Life Is On | Schneider Electric

Partnering for AI-Ready Data Centers

Introduction to AI in data centers

Global data center capacity is set to triple in size between 2022 and 2030. This growth is spurred by the build-out of accelerated computing for Artificial Intelligence (AI).

The race for AI use across all industries is on and that has catapulted the data center industry into hypergrowth. It has also created a race within the market to quickly build and deploy the AI-Ready infrastructure needed to secure leadership in the market.

The challenge is that an AI data center is not traditional. They leverage Graphic Processor (GPU) accelerated servers that require much higher power, cooling and densification.

This fast growth and change from traditional designs has put multiple stressors on the industry, from the need for more utility power to the broader use of liquid-based cooling. The growth of the industry, however, cannot proceed unless carbon emissions are lowered or at a minimum kept at today's levels.

It is imperative that we decouple AI data center growth from the environmental impact. For this to be accomplished, low carbon energy sources need to be utilized, new flexible and efficient AI-Ready data center designs need to be developed, and sustainable business practices need to be put in place.

To be a leader in the AI data center market you must deliver AI-Ready infrastructure at scale-sustainability.

Contents

For the industry to be successful in its deployment of AI-Ready data centers, it must:

- Secure resilient, low carbon energy
- Use new designs for flexible and efficient AI-Ready infrastructure
- Deploy the most sustainable solutions and components
- Design, build, operate and maintain leveraging digital software tools and services
- Source from the provider with the most reliable supply chain that offers local support

Our solutions

At Schneider Electric, we're trusted partners in planning, designing, building and operating AI data centers. We deliver high-density physical infrastructure solutions and best-in-class energy strategies for sustainable deployment. Combining sustainability consultancy and broad data center domain expertise, we're delivering future-ready flexible data centers.

Our solutions scale a range of needs, from AI training cluster deployments in hyperscale facilities, to AI inference deployments in data centers and at the edge.

We're experts in ensuring any environment is ready for the demands of AI compute. No matter the size of your deployment, from traditional densities to extra high densities (200kW+), we have solutions to enable your deployment.

ENERGY STRATEGY FOR THE AI ERA

Accessible, decarbonized and optimized

Read more on p10

END-TO-END FOR AI

Physical and digital infrastructure solutions scaled to your needs

Read more on p15

SUSTAINABLE BUSINESS PRACTICES

Our business is making yours more sustainable

Read more on p25

Why Customers Choose Schneider Electric

There's a reason we're the partner of choice when it comes to navigating accelerated computing AI data centers.

From our strategic expertise to end-to-end solutions, we have the largest and most global solution portfolio as well as the best local technical experts for data center power, cooling and sustainability.

Our customers trust us to meet their AI workload challenges, no matter what.

End-to-end solutions for all AI workload variations – training, inference/ augmentation.

Investment in R&D, manufacturing capacity and solution architect coverage.

Our expertise ensures innovative solutions and unparalleled support.

The world's 10 leading cloud and service providers trust our solutions.

We advise 40% of Fortune 500 companies on sustainability.

"Speed to market is the most important factor for our client base and it's our #1 value add. Schneider Electric makes it easier for us to make an impact by being a totally integrated supply chain partner."

