Industrials | November 2026

AI PICKS AND SHOVELS: POWER IN, HEAT OUT

THE HIDDEN INFRASTRUCTURE INSIDE THE AI DATA CENTRE

THEMES

As one of the largest issuer-sponsored research firms, we are known for our bottom-up work on individual stocks. However, our thinking does not stop at the company level. Through our regular dialogue with management teams and investors, we consider the broad themes related to the companies we follow. Edison themes aims to identify the big issues likely to shape company strategy and portfolios in the years ahead.

ANALYSTS

Harry Kilby
Yana Mihaylova
Jonathan Day

CONTACT

edisongroup.com
+44 (0) 20 3077 5700
industrials@edisongroup.com



EDISON
BRILLIANT KNOWLEDGE

EDISON

AI Picks and shovels 2: Power in, heat out

The hidden infrastructure inside the AI data centre

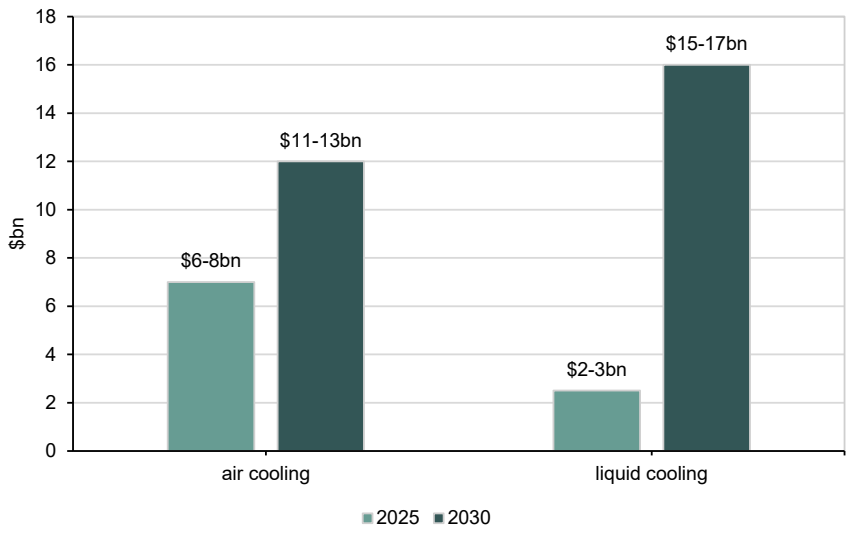
Virtually all electricity delivered to a data centre ends up as heat that must be removed. In our first note we discussed that the AI build-out is increasingly constrained by the speed at which new capacity can be powered. This note looks at the other side of the same megawatt: getting the heat out. AI has made this considerably harder. Conventional racks typically drew 5–10kW, while AI racks now draw 60kW or more. The result is a large and fast-growing opportunity across the cooling value chain. McKinsey expects c $220bn to be spent on cooling equipment for AI workloads to 2030, with liquid cooling growing at 45–50% a year. Our listed company universe (Exhibit 13) shows that there are many ways to gain exposure, from global large caps to smaller European specialists.

In October 2025, McKinsey estimated that around $720bn of the $5.2trn required for AI data-centre workloads to 2030 will be spent on power and cooling equipment, with cooling accounting for roughly $220bn. Within that, spending on liquid-cooling equipment is forecast to grow from $2–3bn in 2025 to $15–17bn in 2030, an annual growth rate of 45–50%, compared with 10–15% for air cooling.

Our central investment view is that higher-density AI racks require disproportionate investment in thermal management, liquid cooling and specialist materials. As compute density rises, so does the non-compute content per rack and per megawatt, creating a second-order capex pool that sits outside the graphics processing unit (GPU) itself.

This is also an area of the AI supply chain in which Europe is comparatively well represented. Heat exchange, fluid handling, controls and speciality materials are long-standing European industrial strengths, and several European companies, including Georg Fischer, Munters and technotrans, have reported sharply higher data-centre orders in 2026.

Exhibit 1: Liquid cooling spend is forecast to overtake air cooling by 2030



Source: McKinsey & Company

AI picks and shovels - Part 2

16 November 2026

Edison themes

As one of the largest issuer-sponsored research firms, we are known for our bottom-up work on individual stocks. However, our thinking does not stop at the company level. Through our regular dialogue with management teams and investors, we consider the broad themes related to the companies we follow. Edison themes aims to identify the big issues likely to shape company strategy and portfolios in the years ahead.

Companies mentioned in this report:

Schneider Electric, Eaton, Parker-Hannifin, Trane Technologies, Vertiv Holdings, Ecolab, Legrand, Saint Gobain, Henkel, nVent Electric, Alfa Laval, Rockwool, Georg Fischer, Clariant, CAREL Industries, Munters Group, Lu-Ve, Costain Group, Simona, Hargreaves Services, technotrans, Nabaltec, APR Technologies, The Gorman-Rupp Company, Shell

At the end of our report find the expanded universe (Exhibit 13)

Analysts

Harry Kilby	+44 (0)20 3077 5700
Yana Mihaylova	+44 (0)20 3077 5700
Jonathan Day	+44 (0)20 3077 5700

Power in, heat out

Almost all of the electricity a data centre draws is converted into heat rather than stored, so a 100MW facility is also producing close to 100MW of heat, continuously. The cooling system is therefore sized from the same megawatt figure as the power infrastructure discussed in our first note.

AI server power density up c 11x between 2020–25

AI has made that heat far more concentrated because AI workloads perform best when processors are placed as close together as possible, which means more power is packed into each rack. Individual GPUs now draw between 700W and 1,200W each. In its April 2026 report, the International Energy Agency (IEA) estimates that the power density of AI servers increased 11-fold between 2020 and 2025 and could rise a further fourfold by 2027. The implication is that the same amount of heat per megawatt now has to be removed from a much smaller space.

Cooling consumes 38–40% of data-centre electricity consumption

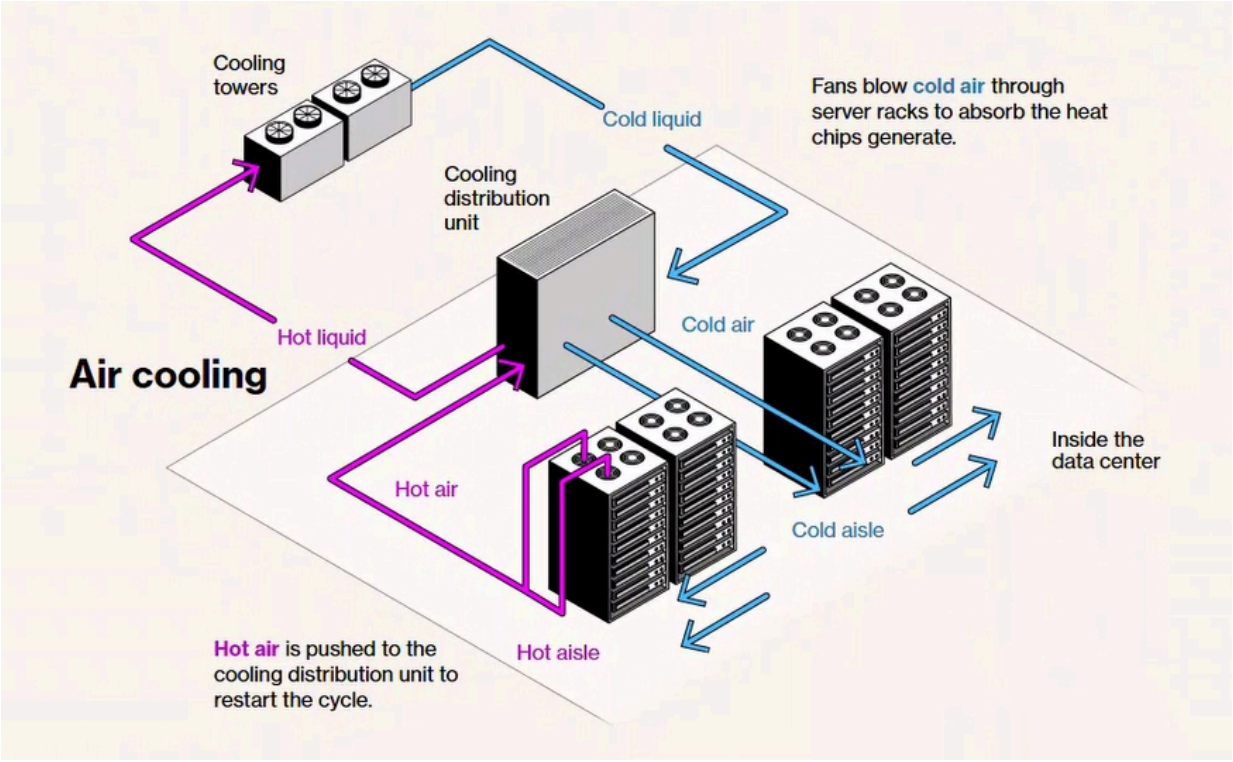
Cooling also consumes a large share of that power in its own right, with Deloitte estimating that cooling systems account for 38–40% of a data centre's electricity consumption, broadly similar to the share used by the computing power and server resources (c 40%). This creates an important link with our first note, because where a data centre's grid connection is fixed, power saved on cooling becomes power available for compute. Deloitte notes that air-based cooling accounts for up to 40% of a data center’s electricity consumption and that alternative cooling methods, such as liquid cooling, can reduce power usage by high-density server racks by as much as 90% compared with air-based cooling. Even a fraction of that saving is meaningful when cooling represents close to 40% of a site's consumption, and it can be achieved in months rather than the years needed to secure a new grid connection. Therefore, cooling efficiency is one of the few ways to increase usable compute capacity without waiting for additional grid capacity. That makes thermal infrastructure a strategic investment for operators rather than a secondary building cost.

How data centres have been cooled

Most data centres in operation today are air cooled (Exhibit 2). Servers draw in cool air at the front, the air absorbs heat as it passes over the components and fans push it out of the back. Racks are arranged in alternating cold aisles and hot aisles so that incoming cool air and outgoing hot air do not mix.

In many facilities, the hot air is then drawn into air-handling units, where it passes over coils containing chilled water. The heat transfers into the water, which is pumped out of the building to cooling towers or dry coolers and released into the atmosphere. The cooled water then returns to begin the cooling cycle again.

Exhibit 2: Air cooling of a data centre



Source: Bloomberg Intelligence

AI changes how far into the building liquid cooling travels

In facilities designed this way, liquid has long been part of data-centre cooling, but what AI changes is how far into the building it travels and what type of liquid is used. In a conventional data-centre hall, chilled water, sometimes mixed with glycol, stops at the air-handling unit on the edge of the room. Rear-door heat exchangers take it a step further, to a coil in the back door of each rack. Whereas with direct-to-chip cooling, a treated water-based coolant, often mixed with propylene glycol, reaches the processor itself. Immersion cooling goes furthest, submerging the servers in a non-conductive fluid.

Incumbents well-placed for the move to liquid cooling

Several European companies are established suppliers to this conventional architecture. For example, **Munters** (MTRS.ST), the Swedish climate-control group, supplies air handlers, chillers and coolant distribution units (CDUs) through its Data Center Technologies division, which generated c SEK6bn of sales in FY25. **LU-VE** (LUVE.MI), based in Italy, and Sweden's **Alfa Laval** (ALFA.ST) manufacture the heat exchangers that transfer heat from air to water, while Italy's **CAREL Industries** (CRLI.MI) supplies the controls, valves and humidity management that regulate the system.

These companies are well-placed for the move to liquid cooling, which spans rear-door heat exchangers, direct-to-chip cooling and immersion cooling (Exhibit 4), because a liquid-cooled hall still relies on much of the same equipment. Heat from the racks still has to be transferred into a facility water loop and ejected outside, which requires heat exchangers, chillers or dry coolers, and the controls to run them. They also benefit from existing relationships with data-centre operators, which matters in a market where new equipment has to be tested and approved before it is used. Munters, for example, already supplies both the air handlers used in conventional halls and the coolant distribution units at the centre of liquid-cooled systems. These are incumbents whose content per megawatt is rising, rather than new entrants competing for a new market.

The building envelope, including insulation, roofing and raised flooring, also affects thermal performance. However, envelope content scales with floor area rather than power density. We therefore treat it as part of the wider cooling ecosystem and return to it only where it matters most for this specific theme, namely fire safety.

Why air cooling alone fails when it comes to AI

The physical limits of air: Water can absorb c 3,500x more heat than air

Air cooling struggles at high densities because air carries heat far less effectively than water. **Trane** (TT), which supplies water-cooled chillers and CDUs for liquid cooling, notes that a given volume of water can absorb c 3,500 times more heat than the same volume of air, so removing large amounts of heat with air requires moving very large volumes of air, usually with fans. As airflow increases, the energy required to run the fans rises steeply, and beyond a certain point the fans themselves become a significant source of power consumption.

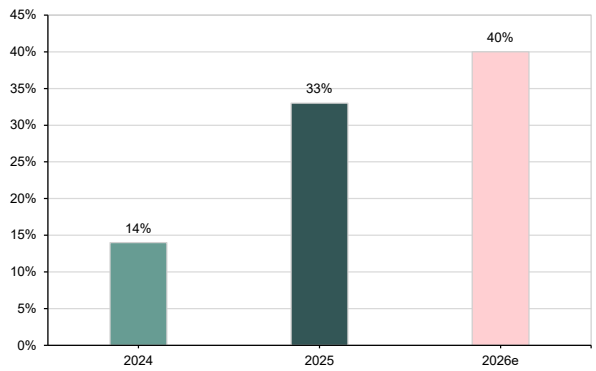
Conventional air cooling is generally effective up to c 20–30kW per rack, and McKinsey places the point at which air struggles to remove heat efficiently at densities above 50kW per rack. AI racks have already moved well beyond these levels, with McKinsey noting that mainstream IT rack deployments are shifting from under 30–50kW per rack to 70–100kW, while direct-to-chip liquid cooling can support higher rack densities up to c 250kW. **Nvidia** has said its Kyber rack, due in 2027, could draw up to 600kW, and it is already preparing suppliers for future racks capable of drawing up to 1MW.

A hybrid transition: Dual cooling systems

The transition is already well under way, with TrendForce data cited by Accenture showing liquid cooling deployed in 33% of AI data centres in 2025 and c 40% expected in 2026 (Exhibit 3). A key feature of this shift for investors is that this is a hybrid transition rather than a straight replacement. In most systems, only the hottest components are liquid cooled, while the rest of the system continues to rely on air cooling. This is why McKinsey expects air-cooling spend to keep growing at 10–15% a year while liquid cooling grows at 45–50%. Therefore, an AI data centre needs two cooling systems instead of one, and this is a key reason thermal content per megawatt is rising.

In April 2026, for example, Munters received an order worth c SEK2.0bn from a US colocation data-centre provider for a new modular cooling platform specially designed for an AI factory build-out. The order covers both custom-designed, high-capacity CDUs and computer room air handlers (CRAHs) placed above the server racks, so the customer is buying liquid and air cooling as a single system.

Exhibit 3: Liquid-cooling adoption rates in AI data centres



Source: TrendForce

AI racks have moved well beyond the thresholds for effective air cooling

Since liquid cooling removes heat directly at the chip, the coolant can do its job even when it is fairly warm, which means not every cooling supplier benefits equally from the shift. Nvidia's Vera Rubin NVL144 rack design, for example, is specified for liquid cooling at 45°C. Water at that temperature is warmer than the outside air for most of the year in many locations, so it can be cooled back down simply by passing it through dry coolers, which work like large radiators, dissipating heat into the outside air. Air-cooled halls, by contrast, often need water chilled well below the outside temperature, which requires energy-intensive chillers. The shift to liquid cooling could therefore favour heat exchangers, pipework and dry coolers over traditional chiller content, so investors should look at which part of the cooling chain a company supplies rather than treating cooling as a single trade.

Inside the rack: Rear door, direct-to-chip and immersion

Liquid coolant now reaches the rack in three main ways (Exhibit 4). Rear-door heat exchangers leave the servers air cooled but capture their heat in a water-cooled coil at the back of the rack. Direct-to-chip cooling brings liquid coolant to the processor itself through cold plates and immersion cooling submerges the whole server in a non-conductive fluid.

The direct-to-chip cooling and other cooling technologies are often combined because cold plates capture most but not all of a server's heat, and the remainder still has to be removed by air or by a rear door.

Exhibit 4: The three main liquid-cooling technologies at the rack

	Rear-door heat exchanger (RDHx)	Direct-to-chip (cold plate)	Immersion
Function	A water-cooled coil replaces the rack's back door. Servers stay air-cooled, but their hot exhaust air is cooled as it leaves the rack	Metal cold plates sit directly on the processors, and coolant flowing through them carries the heat to a CDU	Whole servers are submerged in a tank of fluid that absorbs heat from every component
Coolant	Chilled water, which stays in the door and never enters the server	Treated water, often mixed with propylene glycol, in a sealed loop	Dielectric fluid: usually hydrocarbon-based (single-phase) or engineered, often PFAS-based (two-phase)
Best suited to	Upgrading existing air-cooled halls; removing residual heat from liquid-cooled racks	New high-density AI capacity	Specialised, very high-density sites; not practical as a retrofit

Source: Edison Investment Research

Direct-to-chip most attractive liquid-cooling option near-term

Direct-to-chip cooling is unlikely to remain a niche. McKinsey sees it as potentially the most attractive liquid-cooling option in the near term, noting that hyperscalers, equipment makers and colocation providers are prioritising it for next-generation infrastructure and expects it to account for 30% of the cooling market by 2030. Rear-door heat exchangers are the main route for upgrading existing air-cooled halls, while immersion cooling remains a more specialised option.

