DCS
DATACENTRE SOLUTIONS
DEVELOPING DIGITAL INFRASTRUCTURE IN A HYBRID WORLD

ISSUE V 2025

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Ensure consistent performance wherever you build

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Fewer part numbers, faster installs, and smarter integration

VIEWPOINT

BY PHIL ALSOP
EDITOR

Where in the world?

NOTHING too earth-shattering this issue, more of a sense of curiosity as to how the global data centre landscape will evolve in the decades before the 2050 Net Zero target, bearing in mind the mix of traditional and innovative approaches to determining data centre location, design and construction, fitting out, operation, maintenance and end of life.

Right now, if sustainability was the only consideration when it comes to data centre location, then there would be some obvious winners and losers in terms of the countries and regions 'blessed' with colder climates, plentiful renewables and plenty of space.

Indeed, if sustainability was the only consideration, then data centres would be moving further north and south of the equator, and the two poles might even come into consideration, always allowing for the impact of buildings, power of whatever source, and IT equipment on such delicate natural ecosystems.

Connectivity, closeness to customers, data sovereignty, geopolitics, tradition (can't go wrong building here) are many of the other considerations which influence data centre location, some more genuine than others. For example, while I would concede that I am very far from being a data regulations and compliance expert, I am really not sure as to just how many rules there are as to how and where data must be stored and accessed. After all, if you are a global business, are there seriously major regulatory restrictions in terms of how you can process all your global data…maybe there are, and I should learn to hide my ignorance better, but I can't help feeling that data sovereignty is often used as a selling tool, pressuring uninformed customers into making unnecessary data centre location decisions.

Then again, with geopolitics in a state of turmoil, is it wise to trust third party countries with your company's data. Then again, in many cases, is it wise to trust your own government with possible access to your company's data?!!

Connectivity remains important for most organisations – some combination of speed and reliability. Most of us won't notice a few milliseconds 'delay', but we all have a very low tolerance level when it comes to lack of a connection (remind me to tell you one day about the two weeks I recently spent with no mobile signal – no apology from my mobile provider…).

To the certainties of death, taxes adding the success of data centres built in the FLAPD markets used to be a no-brainer. However, while financial centres and major cities will continue to attract data centres, the pull is maybe not quite so irresistible as previously. Hence the emergence of secondary, Tier 2, emerging locations, which seem to have many advantages going for them and not too many negatives. And we haven't even had a sensible discussion about the edge, now that it has finally, very nearly arrived! As for the idea of building data centres as the central facility in a business park or industrial development or even as the power provider for a new residential development – as large as a new town – well, the idea is a great one, but maybe too many obstacles in practice?

So, no stunning insights to offer, just a celebration of the vibrancy of the data centre market and an enjoyable anticipation of ever more innovation to the point where the industry might just return its image back to the days of the celebrated, pandemic-induced fourth emergency service, rather than the power hungry polluter profile with which it is currently saddled.

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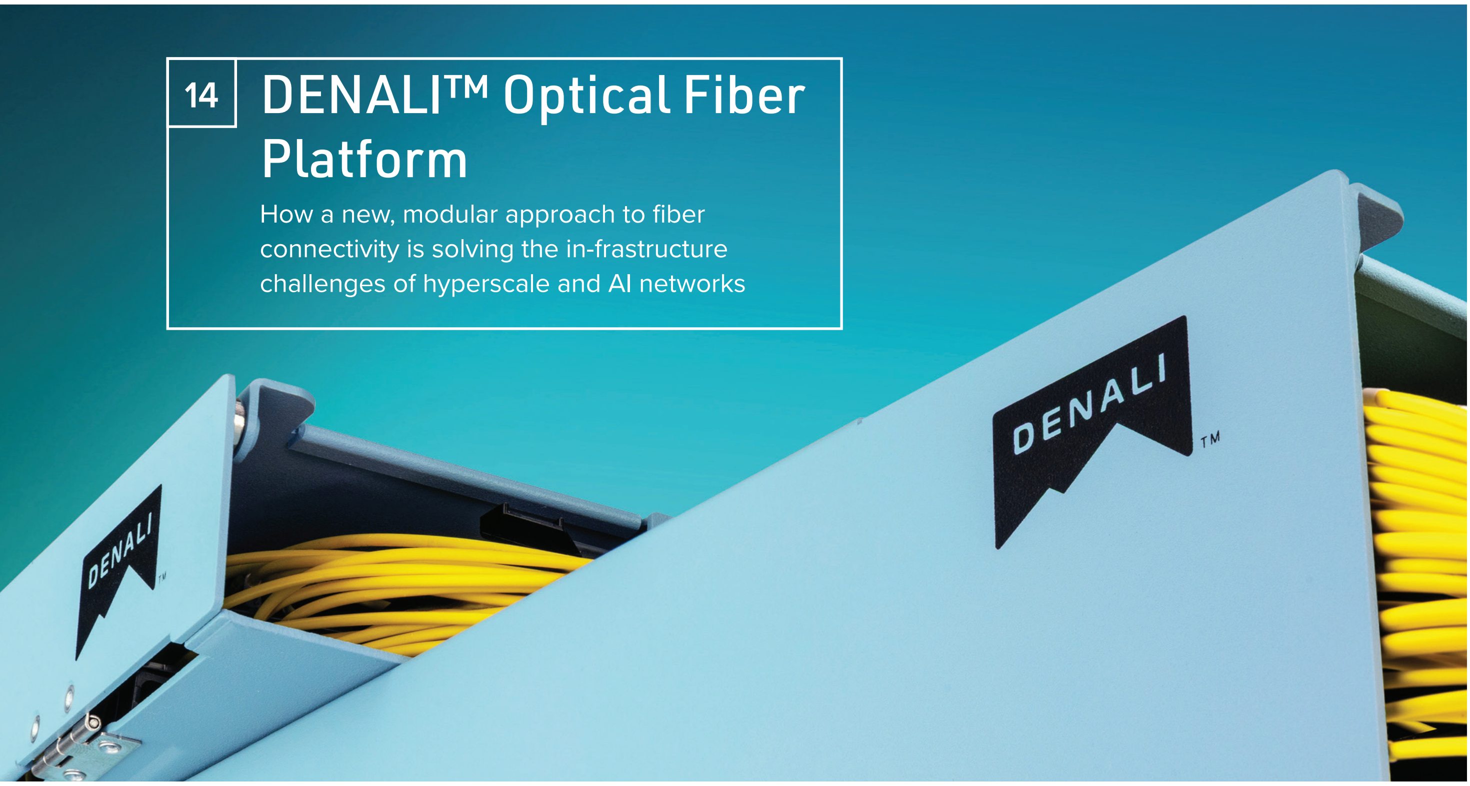

The data centre trade association

DCA News

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EUDCA research affirms data centres' digital importance

The European Data Centre Association (EUDCA) has released an extensive survey of Europe's data centre landscape, providing an in-depth understanding of the market: Identifying its fundamentals, exploring its opportunities, and acknowledging its challenges.

THE European Data Centre Association (EUDCA) has published its inaugural State of European Data Centres report, in collaboration with European National Trade Associations (NTAs). The new report, which can be downloaded freely from the association's website, marks an important step in documenting and recording the state of the industry, allowing greater ongoing analysis and insights, tracking progress and development, and faithfully reflecting a vibrant industry that while experiencing challenges, has potential to be at the heart of a digital Europe.

Michael Winterson, Secretary General of the EUDCA said: "Europe's digital economies could not have been established without the backbone of data centres that provide digital sovereignty while contributing significantly to GDP. The State of European Data Centres 2025 provides a benchmark of this vital industry and a reference point for informed, data-driven decision-making as we continue building Europe's digital future."

The contribution of data centres to Europe's economy The data centre industry contributes significantly to Europe's socio-economic landscape, according to the report. Colocation data centres alone were responsible for €30 billion in GDP in 2023, expected to reach €83.8 billion by 2030, with the creation of thousands of direct and indirect jobs.

The market is expanding rapidly, driven by artificial intelligence (AI) and digital service growth, with demand outstripping supply and attracting billions of euros in investment. Major centres of activity include Frankfurt, London, Amsterdam, Paris, and Dublin (FLAPD), with intense activity in emerging hubs in the Nordics and Southern Europe. Additionally, new metropolitan hubs are emerging in and

around cities such as Barcelona, Rome, and Athens.

Data centres must evolve as flexible energy partners to grid suppliers "A key implication from the report," continued Winterson, "is the need for data centres, as large energy consumers, to become flexible energy partners to grid providers."

Sustainability data shows that more than a quarter (28%) of operators have invested in on-site renewable energy generation capability, and 41% plan to do so. In support of these efforts, 28% are planning on installing battery energy storage systems (BESS) within the next two years.

Currently, nearly a quarter (22%) of data centre operators provide grid stabilisation or energy trading capacity to energy grids, greatly facilitating further utilisation of renewable energy sources (RES). This will almost triple (59%) in the next two years. All of this means that data centre operators, through increased resilience and energy independence, can engage with grid operators to relieve stress on grids, while providing supports such as grid stabilisation services.

Data centre challenges are quickly becoming opportunities The report finds the industry faces challenges related to power availability, sustainability, and regulatory compliance as new reporting obligations came recently into effect. More than a third (36%) said that regulatory compliance will be a challenge over the next three years. However, these challenges also present opportunities for innovation in energy efficiency, flexibility, and heat reuse. The sector's continued growth will necessitate ongoing investments in sustainability to minimise environmental impact.

Water usage efficiency running ahead of targets Another bright spot is improvement in water usage. Of those operators who reported water usage effectiveness (WUE), the average was 0.31 litre per kWh for 2023, well below the Climate Neutral Data Centre Pact (CNDCP) target of 0.4 l/kWh for water-stressed areas.

The industry is also advancing technologies such as liquid cooling and heat reuse to improve efficiency and reduce its environmental footprint. Currently, half of operators have residual heat coupling capability, with a further 38% expected in two years. Already, three quarters of operators have energy or environmental management systems in place. Energy access, skills gaps, and compliance frameworks need to be addressed The data centre industry also faces significant challenges, including power supply constraints, permitting delays, and a growing skills gap in technical fields. More than 75% of survey respondents consider access to power as the biggest challenge for the sector in the next three years, despite a willingness to invest in alternative solutions toaccess power. Energy costs are also a concern, as rising wholesale prices impact operators.

The additional responsibility of regulatory compliance was also significant, with more than a third (36%) citing it as a major challenge in the near future.

A major infrastructure shift is underway

Cisco has released a new global study revealing a major architectural shift underway across enterprise networks. As AI assistants, agents, and data-driven workloads reshape how work gets done, they're creating faster, more dynamic, more latency-sensitive, and more complex network traffic.

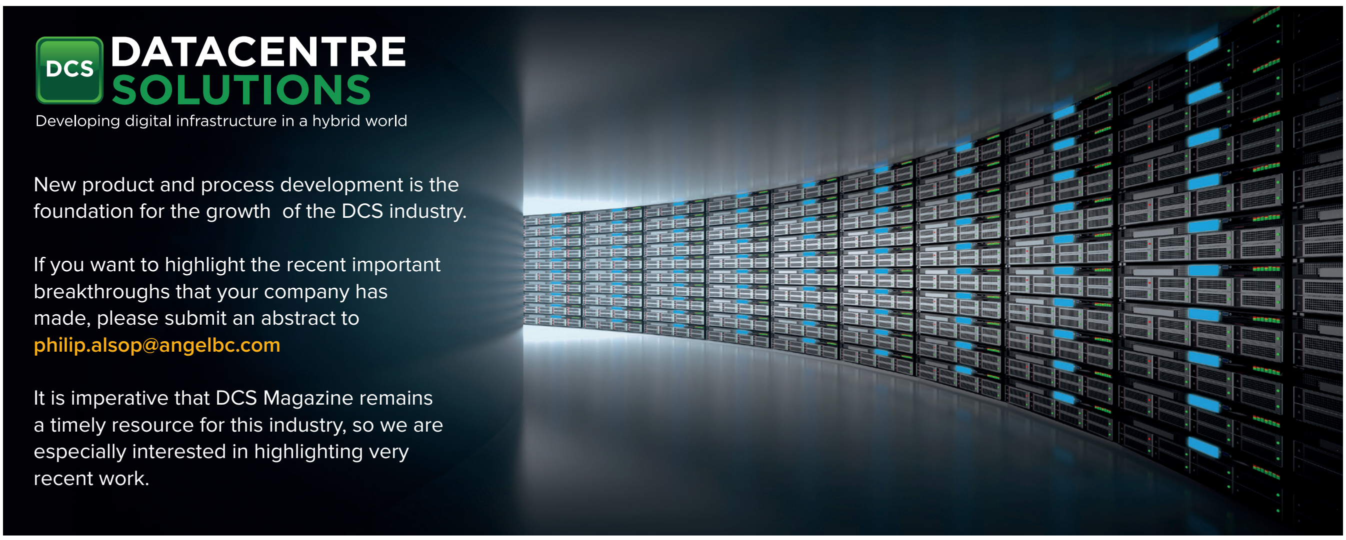
COMBINED with the ubiquity of connected devices, 24/7 uptime demands, and intensifying security threats, these shifts are driving infrastructure to adapt and evolve. The result: IT leaders are changing how they think about the network: what it is, what it enables, and how it protects the organization. The network they build today will decide the business they become tomorrow.

Six signals that an architectural shift is underway

- **The network has become a strategic priority:** 97% say a modernized network is critical to rolling out AI, IoT, and cloud. 91% of IT leaders plan to increase the share of their overall IT budget allocated to networking.
- **Secure networking is mission critical:** 98% say secure networking is important to their operations and growth; 61% say it's critical. 94% believe an improved network will enhance their cybersecurity posture.
- **AI intensifies demand for resilient networks:** 95% of IT leaders say a resilient network is critical, at a time when 77% faced major outages – driven largely by congestion, cyberattacks, and misconfigurations – adding up to $160B globally from just one severe disruption per business, per year.
- **Leaders look to AI to grow revenue:** 55% of IT leaders say a modernized network's greatest impact on revenue will come from deploying AI tools that automate and tailor customer journeys – enabling faster, more personalized experiences that can strengthen loyalty and drive growth.
- **AI is reshaping computing infrastructure:** 71% say their data centers can't yet meet today's AI demands, and 88% plan to expand capacity – on-prem, in the cloud, or both.
- **Leaders want to make networks smarter:** 98% say autonomous, AI-powered networks are essential to future growth – yet only 41% have deployed the intelligent capabilities – like segmentation, visibility, and control – to make their network adaptive.

"AI is changing everything — and infrastructure is at the heart of that reinvention. The network has powered every wave of digital transformation, accelerating the convergence of IoT, cloud, hybrid work, and defending against rising security threats," said Chintan Patel, CTO and Vice President Solutions Engineering, Cisco EMEA. "IT leaders know the network they build today will shape the business they become tomorrow. Those who act now will be the ones who lead in the AI era."

IT leaders are already delivering financial value from today's networks – largely by improving customer experiences (55%), boosting efficiency (52%), and enabling innovation (51%). But much of that value is at risk if it comes from infrastructure that hasn't been designed for AI or real-time scale. To unlock the full growth and savings they expect, leaders have identified critical gaps they must close: siloed or partially integrated systems (58%), incomplete deployments (51%), and reliance on manual oversight (48%). Smarter, more secure, more adaptive networks are the business case for investment. Nearly 9 in 10 (89%) say improved networks will directly drive revenue, and almost everyone (93%) expects meaningful cost savings – driven by smarter operations, fewer outages, and lower energy use.



Data centre industry faces dire skills shortage

As part of its campaign to address the ongoing skills shortage in the data centre and IT industry, HireHigher surveyed sixth-form students at its most recent Student Showcase. The event brought together leading data centre developers and operators with 90 sixth-form students from three London schools, making it the UK's largest student-facing digital infrastructure conference.

THE INITIATIVE is a crucial part of HireHigher's mission to improve careers advice in schools and partner with organisations to create real action within the industry to attract new talent. The students were asked to write down their biggest concerns about leaving the sixth form.

The research reveals significant worries about university acceptance, career choices, financial stability, and the fear of making wrong decisions.

1 in 5 of the students recorded being unsure about their career path as their chief concern, underscoring the need for stronger and perhaps broader career and employability guidance. Interestingly, 14% of the students' leading fear is that they will regret their decisions, with many writing about the fear of not making the most of their potential.

Addressing the findings, Adelle Desouza, founder of HireHigher, comments, "The transition from school to adult life is a huge step that many students find difficult, which is reflected in their shared concerns. To see fear rank so highly is a huge worry.

"I would like to see more working professionals mentoring young adults, going into schools and youth centres, talking to them about their options, and sharing their stories - warts and all, of how they got to where they are and what they do in their jobs."

:Most people don't have a smooth transition from school to adult life. Understanding this and knowing there are many options and ways into different industries will hopefully work to eradicate the fear gripping young people, at a time that should be premised on excitement for their future".

Research reveals reducing environmental impact among top concerns for data centre construction managers

Research from energy solutions specialist Aggreko has revealed that a third of data centre constructions managers in the UK and more than 40% in Ireland cite the reduction of their projects' environmental impact as a top concern. Data was collected from 495 construction managers working in the European data centre sector, including 104 from both the UK and Ireland combined.

This comes as the data centre industry continues to battle for capacity to meet an exponential increase in demand. According to Savills, there is an insufficient pipeline of data centre development planned through to the end of 2025, with the number of projects needing to increase by almost 2.5 times to meet demand.

Additionally, when asked whether sustainability was more important than it was three years ago, respondents to Aggreko's survey in Ireland valued it the most, with a net important score of 96%. Mirroring this, over 70% of respondents in the UK also said sustainability had grown as a priority.

The research highlighted legislation as the main driver for the use of greener technologies in the UK, whereas the need to lower carbon emissions ranked highest in Ireland.

However, more than two-thirds of UK respondents and four-fifths of those from Ireland agreed that 'knowledge of legislation at senior levels is not always implemented on site, which poses a risk to compliance when it comes to decarbonisation', indicating a level of disconnection between knowledge and implementation.

And when asked which greener technology they were likely to use, more than a third of UK respondents cited battery energy storage systems (BESS). A third of respondents from Ireland said future fuel such as hydrogen or biomethanol.

However, there remain various significant barriers to the uptake of greener technologies across Europe. In both the UK and Ireland, the cost of investing in which was highlighted as an issue for more than 40% of the market. Notably, a quarter of respondents from these two countries also said it was 'not easy' to access biofuels.

Speaking about the findings, Billy Durie, Global Sector Head for Data Centres at Aggreko, said: "It is not a surprise to us that data centre construction managers are finding it difficult to battle the challenges facing the industry. Combined with mounting pressure for more data centre space, it seems that we are currently operating in a perfect storm.

"For data centre construction managers active in the UK and Ireland, it is vital they work together with a trusted and reliable energy supplier that understands the industry's challenges. At Aggreko, we know that it's not as simple as taking the plunge on greener upgrades; there are various barriers that must be navigated, and managers need flexibility on their side to be able to respond to whatever challenges are thrown their way.

Data Centre Marketing Club to champion best practice

Senior leaders from the digital infrastructure sector have formed a first of its kind Data Centre Marketing Club - enabling PR, Marketing and Social Media professionals to collaborate, share knowledge, and champion branding, marketing and storytelling best practices.

CO-FOUNDED by Giuseppe Caltabiano, Senior Marketing Director, AVK; Andy Davis, Director, DataX Connect and host of the Inside Data Centre Podcast; Nicola Hayes, Chief Marketing Officer (CMO), Platform Markets Group; Adam Nethersole, Vice President (VP) Marketing, Kao Data; and Rory Flashman-Wells, Managing Director, Spa Communications Ltd, the open community aims to address the negative perception of data centres by improving marketing and communications about the industry's role in technological innovation and sustainability, and its position as a global platform for economic growth.

Further, by encouraging cross-industry learning and providing members with both the foundational tools and a forum to enhance their skillsets, the community plans to help marketers can better understand their strategic value to digital infrastructure organisations, and develop the confidence to create campaigns that deliver demonstrable outcomes for leadership teams.

On the 22nd May 2025, the Data Centre Marketing Club hosts its first, free-to-attend Masterclass event, 'Cutting Through the Noise', at legal firm Norton Rose Fullbright – exploring the critical role of brand in business growth, and how marketers can accelerate impact by delivering a joined-up approach to sales, marketing and communications strategies.

Open to marketing, PR and social media professionals across the industry, key sessions will include 'The ROI of Brand Building in B2B', led by Prof. Charles Graham of the Ehrenberg-Bass Institute; 'Building a standout brand in the data centre sector' featuring James Dunn, Co-Founder and Creative Director WeDoCo, and Giuseppe Caltabiano, Senior Marketing Director, AVK; and 'The ROI of Storytelling' by Tim Love, Founder, CFH London.

AI underdelivers at work

GoTo has released a new research report: The Pulse of Work in 2025: Trends, Truths, and the Practicality of AI.

THE REPORT summarises the findings of a survey of 2,500 global employees and IT leaders on AI use and sentiment, conducted in partnership with research firm Workplace Intelligence.

Among the study's key findings: despite widespread anticipation about AI's positive impact on workforce productivity, most employees feel they were overpromised on its potential. In fact, 62% believe AI has been significantly overhyped.

However, this is likely because employees aren't making the most of what these tools have to offer. The majority (86%) admit they're not using AI tools to their full potential, and 82% say they aren't very familiar with how AI can be used practically in their day-to-day work.

