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Mission-critical Data Center Cooling Solutions

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Agenda

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1 **Industry Flow Solutions Strategy 2030**

2 **Mission-critical Data Center Cooling Solutions**

+ Industry Flow Solutions Strategy 2030

#1 brand in engineered piping systems for industrial applications

Customers

intel
PALL Pall Corporation
Micron
VEOLIA
tsmc
xylem
PUB
Google
aws
Meta
Disney Cruise Line
RoyalCaribbean International

Key segments


Semiconductors


Chemical Process


Water Industry


Marine


Data Center


Food and Beverage


Energy


Life Sciences


PVDF pipes


Pre-insulated pipes


PP pipes


PVC pipes

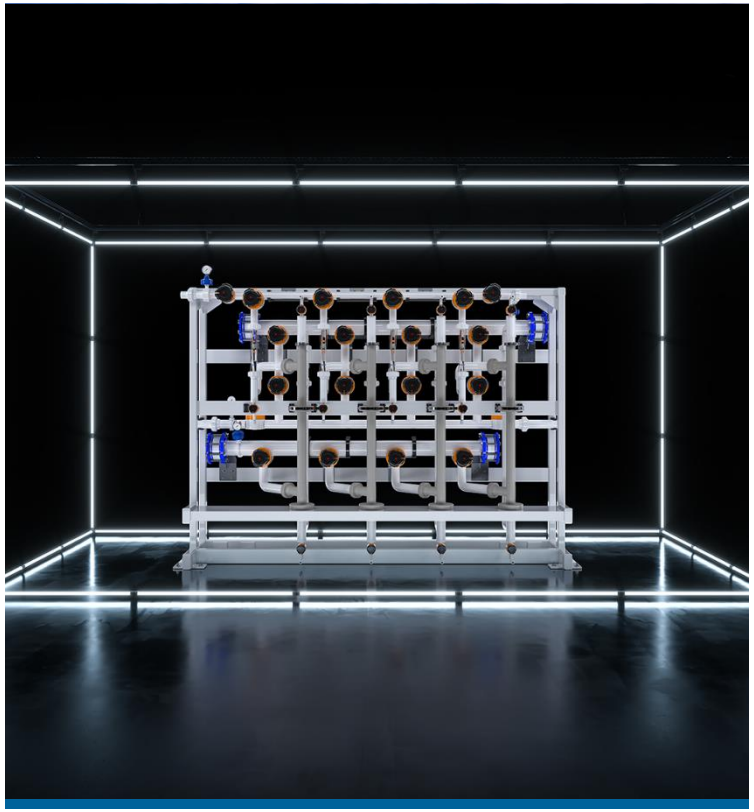

Valves


Actuators


Measurement & control

We successfully developed the core capabilities to deliver complex large-scale projects …

