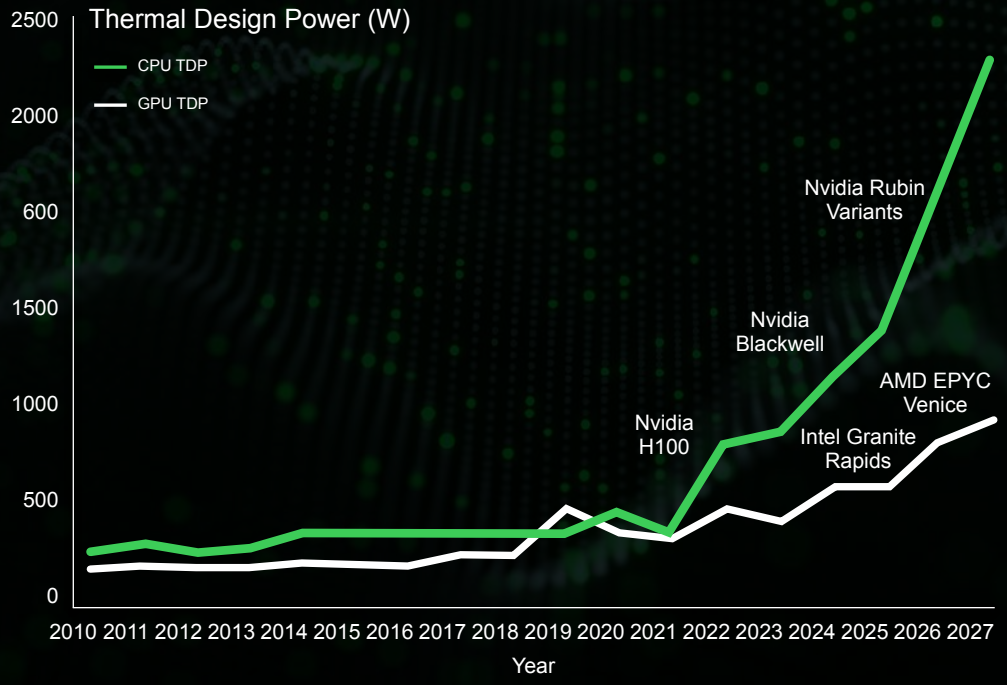

Liquid Cooling AI
Next-generation cooling systems for high-performance computing and AI from Chip to Chiller
Life Is On
Schneider Electric

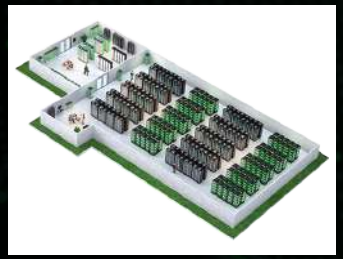
Our speaker

Erik Gjesdal

C&SP Director Nordics&Baltics

The GPU disrupted the way data centers are built & cooled





From:
IT Rack
(White Space) Dominant

To:
Facility
(Gray Space) Dominant

TDP **4X** In two years

700W (H100)
2700W (GB200)

Source: Data based on Schneider internal sources and market analysis.

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GPU based servers are driving rack densities towards 1MW – equivalent to 200 standard ovens

The Register

Google details plans for 1 MW IT racks exploiting electric vehicle supply chain

Google is planning for datacenter racks supporting 1 MW of IT hardware loads, plus the cooling infrastructure to cope, as AI processing...

1 day ago

AI servers of the future: 'rack density' of 1000kW+ with NVIDIA's next-gen Rubin Ultra AI GPUs

AI servers are projected to consume over 1000 kW of power due to NVIDIA's upcoming Rubin Ultra AI GPU and HBM4 memory.