All told, employees estimate that they're spending 2.6 hours a day — or 13 hours per week — on tasks that could be handled by AI. This means that in the U.S. alone, businesses could be missing out on more than $2.9 trillion annually in greater efficiency.

"Employees are already using AI and are seeing clear productivity gains, yet despite these benefits, our latest research shows people still view AI as overhyped.

While many recognise its value, they don't yet see it as the revolutionary change they were promised. This gap likely exists because many workers admit they aren't realising AI's full potential or don't know how to apply it in practical ways," said Rich Veldran, CEO of GoTo.

Other key findings include:

- **AI is handling some tasks for employees —** just not the ones their bosses think: Instead of using AI to save themselves time in their day-to-day work, 54% of employees admit they've used it for sensitive tasks or high-stakes decision-making such as tasks requiring emotional intelligence (29%), tasks impacting safety (25%), and ethical or sensitive personnel actions (16%) — despite knowing they shouldn't. An alarming 77% of these workers also say they don't regret using AI for these tasks.
- **Another potential reason for AI's underuse —** employees don't trust the tools: 86% of employees aren't very confident in the accuracy and reliability of AI tools, and 76% say they often provide outputs that need to be refined or revised by users.
- **Smaller companies are falling behind: At the smallest companies –** those with 50 employees or less — just 59% of workers use AI, and 46% say they don't know how to use AI to save time or improve their work. At larger organisations, however, closer to 80% are using AI.

"Contrary to what you might think, it's not just older workers who are struggling to realise the benefits of AI tools," said Dan Schawbel, Managing Partner, Workplace Intelligence. "Younger workers also admit they're not using these tools to their full potential."

"In fact, 74% of Gen Z employees say they aren't very familiar with how to use AI practically in their day-to-day work. This highlights the importance of equipping all generations with the tools and education to use AI safely and effectively."

The research also describes solutions to help close the AI adoption gap:

- **Give employees the tools they want:** Employees say an AI virtual assistant (88%), AI tools that automate certain work tasks (86%), AI communication tools (83%), generative AI tools (81%), and an AI chat/messaging assistant to communicate with customers (73%), would be most valuable for them, but roughly only 4 out of 10 say their company offers these.
- **Improve policies and training to prevent AI misuse:** Just 45% of IT leaders say their company has an AI policy in place. Both employees (81%) and IT leaders (71%) believe AI tools need better instructions and guardrails for proper usage. 87% of employees also feel most workers are not being trained properly to use AI tools.
- **Be purposeful about AI implementation and ROI measurement:** At companies using AI, 21% of IT leaders admit their company is adopting AI or buying AI tools just because they think they should — not after careful consideration or with a clear plan in mind. What's more, nearly half (49%) of IT leaders say their company isn't measuring the ROI of AI tools very well.
- **Recognise that a small investment can have a major impact:** 77% of IT leaders say their company would only need to spend an extra $20/ month or less per employee on AI tools to save each employee an additional one hour a day in greater efficiency.
- **Help IT leaders understand the employee perspective:** The survey revealed that IT leaders and employees aren't always seeing eye-to-eye when it comes to AI use, practicality, reliability, and more. Companies that take steps to address these disconnects will be well-positioned to maximise the benefits of AI for their organisation.

Fire detection and suppression market is projected to cross $3 billion by 2034

The Data Center Fire Detection and Suppression Market is set to grow from its current market value of more than $1.4 Billion to over $3 Billion by 2034; as reported in the latest study by Global Market Insights, Inc.

THE RISING DEMAND for advanced fire safety solutions is largely fueled by the exponential growth of data centers worldwide, driven by the increasing adoption of cloud computing, edge computing, AI-powered technologies, and high-performance computing (HPC). As companies continue to scale up their data infrastructure to support massive data flows and low-latency services, ensuring comprehensive fire safety has become a top priority.

Modern data centers, especially hyperscale and colocation facilities, house mission-critical IT assets worth millions of dollars, making them vulnerable to fire hazards caused by electrical faults, overheating, or equipment failures. With downtime costs running into hundreds of thousands of dollars per minute, the need for reliable and intelligent fire detection and suppression systems has never been greater.

Additionally, stringent fire safety regulations and rising awareness about safeguarding sensitive data and equipment are pushing operators to integrate AI-based and IoT-enabled fire protection solutions, which offer real-time monitoring and faster response times. Increasing emphasis on business continuity, operational resilience, and protection against growing cyber-physical risks is further propelling the market forward.

The data center fire detection and suppression market is categorized into fire detection and fire suppression systems, where in 2024, the fire suppression segment captured a 50% market share, highlighting its critical role in safeguarding high-value assets from fire-related damages. Fire detection systems are indispensable for early-stage fire risk identification and efficient incident response. These systems comprise AI-powered smoke detectors, multi-sensor detection units, and aspirating smoke detection (ASD) systems, all designed to offer faster and more accurate detection capabilities. Cutting-edge technologies like ASD+ leverage dual-wavelength signal processing, enhancing their ability to differentiate between smoke and dust, thereby reducing false alarms and ensuring timely alerts for genuine threats.

Based on deployment, the data center fire detection and suppression market is split between room-level and building-level solutions, with room-level systems commanding a 61.5% share in 2024. Data center operators increasingly prefer room-level fire protection because it provides localized and targeted suppression, protecting individual data halls, server rooms, and high-density rack spaces without compromising entire facilities.

This approach involves the use of pre-action sprinklers, advanced gas-based suppression systems, and AI-integrated detection devices designed to respond swiftly within confined zones. Given the rapid rise of hyperscale, colocation, and enterprise data centers, room-level fire protection is seen as essential to prevent widespread outages and equipment loss in the event of a fire.

North America Data Center Fire Detection and Suppression Market is projected to generate USD 1 billion by 2034, retaining its dominant position globally. The region's market strength stems from the expanding footprint of complex data center infrastructure and a growing emphasis on implementing state-of-the-art fire safety technologies. In the U.S., continuous growth in cloud services, AI workloads, and data traffic is escalating the demand for next-gen fire detection and suppression systems that offer unmatched reliability and compliance with stringent safety standards. Source: https://www.gminsights.com/industry-analysis/data-center-fire-detection-and-suppression-market

Falling expectation among business leaders that AI will replace people

55% of businesses admit wrong decisions in making employees redundant when bringing AI into the workforce.

ANNUAL RESEARCH released by Orgvue, the organisational design and planning software platform, reveals that 39% of business leaders made employees redundant as a result of deploying AI. Of those, 55% admit they made wrong decisions about those redundancies.

Orgvue first conducted its international survey of 1,000 C-suite and senior decision makers at medium and large organisations in 2024. This year, the research highlights growing caution in deploying AI and acknowledgment that businesses need to reskill people to work with the technology.

Although the findings suggest leaders regret questionable redundancy decisions, fewer leaders are concerned that AI will replace people in their organisation (48% compared to 54% in 2024). Yet business leaders also report feeling less responsibility to protect their workforce from redundancies (62% compared to 70% in 2024), while 34% admit they have had employees quit as a direct result of AI.

Almost half (47%) say that employees using AI without proper controls is one of their biggest fears, such that 80% of business leaders plan to reskill employees to use AI effectively and 51% say they are introducing internal policies to inform how AI is used in the workplace. 51% of leaders also believe reskilling is strategically important in preparing their workforce for AI and 41% say they have increased their L&D budgets to ensure employees have the right training.

Oliver Shaw, CEO of Orgvue, commented: “While 2024 was the year of investment and optimism, businesses are learning the hard way that replacing people with AI without fully understanding the impact on their workforce can go badly wrong. We’re facing the worst global skills shortage in a generation and dismissing employees without a clear plan for workforce transformation is reckless. Some leaders are waking up to the fact that partnership between people and machines requires an intentional upskilling program if they’re to see the productivity gains that AI promises.”

Skills is a clear theme in this year’s research. More than a third (35%) of organisations acknowledge a lack of AI expertise as one of the biggest barriers to successful deployment. One in four (25%) admit they don’t know which roles can benefit most from AI and 30% don’t know which are most at risk from automation. As a result, 43% say they are working with third parties that specialise in AI to help prepare their workforce (up 6% from 2024).

Nevertheless, AI remains the dominant driver of workforce transformation, with 72% of leaders saying they believe it will remain so for the next three years (up 3% from 2024). Investment in AI also remains strong, with 2025 likely to see continued growth. Four in five (80%) of businesses that invested in AI in 2024 said they plan to increase their investments in 2025.

Similarly, 76% of business leaders are confident that their organisation will be taking full advantage of AI by the end of 2025. Yet this is in stark contrast to the 27% of leaders who admit they don’t have a clearly defined roadmap for AI, and the 38% that say they still don’t understand the impact that AI will have on their business.

Shaw concludes: “As in 2024, businesses remain confident that AI will solve their biggest business challenges and will define how they structure their organisation and workforce in the future. But our research suggests this confidence could be misplaced.

“While it’s encouraging to see investment in AI continue to grow, businesses need a better understanding of how the technology will change their workforce in the coming months and years. Questions remain unanswered over whether AI will yield enough return on investment in the near term to justify the costs associated with lost talent and downturn in productivity.”

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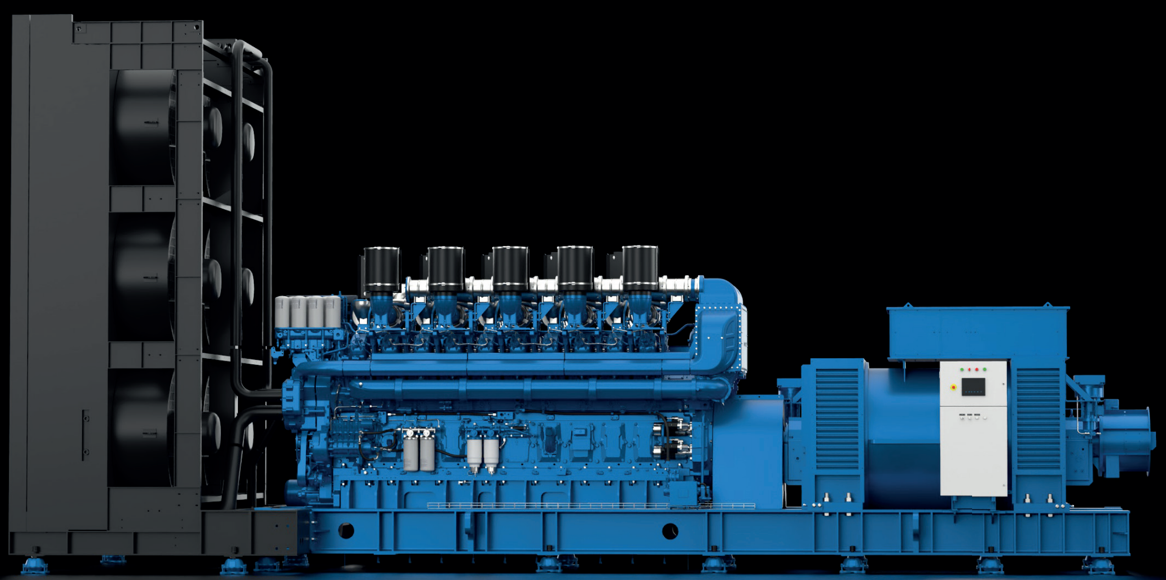

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DENALI Optical Fiber Platform

How a new, modular approach to fiber connectivity is solving the infrastructure challenges of hyperscale and AI networks.

BY MEREDITH KENDRICK, PRODUCT LINE MANAGER, AFL

SURGING global demand for high-speed, high-performance data center components continues to drive new and innovative approaches to modern fiber network design. With the rise of GPU-intensive AI clusters, hyperscale cloud environments, and increasingly complex architectures, the industry must quickly resolve evolving fiber deployment challenges by pivoting to ground-breaking, advanced connectivity platforms. In response to the shift in increasing speed and capacity expectations, AFL introduces the DENALI optical fiber platform, engineered for the next generation of fiber network performance.

This shift represents both a challenge and an opportunity for data center professionals. The challenge lies in rapidly scaling fiber capacity while maintaining operational efficiency and controlling costs. The opportunity comes from implementing next-generation fiber platforms that can grow with these demands while simplifying deployment and management.

Reality check for your DC infrastructure

AI models, data analytics, and cloud computing bring increasing workloads. To continue to operate at the highest performance levels, fiber networks must adapt to accommodate growing fiber counts while supporting higher bandwidth and lower latency compared to workloads seen just 12-18 months ago.

Moreover, system enhancements must satisfy the demand for fast, one-person deployment with smarter integration for minimal downtime and lower costs. While traditional platforms may struggle under such requirements, DENALI recognizes and overcomes these challenges.By leveraging a modular, high-density design built to enable rapid scalability, DENALI empowers seamless network growth in challenging environments supporting rising fiber densities – all while optimizing cable management in constrained spaces.

Key features: A modular solution for modern (and future) demands

Built around a modular, universal tray-based housing, DENALI addresses the core challenges facing data center professionals today: density, scalability, speed, and operational simplicity. The DENALI optical fiber platform features a modular, universal, tray-based system. This innovative design supports multiple cassette types (Fanout, Patch, and Splice) within a single housing footprint. Also, with support for up to 288 LC Duplex Ports (576 fibers) in just 4RU (2RU and 1RU available), DENALI simplifies high-density fiber management.

Key features include:

- **Universal Tray System**
  Single tray system accommodates all cassette sizes, simplifying ordering, installation, and future upgrades.
- **Integrated Rear Cable Management**
  Rear trunk routing ensures clean, performance-optimized installations.
- **Removable Front Patch Cord Clips**
  Improve accessibility and serviceability during routine maintenance.
- **Front or Rear Cassette Loading**
  Sliding trays lock in place, enabling easy access from either side (crucial for tight installation environments).
- **Magnetic Front Door**
  Enhances security and accessibility without cumbersome latches or hinges.

These customer-first design details contribute to faster installs, lower labor costs, and simplified network expansion. DENALI is engineered with faster go-live times and a stronger ROI on infrastructure builds in mind.

> “The market is undergoing a major shift, where AI-driven densification is transforming how data centers approach fiber deployment. The DENALI platform was developed in response to this shift – handling faster scaling, reduced downtime, and solid reliability that AI workloads actually need.”
>
> *Marc Bolick, President of Product Solutions, AFL*

Built to meet the demands of complex AI workloads

As AI workloads grow increasingly complex, bandwidth and data throughput demands continue to escalate. Each new generation of high-speed GPUs and interconnects pushes the limits of existing infrastructure, making fiber networks a critical, strategic asset. These networks now play a direct role in determining the performance of AI systems and cloud environments.

The DENALI platform was purpose-built to address these evolving challenges, supporting bandwidths ranging from 10G to 800G and beyond. This high-bandwidth capability ensures AI clusters can scale rapidly and efficiently, while DENALI's modular design empowers quicker expansions that significantly reduce build times. Reliability is another cornerstone of the platform. Even in high-power, GPU-intensive environments, DENALI maintains consistent performance, ensuring AI and cloud systems operate smoothly under pressure.

Global reach, local expertise

AFL's global presence and strong logistics capabilities ensure fast deployments with comprehensive support throughout every stage of the build process. DENALI allows data center operators and engineers to deploy a single fiber platform anywhere in the world, delivering consistent global performance backed by local compliance expertise. This seamless blend of global network integration and localized execution know-how makes DENALI the ideal choice for a wide range of builds, including geographically dispersed data centers and distributed architectures.

Grow your fiber ecosystem with confidence: Introducing the complete DENALI range

DENALI's modular design and fast, one-person installation extend to the platform's entire range and accessories, delivering reliable, dependable, plug-and play depth to support the advanced scaling needs of modern fiber network ecosystems. The comprehensive range of DENALI components is designed to efficiently speed up Moves, Adds, and Changes (MACs) in existing network infrastructures, while and accelerating time-to-revenue for new deployments.

The DENALI ecosystem includes:

- **DENALI Fiber Housing**
  As the foundational element of the platform, DENALI Housings support all cassette types across a universal tray system. With up to 576 fibers in just 4RU of space (2RU and 1RU housings are also available), DENALI Housings are tailor-made for high-density, GPU-driven environments.

- **DENALI MPO Fanout Cassettes**
  Offering high-performance plug-and-play connectivity, DENALI MPO Fanout Cassettes support up to 24 fibers per unit in Base-8 to Base-24 formats. Features include shuttered adapters and Polarity F mapping. Polarity is managed internally, allowing the same cassette orientation to be used at both ends of the link (ideal for quick, minimal-disruption deployment).

- **DENALI Patch Cassettes**
  Compatible with all DENALI Housings, DENALI Patch Cassettes facilitate high-density, efficient cross-connections across MPO and LC connector interfaces. A compact design enhances cable management in even the most fiber-dense environments.

- **DENALI Splice Cassettes**
  Built for fast, clean splicing, DENALI Splice Cassettes support both single fiber and ribbon splicing. Pre-routed pigtails reduce time and complexity during field termination.

- **DENALI Outback Clip Management (OCM) Bracket**
  At scale, cable management becomes a critical operational consideration. The OCM bracket organizes and secures high-fiber-count trunk cables. Mounted above or below a DENALI housing, the OCM bracket supports up to 2 Outback Clip-mounted trunks for a structured, strain-relieved setup.

- **DENALI MPO Trunk Assemblies**
  With AFL's MicroCore® reduced-diameter cable, DENALI MPO Trunk Assemblies provide improved bend tolerance, better airflow, and enhanced space efficiency. Available in Base-8 to Base-24 configurations with low-loss MPO connectors.

- **DENALI LC Patch Cord Assemblies**
  High-performance, compact LC Patch Cords feature AFL's Micro Dual-Link cable paired with a field-reversible Uniboot LC connector, supporting dense, flexible deployments with reduced congestion.

- **DENALI Accessories**
  From mounting brackets to conversion kits, the comprehensive range of DENALI accessories ensures deployment flexibility across racks and evolving, high-performance environments.

Simplify operations from order to install

From initial specification to final installation, large-scale data center efficiency requires thoughtful planning and the smart deployment of future-ready components. By reducing part numbers, DENALI streamlines the ordering process and simplifies inventory management. Fast, one-person setups also reduce labor demands, backed by DENALI's comprehensive range of accessories (e.g., cassettes, trunks) designed for seamless network integration. This cohesive approach keeps projects on schedule and aligned with long-term operational goals.

How project controls and data accuracy are transforming high-tech construction

In the age of Industry 4.0, also known as the Fourth Industrial Revolution, the construction sector is undergoing a paradigm shift. Technologies like Augmented Reality (AR), the Internet of Things (IoT), and Artificial Intelligence (AI) are no longer fringe concepts. They are fundamental tools in the evolution of complex infrastructure projects.

BY MATT TORMA, DIRECTOR OF MISSION CRITICAL AT XYZ REALITY

NOWHERE is this transformation more critical than in constructing mission-critical environments: data centres, airports, pharmaceutical facilities, and advanced manufacturing plants, where precision is more than a benchmark. It's a necessity.

At the heart of this transformation lies a quiet yet powerful enabler: project controls. These systems, which integrate real-time data with rigorous planning and forecasting, are now driving a new era of construction accuracy.

By aligning data with the physical realities of site conditions, often within millimetres, project controls are helping eliminate the need to re-do work, reduce delays, and ultimately, ensure that the most sensitive, high-spec environments are delivered to exacting standards.

Combining project controls software with advanced technology like AR, 4D models, and real-time data, a new level of accuracy and management has arrived – perfect for high-tech and mission-critical construction projects.

The high stakes of high-tech construction

Constructing mission-critical facilities is a discipline. Unlike commercial buildings, these environments demand adherence to design and an almost forensic level of precision in execution. Data centres, for instance, require intricate coordination of electrical, mechanical, and thermal systems. Even a few millimetres of misalignment in cable trays or HVAC ducting can cause cascading delays or compromise system performance.

Similarly, in airports, the integration of security systems, baggage handling, and passenger flow requires that every subsystem is correctly positioned and functioning at full capacity on day one. In pharmaceutical environments, misalignments or design deviations can lead to contamination risks, regulatory violations, and millions in lost productivity.

When tolerances are tight and timelines are tighter, traditional methods of measuring and monitoring progress are simply not enough. This is where real-time, day-by-day project controls, backed by accurate data and cutting-edge technologies, come into play.

From blueprints to digital twins

Modern project controls are far removed from their legacy counterparts. Rather than acting as post-facto reporting tools, today's systems are proactive, predictive, and deeply embedded into the construction lifecycle.

By harnessing real-time data from IoT sensors, drones, AR-based inspections, and Building Information Modelling (BIM), these controls create a digital twin of the construction environment - a real-time mirror of the physical world. This digital twin becomes the single source of truth. Deviations between the model and the physical build are detected early, flagged automatically, and corrected before they require costly rework.

With AR overlays, for example, a technician on site can compare planned MEP (mechanical, electrical, and plumbing) installations to what's actually been installed with sub-millimetre precision, allowing discrepancies to be addressed immediately rather than during a later quality control phase. It's a system that rewards precision and punishes guesswork, a necessary evolution in an industry where, according to some studies, rework can exceed 10% of total project costs.

Eliminating "clash" culture

Clash detection has long been a staple in BIM-enabled workflows, identifying points where different building systems physically interfere with one another in the model. But in traditional workflows, clashes are often identified too late, sometimes during commissioning when resolution is most expensive.