Strengthened proximity & market share in MicroE, Marine, Data Center

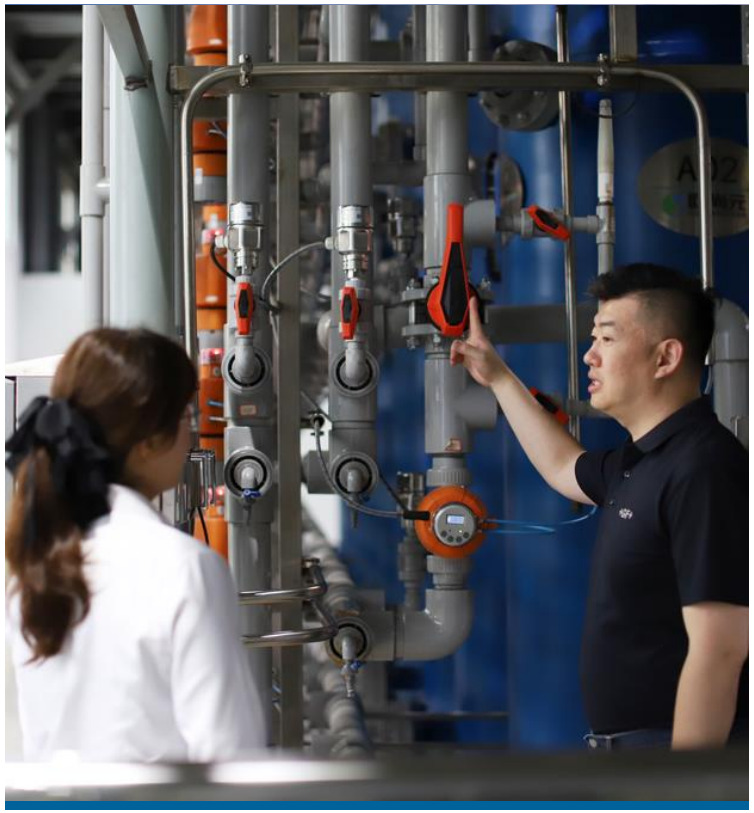


Build a global state of the art prefabrication network

Established strong key account relationships

… and we will capitalize on our strong foundation and create superior value

Driving growth by targeting high-potential industrial segments



Partner of choice by being easy to work with & deliver peace of mind

Innovating high-performance systems with easy-install jointing

Strategy 2030 focuses on strengthening GF's industrial project business

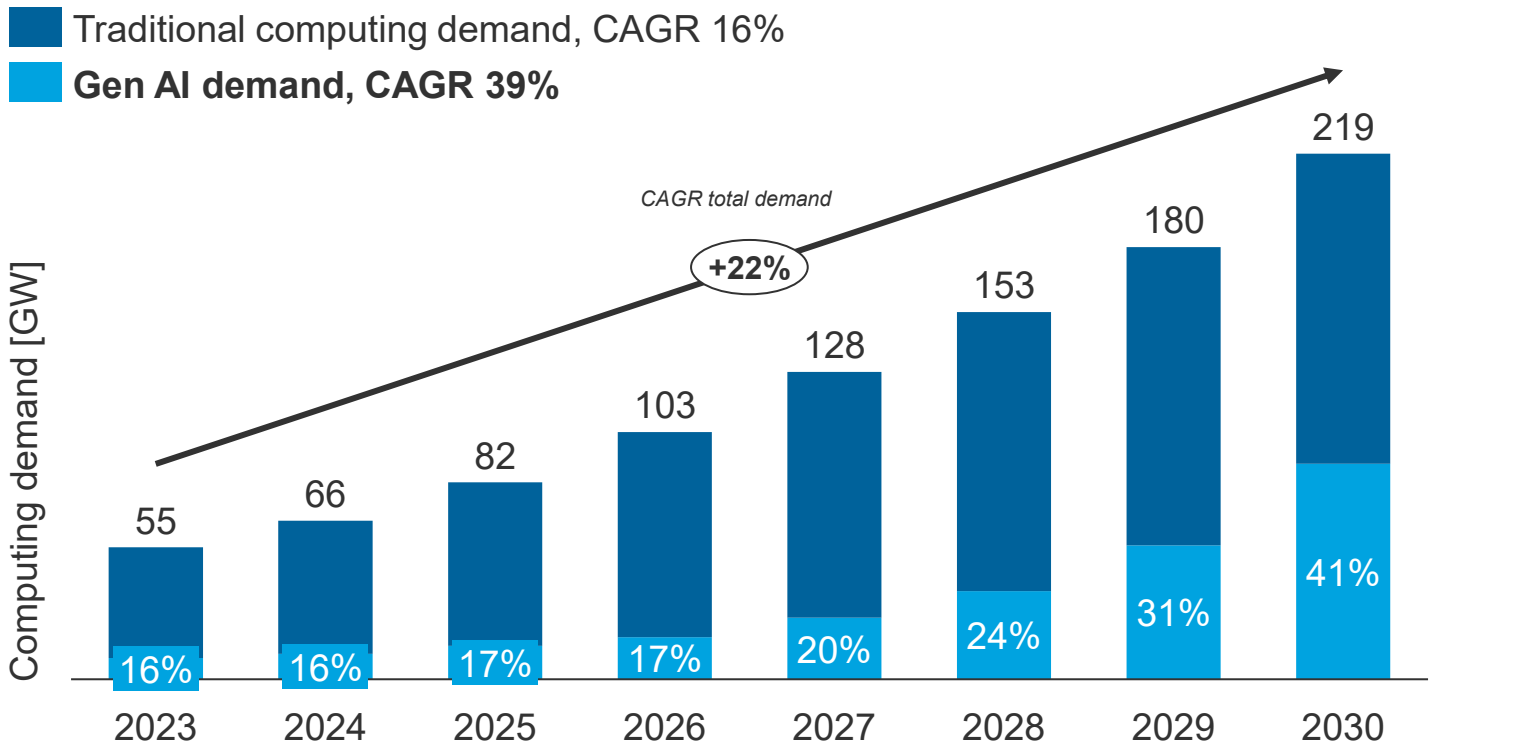
Maximize the core business	▪ Advance in **Service** Leadership ▪ Full potential on **high growing industrial segments** Microelectronics, HVDC, Marine
Grow with new opportunities	▪ Expand **Data Centers** with **Direct to Chip Cooling** ▪ Grow **Marine** in China ▪ Development of new **mission critical segments**
Lead with innovative solutions	▪ Develop **advanced portfolio** and **jointing solutions** ▪ Develop new solution for **Liquid Process Cooling** ▪ Expand our **Automation Flow Control** solutions
Foster a "One GF" performance culture	▪ Empowering **customer-facing teams** with **global alignment** ▪ Driving cross-divisional **channel synergies**

+ Mission-critical Data Center Cooling Solutions

AI is driving data center demands and market development

USD 1’700 billion
CAPEX 2025 – 2030

Global Data Center workloads
(in GW)