Chris Crosby, Founder & CEO
Compass Datacenters

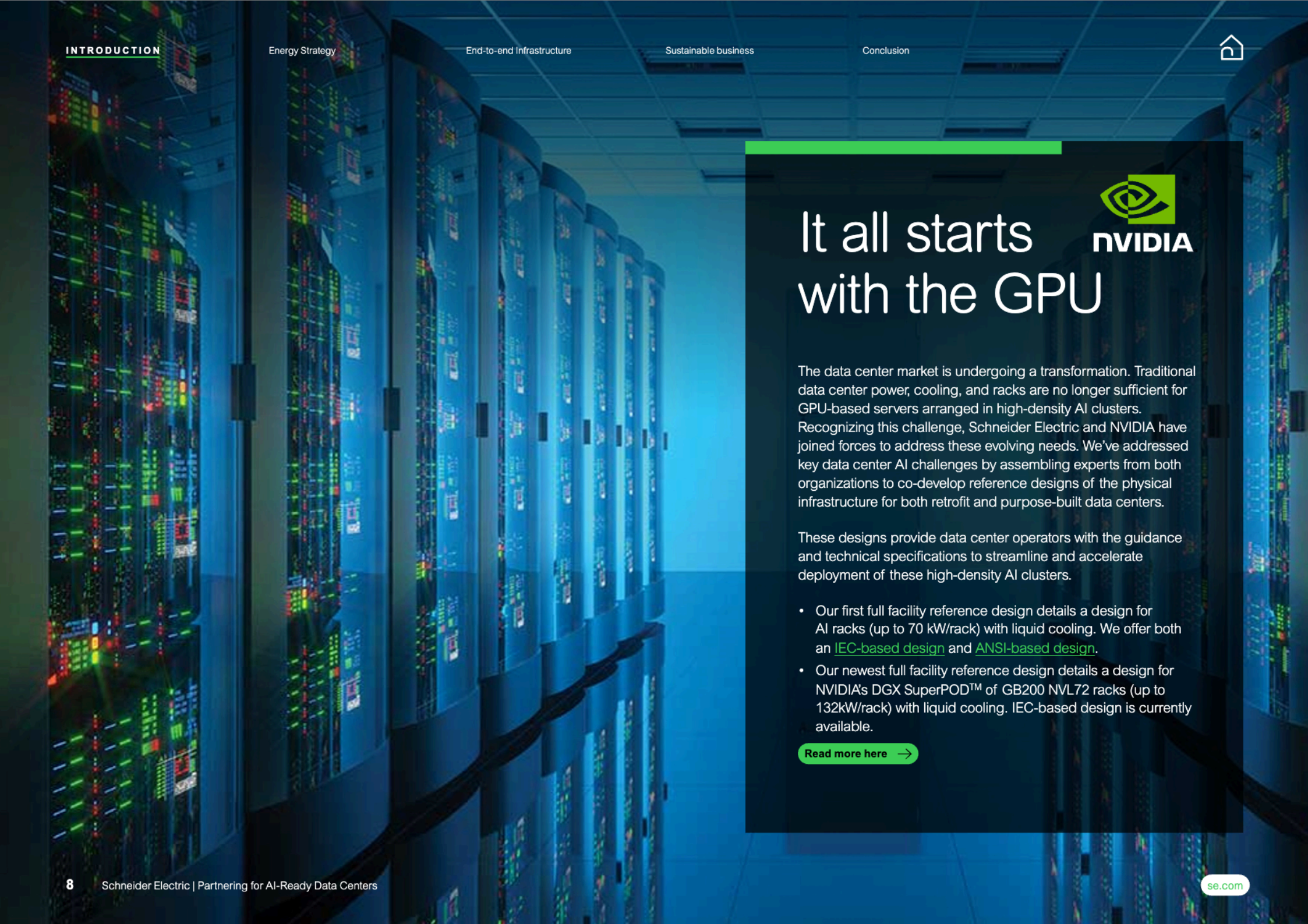
se.com

Partnerships for success

WWT, Schneider Electric and NVIDIA's strategic partnership enables Scott Data to launch GPU as a Service.

Read more here →

Schneider Electric's robust ecosystem of partners and Global Alliances enhance our portfolio with their diverse capabilities. Through partnership and collaboration we can deliver comprehensive solutions to end users.



It all starts with the GPU

NVIDIA

The data center market is undergoing a transformation. Traditional data center power, cooling, and racks are no longer sufficient for GPU-based servers arranged in high-density AI clusters. Recognizing this challenge, Schneider Electric and NVIDIA have joined forces to address these evolving needs. We've addressed key data center AI challenges by assembling experts from both organizations to co-develop reference designs of the physical infrastructure for both retrofit and purpose-built data centers.

These designs provide data center operators with the guidance and technical specifications to streamline and accelerate deployment of these high-density AI clusters.

- Our first full facility reference design details a design for AI racks (up to 70 kW/rack) with liquid cooling. We offer both an IEC-based design and ANSI-based design.
- Our newest full facility reference design details a design for NVIDIA's DGX SuperPOD™ of GB200 NVL72 racks (up to 132kW/rack) with liquid cooling. IEC-based design is currently available.

Read more here →

Energy strategy for the AI era

IN THIS SECTION

Energy strategy for the AI era

As the growth of data centers far outpaces utility growth, sourcing and managing grid power becomes more challenging.

Accessible, decarbonized and optimized.
Schneider Electric helps you secure the power you need to maintain the uptime of your critical facilities – no matter the energy source. We do this through strategic energy sourcing services, onsite power generation, battery and backup infrastructure, and energy supply optimization/control software.

Strategic energy sourcing

Monitor market dynamics to identify strategic sourcing opportunities, adapting your approach as needed to maximize your energy – sustainably.

Read more on p11

Onsite power generation

Empower your businesses with innovative and reliable solutions, allowing you to produce your own electricity with unmatched efficiency ensuring a seamless energy experience.

Read more on p12

Battery and back-up resources

Harnessing the power of advanced battery and backup resources ensures seamless, uninterrupted operations.

Read more on p12

Manage power sources

Optimize energy efficiency and reliability by integrating advanced power management software that manages back-up and prime power sources for optimized availability and sustainability.

Read more on p13

Strategic energy sourcing

Expert consulting services to develop energy strategies and procure power at scale.

Our energy consultants and dedicated software-suite solutions enable customers to build, deliver and execute comprehensive energy strategies.

WE HELP GLOBAL DATA CENTER OPERATORS SAVE

$9.5M

BY LEVERAGING FLEXIBLE POWER SOURCING.

Case study →

Energy Procurement & Risk Management Consulting

Teams of highly skilled energy consultants with a deep understanding of local and regional geographic markets and energy commodity markets help customers build, deliver and execute comprehensive energy strategies.

Read more here →

Site selection/market analysis services

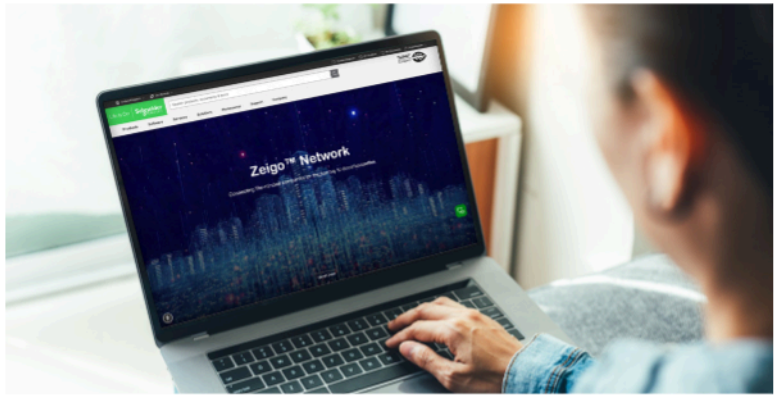
Expert energy consultants evaluate energy markets to help data centers identify which geographies can support new build or expanded facilities based on current power availability and future security of supply. Services can also include natural gas supply evaluations and power supply contract negotiations.

Read more here →

Zeigo Network

Zeigo Network connects like-minded companies on their decarbonization journey, giving them access to education and solution providers for green tech and renewables.

Read more here →



On-site power generation

Bring power to your site 2x to 3x faster via on-site power generation systems delivered via Energy as a Service.