By combining project controls with live field data, clashes are no longer a retrospective discovery. They are pre-empted. A duct slightly off its intended path can be flagged before intersecting with a structural element. A wall that veers a few centimetres from its planned trajectory can be corrected before finishes are applied. This proactive approach is invaluable in mission-critical projects where downtime is not an option.

In addition, precision data allows teams to simulate and visualise installation sequences ahead of time, eliminating spatial conflicts before boots hit the ground. The result: faster installs, fewer delays, and a smoother path to commissioning.

The Industry 4.0 imperative

The adoption of AR, IoT, and AI in construction is more than a technological trend. It's a response to a growing need for certainty in an increasingly complex industry. As detailed in a recent University of Exeter study, Industry 4.0 technologies are making construction smarter, but also more integrated, sustainable, and resilient.

For example, IoT sensors provide a continuous feed of environmental and structural data, helping identify micro-shifts in building elements that may not be visible to the naked eye. AI models analyse these inputs to detect patterns, forecast potential issues, and recommend proactive interventions. Meanwhile, AR enables workers to overlay design models onto the real-world environment, visualising micro-shifts in building elements that may not be immediately visible. This is particularly critical in high-density installations where coordination between trades is essential and where a mistake in the sequence can have exponential consequences.

These technologies thrive when powered by accurate, contextualised data and that's precisely what robust project controls deliver. Without a united framework to manage, interpret, and act upon this data, the promise of Industry 4.0 risks becoming fragmented or underutilised.

The data-driven jobsite

Tomorrow's jobsite will be more than a place of materials and machinery. It will be a data environment. Every element of the build, from foundation layout to final commissioning, is now measurable, traceable, and optimisable. Project controls enable this by creating a feedback loop between design intent, construction reality, and operational performance.

This feedback loop is particularly vital in mission-critical builds. For instance, if an anchor point for a server rack in a data centre is installed a few millimetres off, it could impact airflow, affect server performance, or complicate future maintenance. Project teams can ensure "right first time" outcomes across thousands of such installation points with millimetre-accurate layout tools and automated verification processes. Over time, this precision translates into reduced change orders, shorter punch lists, and fewer commissioning delays. More importantly, it builds confidence among stakeholders, clients, contractors, and end-users alike that the facility will perform as designed from day one.

Building a culture of precision

While technology enables precision, culture sustains it. For project controls to be effective, they must be embraced not just by planners and executives, but by tradespeople, site managers, and subcontractors. This requires training, collaboration, and above all, a shift in mindset, from blame culture to positive action.

Leaders in the field are increasingly recognising that investing in data accuracy and process integrity upstream can pay dividends downstream. A millimetre of misalignment caught today can save thousands tomorrow, preventing costly rework and avoiding project delays. When precision becomes part of the project DNA, errors aren't just caught; they're avoided altogether.

The future is accurate

As the built environment becomes more complex, the margin for error shrinks. In mission-critical construction, this margin is often zero. Project controls, powered by real-time, millimetre-accurate data, are the scaffolding on which this new standard of precision is built.
From digital twins to AI-driven forecasting, from AR-enabled inspections to IoT-integrated feedback loops, the tools are here. They are redefining what's possible in high-stakes construction. But the true revolution lies not in the technology itself, but in how it's used: to prevent rather than react, to align rather than approximate, and to build not just better, but smarter.

In this era of Industry 4.0, accuracy is more than the goal. It's the foundation.

The rise of green data centres:
Scotland's opportunity to be a global leader

In an increasingly climate-conscious world, it's no surprise the green data centre movement is gaining momentum worldwide.

BY DAVID FERGUSON, CYBER DEVELOPMENT LEAD AND HEAD OF DATA AT SCOTLANDIS

AT A TIME when AI development and adoption is driving power and cooling costs through the roof, this shift is driven by the desire to manage data more sustainably and improve energy efficiency. It's a sector that shows real potential and could bring large scale benefits to Scotland.

However, international competition for data centre services is high. And, if we're to stand out in a crowded market, we need to start leading, rather than following, and we need to do that quickly.

When it comes to Scotland, we have a natural edge. The country's climate, geography and impressive renewable energy capacity position it as a serious contender for being a global leader in green data centres.

In fact, back in 2008, ScotlandIS launched the Naturally Cool group – an initiative to attract mega data centre operators to Scotland and support local operators in hosting data closer to end users. So, it's something businesses across the country have been shouting about for quite some time.

More and more, we're seeing new technologies to reduce heat and energy consumption in data centres or store energy more sustainably, like the Coalburn 1 project on the M74. And with the Scottish Government's 'green datacentres and digital connectivity vision and action plan', we're starting to see a bit of traction build.

While these developments are a step in the right direction, they aren't enough on their own. Yes, they contribute to the overall picture, especially when it comes to creating more efficient data

centres, but the real challenge lies in long term consistency.

Unless industry and government can coordinate their approach to overcoming key challenges – like infrastructure and skills – we risk falling behind as a nation. The global race is on, and if we want to lead, we need to be thinking beyond short term fixes and start focusing on how we can align our efforts across the entire country.

The infrastructure gap

Home to Edinburgh, the UK's leading AI city, and Glasgow, a region renowned for its innovation and talent; Scotland has a lot more to offer than just its convenient geography. But, to put it plainly, Scotland's current infrastructure is insufficient for future demands. Without the right compute capacity, supporting energy infrastructure and reliable connectivity networks, we simply cannot meet the projected digital demands of UK-based businesses – let alone attract additional foreign investment.

A disconnect like this can have significant knock-on consequences. In a global economy, organisations building advanced AI models or processing huge volumes of data will go where the compute is available, affordable and scalable. If they face barriers here - like high energy costs, insufficient capacity or unreliable access - they'll take their investment and innovation elsewhere.

With countries like Sweden, Iceland, Norway and Germany already making waves in the green data centre space, it's something the nation can ill afford.

Scotland's 97% renewable energy is impressive but translating that clean energy into more competitive pricing for large-scale data users remains a challenge. At the end of the day, businesses have a bottom line and cost plays a major part. Especially when operating in such an economically turbulent and uncertain time.

It's important for the UK, as a whole, to look at our energy pricing. Because without energy affordability, Scotland risks becoming a less attractive destination, despite its environmental credentials.

Data centre operators and digital-first businesses won't wait for us to catch up - they'll build elsewhere, where energy is cheaper and infrastructure is ready to scale. And that goes for every sector, not just data centres.

To stay ahead, we must offer end-to-end support for businesses to ensure projects are started and finished in Scotland. That means building a robust data ecosystem with enough capacity to serve UK businesses while also providing the scalability to attract inward investment.

Infrastructure needs skills, skills need infrastructure

Infrastructure is vital, but it's not enough to build it and hope they will come. Without the right skills and talent, we won't be able to use the infrastructure effectively. We need to be building it hand-in-hand to ensure whatever infrastructure is being created can be operated, optimised and innovated upon right here in Scotland.

If we develop infrastructure without the talent to operate it, businesses will look to recruit overseas. On the other hand, if we focus on talent but don't have the infrastructure to fulfil the requirements they need, we won't attract inward investment. And with a lack of employment opportunities, talent will look to move abroad for work.

We can't afford to prioritise one over the other. We need a coordinated approach – developing compute, storage, energy and talent simultaneously.

What action does Scotland need to take

In the long term, Scotland could reap huge economic benefits if we can realise the potential of green data centres. But the long term won't exist unless we take action now. If we don't address the skills and infrastructure barriers that are holding us back from being a global leader in green data centres, we will miss our opportunity.

The world is heading towards a sustainable future and it's keep up or be left behind. We have a natural competitive edge, but to get ahead, we must align our efforts across the entire nation – from government down. Only then can we make sure global businesses see Scotland as a trusted, sustainable, reliable and affordable location to store their data.

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- Questions prepared and shared in advance

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jackie.cannon@angelbc.com

ANGEL EVENTS

Can we power AI-driven data centres without derailing Net Zero progress?

Lately, one of the major questions that is being asked is - can we accurately forecast tomorrow's electricity demand? Especially in light of the increases driven by AI-powered data centres. But the more pressing question is - how do we meet that soaring demand without sacrificing the hard-won progress we've made on the road to Net Zero?

BY JAVIER CAVADA, PRESIDENT & CEO EMEA, MITSUBISHI POWER

DATA CENTRES, particularly hyperscale and AI-led facilities, are fast becoming some of the most power-hungry components of the digital economy. According to the International Energy Agency (IEA), global data-centre electricity use is set to more than double by 2030, reaching around 945 TWh, roughly equivalent to Japan's current total consumption.

In Europe, data-centre capacity is expected to grow from around 10 GW today to 35 GW by the end of the decade, according to McKinsey. In the UK alone, data centres currently account for 2.5% of national electricity use. That figure is expected to more than double within the same timeframe.

This rapid growth is already straining infrastructure. Roughly half of Europe's transmission lines are more than 40 years old. Many parts of the grid are in urgent need of reinforcement to handle the rising peaks, not only from data centres but also from electric vehicles and other electrified sectors.

Predicting future electricity needs has always been part science, part art, traditionally based on stable patterns like growing factory output, seasonal heating and cooling demands, and gradual population increases. But AI-powered data centres don't follow those patterns.

Support for the digital economy

AI workloads can be unpredictable because one moment power use is steady, and the next an AI training run sends demand soaring by tens of megawatts.

These sudden spikes — called "burst" loads—are hard to predict and put big pressure on the grid. If the grid can't respond instantly, the risk of a blackout grows.

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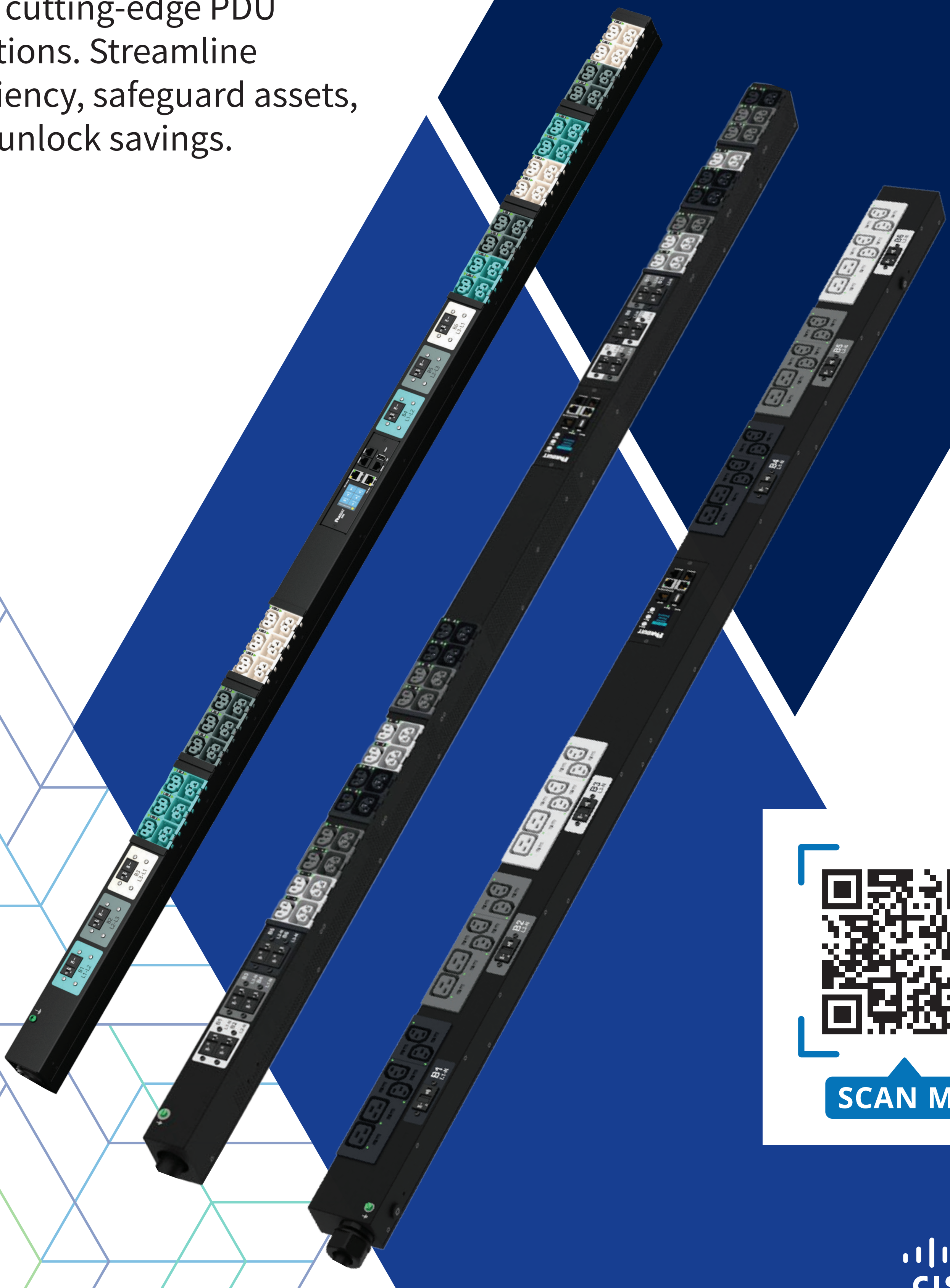

SCAN ME

CISCO Compatible

Adding to this challenge, data centres often cluster in the same places such as Amsterdam, Frankfurt, London or Slough, which puts extra strain on local networks. In many areas, grid operators have paused new connections until upgrades are made. That has forced developers to find quick fixes like on-site gas turbines, batteries, or diesel, just to keep running.

These stop-gap solutions may keep the lights on, but they are insufficient long term. To support the growing digital economy without compromising reliability or climate goals, Europe's energy mix must evolve. Wind and solar will remain the backbone of the energy transition, but their inherent variability makes them unsuitable as the sole power source for critical infrastructure, especially for facilities that cannot tolerate even a millisecond of downtime.

Powerful, green solutions

This is where gas turbines, particularly those capable of running on gas blended with hydrogen, can play a key bridging role. They ramp up quickly, provide essential grid stability services, and can significantly reduce emissions. Blending hydrogen into existing turbines offers a glimpse of what's possible while volumes of hydrogen increase to enable the full transition to 100% hydrogen combustion and a ramping up of renewables in the power mix.

The latest turbines, such as the ones we have at Mitsubishi Power, can already operate on 30% hydrogen and 70% gas, and are progressing towards 100% hydrogen firing capability. In the UK, for example, the Saltend H2H project on the Humber is getting ready to blend hydrogen with natural gas to produce low-carbon power for both industrial and digital users. In Scotland, Peterhead Power Station is preparing a combination of hydrogen-ready turbines with carbon capture to remove 1.5 million tonnes of CO_2 annually.

Of course, powering the future of AI and cloud computing isn't just about generation. Cooling systems, backup power, and energy management all add complexity and further pressure on energy systems. That is why we are seeing developments in modular, end-to-end solutions tailored specifically for hyperscale and colocation data centres. These include integrated systems for power generation, liquid cooling, backup solutions, and digital energy management, designed to support both rapid deployment and long-term sustainability. This comprehensive approach helps data-centre operators move faster, cut emissions, and prepare for a hydrogen-powered future, offering a robust pathway to meet both uptime and Net Zero goals.

Changes needed at policy level

More than just a trend, the rise of AI and digital infrastructure marks a structural shift in how we use electricity. That means energy policy must shift too. We need clear, long-term signals in capacity markets that reward flexibility, as well as incentives for plants that can ramp quickly and run on low-carbon or hydrogen-ready fuels.

Regulators should also prioritise grid access for projects that combine low-carbon generation, energy storage, and smart controls. This will ensure data centres can continue to scale without compromising the broader reliability of the grid.

Europe's Green Industrial Plan has laid important groundwork, but more needs to be done. Streamlining interconnection procedures and prioritising critical digital infrastructure will be key to meeting both economic and environmental objectives.

If data centres are to meet the demands of AI and digitalisation, they must look beyond traditional power purchase agreements.

By integrating on-site generation, battery storage, and intelligent energy management systems, they can hedge against grid delays, enhance resilience, and deliver the uptime their customers demand in our electrified future.

Of course, powering the future of AI and cloud computing isn't just about generation. Cooling systems, backup power, and energy management all add complexity and further pressure on energy systems. That is why we are seeing developments in modular, end-to-end solutions tailored specifically for hyperscale and colocation data centres

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DCS AWARDS 2025

Celebrating 15 Years of Industry Excellence

On 22 May 2025, Angel Business Communications proudly hosted the 15th annual DCS Awards at the Leonardo Royal Hotel London St Paul's. The evening brought together over 300 senior professionals from across the data centre industry for a night of recognition, networking, and celebration, honouring those who continue to drive innovation and excellence in the sector.

This year's awards reflected a particularly buoyant period for the data centre industry, as it undergoes rapid transformation driven by surging demand for AI, cloud computing, and digital services across all sectors. The DCS Awards recognised outstanding achievements in sustainability, facilities innovation, ICT advancements, and customer service.

DCS PROJECT AWARDS

NEW BUILD (GREENFIELD OR BROWNFIELD) PROJECT OF THE YEAR
Sponsored by H2H Communications
WINNER – Vantage Data Centers

DATA CENTRE SUSTAINABILITY PROJECT OF THE YEAR
Sponsored by Centiel
WINNER – EkkoSense and CBRE

DATA CENTRE CONSOLIDATION / UPGRADE PROJECT OF THE YEAR
WINNER – Schneider Electric and APT

CLOUD PROJECT OF THE YEAR
Sponsored by Huawei Digital Power Technologies Co., Ltd
WINNER – EnerSys

DCS INNOVATION AWARDS

DATA CENTRE FACILITIES INNOVATION AWARDS

DATA CENTRE POWER INNOVATION OF THE YEAR
WINNER – Huawei Digital Power Technologies Co., Ltd.

DATA CENTRE POWER DISTRIBUTION UNIT OF THE YEAR
WINNER – Panduit

DATA CENTRE COOLING INNOVATION OF THE YEAR
WINNER – VERTIV

DATA CENTRE SUSTAINABILITY INNOVATION OF THE YEAR
WINNER – Clean Energy Capital

DATA CENTRE INTELLIGENT AUTOMATION / MANAGEMENT INNOVATION OF THE YEAR
WINNER – RiT Tech

DATA CENTRE SAFETY & SECURITY INNOVATION OF THE YEAR
WINNER – Pure Data Centres Group

DCIM / DC MANAGEMENT INNOVATION OF THE YEAR
WINNER – RiT Tech

EDGE INNOVATION OF THE YEAR
Sponsored by Pulsant
WINNER – StorMagic

DATA CENTRE ICT INNOVATION AWARDS

DATA CENTRE ICT STORAGE INNOVATION OF THE YEAR
WINNER – Geyser Data

DATA CENTRE ICT SECURITY INNOVATION OF THE YEAR
WINNER – Hornetsecurity

DATA CENTRE ICT NETWORKING INNOVATION OF THE YEAR
WINNER – Bridgeworks

DATA CENTRE ICT AUTOMATION / ORCHESTRATION INNOVATION OF THE YEAR
WINNER – Türk Telekom

DATA CENTRE ANALYTICS / OBSERVABILITY INNOVATION OF THE YEAR
WINNER – Gapit Nordics AS

COLOCATION EXCELLENCE AWARDS

MANAGED SERVICES / COLOCATION PROJECT OF THE YEAR
WINNER – atNorth

BEST COLOCATION PROVIDER SUSTAINABILITY PROJECT OF THE YEAR
WINNER – nLighten

BEST COLOCATION PROVIDER SUSTAINABILITY INNOVATION OF THE YEAR
Sponsored by Huawei Digital Power Technologies Co., Ltd
WINNER – Therma Loop AB

DATA CENTRE HOSTING/ COLOCATION SUPPLIER OF THE YEAR
WINNER – Conapto

DCS COMPANY AWARDS

DATA CENTRE MANAGED SERVICES VENDOR OF THE YEAR
WINNER – OryxAlign

DATA CENTRE FACILITIES VENDOR OF THE YEAR
WINNER – Huawei Digital Power Technologies Co., Ltd.

DATA CENTRE ICT SYSTEMS VENDOR OF THE YEAR
WINNER – Hubnetix

OUTSTANDING CONTRIBUTION TO SUSTAINABILITY AND EFFICIENCY AWARD
Sponsored by OryxAlign
WINNER – Sudlows

CUSTOMER-CENTRIC SERVICE EXCELLENCE AWARD
WINNER – Telehouse

EXCELLENCE IN DATA CENTRE SERVICES AWARD
WINNER – Critical Facilities Solutions

OUTSTANDING CONTRIBUTION TO DIVERSITY, EQUALITY AND SOCIAL RESPONSIBILITY AWARD
WINNER – Kao Data

OUTSTANDING CONTRIBUTION TO SKILLS AND TRAINING AWARD
WINNER – CBRE

BEST OVERALL DATA CENTRE OF THE YEAR
Sponsored by OryxAlign
WINNER – Green Mountain

DCS INDIVIDUAL AWARDS

DATA CENTRE INDUSTRY CONTRIBUTION OF THE YEAR
WINNER – Andy Hirst - Sudlows

EMERGING TALENT AWARD
WINNER – Dena Rahman - Pure Data Centres

EDITOR'S CHOICE AWARD
Sustained Innovation in the Data Centre
centiel continuous power availability
Schneider Electric

The DCS Awards team would like to thank all those who participated this year, especially our sponsors including: Headline sponsors Huawei, Silver sponsors Hyperview, and Category sponsors included Centiel, H2H Communications, Oryx Align Ltd, and Pulsant. We'd also like to thank our supporters The Data Centre Alliance.