Source: McKinsey

Significant investments and operational costs define the needs of the industry

Speed

$720 M

CAPEX new build (excl. IT)*

Energy Efficiency

$30 M

average energy costs per year

Reliability

99.995 %

uptime (26 min downtime per year accepted)

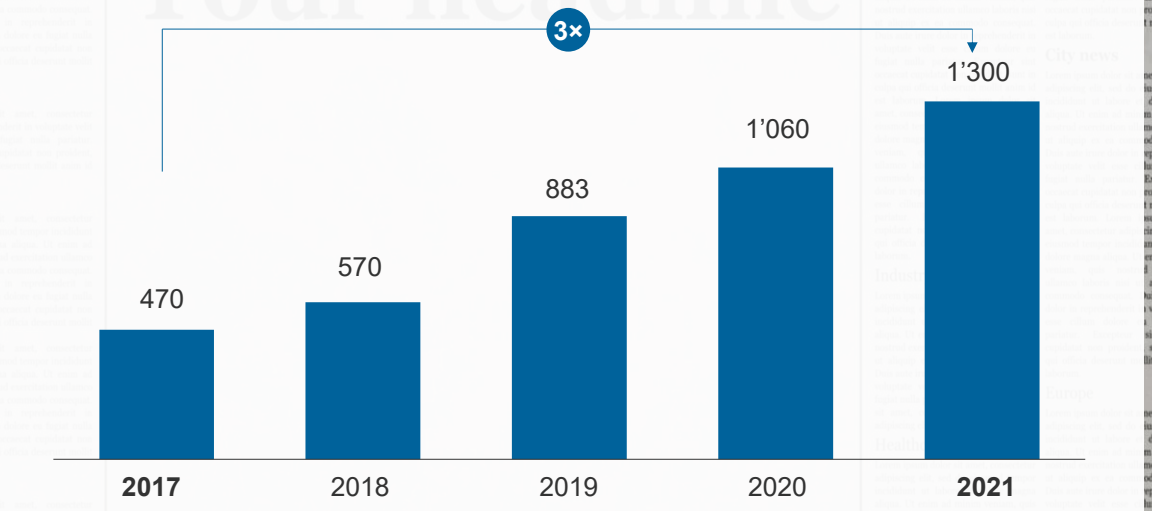
*Excluding IT, land acquisition, and power (generation & transmission), Estimates given for typical large data center of today (60 MW). Source: McKinsey, Meta, Uptime Institute

From Overuse to Reuse: Rising water consumption has turned into bold preservation targets

Google's water use is soaring in The Dalles, records show, with two more data centers to come

