



MEAN WELL: Rethinking Power Supply for Data Centers

Power Supplies | 24.09.2026



Figure 1: As modern data centers continue to expand, power supply and cooling are becoming increasingly important. (Source: Shutterstock)

Data centers are currently among the fastest-growing industries, driven by the increasing use of artificial intelligence. At the same time, high demand is creating new opportunities for related industries, including manufacturers of energy storage systems (ESS), fuel cell technology and liquid cooling solutions, whose products are increasingly needed to meet the growing requirements of modern IT infrastructures. As a result, the focus is shifting beyond computing power alone to the question of how the underlying infrastructure can be supplied with energy reliably and efficiently.

What are the power supply requirements of modern data centers?

Data centers need to be available around the clock. Even brief power interruptions can affect the operation of the IT infrastructure. Battery systems therefore bridge short-term power outages until an emergency generator takes over. At the same time, increasing computing power raises server energy consumption and heat generation, making reliable thermal management just as essential as a stable power supply.

In principle, two power supply concepts can be distinguished. Traditional IT environments predominantly distribute power using AC voltage. In addition, high-voltage direct current architectures, known as HVDC systems, are becoming increasingly important. Both approaches place different

requirements on power supplies, energy storage systems and cooling systems requirements on power supplies, energy storage systems and cooling systems.

How can reliable power supply and cooling be ensured in AC data centers?

AC data centers use scalable three-phase power supply and online UPS systems that include inverters, battery chargers and battery storage systems, among other components (Fig. 2). Since the power electronics installed in these systems also generate heat, they require continuous cooling. Three-phase power supplies such as MEAN WELL's **XTR-480-24** or **XTR-960-24** are suitable for this purpose. They supply the UPS cooling units, which consist of several 24 V DC fans typically rated at around 50 W, and are designed to withstand short-term voltage peaks from the inverter during start-up.

Even more heat is generated within the server racks themselves. Liquid cooling systems are therefore used to circulate coolant between hot and cold areas. Rear Door Heat Exchangers (RDHx) installed directly on the compute racks support heat dissipation.

To power these systems, MEAN WELL offers the DHP-1UT-B rack chassis with 3,200 W **NCP-3200** series rack power supplies. The 19-inch system provides 12.8 kW of power per unit, is scalable in terms of output power, and is suitable for powering the BLDC motors used for hot and cold water circulation as well as the 500 W DC fans of the RDHx.

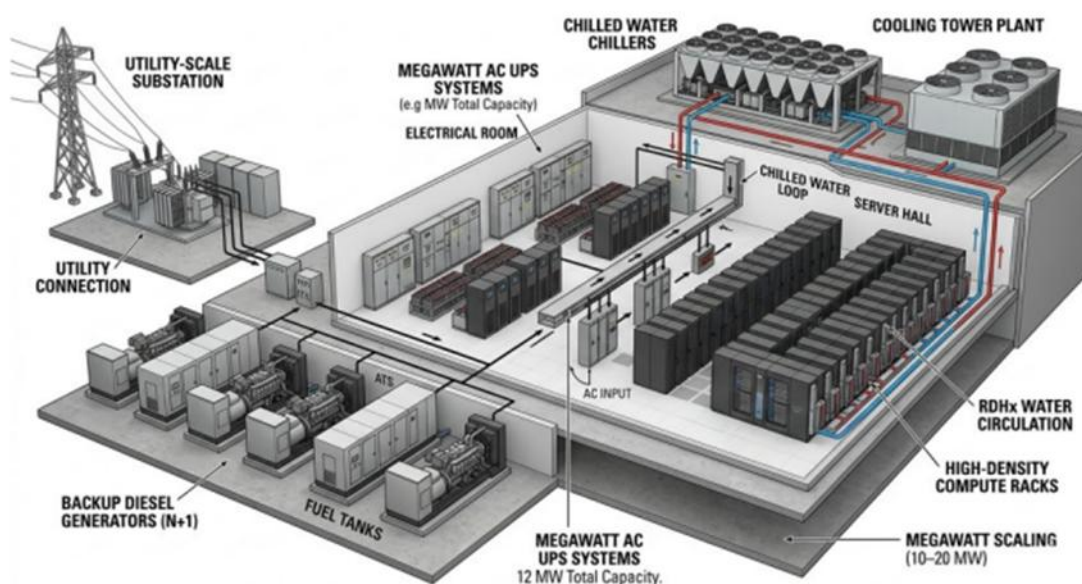


Figure 1 AC powered Data Center infrastructure

Figure 2: Traditional AC-based data centers combine three-phase power supply, online UPS systems, emergency generators and liquid cooling. (Source: MEAN WELL)

What advantages do HVDC data centers offer?

In a DC-based infrastructure (Fig. 3), the computer racks are supplied with 800 V DC instead of 400 to 480 V AC. HVDC power distribution can reduce power requirements and thereby lower power losses as well as the amount of cabling material needed. At the same time, an 800 V DC battery energy storage system (BESS) can take over the function of a conventional AC online UPS. This can reduce costs and improve overall system efficiency by several percentage points.

In the event of a power outage, the BESS supplies energy for several minutes until the emergency generator takes over. However, components such as the energy management system, display or controller require lower DC voltages. For these applications, MEAN WELL offers the **RSDH-150/300** and **DDRH-120/240** DC/DC converter series for HVDC applications. With their wide input voltage range of 250 to 1,500 V DC, they can step down the high DC voltage to a lower DC voltage for the respective devices.