Under the hood:

How two-phase, direct-to-chip liquid cooling works

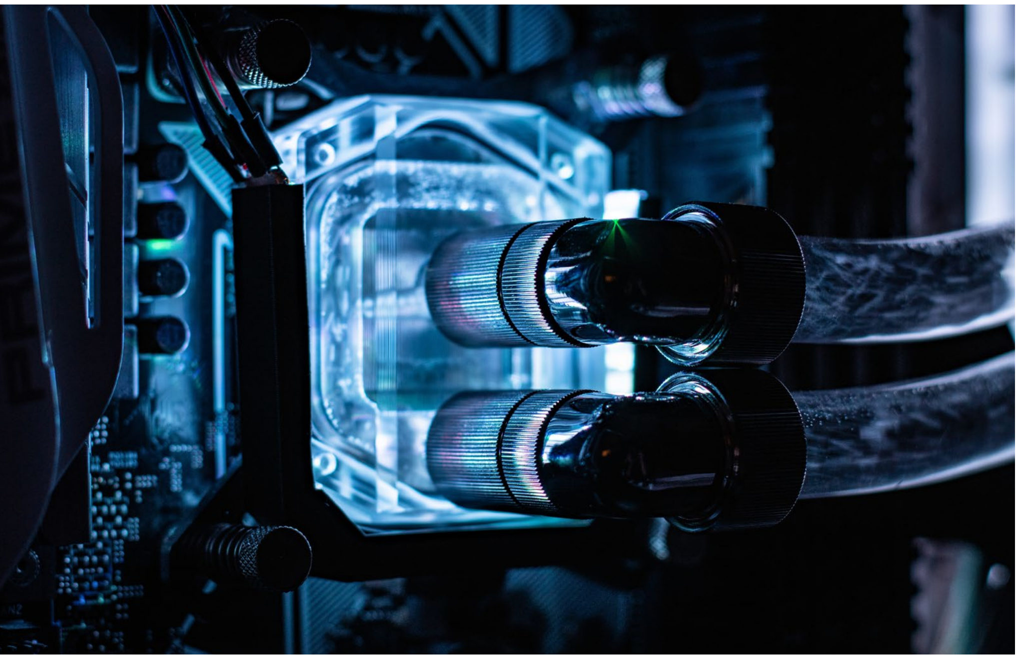
As next-generation AI superchips approach 2,800 watts and beyond, the industry is going to see the wide-spread emergence of 50-100 megawatt AI factories that are powerful enough to handle AI workloads – but hotter than ever. Liquid cooling, or a combination of liquid cooling and air cooling, will be required to keep these facilities cool, with several different types of liquid cooling data centers hyperscalers can choose from.

BY SHAHAR BELKIN, CHIEF EVANGELIST AT ZUTACORE

There are two main categories of liquid cooling. The most commonly used method is known as Direct-to-chip cooling, which uses small, compact cold plates filled with liquid that is either water, a water glycol mix, or a heat transfer fluid. These cold plates are placed directly on top of the GPU or CPU, in place of traditional heat sink.

The other category of liquid cooling is known as Immersion cooling. This method of cooling uses large heavy tanks filled with either an oily liquid or a low boiling point, dielectric fluid. The servers and other IT equipment are literally 'immersed' directly into this liquid, hence the name.

It is widely agreed in the industry that direct-to-chip liquid cooling is the most effective technology for scaling in the future and being able to handle the added heat from AI factories. Once a data center makes that decision to go direct-to-chip, it's an easy decision on whether to use a single-phase or two-phase approach. Single-phase uses water or a glycol water mix, which presents a risk of catastrophic damage in the event of leaks and hyperscale don't want this risk. Two phase, direct-to-chip, on the other hand, uses no water in the cold plate, and leverages a heat transfer fluid that is safe to IT equipment.



How direct-to-chip liquid cooling works

As you can see in the image below, two-phase, direct-to-chip liquid cooling consists of a simple cold plate design that sits on top of the CPU or GPU. Using a cold plate means that you don't have to change the server and rack design. It only involves replacing the air based heat sink with a cold plate.

Inside the cold plate is a pool of heat transfer fluid and when heat is generated from the chip, the liquid begins to boil and the heat turns into vapor. The liquid always remains at a consistent boiling temperature, regardless of chip power, ensuring predictable thermal performance, allowing this cooling method to be scalable and able to cool hotter and hotter chips as they become available.

As can be seen in the image below, this process is similar to the way boiling water keeps the bottom of a pot at 100°C, only in this case at a lower temperature. As the liquid inside the cold plate boils, the liquid in the cold plate never passes the boiling temp. This makes this technique highly scalable for cooling higher power "hotter" chips of the future.

To see an instructional video showing how the two-phase pool boiling approach works graphically, click this link.

So What Happens to the Bubbles?
While pool boiling has always been the holy-grail of liquid cooling, up until now, no one has been able to figure out how to prevent the boiling bubbles from causing hot spots. To overcome this, ZutaCore developed a structure of fins and wick with a material that is porous like a sponge located between the fins (see image below). The liquid is soaked inside the wick and the bubbles occur between the wick, liquid and the fins. This method prevents bubbles from being formed on the surface and maintains uniform cooling.

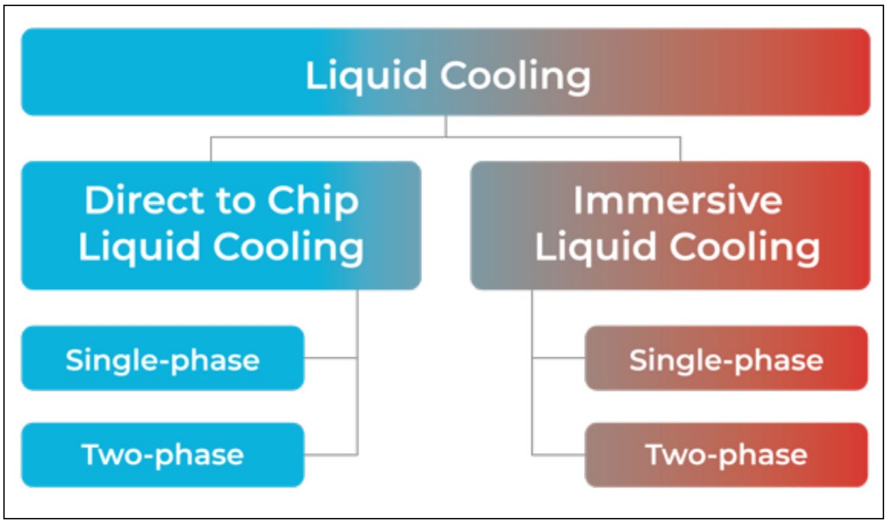
Looking at the Whole System: Cold Plate, Manifolds, Heat Rejection Units
While two-phase, direct-to-chip cold plates sit on top of the processors, the system also features manifolds that act as the distribution of the liquid and vapor to the system in a closed loop system that sends heat into a heat rejection unit. Together, these components deliver one of the most cost-effective, sustainable cooling mechanisms that is also easy to install and requires low to zero maintenance over time.

Repurposes heat into valuable, reusable energy

Another advantage of two-phase, direct-to-chip liquid cooling is that as all the heat is now transferred into vapor in a tube, the heat can be transferred to be re-used for other purposes such as heating the data center or even nearby buildings and neighborhoods. This delivers a level of sustainability that is simply not possible with alternative cooling solutions.

A New data center architecture for AI factories

Munters is a global leader in energy-efficient air treatment and climate solutions and they recently announced a partnership with ZutaCore to deliver a



Two main categories of liquid cooling are 'immersion' or 'direct-to-chip' and each has a single-phase or two-phase option.

new waterless data center architecture capable of sustainably cooling the massive power densities being driven by AI accelerators.

This solution is designed to liquid cool 100s of Megawatts of AI Workloads. Munters has integrated the HyperCool closed-loop system at the server and rack level with the Munters closed-loop system that provides the ability to remove heat from the data center without a facility water loop. Leveraging a two-phase, liquid cooling process, this system features condensers on the roof that condense the two phase to liquid using dry coolers and ambient air, the liquid is brought down on demand to cool the GPUs and CPUs by gravity.

The heat is removed outside the facility or can be reused for other applications, such as heating adjacent facilities or harvesting energy for reuse and further reducing PUEs.

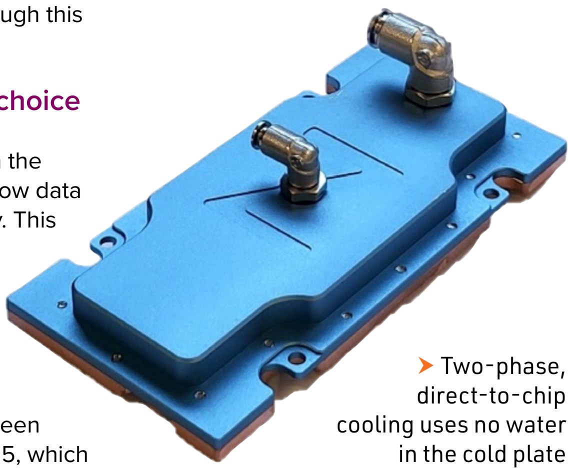
To see a video that walks through this new architecture, click here.

How PUE impacts your choice of liquid cooling

PUE is a widely used metric in the industry that helps measure how data centers are using their energy. This metric is a ratio between the total energy amount a facility consumes and the energy specifically used by the IT equipment.

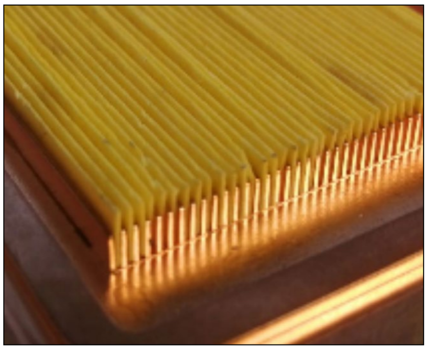
The industry as a whole has been pretty much stuck at around 1.5, which means that 1/3 of data center power is being used for cooling, lighting, and other systems. That means that if an AI factory is pumping in 15 megawatts, only 10 megawatts is going to compute and 5 megawatts is going to overhead including what is cooling that compute.

This number is only going to get more important with the transition to 100 megawatt AI factories, which is why countries such as those in Europe are starting to institute new regulations requiring data centers to measure and report their PUEs in an effort to reduce their environmental impact. In fact, all European data centers larger than 500kW will soon be required to report factors such as floor area, installed power, data volumes, energy consumption, PUE, temperature set points, waste heat utilization, water usage, and use of renewable energy. This information will then be used to provide a basis for transparent and



Two-phase, direct-to-chip cooling uses no water in the cold plate

➤ It does not matter if you turn the heat up 3X on a ZutaCore cold plate because the liquid will always stay at boiling temperature, requiring no new equipment or infrastructure change



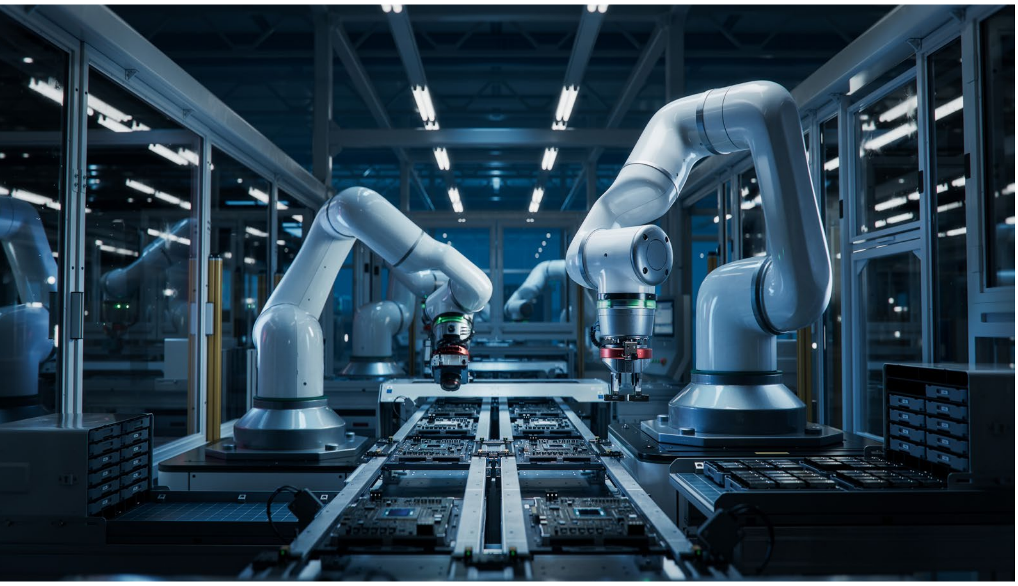
➤ Hot spots are eliminated through novel use of wicks and fins

evidence-based planning and decision making by member states and the Commission and assess certain key elements of a sustainable data center.

Key takeaways on two-phase, direct-to-chip liquid cooling

Below are just some of the advantages that companies can benefit from when using two-phase, direct-to-chip cooling.

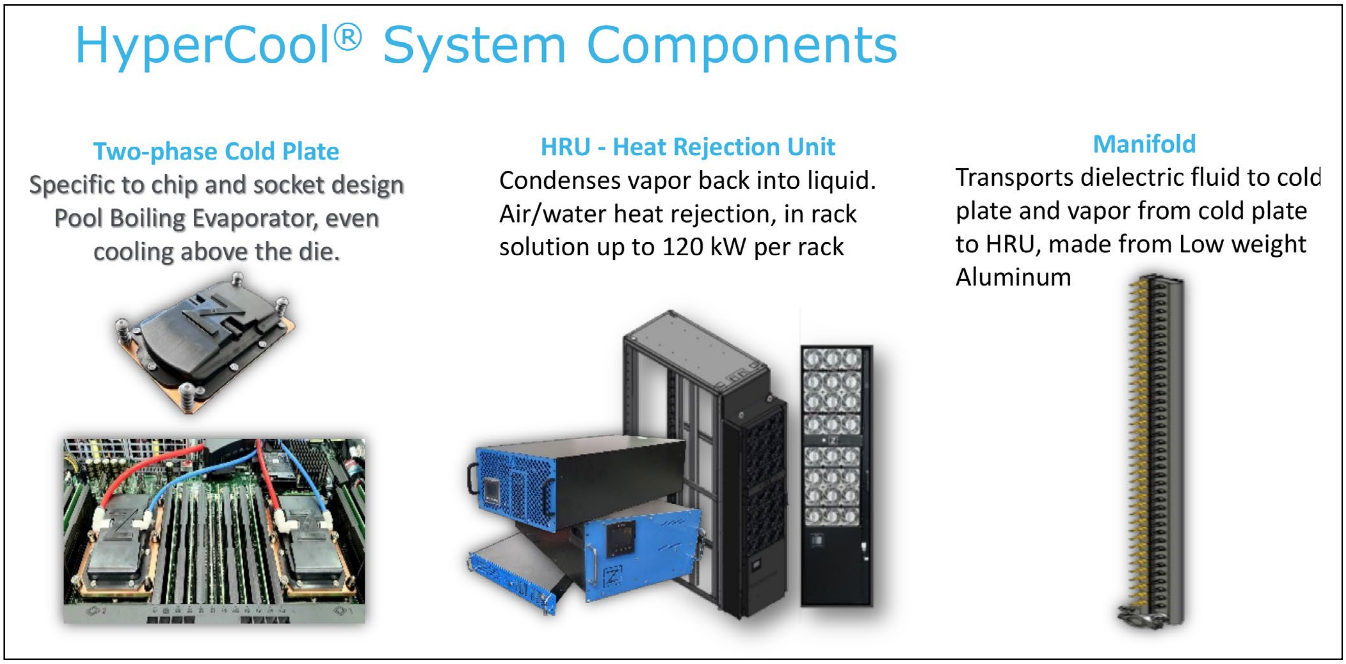
- **Eliminates the Massive Amount of Water Required to Cool GPUs and CPUs.** A 100-megawatt data center can use approximately 1.1 million gallons of water every day. Two-phase, direct-to-chip liquid cooling technology reduces data center water consumption in several ways. First, the cold plates do not use water at all. The dual phase pool boiling approach uses a heat transfer fluid to evacuate the heat from the chips via liquid to vapor phase change. This system can utilize liquid to air heat exchange, liquid to liquid (using a primary water loop if available), or even a thermosyphon approach that would eliminate massive amounts of data center water use altogether.
- **High Thermal Design Power (TDP)** Supports 2800W and above TDP in a compact and environmentally friendly, scalable design.
- **100% Heat Reuse –** Provides constant and high output water temperature (70 °C) and 30-40% less energy for heat reuse applications.
- **Superior Power Usage Effectiveness –** Achieves as low as 1.04 PUE, delivering 10-20% better energy efficiency with dynamic cooling, smaller pumps, and no performance degradation over time.
- **Higher Server Densification –** Up to 50% less space is used in an air-assisted liquid-cooled datacenter and up to 75% less space than immersion cooling.
- **Continuous Operation in Case of Dielectric Fluid Leak –** Non-conductive, non-corrosive dielectric fluid ensures no damage and continuous operation in case of a leak, compared to water-based technologies, where leaks could cause significant server damage and outages.
- **Lowest Maintenance –** The quality and amount of the dielectric liquid in HyperCool stay the same after many years of usage. Since no water is used, the system is free from corrosion and water-related threats such as mold.
- **Ideal for Chiplet Architectures –** Unique design automatically maintains different temperatures at different locations which is key for AI servers leveraging the latest chiplet architectures.



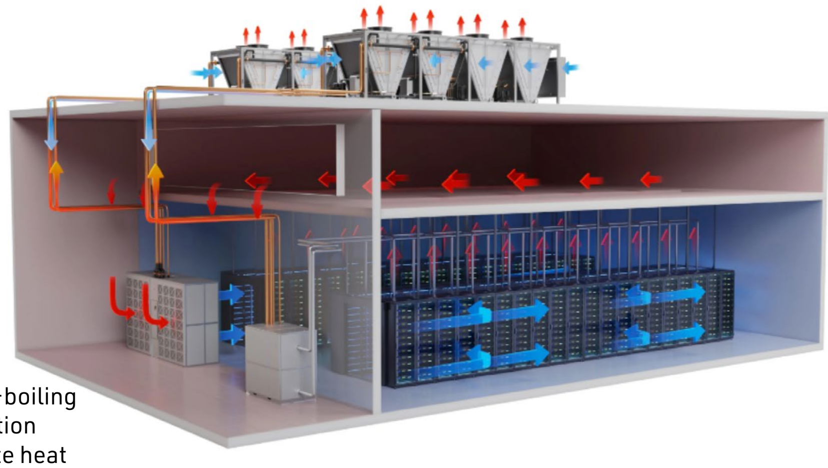
The future: taking water out of liquid cooling

There is no question that the future of data centers and AI factories will require some level of liquid cooling to bring the heat down.

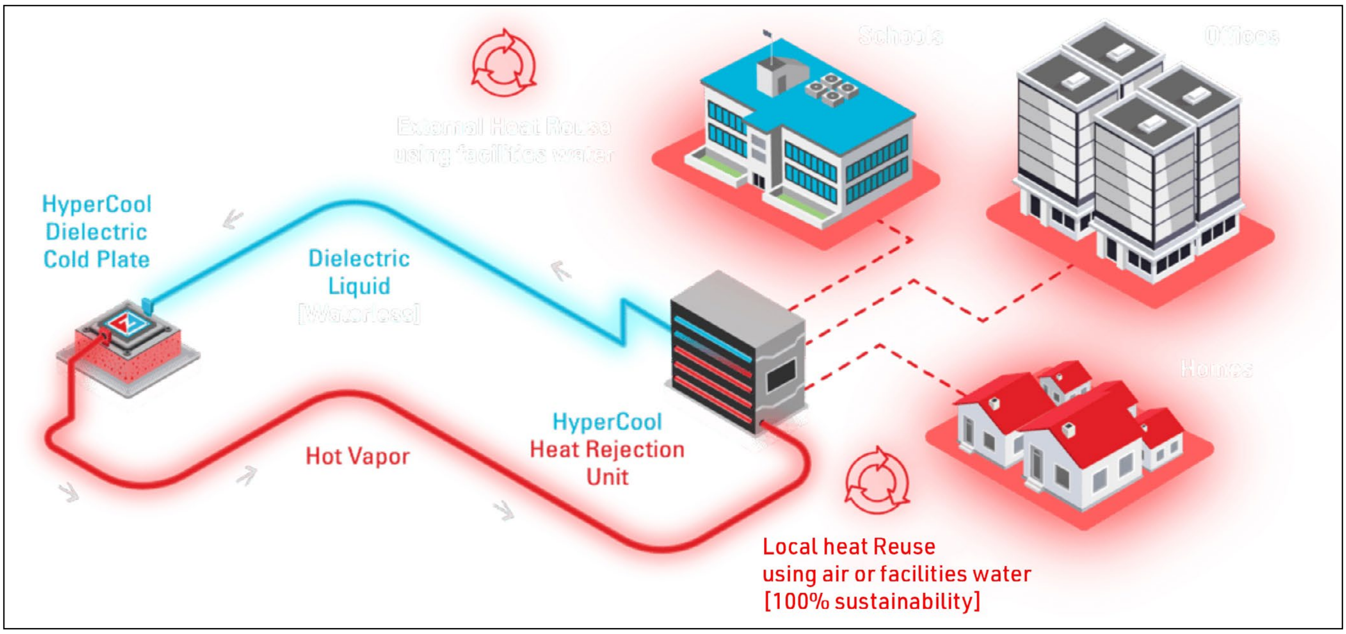
Two-phase, direct-to chip liquid cooling uses dielectric liquid, which not only eliminates the risk of water leakage, but also saves this scarce resource for what it's really needed for



globally, which is drinking! And when compared to liquid cooling solutions on the market, this method of cooling delivers unprecedented benefits in cost, sustainability and scalability. It is for these reasons why the ecosystem is growing so fast around this technology and this is what will drive true AI sustainability to the masses in the future.



