

The AI paradox: Sustainability and energy consumption

Life Is On

Schneider
Electric

Life Is On

Schneider
Electric

The pace of digital adoption and electrification is

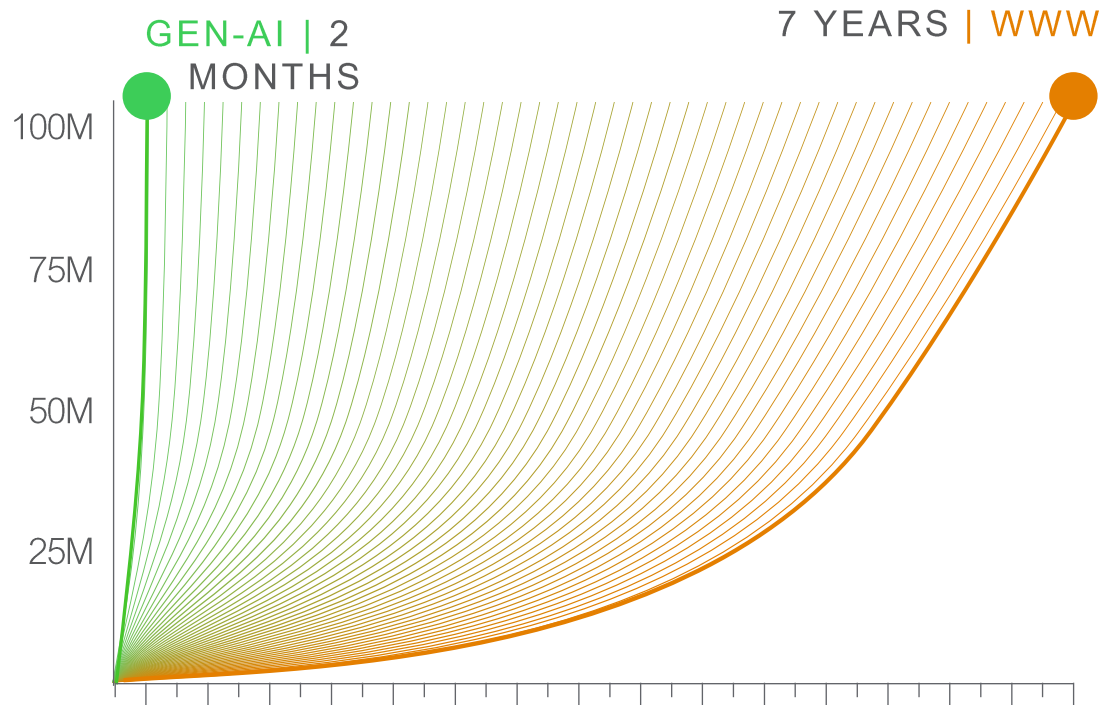
Growing demand for **Data Centers**



3bn more people needing access to electricity by 2050



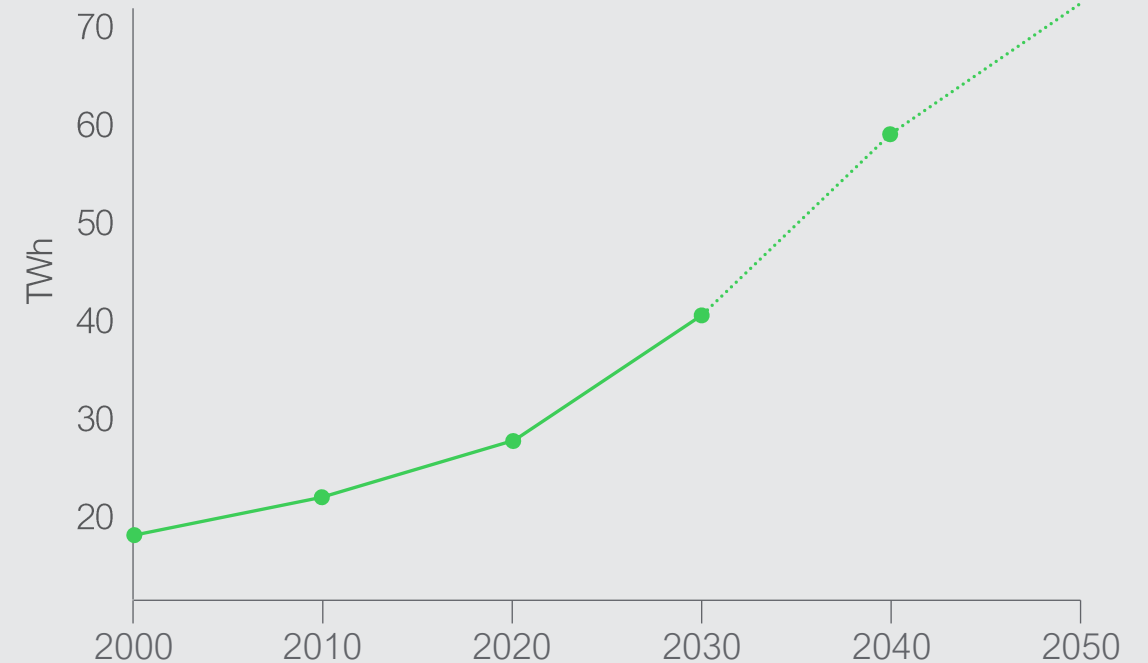
Electrification to meet Net Zero targets