Cooling efficiency can add capacity without waiting for more power

Efficiency is the other reason the choice of technology matters. It is usually measured by power usage effectiveness (PUE), the ratio of a facility's total power draw to the power used by its IT equipment. For example, a PUE of 1.0 would mean every watt goes to the IT equipment. PUE is measured against the IT load, so the gap in the PUE for different cooling architectures (Exhibit 5) translates directly into compute capacity.

Exhibit 5: Power usage effectiveness (PUE) by cooling architecture

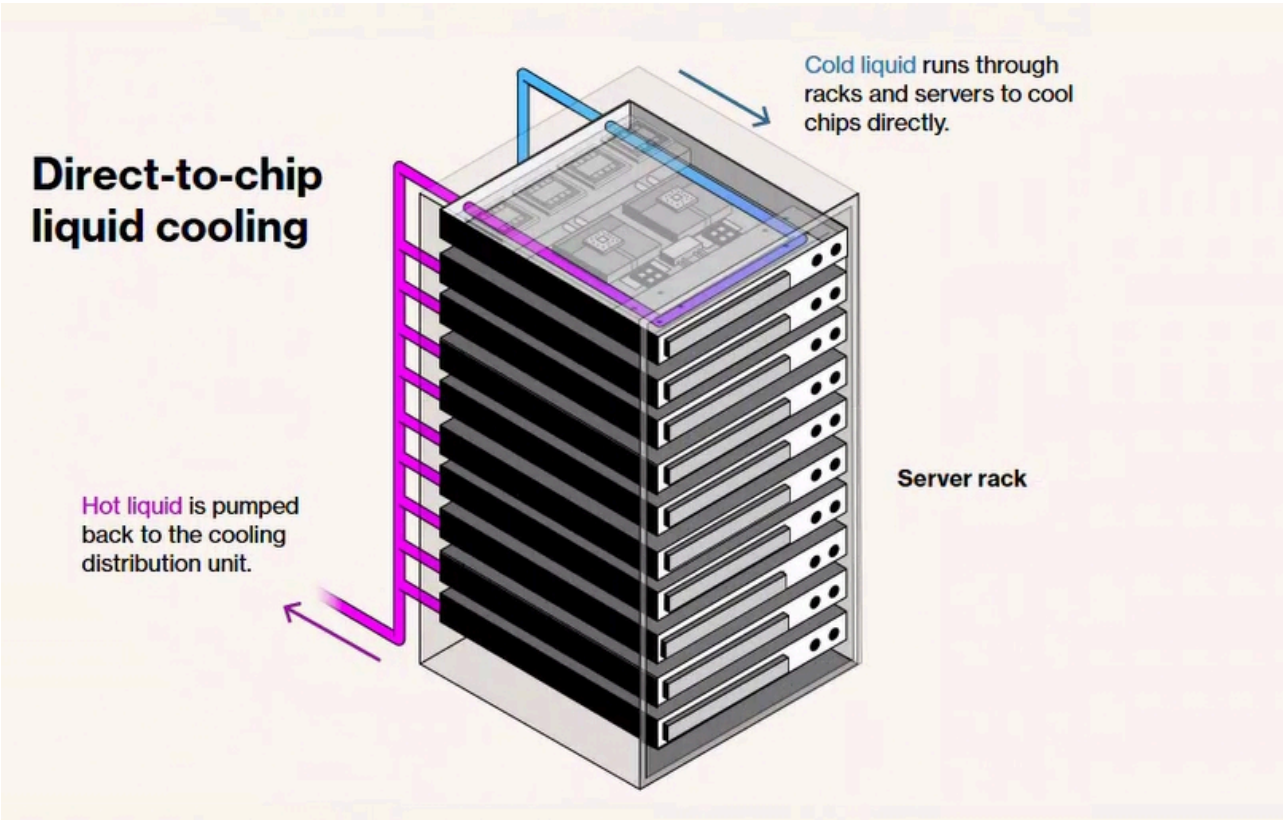
Cooling architecture	Typical PUE range	Best-in-class PUE	Primary efficiency loss
Hot-aisle/Cold-aisle (no containment)	1.65–1.95	1.55	Air mixing, over-cooling, fan power
Hot-aisle containment + economisers	1.40–1.60	1.28	CRAH fan power, chiller partial load
In-row cooling	1.30–1.50	1.22	In-row unit fans, distribution losses
Rear-door heat exchangers	1.25–1.45	1.18	Server fans (elevated static pressure), RDHx pumping
Direct-to-chip liquid cooling	1.15–1.30	1.10	Residual air cooling (non-liquid components), CDU pumping
Single-phase immersion	1.05–1.15	1.03	Fluid pumping, heat rejection (dry cooler fans or facility cooling)
Two-phase immersion	1.03–1.08	1.02	Condenser cooling, minimal pumping during transients

Source: Energy Solutions Intelligence

How direct-to-chip cooling works

Direct-to-chip cooling replaces the air around the processor with a sealed liquid loop (Exhibit 6). A metal cold plate is mounted directly on top of each processor, and coolant flows through the plate, absorbs heat at the source and carries it away to a CDU, which manages the temperature, pressure and flow of the liquid. Sensors continuously monitor temperature, flow rates and leaks.

Exhibit 6: Direct-to-chip cooling



Source: Bloomberg Intelligence

For investors, the key point is how many separate components this requires, each of them a capex line that did not exist in an air-cooled hall. At the chip, a thermal interface material fills the microscopic gaps between the processor and the cold plate so that heat can flow efficiently. The cold plate contains fine internal channels through which the coolant passes. Manifolds distribute coolant evenly to each server in the rack, and quick-disconnect couplings enable servers to be removed for maintenance without leaking. The CDU, effectively a compact pumping and heat-exchange station, keeps the clean coolant inside the rack separate from the building's water supply and pipework. Valves and pumps then connect each rack to the facility's heat-rejection equipment. A server rack's thermal equipment was once largely fans and heatsinks, whereas a liquid-cooled AI rack includes all of the above, so the list of costs for materials removing heat has become considerably longer.

High barriers to entry, high-value solution

These components also carry high barriers to entry because the liquid circulates next to very expensive equipment. An Nvidia GB200 NVL72 rack is reported to cost c $3m, so each coupling, valve and seal must be tested and approved by the customer before it can be used. By comparison, in-rack cooling is estimated at c $42,000 for a GB200 rack (rising by about 20% with each new generation), representing less than 2% of the value of the equipment it protects. This means that once an operator has approved a supplier, switching to a cheaper alternative would mean repeating that testing and accepting the risk that an unproven part fails, all for a savings that is small relative to the cost of a damaged rack. In practice, this makes qualified suppliers difficult to displace on price.

Examples of where the European exposure sits

Coolant distribution units

The CDU is the highest-value single item in this chain, and technotrans (TTRGn.DE), the German thermal-management specialist company, is one of the most direct European exposures to it. Its data-centre applications order volume in H126 already exceeded its total for the whole of FY25, and it has commissioned a fourth CDU production line. Data-centre orders are still a modest share of the group, but the pace of growth shows how quickly a new product category can scale for a small-cap supplier.

Pipework and fluid handling

Georg Fischer (GF.S), the Swiss flow-solutions group, is one of the most visible European exposures to the pipework that connects racks to the facility, as a global leader in water and flow solutions. Management has stated that its data-centre end-market order intake doubled year-on-year in H126, helped by the expansion of its offerings, which included an energy balancing valve for precise temperature control and the launch of LiquidCore in November 2025. LiquidCore is a prefabricated high-performance polymer liquid-to-rack piping system for reliable coolant distribution. Georg Fischer has since partnered with Parker Hannifin on a high-performance hose and fitting technology with advanced polymer valve design in a single pre-assembled coupling for direct liquid cooling.

A fundamental benefit of polymer piping is its corrosion resistance. Corrosion particles tend to form from metallic materials and can block the fine channels inside cold plates. Prefabrication, where installation work is moved from the construction site into the factory, is also an important benefit as it can lead to shorter build times and shifts revenue from contracting towards higher-margin manufactured product.

SIMONA (SIM0.F), the German thermoplastics group, offers exposure to the same trend, with thermoplastic piping systems for data-centre cooling covering facility water systems and technology cooling systems through to direct liquid-cooling infrastructure. SIMONA's range also reaches into the rack itself through polyvinylidene fluoride (PVDF) rack distributors for direct liquid cooling, and its double-pipe systems offer continuous monitoring of the annular space between the inner and outer pipe, which addresses leak risk directly.

Thermal interface materials

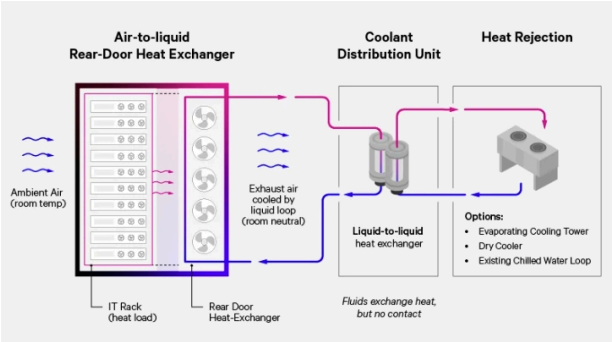
At the chip level, thermal interface materials are supplied by speciality chemicals groups such as **Henkel** (HNKG.DE), whose Loctite and Bergquist ranges include the gap pads, liquid gap fillers and phase-change materials used to move heat from components into heat sinks and cold plates. Better interface materials directly reduce the energy needed for cooling, and Henkel's range extends beyond processors to optical transceivers, wavelength selective switches and reconfigurable optical add-drop multiplexer systems. In October 2025, it launched a high-conductivity liquid gap filler designed specifically for the 800G and 1.6T AI data-centre optical transceivers that connect servers. Since these materials are applied to every processor and, increasingly, to the optical components around it, their demand is linked more closely to AI hardware volumes rather than building completions.

Rear-door heat exchangers

Not every data centre can be rebuilt for direct-to-chip cooling, and, for existing halls, rear-door heat exchangers provide a retrofit option. The unit replaces the rack's back panel with a coil through which chilled water circulates, so hot exhaust air from the servers is cooled to near room temperature before it re-enters the hall. Passive doors rely on the servers' own fans to push air through the coil, while active doors add their own fans for higher densities. Since rear-door heat exchangers fit standard racks and connect to an existing chilled-water supply or a CDU, rear doors can raise density without redesigning the hall. At the University of Cambridge's West Cambridge Data Centre, **Legrand's** (LEGD.PA) ColdLogik rear-door heat exchanger, gained through its 2022 acquisition of UK-based USystems was reported to have increased density from 30 kW to 44 kW and helped lift hall capacity from 900kW to 1.2MW. The retrofit route is particularly relevant in Europe, where much of the existing capacity is air cooled.

Vertiv (VRT), which sells rear doors alongside CDUs for direct-to-chip cooling, describes them as a first step towards high-density calling that can work with existing cooling systems without significant structural changes to the white space. In its design, a CDU links the door to the facility's heat-rejection equipment, transferring heat between two separate liquid loops that never mix (Exhibit 7).

Exhibit 7: Rear-door heat exchanger



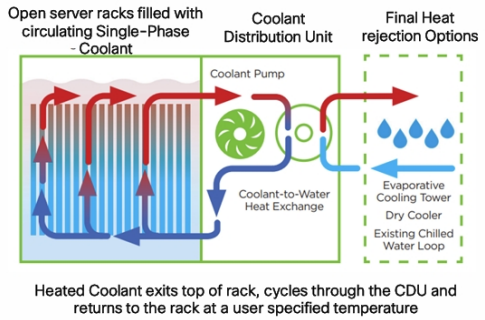
Source: Vertiv

Rear doors are also more than a retrofit tool. Vertiv estimates that direct-to-chip cooling typically removes 70–80% of a rack's heat. The rest, including heat from components the cold plates do not reach, such as power supplies and storage devices, has to be removed by air. At AI densities that remainder is substantial: in a 100kW rack, 20–30kW would still need to be removed by air, two to six times the total load of a conventional 5–10kW rack. A rear door can capture this heat at the rack, meaning rear doors are suited to new deployments as well as retrofits.

Immersion cooling: A growing niche

Immersion cooling, in which entire servers are submerged in non-conductive fluid, can manage even higher densities. Accenture's 2026 data-centre trends report notes that immersion cooling is more energy efficient than cold-plate cooling but its capital costs are higher, and immersion cooling is not a practical option for a retrofit. In single-phase immersion, the coolant, which is usually hydrocarbon based, absorbs heat and is circulated through heat exchangers. In two-phase immersion, the coolant vaporises as it absorbs heat and is condensed back into liquid, which is more efficient, but the fluids used in this type of immersion are typically per- and polyfluoroalkyl substances (PFAS) chemicals, which may face regulatory issues Europe and the US.

Exhibit 8: Cisco-GRC immersion-cooling system



Source: Cisco, GRC

Although immersion cooling is not as widely used as other liquid-cooling methods, adoption appears to be growing. This is evident through companies like Vertiv, which in November 2025 introduced its CoolCentre Immersion system in Europe, which is able to accommodate up to 240kW per unit. Mainstream IT vendors are also beginning to validate the technology. **Cisco** formed an engineering alliance with immersion specialist **Green Revolution Cooling** (GRC) in February 2025 that validated Cisco's Unified Computing System (UCS) servers in GRC's immersion systems (Exhibit 8), and **Shell** (SHEL.L) supplies the gas-to-liquids based immersion-cooling fluid used in Cisco's immersion solutions. Cisco claims the combined approach can reduce cooling energy consumption by up to 90%, which illustrates why immersion cooling attracts attention despite its higher upfront cost. This shift is also seen at the smaller end, with Sweden's **APR Technologies** (APRTEC.TE), which listed on Spotlight in January 2026, developing Rheion, an electrohydrodynamic micro-pump that moves dielectric coolant across the chip with no moving parts. Although still early in its commercialisation, APR has completed pre-series deliveries to a global technology company and, in October, signed aerospace agreements with Zoppas Industries and Airbus UpNext. The greater operational change that immersion cooling requires has nevertheless kept it a more specialised option than direct-to-chip cooling, and maintenance is a good example of this. Servers have to be lifted out of the fluid to be worked on, and the tanks need their own preventative maintenance programme. This is typically delivered through scheduled site visits covering inspection of the tank, pipe connections, safety trays and sensors, checks that the CDU, pumps and alarms work, cleaning and replacement of consumables, and laboratory testing of coolant samples to monitor fluid quality.

Higher rack densities create specialist materials demand

Liquid cooling and higher rack densities also create demand for specialist materials, from the coolants that circulate through the loop to the fire-safety materials used in cables and buildings.

Coolants: From commodity to service

The coolant in a liquid loop is a specified product rather than ordinary water. It contains additives that prevent corrosion,

stop bacterial growth and control electrical conductivity, and it must be monitored and replaced over time, which creates an ongoing service relationship. Fluid suppliers are developing coolants specifically for this market, evident through companies like Shell that launched Shell DLC Fluid S3 in June 2025, a propylene glycol-based direct liquid-cooling fluid for which it claims corrosion protection and an expected service life of more than six years.

This is where companies like **Ecolab** (ECL), a water-treatment and hygiene group, stand to benefit. Ecolab acquired CoolIT, a direct liquid-cooling specialist, for c $4.75bn, closing the deal in July 2026, and reported that CoolIT's year-to-date sales had grown by more than 100%. At the SC26 Supercomputing conference in November 2026, Ecolab plans to introduce an end-to-end 3D TRASAR cooling platform that combines CoolIT's CDUs and cold plates with integrated 3D TRASAR digital optimisation and advanced cooling fluids, aimed at giving operators real-time visibility of system performance and reducing cooling power demand. That pairing of hardware, chemistry and monitoring points to a recurring revenue opportunity alongside the initial equipment sale, and Ecolab is targeting $4bn of annual sales from its Global High-Tech business by 2030, up from c $1.5bn of annualised sales in 2026.

Why higher density raises the fire-safety bar

According to the North American Flame Retardant Alliance, a chemical-industry body, higher power densities place greater importance on the fire resistance of electronic and electrical components. Electronic equipment contains polymer-based materials that can contribute to fire spread if they are not engineered for fire performance, and data centres rely on extensive cabling, power distribution and cooling systems. Lithium-ion batteries are also increasingly used in uninterruptible power-supply and energy-storage systems, and the alliance notes that lithium-ion thermal runaway can exceed 1,000°C.

A battery fire of this kind can take a facility offline. In the Uptime Institute's 2026 Annual Outage analysis, 57% of respondents to its 2025 survey said their most recent major outage cost more than $100,000, and one in five reported costs above $1m. In September 2025, for example, a lithium-ion battery at South Korea's National Information Resources Service data centre in Daejeon went into thermal runaway and caught fire, forcing authorities to shut down all 647 government IT systems housed there as a precaution.

Corrosive smoke is driving halogen-free flame retardants

Smoke can be as damaging as a fire itself in a data centre, because conventional PVC cable insulation releases hydrogen chloride when it burns, which forms a corrosive acid that can damage electronic equipment even in areas the fire never reaches. This is one reason why data centres increasingly specify low-smoke, halogen-free cables and why halogenated flame retardants are progressively being designed out of building regulations.