➤ Right: Heat is transported from ZutaCore pool-boiling cold plates directly to Munters SyCool heat rejection condensers, eliminating the need for intermediate heat exchange devices.



➤ Two-phase, direct-to-chip cooling allows heat to be reused for other purposes

Data centre design:
five steps to a sustainable future

The European AI market is predicted to grow by 15.9% over the next 5 years. This is creating a considerable demand for infrastructure to train and deploy the next generation of AI technologies. As a result, data centre operators are renovating and upgrading their infrastructure significantly, and many are taking steps to build new facilities altogether.

BY FRANCESCO FONTANA, ENTERPRISE MARKETING AND ALLIANCES DIRECTOR AT ARUBA S.P.A

IN FACT, the number of hyperscalers is expected to grow by 50% from 2024 to 2030.

While operators can update or develop infrastructure, those building new campuses must be aware of the environmental implications and keep sustainability at the forefront of their plans. By considering the following steps, operators can strike a balance between operational reliability and sustainability, while designing a data centre that can keep up with constantly changing technologies such as AI.

The challenge

Recent shifts in customer needs have shaped new considerations for data centre design and development, and the rapid growth of technologies like AI has been a major driver. Customers increasingly demand flexible and scalable colocation facilities that can support new applications, expand cloud adoption, and accommodate data growth and digital transformation. The explosion of AI has also increased the demand for high-power computing, raising concerns about the quantity of energy that data centres need to run on, leading to increased scrutiny over energy and water use.

When building a smart data centre, or enhancing an existing one, operators should consider the following steps to ensure their facility is both sustainable and addressing customers' ever-changing needs.

Five steps to a future-proof data centre:

- **Prioritise scalability and flexibility**
  Customers are progressively demanding flexible and scalable colocation solutions to allow for business growth. This creates a need for stable and resilient IT infrastructures that consistently deliver and deploy everyday workloads at scale. Meeting this demand means operators must prioritise equipping their data

centres with ample rack space to give customers the flexibility to scale IT resources up or down where necessary. It's also important for operators to provide customised solutions such as private cages or cross-connectors to give customers the freedom to choose features for their facility to suit their individual needs.

This approach allows customers to adjust their infrastructure as needs evolve, while playing a crucial role in supporting new applications, expanding cloud adoption, and accommodating data growth and digital transformation.

- **Adopt a green-by-design approach to sustainability**
  Environmental responsibility is no longer optional, it must be embedded into every aspect of a data centre's design, construction, and operation. A green-by-design approach means considering sustainability from the outset, not treating it as a bolt-on solution once the facility is operational.

  Operators are now investing heavily in renewable energy infrastructure as part of their long-term strategy. This includes deploying on-site photovoltaic systems, integrating hydroelectric power where geography permits, and forming energy supply agreements that guarantee clean, low-impact energy sources. By producing or directly sourcing renewable energy, operators can significantly reduce the carbon intensity of their operations and move closer to climate-neutral goals.

  Across the sector, many operators are crucially aligning with industry-wide sustainability pledges, such as Climate Neutral Data Centre Pact and European Green Digital Coalition. These commitments, backed by independently audited frameworks, ensure measurable progress in sustainability efforts.

  Ultimately, a green-by-design philosophy is the most effective way to manage AI's energy appetite while ensuring long-term environmental resilience and operational efficiency.

- **Choose the right location**
  Location is another factor that can contribute to increased sustainability for data centres. For example, regional cloud providers are equipped with more flexible offerings and highly customised services, which is increasingly important among businesses requiring greater flexibility and customisable cloud services to adapt to their individual needs.

  Italy is emerging as a prime region for European operators to set up their data centres, as the Italian cloud market is set to rise to 15 billion euros by 2025. The Italian region has experienced significant investments from leading hyperscalers in recent years, representing an opportunity to accelerate the development of cloud and data centre offerings in the area.

- **Engineer for high-density workloads**
  The growth of AI and high-performance computing (HPC) is rapidly changing infrastructure requirements. These workloads demand high processing intensity and generate far more heat than traditional applications, putting pressure on conventional cooling and power systems. Operators must ensure their facilities can accommodate this new level of density and performance.

  To meet this demand, operators must design facilities with high-density computing in mind from the outset. This includes adopting advanced ooling methods such as liquid cooling, which offers superior heat transfer capabilities compared o traditional air-cooling systems. By supporting power densities beyond 20 kW per rack, liquid cooling enables data centres to host next-generation GPUs and other AI-ready hardware efficiently and sustainably.

  Planning for high-density workloads also means rethinking layout, airflow, and power distribution strategies to ensure performance does not come at the cost of energy efficiency or operational stability. Data centres that can support these evolving needs will be best positioned to serve organisations investing in AI, machine learning, and other compute-heavy innovations – both now and in the future.

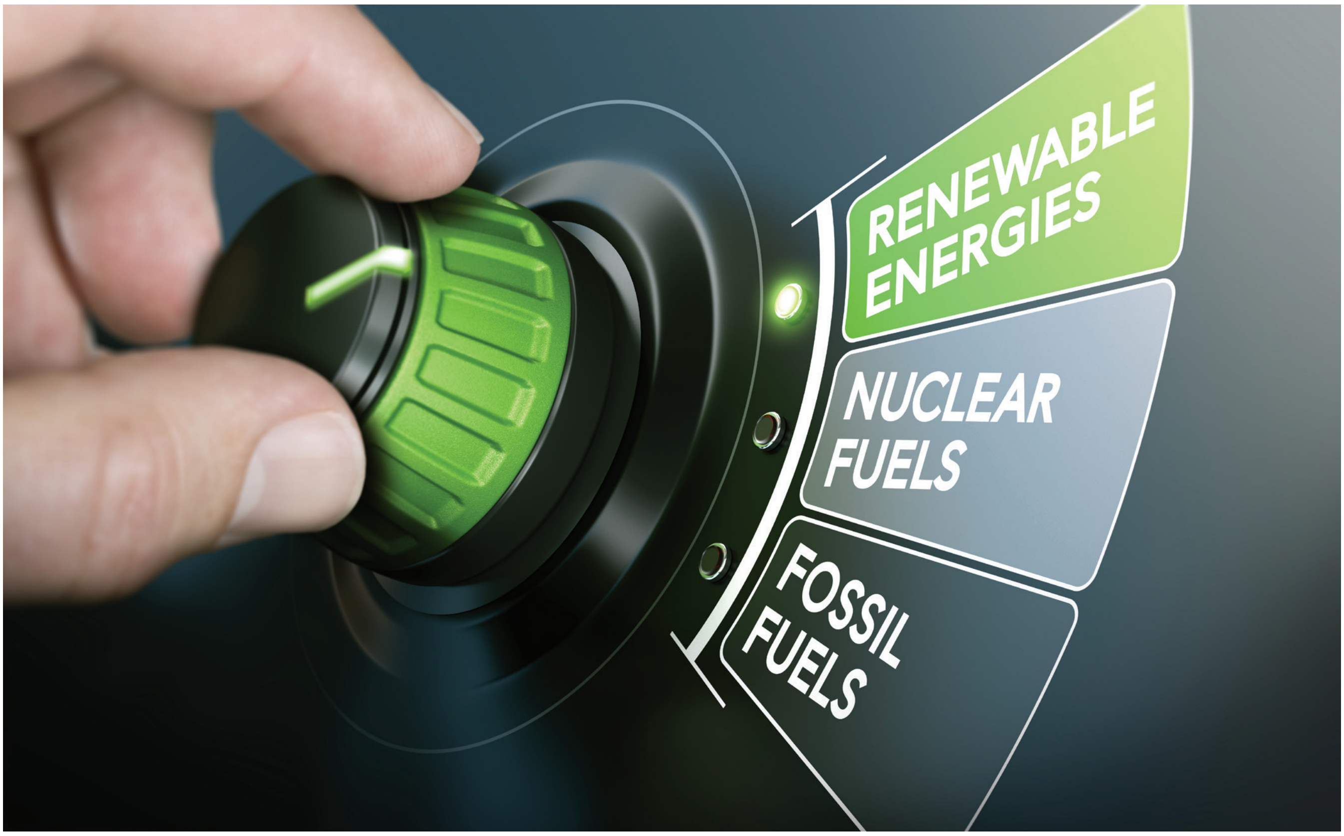
- **Ensure regulatory compliance**
  Finally, operators must adhere to regulatory frameworks and green certifications to ensure the legal compliance of their data centre. Laws such as the General Data Protection Regulation (GDPR) require operators to implement strong encryption, secure data storage, and strict access controls to protect user data and privacy compliance. Leadership in Energy and Environmental Design (LEED) ensures operators are energy efficient, reducing the environmental impact of their data centres.

  These standards enhance credibility, improve energy efficiency, and reduce carbon footprints, contributing to overall sustainability. By adhering to such laws, operators can enhance the security of their data centres, cut operational costs, and prepare for a sustainable future.

A sustainable future

The future of data centres will be defined by their ability to scale sustainably while supporting the next generation of digital technologies. As AI adoption accelerates and customer demands evolve, operators must take a long-term approach to infrastructure design, placing energy efficiency, environmental responsibility, and adaptability at the heart of their strategy. This means investing in renewable energy sources such as hydropower and solar, which can significantly reduce carbon emissions and help operators meet climate goals. It also requires deploying advanced cooling techniques – like liquid cooling – that are specifically designed to handle the increased thermal load of high-density computing environments, particularly those driven by AI and HPC workloads.

Looking ahead, emerging technologies offer even more potential for sustainable progress. Agentic AI systems will give data centres the ability to autonomously monitor and optimise their own resource consumption, while developments in quantum computing promise new efficiencies in both processing and energy use. Together, these innovations signal a future where performance and sustainability are no longer competing priorities, but interconnected drivers of progress.



Digital growth in APAC outpaces green policy

The Asia-Pacific region is fast becoming the engine room of the global digital economy. It hosts approximately 1,811 data centers to date, forecasted to grow by 17% across the region over the next five years.

BY AYMERIC DE CONDÉ, HEAD OF APAC AT STX GROUP

IT IS BEING driven by surging demand for cloud services, artificial intelligence, e-commerce and mobile connectivity across a rapidly digitizing population.

But with data centers accounting for just over 1% of global energy consumption, the tension between digital transformation in the region and climate responsibilities is acute, and a policy reckoning is underway.

China is emerging as a case study in how to confront this dilemma head-on. In July 2024, President Xi Jinping set in motion bold green targets for its data centers to lower the average Power Usage Effectiveness (PUE) by 2025, increase the use of renewable energy by 10% each year and enforce new standards for energy and water efficiency (State Council of China). The impact of these goals has yet to be reported on, but their strategic ambition is clear: improve operational efficiency and align with global benchmarks to improve competitiveness in a global market that increasingly values sustainability.

The same cannot be said for all APAC countries, however. Regulatory lag is evident as private-sector infrastructure growth far outstrips policy. This is often because most power markets are government-led, which creates bureaucratic hurdles and slows the decision-making processes.

This leads to policies often being reactive with governments imposing resource usage requirements as grid stresses emerge, not beforehand. Another challenge is that many APAC grids are dominated by government-led or monopolistic utilities, leading to centralized planning but sometimes slow adaptation and investment cycles.

Malaysia, for example, the region's fastest-growing data center market, is attracting heavy investment thanks to its geography and power capacity. Yet this rapid expansion risks outpacing the nation's environmental safeguards, particularly around energy diversification and water management. Indonesia has also emerged as a key destination for hyperscale facilities but lacks a unified regulatory framework to ensure energy-efficiency is optimized. India has shown encouraging signs of progress, with several states introducing incentives for green data center design, but national-level policy cohesion remains patchy.

Without a deliberate effort to strengthen regional standards, the long-term consequences may include stranded assets, increased stress on energy sources and emissions trajectories diverging enormously from national climate pledges.

Without a deliberate effort to strengthen regional standards, the long-term consequences may include stranded assets, increased stress on energy sources and emissions trajectories diverging enormously from national climate pledges

Lessons from Europe and the push for policy alignment

A useful comparison lies in how Europe has approached the same challenge. The EU has adopted a top-down, standardized regulatory model that includes the EU Code of Conduct for Data Centres and public-private initiatives like the Climate Neutral Data Centre Pact. These initiatives set explicit energy efficiency requirements, carbon reduction targets and transparency obligations.

Europe recognized early on that digitization and the growth of data infrastructure would have massive implications for energy use and carbon emissions. Countries like Sweden, the Netherlands, and Germany began noticing that data centers were consuming outsized portions of their national electricity — particularly given Europe's relatively high energy costs. This caused grid stress in certain regions and public backlash over land use, water consumption, and electricity prioritization. In tandem, it was setting itself bold legally binding climate commitments, subjecting all industries to rigorous emissions reductions. Europe now treats data center sustainability as an extension of climate law, with data centers defined as "essential services" subject to environmental performance benchmarks. Europe and the US also operate far more interconnected, mature, and market-driven grids. By contrast, APAC economies tend to use a more decentralized and incentive-led approach, driven by investor pressure, which is harder to enforce and results in inconsistencies. Power grids in APAC are often fragmented, less integrated, and in many countries, largely isolated from one another. There is limited cross-border electricity trade, and regional interconnections (like the ASEAN Power Grid) are still in early stages. Europe's grid is highly integrated, allowing for significant cross-border electricity flows, which helps balance supply and demand and supports large-scale renewable integration. Though more difficult without the centralized governance system that Europe has, synchronization across the APAC region and shared modelling will lead to much greater efficiencies.

Closing the policy gap

Across the region, there's growing recognition that if data centers are allowed to become energy sinks without policy safeguards, they could undermine national climate goals. If managed wisely, however, they could become powerful drivers of clean energy deployment and technological innovation. Thankfully, momentum is building. Singapore, for instance, has begun issuing conditional approvals for new data centers based on their environmental performance, while Thailand and Japan are gradually aligning national strategies to support greener digital infrastructure.

By setting out clear policy frameworks and incentivizing data center innovation— such as AI-optimized cooling systems or modular, low-carbon design – APAC could set a new global benchmark for sustainable digital infrastructure. This would not only future-proof the region's tech economies but also strengthen their hand in global climate negotiations and ESG-conscious supply chains. Get this right, and Asia could lead the world in building a digital economy fit for a net-zero future. Get it wrong, and we will see crucial environmental targets missed at a massive cost for the region's economy and - most importantly - for the planet.

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ANGEL EVENTS

Cooling the heat:

Practical strategies for data centre disputes

Data centres are the backbone of the digital economy, supporting everything from cloud services to critical infrastructure. When problems arise, the impact can cascade far beyond the immediate parties, disrupting entire ecosystems. These can result in claims above $10 million for direct and consequential damages.

BY JOYCE FONG, COUNSEL, AND BRYAN TAN, PARTNER, AT REED SMITH

WITH global data centre capex expected to surge from $434 billion in 2024 to $1.1 trillion by 2029, the scale and stakes are only growing. Disputes are inevitable, but with the right strategies in place from the outset, their impact can be managed, and there are practical ways to anticipate and navigate disputes in the data centre space.

Due diligence: Whom are you contracting with?

At risk of stating the obvious, remember to conduct adequate counterparty due diligence before signing the contract. Operators should ensure that customers are financially sound and compliant with the applicable regulations, particularly in respect of their data. Similarly, customers must check the operators' track record and capital strength to honour long-term commitments and fund emergency fixes without delay, especially when dealing with smaller or regional providers or where subcontracting chains are opaque.

Due diligence: What regulations apply?

Regulatory due diligence is just as crucial, especially given the increasingly complex regulatory frameworks in countries such as China, Russia, India and Indonesia. Businesses should map out the compliance landscapes in their home jurisdiction and every location where data will be stored or processed. This facilitates compliance with data localisation laws and cross-border transfer restrictions, and assesses the risk of extraterritorial enforcement such as under the European Union's GDPR or the U.S. CLOUD Act.

Contract: Is it comprehensive and clear?

Ensure that your contracts anticipate common failure points and allocate risks clearly between the parties. Contracts should clearly stipulate how performance is measured, what counts as a breach, what grace periods or remedies apply, and how parties are to escalate any issues.

Common flashpoints for service level agreements (SLAs) include:

- **Fire risks:** Some SLAs cap operators' liability for fire incidents, given the significant risk of fire arising from the use of lithium-ion batteries in uninterruptible power supply systems. Alternatively, SLAs may stipulate liquidated damages in the event of a fire.
- **Fluctuating energy costs:** Consider expressly permitting price revision or renegotiation if energy costs swing beyond pre-agreed parameters. This mitigates the impact of wild fluctuations in energy costs, which are largely out of the operators' control. Where non-green energy is used, consider also the rising cost of obtaining carbon credits.
- **Changing regulatory regime:** Evolving regulatory frameworks, for example those relating to fire safety and cybersecurity, could expose operators to significant unexpected costs. SLAs should clearly indicate whether such costs can be passed on to customers.

In addition to contractual allocation of risks, the flashpoints above can be mitigated by third-party resources such as insurance, bank guarantees, fire suppression systems and power hedging contracts.

Contract: Are the dispute resolution provisions fit for purpose?

Do not ignore dispute resolution provisions when negotiating the contract as they can make or break a case. Instead, consider the following:

- **Confidentiality:** Should disputes be resolved in a public or private forum? Operators may wish to keep details of outages confidential to avoid eroding customer confidence. Customers, on the other hand, may wish to rely on public pressure to ensure that the operators take swift action to rectify any deficiencies.

- **Compatibility:** Where there is a complex contractual web involving multiple parties along a supply chain, the dispute resolution provisions in the various contracts should be streamlined to enhance the efficacy of any dispute resolution process.
- **Enforceability:** Where are your counterparty's assets? Asset location is a significant factor in determining whether to provide for court litigation or arbitration, and where such proceedings should take place.

When problems arise, what are your rights, remedies and obligations?

Common breach triggers in SLAs include excessive downtime, failure to meet physical or cybersecurity standards, delays in critical migrations and failure to comply with data localisation requirements.

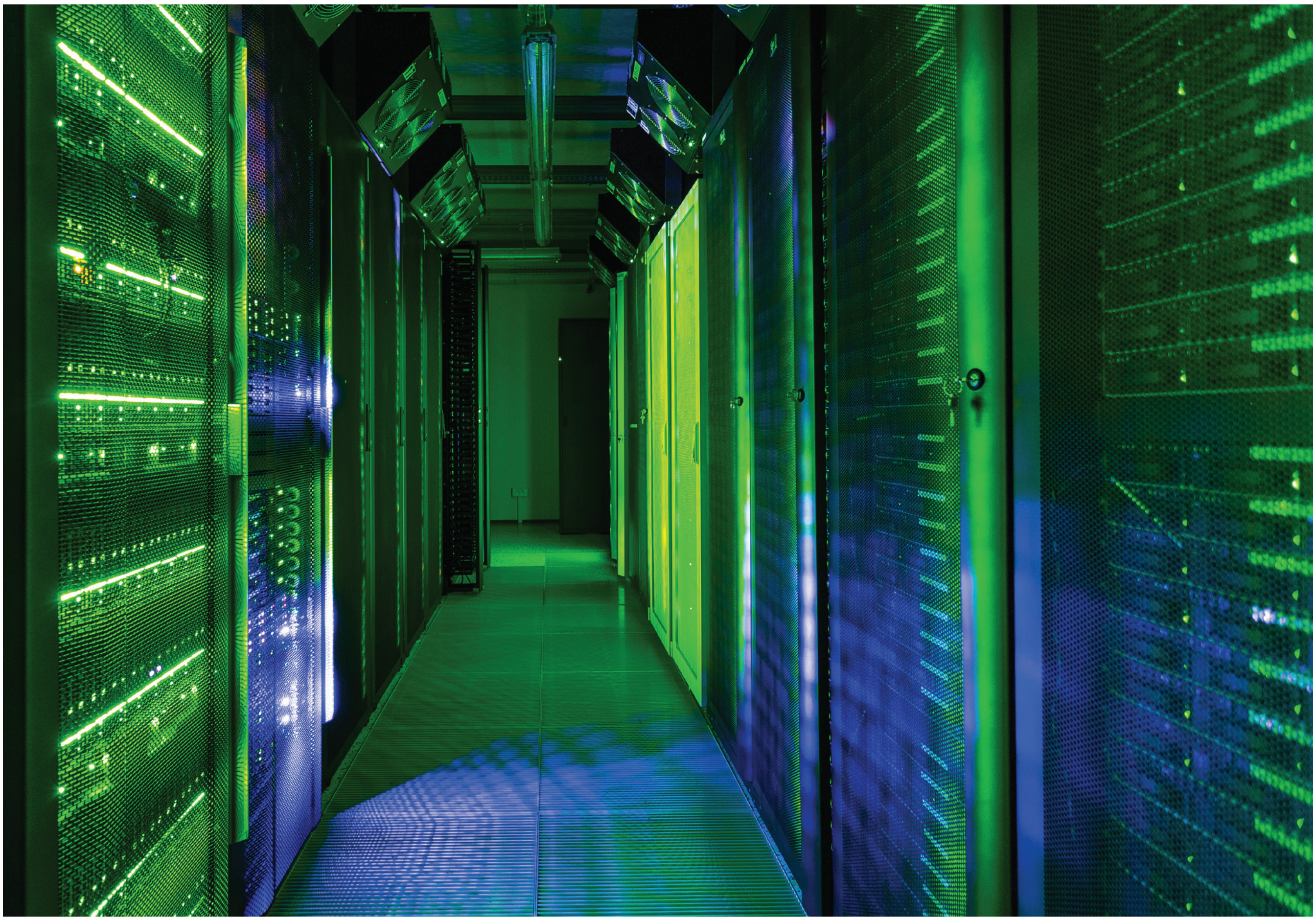
The following are relevant when breaches occur:

- **Who?** Both sides need to be clear on who needs to continue doing what, notwithstanding the dispute, to avoid falling afoul of the contract. Contractual obligations generally continue to run unless there has been a very serious breach.
- **What?** Actively preserve all evidence relating to the breach. Server logs, monitoring data, service alerts and internal communications can be vital in establishing what happened and when. Also, avoid unnecessary paper trails that might be disclosable.
- **Where?** The governing law and jurisdiction specified in the contract dictates how and where the dispute unfolds. This can have a huge impact on costs, timelines and available remedies.
- **When?** Does the contract require the innocent party to notify the other party of the breach within a certain time? The notifying party must observe any notification requirements closely.
- **How?** Similarly, does the contract require parties to attempt to resolve their differences amicably before commencing formal proceedings? While a failure to observe such stipulations may save time in the short term, it risks lengthy and costly satellite litigation.