Our joint venture with Carlyle, AlphaStruxure, can energize data centers in 24 - 30 months, far faster than most utility lead times.

AlphaStruxure

AlphaStruxure delivers on-site power generation systems via Energy as a Service. These systems can deploy for zero CapEx in 24 - 30 months, far faster than utility alternatives. These island-able systems can work alongside utility capacity if or when it arrives. Additionally, these power systems are backed by performance guarantees around construction timelines and reliability levels of three, four, or five-nines.

Read more here →

Battery and back-up resources

Deploy various back-up power resources enabling the data center to become part of the grid power ecosystem.

With grid instability and electricity scarcity, intelligent back-up sources need to be added to deliver longer and sustainable energy storage systems that can interact with the utility.

Battery Energy Storage System (BESS)

Our BESS is a fully self-contained solution built upon a flexible, scalable, and highly-efficient architecture delivering flexibility, helping to minimize energy costs and maximize renewable energy.

Read more here →

Grid-interactive Galaxy UPS Range

Explore a range of modular 3-phase UPS systems that deliver high availability and reliability and lithium-ion battery options.

Read more here →

Manage power sources

Manage back-up and prime power sources for optimized availability and sustainability.

Data centers trust our guidance and support on their sustainable path to net zero Scope 1 & 2 emissions. We work together, using expert services and leading software solutions to automate utility sources, gensets, UPS and on-site energy sources.

EcoStruxure™ Power Monitoring Expert
Award-winning power monitoring software giving insight into the electrical system health and energy efficiency of data centers to improve system performance and maximize uptime / operational efficiency.

Read more here →

EcoStruxure™ Microgrid Advisor
A cloud-based software that dynamically orchestrates on-site energy resources alongside the grid to optimize performance by utilizing advanced modeling and forecast algorithms to connect, monitor, and control demand needs to automatically forecast and optimize energy consumption, production, and storage, while providing real-time energy savings and CO_2 emissions data.

Read more here →

End-to-end for AI

IN THIS SECTION

End-to-end for AI

As the rack density of AI workloads has increased, the physical infrastructure needed to support it has changed. Higher density means more power, more heat and more cooling.

Infrastructure solutions scaled to your needs.
The impact of high-density compute has fundamentally changed data center design. Schneider Electric offers full data center physical and digital infrastructure to support the global deployment of AI workloads. Our solution covers grid to chip and chip to chiller infrastructure, monitoring and management software, and services for optimization. With our ecosystem of partners, we deliver the integrated solutions, at the scale you need.

Sustainable AI-Ready data center design

Integrate cutting-edge technology with energy-efficient infrastructure to optimize performance and minimize environmental impact.

Read more on p16

AI-Ready high-performance power trains

Integrated and intelligent high-density electrical equipment designed to ensure safety, reliability, and rapid scalability.

Read more on p17

Hybrid & high efficiency cooling solutions for AI loads

AI workloads run hot – investing in innovative and highly efficient liquid and air cooling solutions to keep data centers optimally cool.

Read more on p20

Safeguard your operations

Optimize data center maintenance with 24/7 rack to grid asset monitoring to ensure safe operations and enable condition-based maintenance.

Read more on p22

Sustainable AI-Ready data center design

Enabling data center providers to design scalable and next gen AI-Ready data centers, using design expert services and best-in-class software-suite solutions.

ETAP VOTED

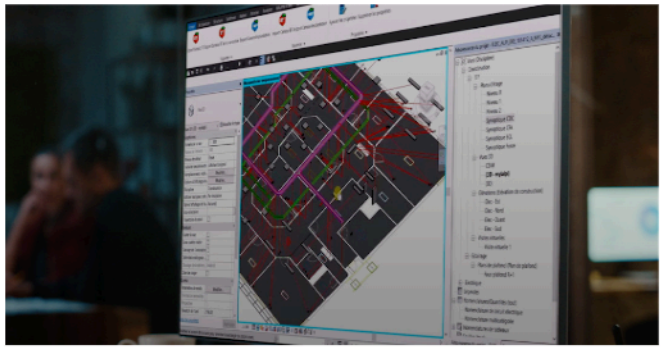
Top 10

ELECTRICAL DESIGN SOFTWARE

ETAP Digital Twin

Unified engineering and real-time platform to accelerate productivity, increase efficiency, and enable digitization of power systems at every stage of the electrical installation life cycle.

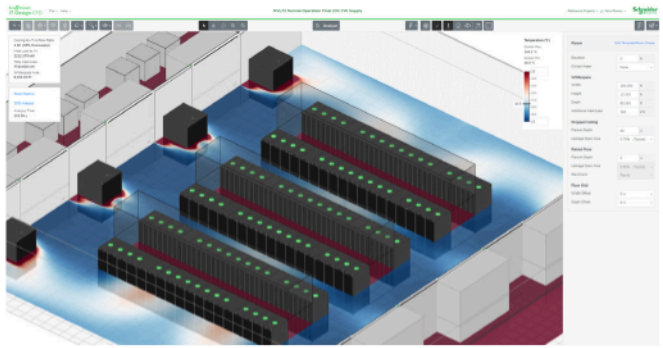
Read more here



EcoStruxure™ IT Design CFD

Cloud-based data center design software that enables data center managers and designers to reduce OPEX, optimize cooling, and mitigate asset risk using the science of computational fluid dynamics (CFD).

Read more here



EcoConsult

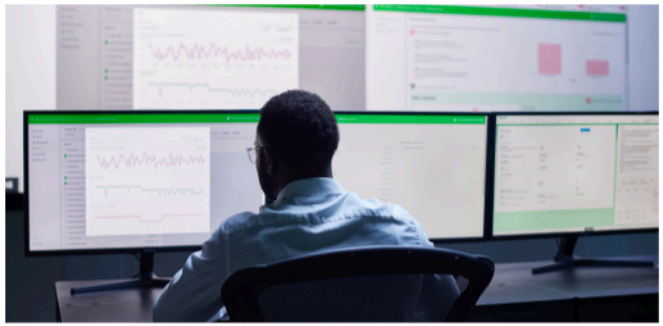
Consultants who audit, evaluate, and map electrical and automation assets and systems, leveraging software to optimize and digitize those assets and systems.