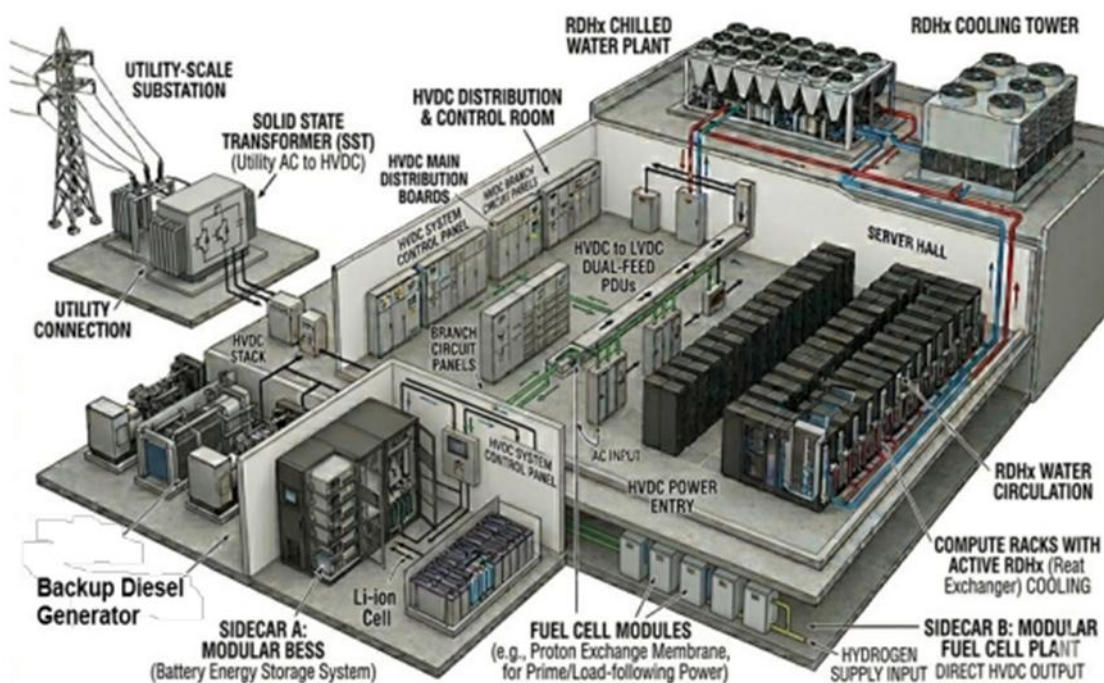


Figure 2 DC powered Data Center infrastructure

Figure 3: In a DC-based data center, an 800 V BESS replaces the conventional AC online UPS. (Source: MEAN WELL)

What role can fuel cells play in data centers?

In addition to battery storage systems and diesel generators, fuel cells can also serve as a potential energy source for data centers. Powered by hydrogen, they can provide energy over a period of several days. As a result, fuel cell systems can potentially replace both the diesel generator and the BESS. Another advantage is that no start-up waiting time is required.

For the hydrogen production required for this purpose, MEAN WELL offers high-power supply solutions such as the SHP-30K-55, which can be operated in parallel to provide the high power levels needed for electrolyzer stacks. These stacks produce hydrogen outside the data center for subsequent use in the fuel cells.



Figure 4: MEAN WELL provides both AC/DC and DC/DC power supply solutions for data centers. (Source: MEAN WELL)

MEAN WELL thus provides both AC/DC and DC/DC power supply solutions for various areas of modern data centers. The new XTR series and the DHP-1UT-B rack system support thermal management, while the **RSDH-150/300** and **DDRH-120/240** series are designed to convert 800 V DC to low DC voltages in HVDC systems. In addition, power supply solutions are available for high-power applications such as hydrogen production.

The Value of Schukat

Schukat electronic carries LED drivers from various manufacturers, including **MEAN WELL**, **Tridonic**, **Recom**, **Yingjiao**, and others. The distributor stocks approximately 8,000 different types of **power supplies** and DC/DC converters in quantities suitable for production at its automated central warehouse in Monheim am Rhein.

In addition, Schukat provides fast and expert support through **direct points of contact** and offers a knowledgeable field service team to assist with selecting the right power supply products, answering customer-specific questions, and resolving issues on-site. Customers benefit from prompt processing of inquiries, the provision of data sheets and samples, as well as a range of delivery quantities—from samples to mass production.

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As a family-owned company based in Monheim am Rhein, Schukat has stood for continuity, short decision-making processes and partnership-based cooperation since 1964. Today, the company employs 150 people and 20 trainees and achieved a turnover of €127 million in 2023.

Schukat is certified according to DIN EN ISO 9001:2015 and offers complete traceability of delivered components with its traceability solution. In order to make the procurement process efficient and support customers from development to series production, the company also offers its customers digital services such as API interfaces, EDI, ECAD models, a reeling service, 24-hour delivery and housing modifications. The business model is complemented by consistent digitalisation, sustainability initiatives and a clear strategic focus on future-oriented markets such as industrial automation, medical technology, renewable energies and home automation.

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