Halogen-free compounds use a range of flame-retardant systems, including mineral fillers such as aluminium hydroxide and magnesium hydroxide, and phosphorus-based additives. Mineral fillers such as aluminium hydroxide release water when heated, which cools the material and slows the spread of fire without producing corrosive smoke. **Nabaltec** (NTGG.DE), one of the companies among the world's leading manufacturers of aluminium hydroxide-based products, produces and sells aluminium hydroxide under its APYRAL brand, which is used especially as a flame retardant in telecommunication and data cables and is valued in particular for its smoke-reducing and non-toxic properties. In its H126 interim report, management points to the company's products for the growing market for data and energy cables for data centres and lists data centres among the applications opening up attractive growth prospects. **Clariant** (CLN.S) takes a different chemical approach, supplying phosphorus-based halogen-free flame retardants through its Exolit range.

Fire performance is largely determined by building codes, product standards and insurers' requirements rather than being chosen freely by the operator, and such requirements tend to tighten over time, making demand relatively durable. The switch to halogen-free cables also typically increases the value of each metre of cable rather than the number of metres installed, which can support pricing for filler and compound suppliers.

Passive fire protection and the building envelope

Fire performance in a data centre is built up in layers: Flame retardants and fillers determine how the polymer compounds in cables and components behave in a fire; cable makers turn those compounds into certifiedfire-performance products; and the building itself provides passive protection that limits how far a fire can spread. Earlier in this note we set the building envelope aside, because, for cooling, it scales with floor area rather than power density. Fire safety is different, because walls, floors and ceilings are designed to stop a fire spreading from one room to the next, and every point where cables or pipes pass through them has to be sealed to keep that protection intact. As AI halls carry more cabling and, with liquid cooling, more pipework, passive fire protection and non-combustible insulation

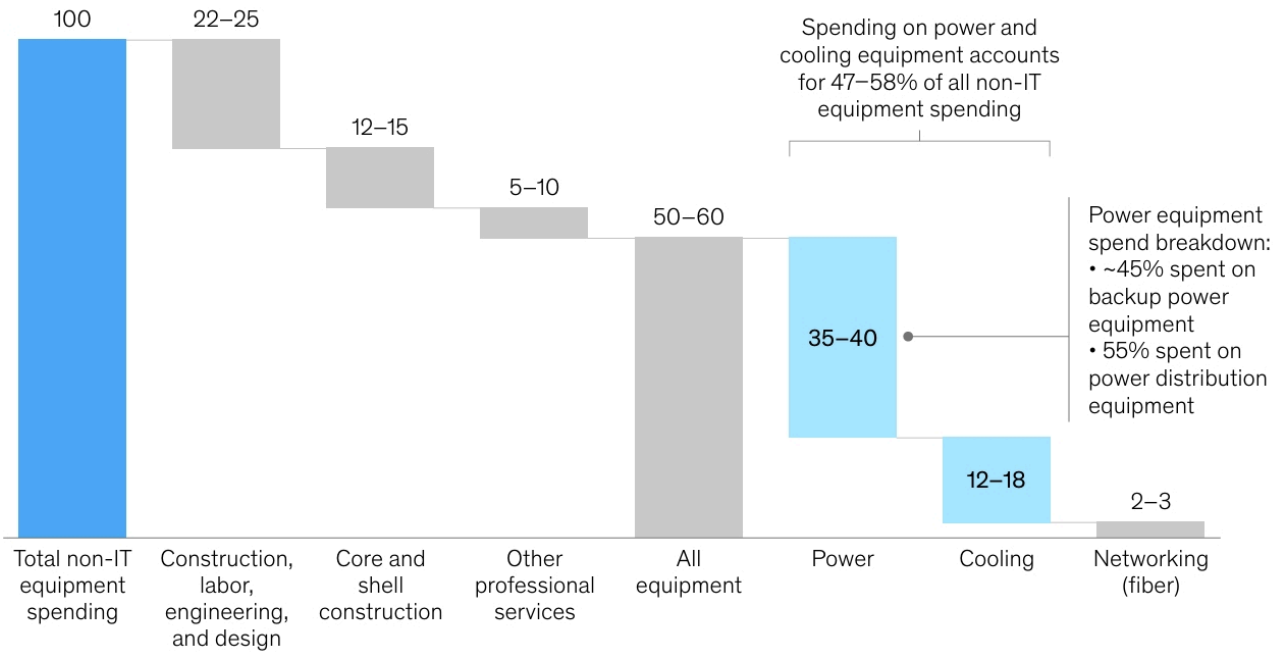
become a more important part of the build. This is reflected by companies like **Saint-Gobain** (SGOB.PA), which markets a dedicated data-centre range spanning passive fire protection, insulation and interior systems, and **ROCKWOOL** (ROCKb.CO), which makes non-combustible stone wool insulation.

Following the capex: From forecasts to orders

Cooling a c $220bn capex pool, liquid cooling is growing fastest

McKinsey's analysis provides a useful framework for where AI data-centre capex flows (Exhibit 9). Of the $6.7tn of cumulative global data-centre capex it expects by 2030, c 60% goes on IT equipment including the technology developers and designers producing the IT equipment for data centres. Within the remaining non-IT equipment spend, power and cooling are the largest categories, together accounting for 47–58%. Cooling is the smaller of the two, at c $220bn cumulatively compared with $500bn for power. However, cooling contains the fastest-growing segment, and McKinsey forecasts liquid-cooling spend to grow 45–50% a year to 2030, compared with 30–35% for heat rejection and 10–15% for air cooling, and expects spending on liquid cooling and related mechanical systems to grow faster than overall data-centre spending over the next five years.

Exhibit 9: Capital expenditure breakdown of non-IT spending for data centers (%)



Source: McKinsey & Company

Can we quantify the opportunity per megawatt?

Company disclosures can help translate these forecasts into content per megawatt, and **Georg Fischer** (GF.S) offers one of the few explicit data points. On its H126 results call, Management had said that a single 100MW liquid-cooled data centre represents an addressable opportunity of c CHF15m for its products, roughly CHF150,000 per megawatt. Against its mid-term target of CHF300m of data-centre sales, this implies supplying around twenty 100MW liquid-cooled sites, or 2GW, a year.

This means that liquid cooling creates meaningful content per megawatt even within a single, relatively narrow product category, such as piping and valves, and further content sits in CDUs, cold plates, heat exchangers, couplings and controls. For mid-sized European suppliers, a relatively small number of large AI projects can therefore have a material effect on group revenue, which helps explain why order announcements in this sector can be large relative to company size. However, this opportunity is still an early one as seen from the same disclosures, with Georg Fischer's management reporting data-centre sales close to CHF20m in H126, still mostly in facility cooling rather than inside the server room, compared with net sales of close to CHF1.6bn for its Flow Solutions business, which now makes up all of its continuing operations. Across the sector, orders are running well ahead of revenue, which is typical at this stage,

but it means investors should not only focus on how quickly those orders convert into revenue, but also on whether they convert at all. Data-centre projects can be delayed or cancelled if developers cannot secure grid connections, and suppliers may not have the capacity to deliver everything they have booked.

Orders and capacity

Individual orders in this market can be large relative to the size of the supplier, and for a mid-sized European company a single hyperscaler or colocation project can be worth a substantial share of a year's divisional sales. This provides revenue visibility, but it also brings customer concentration and makes reported order intake uneven from one period to the next.

Orders are also running ahead of revenue (book to bill >1x), with several suppliers reporting data-centre order intake growing much faster than sales and deliveries driven by some large awards stretching into 2028. This shifts the main risk from demand to execution, because suppliers now have to manage manufacturing capacity, secure components and deliver new modular systems on time and at the expected margin. Increasingly, the supplier is responsible for a complete system rather than individual components. Fo example, Munters' April 2026 order is for a fully modular cooling platform of CDUs and over-the-rack air handlers, designed to cool an entire AI factory build-out for a US colocation provider, so Munters carries the execution risk on the whole package. Standardised modular systems of this kind suit colocation providers and other operators that want to deploy quickly. Hyperscalers generally specify customised systems built to their own designs, so suppliers serving them are more likely to be engineering to order.

Demand is broad based across the cooling chain

Demand also appears broad-based across the cooling chain rather than confined to a single product, with growth reported in controls, CDUs, air handling and heat rejection. For investors, this suggests the content-per-megawatt argument applies across the thermal system rather than to one component category.

Suppliers are responding by adding capacity ahead of demand, including new liquid-cooling and chiller production in the US and Europe, and Accenture notes that three of the four main cold-plate manufacturers supplying the US have increased production. Capacity commitments are a useful signal because they reflect management confidence that demand will persist beyond individual contracts. However, their scale matters as much as their direction. Some additions are incremental, such as an extra production line, while others involve new factories, evident through technotrans adding a fourth CDU production line and its investment in a new factory at Sassenberg to expand capacity in liquid cooling for data centres. If many suppliers expand at the same time, the industry could also end up with excess capacity, should demand slow, putting pressure on prices and utilisation. Investors should therefore judge capacity additions against each supplier's order book rather than treating expansion as a positive signal.

Taken together, these datapoints suggest demand visibility that is unusually strong for an industrial end market. The investment question is therefore shifting from whether demand exists to whether suppliers can deliver it profitably and on time.

Consolidation likely to continue

Acquisitions provide a further signal, as large industrial- and building-technology groups have spent heavily to buy liquid-cooling specialists.

Exhibit 10: Acquisitions of liquid-cooling specialists

Date	Acquirer	Target	Consideration
Jul-22	Legrand	USystems (UK)	Undisclosed
Dec-23	Vertiv	CoolTera (UK)	Undisclosed
Feb-25	Schneider Electric	Motivair (75% stake)	$850m
Mar-26	Trane Technologies	LiquidStack	Undisclosed
Mar-26	Eaton	Boyd Thermal	$9.5bn
Apr-26	Vertiv	Strategic Thermal Labs	Undisclosed
Jul-26	Ecolab	CoolIT	c $4.75bn

Source: Company announcements

These consolidations suggest that buyers are paying for two main things. The first is products that fill gaps in their own offer. Eaton used Boyd Thermal to add liquid cooling to its power-management portfolio, Trane said LiquidStack's direct-

to-chip and immersion cooling would complement its chillers, heat rejection and controls, and Ecolab sees CoolIT's hardware as complementing its own water, chemistry and digital monitoring capabilities. The second is established positions with hyperscale and colocation customers. Groups of this size could build the manufacturing capability themselves, but customer approvals and relationships are much harder to replicate, which suggests one of the main barriers to entry is customer qualification and track record.

Acquisition is also steadily removing independent specialists before they reach public markets. The targets in Exhibit 10 were all privately held, leaving investors increasingly reliant on diversified industrial groups for exposure and giving the small number of remaining listed specialists a degree of strategic value. The scale of recent orders and acquisitions suggests heat removal is now treated as core AI infrastructure, and the constraint for many suppliers is moving from winning orders to delivering them.

This consolidation is likely to continue as large groups still have large gaps to fill, and established customer positions are hard to build organically, creating opportunity for investors in the remaining listed specialists and in the mid-sized suppliers.

The water constraint

Why water still matters

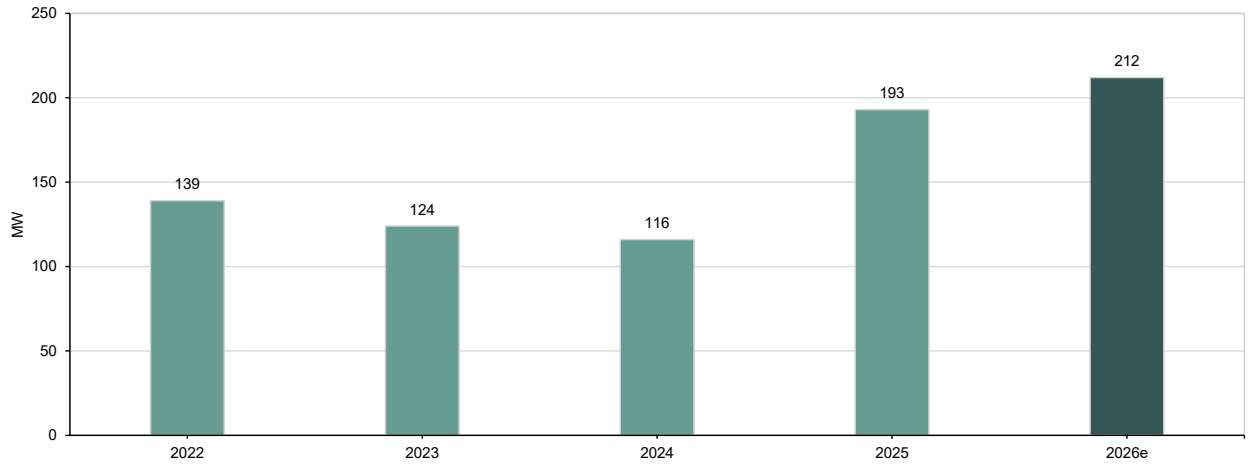
In many data centres, the final step in removing heat consumes water, because cooling towers release heat by evaporating water. Around 80% of the water used in evaporative cooling is lost this way, and the UK's Government Digital Sustainability Alliance estimates that a 100MW facility using this type of cooling can consume c 2.5bn litres a year, equivalent to the needs of roughly 80,000 people. Liquid cooling helps, because warm-water loops can reject heat through dry coolers that use little or no water, and Accenture expects water-intensive evaporative cooling to be phased out as communities facing shortages become less willing to accept it.However, water is unlikely to disappear from data-centre cooling, because dry coolers generally use more electricity than evaporative systems and are less effective in hot weather. Therefore, many sites tend to use dry cooling for most of the year but switch to water to pre-cool incoming air on the hottest days, which is when local supplies are typically under the most pressure. Data centres also consume water indirectly through the power stations that supply their electricity, and, in the US, this indirect use was around 12 times their direct consumption in 2023, according to Lawrence Berkeley National Laboratory estimates reported by Bloomberg.

The UK reservoir gap

The UK is a particularly clear example of where this constraint becomes visible, because it combines Greater London, Europe's largest data-centre market accounting for more than 80% of UK data-centre supply according to CBRE, with a reservoir network that has barely grown in three decades. The Environment Agency projects a shortfall in England's public water supply of nearly 5bn litres a day by 2050, which is more than a third of current supply. Much of the capacity sits within Thames Water's supply area, the UK's largest water and wastewater services company, which the Environment Agency classifies as seriously water stressed, and the company has itself warned that a large proportion of proposed data centres are earmarked for its region.

Demand in the London area is still rising. Exhibit 11 shows the annual data-centre take-up in London, meaning the capacity leased by occupiers in each year. CBRE expects take-up to reach record 212MW in 2026. The first AI Growth Zone, at Culham in Oxfordshire, sits seven miles from the site of a planned new reservoir at Abingdon. Industry groups argue that UK data centres use far less water than US facilities because they tend not to rely on water-intensive cooling, and AI is not the main driver of the projected deficit. However, it does potentially add concentrated and largely unplanned demand to a system that is already short of supply.

Exhibit 11: Annual data centre take-up in London (MW)



Source: CBRE

The government notes that no new reservoirs have been delivered since 1992, when Carsington Water in Derbyshire was officially opened. Carsington, which was 96.2% full in mid-June 2026, had fallen to 60.3% by 19 October 2026 after a dry summer. Ten large reservoirs are now planned, but construction has started on only one, Havant Thicket in Hampshire, and the largest, Thames Water's 150bn-litre White Horse Reservoir in Oxfordshire, formerly known by the working title South East Strategic Reservoir Option (SESRO), is not expected to open until 2040.

The water industry's record £104bn investment plan for 2025–30 includes new reservoirs, and strategic reservoir programmes sit outside those committed figures as additional investment. Thames Water opened a £5.7bn tender in January 2026 to appoint a main works contractor for the White Horse Reservoir. **Costain** (COSG.L) is already involved in both strands of this spending. Within the current regulatory period it was awarded c £150m of upgrades to Thames Water's wastewater treatment assets across 15 sites in August 2026. On the reservoir programme, it has conducted clay compaction trials for the White Horse Reservoir to inform its design, and its annual report notes that it provides constructibility advice to Thames Water on the programme. **Hargreaves Services** (HASE.L) approaches the same opportunity from the construction side, since a reservoir is in large part an earthworks project, and bulk earthworks is a core capability of its Services division, which moved a record amount of earth on HS2 and Sizewell C in FY26. The group has identified the next generation of reservoir creation as a longer-term focus. For investors, the point is that the resource demands of the AI build-out extend beyond the data-centre fence into water storage and supply infrastructure that often takes more than a decade to deliver.

What could weaken the thesis?

Our central investment view is that higher-density AI racks require disproportionate investment in thermal management, liquid cooling and specialist materials. As compute density rises, so does the non-compute content per rack and per megawatt, creating a second-order capex pool that sits outside the GPU itself. The result is a large and fast-growing opportunity across the cooling value chain. Below we discuss a range of factors that could weaken our thesis.

AI infrastructure demand slows

As in our first note, the most important risk is a slowdown in data-centre capex. Cooling orders are large, lumpy and concentrated among a relatively small number of operators, so a change in spending plans by a few customers could have a significant effect on individual suppliers.

US policy uncertainties could slow AI growth

Democrats won control of both chambers of the US Congress in the 3 November mid-terms, after a campaign in which data centres' impact on electricity bills was highlighted as a prominent issue. Tighter rules on power costs and approvals could slow new US capacity, and AI and data-centre stocks, including cooling suppliers in our universe, sold off sharply after the results.

Orders fail to convert into margins

Winning orders, converting them into sales and delivering those sales profitably are separate challenges. Projects can be delayed or cancelled if data-centre developers cannot secure power or grid connections, and suppliers may lack the capacity to deliver everything they have booked. At Munters, data-centre orders have materially outpaced sales, while the ramp-up of US chiller production and supply constraints have delayed the conversion of those orders into margins. Its April 2026 order will be delivered between early 2027 and the first quarter of 2028, so the earnings benefit will take time to appear.