Read more here

Power System Analytical Studies

Analytical studies help ensure electrical systems operate as they were designed and intended. In addition to troubleshooting problems, managing an electrical system involves identifying potential issues and eliminating or mitigating their effects. Power system analytical studies guard against improper system operation and the possibility of catastrophic losses.

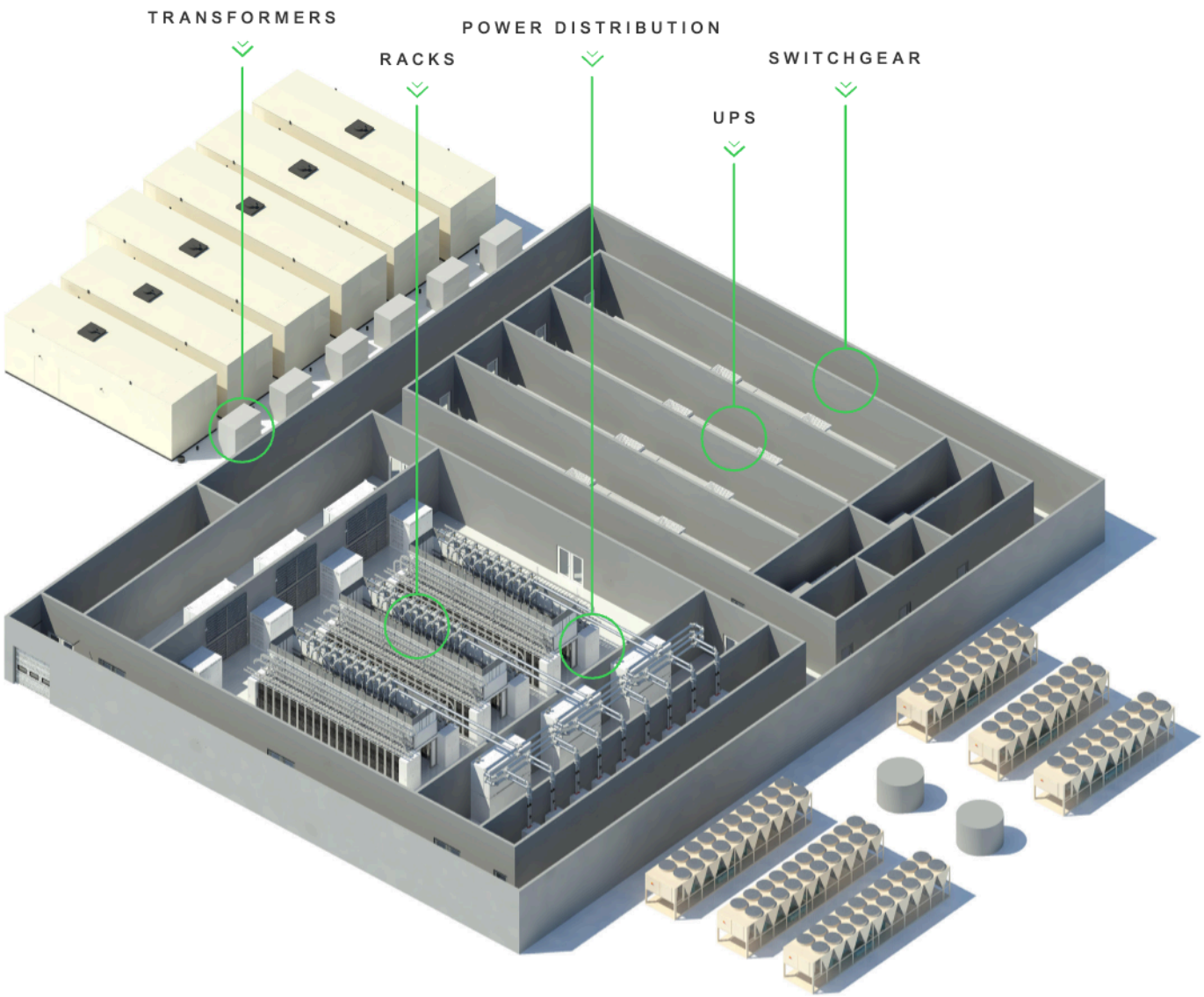
Read more here



AI-Ready high-performance power trains

Integrated & intelligent high-density electrical equipment & white space infrastructure suited for AI workloads.

Grid to Chip



AI-Ready high-performance power trains

continued

Offering comprehensive cutting-edge power assets for data centers, ensuring the safety and reliability of operations.

Low Voltage Switchgear and Breakers

Hardware with latest evolutions of IEC and to IEEE standards.

Read more here →

Medium Voltage Switchgear and Breakers

Hardware with latest evolutions of IEC and extended to IEEE standards.

Read more here →

Power Distribution

Efficient power distribution is crucial for maintaining the operational integrity and energy efficiency of a data center. We provide reliable power solutions designed to optimize performance and reduce downtime.

Read more here →

Read more here →

Line Series & Galaxy Power Distribution

Uninterruptable Power

Highly efficient, scalable 10-1500kW range of UPSes featuring modular, redundant design and AI profile compatability.

Galaxy VL →

Galaxy VXL →

Galaxy VX →

Galaxy Lithium – ion →

Galaxy 3-Phase UPS

SECURE AI-READY HIGH-PERFORMANCE POWER TRAINS CONTINUED

Racks & Rack Power Distribution

NetShelter Rack & rPDU Systems
NetShelter rack systems offer standard and custom full, half and wall rack enclosures designed to house critical IT infrastructure in IT, commercial, and industrial environments. NetShelter rack systems are built to last, highly secure and simple to configure.