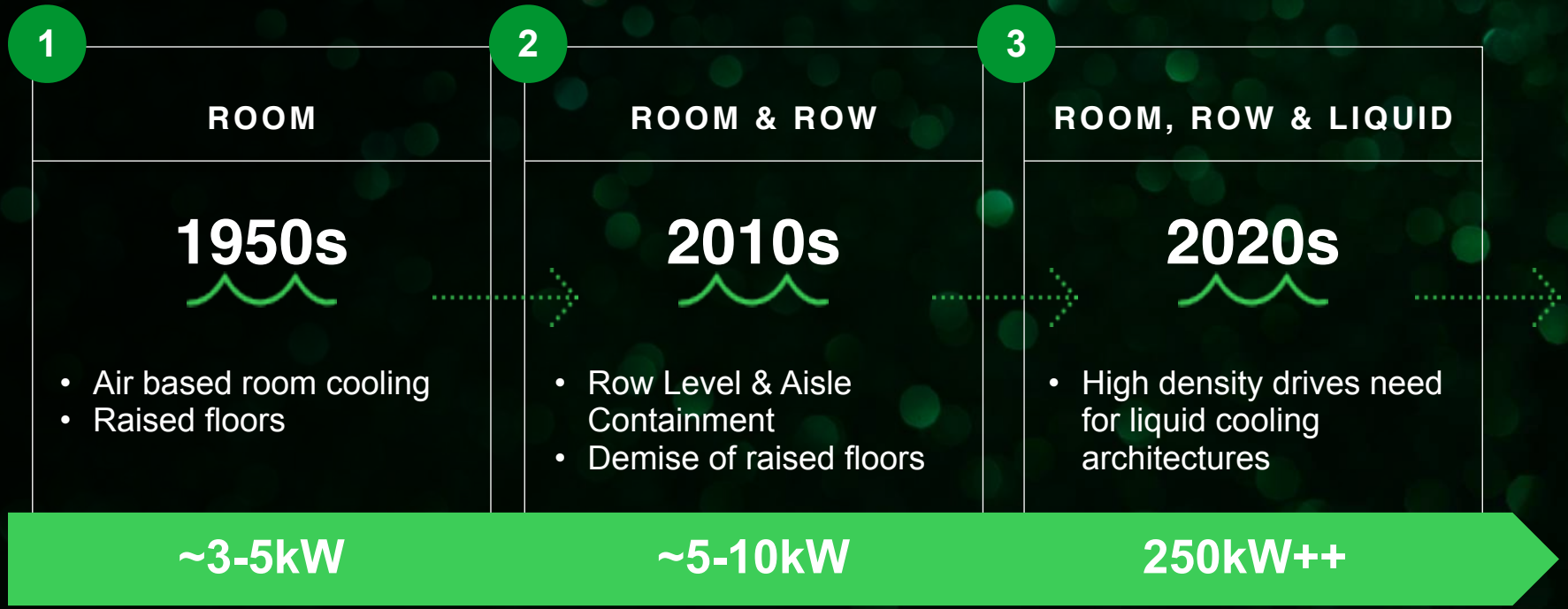
Nov 24, 2024

Data Center Dynamics
https://www.datacenterdynamics.com › news › hypersca...

Hyperscalers prepare for 1MW racks at OCP EMEA

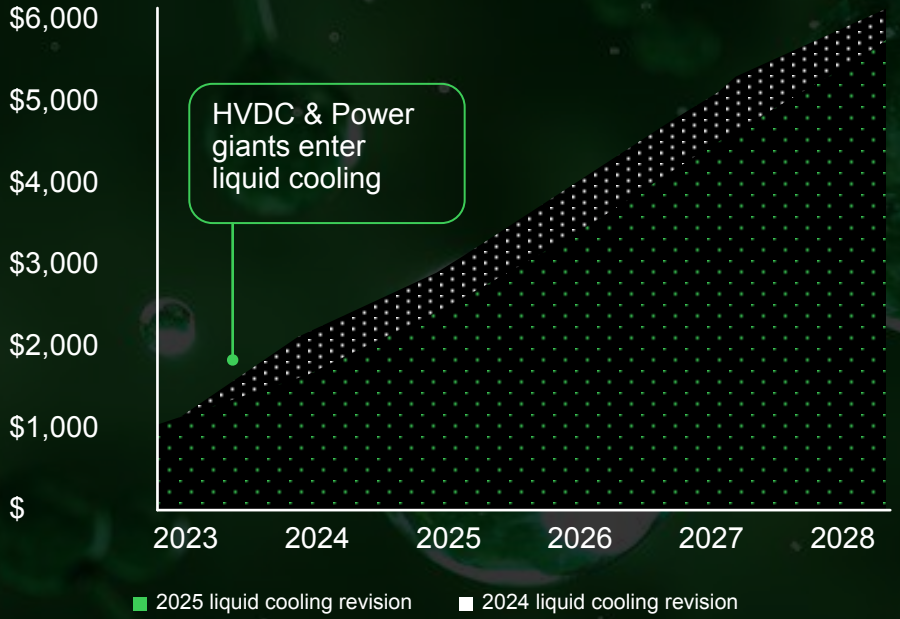
7 days ago — **Google has joined Meta and Microsoft's collaboration project on a power rack** the companies hope will help them reach rack densities of 1MW.