OREGONLIVE The Oregonian

Google Oregon annual water consumption in million liters



~ From 4 million liters of water per day

being used for cooling[1] by a hyperscale data center every day

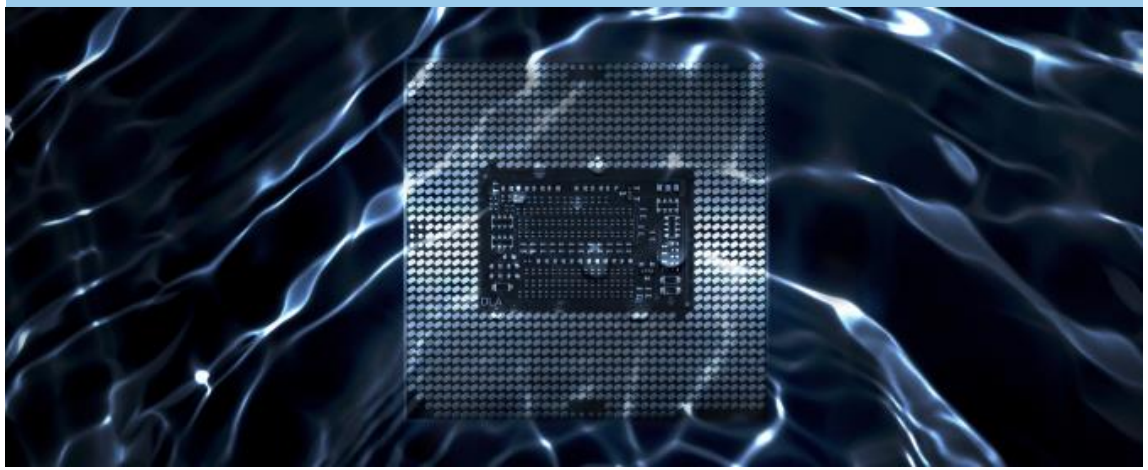
Towards water positive

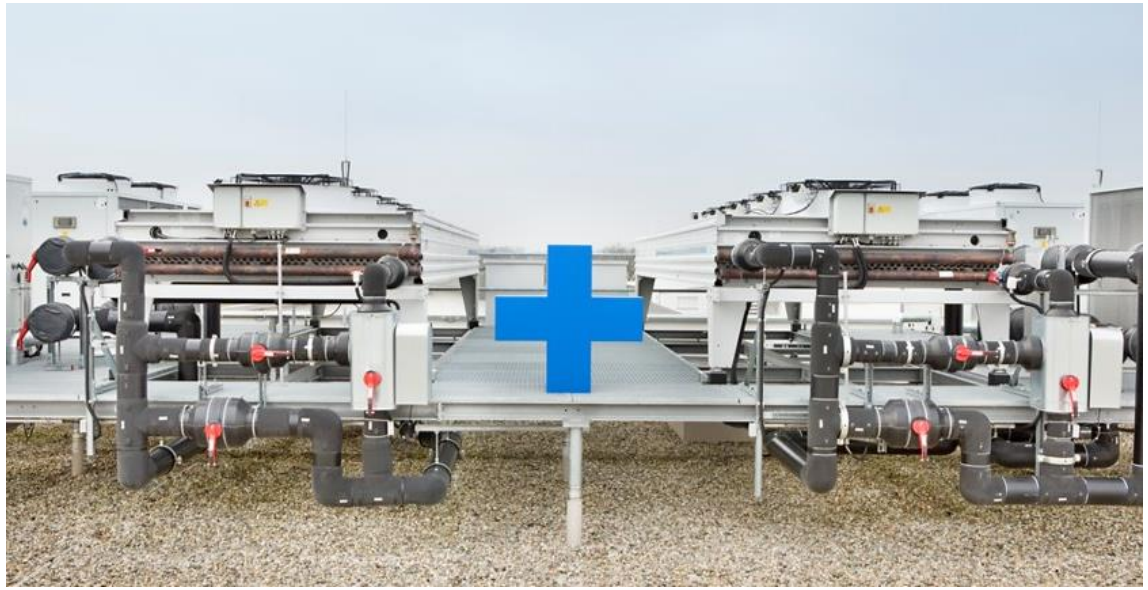
Zero-water targeted by 2027 and water positive by 2030.[2]

Source: 1: City of Dalles, 2: Microsoft

GF is well positioned with proven expertise as a trusted global partner delivering flow

Recognized by **Intel & TSMC** with multiple Supply Excellence Awards, latest 2025.





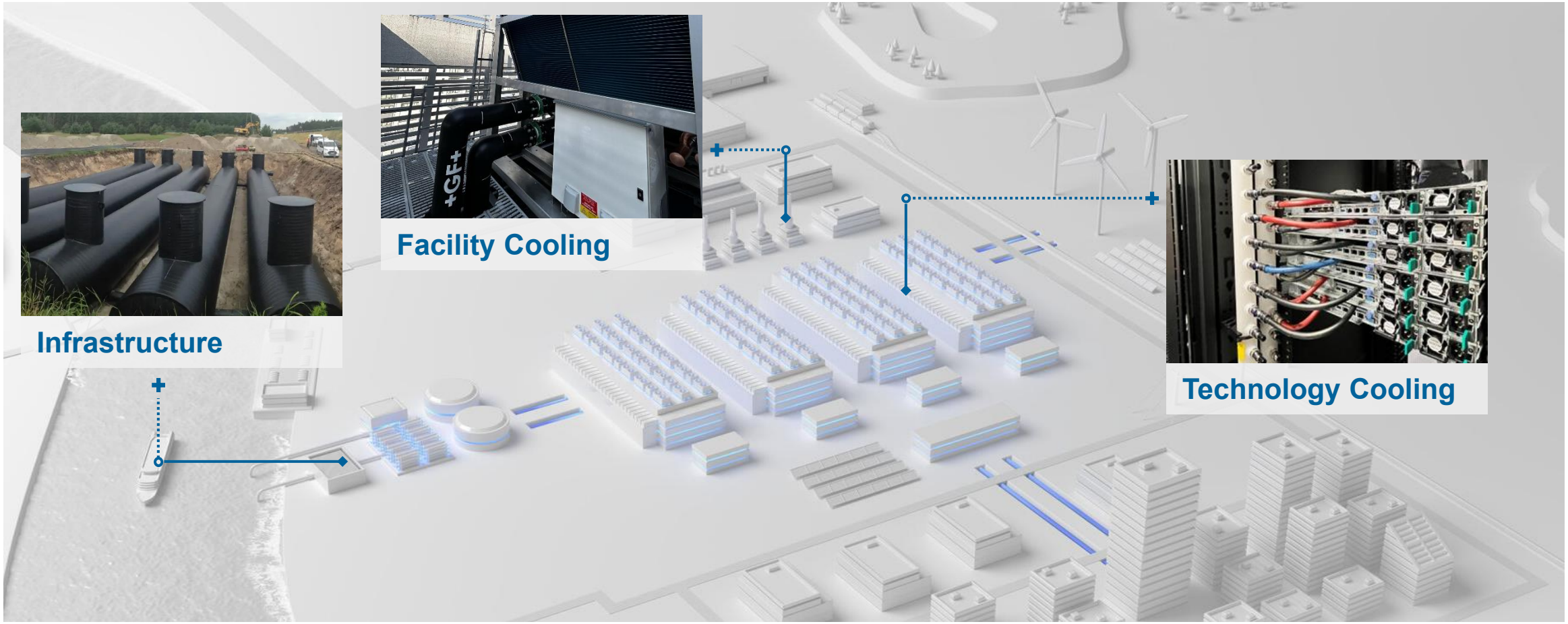
30+ years in Microelectronics

Trusted in the frontline of the world's most valuable chips.