The base is still small

Many of the strongest growth rates are from low starting points. Georg Fischer's data-centre sales were c CHF20m in H126, and technotrans' data-centre orders are still a modest share of the group. Rapid order growth does not yet mean material earnings exposure.

Air cooling lasts longer, or technology shifts

If rack densities stabilise, or hybrid designs persist for longer than expected, the move to liquid cooling could be slower than forecasts suggest. Newer approaches could change which components are needed. Accenture notes that Microsoft has tested microfluidic cooling, in which coolant flows through tiny channels etched into the chip itself, although so far only in the laboratory.

Standardisation reduces differentiation

Component suppliers currently benefit from complex, evolving designs and lengthy customer qualification. If the industry converges on standard reference designs, some of these components could become commoditised.

A strong theme can still be a poor investment

As with the power theme, the key question is not whether a company benefits from AI-related cooling demand, but how much of that benefit is already reflected in its valuation.

Listed company universe: Power in, heat out

Investors can gain exposure to the theme through a range of sub-sectors, from global large caps to small-cap specialists (Exhibit 12). Alongside the large-cap benchmarks, we have grouped the remaining companies, which are mostly mid- and small-caps, by the part of the cooling value chain they serve. As many companies span more than one part of the value chain, each is allocated to the group that best reflects its exposure to this theme, which is not necessarily its main business activity. The full list is in Exhibit 13. Inclusion does not imply that AI or data centres are currently material to earnings or that the shares are attractively valued.

Exhibit 12: Market cap growth, performance and valuation by sub-theme

Group	Companies	Median 2yr market cap. Change	Median 1yr share price performance	Median FY1 P/E (x)
Large-cap benchmarks	10	80%	15%	23.4%
Core cooling systems	16	31%	12%	17.1%
Heat transfer and fluid handling	13	33%	19%	17.6%
Cooling materials and fluids	7	-20%	20%	14.7%
Fire protection and building materials	11	7%	13%	13.6%
Water infrastructure	5	186%	40%	14.2%

Source: Edison Investment research, LSEG Data & Analytics

Theme exposure is not the same as data-centre exposure

For most of the large caps, the link to data centres is clear because they sell directly into them. AMD makes the processors that generate the heat, while Vertiv, Schneider Electric, Eaton and Trane supply the power and cooling systems that keep data centres running. Shell is the exception, as cooling fluids are a small part of its business. For many smaller companies, the exposure is far less visible, because data-centre sales sit within broader divisions and

are often undisclosed or still small. Georg Fischer's data-centre sales, for example, were only around 1% of its Flow Solutions sales in H126.

The market is pricing more than just cooling

Share price performance over the past year has been positive but uneven, with a median gain of 18% across the universe, and valuations are similarly dispersed, with FY1 P/E multiples ranging from below 9x to almost 38x (Exhibits 12 and 13). The median company's market capitalisation has risen by 30% over the period, and 45 of the 60 companies with a two-year record are larger than they were, including 15 that have at least doubled. In aggregate, the universe has added c £860bn of market value, but this is highly concentrated: the 10 large-cap benchmarks account for c 90% of it, and AMD alone accounts for around half.

Below the large caps, the differences between sub-themes mostly reflect their wider end markets (Exhibit 12). Market values reflect each company's whole business, not just the activities that place it in a group, so where we point to a driver, it may apply to only part of a company's business. Water infrastructure has grown the fastest, as the UK water infrastructure contractors have benefited from UK water and wider infrastructure spending. Core cooling systems and heat transfer and fluid handling have grown at a similar pace. However, core cooling systems shows the wider spread as its members range from specialists with significant data-centre exposure to companies that depend mainly on other end markets. In fire protection and building materials, the cable makers have grown fastest, which may partly reflect grid investment and electrification, including data centres, while the more construction- and chemicals-focused companies have lagged. Cooling materials and fluids is the only group to have lost value over two years, despite a recovery over the past year. This is likely to reflect weakness in its members' main chemicals and industrial markets rather than their data-centre activities.

The median non-European company has more than doubled in value over two years, against a 14% for the median European company. This largely reflects composition, as the non-European group is dominated by large caps with substantial data-centre exposure, while the European group includes all of the materials companies and many smaller industrials for which data centres are still a small share of sales.

The post-US election sell-off has also improved potential entry points. It produced a sharp double-digit de-rating of AI-related shares, taking the Nasdaq more than 10% below its October peak, and hit companies broadly, from chipmakers to the picks and shovels of the build-out, rather than on their individual fundamentals. As tighter US policy is more likely to slow the build-out than stop it, this offers investors exposure to a long-term trend at lower valuations. Lower valuations also make acquisitions easier, which could accelerate the consolidation discussed earlier and benefit the smaller listed specialists most likely to be targets.

Selectivity matters more than theme exposure

Taken together, the past two years suggest the market has so far rewarded exposure to wider data-centre capex and electrification, mostly where data centres are already large enough to drive group earnings.

In the short term, policy uncertainty after the US mid-terms and the recent correction could keep AI-related shares volatile. Over the longer term, we believe the opportunity remains intact. So far, the market has concentrated on companies higher up the value chain, in compute, power and the large-cap infrastructure groups. Further down, data-centre capex is still working its way through, with orders running ahead of revenue and deliveries stretching into 2028. As a result, the growth has yet to show up in the earnings of most of the smaller and European companies in our universe. This makes selectivity critical. The opportunity lies in companies where data-centre demand can grow large enough relative to the group for the market to reward it and where orders are converting into profitable sales.

Exhibit 13: Listed companies exposed to the AI picks-and-shovels power in, heat out theme

Company name	GICS sub sector	Market Cap (£m)	2yr market cap. change (%)	Current price (£)	1yr performance (%)	FY1 P/E (x)	12m EPS change (%)	12m P/E change (%)
Large cap benchmarks								
Advanced Micro Devices, Inc.	Semiconductors	633,379	258%	386.2	111%	31.43	26%	-26%
Shell plc	Integrated Oil & Gas	206,925	23%	36.2	26%	8.58	-17%	-5%
Schneider Electric SE	Electrical Components & Equipment	121,215	36%	196.9	1%	19.49	3%	-28%
Eaton Corporation PLC	Electrical Components & Equipment	103,152	37%	265.5	-7%	22.13	12%	-37%
Parker-Hannifin Corporation	Industrial Machinery & Supplies & Components	91,226	102%	723.5	15%	25.24	18%	-13%
Delta Electronics, Inc.	Electronic Components	76,560	285%	29.5	33%	22.52	71%	-96%
Trane Technologies PLC	Building Products	69,047	59%	315.4	-3%	24.28	16%	-26%
Ecolab Inc.	Specialty Chemicals	64,337	46%	229.4	18%	33.21	13%	-4%
Johnson Controls International PLC	Building Products	64,075	122%	105.8	15%	21.89	37%	-51%
Vertiv Holdings Co	Electrical Components & Equipment	56,058	273%	145.6	3%	20.93	47%	-61%
Core cooling systems								
Andrews Sykes Group PLC	Trading Companies & Distributors	217	-13%	5.2	2%	NULL	N/A	N/A
APR Technologies AB	Electrical Components & Equipment	40	N/A	1.4	N/A	NULL	N/A	N/A
Asetek A/S	Technology Hardware, Storage & Peripherals	59	31%	0.2	69%	NULL	-183%	N/A
Beijer Ref AB (publ)	Trading Companies & Distributors	6,122	30%	11.9	3%	25.19	5%	-93%
Bravida Holding AB	Diversified Support Services	2,338	110%	11.3	85%	16.90	16%	-88%
CAREL Industries S.p.A.	Building Products	2,532	5%	22.3	24%	28.86	16%	3%
Flex Ltd	Electronic Manufacturing Services	21,072	134%	57.0	20%	11.38	25%	10%
Kaori Heat Treatment Co Ltd	Industrial Machinery & Supplies & Components	3,107	550%	33.2	152%	38.26	41%	-93%
Legrand SA	Electrical Components & Equipment	30,413	43%	113.5	4%	NULL	6%	2%
Modine Manufacturing Company	Building Products	4,110	84%	77.3	-30%	11.79	24%	-26%
Munters Group AB	Building Products	1,901	-3%	10.2	-13%	14.44	-38%	-94%
nVent Electric PLC	Electrical Components & Equipment	13,625	80%	84.3	0%	16.64	35%	-47%
Sensirion Holding AG	Electronic Equipment & Instruments	1,170	7%	73.1	40%	33.87	-170%	N/A
Systemair AB	Building Products	1,366	13%	6.6	12%	17.29	12%	-93%
technotrans SE	Industrial Machinery & Supplies & Components	151	15%	21.5	-23%	12.03	57%	-26%
Vaisala Oyj	Electronic Equipment & Instruments	1,955	103%	53.1	52%	23.67	-6%	17%
Heat transfer and fluid handling								
Aalberts N.V.	Industrial Machinery & Supplies & Components	3,775	0%	34.6	55%	12.76	-16%	-37%
Alfa Laval AB (publ)	Industrial Machinery & Supplies & Components	16,991	40%	40.7	20%	20.54	10%	-93%
Belimo Holding AG	Building Products	8,559	78%	688.6	-3%	33.69	24%	-7%
Dover Corporation	Industrial Machinery & Supplies & Components	21,136	30%	158.9	16%	18.18	16%	-11%
Georg Fischer AG	Industrial Machinery & Supplies & Components	4,366	1%	52.7	11%	20.69	-52%	33%
KSB SE & Co KGaA	Industrial Machinery & Supplies & Components	1,263	36%	736.3	-7%	10.15	19%	-5%
Lu-Ve SpA	Building Products	1,181	159%	51.6	68%	22.02	11%	68%
Mersen SA	Electrical Components & Equipment	784	6%	31.4	80%	11.98	-77%	533%
NORMA Group SE	Industrial Machinery & Supplies & Components	264	-40%	11.6	8%	12.59	-176%	N/A
Simona AG	Commodity Chemicals	361	0%	60.2	40%	14.94	N/A	N/A
Sulzer AG	Industrial Machinery & Supplies & Components	5,702	114%	165.1	39%	17.09	12%	12%
Trelleborg AB (publ)	Industrial Machinery & Supplies & Components	7,925	40%	35.0	17%	19.70	2%	-91%
Cooling materials and fluids								
Arkema SA	Specialty Chemicals	3,750	-44%	48.4	12%	12.32	-47%	-32%
Elkem ASA	Specialty Chemicals	940	14%	2.5	23%	11.45	-236%	-144%
Fuchs Se	Commodity Chemicals	4,431	1%	31.3	21%	15.86	2%	-26%
Henkel AG & Co. KGaA	Household Products	29,564	14%	65.4	16%	14.38	-1%	-31%
SGL Carbon SE	Electrical Components & Equipment	507	-26%	4.0	67%	14.74	-65%	N/A
Syensqo NV	Specialty Chemicals	6,732	-20%	64.7	9%	18.15	-30%	-90%
Wacker Chemie AG	Specialty Chemicals	3,491	-32%	67.2	20%	27.80	-483%	-125%
Fire protection and building materials								
Clariant AG	Specialty Chemicals	3,317	-14%	9.7	54%	13.13	-108%	-1280%
Compagnie de Saint Gobain SA	Building Products	31,608	9%	63.9	-6%	11.62	-3%	-37%
Hexpol AB (publ)	Specialty Chemicals	2,483	-14%	7.2	13%	14.04	-13%	-92%
Kingspan Group PLC	Building Products	14,892	21%	80.9	44%	17.66	1%	13%
Lanxess AG	Diversified Chemicals	951	-55%	11.0	-24%	NULL	-29%	N/A
Morgan Advanced Materials PLC	Industrial Machinery & Supplies & Components	755	-6%	2.7	33%	13.00	-32%	-4%
Nabaltec AG	Specialty Chemicals	82	-44%	9.3	-16%	10.50	-32%	1%
Nexans SA	Electrical Components & Equipment	4,740	59%	106.8	6%	14.25	28%	-59%
Prysmian S.p.A.	Electrical Components & Equipment	28,247	191%	89.7	28%	17.04	71%	-15%
Rockwool A/S	Building Products	5,178	7%	24.3	1%	14.79	-21%	-11%
Volex PLC	Electrical Components & Equipment	991	67%	5.4	46%	13.13	20%	-4%
Water infrastructure								
Costain Group PLC	Construction & Engineering	672	276%	2.6	68%	15.47	-1%	86%
Galliford Try Holdings PLC	Construction & Engineering	703	202%	7.0	40%	14.20	23%	38%
Hargreaves Services PLC	Diversified Support Services	274	93%	9.1	40%	18.01	78%	-25%
Kemira Oyj	Diversified Chemicals	1,896	-13%	13.1	-17%	13.00	-22%	-25%
Kier Group PLC	Construction & Engineering	1,421	186%	3.2	49%	12.82	10%	-17%

Source: LSEG Data & Analytics, Edison Investment Research

General disclaimer and copyright

This report has been prepared and issued by Edison. Edison Investment Research standard fees are £60,000 pa for the production and broad dissemination of a detailed note (Outlook) following by regular (typically quarterly) update notes. Fees are paid upfront in cash without recourse. Edison may seek additional fees for the provision of roadshows and related IR services for the client but does not get remunerated for any investment banking services. We never take payment in stock, options or warrants for any of our services.

Accuracy of content: All information used in the publication of this report has been compiled from publicly available sources that are believed to be reliable, however we do not guarantee the accuracy or completeness of this report and have not sought for this information to be independently verified. Opinions contained in this report represent those of the research department of Edison at the time of publication. Forward-looking information or statements in this report contain information that is based on assumptions, forecasts of future results, estimates of amounts not yet determinable, and therefore involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of their subject matter to be materially different from current expectations.

Exclusion of Liability: To the fullest extent allowed by law, Edison shall not be liable for any direct, indirect or consequential losses, loss of profits, damages, costs or expenses incurred or suffered by you arising out or in connection with the access to, use of or reliance on any information contained on this note.

No personalised advice: The information that we provide should not be construed in any manner whatsoever as, personalised advice. Also, the information provided by us should not be construed by any subscriber or prospective subscriber as Edison's solicitation to effect, or attempt to effect, any transaction in a security. The securities described in the report may not be eligible for sale in all jurisdictions or to certain categories of investors.

Investment in securities mentioned: Edison has a restrictive policy relating to personal dealing and conflicts of interest. Edison Group does not conduct any investment business and, accordingly, does not itself hold any positions in the securities mentioned in this report. However, the respective directors, officers, employees and contractors of Edison may have a position in any or related securities mentioned in this report, subject to Edison's policies on personal dealing and conflicts of interest.

Copyright 2026 Edison Investment Research Limited (Edison).

Australia

Edison Investment Research Pty Ltd (Edison AU) is the Australian subsidiary of Edison. Edison AU is a Corporate Authorised Representative (1252501) of Crown Wealth Group Pty Ltd who holds an Australian Financial Services Licence (Number: 494274). This research is issued in Australia by Edison AU and any access to it, is intended only for "wholesale clients" within the meaning of the Corporations Act 2001 of Australia. Any advice given by Edison AU is general advice only and does not take into account your personal circumstances, needs or objectives. You should, before acting on this advice, consider the appropriateness of the advice, having regard to your objectives, financial situation and needs. If our advice relates to the acquisition, or possible acquisition, of a particular financial product you should read any relevant Product Disclosure Statement or like instrument.

New Zealand

The research in this document is intended for New Zealand resident professional financial advisers or brokers (for use in their roles as financial advisers or brokers) and habitual investors who are "wholesale clients" for the purpose of the Financial Advisers Act 2008 (FAA) (as described in sections 5(c) (1)(a), (b) and (c) of the FAA). This is not a solicitation or inducement to buy, sell, subscribe, or underwrite any securities mentioned or in the topic of this document. For the purpose of the FAA, the content of this report is of a general nature, is intended as a source of general information only and is not intended to constitute a recommendation or opinion in relation to acquiring or disposing (including refraining from acquiring or disposing) of securities. The distribution of this document is not a "personalised service" and, to the extent that it contains any financial advice, is intended only as a "class service" provided by Edison within the meaning of the FAA (i.e. without taking into account the particular financial situation or goals of any person). As such, it should not be relied upon in making an investment decision.

United Kingdom

This document is prepared and provided by Edison for information purposes only and should not be construed as an offer or sol icitation for investment in any securities mentioned or in the topic of this document. A marketing communication under FCA Rules, this document has not been prepared in accordance with the legal requirements designed to promote the independence of investment research and is not subject to any prohibition on dealing ahead of the dissemination of investment research.

This Communication is being distributed in the United Kingdom and is directed only at (i) persons having professional experience in matters relating to investments, i.e. investment professionals within the meaning of Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended (the "FPO") (ii) high net-worth companies, unincorporated associations or other bodies within the meaning of Article 49 of the FPO and (iii) persons to whom it is otherwise lawful to distribute it. The investment or investment activity to which this document relates is available only to such persons. It is not intended that this document be distributed or passed on, directly or indirectly, to any other class of persons and in any event and under no circumstances should persons of any other description rely on or act upon the contents of this document.

This Communication is being supplied to you solely for your information and may not be reproduced by, further distributed to or published in whole or in part by, any other person.