NetShelter SX Gen 2, rPDU Advanced, NetShelter SX High Strength Rack, Open Architecture Rack
Portfolio including the NetShelter SX Gen2 enclosures, a new version of NetShelter Aisle Containment and the latest enhancements to the NetShelter Rack PDU Advanced. Sustainably power, scale, and optimize your rack architecture for AI workloads.

Read more here →

Read more here →

Management Software

EcoStruxure Power Monitoring expert (PME)
Best-in-class software purpose-built to help facilities maximize uptime and operational efficiency via power asset monitoring.

EcoStruxure™ Power Operation
The Energy and Power Management System (EPMS) software is specifically designed to interrogate various types of devices across the local area network and collect energy and power information, to serve as the foundation for EPMS software to further process and then present as actionable information via specialized energy and power management web applications.

Read more here →

Power Quality & Metering

PowerLogic ION9000 & Acti9 iEM3000 Energy Meter
Meters and power monitoring software monitor, detect and analyze the impact of the unique AI load profile to reduce the risk of damage to my equipment and grid equipment.

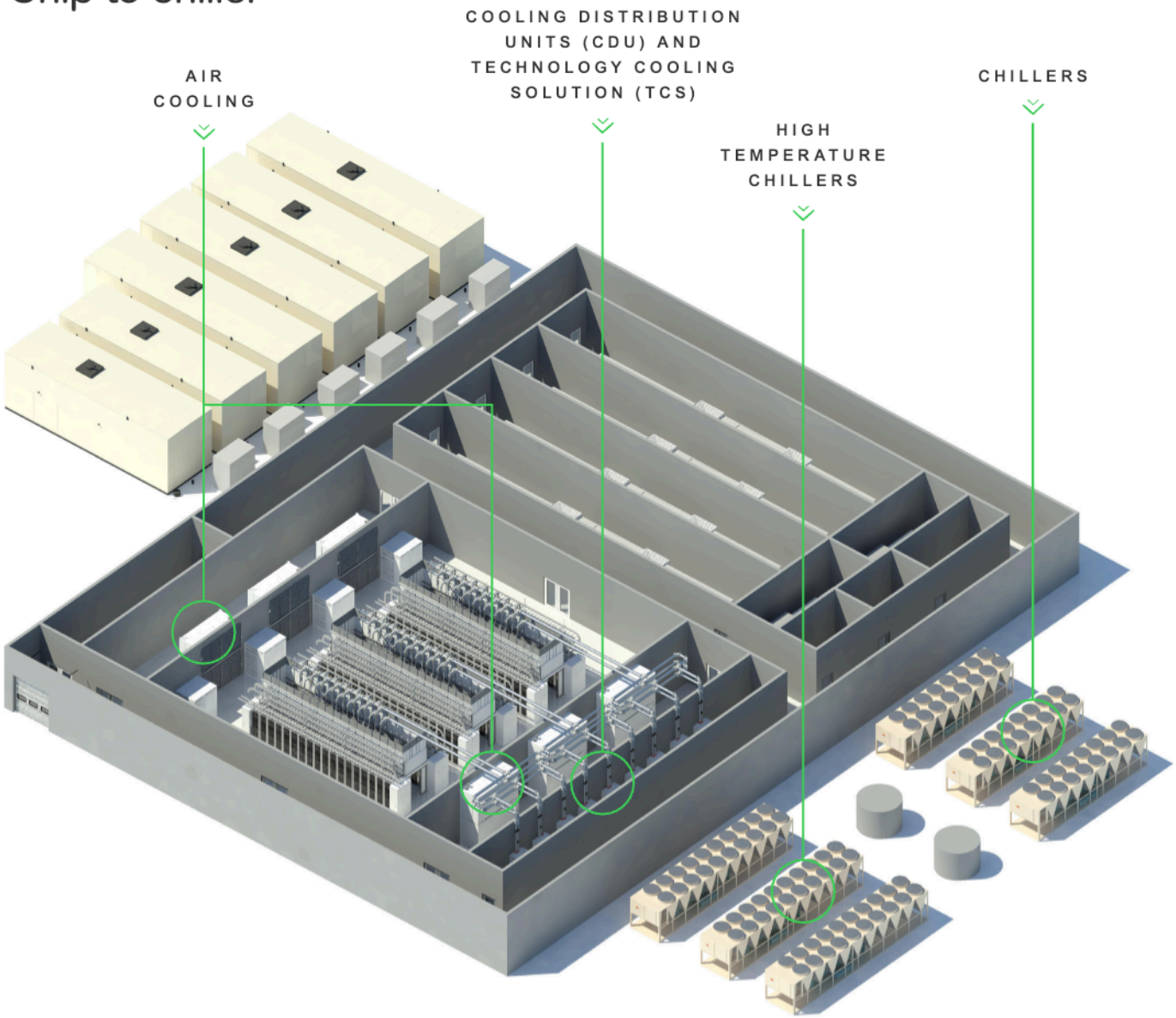
Read more here →

Read more here →

Hybrid & high efficiency cooling solutions to run AI loads

Schneider Electric is investing and developing high efficiency cooling solutions to adapt to high-compute AI needs.

Chip to chiller



HYBRID & HIGH EFFICIENCY COOLING SOLUTIONS TO RUN AI LOADS CONTINUED

Liquid Cooling

Liquid cooling is an architecture in which Coolant Distribution Units (CDUs) are the backbone, between servers and heat rejection units.