20+ years in Data Centers

Trusted across 150+ global projects by all the top-tier players

With our solutions we cover a wide range of applications in Data Centers



We have a broad application coverage in the facility cooling with an impressive track record

Facility water system

Exemplary machine room application

Delivering customer value in over 150 projects

- **100% Corrosion-free**
- **30% better insulation** performance[1]
- From **6 months to 6 weeks** via prefabrication[2]
- **Global engineering** and **pre-fabrication** support

Customer references: GF customer database,1: Baden Baden Cloud Data Center, Germany, 2: Hyperscaler data center, Ireland

The industry has now reached an inflection point which forces a technology shift towards liquid cooling

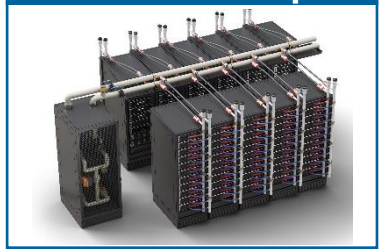
Shift from air cooling to liquid cooling above 100 kw

Air Cooling

44%
Market share

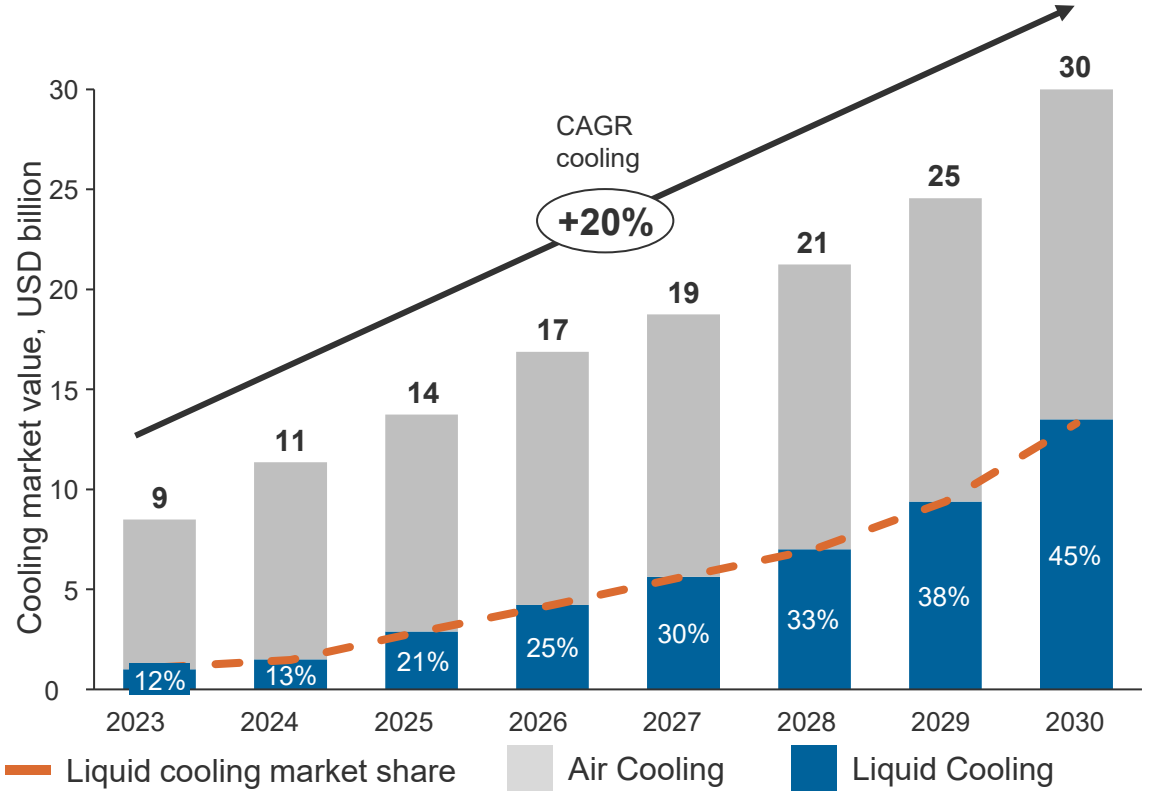
USD 13+ billion
by 2030

Direct-to-chip



Immersion cooling

Data Center cooling market outlook
(in USD billion)