Adoption rate: first 100M users

Sources: Citi Research, Similar Web, Open AI, Enerdata

ELECTRICITY: PRODUCTION 2000-2050



Our new digital economy is impossible without data



90% Internet Users

In 2030, 7.5 Billion people
(Arcserve)



>100B IoT Devices

In 2050 vs around
25 Billion in 2022



61% Yearly
Big Data Growth

Stored data from 50 ZBs 2022
to 175 ZBs by 2025 (*IDC)



\$16T From AI

14% increase in Global Economy by
2030 due to labor productivity
and product enhancements (WEF)

AI is the
next industrial
revolution
touching
every aspect
of our lives



100M ChatGPT Users
in first two months

Reuters



~\$60B YTD Investment
into AI by Private Equity
(Goldmann Sachs)



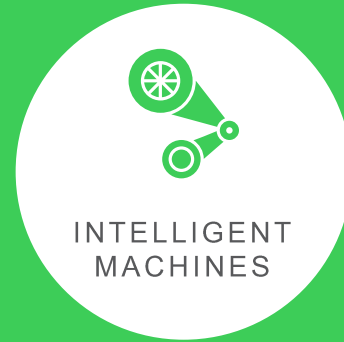
\$1.3T GenAI
Market Cap

By 2032 (Bloomberg)

Development

Deployment

Training



Augment / Inference

- Huge processing power
- Massive memory capacity
- Extended processing time
- Scalability
- Energy intensive

- Efficient resource usage
- Low latency
- Scalability
- Energy efficient
- Model optimization, tuning, customization
- Compressible and integrateable

AI deployment brings its own challenges to the data center market

Capacity

Related to the need of power



Vacancy

At an all-time high, no space availability



Rental rates

Costs going up



Design

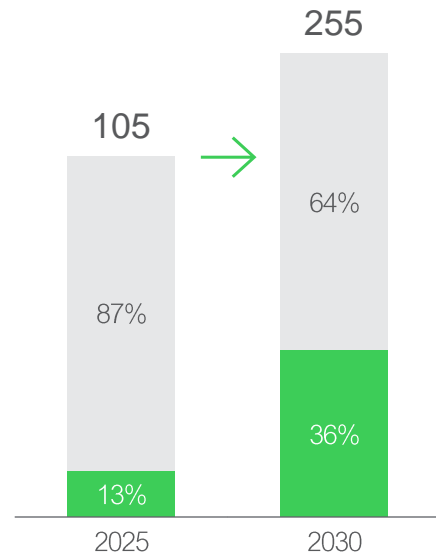
Uptick in size of hyperscalers



AI is accelerating

Expected to reach 36% of all installed data center workloads by 2030 - raising several difficulties for data center providers

SHARE OF AI (INCL. GEN AI) WORKLOADS OVER TOTAL CAPACITY (2025-2030) [IN GW]