- Liquid to Liquid CDUs ensure flow control, temperature control, and pressure control to the Technology Cooling System (TCS), as well as fluid treatment, filtration and quality
- Liquid to Air CDUs, are an alternative solution which allows liquid cooling servers to be used in an air based white space
- Manifolds distribute fluid throughout servers, ensuring a consistent flow of cooling
- Cold plates reject chip heat into the fluid distribution, maintaining the device's optimal operating temperature

Read more here →

Uniflair Coolant Distribution Unit (CDU)

High Temperature Chillers

Designed for flexibility and efficiency, using economization / free-cooling as primary heat rejection.

- Oil free centrifugal chillers as superefficient solution for AI GPUs
- Flexible Heat rejection units to be adaptable to uncertain case temperature requirements and to allow a smooth transition from air-cooled to liquid-cooled servers

Read more here →

Uniflair Chillers

Air Cooling

Chilled water and direct expansion solutions for supplementing liquid cooling systems or for auxiliary rooms, independently on the site's architecture.

- Downflow or underfloor solutions for traditional data centers with raised floors
- Frontal discharge fan walls for new and modern data centers without raised floors
- Rear door heat exchangers, connected directly to the racks complement liquid cooling and minimize impact on the white space

Read more here →

Uniflair Room Cooling

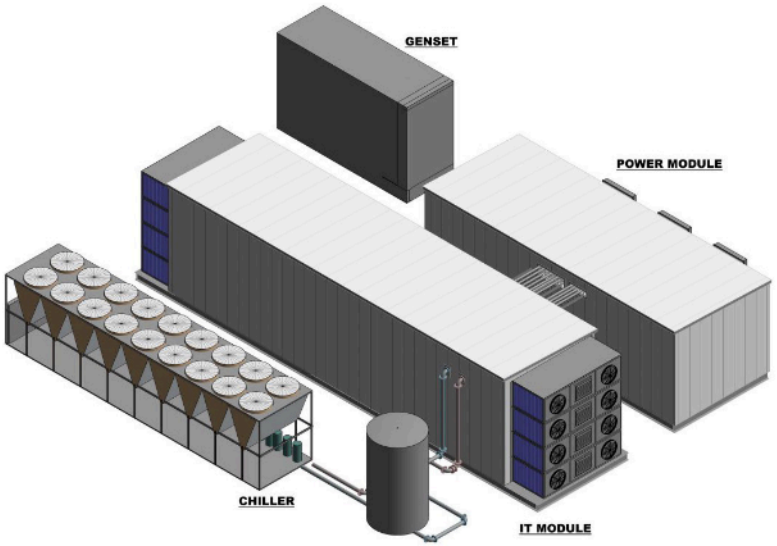
Prefabricated modular data centers

Modular data centers can provide the infrastructure, power and thermal management necessary for AI model training and inference. Each unit delivers purpose-built solutions customized to achieve your strategic AI goals.

Read more here →

30%

FASTER TIME TO MARKET WHEN COMPARED TO TRADITIONAL STICK-BUILT SOLUTIONS



Today, businesses have a growing data need that require the ability to seamlessly add data center capacity. Schneider Electric's Modular Data Center solutions promote designs that not only adapt to complex customer infrastructure requirements, but to different locations and environments.

Read more here →

Read more here →

Speed to Market

Designed, manufactured, tested and delivered as a complete system.

Predictable Performance

Data center design supporting higher rack densities, thermal management and power load.

Ease of Scalability

Pre-engineered repeatable clusters for deployment wherever organizations need rapid, adaptable, scalable infrastructure.

Safeguard your operations with next-level proactive asset management services

Developing next-level services to optimize data center maintenance through 24/7 asset tracking to power predictive analytics.

6,000+

ELECTRICAL ASSET EXPERTS

AVEVA Unified Operations Center

Bring end-to-end operational visibility across a data center portfolio to maintain uptime, mitigate costs, and manage complexity.

Read more here →

Cybersecurity services & software

Expert consultants design and implement flexible and customized critical cybersecurity solutions within four categories: permit, protect, detects & respond.

Read more here →

EcoCare

EcoCare is a next-generation service plan which combines priority support from our services experts with AI-powered advanced analytics to help you boost uptime, safety and efficiency.

Read more here →

Sustainable business practices

IN THIS SECTION

Sustainable business practices

As the data center market has exploded due to AI demand, it is key that we decouple that growth from environmental impact.

Our business is making yours more sustainable.
Our goal is to help you set, meet and exceed your sustainability objectives in line with your AI strategy. Our unique combination of sustainability leadership, sustainability consulting expertise, and data center domain expertise means we can support you with a holistic environmental sustainability strategy, program execution and reporting. We help data centers achieve the highest levels of sustainability and energy efficiency through consulting and providing sustainable, efficient products for their infrastructure.

Align sustainable strategies with business growth

Reset your sustainability strategy to ensure that it will allow you to meet your sustainability goals.

Read more on p26

Drive power and water efficiencies to decarbonize operations

Utilize software and services to drive efficiency in operations.

Read more on p27

Decarbonize supply chains

Prioritize modernization, circularity and supply chain decarbonization to rapidly decrease Scope 3 emissions.

Read more on p28

Prioritize low embodied carbon products and materials

Ensure that the products you purchase will help you meet your sustainability targets.

Read more on p29

Compliant sustainability reporting for all stakeholders

Partner with sustainability consultants to understand local regulation and sustainability reporting requirements.

Read more on p30

SCHNEIDER ELECTRIC NAMED THE

World's Most Sustainable Company Read more here →

BY TIME MAGAZINE AND STATISTA

Align sustainable strategies with business growth

As AI drives your business growth, your sustainability plan must adapt with it.

Our expert consulting teams can help you assess the energy use, carbon emissions, water use and circularity of your current or future AI-Ready data centers. We can then make recommendations and help implement programs to improve sustainability.