Source: Harmonized from various market estimates including NVIDIA, Omdia and Dell´Oro Group

We are venturing into liquid cooling with a unique solution and superior performance

Matching the market development towards pure water as ultimate coolant

Image from Dan DeLong for Microsoft

Maximum performance[1]

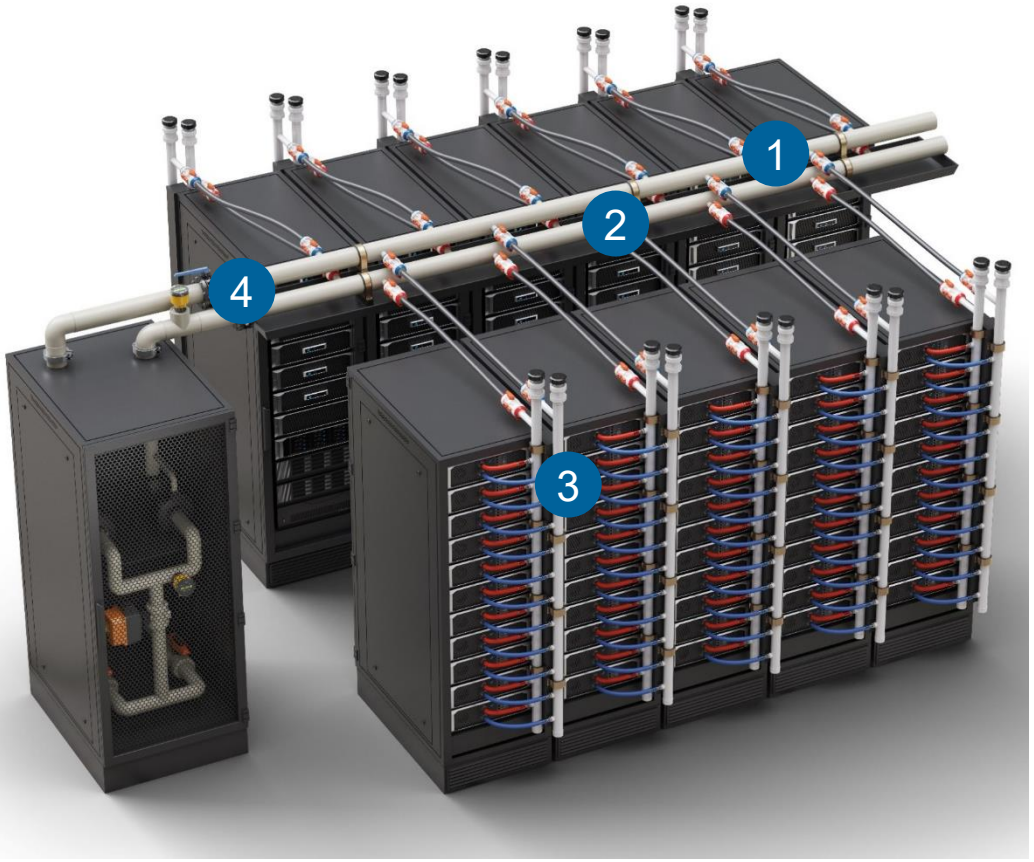
- > 5% better thermal carrier
- > 50% lower viscosity to pump
- 25% less hydraulic power needed

High purity for microscale features

- Prevent blocking the µ channels (< 5 µm)
- Zero coolant degradation due to impurities

1: Compared to PG25.