■ AI (incl. Gen AI) workloads
■ Other workloads

2023

+150GW

Of capacity to be added in next 5 years

60%

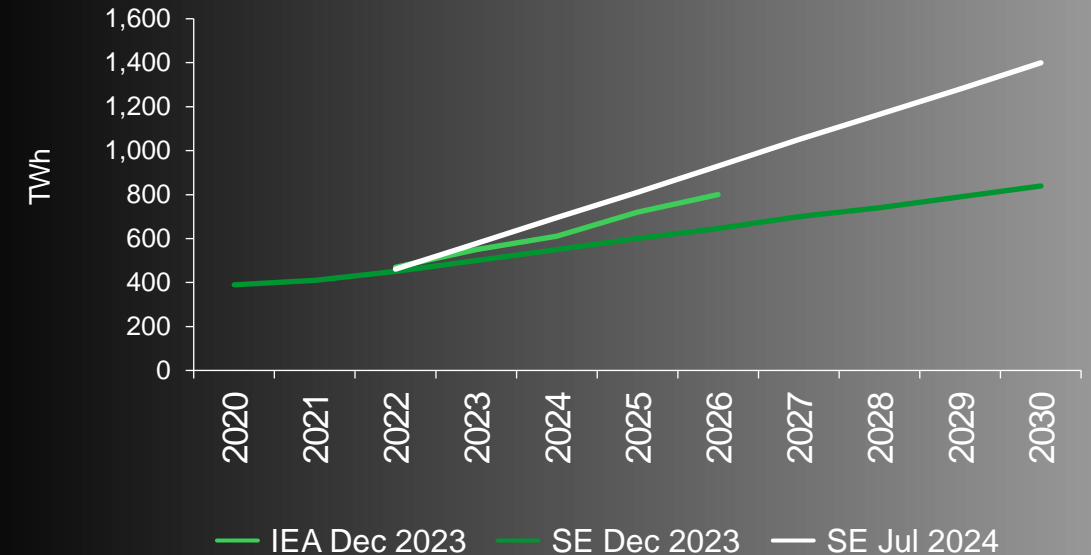
Of new build allocated to AI

40 – 100kW

Average density, long tail towards high density

Higher density requires more power

GLOBAL ENERGY DEMAND FROM DATA CENTERS (2020-2030)



Sources: IEA (2023), Schneider Electric DCoF study (2024)

1. Implies about 15 to 30, "GW scale", deployed training factories on the planet by 2030

To thrive in the new AI era, data centers need to:

OPTIMIZE POWER
CAPACITY AND
EFFICIENCY



DEPLOY
HIGH-DENSITY
INFRASTRUCTURE



ENHANCE
SUSTAINABILITY
PRACTICES



Energy strategy for the AI Era

- ✓ Energy Procurement
- ✓ Onsite power Generation
- ✓ Battery and back-up Resources
- ✓ Manage power sources



PRIME
POWER



BACK-UP
POWER



AVAILABLE
POWER



HOW YOU MANAGE WILL
HELP YOU GET TO YOUR
SUSTAINABILITY GOALS



Not just more power. More optimized power

Challenges

Strategic Energy Sourcing



Onsite Power Generation



Manage Power Sources



Solution

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

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

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



WE HELP GLOBAL DATA CENTER OPERATORS SAVE

€9M

BY LEVERAGING FLEXIBLE POWER SOURCING

FROM GRID TO CHIP AND
CHIP TO CHILLER

Welcome to the new era of data centers

What's so special about AI data centers?



Rapid Compute evolutions

Data Center flexibility as owners and operators are planning with more uncertainty



Ultra Power Density

Need guaranteed and reliable operation near operational limits



Race to AI leadership

More than ever... need to build fast and ability at scale



Dynamic Power Profile

Ensure all elements in power training can both tolerate and possibly "smooth" power profile



Architecture variability

Wide range of innovation from zero resiliency to high availability

End-to-End for AI

- ✓ Sustainable AI-Ready Data Center Design
- ✓ AI-Ready High-Performance Power Trains
- ✓ Hybrid & High Efficiency Cooling Solutions for AI loads
- ✓ Safeguard your Operations

AI-Ready high-performance power trains

➤ Switchgear

Low & Medium Voltage Switchgear - Get high-performance functionality, compact installation footprints, and superior design with our LV/MV switchgear products.

