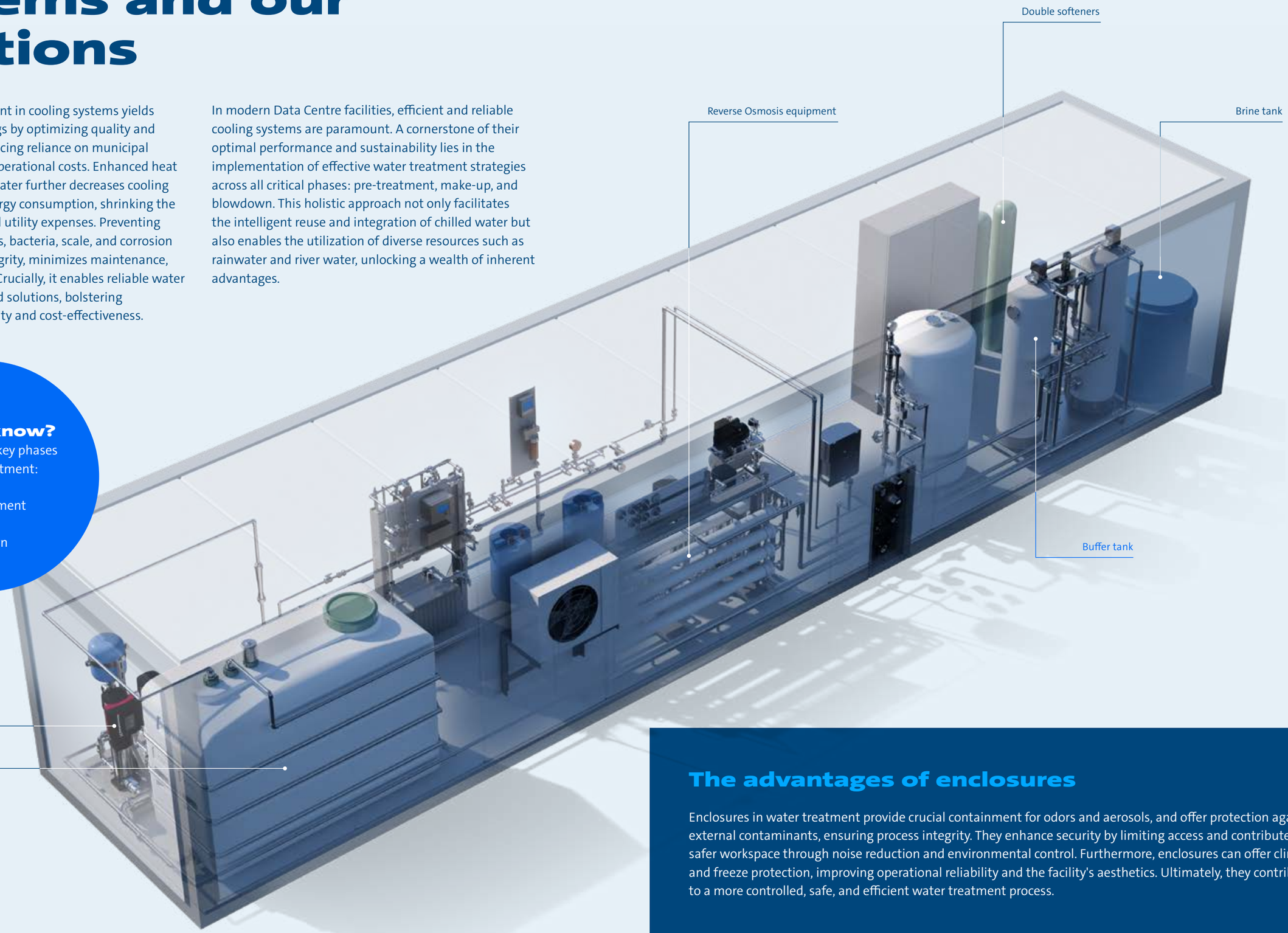
Water treatment systems and our solutions

Effective water treatment in cooling systems yields significant water savings by optimizing quality and minimizing losses, reducing reliance on municipal sources and lowering operational costs. Enhanced heat transfer from cleaner water further decreases cooling water demand and energy consumption, shrinking the ecological footprint and utility expenses. Preventing the formation of viruses, bacteria, scale, and corrosion safeguards system integrity, minimizes maintenance, and avoids downtime. Crucially, it enables reliable water reuse through advanced solutions, bolstering operational sustainability and cost-effectiveness.