United States

Edison relies upon the "publishers' exclusion" from the definition of investment adviser under Section 202(a)(11) of the Investment Advisers Act of 1940 and corresponding state securities laws. This report is a bona fide publication of general and regular circulation offering impersonal investment-related advice, not tailored to a specific investment portfolio or the needs of current and/or prospective subscribers. As such, Edison does not offer or provide personal advice and the research provided is for informational purposes only. No mention of a particular security in this report constitutes a recommendation to buy, sell or hold that or any security, or that any particular security, portfolio of securities, transaction or investment strategy is suitable for any specific person.

London | New York | Frankfurt
20 Red Lion Street
London, WC1R 4PS
United Kingdom

EDISON

AI Picks and shovels 2: Power in, heat out

The hidden infrastructure inside the AI data centre

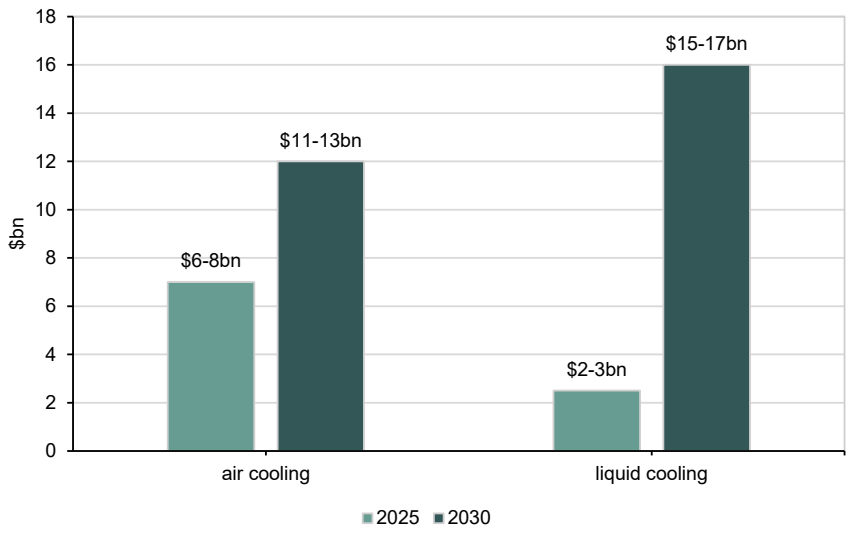
Virtually all electricity delivered to a data centre ends up as heat that must be removed. In our first note we discussed that the AI build-out is increasingly constrained by the speed at which new capacity can be powered. This note looks at the other side of the same megawatt: getting the heat out. AI has made this considerably harder. Conventional racks typically drew 5–10kW, while AI racks now draw 60kW or more. The result is a large and fast-growing opportunity across the cooling value chain. McKinsey expects c $220bn to be spent on cooling equipment for AI workloads to 2030, with liquid cooling growing at 45–50% a year. Our listed company universe (Exhibit 13) shows that there are many ways to gain exposure, from global large caps to smaller European specialists.

In October 2025, McKinsey estimated that around $720bn of the $5.2trn required for AI data-centre workloads to 2030 will be spent on power and cooling equipment, with cooling accounting for roughly $220bn. Within that, spending on liquid-cooling equipment is forecast to grow from $2–3bn in 2025 to $15–17bn in 2030, an annual growth rate of 45–50%, compared with 10–15% for air cooling.

Our central investment view is that higher-density AI racks require disproportionate investment in thermal management, liquid cooling and specialist materials. As compute density rises, so does the non-compute content per rack and per megawatt, creating a second-order capex pool that sits outside the graphics processing unit (GPU) itself.

This is also an area of the AI supply chain in which Europe is comparatively well represented. Heat exchange, fluid handling, controls and speciality materials are long-standing European industrial strengths, and several European companies, including Georg Fischer, Munters and technotrans, have reported sharply higher data-centre orders in 2026.

Exhibit 1: Liquid cooling spend is forecast to overtake air cooling by 2030



Source: McKinsey & Company

AI picks and shovels - Part 2

16 November 2026

Edison themes

As one of the largest issuer-sponsored research firms, we are known for our bottom-up work on individual stocks. However, our thinking does not stop at the company level. Through our regular dialogue with management teams and investors, we consider the broad themes related to the companies we follow. Edison themes aims to identify the big issues likely to shape company strategy and portfolios in the years ahead.

Companies mentioned in this report:

Schneider Electric, Eaton, Parker-Hannifin, Trane Technologies, Vertiv Holdings, Ecolab, Legrand, Saint Gobain, Henkel, nVent Electric, Alfa Laval, Rockwool, Georg Fischer, Clariant, CAREL Industries, Munters Group, Lu-Ve, Costain Group, Simona, Hargreaves Services, technotrans, Nabaltec, APR Technologies, The Gorman-Rupp Company, Shell

At the end of our report find the expanded universe (Exhibit 13)

Analysts

Harry Kilby	+44 (0)20 3077 5700
Yana Mihaylova	+44 (0)20 3077 5700
Jonathan Day	+44 (0)20 3077 5700

Power in, heat out

Almost all of the electricity a data centre draws is converted into heat rather than stored, so a 100MW facility is also producing close to 100MW of heat, continuously. The cooling system is therefore sized from the same megawatt figure as the power infrastructure discussed in our first note.

AI server power density up c 11x between 2020–25

AI has made that heat far more concentrated because AI workloads perform best when processors are placed as close together as possible, which means more power is packed into each rack. Individual GPUs now draw between 700W and 1,200W each. In its April 2026 report, the International Energy Agency (IEA) estimates that the power density of AI servers increased 11-fold between 2020 and 2025 and could rise a further fourfold by 2027. The implication is that the same amount of heat per megawatt now has to be removed from a much smaller space.

Cooling consumes 38–40% of data-centre electricity consumption

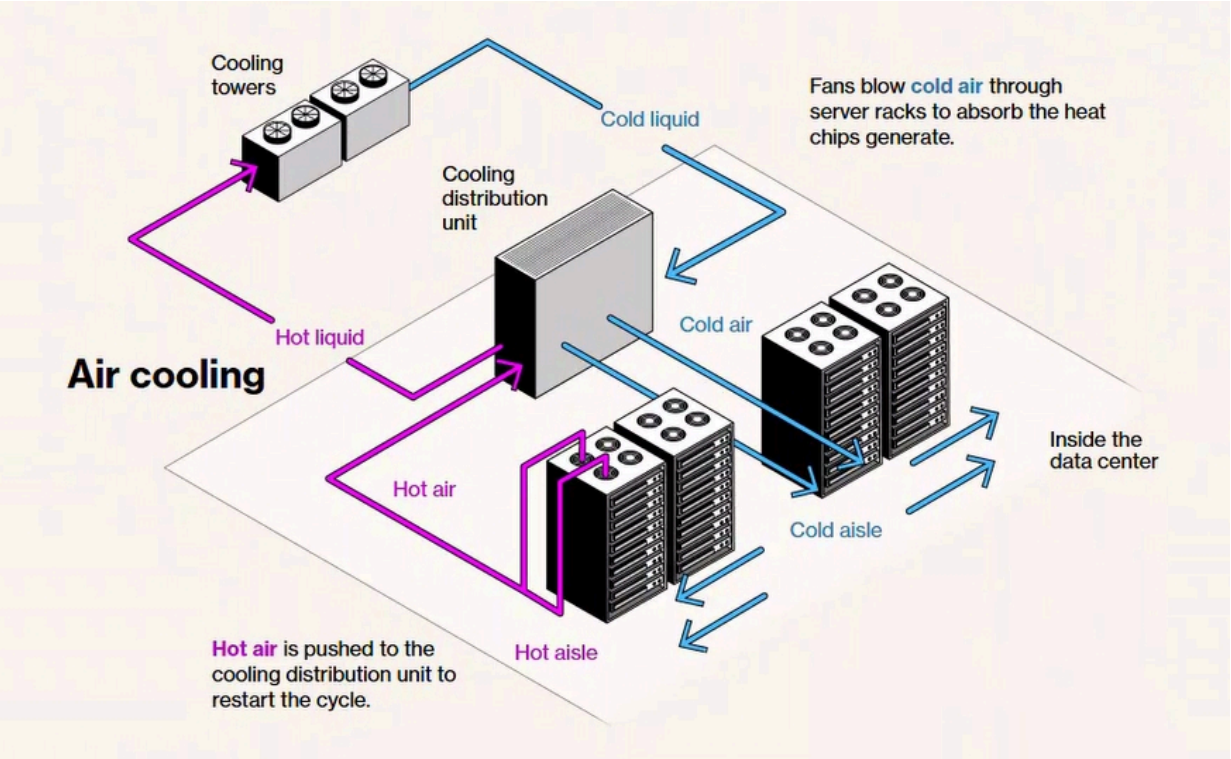
Cooling also consumes a large share of that power in its own right, with Deloitte estimating that cooling systems account for 38–40% of a data centre's electricity consumption, broadly similar to the share used by the computing power and server resources (c 40%). This creates an important link with our first note, because where a data centre's grid connection is fixed, power saved on cooling becomes power available for compute. Deloitte notes that air-based cooling accounts for up to 40% of a data center’s electricity consumption and that alternative cooling methods, such as liquid cooling, can reduce power usage by high-density server racks by as much as 90% compared with air-based cooling. Even a fraction of that saving is meaningful when cooling represents close to 40% of a site's consumption, and it can be achieved in months rather than the years needed to secure a new grid connection. Therefore, cooling efficiency is one of the few ways to increase usable compute capacity without waiting for additional grid capacity. That makes thermal infrastructure a strategic investment for operators rather than a secondary building cost.

How data centres have been cooled

Most data centres in operation today are air cooled (Exhibit 2). Servers draw in cool air at the front, the air absorbs heat as it passes over the components and fans push it out of the back. Racks are arranged in alternating cold aisles and hot aisles so that incoming cool air and outgoing hot air do not mix.

In many facilities, the hot air is then drawn into air-handling units, where it passes over coils containing chilled water. The heat transfers into the water, which is pumped out of the building to cooling towers or dry coolers and released into the atmosphere. The cooled water then returns to begin the cooling cycle again.

Exhibit 2: Air cooling of a data centre



Source: Bloomberg Intelligence

AI changes how far into the building liquid cooling travels

In facilities designed this way, liquid has long been part of data-centre cooling, but what AI changes is how far into the building it travels and what type of liquid is used. In a conventional data-centre hall, chilled water, sometimes mixed with glycol, stops at the air-handling unit on the edge of the room. Rear-door heat exchangers take it a step further, to a coil in the back door of each rack. Whereas with direct-to-chip cooling, a treated water-based coolant, often mixed with propylene glycol, reaches the processor itself. Immersion cooling goes furthest, submerging the servers in a non-conductive fluid.

Incumbents well-placed for the move to liquid cooling

Several European companies are established suppliers to this conventional architecture. For example, **Munters** (MTRS.ST), the Swedish climate-control group, supplies air handlers, chillers and coolant distribution units (CDUs) through its Data Center Technologies division, which generated c SEK6bn of sales in FY25. **LU-VE** (LUVE.MI), based in Italy, and Sweden's **Alfa Laval** (ALFA.ST) manufacture the heat exchangers that transfer heat from air to water, while Italy's **CAREL Industries** (CRLI.MI) supplies the controls, valves and humidity management that regulate the system.

These companies are well-placed for the move to liquid cooling, which spans rear-door heat exchangers, direct-to-chip cooling and immersion cooling (Exhibit 4), because a liquid-cooled hall still relies on much of the same equipment. Heat from the racks still has to be transferred into a facility water loop and ejected outside, which requires heat exchangers, chillers or dry coolers, and the controls to run them. They also benefit from existing relationships with data-centre operators, which matters in a market where new equipment has to be tested and approved before it is used. Munters, for example, already supplies both the air handlers used in conventional halls and the coolant distribution units at the centre of liquid-cooled systems. These are incumbents whose content per megawatt is rising, rather than new entrants competing for a new market.

The building envelope, including insulation, roofing and raised flooring, also affects thermal performance. However, envelope content scales with floor area rather than power density. We therefore treat it as part of the wider cooling ecosystem and return to it only where it matters most for this specific theme, namely fire safety.

Why air cooling alone fails when it comes to AI

The physical limits of air: Water can absorb c 3,500x more heat than air

Air cooling struggles at high densities because air carries heat far less effectively than water. **Trane** (TT), which supplies water-cooled chillers and CDUs for liquid cooling, notes that a given volume of water can absorb c 3,500 times more heat than the same volume of air, so removing large amounts of heat with air requires moving very large volumes of air, usually with fans. As airflow increases, the energy required to run the fans rises steeply, and beyond a certain point the fans themselves become a significant source of power consumption.

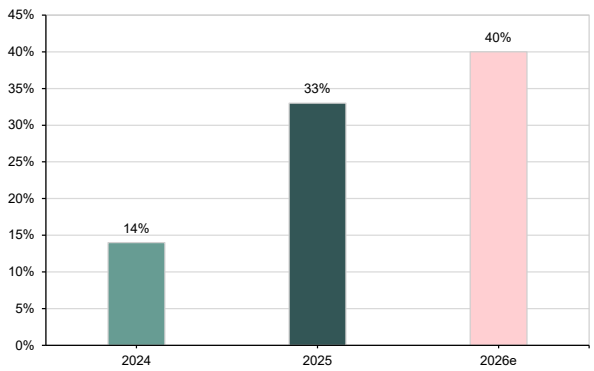
Conventional air cooling is generally effective up to c 20–30kW per rack, and McKinsey places the point at which air struggles to remove heat efficiently at densities above 50kW per rack. AI racks have already moved well beyond these levels, with McKinsey noting that mainstream IT rack deployments are shifting from under 30–50kW per rack to 70–100kW, while direct-to-chip liquid cooling can support higher rack densities up to c 250kW. **Nvidia** has said its Kyber rack, due in 2027, could draw up to 600kW, and it is already preparing suppliers for future racks capable of drawing up to 1MW.

A hybrid transition: Dual cooling systems

The transition is already well under way, with TrendForce data cited by Accenture showing liquid cooling deployed in 33% of AI data centres in 2025 and c 40% expected in 2026 (Exhibit 3). A key feature of this shift for investors is that this is a hybrid transition rather than a straight replacement. In most systems, only the hottest components are liquid cooled, while the rest of the system continues to rely on air cooling. This is why McKinsey expects air-cooling spend to keep growing at 10–15% a year while liquid cooling grows at 45–50%. Therefore, an AI data centre needs two cooling systems instead of one, and this is a key reason thermal content per megawatt is rising.

In April 2026, for example, Munters received an order worth c SEK2.0bn from a US colocation data-centre provider for a new modular cooling platform specially designed for an AI factory build-out. The order covers both custom-designed, high-capacity CDUs and computer room air handlers (CRAHs) placed above the server racks, so the customer is buying liquid and air cooling as a single system.

Exhibit 3: Liquid-cooling adoption rates in AI data centres



Source: TrendForce

AI racks have moved well beyond the thresholds for effective air cooling

Since liquid cooling removes heat directly at the chip, the coolant can do its job even when it is fairly warm, which means not every cooling supplier benefits equally from the shift. Nvidia's Vera Rubin NVL144 rack design, for example, is specified for liquid cooling at 45°C. Water at that temperature is warmer than the outside air for most of the year in many locations, so it can be cooled back down simply by passing it through dry coolers, which work like large radiators, dissipating heat into the outside air. Air-cooled halls, by contrast, often need water chilled well below the outside temperature, which requires energy-intensive chillers. The shift to liquid cooling could therefore favour heat exchangers, pipework and dry coolers over traditional chiller content, so investors should look at which part of the cooling chain a company supplies rather than treating cooling as a single trade.

Inside the rack: Rear door, direct-to-chip and immersion

Liquid coolant now reaches the rack in three main ways (Exhibit 4). Rear-door heat exchangers leave the servers air cooled but capture their heat in a water-cooled coil at the back of the rack. Direct-to-chip cooling brings liquid coolant to the processor itself through cold plates and immersion cooling submerges the whole server in a non-conductive fluid.

The direct-to-chip cooling and other cooling technologies are often combined because cold plates capture most but not all of a server's heat, and the remainder still has to be removed by air or by a rear door.

Exhibit 4: The three main liquid-cooling technologies at the rack

	Rear-door heat exchanger (RDHx)	Direct-to-chip (cold plate)	Immersion
Function	A water-cooled coil replaces the rack's back door. Servers stay air-cooled, but their hot exhaust air is cooled as it leaves the rack	Metal cold plates sit directly on the processors, and coolant flowing through them carries the heat to a CDU	Whole servers are submerged in a tank of fluid that absorbs heat from every component
Coolant	Chilled water, which stays in the door and never enters the server	Treated water, often mixed with propylene glycol, in a sealed loop	Dielectric fluid: usually hydrocarbon-based (single-phase) or engineered, often PFAS-based (two-phase)
Best suited to	Upgrading existing air-cooled halls; removing residual heat from liquid-cooled racks	New high-density AI capacity	Specialised, very high-density sites; not practical as a retrofit

Source: Edison Investment Research

Direct-to-chip most attractive liquid-cooling option near-term

Direct-to-chip cooling is unlikely to remain a niche. McKinsey sees it as potentially the most attractive liquid-cooling option in the near term, noting that hyperscalers, equipment makers and colocation providers are prioritising it for next-generation infrastructure and expects it to account for 30% of the cooling market by 2030. Rear-door heat exchangers are the main route for upgrading existing air-cooled halls, while immersion cooling remains a more specialised option.

Cooling efficiency can add capacity without waiting for more power

Efficiency is the other reason the choice of technology matters. It is usually measured by power usage effectiveness (PUE), the ratio of a facility's total power draw to the power used by its IT equipment. For example, a PUE of 1.0 would mean every watt goes to the IT equipment. PUE is measured against the IT load, so the gap in the PUE for different cooling architectures (Exhibit 5) translates directly into compute capacity.

