Let’s reimagine data centre cooling

Discover how our liquid cooling fluids can help you improve cooling performance, boost energy and water efficiency, and enable heat re-use.

Castrol ON

The need for new data centre cooling solutions today

The next generation of data centres requires a cooling revolution. Operational energy costs are one of the biggest outgoings for data centres.

Data centres are responsible for 2% of global electricity consumption and that figure is set to rise rapidly with the growth of artificial intelligence, high-density compute, and edge computing.

Air cooling – the default for decades – is struggling to keep up. It consumes high volumes of energy and water, adds infrastructure complexity, and is unable to support the latest high-powered chipsets.

Castrol ON's liquid cooling technologies are designed to help you solve these crucial problems. They help improve thermal efficiency, reduce total cost of ownership (TCO), and support the sustainability goals of operators under mounting pressure to reduce carbon, water, and energy usage.

The industry is nearing a tipping point:

76%

of data centre experts say immersion cooling must be adopted within the next three years to maintain performance.

Meanwhile, hyperscalers are already leading the charge with single-phase direct-to-chip cooling, thanks to its suitability for retrofitting and high-performance compute.

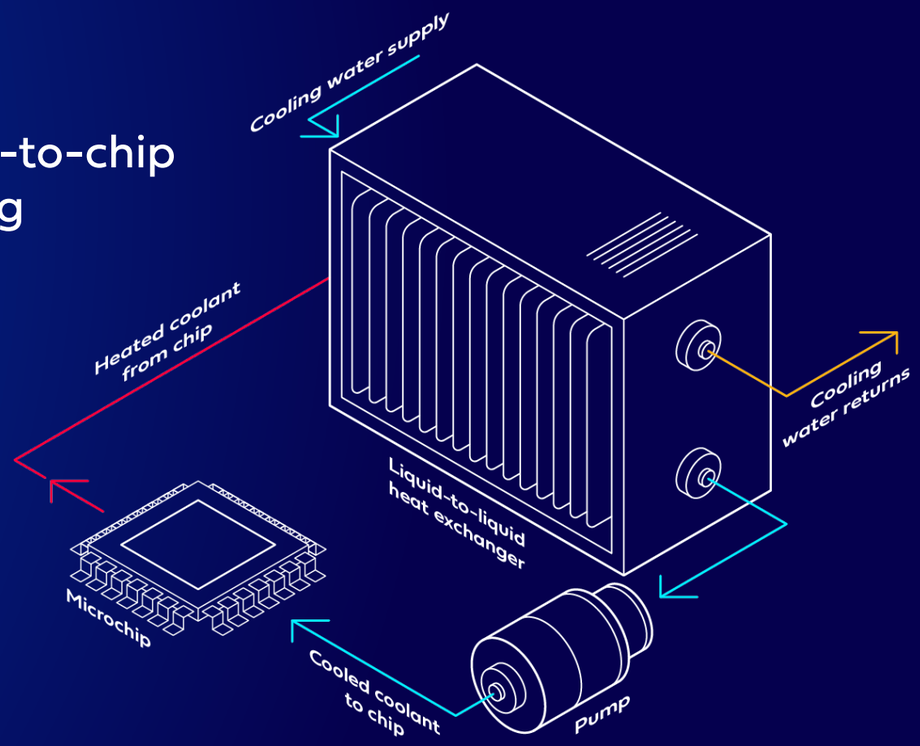
The time is right to embrace new, innovative technology that improves water and energy efficiency without compromising a data centre's uptime.

Castrol ON liquid cooling technologies

Together with our customers and partners, Castrol ON is defining the future of data centres with liquid cooling fluids that deliver reliable cooling performance while reducing energy and water usage.

Castrol ON offers two proven liquid cooling systems under one global brand: **direct-to-chip** and **immersion cooling**. Each system supports distinct data centre needs and delivers powerful benefits.