We are setting new standards for the industry with our complete polymer solution



60% lighter

Superior performance
100% Corrosion free
100% Purity

4x faster installation

80%
lower CO_2 footprint

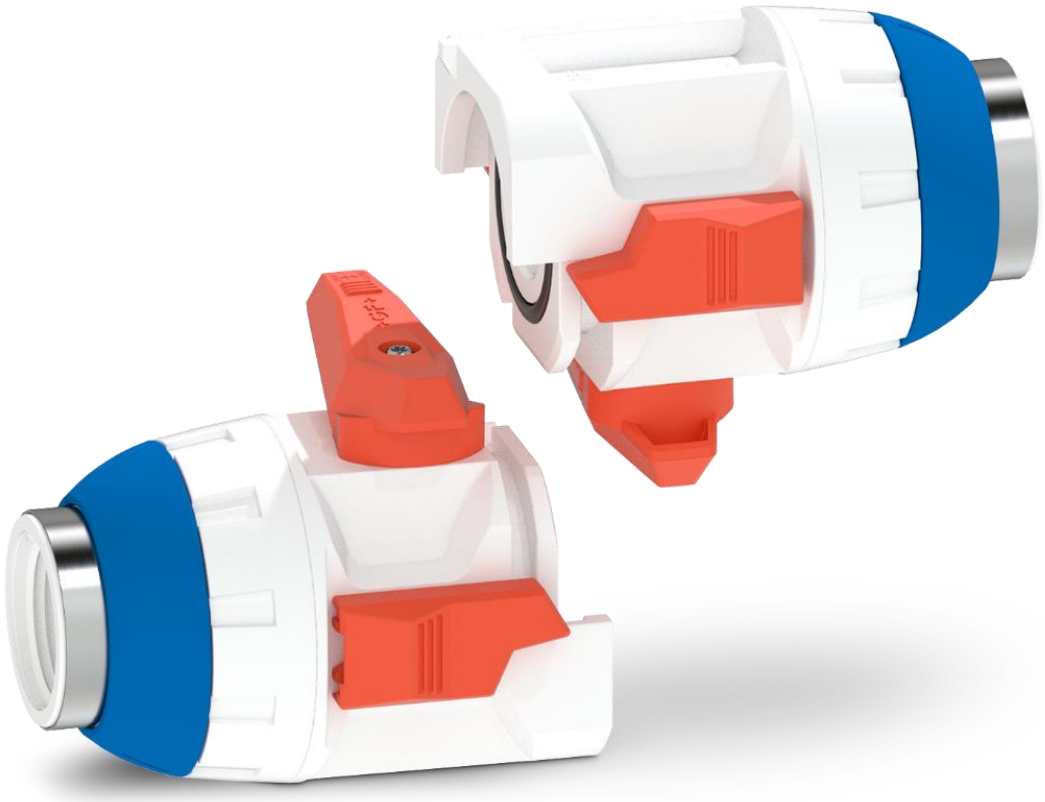
Value driven services

- Engineering Services
- Pre-fabrication
- Infrared Welding

Complete portfolio

1. Distribution System
2. Quick Connect Valve 700
3. In-Rack Manifold
4. Measurement & Control

We developed the world's first dual interlock valve made from polymers …



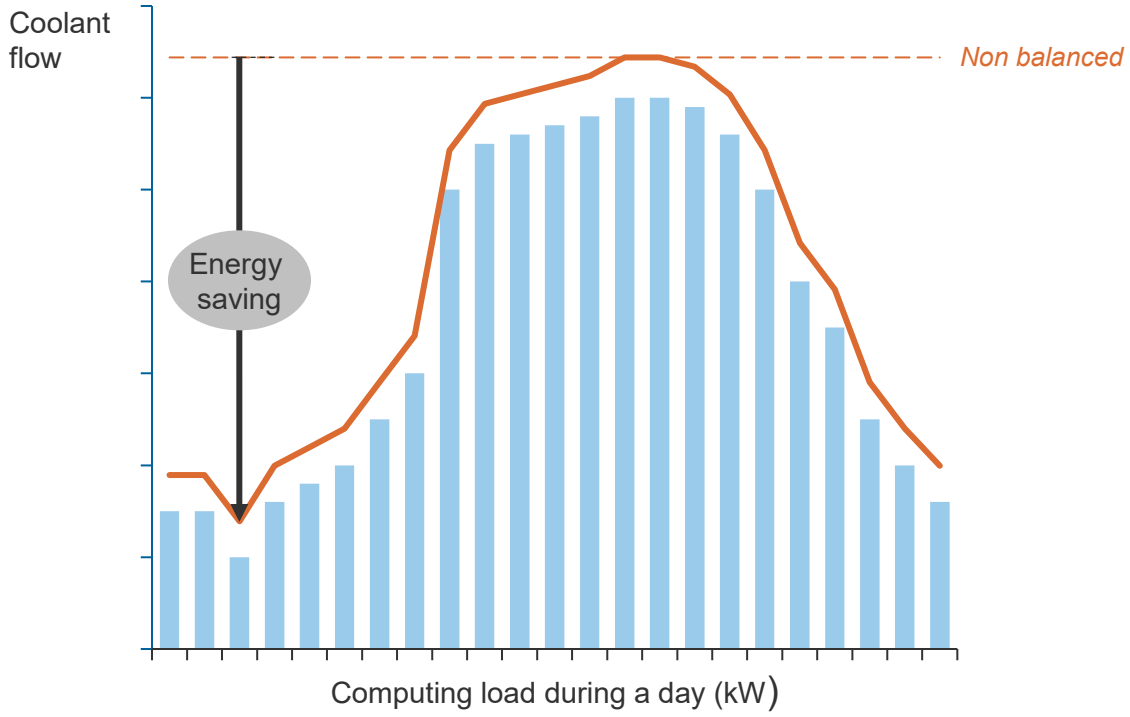
55% less weight
with same strength, performance and reliability

25% better flow
Full-bore valve design for optimal flow with reduced pressure drop and no corrosion

Easy handling
Safe, easy, and ergonomic to handle and color coding for supply/return lines