In modern Data Centre facilities, efficient and reliable cooling systems are paramount. A cornerstone of their optimal performance and sustainability lies in the implementation of effective water treatment strategies across all critical phases: pre-treatment, make-up, and blowdown. This holistic approach not only facilitates the intelligent reuse and integration of chilled water but also enables the utilization of diverse resources such as rainwater and river water, unlocking a wealth of inherent advantages.

Did you know?
There are three key phases of water treatment:

- Pre-treatment
- Make-up
- Blowdown



The advantages of enclosures

Enclosures in water treatment provide crucial containment for odors and aerosols, and offer protection against external contaminants, ensuring process integrity. They enhance security by limiting access and contribute to a safer workspace through noise reduction and environmental control. Furthermore, enclosures can offer climate and freeze protection, improving operational reliability and the facility's aesthetics. Ultimately, they contribute to a more controlled, safe, and efficient water treatment process.

Heat reuse systems and our solutions

Data centers produce a substantial amount of heat. Instead of letting this energy go to waste, heat reuse captures and redirects this excess heat for other applications. This approach helps data centers reduce their overall energy consumption and lower operational costs while supporting their environmental goals.

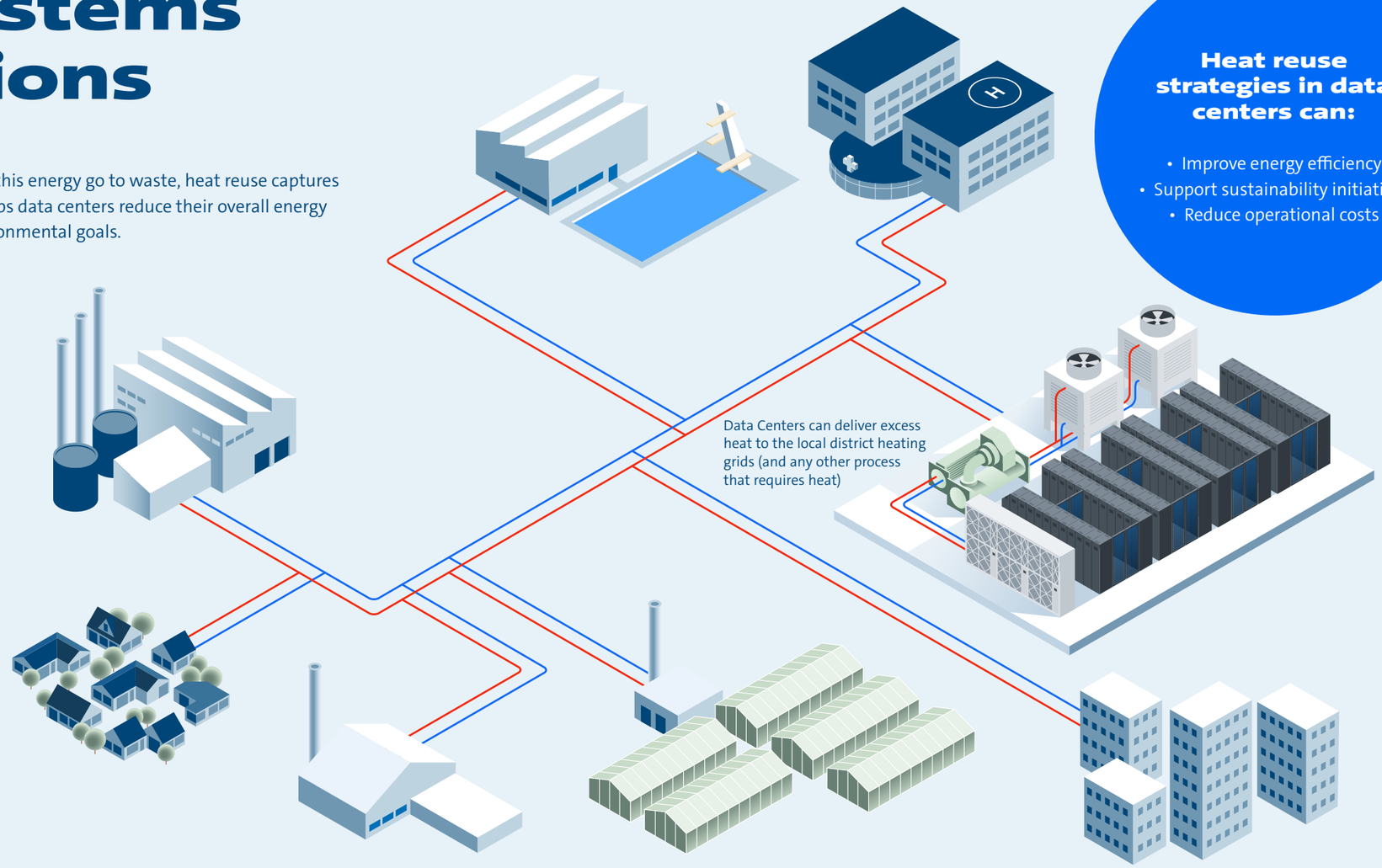
Key methods for heat reuse

Heat collection
Excess heat from server operations is collected using heat exchangers, ensuring valuable thermal energy is effectively harnessed.

Heat transfer
The collected heat is transferred to a medium, typically water, which is then circulated through the system to optimise energy utilisation.

Heat distribution
The heated medium is repurposed for various uses, such as supporting other industrial processes, providing a sustainable and efficient energy source.

Our advanced heat recovery systems and intelligent controls help data centers capture, transfer, and repurpose heat effectively, supporting sustainability goals by reducing overall energy consumption and lowering operational costs.