➤ UPS

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

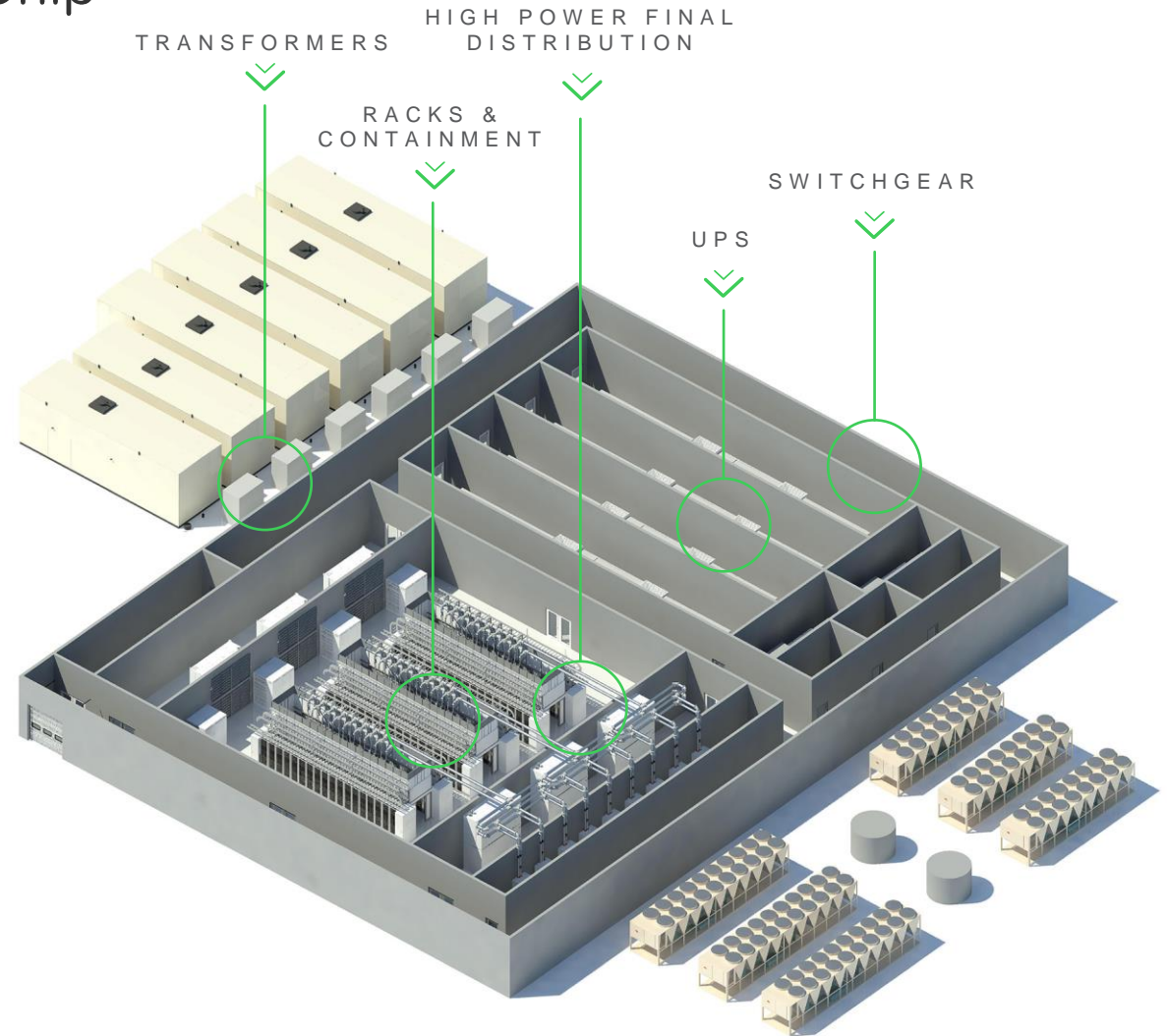
➤ High Power Final Distribution

Designed for efficient installation, the compartmental approach separates monitoring, distribution, and control.

➤ Racks and Containment

NetShelter rack systems and air containment systems are built to last, highly secure and simple to configure.

Grid to Chip



Hybrid & high efficiency cooling solutions to run AI loads

> Liquid to Liquid Cooling Distribution Units (CDUs) and Technology Cooling Systems (TCS)

to ensure flow control, temperature control, pressure control on Technology Cooling System (TCS), as well as fluid treatment, filtration and quality.

> Liquid to Air CDUs,

as an alternative solution which allows to use liquid cooling servers in an air based white space

> High Temperature Chillers

Designed for flexibility and efficiency, using economization / free-cooling as primary heat rejection for the Liquid Cooled servers