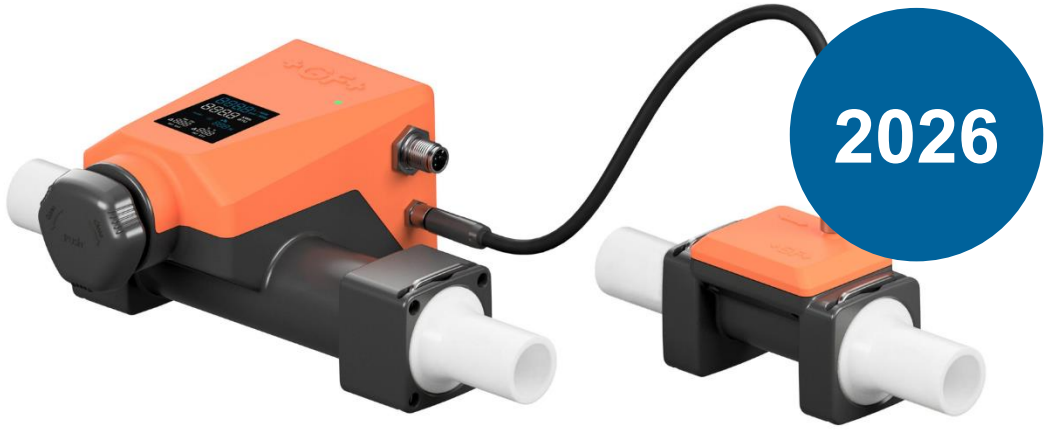
… and we do not stop inventing

Balancing the flow optimizes system efficiency under diverse cooling demands



Source: Harmonized from various sources, including Uptime institute and ICCSINO.

Precision engineered for optimal flow control



Compact
Half the size of the competition

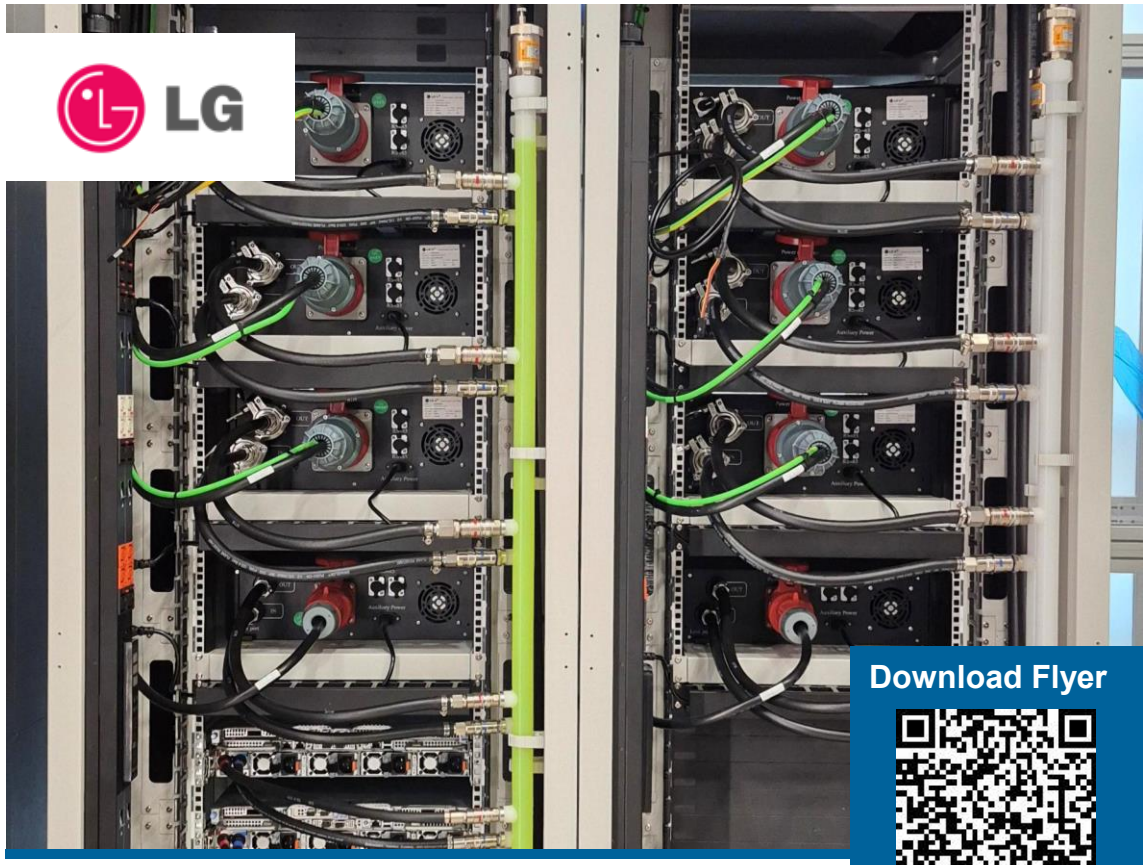
Fast and Precise
market leading control accuracy

Smart
Fully digital, real-time diagnostics

Customer acceptance is proof that we are on the right track

Download Flyer

Sustainable cooling in tropical climates



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Driving AI data center efficiency

Q&A