Heat reuse strategies in data centers can:

- Improve energy efficiency
- Support sustainability initiatives
- Reduce operational costs

KPV

- Vertically mounted split case pump
- Requires no alignment
- Small mechanical space footprint

LCSE

- Single stage, end suction, split coupled, centrifugal pump
- Integrated motor, drive, and control

VLSE

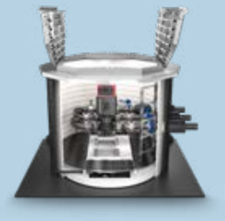
- Verticaly mounted, split coupled in-line pump
- Integrated motor, drive, and control

NBE

- End-suction close-coupled pumps
- Frequency-controlled motors

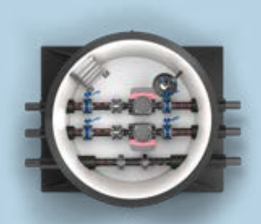
NKE

- Endsuction long coupled single stage
- Frequency-controlled motors



iGRID Temperature Zone

- Intelligent mixing loop designed to reduce supply temperature in the district heating grid



iGRID Pressure Zone

- Prefabricated pumping station designed to deliver pressure in the district heating grid

Keeping data flowing around the world

Our reliable solutions optimise cooling for any type of data center while maximising efficiency, cost-effectiveness, and redundancy. Here are some of the many operators who've implemented Grundfos' high-efficiency cooling solutions for the next generation of data infrastructure.

Grundfos integrated pump solutions maximise performance in a space-constrained data center

Location: UAE

Challenge: A data center faced efficiency challenges due to hot climatic conditions and limited space for HVAC circulation pumps, leading to suboptimal performance of air-cooled chillers.

Grundfos solution: Grundfos Hydro MPC E and Hydro Multi E water boosting systems with IP55-rated MGE motors and an adiabatic chiller booster system.

Result: A 30% reduction in energy consumption, enhanced system efficiency, and positive feedback on installation quality, supporting the client's carbon neutrality goals.

Mobile flushing systems contribute to circular economy in hyperscale data centers

Location: Northern Europe

Challenge: A global operator needed to reduce waste and enhance sustainability during the commissioning of complex cooling systems in their large data centers, where traditional flushing systems proved inefficient and wasteful.