The third wave is liquid cooling for the AI-powered future



Deploying Liquid cooling at scale is NEW

Liquid Cooling Market Forecast Update



Our global footprint and experience in liquid cooling, deliver on a large scale to meet the current demands of AI and what's coming next.

6X in 5 Years

$1B (2023) › $6B (2028)

Omdia

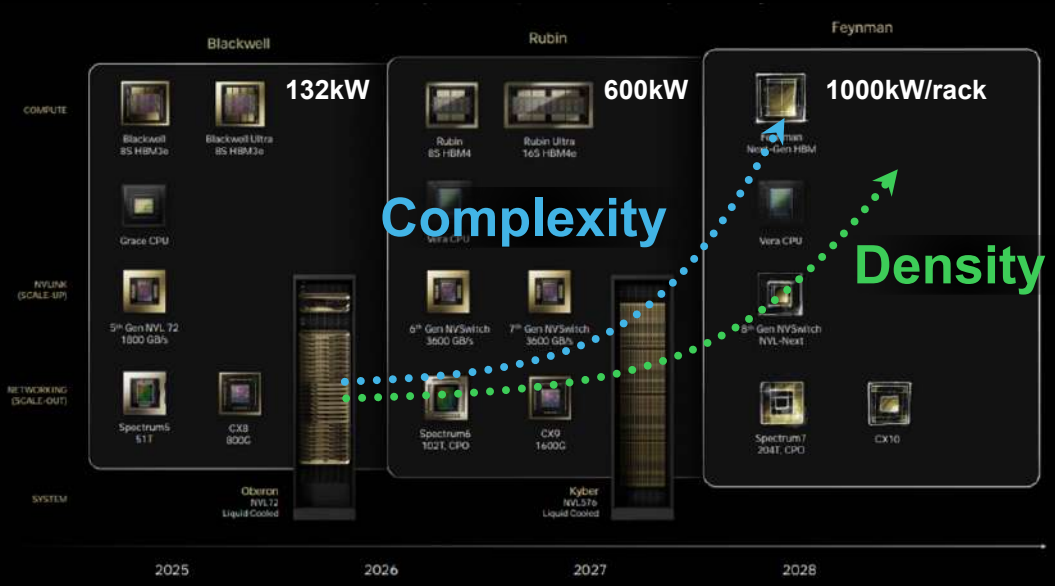
Air cooling will not disappear, in fact the need for air cooling increases…

Direct-to-chip liquid cooling still requires **air cooling for 10 to 30 percent** of the heat load

A 130kW rack requires **10-40 kilowatts** of air cooling

Cooling complexity tracks densities and after 70 years, the industry still has challenges with air cooling

NVIDIA Paves Road to Gigawatt AI Factories
One-Year Rhythm | Full-Stack | One Architecture | CUDA Everywhere



Data Center Dynamics

Cooling system failure takes down UNC Health data center in North Carolina

A failed air conditioning system at UNC Health's remote data center brought down computer operations at its hospitals and clinics in North...

Jul 24, 2024

Heatwave, Cooling Failure Bring iiNet Data Center Down in Perth

A data center in Western Australia was knocked offline due to equipment failure and record-breaking temperatures in the area.

Jun 1, 2024

Google's London data center outage during heatwave caused by "simultaneous failure of multiple, redundant cooling systems"

Google said the data center hosting one of its London cloud regions suffered "simultaneous failure of multiple, redundant cooling systems" during the UK's...

Aug 2, 2022

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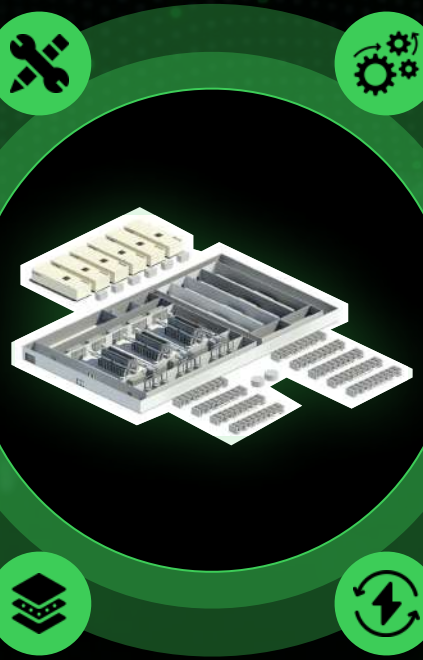
The unprecedented change in cooling architecture has created unique challenges



Skill Shortage
New skill sets from Installation, operation & maintenance

Leak Management
Leak monitoring & prevention

Deployment
Scheduling around compute

Retrofitting
Integrating existing air architecture with liquid architectures

Compatibility
What materials are available and work best?