Looking ahead

As digital infrastructure expands, so too does the risk and complexity of associated disputes. Regardless of where you are in the supply chain, smart planning around risk and resolution is essential. Get it right, and you stay ahead of disruption. Get it wrong, and a small glitch can snowball into a full-scale gridlock.

Where there is a complex contractual web involving multiple parties along a supply chain, the dispute resolution provisions in the various contracts should be streamlined to enhance the efficacy of any dispute resolution process



How to power the future economy

The data center industry's power and sustainability challenges cannot be addressed without deep partnership between all stakeholders.

BY TINBOAT ARSLANOUK, CHIEF BUSINESS OFFICER – INTERNATIONAL, KHAZNA DATA CENTERS

THE DATA CENTER INDUSTRY experienced significant growth in 2024 – largely fueled by the rise of AI, cloud computing and IoT applications. And electricity consumption is projected to double from 2023 to 2028, growing at a CAGR of 19.5%.

While there is some correlation between these growth figures, there's no doubting that the data center industry is responsible for part of the increased demand. Therefore, with data storage demand continuing to grow exponentially, it's vital that the industry, in collaboration with its stakeholders, moves quickly to embrace more sustainable processes and identify power bottlenecks. This will maintain AI's upward trajectory and the business it facilitates.

Factoring AI growth into ESG and innovation planning

Most are in no doubt that the growth of AI is placing considerable pressure on national ESG strategies. As a result, data centers are increasingly being expected to do more with less – provide more computing power while using less energy and shrinking their carbon footprint.

As an example, the EU's Revised Energy Efficiency Directive 2024 requires mandatory reporting on PUE, renewable energy, waste heat, and other factors from 2024. Facilities over 1MW in size, are being asked to undertake feasibility studies on waste, heat, and energy efficiency measures and are being encouraged to deploy best energy practices. Meanwhile in the US, data centers over 1,000 square feet are asked to report PUE and those with a PUE over 1.5 must reduce it by 10% per year until it is below 1.5.

At the same time, data center operators are being required by clients to accommodate ever-larger deployments, often with more advanced and power-hungry chipsets.

To address this, the industry must not only create more stringently power-efficient facilities, but also adopt cleaner

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methods of energy consumption and production. They must work within resilient, diversified power grids that can deliver clean energy, as well as adopt innovative cooling and control technologies that consume less power. Modern data centers use about 40% of their energy for cooling. While traditional air cooling relies on AC units and airflow management, innovative liquid cooling techniques, such as direct-to-chip and immersion, efficiently absorb and transfer heat, making them ideal for hyperscalers who are looking to increase rack density, reduce energy use, lower carbon footprints, and meet sustainability goals.

Maintaining performance

That said, reducing energy consumption must form part of a more holistic sustainability narrative. As important as environmental sustainability is to the industry – and to regulators – business sustainability is essential as well. The main challenge to improving power consumption in the data center is the need to maintain high service reliability and availability.

This is a challenge that cannot be addressed without deep partnership between all stakeholders. The data center industry and regulators will need to work together to create measurable goals, support initiatives, and track progress toward objectives. The industry and regulators must work with utilities providers to ensure an acceptable clean energy mix. And clients – in our case the hyperscalers – also need to be part of the conversation, to see where efficiencies in housing the end technologies can be driven.

Energy and power are essential to AI's future

Mission-critical to AI deployments remains the availability of adequate energy sources. With differing national grid capacities around the world, building an AI campus may require a decision at the national level and in developing countries could mean choosing between electrifying communities or powering AI clusters. Again, these national-level decisions need input from a variety of stakeholders.

Getting this balance right will pay dividends. We've seen successful AI deployments happening with the right conditions, where both energy abundance and favorable political alignments are creating AI hubs. The GCC region, for example, is uniquely positioned for AI growth due to energy wealth, strong ties to the West, geopolitical stability and strategic competitiveness in digital infrastructure.

The UAE stands out as a global exemplar of this approach. In 2017, it became the first country to appoint a Minister of State for Artificial Intelligence, a move that demonstrated intent and helped accelerate AI integration across sectors. Since then, the establishment of the UAE Council for Artificial Intelligence has further institutionalized its AI ambitions, aligning policy, infrastructure, and industry to foster sustainable growth. This forward-leaning governance model reflects exactly the kind of national leadership required to responsibly scale AI capabilities, particularly in energy-rich and digitally connected regions.

As a new generation of AI-based solutions trigger exponential growth in the digital economy, data center efficiency and sustainability is transcending companies, geographies, and workloads – and becoming an undeniable business imperative across nearly every industry. To sustain AI's growth, we must work together to create the favourable conditions in which AI hubs, powered by top data centers, can thrive.

As a new generation of AI-based solutions trigger exponential growth in the digital economy, data center efficiency and sustainability is transcending companies, geographies, and workloads

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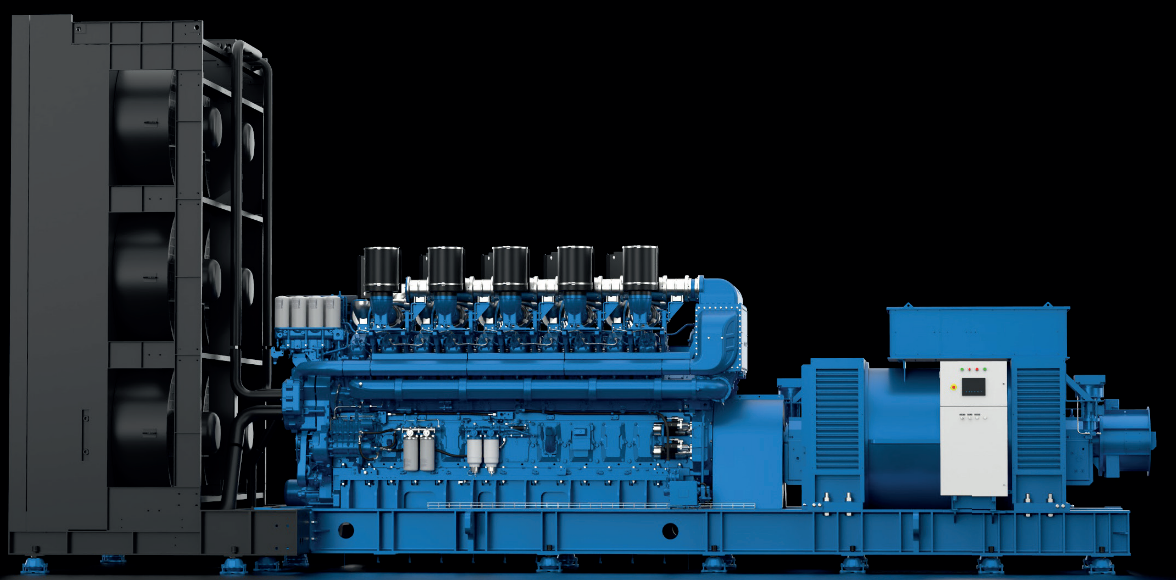

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Can greater standardisation unlock net-zero progress for the EMEA data centre sector?

Global markets depend on data centres. This reliance is highlighted by CAGR predictions, with incredible growth forecasted across Europe in the next three years that will outpace global growth at a 25% CAGR. Yet, a significant concern remains. The skyrocketing demand for data centres worldwide has increased energy requirements. In part due to the rise of AI, which now consumes 25% of data centre workloads across EMEA sites, Goldman Sachs research predicts a 165% increase in data centre energy requirements between 2023 and 2030.

BYJON HEALY, EMEA MANAGING DIRECTOR, SALUTE

DATA CENTRES that haven't been optimised with sustainability in mind prove a significant roadblock for businesses aiming to meet climate objectives, leaving the EMEA market at a pivotal crux.

Can we find a standardised level for what a green data centre looks like, or do we continue on a path of region-specific practices?

EMEA data centre market

As things stand, there's little standardisation across EMEA. While this hasn't hampered the sector's growth, varying data centre practices muddy a transparent analysis of net-zero progress.

With heat one of the data centres' largest emissions, cold-climate countries such as Finland have intrinsic advantages. Heat waste is lower as the climate naturally keeps centres cooler, reducing energy demands.

A strong history of district heat reuse across the region means familiarity with offsetting waste. The same goes for Denmark and Sweden, which also host hyperscaler centres for the likes of Apple and Facebook. A long-established renewables industry similarly boosts energy-efficient data centres in these countries.

FLAP-D (Frankfurt, London, Amsterdam, and Paris) leverages technological prowess, collaboration, and knowledge-sharing. They have different advantages, such as Paris' nuclear-heavy grid that gives data centres a relatively low-carbon energy base and Amsterdam's strict environmental

controls and capabilities to tap into AMS-IX, one of the world's largest internet exchanges. However, similar climates, reporting, material usage, and geographical considerations mean FLAP-D countries provide an optimistic view for similar collaboration elsewhere.

Wider standardisation across similar geographies is more disparate. For example, hosting data centres in the Middle East, Spain, Italy, or Greece presents harsher weather-related challenges and nature-related risk, requiring more intensive cooling capabilities that ultimately impact sustainability measures.

A race against time

Data centres across EMEA are being constructed at a pace to meet growing demand but without a standardised view of what excellence in data centre sustainability looks like, missing green opportunities. This is exacerbated by a mismatch between data centre energy demands and the pace at which renewable energy, such a solar and wind, can be deployed.

There's no easy fix here, and construction has to continue, with efforts to make carbon savings and net-zero progress where we can. The intermittency of renewables is also a concern, requiring grid storage solutions and smarter grid systems to ensure reliability. Of course, the availability and success of renewables usage differ from country to country, adding further fragmentation to build best practices.

That said, data centre energy demands are stable and predictable, meaning, if we can continue to make progress on the renewables front, leaders across Europe will quickly set an example for what green energy usage for data centre support can achieve.

Shades of green

While a few overarching climate policies exist, such as the European Energy Directive (EED) and Corporate Sustainability Reporting Directive (CSRD), reporting remains fragmented. Non-linear perceptions around net-zero strategies and climate investment ROI damage widespread progress toward climate-based directives.

Research from Keysource's State of the Industry Report revealed that only 53% of IT and Data Centre decision-makers have adequate visibility of sustainability strategies.

> Variation around what is and is not important to measure is an endemic problem across most sectors' net-zero progress. There are also multiple differences in climate-related metrics, fragmenting views into energy efficiency and carbon usage

Variation around what is and is not important to measure is an endemic problem across most sectors' net-zero progress. There are also multiple differences in climate-related metrics, fragmenting views into energy efficiency and carbon usage. Ultimately, this keeps EMEA-wide development toward greener data centres in siloes, restricting region-wide innovation and standardisation.

Knowledge shared and gained

Without clear directives to meet consistent data centre performance across borders, performance standards vary. This stunts consistency across regions, resulting in unpredictable costs, emissions, and risk.

Equally, the latest innovations are rarely shared. This is not because of gatekeeping industry secrets, but rather the lack of cross-border collaborative frameworks hindering the adoption of better practices, including new methods of liquid cooling and solar technologies, building material choices, or the integration of renewables.

Take the UK and Northern Ireland, for example - they share similar technological progression, climates, risk, and building practices and yet miss chances to make informed, greener decisions due to restricted cross-border collaboration. Ultimately, a lack of knowledge sharing maintains the perceived risk of transformation, slowing innovation.

Steps toward standardisation

A few foundational changes need to occur for our sector to standardise what a green data centre looks like:

Leading from the front

Several data centre consultancies work across the entirety of EMEA, delivering a range of consultative, design, build, investor, and post-build services. These organisations, because of their end-to-end services, are best placed to form an understanding of standards going forward. Reports, whitepapers, event participation, and collaboration with other partners can slowly create a greater understanding of optimal, green practices.

Establishing a transparent view of net-zero progress

Equally, data centre build, optimisation, and operation emissions must be diligently tracked. This will aid both internal optimisation and progress toward greener operations, while enabling customers to more readily track and report emissions attributed to their data centre partner.

Our sector needs to support our customers when it comes to reporting by providing a more transparent view of all Scope emissions. In doing so, greener operators will continue to be favoured by sustainability-savvy clientele.

Grasp the opportunity for energy efficiency

Operators must recognise that emissions analysis can be measured with minute detail. For example, during the building of Datum's MCR2 facility, scope emissions tracking went down even into the carbon usage of materials and worker transportation. Measurement is equally important.

Data centres across EMEA need to assess energy usage now and how it changes as they optimise in the future.

This will create an all-important benchmark that other suppliers can learn from and adhere to. If these points can be achieved in the coming years, we will be looking at a more transparent, effective, and ultimately greener sector for EMEA data centre use, fuelling our continued growth over the long term.

Using AI to solve the power challenges caused by... AI

In the face of growing concern surrounding the energy demands of Artificial intelligence (AI) how the technology can be used to address the very issues it's accused of causing.

BY BEN CROXFORD, MANAGING DIRECTOR AT ECLIPSE POWER NETWORKS

ARTIFICIAL INTELLIGENCE (AI) is a central part of the UK government's plan to boost growth across the UK. Through its AI Opportunities Action Plan, the government intends using AI to deliver its wide-ranging Plan for Change, including commitments to make Britain a clean energy superpower by 2030. Elsewhere AI is being touted as a fix for everything from administrative overload in the Civil Service, to the UK's one million-plus potholes. Admirable, but not to my mind where AI can add the most benefit. Much has been made of the increased energy demands of data centres processing AI workloads, as opposed to regular facilities more focused on data storage. In April, the International Energy
Agency published a new report, projecting that data centre consumption will more than double by 2030. Yet within the energy sector, AI can be used to cure the very problems it's been accused of causing in terms of its power demands.

The challenge: A tremendous demand for energy

AI is here to stay. Not only does the government believe it can fix many of the UK's issues – potholes aside – it considers AI to be the next frontier.

Data centres have been elevated to critical national infrastructure status, local authority decisions preventing data centres from being built have been overruled, and dedicated AI growth zones have been created.

However, the energy demand of AI is notoriously high, and given its potential to revolutionise parts of our lives in ways we don't yet know, the rate of increase is expected to be steep too. According to the International Energy

Agency (IEA), a single AI-focused data centre may require as much power as 100,000 households. Globally, within the next two years, the AI industry could use as much energy as a country the size of Japan.

The solution: Using AI to cure itself

Ironically, because of its capabilities, we can use AI to provide the solution for its own increased demand for energy. Across the energy sector, AI is being used to optimise generation, transmission, distribution and consumption. It's also a major instrument in decarbonising the sector and making net zero a reality.
AI thrives on data. The energy s

ector both generates and consumes enormous volumes of it. The information generated by smart meters, remote monitoring sensors, electric vehicle charging and other digital assets feeds into AI algorithms to empower smart grids and actively managed networks that benefit the electricity industry on multiple levels.

Energy companies use AI to connect, optimise, and control energy assets, such as electric vehicles (EVs), heat pumps, and HVAC (heating, ventilation and air conditioning) systems. It allows suppliers to balance and shift loads in real time by incentivising changes to consumer behaviour.

These demand-side response (DSR) programmes reward people for adjusting when they use power to help balance the load on the grid. Platforms that enable this, such as Octopus Energy's KrakenFlex, use AI to determine what capacity is needed from DSR programmes, when to call a DSR event, and what incentive to offer. By allowing loads to be shifted and re-shaped, AI also enables electricity providers to create new energy products and tariffs – generating income for future investment in the networks.

AI is being used to manage both generation and demand for commercial and industrial developments. AI helps optimise the use of distributed energy resources (DERs), like batteries, solar and wind, to meet the peaks and troughs of grid demand. A vast amount of data from these assets, combined with weather forecasts and other key variables, are processed to predict and respond to the variability in energy supply and demand. In short, AI enables these resources to be managed more effectively so they perform better and are discharged or curtailed at the right times.

With AI powering optimisation, asset owners will be able to increase the value from their assets by intelligently using them at times that maximise their financial benefits, i.e., when the market conditions are right. In turn, this will potentially provide a boost to investment in new renewable assets.

Self-sustaining innovation

An important additional benefit from the use of AI to optimise networks and assets is that it helps to ensure new generation comes from renewable sources. Variable renewable energy (VRE) sources are inherently intermittent due to weather conditions changing their output. By actively managing these assets and the network, we can compensate for their intermittency through the use of diverse assets with different output profiles that can ramp up or down in response to the changing conditions. AI algorithms that can respond to voltage fluctuations in milliseconds will aid grid stability, enabling real-time load balancing and power-flow optimisation to reduce transmission losses.

AI offers further exciting potential to expand and improve renewable energy. For example, as a tool for scientific discovery, AI looks likely to accelerate the pace of innovation in key technologies such as photovoltaic (PV) solar modules, or battery storage. Improvements here could improve efficiency or performance, lower the technologies' cost, or provide other tangible benefits. So, in essence, AI enables cleaner energy to power its own consumption.

Why IDNOs are well-placed to lead

AI isn't just for national infrastructure – it can drive efficiency at the distribution level, too. Independent distribution network operators (IDNOs) like Eclipse Power Networks are ideally placed to adopt AI tools quickly and with focus. With more agile structures than traditional distribution network operators (DNOs), IDNOs can trial and deploy targeted AI solutions across

design, planning, operations and asset maintenance.

AI supports faster connections, the smarter adoption of existing networks, and predictive maintenance that minimises disruption and cost. At the planning stage, AI enables better demand forecasting and scenario modelling. And through data-led asset management, AI helps us move from reactive to preventative maintenance strategies.

However, while the power industry can already point to successes, it's not alone in facing a critical, UK-wide shortage of AI skills. These add to the challenge of adapting to shifting and growing energy use, driven in part by AI's increased demands. But there is increasing help, for example through the free tools, funding opportunities and knowledge-transfer partnerships supported by Innovate UK. By investing in skills, and by reframing AI as a strategic enabler across business functions, the power industry can continue to innovate in this area.

From condition to cure

Despite some alarmism about AI's energy consumption, it has the potential to more than compensate for its own energy demand. As the IEA's recent report finds, it could be instrumental in cutting costs, enhancing competitiveness and reducing emissions across the sector.

By using AI to optimise demand and generation, we don't have to take a simple 'add more to keep up' approach. Intelligent AI-powered optimisation of smart grids and actively managed networks can do lots of the heavy lifting that the new hyperscale data centres will need, as well as powering a cleaner energy infrastructure that benefits everyone.

Why retrofit is becoming critical to data centre growth strategies

EMCOR UK, explores the challenges of data centre demand and explains why with the right planning, engineering expertise, and risk management, retrofitting existing assets allows operators to meet demand today and build resilience for tomorrow.

BY STEVE CLIFFORD, DIRECTOR OF DATA CENTRES, EMCOR UK

WHY RETROFIT is becoming critical to data centre growth strategies
Data centre demand is soaring. With AI, cloud and edge computing, IOT and digital transformation reshaping economies, the need for resilient, high-performance infrastructure has never been greater. Operators face a growing dilemma: new capacity simply cannot be built fast enough to match demand.

Construction lead times are increasing. Power capacity and availability challenges are intensifying. Planning approvals are slowing. In response, operators are rethinking their growth strategies and they are increasingly turning to an approach that, until recently, was seen as a stopgap: retrofit. Retrofit is no longer an emergency solution or a compromise. It is becoming a core part of long-term estate strategies for operators determined to stay competitive.
In this article, I explore why retrofit is becoming a strategic priority for data centre operators. I'll look at the forces driving this shift, the engineering and operational challenges retrofit presents, how to plan a successful project, and lessons we've learned from delivering complex retrofits in live environments.