Sustainability Consulting Services
Global sustainability experts consult with customers to set a bold, actionable strategy to achieve carbon & sustainability goals, assuring confident and accurate reporting.

Read more here →

Drive power and water efficiencies to decarbonize operations

Leverage digital tools to measure, analyze, and simulate changes.

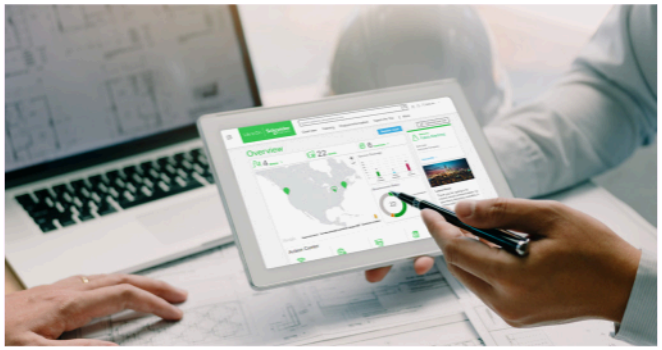
We define energy efficiency strategies to reduce energy use in your current operations. Our expert teams evaluate Scope 1 (purchased electricity) & and Scope 2 (from electricity generated on-site) emissions, make recommendations and offer services and solutions to reduce.

EcoStruxure™ IT Advisor
Cloud-based asset and planning software to reduce OpEx and plan for uptime, with analytics to facilitate capacity planning.

Read more here →

EcoConsult
Consultants who audit, evaluate, and map electrical and automation assets and systems, leveraging software to optimize and digitize those assets and systems.

Read more here →



Energy Efficiency Services
Consulting services to improve site efficiency for cost savings and CO_2 emission reduction.

Read more here →

Renewable Energy Strategy & Procurement Services
Relieve power availability constraints through strategic procurement support and renewable energy opportunities.

Read more here →

Decarbonize supply chains

Scope 3 can be a large component of your accelerated compute AI data center.

We efficiently evaluate the embodied carbon of your current AI data center and consult with your suppliers to facilitate a comprehensive decarbonization plan. At both end-of-life and during construction, we offer services to help minimize the impact of assets & facilities.

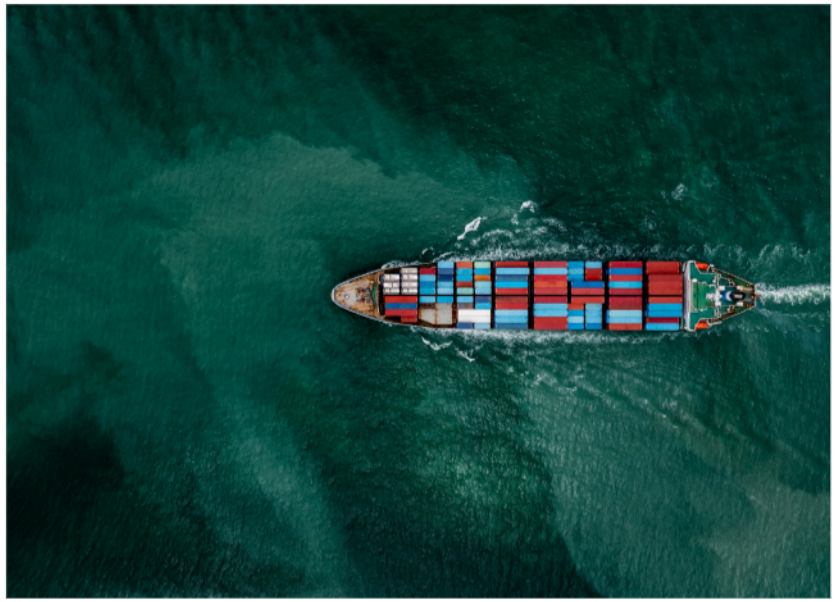
RETROFIT ACTIVE COMPONENTS CAN LEAD TO SAVINGS OF UP TO

90%

OF RESOURCES

Supply chain decarbonization services
Reduce Scope 3 emissions by engaging suppliers through tailored program including goal setting, emissions assessment, and decarbonization initiatives through education, software tools, and progress tracking.

Read more here →



EcoFit
Centralized solution for useful life extension through power and cooling modernization, and second life management of critical components from dedicated circularity services supported by EcoStruxure™ Asset Advisor monitoring and insights.

Read more here →

Prioritize low embodied carbon products and materials

Our portfolio is designed with sustainability in mind.

This means we're driven to reduce the impact of our entire portfolio of assets, by utilizing an EcoDesign program and methodology for R&D and an Environmental Data Program to ensure transparency of data to customers.

80%

OF SCHNEIDER ELECTRIC SOLD GOODS HAVE A PRODUCT ENVIRONMENTAL PROFILE (PEP)

EcoDesigned product portfolio
Our EcoDesign program ensures that we design our products to reduce their environmental impacts, and our Environmental Data Program communicates the environmental. performance of our products to our customers. This enables customers and partners to make data-based decisions leveraging reliable and granular lifecycle related data sets. It also enables customers to differentiate their own value proposition by opting for more sustainable choices and accurately evaluate and report on their own environmental footprint and carbon reduction efforts.

Read more here →

Compliant sustainability reporting for all stakeholders

Software and services that provide the data and reporting structure needed for local compliance.

Schneider Electric software tools can extract the data from smart and IoT enabled devices across your AI data center portfolio to provide accurate data. Our sustainability experts can help you construct the data in the format needed for local reporting, understanding the local and regional requirements needed to comply with all requirements no matter the geography.

2,400+

EXPERTS ACROSS OVER 100 COUNTRIES, PROVIDING LOCAL, REGIONAL, AND GLOBAL REPORTING SUPPORT

Sustainability Consulting Services
Global consulting team that support sustainability strategy definition & solutions, reporting, procurement, and ensure regulatory compliance.