Operating Procedures
Integrate liquid cooling processes into operational and emergency processes. Time to react is much shorter with liquid cooling equipment

Scalability
Global Consistency with robust supply chain services

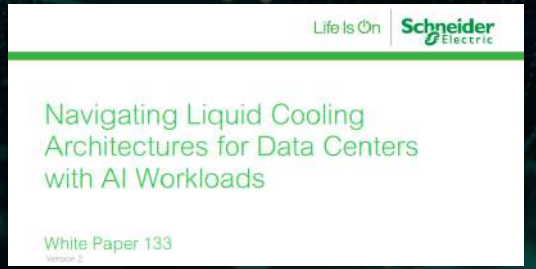
Maintenance
Determining SLAs

Data Center Architecture
Mechanical, electrical, and IT equipment to optimize performance

Standardized
Reduce first-of-kind deployments and gain efficiency in repeat build-outs

Questions are being asked..
and we are answering them…

- How to scale and move fast?
- Needed ops/management changes?
- Best service practices?
- Infrastructure Managment software needs?
- Most efficient, sustainable cooling?
- How to support hybrid cooling?
- Right CDU/pod size?
- Best architecture for application?
- Liquid cooling risks (e.g., black water & filtration)?
- How to upskill team?
- Can I retrofit my air-cooled data center with liquid cooling?



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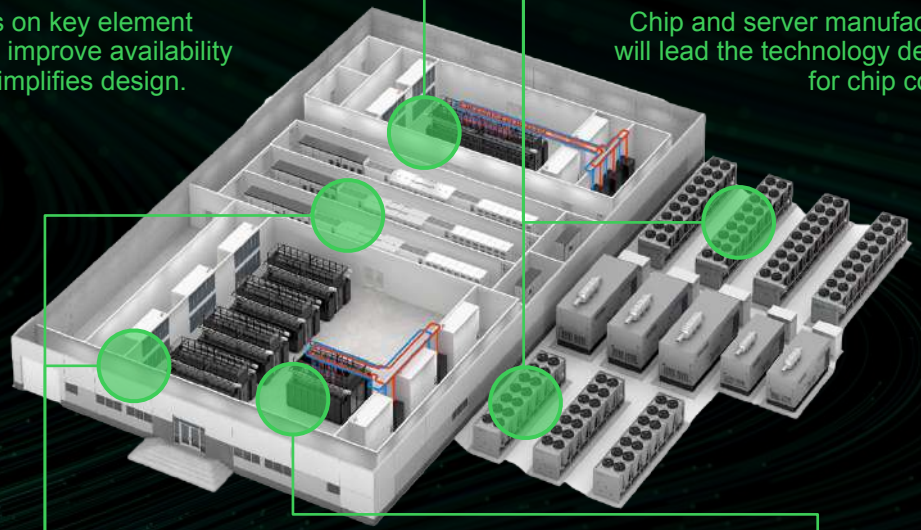
Liquid cooling requires an end-to-end understanding, whether you are retrofitting an existing building, constructing a new one, or considering any stage of the lifecycle.

Transition to liquid cooling requires site-specific designs based on density, efficiency and location.

Innovative heat rejection systems are essential for efficient liquid cooling solutions.

Focus on key element which improve availability and simplifies design.

