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Press

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Siemens and partners develop reference architecture purpose-built for NVIDIA AI data centers

- **UL-aligned reference architecture developed by Siemens, NVIDIA, and Fluence**
- **DSX Vera Rubin AI factory reference design focuses infrastructure requirements on speed, efficiency, and reliability**

Siemens – together with NVIDIA and Fluence, and incorporating nVent-aligned design considerations – has developed an NVIDIA DSX Vera Rubin-aligned reference design that translates NVIDIA's AI factory vision into a deployable, industrialized electrical, power and controls architecture for hyperscalers, colocation providers, and specialized cloud infrastructure providers.

As AI factories become more pronounced in the data center industry, next-generation platforms such as NVIDIA Vera Rubin NVL72 are redefining infrastructure requirements, pushing technology to new limits, especially in the domains of power and cooling. Owners and operators of AI factories face a new operating reality characterized by site selection, grid interconnection strategy, capital efficiency, and time to revenue, all while balancing a suite of new and emerging technologies.

Sized at a total facility capacity of 136 MW with an IT load of 100 MW, Siemens' reference design for NVIDIA DSX Vera Rubin NVL72 delivers an end-to-end electrical, power and controls solution, spanning the complete path from the utility connection (nominal 34.5 kV) through medium-voltage distribution, modular low-voltage power blocks, and ultimately to the rack interface. With a baseline architecture targeting Tier III concurrent maintainability, any single component can be removed from service without impacting IT operations. And as it is built on repeatable, scalable electrical building blocks aligned with NVIDIA DSX Vera Rubin deployment units, capacity can be added in phases – supporting initial deployments of tens of megawatts and scaling to hundreds of megawatts or beyond – without fundamental redesign.

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The reference design incorporates nVent-aligned electrical design parameters to ensure compatibility with NVIDIA workloads and system architectures, with a planned expansion to include advanced thermal management capabilities in a forthcoming supplement.

“nVent has deployed more than two gigawatts of liquid cooling capacity globally,” said Sara Zawoyski, President, nVent Systems Protection. “That operational experience is what allows us to help partners like Siemens translate reference architectures into deployable thermal solutions that perform reliably from day one at this scale. Platforms like NVIDIA Vera Rubin NVL72 are pushing rack densities well beyond what traditional air-cooled infrastructure can support.”

The DSX Vera Rubin reference design allows AI factory owners and operators to deploy extreme-density AI infrastructure faster, with lower risk and greater predictability, while also preserving long-term flexibility for future IT generations and evolving energy requirements. Designed to support DSX MaxLPS, it enables AI factories to maximize computing output and token production within fixed power envelopes. A core objective is to also compress deployment timelines and reduce execution risk.

“Siemens’ deep expertise in power systems and controls engineering, modular infrastructure, protection, and industrialized delivery is really evident in this latest joint reference architecture design,” said Ruth Gratzke, President of Siemens Smart Infrastructure USA. “Our pre-engineered, prefabricated, and factory-tested medium- and low-voltage skids help minimize on-site construction complexity, shorten commissioning cycles, and improve quality, safety, and repeatability across deployments. Further, our automation and digital twin strategies deployed in this reference help ensure that facilities are brought online faster and with greater potential to produce tokens at scale.”

As part of the blueprint, Fluence’s battery energy storage provides the flexibility and resilience AI factories need to operate reliably and scale quickly in power-constrained environments.

“Our Smartstack platform is central to this new architecture, transforming the grid into an accelerator for compute,” said Jeff Monday, Fluence Chief Growth Officer. “By providing essential capabilities like voltage and frequency ride through, black start, grid demand response, and AI load smoothing, we are enabling our customers to build the AI factories of the future faster and more reliably.”

In addition, the design is tightly integrated with a centralized Integrated Data Center Management Suite, providing a single-pane-of-glass view across power, cooling, and compute infrastructure.

Siemens brings decades of expertise in industrial-grade electrical systems and intelligent infrastructure to the data center sector. Its comprehensive portfolio, from medium- and low-voltage power distribution to advanced automation and energy management software, enables reliable, efficient, and sustainable operation of mission-critical facilities. By combining IoT-enabled hardware, AI apps, cloud-driven software, and comprehensive digital services, Siemens empowers data center operators to accelerate transformation and scale confidently to meet the demanding infrastructure requirements of AI-driven workloads.

This press release, as well as a press picture, is available here.

For more information on Siemens Smart Infrastructure, please see Siemens Smart Infrastructure.

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Siemens Smart Infrastructure (SI) is shaping the market for intelligent, adaptive infrastructure for today and the future. It addresses the pressing challenges of urbanization and climate change by connecting energy systems, buildings, and industries. SI provides customers with a comprehensive end-to-end portfolio from a single source – with products, systems, solutions, and services from the point of power generation all the way to consumption. With an increasingly digitalized ecosystem, it helps customers thrive and communities progress while contributing toward protecting the planet. To protect this journey, we foster holistic cybersecurity to ensure secure and reliable operations. Siemens Smart Infrastructure has its global headquarters in Zug, Switzerland. As of September 30, 2025, the business had around 79,400 employees worldwide.

Siemens AG (Berlin and Munich) is a leading technology company focused on industry, infrastructure, mobility, and healthcare. The company's purpose is to create technology to transform the everyday, for everyone. By combining the real and the digital worlds, Siemens empowers customers to accelerate their digital and sustainability transformations, making factories more efficient, cities more livable, and transportation more sustainable. A leader in industrial AI, Siemens leverages its deep domain know-how to apply AI – including generative AI – to real-world applications, making AI accessible and impactful for customers across diverse

industries. Siemens also owns a majority stake in the publicly listed company Siemens Healthineers, a leading global medical technology provider pioneering breakthroughs in healthcare. For everyone. Everywhere. Sustainably.
In fiscal 2025, which ended on September 30, 2025, the Siemens Group generated revenue of €78.9 billion and net income of €10.4 billion. As of September 30, 2025, the company employed around 318,000 people worldwide on the basis of continuing operations. Further information is available on the Internet at www.siemens.com.

About Fluence

Fluence Energy, Inc. (Nasdaq: FLNC) is a global market leader delivering intelligent energy storage and optimization software for renewables and storage. The Company's solutions and operational services are helping to create a more resilient grid, from powering the next generation of AI-driven data centers to unlocking the full potential of renewable portfolios. With gigawatts of projects successfully contracted, deployed, and under management across nearly 50 markets, the Company is transforming the way we power our world for a more sustainable future.

About nVent

nVent is a leading global provider of electrical connection and protection solutions. We believe our inventive electrical solutions enable safer systems and ensure a more secure world. We design, manufacture, market, install and service high performance products and solutions that connect and protect some of the world's most sensitive equipment, buildings and critical processes. We offer a comprehensive range of systems protection and electrical connections solutions across industry-leading brands that are recognized globally for quality, reliability and innovation. Our principal office is in London and our management office in the United States is in Minneapolis. Our robust portfolio of leading electrical product brands dates back more than 100 years and includes nVent CADDY, ERICO, HOFFMAN, ILSCO, SCHROFF and TRACHTE.