Exhibit 5: Power usage effectiveness (PUE) by cooling architecture

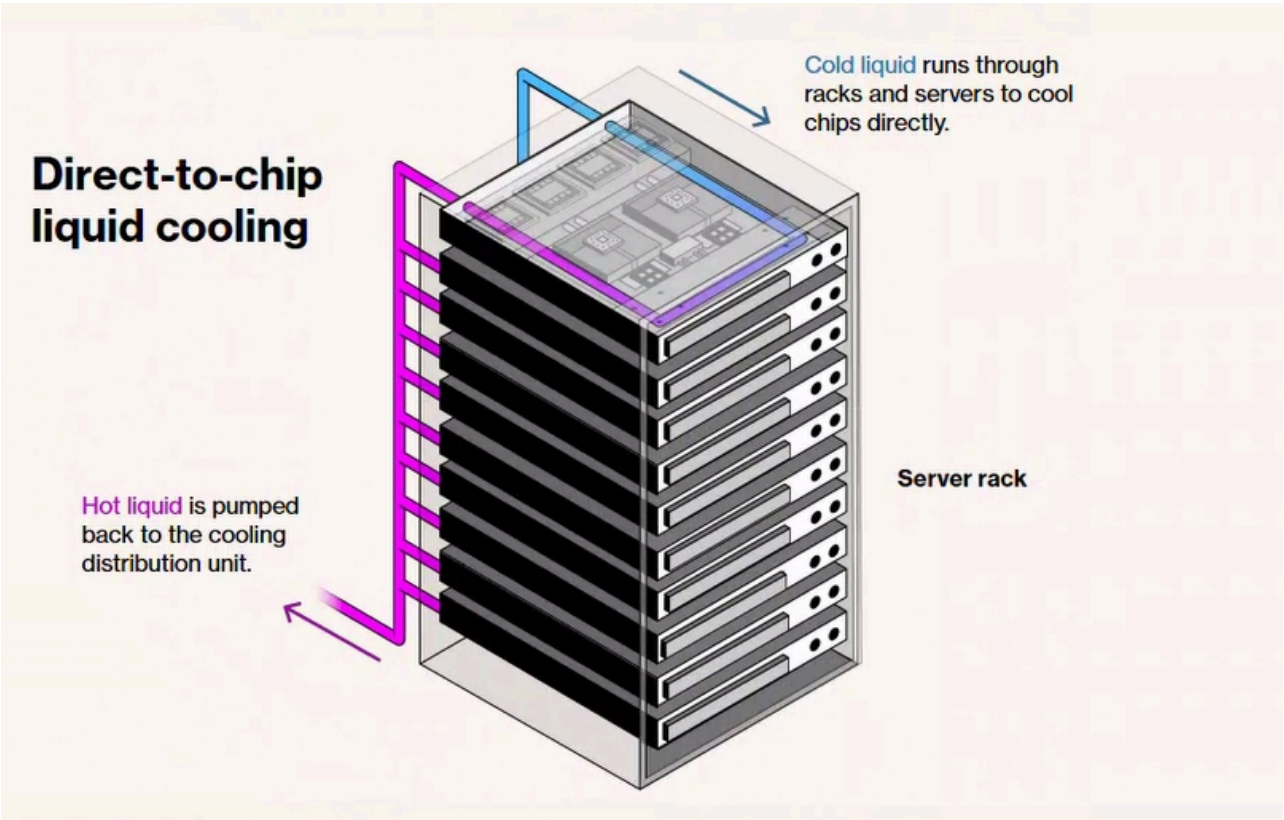
Cooling architecture	Typical PUE range	Best-in-class PUE	Primary efficiency loss
Hot-aisle/Cold-aisle (no containment)	1.65–1.95	1.55	Air mixing, over-cooling, fan power
Hot-aisle containment + economisers	1.40–1.60	1.28	CRAH fan power, chiller partial load
In-row cooling	1.30–1.50	1.22	In-row unit fans, distribution losses
Rear-door heat exchangers	1.25–1.45	1.18	Server fans (elevated static pressure), RDHx pumping
Direct-to-chip liquid cooling	1.15–1.30	1.10	Residual air cooling (non-liquid components), CDU pumping
Single-phase immersion	1.05–1.15	1.03	Fluid pumping, heat rejection (dry cooler fans or facility cooling)
Two-phase immersion	1.03–1.08	1.02	Condenser cooling, minimal pumping during transients

Source: Energy Solutions Intelligence

How direct-to-chip cooling works

Direct-to-chip cooling replaces the air around the processor with a sealed liquid loop (Exhibit 6). A metal cold plate is mounted directly on top of each processor, and coolant flows through the plate, absorbs heat at the source and carries it away to a CDU, which manages the temperature, pressure and flow of the liquid. Sensors continuously monitor temperature, flow rates and leaks.

Exhibit 6: Direct-to-chip cooling



Source: Bloomberg Intelligence

For investors, the key point is how many separate components this requires, each of them a capex line that did not exist in an air-cooled hall. At the chip, a thermal interface material fills the microscopic gaps between the processor and the cold plate so that heat can flow efficiently. The cold plate contains fine internal channels through which the coolant passes. Manifolds distribute coolant evenly to each server in the rack, and quick-disconnect couplings enable servers to be removed for maintenance without leaking. The CDU, effectively a compact pumping and heat-exchange station, keeps the clean coolant inside the rack separate from the building's water supply and pipework. Valves and pumps then connect each rack to the facility's heat-rejection equipment. A server rack's thermal equipment was once largely fans and heatsinks, whereas a liquid-cooled AI rack includes all of the above, so the list of costs for materials removing heat has become considerably longer.

High barriers to entry, high-value solution

These components also carry high barriers to entry because the liquid circulates next to very expensive equipment. An Nvidia GB200 NVL72 rack is reported to cost c $3m, so each coupling, valve and seal must be tested and approved by the customer before it can be used. By comparison, in-rack cooling is estimated at c $42,000 for a GB200 rack (rising by about 20% with each new generation), representing less than 2% of the value of the equipment it protects. This means that once an operator has approved a supplier, switching to a cheaper alternative would mean repeating that testing and accepting the risk that an unproven part fails, all for a savings that is small relative to the cost of a damaged rack. In practice, this makes qualified suppliers difficult to displace on price.

Examples of where the European exposure sits

Coolant distribution units

The CDU is the highest-value single item in this chain, and technotrans (TTRGn.DE), the German thermal-management specialist company, is one of the most direct European exposures to it. Its data-centre applications order volume in H126 already exceeded its total for the whole of FY25, and it has commissioned a fourth CDU production line. Data-centre orders are still a modest share of the group, but the pace of growth shows how quickly a new product category can scale for a small-cap supplier.

Pipework and fluid handling

Georg Fischer (GF.S), the Swiss flow-solutions group, is one of the most visible European exposures to the pipework that connects racks to the facility, as a global leader in water and flow solutions. Management has stated that its data-centre end-market order intake doubled year-on-year in H126, helped by the expansion of its offerings, which included an energy balancing valve for precise temperature control and the launch of LiquidCore in November 2025. LiquidCore is a prefabricated high-performance polymer liquid-to-rack piping system for reliable coolant distribution. Georg Fischer has since partnered with Parker Hannifin on a high-performance hose and fitting technology with advanced polymer valve design in a single pre-assembled coupling for direct liquid cooling.

A fundamental benefit of polymer piping is its corrosion resistance. Corrosion particles tend to form from metallic materials and can block the fine channels inside cold plates. Prefabrication, where installation work is moved from the construction site into the factory, is also an important benefit as it can lead to shorter build times and shifts revenue from contracting towards higher-margin manufactured product.

SIMONA (SIM0.F), the German thermoplastics group, offers exposure to the same trend, with thermoplastic piping systems for data-centre cooling covering facility water systems and technology cooling systems through to direct liquid-cooling infrastructure. SIMONA's range also reaches into the rack itself through polyvinylidene fluoride (PVDF) rack distributors for direct liquid cooling, and its double-pipe systems offer continuous monitoring of the annular space between the inner and outer pipe, which addresses leak risk directly.

Thermal interface materials

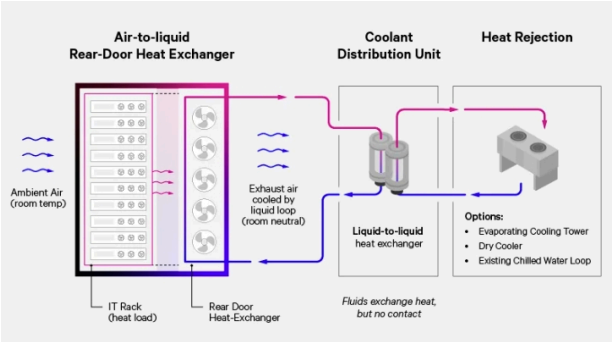
At the chip level, thermal interface materials are supplied by speciality chemicals groups such as **Henkel** (HNKG.DE), whose Loctite and Bergquist ranges include the gap pads, liquid gap fillers and phase-change materials used to move heat from components into heat sinks and cold plates. Better interface materials directly reduce the energy needed for cooling, and Henkel's range extends beyond processors to optical transceivers, wavelength selective switches and reconfigurable optical add-drop multiplexer systems. In October 2025, it launched a high-conductivity liquid gap filler designed specifically for the 800G and 1.6T AI data-centre optical transceivers that connect servers. Since these materials are applied to every processor and, increasingly, to the optical components around it, their demand is linked more closely to AI hardware volumes rather than building completions.

Rear-door heat exchangers

Not every data centre can be rebuilt for direct-to-chip cooling, and, for existing halls, rear-door heat exchangers provide a retrofit option. The unit replaces the rack's back panel with a coil through which chilled water circulates, so hot exhaust air from the servers is cooled to near room temperature before it re-enters the hall. Passive doors rely on the servers' own fans to push air through the coil, while active doors add their own fans for higher densities. Since rear-door heat exchangers fit standard racks and connect to an existing chilled-water supply or a CDU, rear doors can raise density without redesigning the hall. At the University of Cambridge's West Cambridge Data Centre, **Legrand's** (LEGD.PA) ColdLogik rear-door heat exchanger, gained through its 2022 acquisition of UK-based USystems was reported to have increased density from 30 kW to 44 kW and helped lift hall capacity from 900kW to 1.2MW. The retrofit route is particularly relevant in Europe, where much of the existing capacity is air cooled.

Vertiv (VRT), which sells rear doors alongside CDUs for direct-to-chip cooling, describes them as a first step towards high-density calling that can work with existing cooling systems without significant structural changes to the white space. In its design, a CDU links the door to the facility's heat-rejection equipment, transferring heat between two separate liquid loops that never mix (Exhibit 7).

Exhibit 7: Rear-door heat exchanger



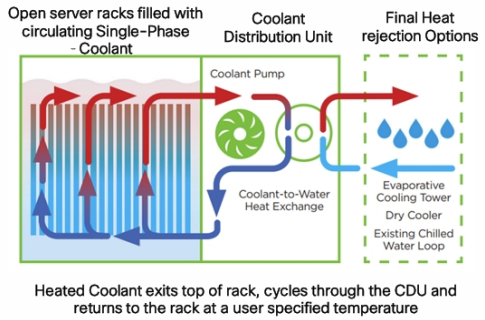
Source: Vertiv

Rear doors are also more than a retrofit tool. Vertiv estimates that direct-to-chip cooling typically removes 70–80% of a rack's heat. The rest, including heat from components the cold plates do not reach, such as power supplies and storage devices, has to be removed by air. At AI densities that remainder is substantial: in a 100kW rack, 20–30kW would still need to be removed by air, two to six times the total load of a conventional 5–10kW rack. A rear door can capture this heat at the rack, meaning rear doors are suited to new deployments as well as retrofits.

Immersion cooling: A growing niche

Immersion cooling, in which entire servers are submerged in non-conductive fluid, can manage even higher densities. Accenture's 2026 data-centre trends report notes that immersion cooling is more energy efficient than cold-plate cooling but its capital costs are higher, and immersion cooling is not a practical option for a retrofit. In single-phase immersion, the coolant, which is usually hydrocarbon based, absorbs heat and is circulated through heat exchangers. In two-phase immersion, the coolant vaporises as it absorbs heat and is condensed back into liquid, which is more efficient, but the fluids used in this type of immersion are typically per- and polyfluoroalkyl substances (PFAS) chemicals, which may face regulatory issues Europe and the US.

Exhibit 8: Cisco-GRC immersion-cooling system



Source: Cisco, GRC

Although immersion cooling is not as widely used as other liquid-cooling methods, adoption appears to be growing. This is evident through companies like Vertiv, which in November 2025 introduced its CoolCentre Immersion system in Europe, which is able to accommodate up to 240kW per unit. Mainstream IT vendors are also beginning to validate the technology. **Cisco** formed an engineering alliance with immersion specialist **Green Revolution Cooling** (GRC) in February 2025 that validated Cisco's Unified Computing System (UCS) servers in GRC's immersion systems (Exhibit 8), and **Shell** (SHEL.L) supplies the gas-to-liquids based immersion-cooling fluid used in Cisco's immersion solutions. Cisco claims the combined approach can reduce cooling energy consumption by up to 90%, which illustrates why immersion cooling attracts attention despite its higher upfront cost. This shift is also seen at the smaller end, with Sweden's **APR Technologies** (APRTEC.TE), which listed on Spotlight in January 2026, developing Rheion, an electrohydrodynamic micro-pump that moves dielectric coolant across the chip with no moving parts. Although still early in its commercialisation, APR has completed pre-series deliveries to a global technology company and, in October, signed aerospace agreements with Zoppas Industries and Airbus UpNext. The greater operational change that immersion cooling requires has nevertheless kept it a more specialised option than direct-to-chip cooling, and maintenance is a good example of this. Servers have to be lifted out of the fluid to be worked on, and the tanks need their own preventative maintenance programme. This is typically delivered through scheduled site visits covering inspection of the tank, pipe connections, safety trays and sensors, checks that the CDU, pumps and alarms work, cleaning and replacement of consumables, and laboratory testing of coolant samples to monitor fluid quality.

Higher rack densities create specialist materials demand

Liquid cooling and higher rack densities also create demand for specialist materials, from the coolants that circulate through the loop to the fire-safety materials used in cables and buildings.

Coolants: From commodity to service

The coolant in a liquid loop is a specified product rather than ordinary water. It contains additives that prevent corrosion,

stop bacterial growth and control electrical conductivity, and it must be monitored and replaced over time, which creates an ongoing service relationship. Fluid suppliers are developing coolants specifically for this market, evident through companies like Shell that launched Shell DLC Fluid S3 in June 2025, a propylene glycol-based direct liquid-cooling fluid for which it claims corrosion protection and an expected service life of more than six years.

This is where companies like **Ecolab** (ECL), a water-treatment and hygiene group, stand to benefit. Ecolab acquired CoolIT, a direct liquid-cooling specialist, for c $4.75bn, closing the deal in July 2026, and reported that CoolIT's year-to-date sales had grown by more than 100%. At the SC26 Supercomputing conference in November 2026, Ecolab plans to introduce an end-to-end 3D TRASAR cooling platform that combines CoolIT's CDUs and cold plates with integrated 3D TRASAR digital optimisation and advanced cooling fluids, aimed at giving operators real-time visibility of system performance and reducing cooling power demand. That pairing of hardware, chemistry and monitoring points to a recurring revenue opportunity alongside the initial equipment sale, and Ecolab is targeting $4bn of annual sales from its Global High-Tech business by 2030, up from c $1.5bn of annualised sales in 2026.

Why higher density raises the fire-safety bar

According to the North American Flame Retardant Alliance, a chemical-industry body, higher power densities place greater importance on the fire resistance of electronic and electrical components. Electronic equipment contains polymer-based materials that can contribute to fire spread if they are not engineered for fire performance, and data centres rely on extensive cabling, power distribution and cooling systems. Lithium-ion batteries are also increasingly used in uninterruptible power-supply and energy-storage systems, and the alliance notes that lithium-ion thermal runaway can exceed 1,000°C.

A battery fire of this kind can take a facility offline. In the Uptime Institute's 2026 Annual Outage analysis, 57% of respondents to its 2025 survey said their most recent major outage cost more than $100,000, and one in five reported costs above $1m. In September 2025, for example, a lithium-ion battery at South Korea's National Information Resources Service data centre in Daejeon went into thermal runaway and caught fire, forcing authorities to shut down all 647 government IT systems housed there as a precaution.

Corrosive smoke is driving halogen-free flame retardants

Smoke can be as damaging as a fire itself in a data centre, because conventional PVC cable insulation releases hydrogen chloride when it burns, which forms a corrosive acid that can damage electronic equipment even in areas the fire never reaches. This is one reason why data centres increasingly specify low-smoke, halogen-free cables and why halogenated flame retardants are progressively being designed out of building regulations.

Halogen-free compounds use a range of flame-retardant systems, including mineral fillers such as aluminium hydroxide and magnesium hydroxide, and phosphorus-based additives. Mineral fillers such as aluminium hydroxide release water when heated, which cools the material and slows the spread of fire without producing corrosive smoke. **Nabaltec** (NTGG.DE), one of the companies among the world's leading manufacturers of aluminium hydroxide-based products, produces and sells aluminium hydroxide under its APYRAL brand, which is used especially as a flame retardant in telecommunication and data cables and is valued in particular for its smoke-reducing and non-toxic properties. In its H126 interim report, management points to the company's products for the growing market for data and energy cables for data centres and lists data centres among the applications opening up attractive growth prospects. **Clariant** (CLN.S) takes a different chemical approach, supplying phosphorus-based halogen-free flame retardants through its Exolit range.