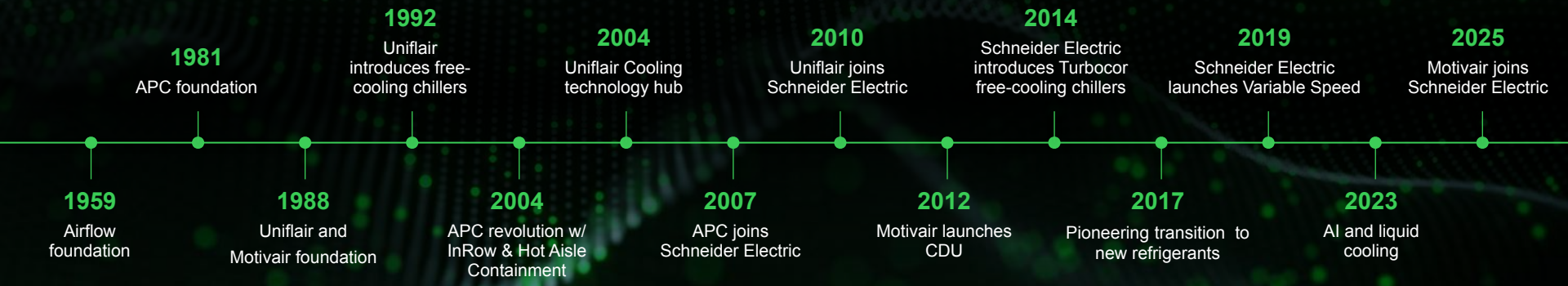
Chip and server manufacturers will lead the technology decision for chip cooling.



Heat rejection systems must balance efficiency & flexibility while accommodating direct liquid cooling, hybrid air cooling, and support space cooling.

Hybrid environments need a complete and broad cooling portfolio adaptable to greenfield and brownfield data centers.

A 50+ Year History of



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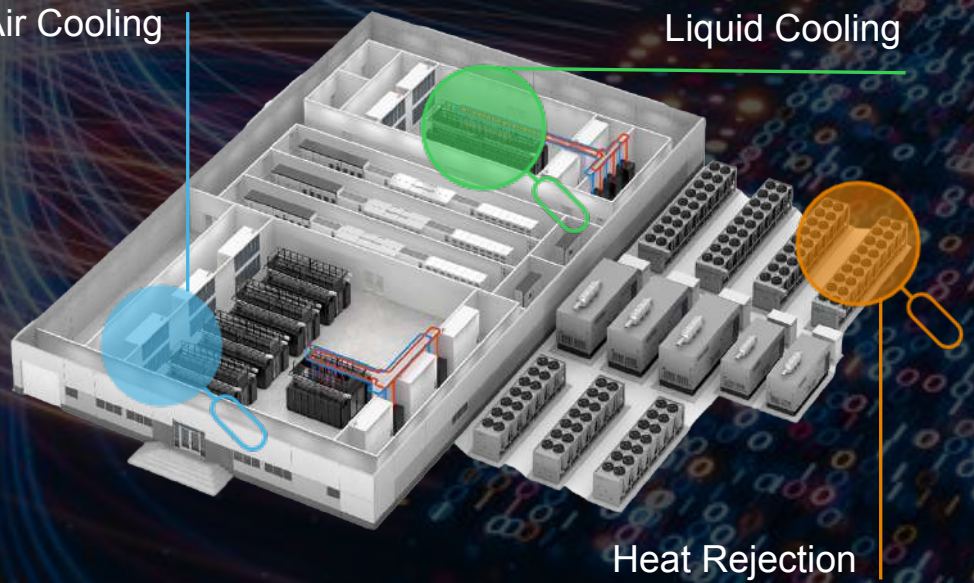


From Chip to Chiller: the fully-integrated liquid cooling ecosystem

More than just a collection of components, this is a **co-ordinated architecture.** One that is designed to scale with AI, adapt to hybrid environments, and deliver performance without compromise.