Direct-to-chip cooling



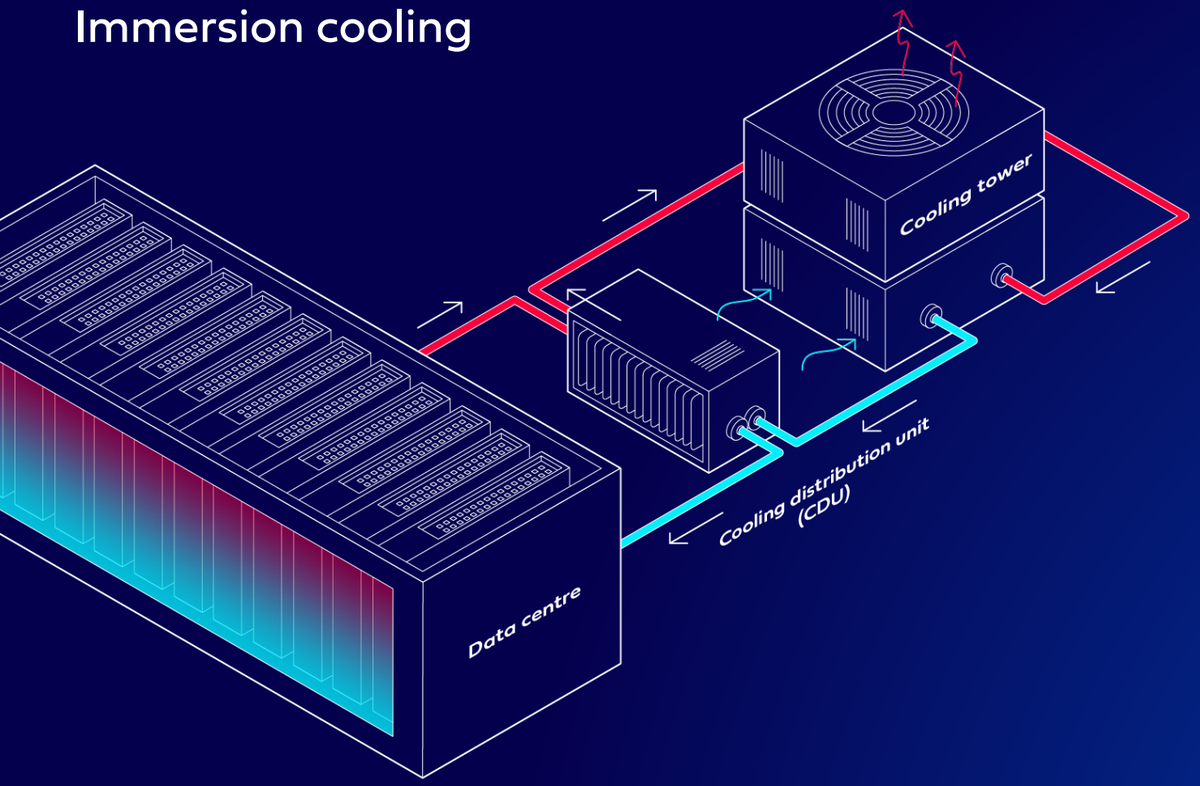
Direct-to-chip cooling is designed for use in enterprise and hyperscale environments, making it ideal for retrofits and phased upgrades. This system functions by circulating fluid through cold plates that are placed directly on heat-generating components such as CPUs and GPUs. It is a choice solution due to its high efficiency and rapid adoption, which can be achieved without requiring a complete overhaul of existing infrastructure.

Castrol ON PG 25 is optimized for direct liquid cooling, a method where the cooling fluid comes into direct contact with the CPU or GPU, significantly improving heat dissipation. The fluid provides proven heat transfer performance, helping to maintain optimal temperatures even under heavy computational loads, which is critical for modern data centres.

Key product features include:

- Non-harmful propylene glycol (PG) fluid
- Offers extended protection against metal corrosion
- Compatible with wetted materials present in the cooling system
- Biostable formulation preventing bacterial growth during service
- Ready to use, does not need dilution with water

Immersion cooling



Immersion cooling is where physical server hardware is immersed in a bath containing a non-conductive fluid that draws heat away from hot components such as CPUs, GPUs and RAM. The hot fluid is then cooled through a heat exchanger mounted to the chassis, and the cooled liquid is then pumped back into the bath to repeat the process.

Castrol ON range of immersion cooling fluids (DC 15 and DC 20) are single-phase dielectric coolants with improved thermal management performance, combined with safety and high lifetime stability, that will transform the use of efficient immersion cooling for high-performance data centres. Castrol ON fluids have been proven for use with leading tank and rack-based liquid cooling solutions.

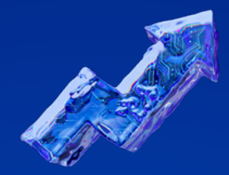
Key product features include:

- Low viscosity, efficient heat transfer and good pumpability
- Proven thermal properties across the operating temperature range
- Excellent electrical insulation and high flash point to protect against breakdown and ignition
- Formulated to provide high oxidation resistance to maintain performance
- Compatible with a range of elastomers, plastics and metals

How you benefit from Castrol ON range of fluids

Savings

Liquid cooling technology could help reduce water usage and energy usage and costs, which can improve efficiency and lower the total cost of ownership (TCO) over the operational duration of the facility.