Fire performance is largely determined by building codes, product standards and insurers' requirements rather than being chosen freely by the operator, and such requirements tend to tighten over time, making demand relatively durable. The switch to halogen-free cables also typically increases the value of each metre of cable rather than the number of metres installed, which can support pricing for filler and compound suppliers.

Passive fire protection and the building envelope

Fire performance in a data centre is built up in layers: Flame retardants and fillers determine how the polymer compounds in cables and components behave in a fire; cable makers turn those compounds into certifiedfire-performance products; and the building itself provides passive protection that limits how far a fire can spread. Earlier in this note we set the building envelope aside, because, for cooling, it scales with floor area rather than power density. Fire safety is different, because walls, floors and ceilings are designed to stop a fire spreading from one room to the next, and every point where cables or pipes pass through them has to be sealed to keep that protection intact. As AI halls carry more cabling and, with liquid cooling, more pipework, passive fire protection and non-combustible insulation

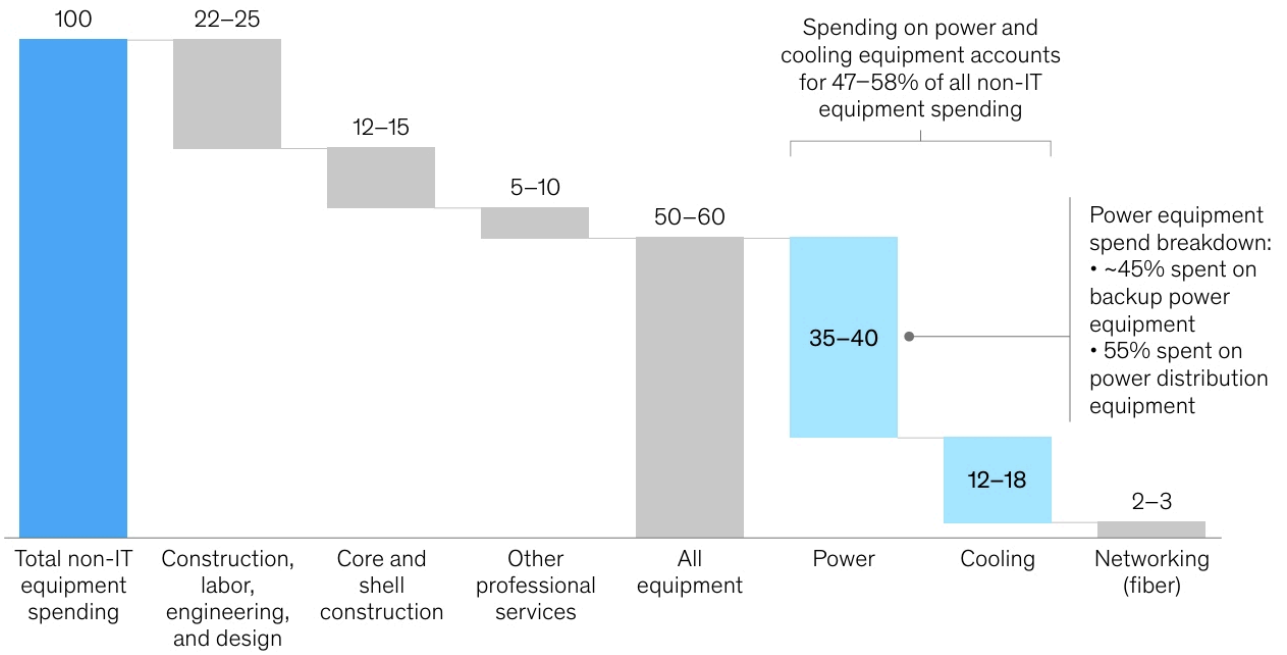
become a more important part of the build. This is reflected by companies like **Saint-Gobain** (SGOB.PA), which markets a dedicated data-centre range spanning passive fire protection, insulation and interior systems, and **ROCKWOOL** (ROCKb.CO), which makes non-combustible stone wool insulation.

Following the capex: From forecasts to orders

Cooling a c $220bn capex pool, liquid cooling is growing fastest

McKinsey's analysis provides a useful framework for where AI data-centre capex flows (Exhibit 9). Of the $6.7tn of cumulative global data-centre capex it expects by 2030, c 60% goes on IT equipment including the technology developers and designers producing the IT equipment for data centres. Within the remaining non-IT equipment spend, power and cooling are the largest categories, together accounting for 47–58%. Cooling is the smaller of the two, at c $220bn cumulatively compared with $500bn for power. However, cooling contains the fastest-growing segment, and McKinsey forecasts liquid-cooling spend to grow 45–50% a year to 2030, compared with 30–35% for heat rejection and 10–15% for air cooling, and expects spending on liquid cooling and related mechanical systems to grow faster than overall data-centre spending over the next five years.

Exhibit 9: Capital expenditure breakdown of non-IT spending for data centers (%)



Source: McKinsey & Company

Can we quantify the opportunity per megawatt?

Company disclosures can help translate these forecasts into content per megawatt, and **Georg Fischer** (GF.S) offers one of the few explicit data points. On its H126 results call, Management had said that a single 100MW liquid-cooled data centre represents an addressable opportunity of c CHF15m for its products, roughly CHF150,000 per megawatt. Against its mid-term target of CHF300m of data-centre sales, this implies supplying around twenty 100MW liquid-cooled sites, or 2GW, a year.

This means that liquid cooling creates meaningful content per megawatt even within a single, relatively narrow product category, such as piping and valves, and further content sits in CDUs, cold plates, heat exchangers, couplings and controls. For mid-sized European suppliers, a relatively small number of large AI projects can therefore have a material effect on group revenue, which helps explain why order announcements in this sector can be large relative to company size. However, this opportunity is still an early one as seen from the same disclosures, with Georg Fischer's management reporting data-centre sales close to CHF20m in H126, still mostly in facility cooling rather than inside the server room, compared with net sales of close to CHF1.6bn for its Flow Solutions business, which now makes up all of its continuing operations. Across the sector, orders are running well ahead of revenue, which is typical at this stage,

but it means investors should not only focus on how quickly those orders convert into revenue, but also on whether they convert at all. Data-centre projects can be delayed or cancelled if developers cannot secure grid connections, and suppliers may not have the capacity to deliver everything they have booked.

Orders and capacity

Individual orders in this market can be large relative to the size of the supplier, and for a mid-sized European company a single hyperscaler or colocation project can be worth a substantial share of a year's divisional sales. This provides revenue visibility, but it also brings customer concentration and makes reported order intake uneven from one period to the next.

Orders are also running ahead of revenue (book to bill >1x), with several suppliers reporting data-centre order intake growing much faster than sales and deliveries driven by some large awards stretching into 2028. This shifts the main risk from demand to execution, because suppliers now have to manage manufacturing capacity, secure components and deliver new modular systems on time and at the expected margin. Increasingly, the supplier is responsible for a complete system rather than individual components. Fo example, Munters' April 2026 order is for a fully modular cooling platform of CDUs and over-the-rack air handlers, designed to cool an entire AI factory build-out for a US colocation provider, so Munters carries the execution risk on the whole package. Standardised modular systems of this kind suit colocation providers and other operators that want to deploy quickly. Hyperscalers generally specify customised systems built to their own designs, so suppliers serving them are more likely to be engineering to order.

Demand is broad based across the cooling chain

Demand also appears broad-based across the cooling chain rather than confined to a single product, with growth reported in controls, CDUs, air handling and heat rejection. For investors, this suggests the content-per-megawatt argument applies across the thermal system rather than to one component category.

Suppliers are responding by adding capacity ahead of demand, including new liquid-cooling and chiller production in the US and Europe, and Accenture notes that three of the four main cold-plate manufacturers supplying the US have increased production. Capacity commitments are a useful signal because they reflect management confidence that demand will persist beyond individual contracts. However, their scale matters as much as their direction. Some additions are incremental, such as an extra production line, while others involve new factories, evident through technotrans adding a fourth CDU production line and its investment in a new factory at Sassenberg to expand capacity in liquid cooling for data centres. If many suppliers expand at the same time, the industry could also end up with excess capacity, should demand slow, putting pressure on prices and utilisation. Investors should therefore judge capacity additions against each supplier's order book rather than treating expansion as a positive signal.

Taken together, these datapoints suggest demand visibility that is unusually strong for an industrial end market. The investment question is therefore shifting from whether demand exists to whether suppliers can deliver it profitably and on time.

Consolidation likely to continue

Acquisitions provide a further signal, as large industrial- and building-technology groups have spent heavily to buy liquid-cooling specialists.

Exhibit 10: Acquisitions of liquid-cooling specialists

Date	Acquirer	Target	Consideration
Jul-22	Legrand	USystems (UK)	Undisclosed
Dec-23	Vertiv	CoolTera (UK)	Undisclosed
Feb-25	Schneider Electric	Motivair (75% stake)	$850m
Mar-26	Trane Technologies	LiquidStack	Undisclosed
Mar-26	Eaton	Boyd Thermal	$9.5bn
Apr-26	Vertiv	Strategic Thermal Labs	Undisclosed
Jul-26	Ecolab	CoolIT	c $4.75bn

Source: Company announcements

These consolidations suggest that buyers are paying for two main things. The first is products that fill gaps in their own offer. Eaton used Boyd Thermal to add liquid cooling to its power-management portfolio, Trane said LiquidStack's direct-

to-chip and immersion cooling would complement its chillers, heat rejection and controls, and Ecolab sees CoolIT's hardware as complementing its own water, chemistry and digital monitoring capabilities. The second is established positions with hyperscale and colocation customers. Groups of this size could build the manufacturing capability themselves, but customer approvals and relationships are much harder to replicate, which suggests one of the main barriers to entry is customer qualification and track record.

Acquisition is also steadily removing independent specialists before they reach public markets. The targets in Exhibit 10 were all privately held, leaving investors increasingly reliant on diversified industrial groups for exposure and giving the small number of remaining listed specialists a degree of strategic value. The scale of recent orders and acquisitions suggests heat removal is now treated as core AI infrastructure, and the constraint for many suppliers is moving from winning orders to delivering them.

This consolidation is likely to continue as large groups still have large gaps to fill, and established customer positions are hard to build organically, creating opportunity for investors in the remaining listed specialists and in the mid-sized suppliers.

The water constraint

Why water still matters

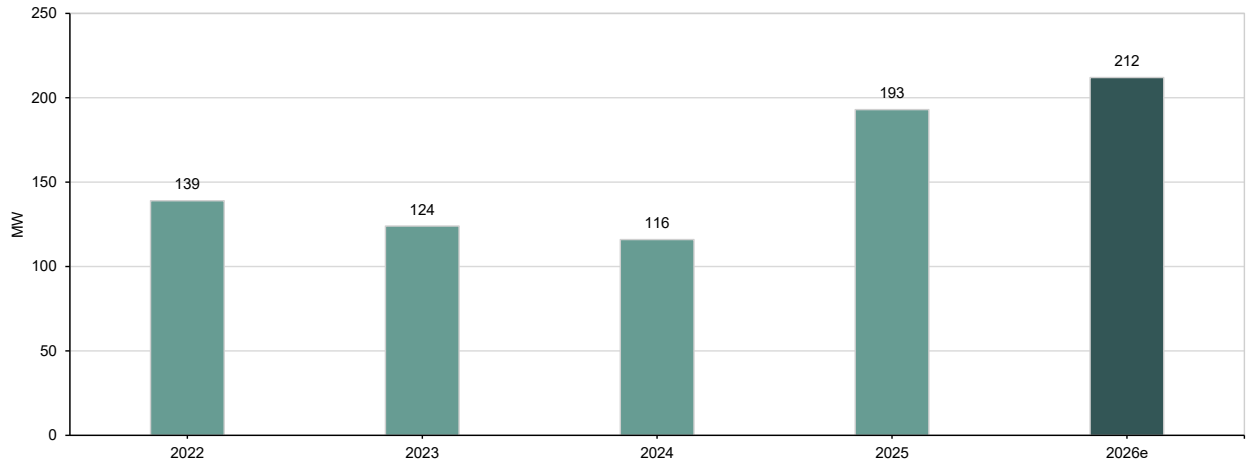
In many data centres, the final step in removing heat consumes water, because cooling towers release heat by evaporating water. Around 80% of the water used in evaporative cooling is lost this way, and the UK's Government Digital Sustainability Alliance estimates that a 100MW facility using this type of cooling can consume c 2.5bn litres a year, equivalent to the needs of roughly 80,000 people. Liquid cooling helps, because warm-water loops can reject heat through dry coolers that use little or no water, and Accenture expects water-intensive evaporative cooling to be phased out as communities facing shortages become less willing to accept it.However, water is unlikely to disappear from data-centre cooling, because dry coolers generally use more electricity than evaporative systems and are less effective in hot weather. Therefore, many sites tend to use dry cooling for most of the year but switch to water to pre-cool incoming air on the hottest days, which is when local supplies are typically under the most pressure. Data centres also consume water indirectly through the power stations that supply their electricity, and, in the US, this indirect use was around 12 times their direct consumption in 2023, according to Lawrence Berkeley National Laboratory estimates reported by Bloomberg.

The UK reservoir gap

The UK is a particularly clear example of where this constraint becomes visible, because it combines Greater London, Europe's largest data-centre market accounting for more than 80% of UK data-centre supply according to CBRE, with a reservoir network that has barely grown in three decades. The Environment Agency projects a shortfall in England's public water supply of nearly 5bn litres a day by 2050, which is more than a third of current supply. Much of the capacity sits within Thames Water's supply area, the UK's largest water and wastewater services company, which the Environment Agency classifies as seriously water stressed, and the company has itself warned that a large proportion of proposed data centres are earmarked for its region.

Demand in the London area is still rising. Exhibit 11 shows the annual data-centre take-up in London, meaning the capacity leased by occupiers in each year. CBRE expects take-up to reach record 212MW in 2026. The first AI Growth Zone, at Culham in Oxfordshire, sits seven miles from the site of a planned new reservoir at Abingdon. Industry groups argue that UK data centres use far less water than US facilities because they tend not to rely on water-intensive cooling, and AI is not the main driver of the projected deficit. However, it does potentially add concentrated and largely unplanned demand to a system that is already short of supply.

Exhibit 11: Annual data centre take-up in London (MW)



Source: CBRE

The government notes that no new reservoirs have been delivered since 1992, when Carsington Water in Derbyshire was officially opened. Carsington, which was 96.2% full in mid-June 2026, had fallen to 60.3% by 19 October 2026 after a dry summer. Ten large reservoirs are now planned, but construction has started on only one, Havant Thicket in Hampshire, and the largest, Thames Water's 150bn-litre White Horse Reservoir in Oxfordshire, formerly known by the working title South East Strategic Reservoir Option (SESRO), is not expected to open until 2040.

The water industry's record £104bn investment plan for 2025–30 includes new reservoirs, and strategic reservoir programmes sit outside those committed figures as additional investment. Thames Water opened a £5.7bn tender in January 2026 to appoint a main works contractor for the White Horse Reservoir. **Costain** (COSG.L) is already involved in both strands of this spending. Within the current regulatory period it was awarded c £150m of upgrades to Thames Water's wastewater treatment assets across 15 sites in August 2026. On the reservoir programme, it has conducted clay compaction trials for the White Horse Reservoir to inform its design, and its annual report notes that it provides constructibility advice to Thames Water on the programme. **Hargreaves Services** (HASE.L) approaches the same opportunity from the construction side, since a reservoir is in large part an earthworks project, and bulk earthworks is a core capability of its Services division, which moved a record amount of earth on HS2 and Sizewell C in FY26. The group has identified the next generation of reservoir creation as a longer-term focus. For investors, the point is that the resource demands of the AI build-out extend beyond the data-centre fence into water storage and supply infrastructure that often takes more than a decade to deliver.

What could weaken the thesis?

Our central investment view is that higher-density AI racks require disproportionate investment in thermal management, liquid cooling and specialist materials. As compute density rises, so does the non-compute content per rack and per megawatt, creating a second-order capex pool that sits outside the GPU itself. The result is a large and fast-growing opportunity across the cooling value chain. Below we discuss a range of factors that could weaken our thesis.

AI infrastructure demand slows

As in our first note, the most important risk is a slowdown in data-centre capex. Cooling orders are large, lumpy and concentrated among a relatively small number of operators, so a change in spending plans by a few customers could have a significant effect on individual suppliers.

US policy uncertainties could slow AI growth

Democrats won control of both chambers of the US Congress in the 3 November mid-terms, after a campaign in which data centres' impact on electricity bills was highlighted as a prominent issue. Tighter rules on power costs and approvals could slow new US capacity, and AI and data-centre stocks, including cooling suppliers in our universe, sold off sharply after the results.

Orders fail to convert into margins

Winning orders, converting them into sales and delivering those sales profitably are separate challenges. Projects can be delayed or cancelled if data-centre developers cannot secure power or grid connections, and suppliers may lack the capacity to deliver everything they have booked. At Munters, data-centre orders have materially outpaced sales, while the ramp-up of US chiller production and supply constraints have delayed the conversion of those orders into margins. Its April 2026 order will be delivered between early 2027 and the first quarter of 2028, so the earnings benefit will take time to appear.

The base is still small

Many of the strongest growth rates are from low starting points. Georg Fischer's data-centre sales were c CHF20m in H126, and technotrans' data-centre orders are still a modest share of the group. Rapid order growth does not yet mean material earnings exposure.