The forces driving retrofit adoption

Several converging factors are fuelling the shift toward retrofit:

- **Power scarcity:** In many key locations, hyperscale projects are monopolising available grid capacity. New sites struggle to secure reliable, scalable power. Retrofitting existing sites with established connections allows operators to grow without relying on uncertain new grid infrastructure.
- **Permitting and regulation:** Building new facilities has become a more arduous process, often slowed by environmental, planning, and political challenges. Retrofitting avoids much of this complexity.
- **Cost escalation:** The rising price of construction materials, labour, and specialist equipment is making both brownfield and greenfield developments riskier.
- **Asset life cycles:** Many first-generation data centres are now approaching end-of-life stages for critical systems, creating a natural trigger for major upgrades.
- **Sustainability and carbon reduction:** Retrofitting significantly reduces embodied carbon emissions compared to new construction. Extending the lifespan of a sound existing building through retrofit is almost certainly a lower carbon pathway. This approach aligns with global sustainability goals and offers a more environmentally responsible strategy for data centre expansion.

For many operators, retrofitting existing assets is the fastest, most cost-effective way to add capacity, improve resilience, and meet customer expectations without waiting years for a new build. In fact, upgrading an existing data centre can cost up to 40% less than constructing a new facility, while delivering comparable benefits.

Understanding retrofit: More than a patch-up job

Successful retrofit projects are far more sophisticated than simple patch-and-repair exercises. They involve careful

modernisation of live environments, often involving:
- Upgrading mechanical and electrical systems, including UPS, cooling, and fire protection.
- Replacing ageing plant and infrastructure to meet today's resilience and energy efficiency standards.
- Reconfiguring white space layouts to support greater rack densities and changing cooling needs.

At EMCOR UK, we have delivered retrofit projects that demonstrate what is possible. For example, we recently transformed an existing office space into a fully operational UPS Switch Room for a major customer. The project supported two diverse power feeds, designed to allow future expansion up to 600kKA for each feed. We've also delivered an external modular facility housing associated battery strings, complete with cooling, fire and leak detection, and enhanced security systems. All work was completed while ensuring there was no disruption to ongoing operations.

One of the key lessons from this project was the importance of early design flexibility. We had to factor in future growth requirements from the outset, not just the immediate need.

The engineering and operational challenges

Retrofitting a live, operational data centre is not without its risks. Compared to a new build, the engineering challenges are often more complex and unforgiving.

If not properly managed, retrofit projects can risk temporary cooling outages, loss of redundancy including accidental downtime. Early-stage risk identification and mitigation planning is critical.

Some key best practices deliverables include:
- Detailed phased planning to avoid downtime.
- Temporary systems to maintain cooling and power during works.
- Constant stakeholder communication to keep all parties aligned.
- Thorough pre-construction surveys to understand constraints.

Our engineering-led approach has been instrumental in solving these challenges. For instance, when

delivering bespoke chiller gantries for various data centres in London, Birmingham and Guildford, we designed, manufactured, and installed platforms to accommodate restricted space urban sites. By using off-site fabrication laser scanning and 3D modelling, we reduced on-site risks and completed installations ahead of deadlines, ensuring operational continuity.

We learned that working in constrained city locations requires even more precision at the design phase. Every milimeter matters.

Assurance is another key factor. In today's risk-averse market, operators expect partners to demonstrate a proven track record, robust processes, and a deep understanding of critical environments. Retrofit projects demand nothing less.

Strategic considerations for retrofit success

Planning is paramount. Operators must understand when retrofit makes sense – typically triggered by end-of-life equipment, resilience concerns, or the need to enhance capacity without moving location.

A successful retrofit strategy involves:
- Uptime-first planning: Building programmes around business continuity, with minimal disruption.
- **Future-proof design:** Ensuring that the project requisite not only solve today's problems but allows for future scaling and new technologies.
- **Partner selection:** Working with suppliers who offer self-delivery models and have experienced, long-serving teams. Consistency of people and processes can make the difference between a seamless upgrade and costly disruption.

The benefit of retrofitting can reduce project timelines by approximately 30%, primarily due to savings in site development and utility setup.

Our in-house engineering and commissioning teams have been a vital part of our customers' success in these type of projects. Having experienced people who understand both the technical and operational pressures of live data centres is a major asset.

Retrofit as a growth strategy

In today's data centre landscape, retrofit is not an afterthought — it is a strategic advantage. Operators who embrace retrofit can add capacity faster, manage costs more effectively, and reduce their exposure to planning and power risks.

Before considering any retrofit, my advice would be to start with a full lifecycle and risk assessment of the site. Understand your resilience thresholds. Audit your critical systems. Prioritise upgrades that strengthen redundancy before expanding capacity.

With the right planning, engineering expertise, and risk management, retrofitting existing assets allows operators to meet demand today and build resilience for tomorrow.
I fully believe that retrofit will play an increasingly critical role in shaping the future of the data centre industry. And I'm proud to be helping our customers turn today's challenges into tomorrow's opportunities.

Data-driven decisions: powering a smarter, greener future

As the digital backbone of the modern world, data centres are under more pressure than ever. They must deliver relentless uptime, process and store vast amounts of information, and meet increasingly demanding sustainability targets, all while keeping costs under control.

BY CONRAD ENERGY

IN THIS environment, energy efficiency isn't just a target, it's a business imperative. But where does energy efficiency begin? With data.

The key to unlocking smarter, greener, and more cost-effective energy solutions lies in truly understanding how, when, and where you use energy.

Consumption to clarity: a mini energy transition

The journey to greater energy efficiency doesn't always begin with a bold transformation. For many data centres, it starts with something more subtle but just as powerful: visibility.

Sophisticated energy management systems are commonplace across the sector. But having data is not the same as using it effectively. That's why many operators are now embarking on what could be called a "mini energy transition", a shift in mindset from simply measuring energy use to actively managing and optimising it.

This transition is being driven by a perfect storm of external pressures: rising energy prices, tightening emissions regulations and investor and customer scrutiny over ESG performance. Together, these factors are pushing industry leaders to go beyond the basics and find deeper, data-led efficiencies.

It's not just about hitting sustainability targets, although that matters enormously. It's about using energy more intelligently to improve operational resilience, reduce exposure to volatile markets, and enhance long-term value. That starts with taking a fresh look at the data you already have.

Smarter use of smart tools

Data centres are already equipped with high-spec monitoring tools. Power Usage Effectiveness metrics, real-time analytics, environmental sensors are not new. But the challenge lies in translating these insights into actions that cut costs and carbon.

That's where external expertise can add real value.

"At Conrad Energy, we don't just supply green energy, we help our clients understand how to use that power more intelligently," explains Tim Foster, Director of Energy for Business. "It's about building a bespoke and resilient strategy that aligns energy usage with operational goals and sustainability targets."

This kind of collaborative, data-informed partnership is key to driving measurable impact. Whether it's refining load management, aligning procurement with usage patterns, or tapping into on-site generation, there are real gains to be made when external experts work hand-in-hand with internal teams.
For example, a facility may be accurately tracking its energy usage, but missing opportunities to shift flexible loads outside red zones. A fresh perspective from the outside can uncover these micro-efficiencies that,

when scaled across a portfolio, deliver meaningful cost reductions.

From insight to action: unlocking value at every level

The most energy-efficient data centres don't just monitor. They act.
This might mean shifting non-critical workloads to off-peak periods, fine-tuning cooling strategies in response to real-time conditions, or integrating battery storage to reduce grid dependency and improve resilience. Each of these steps begins with data and each one benefits from strategic insight.

Conrad Energy offers more than just the electricity supply. With decades of experience in the team across the energy landscape, they provide advanced energy management support tailored to the unique needs of high-consumption sites. That could include demand-side response opportunities, optimisation of behind-the-meter assets, or even the design and delivery of flexible energy infrastructure.

In one recent engagement, Conrad Energy supported a large-scale industrial client to identify operational changes that reduced grid costs by 18%, without compromising performance. That same approach – combining technical analysis with commercial strategy – is now being deployed to help data centre operators optimise their estates.

And importantly, all electricity supplied by Conrad Energy is 100% green as standard, giving data centre operators a tangible way to reduce Scope 2 emissions and demonstrate progress on ESG commitments.

Agility and assurance in a volatile market

The energy landscape has become more volatile in recent years. Market uncertainty makes it difficult for data centre operators to forecast costs and manage budgets effectively, particularly when energy is such a significant line item.

That's why more organisations are exploring fixed-price supply contracts or tailored Power Purchase Agreements (PPAs) to lock in long-term value and cost predictability. Conrad Energy's flexible approach to commercial structuring means customers can benefit from greater financial certainty, without compromising on sustainability or performance.

This flexibility can also be paired with sleeved PPAs or embedded generation to further increase resilience and control. For mission-critical operations such as data centres, this blend of energy security and green supply can be a strategic differentiator, reassuring investors, satisfying regulators, and boosting reputation in a carbon-conscious marketplace.

This approach is about more than saving money. It's about creating a secure, future-proof energy strategy that aligns with both operational needs and environmental values.

Why partner with Conrad Energy?

For data centres navigating the complex intersection of uptime, cost, and carbon, choosing the right energy partner is crucial.

Conrad Energy combines deep industry expertise with a genuinely collaborative ethos. As one of the UK's largest independent energy producers and suppliers, they bring a unique blend of scale, flexibility, and innovation. Their nationwide fleet includes over 80 sites and a growing portfolio of energy projects from solar and battery sites to synchronous condensers. They're not tied to a single technology or a single model. Every engagement starts with understanding what's right for the customer. That means the solutions on offer are as agile and future-ready as the data centres they support.

This means that whether you need grid-supplied green power, on-site generation, or support to optimise existing assets, Conrad Energy can deliver a tailored solution that works for your site, your strategy, and your stakeholders.

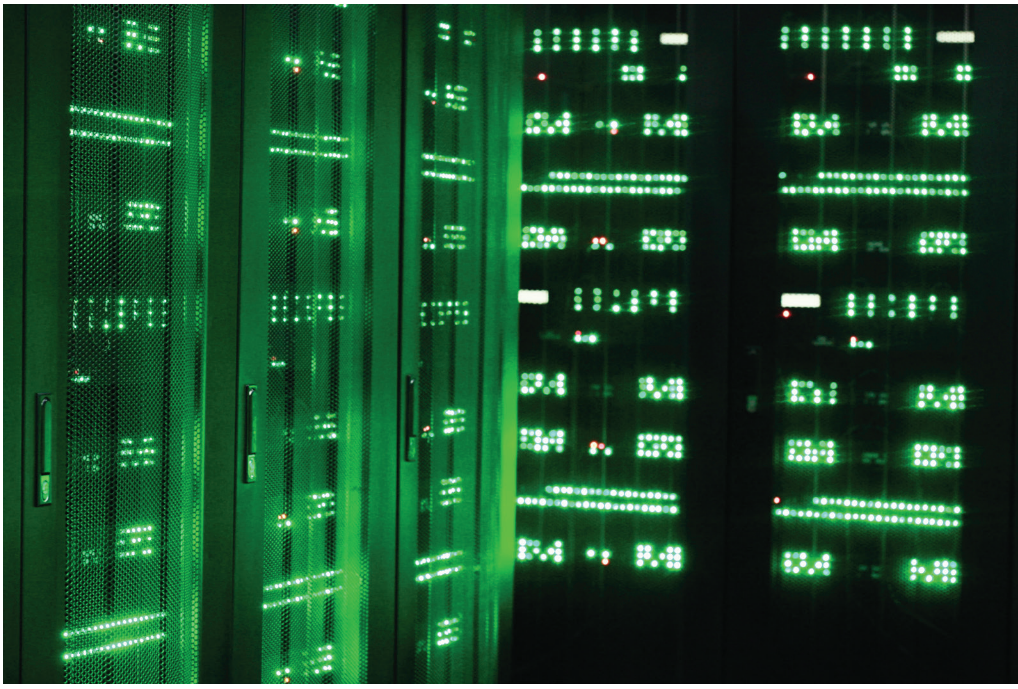
"Energy efficiency isn't just about equipment," adds Foster. "It's about how you use the resources you have. And that begins with understanding your data. When we work with data centres, we help them translate information into action. That's where the real value lies."

The bottom line

In an industry defined by complexity and rapid growth, energy efficiency is no longer optional. It's essential to resilience, sustainability, and long-term success.

But efficiency doesn't start with equipment upgrades or capital projects. It starts with clarity. By unlocking the power of energy data and working with the right partner, data centres can make smarter decisions, reduce operational risk, and accelerate their transition to a greener future.

With insight, experience, and 100% green power, Conrad Energy is ready to help you turn data into impact.



DCA Update

BY STEVE HONE, CEO THE DCA – DATA CENTRE ALLIANCE

THE SUMMER is here and so is the holiday season! Here are a few events to be aware of prior to August and some to get in your diary in September, not forgetting The DCA's Data Centre Transformation Conference in October.
The DCA are supporting the events listed below in various capacities and we look forward to meeting up with our Members and Partners that attend them.

DATA CENTRE EVENTS Q3 2025

- DCA 10X10 Data Centre Update Briefing & Networking, London -30 July 2025
- Platform Global, Antibes – 07-09 Sept. 2025
- Communico Networking, London – 11 Sept. 2025
- DCD Connect, London – 16-17 Sept. 2025
- Data Centres Expo, Amsterdam – 24 Sept. 2025
- Mixing IT Networking, London – 25 Sept. 2025
- Cloud & Datacenter Convention, Dubai – 26 Sept. 2025

Hold The Date – DCA Annual Conference

- Data Centre Transformation 2025 – 21 October 2025

To see details of these events and the rest of 2025 CLICK HERE

DATA CENTRE SOLUTIONS – ISSUE 05

The DCA feature comprises of a number of articles from DCA Partners and Industry Experts, we have taken this opportunity to feature an in-depth contribution from Ian Bitterlin a retired (so he says) Consulting Engineer and Visiting Professor, University of Leeds. Ian's piece is titled - The Holy Grail of data centres is closer to the 'edge' than ever! Ian looks into the development and demands of AI Data Centres along with their increasing power consumption. He shares his thoughts on how 'Edge' / distributed infrastructure could provide a solution with the happy biproduct of heat for commerce and residential uses.

We also have an article from Ajay Kareer, Data Centre Market Manager at Harting Ltd. Ajay explains how improving connectivity can have a positive impact on energy efficiency in Data Centres.

Finally, Mike Meyer, Executive Director DCA & MS Portman Partners provides us with some useful insights into Impactful Hiring – Mike's thoughts are that by combining traditional HR insights with The GC Index, organizations can make smarter hiring and talent development decisions.

If you'd like to find out more about The DCA and how we support the sector and those working in it drop me an email, steveh@dcauk.org

Best regards,
Steve

New technologies driving energy efficient connectivity for data centres

BY AJAY KAREER, DATA CENTRE MARKET MANAGER - HARTING LTD

THE INTERNATIONAL DATA CORPORATION reports that energy consumption per server is growing by around 9% per year globally. Despite servers becoming more compact to save installation space, their improved performance increases their energy requirement over volumetric space. As energy costs can account for more than 50% of the total operating expenses of a data centre, it's essential to focus on managing critical data centre infrastructure to ensure energy efficiency and reliability.

One solution is using 'plug and play' connectors and pre-assembled cable assemblies instead of hardwired connections. These connectorised assemblies can reduce installation and commissioning times, maintenance downtimes and the overall cost of ownership when compared to hardwiring. They can also contribute to improving energy efficiency.

HARTING has calculated the effect of power usage from connectors in data centres, by comparing the power consumption of three different connector solutions in its independently accredited test laboratory. One of the connectors tested was the HARTING Han-Eco®. The other two were CEE (IEC 60309) plugs from different manufacturers.

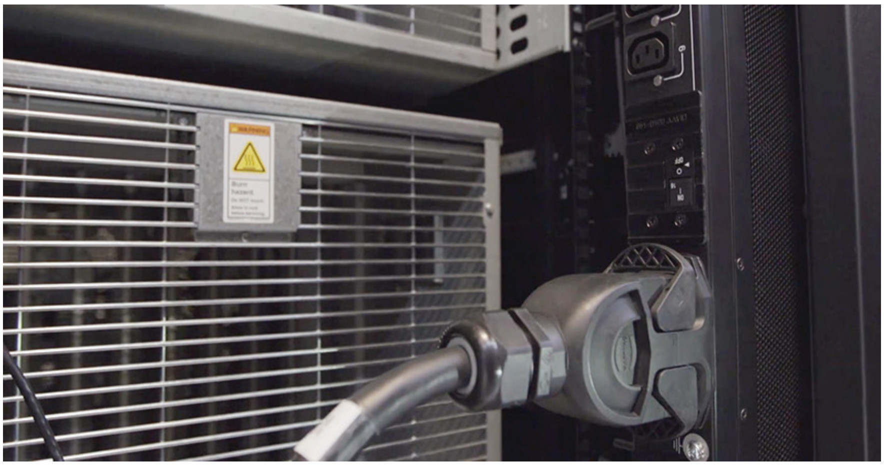
Compared to the two brands of IEC connectors, the Han-Eco® connector reduced power wastage through leakage by up to 50% by using low-impedance contacts. These contacts reduce the power wasted through connections and significantly improve the Power Usage Efficiency (PUE) of data centres.

Depending on the electricity price, which differs regionally and worldwide, one hyperscale data centre with 15,000 racks can achieve annual power consumption savings of around £100,000.

As we have seen, data centre servers require more energy despite becoming more compact. That's why it's crucial to improve the efficiency and performance of electrical connections through design optimisations and leading-edge technologies. Connectors must be able to offer higher current-carrying capacity while remaining the same size.

One method for boosting efficiency is current carrying capacity, the maximum current that a connector can transmit for a specific cable diameter. The capacity results from the balance between the heat generated by electrical resistance and the heat dissipated. While higher current-carrying capacities can be realised with larger connectors and cables, this is not an option in many applications due to limited space.

To improve current carrying capacity, there are three key areas to examine: the cable connection, the contact material and the contact point itself.



For the cable connection, crimping provides both efficient electrical contact and mechanical strength. A well-executed crimp considerably reduces resistance due to high contact density. It's the ideal solution for pre-assembling connectors in large quantities and delivers a consistently high-quality result when using the appropriate crimp tools. This method also maximises the current capacity of a cable's connector whilst minimizing the footprint of the connection itself.

In terms of the contact material, the alloy selected is also important as it can significantly increase conductivity. Copper alloy is generally used as the base material and the resistance in the mating area is influenced by various factors, such as the number and size of the contact points: the larger the contact surface, the lower the resistance. The strength of the connection between the mating parts also plays a significant role because it increases the effective contact surface, meaning that more current can flow per contact point.

Ultimately, optimised connector design is essential to improving the overall current carrying capacity. HARTING employ state of the art simulation tools during the design phase, so materials can be selected and adapted accordingly.

Alongside current capacity, new Smart Connectivity solutions are being developed to improve safety, identify faults, and ensure systems within data centres are working efficiently.

One of the most important additional functions powered by Smart Connectivity is the signalling of the mating state. The mating state can indicate a range of different parameters, including if the connector is electrically connected and whether it is mechanically locked. It can also indicate if the connector is overloaded and monitor whether environmental parameters such as temperature and humidity are within the permitted range.

Energy efficiency is not just a hot topic in data centres, which is why HARTING are fully focused on the 'All Electric Society', a vision of the future, which is highly electrified, and meets the criteria of climate neutrality. By combining renewable energies, smart grids and the electrification of industrial processes, HARTIING aim to connect data and power efficiently and sustainably. To efficiently utilise and optimise electrical energy, it's important to integrate electricity generation, storage and consumption to ensure a stable and needs-based energy supply.

In view of the fluctuating supply from renewable sources, new energy storage technologies are key. Companies are investing in innovative storage systems to bridge the time gaps between generation and consumption as well as compensating for so-called dark periods. Technology such as modularised plug-in battery storage systems makes it possible to store electricity when it is produced.

When demand increases, it can then be sold or utilised, which enables more flexible pricing and contributes to a more stable energy market.

To learn more about HARTING, the All Electric Society and their range of connectors and cabling solutions for data centres, please visit https://www.harting.com/en-GB/data-centres

The holy grail of data centres is Closer to the ‘Edge’ than ever

BY IAN BITTERLIN, RETIRED CONSULTING ENGINEER AND VISITING PROFESSOR, UNIVERSITY OF LEEDS

THERE WAS A TIME, certainly up to 1993 in the UK, when energy consumption was not even on the agenda of data centre design. There was no shortage of utility connections with cheap energy, whilst the overriding design criteria was Reliability, Reliability, and more Reliability.

An anecdotal example from my own experience was when working at Anton Piller with hybrid rotary-UPS. We had a major UK market share in large UPS systems (<4MW) and a product that offered unmatched reliability with energy efficiency of 94%, compared to the best-in-class thyristor based static-UPS of 82%. The hybrid-rotary machine was eye-wateringly costly to buy and to service, but I cannot recall ever discussing the efficiency gain – only the reliability.

However, data centre energy consumption has grown in importance as both awareness of climate change (even with the general public) and the cost of energy has increased, and data centres have developed to the point of multi-GW facilities being built, and in the last 2 years this has been heavily driven by investment in ‘AI’, with huge, never before contemplated, power consumption by AI computing models.

Examples from the USA include 4.5GW in Alabama, referred to by one commentator as ‘in the middle of data centre nowhere’, and a multi-GW facility being built off-grid and powered by on-site nuclear SMRs. It is worth noting that 4.5GW represents 30% of the UK summer national demand for 70m people and business, or fifteen cities the size of Bristol.