Grundfos solution: A mobile flushing system with a containerised pumping station featuring six Grundfos NB pumps, valves, and manifolds, along with a hydraulic levelling system, designed for easy transportation and reuse across multiple sites.

Result: Significant savings in time, money, and resources, while contributing to the customer's sustainability goals by supporting a circular economy. The system is in use across northern Europe with dedicated aftersales support.

Modular plant rooms help fast track data center construction

Location: Netherlands

Challenge: A leading data center operator needed to meet a tight construction schedule for a rapid-build data center, requiring modular, off-site plant room construction to align with pre-installed piping and electrical infrastructure.

Grundfos solution: Grundfos designed, built, and supplied seven packaged chilled water and water treatment plant rooms, featuring Hydro MPC Boosters with intelligent variable-speed controllers and BMS connectivity. The plant rooms were constructed in the UK and delivered to the Netherlands within 20 weeks.

Result: The customer received fully commissioned plant rooms on time, enabling their rapid data center rollout while achieving outstanding energy efficiency.

Grundfos pumps enable sustainable cooling for award-winning data center

Location: United Kingdom

Challenge: Digital Realty's Cloud House data center needed a highly efficient cooling solution using dock water to regulate server temperatures. The system required pumps capable of achieving suction lift, maintaining a sufficient flow rate, and ensuring the return water temperature stayed below 27 degrees Celsius to meet stringent environmental requirements and avoid fluctuations that could damage IT systems.

Grundfos solution: Grundfos NBG 150-125-315/336 pumps with high-efficiency IE3 motors and variable speed drives were installed. These corrosion-resistant pumps handle brackish water, lift up to 50 litres/second, and maintain a temperature differential of no more than 7.5 degrees Celsius.

Result: The cooling system is up to 20 times more energy efficient than traditional methods, significantly reduces water waste, and supports Digital Realty's goals of cutting emissions and achieving climate neutrality by 2030. The solution also contributed to the building's BREEAM Excellent rating, aligning with sustainability targets and reducing costs for users worldwide.

Services

We offer a wide range of services, including digital services, operation services, optimisation services, repair services, and service agreements.

Energy check

An easy-to-understand assessment of pump performance

A basic check that uses data from the nameplates of pumps and motors, or an advanced version that pulls data from your SCADA system or on-site measurements. A customised energy check report details the energy consumption of your installed pumps based on variables like nameplate information, pump age, load profile, and operating hours. The report presents suggestions for saving energy and energy expenses.

Energy audit

A comprehensive analysis of pump performance

An energy audit is a diagnostic tool developed to identify excessive energy consumption. The audit measures aspects of the system such as flow, energy consumption, pressure, temperature, and incident rates such as pump start/stop and valve open/close. Based on these metrics, the audit assesses the overall efficiency of your pumps and proposes changes to improve efficiency.

Customised service agreements

Improved operational reliability and safety

A Grundfos customised service agreement is an arrangement between you and Grundfos that allows you to always stay ahead of maintenance needs. The agreement is fixed in time and can include any of our existing service offerings. From information about your installed base and current situation, we help you define your maintenance needs and draw up the customised agreement.

Offsite construction

The surge in data center construction has led to a rapid expansion in capacity. To keep up with these demands and meet tighter project timelines, data center providers are increasingly turning to offsite construction methods.

1. Consultation & design
2. Sizing & planning
3. Engineering & production
4. Installation
5. Commissioning
6. Operation
7. Maintenance
8. Monitoring

Why choose offsite construction?

Safer
Fewer accidents and health risks in a controlled environment.

Faster
More control over labour, scheduling, and materials.

More sustainable
Less waste, thanks to a factory-controlled environment.

Higher quality
Pre-tested components and fewer defects.

Less disruption
Reduced environmental impact, with less noise, dust, and litter.

We believe it's possible to cool data centers without warming the planet

Sustainability is at the core of everything we do at Grundfos.

We share a sense of responsibility with the data center industry that drives us towards ever more energy-efficient solutions, helping you exceed your own sustainability goals.

With data center specialists around the world, we'll be by your side at every stage: from consultation and design through to commissioning, maintenance, and monitoring.

To discuss your next cooling, water treatment, or distribution project, contact us today.

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