Air cooling lasts longer, or technology shifts

If rack densities stabilise, or hybrid designs persist for longer than expected, the move to liquid cooling could be slower than forecasts suggest. Newer approaches could change which components are needed. Accenture notes that Microsoft has tested microfluidic cooling, in which coolant flows through tiny channels etched into the chip itself, although so far only in the laboratory.

Standardisation reduces differentiation

Component suppliers currently benefit from complex, evolving designs and lengthy customer qualification. If the industry converges on standard reference designs, some of these components could become commoditised.

A strong theme can still be a poor investment

As with the power theme, the key question is not whether a company benefits from AI-related cooling demand, but how much of that benefit is already reflected in its valuation.

Listed company universe: Power in, heat out

Investors can gain exposure to the theme through a range of sub-sectors, from global large caps to small-cap specialists (Exhibit 12). Alongside the large-cap benchmarks, we have grouped the remaining companies, which are mostly mid- and small-caps, by the part of the cooling value chain they serve. As many companies span more than one part of the value chain, each is allocated to the group that best reflects its exposure to this theme, which is not necessarily its main business activity. The full list is in Exhibit 13. Inclusion does not imply that AI or data centres are currently material to earnings or that the shares are attractively valued.

Exhibit 12: Market cap growth, performance and valuation by sub-theme

Group	Companies	Median 2yr market cap. Change	Median 1yr share price performance	Median FY1 P/E (x)
Large-cap benchmarks	10	80%	15%	23.4%
Core cooling systems	16	31%	12%	17.1%
Heat transfer and fluid handling	13	33%	19%	17.6%
Cooling materials and fluids	7	-20%	20%	14.7%
Fire protection and building materials	11	7%	13%	13.6%
Water infrastructure	5	186%	40%	14.2%

Source: Edison Investment research, LSEG Data & Analytics

Theme exposure is not the same as data-centre exposure

For most of the large caps, the link to data centres is clear because they sell directly into them. AMD makes the processors that generate the heat, while Vertiv, Schneider Electric, Eaton and Trane supply the power and cooling systems that keep data centres running. Shell is the exception, as cooling fluids are a small part of its business. For many smaller companies, the exposure is far less visible, because data-centre sales sit within broader divisions and

are often undisclosed or still small. Georg Fischer's data-centre sales, for example, were only around 1% of its Flow Solutions sales in H126.

The market is pricing more than just cooling

Share price performance over the past year has been positive but uneven, with a median gain of 18% across the universe, and valuations are similarly dispersed, with FY1 P/E multiples ranging from below 9x to almost 38x (Exhibits 12 and 13). The median company's market capitalisation has risen by 30% over the period, and 45 of the 60 companies with a two-year record are larger than they were, including 15 that have at least doubled. In aggregate, the universe has added c £860bn of market value, but this is highly concentrated: the 10 large-cap benchmarks account for c 90% of it, and AMD alone accounts for around half.

Below the large caps, the differences between sub-themes mostly reflect their wider end markets (Exhibit 12). Market values reflect each company's whole business, not just the activities that place it in a group, so where we point to a driver, it may apply to only part of a company's business. Water infrastructure has grown the fastest, as the UK water infrastructure contractors have benefited from UK water and wider infrastructure spending. Core cooling systems and heat transfer and fluid handling have grown at a similar pace. However, core cooling systems shows the wider spread as its members range from specialists with significant data-centre exposure to companies that depend mainly on other end markets. In fire protection and building materials, the cable makers have grown fastest, which may partly reflect grid investment and electrification, including data centres, while the more construction- and chemicals-focused companies have lagged. Cooling materials and fluids is the only group to have lost value over two years, despite a recovery over the past year. This is likely to reflect weakness in its members' main chemicals and industrial markets rather than their data-centre activities.

The median non-European company has more than doubled in value over two years, against a 14% for the median European company. This largely reflects composition, as the non-European group is dominated by large caps with substantial data-centre exposure, while the European group includes all of the materials companies and many smaller industrials for which data centres are still a small share of sales.

The post-US election sell-off has also improved potential entry points. It produced a sharp double-digit de-rating of AI-related shares, taking the Nasdaq more than 10% below its October peak, and hit companies broadly, from chipmakers to the picks and shovels of the build-out, rather than on their individual fundamentals. As tighter US policy is more likely to slow the build-out than stop it, this offers investors exposure to a long-term trend at lower valuations. Lower valuations also make acquisitions easier, which could accelerate the consolidation discussed earlier and benefit the smaller listed specialists most likely to be targets.

Selectivity matters more than theme exposure

Taken together, the past two years suggest the market has so far rewarded exposure to wider data-centre capex and electrification, mostly where data centres are already large enough to drive group earnings.

In the short term, policy uncertainty after the US mid-terms and the recent correction could keep AI-related shares volatile. Over the longer term, we believe the opportunity remains intact. So far, the market has concentrated on companies higher up the value chain, in compute, power and the large-cap infrastructure groups. Further down, data-centre capex is still working its way through, with orders running ahead of revenue and deliveries stretching into 2028. As a result, the growth has yet to show up in the earnings of most of the smaller and European companies in our universe. This makes selectivity critical. The opportunity lies in companies where data-centre demand can grow large enough relative to the group for the market to reward it and where orders are converting into profitable sales.

Exhibit 13: Listed companies exposed to the AI picks-and-shovels power in, heat out theme

Company name	GICS sub sector	Market Cap (£m)	2yr market cap. change (%)	Current price (£)	1yr performance (%)	FY1 P/E (x)	12m EPS change (%)	12m P/E change (%)
Large cap benchmarks								
Advanced Micro Devices, Inc.	Semiconductors	633,379	258%	386.2	111%	31.43	26%	-26%
Shell plc	Integrated Oil & Gas	206,925	23%	36.2	26%	8.58	-17%	-5%
Schneider Electric SE	Electrical Components & Equipment	121,215	36%	196.9	1%	19.49	3%	-28%
Eaton Corporation PLC	Electrical Components & Equipment	103,152	37%	265.5	-7%	22.13	12%	-37%
Parker-Hannifin Corporation	Industrial Machinery & Supplies & Components	91,226	102%	723.5	15%	25.24	18%	-13%
Delta Electronics, Inc.	Electronic Components	76,560	285%	29.5	33%	22.52	71%	-96%
Trane Technologies PLC	Building Products	69,047	59%	315.4	-3%	24.28	16%	-26%
Ecolab Inc.	Specialty Chemicals	64,337	46%	229.4	18%	33.21	13%	-4%
Johnson Controls International PLC	Building Products	64,075	122%	105.8	15%	21.89	37%	-51%
Vertiv Holdings Co	Electrical Components & Equipment	56,058	273%	145.6	3%	20.93	47%	-61%
Core cooling systems								
Andrews Sykes Group PLC	Trading Companies & Distributors	217	-13%	5.2	2%	NULL	N/A	N/A
APR Technologies AB	Electrical Components & Equipment	40	N/A	1.4	N/A	NULL	N/A	N/A
Asetek A/S	Technology Hardware, Storage & Peripherals	59	31%	0.2	69%	NULL	-183%	N/A
Beijer Ref AB (publ)	Trading Companies & Distributors	6,122	30%	11.9	3%	25.19	5%	-93%
Bravida Holding AB	Diversified Support Services	2,338	110%	11.3	85%	16.90	16%	-88%
CAREL Industries S.p.A.	Building Products	2,532	5%	22.3	24%	28.86	16%	3%
Flex Ltd	Electronic Manufacturing Services	21,072	134%	57.0	20%	11.38	25%	10%
Kaori Heat Treatment Co Ltd	Industrial Machinery & Supplies & Components	3,107	550%	33.2	152%	38.26	41%	-93%
Legrand SA	Electrical Components & Equipment	30,413	43%	113.5	4%	NULL	6%	2%
Modine Manufacturing Company	Building Products	4,110	84%	77.3	-30%	11.79	24%	-26%
Munters Group AB	Building Products	1,901	-3%	10.2	-13%	14.44	-38%	-94%
nVent Electric PLC	Electrical Components & Equipment	13,625	80%	84.3	0%	16.64	35%	-47%
Sensirion Holding AG	Electronic Equipment & Instruments	1,170	7%	73.1	40%	33.87	-170%	N/A
Systemair AB	Building Products	1,366	13%	6.6	12%	17.29	12%	-93%
technotrans SE	Industrial Machinery & Supplies & Components	151	15%	21.5	-23%	12.03	57%	-26%
Vaisala Oyj	Electronic Equipment & Instruments	1,955	103%	53.1	52%	23.67	-6%	17%
Heat transfer and fluid handling								
Aalberts N.V.	Industrial Machinery & Supplies & Components	3,775	0%	34.6	55%	12.76	-16%	-37%
Alfa Laval AB (publ)	Industrial Machinery & Supplies & Components	16,991	40%	40.7	20%	20.54	10%	-93%
Belimo Holding AG	Building Products	8,559	78%	688.6	-3%	33.69	24%	-7%
Dover Corporation	Industrial Machinery & Supplies & Components	21,136	30%	158.9	16%	18.18	16%	-11%
Georg Fischer AG	Industrial Machinery & Supplies & Components	4,366	1%	52.7	11%	20.69	-52%	33%
KSB SE & Co KGaA	Industrial Machinery & Supplies & Components	1,263	36%	736.3	-7%	10.15	19%	-5%
Lu-Ve SpA	Building Products	1,181	159%	51.6	68%	22.02	11%	68%
Mersen SA	Electrical Components & Equipment	784	6%	31.4	80%	11.98	-77%	533%
NORMA Group SE	Industrial Machinery & Supplies & Components	264	-40%	11.6	8%	12.59	-176%	N/A
Simona AG	Commodity Chemicals	361	0%	60.2	40%	14.94	N/A	N/A
Sulzer AG	Industrial Machinery & Supplies & Components	5,702	114%	165.1	39%	17.09	12%	12%
Trelleborg AB (publ)	Industrial Machinery & Supplies & Components	7,925	40%	35.0	17%	19.70	2%	-91%
Cooling materials and fluids								
Arkema SA	Specialty Chemicals	3,750	-44%	48.4	12%	12.32	-47%	-32%
Elkem ASA	Specialty Chemicals	940	14%	2.5	23%	11.45	-236%	-144%
Fuchs Se	Commodity Chemicals	4,431	1%	31.3	21%	15.86	2%	-26%
Henkel AG & Co. KGaA	Household Products	29,564	14%	65.4	16%	14.38	-1%	-31%
SGL Carbon SE	Electrical Components & Equipment	507	-26%	4.0	67%	14.74	-65%	N/A
Syensqo NV	Specialty Chemicals	6,732	-20%	64.7	9%	18.15	-30%	-90%
Wacker Chemie AG	Specialty Chemicals	3,491	-32%	67.2	20%	27.80	-483%	-125%
Fire protection and building materials								
Clariant AG	Specialty Chemicals	3,317	-14%	9.7	54%	13.13	-108%	-1280%
Compagnie de Saint Gobain SA	Building Products	31,608	9%	63.9	-6%	11.62	-3%	-37%
Hexpol AB (publ)	Specialty Chemicals	2,483	-14%	7.2	13%	14.04	-13%	-92%
Kingspan Group PLC	Building Products	14,892	21%	80.9	44%	17.66	1%	13%
Lanxess AG	Diversified Chemicals	951	-55%	11.0	-24%	NULL	-29%	N/A
Morgan Advanced Materials PLC	Industrial Machinery & Supplies & Components	755	-6%	2.7	33%	13.00	-32%	-4%
Nabaltec AG	Specialty Chemicals	82	-44%	9.3	-16%	10.50	-32%	1%
Nexans SA	Electrical Components & Equipment	4,740	59%	106.8	6%	14.25	28%	-59%
Prysmian S.p.A.	Electrical Components & Equipment	28,247	191%	89.7	28%	17.04	71%	-15%
Rockwool A/S	Building Products	5,178	7%	24.3	1%	14.79	-21%	-11%
Volex PLC	Electrical Components & Equipment	991	67%	5.4	46%	13.13	20%	-4%
Water infrastructure								
Costain Group PLC	Construction & Engineering	672	276%	2.6	68%	15.47	-1%	86%
Galliford Try Holdings PLC	Construction & Engineering	703	202%	7.0	40%	14.20	23%	38%
Hargreaves Services PLC	Diversified Support Services	274	93%	9.1	40%	18.01	78%	-25%
Kemira Oyj	Diversified Chemicals	1,896	-13%	13.1	-17%	13.00	-22%	-25%
Kier Group PLC	Construction & Engineering	1,421	186%	3.2	49%	12.82	10%	-17%

Source: LSEG Data & Analytics, Edison Investment Research

General disclaimer and copyright

This report has been prepared and issued by Edison. Edison Investment Research standard fees are £60,000 pa for the production and broad dissemination of a detailed note (Outlook) following by regular (typically quarterly) update notes. Fees are paid upfront in cash without recourse. Edison may seek additional fees for the provision of roadshows and related IR services for the client but does not get remunerated for any investment banking services. We never take payment in stock, options or warrants for any of our services.

Accuracy of content: All information used in the publication of this report has been compiled from publicly available sources that are believed to be reliable, however we do not guarantee the accuracy or completeness of this report and have not sought for this information to be independently verified. Opinions contained in this report represent those of the research department of Edison at the time of publication. Forward-looking information or statements in this report contain information that is based on assumptions, forecasts of future results, estimates of amounts not yet determinable, and therefore involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of their subject matter to be materially different from current expectations.

Exclusion of Liability: To the fullest extent allowed by law, Edison shall not be liable for any direct, indirect or consequential losses, loss of profits, damages, costs or expenses incurred or suffered by you arising out or in connection with the access to, use of or reliance on any information contained on this note.

No personalised advice: The information that we provide should not be construed in any manner whatsoever as, personalised advice. Also, the information provided by us should not be construed by any subscriber or prospective subscriber as Edison's solicitation to effect, or attempt to effect, any transaction in a security. The securities described in the report may not be eligible for sale in all jurisdictions or to certain categories of investors.

Investment in securities mentioned: Edison has a restrictive policy relating to personal dealing and conflicts of interest. Edison Group does not conduct any investment business and, accordingly, does not itself hold any positions in the securities mentioned in this report. However, the respective directors, officers, employees and contractors of Edison may have a position in any or related securities mentioned in this report, subject to Edison's policies on personal dealing and conflicts of interest.

Copyright 2026 Edison Investment Research Limited (Edison).

Australia

Edison Investment Research Pty Ltd (Edison AU) is the Australian subsidiary of Edison. Edison AU is a Corporate Authorised Representative (1252501) of Crown Wealth Group Pty Ltd who holds an Australian Financial Services Licence (Number: 494274). This research is issued in Australia by Edison AU and any access to it, is intended only for "wholesale clients" within the meaning of the Corporations Act 2001 of Australia. Any advice given by Edison AU is general advice only and does not take into account your personal circumstances, needs or objectives. You should, before acting on this advice, consider the appropriateness of the advice, having regard to your objectives, financial situation and needs. If our advice relates to the acquisition, or possible acquisition, of a particular financial product you should read any relevant Product Disclosure Statement or like instrument.

New Zealand

The research in this document is intended for New Zealand resident professional financial advisers or brokers (for use in their roles as financial advisers or brokers) and habitual investors who are "wholesale clients" for the purpose of the Financial Advisers Act 2008 (FAA) (as described in sections 5(c) (1)(a), (b) and (c) of the FAA). This is not a solicitation or inducement to buy, sell, subscribe, or underwrite any securities mentioned or in the topic of this document. For the purpose of the FAA, the content of this report is of a general nature, is intended as a source of general information only and is not intended to constitute a recommendation or opinion in relation to acquiring or disposing (including refraining from acquiring or disposing) of securities. The distribution of this document is not a "personalised service" and, to the extent that it contains any financial advice, is intended only as a "class service" provided by Edison within the meaning of the FAA (i.e. without taking into account the particular financial situation or goals of any person). As such, it should not be relied upon in making an investment decision.

United Kingdom

This document is prepared and provided by Edison for information purposes only and should not be construed as an offer or sol icitation for investment in any securities mentioned or in the topic of this document. A marketing communication under FCA Rules, this document has not been prepared in accordance with the legal requirements designed to promote the independence of investment research and is not subject to any prohibition on dealing ahead of the dissemination of investment research.

This Communication is being distributed in the United Kingdom and is directed only at (i) persons having professional experience in matters relating to investments, i.e. investment professionals within the meaning of Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended (the "FPO") (ii) high net-worth companies, unincorporated associations or other bodies within the meaning of Article 49 of the FPO and (iii) persons to whom it is otherwise lawful to distribute it. The investment or investment activity to which this document relates is available only to such persons. It is not intended that this document be distributed or passed on, directly or indirectly, to any other class of persons and in any event and under no circumstances should persons of any other description rely on or act upon the contents of this document.

This Communication is being supplied to you solely for your information and may not be reproduced by, further distributed to or published in whole or in part by, any other person.

United States

Edison relies upon the "publishers' exclusion" from the definition of investment adviser under Section 202(a)(11) of the Investment Advisers Act of 1940 and corresponding state securities laws. This report is a bona fide publication of general and regular circulation offering impersonal investment-related advice, not tailored to a specific investment portfolio or the needs of current and/or prospective subscribers. As such, Edison does not offer or provide personal advice and the research provided is for informational purposes only. No mention of a particular security in this report constitutes a recommendation to buy, sell or hold that or any security, or that any particular security, portfolio of securities, transaction or investment strategy is suitable for any specific person.

London | New York | Frankfurt
20 Red Lion Street
London, WC1R 4PS
United Kingdom