Superiority

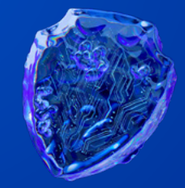
Great performance defines our range of thermal management fluids, helping to maximize uptime and operational security.

Serviceability

Castrol has a true global footprint. We can offer technical support around the world, making your technology easy to maintain and manage throughout the whole life cycle.

Simplicity

Our relationship with our strategic global partners gives you an integrated offering from one trusted partner, making data centre management simpler than ever.



Safety

Data centre safety is critical, which is why our engineers can help to minimize risk.

A true global partner you can trust

To be ready for tomorrow, data centres must embrace fluid thinking today. Castrol is your long-term strategic partner, supporting you at every stage of your liquid cooling journey — with the technology, expertise, and reach to help you succeed globally.

Our fluids are engineered to deliver consistent, high-efficiency thermal performance — backed by extensive validation, global approvals, and real-world reliability.

Industry partnerships and fluid approvals

We work closely with leading research institutions and industry innovators to push the boundaries of what's possible in liquid cooling.

- We've partnered with **research institutions** – including The Research Institute of Sweden (RISE) and the Open Compute Project Foundation (OCP) – to optimise our testing and understanding of immersion cooling fluids. Our partnership programmes empower the research and development of new cooling technologies for use in data centres. We are working with research institutions to support with fluid, material science and thermal management expertise, which will aim to accelerate data centre innovation.
- We also work with leading immersion **system manufacturers**, such as Submer and Icetope. These partnerships give us access to state-of-the-art laboratories and immersion cooling centres, where we can test servers and hardware and develop greater capabilities and solutions.
- Castrol is partnering with **server manufacturers** to share critical insights and drive innovation. We are also exploring opportunities to expand our collaboration with chip manufacturers.
- Our fluids are **co-engineered** and approved by key industry players, such as Submer and GRC, to give compatibility and performance assurance.

Our global ecosystem

RISE · OPEN Compute Project · GRC The Immersion Cooling Authority · ICEOTOPE Precision Immersion Cooling · intel.

submer · DELL Technologies · SUPERMICRO · wilo

BOSTON Servers | Storage | Solutions · Hypertec · MIDAS Immersion Cooling · GIGA COMPUTING

KONTENA · Scolmore Group · LiquidCool Solutions · Schneider Electric

PEGATRON · COMPAL · Kentec 金運 Cooling Solutions · FBOX

Innovation through co-development

Through co-development with customers, universities, and technology partners, Castrol is shaping the future of cooling and unlocking new levels of system performance.

Pangbourne, UK

Our Liquid Cooling Centre of Excellence in Pangbourne, UK, was opened in 2025. Working with key customers, eco-system partners and industry stakeholders, this state-of-the-art facility is purpose-built to create, test, and analyse liquid cooling solutions that will transform data centre operations.

Shanghai, China

In addition, in 2025 Castrol and Schneider Electric jointly established the Liquid Cooling Technology Co-Laboratory in Shanghai, China. This strategic partnership injects brand-new vitality into data centre technological innovation.

Fluid Thinking

Solid Solutions

Break fix

- Spare fluid
- On-site response
- Virtual engineers
- Telephone support

Disposal

- Fluid collection
- Disposal

System startup

- Liquid cooling fluid installation
- Filtration
- System flush
- Certificates of analysis

Maintenance

- Smart dosing
- Predictive maintenance
- Dynamic monitoring
- Lab testing

This support approach helps minimize operational risk and reduce complexity — ensuring long-term reliability and efficiency.

From install to disposal, our industry-leading service model facilitates liquid cooling adoption in data centres*. We support the full lifecycle of your cooling systems with:

*All services will be delivered in collaboration with third-party suppliers. The availability and rollout of certain services may vary by location and may be introduced at different times depending on regional factors.

Pangbourne,
UK

Hamburg,
GERMANY

Wayne,
USA

Shanghai,
CHINA

Global reach and support

With Castrol's global manufacturing footprint and supply network, we provide consistent, high-quality service wherever your operations are based.

You also have access to the **Castrol ON Liquid Cooling Customer Hub** — a dedicated online platform offering onboarding support, technical documentation, training tools, and expert assistance.

Key

- Production site
- Stock point loction
- Technology centre

Visit castrol.com/liquidcooling – your one-stop shop for operating guides, product data sheets, safety resources, and more.

Have questions? Contact us at LiquidCooling@bp.com

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