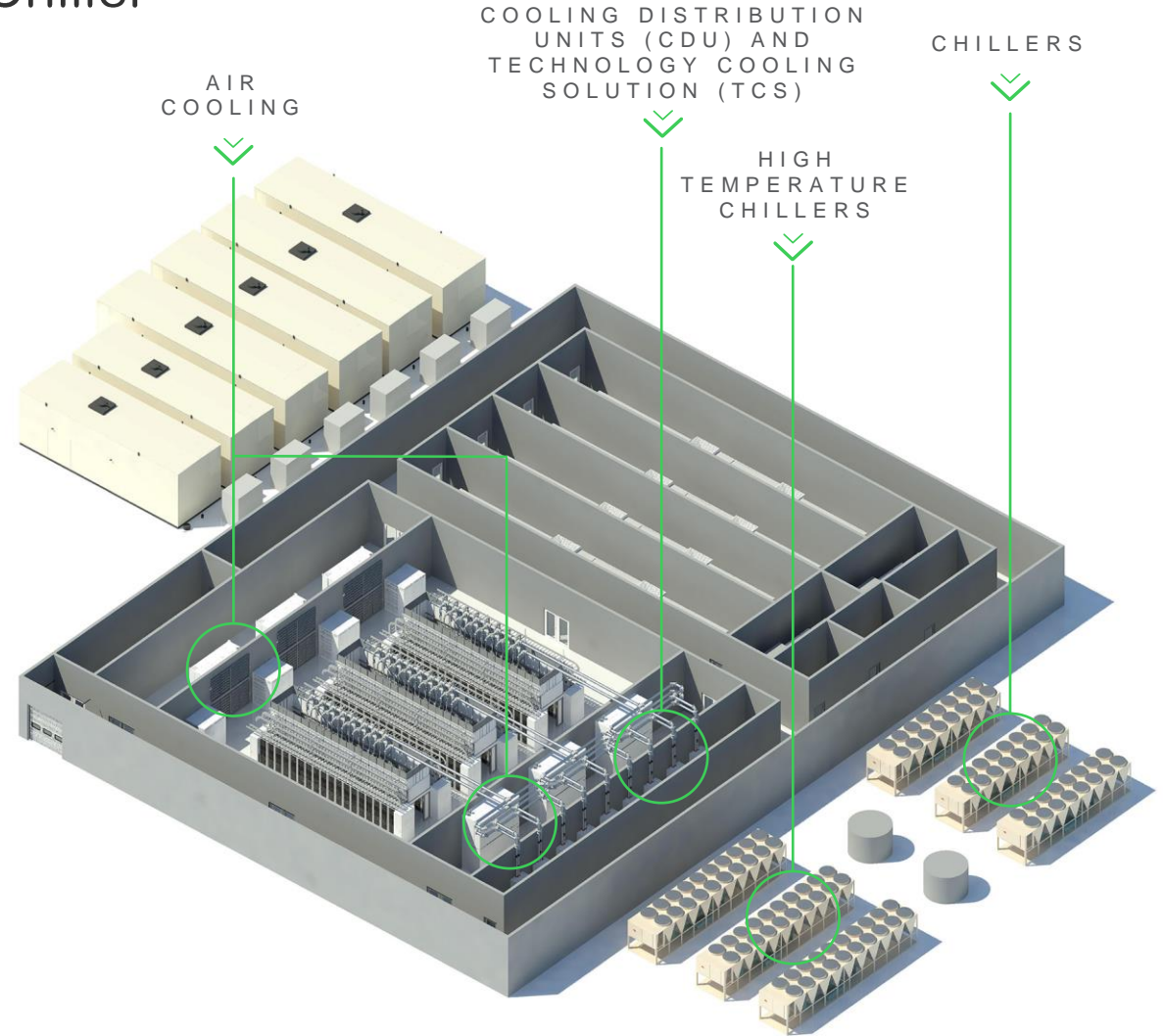
> Air Cooling

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

> Chillers

Reliable cooling solutions designed to enhance the performance and energy efficiency of your data center by removing heat from the facility to maintain optimal temperatures for efficient operation of air based heat rejection systems

Chip to Chiller



Sustainable Business Practices

- ✓ Align sustainable strategies with business growth
- ✓ Drive Power and Water Efficiencies to Decarbonize operation
- ✓ Decarbonize supply chains
- ✓ Prioritize low embodied carbon products and materials
- ✓ Compliant Sustainability reporting for stakeholder

How do we decouple AI data center growth from energy consumption?



Sustainability First Approach

Challenges

Scope 3 emissions have grown exponentially



New regulatory requirements to report on



Rebuild your sustainability strategy



Solution

We can help you decarbonize by engaging your top suppliers with goal setting, emissions assessments, education and progress tracking with our [Supply Chain Decarbonization Services](#)

Our [EcoStruxure Resource Advisor](#) is a cloud-based platform that manages your energy footprint by collecting, analyzing and automating your most important sustainability statistics under a centralized hub to provide actionable insights.

We also offer [sustainability consulting services](#) that help you set, meet and exceed your sustainability objectives in line with your AI strategy. Our team of more than 2,400 experts across 100+ countries can help you reach your goals.



SCHNEIDER ELECTRIC NAMED THE

World's Most Sustainable Company

BY TIME MAGAZINE AND STATISTA

An aerial photograph of a dense green forest with a prominent, winding river that meanders through the landscape. The river is a vibrant blue-green color, contrasting with the deep green of the trees. The overall scene is bright and natural, suggesting a healthy, sustainable environment.

Our Business
is making
yours more
sustainable.

The enablers of a sustainable growth of AI & Data Center

Power



People



Partnership



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

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