Read more here →

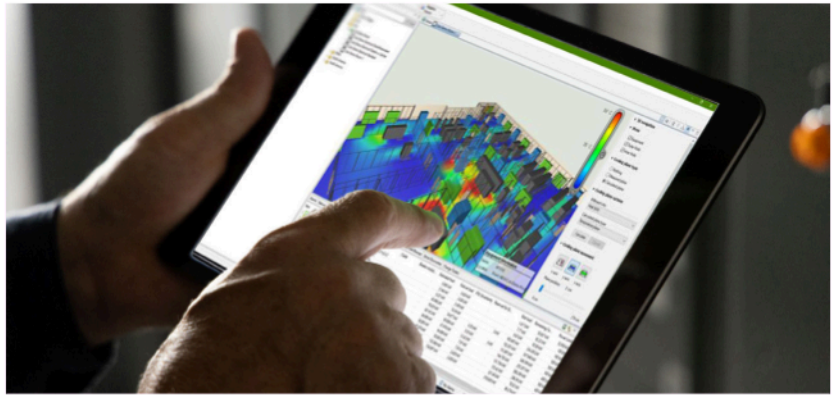
EcoStruxure™ Resource Advisor
Cloud-based software platform for managing energy and sustainability footprint by collecting, analyzing & automating key information, under centralized data to enable AI and human expertise.

Read more here →

EcoStruxure™ IT
Vendor-neutral DCIM solution for monitoring of IT infrastructure

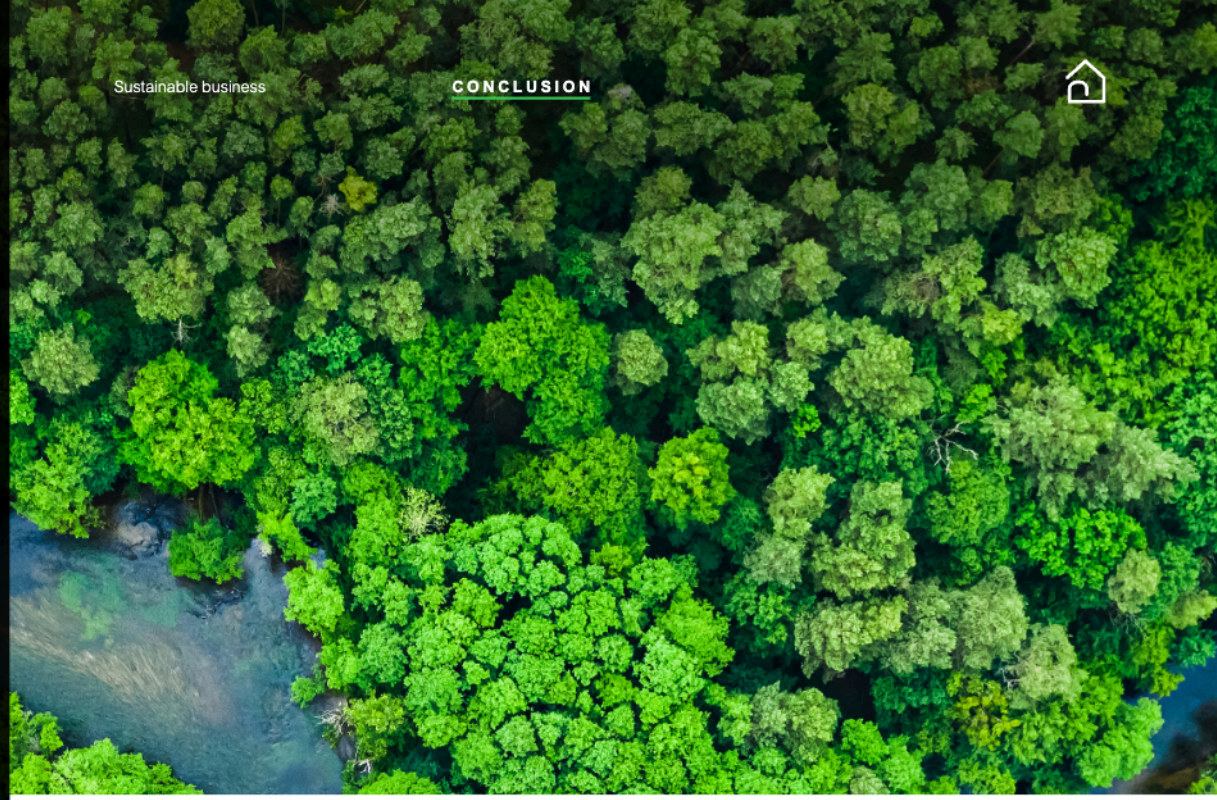
EcoStruxure IT software enables owners and operators to measure and report data center performance based on historical data and trends analysis, combining it with AI and real-time monitoring to turn it into actionable insights for improved sustainability.

Read more here →



CONCLUSION

Don’t go at it alone Schneider Electric is at the ready



We’re your trusted partner for planning, designing, building and operating AI-Ready data centers. Every day, our teams deliver high-density physical and digital infrastructure solutions and best-in-class energy strategies for sustainable deployment. Combining sustainability consultancy with deep data center domain expertise to deliver flexible data centers of the future.

Reach out to us today to partner on your next AI data center project.

Resources and reference designs

- **Whitepaper:** The AI Disruption: Challenges and Guidance for Data Center Design WP110
- **Whitepaper:** AI-Driven Data Centers: Revolutionizing Decarbonization Strategies WP106
- **Whitepaper:** Guide to Environmental Sustainability Metrics for Data Centers WP67
- **AI Reference Designs to Enable Adoption:** A Collaboration Between Schneider Electric
- **SE-NVIDIA Reference Design**

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