In the USA many of the hyperscale operators are planning and building facilities next to existing power plants and contracting to purchase all the output, or the power plant itself, with one grid operator describing this as ‘unfair’ to domestic consumers as grid resilience is reduced.

This explosion of AI data centre energy demand has hit the press and is coming into public domain, although a recent UK survey reported that 51% of the population had never heard of data centres and had no concept of how the modern ICT infrastructure operates, or provides the services on mobile devices. However, AI will certainly stretch national power utilities as they fail to decarbonise fast enough (to meet govt targets) in the face of increased demand from domestic heating electrification, and the switch from ICEs to EVs. It should be clear, but isn’t yet by most legislators, that EVs are not a panacea for transport solutions (both personal and commercial) if the UK grid is not decarbonised drastically and quickly. If the grid remains 50% fossil fuel based, then so are the EVs, and this should drive the parallel development of biofuel for ICEs. It is worth noting that last year’s Goodwood Revival competitors were 100% fuelled by drop-in sustainable biofuel.

Over the same timeframe (1990-2025) the efficiency of the data centre power and cooling plant has reduced the average Power Usage Effectiveness (PUE of IEC/ISO 30134) from >3 to <1.2 at full-load (>4 to <1.5 at 40% load) although, in most hyperscale models with a PUE of <1.12 and even at less than full-load. So, there is nowhere left to ‘improve’ the data centre infrastructure unless we reduce the ICT load itself, e.g., use fewer apps and stream less, but that is unlikely to happen as data-traffic is still rising exponentially, albeit a slower exponential rate.

Distributed computing

The concepts of distribution and decentralisation are not new. Mainframes decentralised into multiple cabinets of file-servers to compute chunks of workload in parallel, and the ‘hypervisor’ was born... the ‘Capello di tutti Cappelli’.

Also, it is not unreasonable to draw the similarity between the mobile-phone telecom system and distributed computing. In theory, one very-tall telecom tower could have been built in the centre of the country, with aerials 3600 to cover all mobile-phone users. But that would have been impractical and costly, so the ‘problem’ was solved by 50,000 telecom-masts and base stations, each covering a defined cell and overlapping with each other.

The masts detect the users in the area and connect the local mobile users directly via the fixed-line telecom fibre into the telephone exchanges. Most failures in the ‘mesh’ of fibre and exchanges are seamlessly covered by rerouting etc. Thus, the telecom industry invented ‘the edge’.

Even the concept of the “cloud”, the ultimate incarnation of distributed infrastructure, is older than one might imagine. In the mid-80s, before the internet, in the days of dial-up modems with rubber-cups for the telephone handsets, and when I was playing around with my Acorn Archimedes 3000 (still have it and it still works) and Amstrad WP desktop, both with 256k RAM and 5¼” floppy-disks, and my HP41CV programmable handheld calculator, but could not afford an IBM desktop, the idea was touted, I recall by Hewlett Packard, of a ‘cloud’ of distributed computing. The idea was that we would all have our desktops at home but would only use them for an hour or two a day. The rest of the time they would be accessed by dial-up from a central mainframe that would use our underutilised hardware to crunch numbers.

There was even a financial element to pay the PC owner for the time, but the 80s idea went further and the term 'data-furnace' was coined – the home would benefit from the waste heat and substitute for its central heating boiler, 'furnace' being the US word for boiler. At the time there was a project in Paris with 2,000 homes involved, and the company, Qarnot, maybe named after Carnot, still operates in the 'data-furnace' field. Very few things in this world are really new, but Qarnot could have been far in advance of any curve. Of course, the 'domestic' data-furnace idea fell by the wayside as a home notebook consumes a heady <100W instead of the 1kW of 1985, but I shall return to the waste heat topic.

Latency

There was a long period of time (pun intended) when latency was regarded as an important, if not vital, issue for the location of data centres. As an example, only a decade ago, Ark Continuity in Corsham, very near the M4 data corridor from London to Bristol and South Wales, found clients more receptive when offering their Farnborough/M25 development, 40km to the City, than the extra 130km from Farnborough to Corsham. Those days appear over, and today, in the UK, no one considers even a few hundred km as a problem, e.g. Newcastle or Anglesey, both destinations for several hundred MW, if not a GW or two.

In recent years hyperscale facilities have often been located in locations where there was low-cost energy and the climate is conducive to low-energy cooling, such as northern Scandinavia, but this has been made possible by the exponential increase in data-fibre transmission rates per strand of glass, apparently and successfully removing the latency problem altogether.

The increase in transmission capacity fibre has, at least to date, exceeded the growth-rate in the data traffic, and the result has been that the focus on latency has diminished.

Only for applications involving 'instantaneous' trading on the stock-markets is latency reserved as a key location driver, with, historically, 13km of fibre pathway (not 'as-the-crow-flies'), data travelling close to the speed of light, and very fast signal processing hardware at each end of the path, resulting in a <2ms round-trip, about as close to 'instantaneous' handshake as is possible.

The impact of AI on data centre development

The expansion of data centre construction over the past two years has been huge, the initial phases being in model construction and learning/training, which has witnessed vast power connections. CPU's are now being replaced by GPU's for AI, notably from NVIDIA, to crunch the data and produce the models.

To achieve the desired result it is an unfortunate consequence is they take 10x more energy for some applications and run cooler than CPUs making the reuse of waste heat harder to harvest and less efficient to export even a few hundred meters.

It can be said that the current energy demand from AI is a threat to climate change actions, adding to grid loads as they strive to decarbonise, and becoming part of the problem instead of part of the solution.

We can also view the GPU 'bubble' as a repeat of the 2001-2 'dot.bomb' crash, when investors piled in with a mantra of 'build and they would come', but nobody turned up. And, if we are to learn anything from history, the hype of being first to capture a huge market with massive RoI's has been based not only on the theme of the dot.bomb crash, but the Tulip Mania of 1637 and the South Sea Bubble collapse in 1720.

Given the technology bubble of AI, the lack of paying customers, and the release this January of the Chinese DeepSeek AI alternative to NVIDIA, the US NASDAQ could also crash as it did in the dot.bomb era. In the first week many technology shares suffered dramatic daily falls.

There is little doubt Nvidia was hyped and overpriced, so this is probably a reality-check and repositioning of the share price. However, the energy delta between DeepSeek and Nvidia hardware is staggering - almost a climate change slow-down agenda compared to the current iteration of AI, and it has been claimed, although not proven, said that DeepSeek is 1/25th the cost of Chat GPT.

But does the energy saving of DeepSeek over the current high demand solve the 'problem' of AI? If the INVIDIA bubble bursts, what is the likely result? I think that we can fall back on history again, and the answer may exist in Jeavons Paradox. In 1865, there was a coal crisis in the UK when the Manchester cotton mills were exhausting the nations coal reserves.

They discussed "The Coal Question" in Parliament where it was said that James Watt's new condensing boiler engine used 1/6th of the coal compared to Newcomen's engine, and the problem would be solved.

However, the English economist William Stanley Jevons correctly observed that technological improvements that increased the efficiency of coal use led to the increased consumption of coal in a wide range of industries. He argued that technological progress could not be relied upon to reduce fuel consumption, and he has been proven right. Jevons Paradox is now referred to as the rebound effect.

Given that the Pandora's Box of AI has been opened, could the result of DeepSeek's approach to AI reduce the energy needs, reduce the cost of usage, increase consumer uptake, and thereby stimulate even greater energy demand?

So, what should we do to mitigate the problem of exponential data centre energy demand? The answer may only be in the field of the reuse of waste heat adjacent to the ICT.

Today's concept of 'edge'

The data centre world has had a history of 'the latest sliced bread' syndrome, and some of them are already on their 2nd (and 3rd!) times around-the-block. The 'edge' has been one of the hottest of topics in the past 5-years, even though it has defied definition, where no-one has appeared to agree on the ICT capacity of each 'facility', varying from micro, e.g.,10-20kW, to macro e.g., 250-500kW, and even above.

The arguments put forward in favour of 'edge' have included very low latency, enabling driverless cars and such applications as UHD/4K streaming of video (apps and movies) to mobile phones without buffering, although the social worth of either is debateable. Obviously, the smaller the 'cell', the fewer users are connected to each, the lower the latency, and the lower kW capacity required of the 'edge data centre'.

An important question to ask is how much ICT capacity is needed, versus how much (kW) energy it consumes? And here we have a problem, and an opportunity.

Moore's Law may have reached it's original 'number of transistors per processor' limit at the atomic level, but there is plenty of proof that the 'doubling of operations/Watt every two years' (Koomey's Law) has long been exceeded. So, in the essence of Moore's Law, a 20kW cabinet 'today' will do the same work in two years' time as a 40kW cabinet today, if its hardware is refreshed with the latest processors etc. For 'edge' this has an interesting effect on the model that assumes that one geographical cell is fed by one or two (or maybe three) 'edge' data centres. The smaller the cell, the smaller the facility capacity.

And the concept of 'edge' can be logically extended in the same way as the cellular mobile-phone market – small cells, overlapping like a Venn diagram. For high population cities it is easy to argue that every lamppost and corner of each building has a 6G I/O antenna, probably one every 150m, each connected by fibre to an 'edge' facility, probably serving a cell of <1km2 that contains 50-75 antennas. Those micro-edge (20kW?) facilities would feed into macro-edge data centres (400-500kW) that, in turn, would feed into the larger, remote, multi-national hyperscale facilities.

However, the introduction of AI has pushed the kW load per cabinet up, at a higher heat density, a smaller physical footprint, and offers the chance (and actually demands) to utilise liquid cooling. This further presents the opportunity to capture waste heat.

The reuse of waste heat

Liquid cooling is not new, in fact from 1956 IBM mainframes were liquid cooled, although we still needed tight temperature and humidity control for printers and punch-card sorting machines, until Gene Amdahl left IBM and introduced his own air-cooled mainframe. He also became famous for his ideas about paralleling processing and the 'speedup' of distributed hardware.

Also, the modern iteration of liquid cooling with mother-board immersion is not new – with companies like Green Revolution Cooling (USA) and Iceotope (UK) et al being in the liquid cooling business for two decades – but the widespread market adoption has taken an inordinately long gestation period. The main reason that it has, at last, gained traction is probably because it isn't needed at 15-20kW per cabinet, where the air-cooling of servers is very straight-forward, but it is essential at >30kW. However, in my opinion, if you can't harvest and reuse the waste heat, the RoI for liquid cooling is very limited, but, stealing from Groucho Marx; "That is my opinion, and if you don't like it… well, I have others".

All of these influences, before the introduction of the AI, led me to form an opinion on the most likely configuration of 'edge'. When I was tutoring on data centre energy matters I would suggest to students that the perfect storm would be to rent a bedroom in every low-cost hotel for 356 nights per year.

Take out the bed, fit a high security door, install a 15-20kW ICT liquid immersion cooled cabinet, connect the heat exchanger to feed the waste hot water (at 50^{o}C) into the hotels hot-water system, and connect the I/O to the 5G antenna on the roof.

The result is an ultra-low-cost infrastructure without building, plenty of connectivity without digging, no problems with power source or the heat rejection, and with a high percentage of the waste energy being reused by the hotel 24/7.

So, what is the 'Holy Grail'?

The exponential growth in data centres, currently accelerating for AI, is causing many utilities grief in both finding the provision/capacity where the operator wants to build a data centre and decarbonising their grids at the same time.

Reusing the waste heat from a hyperscale facility, especially in remote areas, is more than problematical. This is because the waste heat from AI GPU infrastructure is unfortunately at a lower temperature than conventional CPUs, e.g., 48°C instead of 65°C, making it harder to 'export' even into an adjacent process that demands heat, or making the reuse less efficient by absorbing energy in heat pumps to raise the waste heat to a usable temperature.

The days of giant facilities in remote regions may not be over quite yet but AI might be the straw that breaks the camel's back.

One solution is very applicable to UK city centres, and I read about it in a press release earlier this year from a data centre development company, EdgeNebula, which proposes a very interesting technical and commercial solution to city-centre data centre expansion with carbon-neutrality.

We have too much empty commercial office space, effectively 'stranded' real estate, at very low cost when compared to any usual data centre build, complete with security, reception, and vertical transport. The larger buildings have utility connections with 250-500kW to spare (designed at 200W/m2 over multiple floors, 2-3MW), and copious capacity and numbers of fibre providers passing the front door – so the three essential elements for an 'edge' data centre are present at low cost and with rapid deployment.

In addition, the majority of larger buildings have a 'Landlords' emergency generator that could be reprovisioned or enlarged to supply the edge data centre if required, although the concept of 'edge' with multiple overlapping cells somewhat negates the requirement for utility back-up in mature grids.

On the roof of every office block there is the similar capacity of heat rejection as there is in the power utility rating, however the ICT solution can be either air-cooled or liquid-cooled, via a heat exchanger into the building's chilled water system.

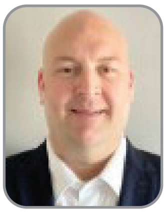
With either an air or liquid cooling solution the waste heat can be injected into a local district heating network (if available) or used to heat the remaining unoccupied offices at low cost, making the lease rates lower, and the waste heat temperature is perfect for space or water heating without using a heat pump.

There is, in addition, a fantastic opportunity to convert the remaining floor area into, much needed, low cost living accommodation – with a low energy demand (20% of the office space) leaving spare capacity for the data centre, and offering domestic free-heating and hot water as required, 24/7/365.

Effectively (and it has to be 'actual', not a promise of 'possible') reusing the waste heat means that the ICT solution is close to carbon-neutrality, or at least an 80% reduction in carbon if a heat pump is needed.

Companies such as EdgeNebula seem to be on the right track.

Impactful hiring



BY MIKE MEYER, EXECUTIVE DIRECTOR, THE DCA & MD PORTMAN PARTNERS

What if I told you I had a crystal ball that could measure the impact someone could, and would, make on your business? Would you grab it without hesitation?

By now, everyone knows that hiring the wrong person, or even the right person at the wrong time, is an expensive mistake. 85% of HR decision makers admit their business has made a bad hire but how do you define what a 'bad hire' is for your company? The success of a recruit is not one dimensional and will differ from business to business.

A report from the Recruitment & Employment Confederation (REC) found that more than a third of companies believe hiring mistakes cost their business nothing. However, a poor hire at mid manager level with a salary of £42,000 can cost a business more than £132,000 due to the accumulation of costs associated with the recruitment process, such as training, onboarding, wasted salary and much more. And similarly, around the globe, the price of a bad hire is at least 30 percent of the employee's first-year earnings.

Let's take a time machine back to when the Uptime Institute forecast that staffing requirements in the digital infrastructure sector would grow from 2 million in 2019 to nearly 2.3 million by 2025, spanning more than 230 roles. Combine that with the looming 'great retirement' where up to a third of industry leadership may soon trade their business attire for swimsuits and the shortfall was estimated to double.

Well, fast forward to today and you'll find we are in 2025 and guess what? The number of people in the digital infrastructure sector has shrunk to around 1.9 million and the requirement for growth grown to around 2.6 million. Coupled with the fact that around 190 thousand, 5%, of people in the data centre sector have changed jobs in the last 12 months you can see the challenge, right?

So, where do we find all these additional professionals? They're not hiding within our sector! They reside in adjacent industries, parallel sectors, or outside entirely. That raises further challenges in executive search and recruitment from assessing transferable skills to determining an individual's suitability, potential impact, and

diversity of thought. At the same time, businesses must focus on retaining top talent.

The Crystal Ball: The GC Index®

Portman embraces The GC Index®, a groundbreaking digital Organimetric that identifies five proclivities or distinct ways individuals are inclined to make an impact. The GC Index provides an unparalleled global business language that immediately enhances 20 business areas, including strategy, organizational culture, talent acquisition, change and transformation, DE&I, wellbeing, and more.

How does this help recruitment? Conventional criteria such as experience, expertise, and qualifications on a CV may not always apply when assessing sector newcomers. More critical than background is understanding the impact an individual will make, a factor beyond personality assessments. Hiring decisions should be based on contribution and capability, not personality alone.

The GC Index fills this gap. It's the world's first Organimetric, connecting people and businesses through unique data that was previously unavailable. It's the only assessment tool that integrates across all business processes, empowering leadership teams to align organizations with strategic objectives.

Unlocking Workforce Potential

The GC Index helps businesses gain insight into individuals' strengths and assess their impact. Employers can make data driven, unbiased decisions that maximize diversity of thought and drive success.

Now, imagine having immediate access to insights on:

- **Your Strategists,** the people who see patterns, the individuals that see the future, that engage others with a clear direction that brings focus to action.
- **Your Game Changers,** the people who see possibilities, the individuals who generate the ideas and possibilities that have the potential to be transformational.
- **Your Play Makers,** the people who see people, the individuals that focus on getting the best from others, individually and collectively, in support of agreed objectives.
- **Your Implementers,** the people who see practicalities, the individuals who get things done, who as leaders shape strategic plans and deliver tangible outcomes.
- **Your Polishers,** the people who see potential, the individuals that create a future to be proud of, who focus on making things better, continual improvement and the pursuit of excellence

By combining traditional HR insights with The GC Index, organizations can make smarter hiring and talent development decisions, leading to:

- Enhanced business outcomes
- A unified language across the company
- Improved individual and team performance
- Strategic alignment between workforce impact and business objectives

Portman Partners has fully embraced The GC Index alongside other technical assessment tools. These methodologies strengthen our ability to support businesses, leveraging our unrivalled industry expertise, extensive network, and a proven track record of success.

Power Distribution Units

Empower your operations with cutting-edge PDU solutions. Streamline efficiency, safeguard assets, and unlock savings.

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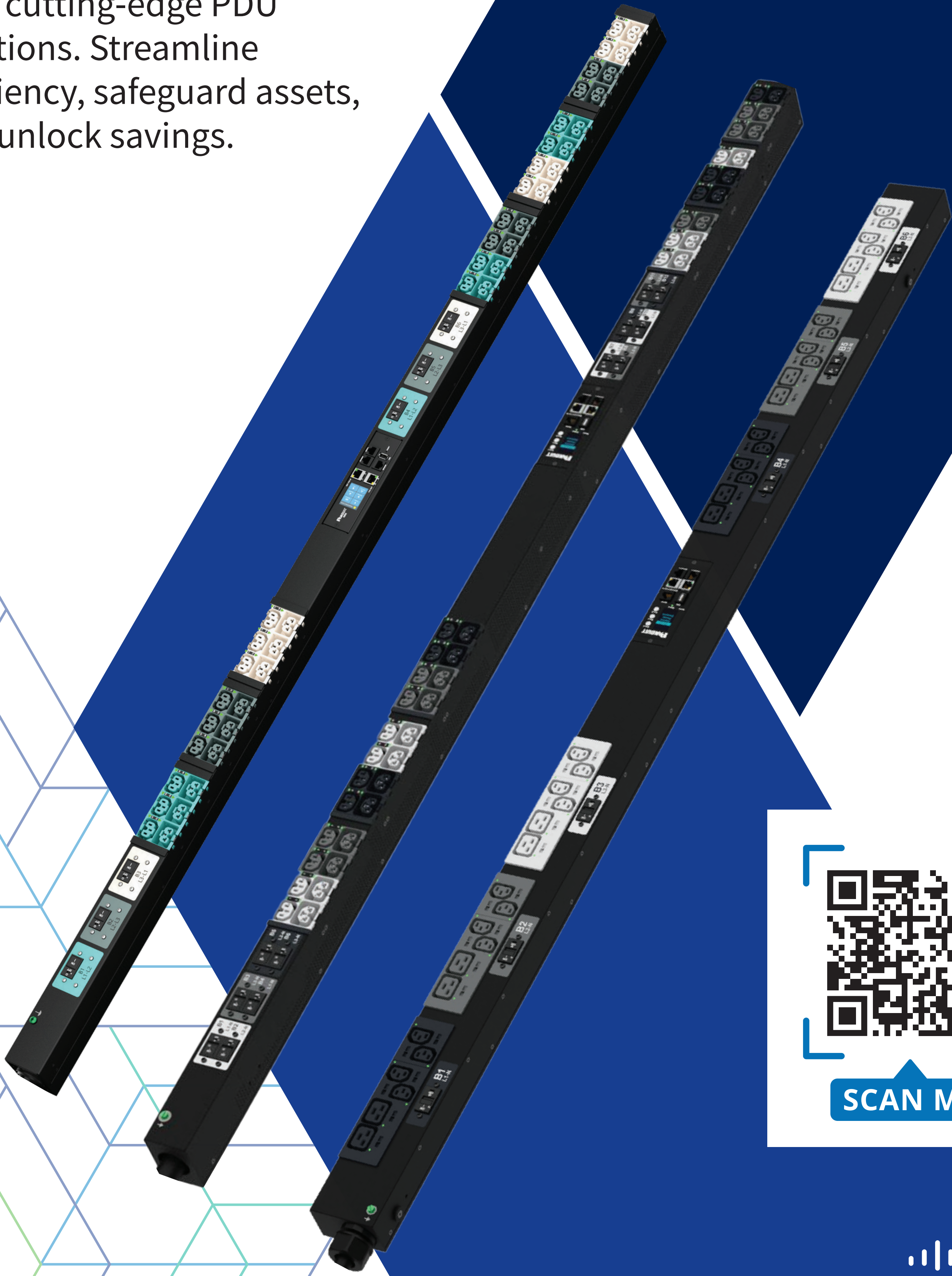

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