AI-Ready high-performance power trains

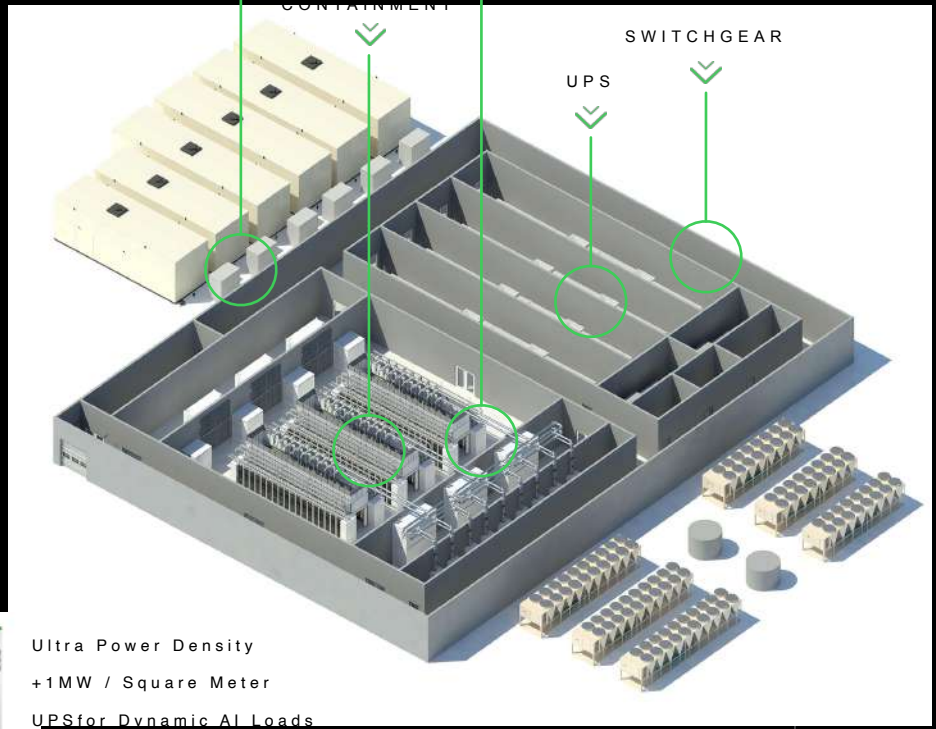
LV/MV Switchgear
High-performance, compact design

AI compatible UPS
10-1500kW, modular and redundant

High Power Distribution
Easy install, precise control, distribution and monitoring

NetShelter Racks and Containment
Secure and configurable rack-systems

Grid to Chip



Ultra Power Density

+1MW / Square Meter

UPSfor Dynamic AI Loads

G

Schneider Electric is aligned with all the main players in the AI ecosystem for solution design and deployments

Chips / GPUs

NVIDIA is the single most influential voice today

Most collaborated and partnered across the IT stack

System Integrators

Various partnerships with top AI players

Awarded by Nvidia and Intel in various categories of AI partnerships

Servers

Together make up 32% of server vendor unit shipments WW (44% of market is ODM direct)

Most partnered servers in alliance networks

Coverage by dedicated teams

Power up your AI data center infrastructure with comprehensive and ready-to-deploy reference design.

SCHNEIDER – FULL ARCHITECTURE & ANALYSIS SINCE 2013

Reference Design 99

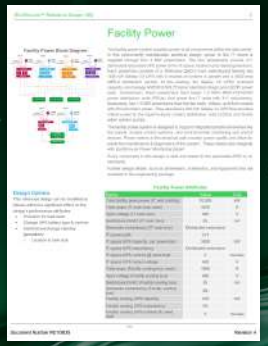
Up to 70 kW / rack with liquid cooling

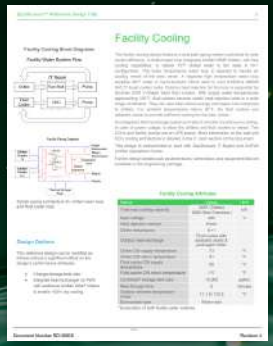
Reference Design 108

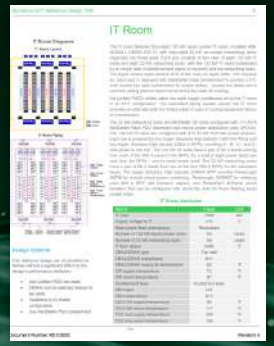
NVIDIA DGX SuperPOD / GB200 NVL72 up to 132 kW / rack with liquid cooling

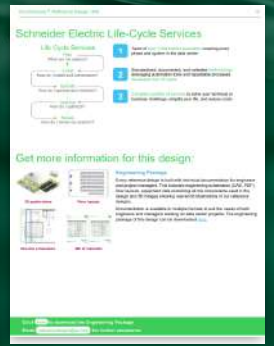
Reference Design 110

NVIDIA DGX SuperPOD / GB300 NVL72 / up to 142 kW / rack with liquid cooling









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Schneider Electric enables you to move faster and scale smarter with our unrivalled & proven liquid cooling expertise and end-to-end cooling solutions.

- Engineering Experience
- Reference Designs
- Chip to Chiller – Liquid & Air
- Software & Services
- AI Ecosystem of Partners

Stay Updated on AI-Ready Data Centers

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