

## Data Centers: Then, Now, Next – Engineering the Future of Digital Infrastructure

Shaping the Future With the Next Generation of Data Center Design

CA, UNITED STATES, May 22, 2025 /EINPresswire.com/ -- Data centers are the invisible force behind our connected world. From streaming your favorite show to enabling real-time AI applications, these facilities are the digital backbone of modern life. But data centers didn't always look like the sleek, high-efficiency campuses we see



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today. The industry has undergone a dramatic transformation—from clunky mainframes housed in vast rooms to highly optimized hyperscale facilities designed for sustainability and rapid scalability. As we look ahead, what does the future hold for data center development? Kier + Wright (K+W) is helping answer that question with innovative design and engineering solutions built for what's next.

Then: The Birth of Data Centers

The first data centers were rooms filled with massive mainframes that required extensive cooling and dedicated staffing to operate. In the 1990s, the rise of the internet and enterprise computing led to the development of purpose-built data centers. These facilities were the first step toward the modern hyperscale infrastructure we see today.

Back then, efficiency wasn't a priority—hardware needed vast amounts of energy, and cooling solutions were rudimentary at best. But as demand for digital storage skyrocketed, the industry began to shift towards more strategic and sustainable engineering solutions.

Now: The Backbone of the Digital Age

Today, data centers are more than just server storage—they are mission-critical hubs that power AI, cloud computing, financial transactions, and nearly every aspect of digital life. Modern facilities prioritize reliability, speed to market, and energy efficiency.

"Data centers require precision, speed, and scalability to meet the demands of an ever-evolving digital landscape," says Emad Sarieddine, PE, Vice President at K+W. "From site development to infrastructure optimization, these facilities depend on engineering solutions that streamline construction, enhance operational efficiency, and ensure long-term resiliency."

As data centers grow in complexity, the need for sustainable infrastructure and resilient site design has become essential. These facilities must be engineered to handle increasing power demands, optimize cooling efficiency, and integrate scalable solutions that support future growth. From site constraints to utility coordination, every aspect of development requires a strategic approach to ensure reliability, sustainability, and operational efficiency.

"Modern data centers must be designed with efficiency, scalability, and sustainability at their core. Integrating green infrastructure, advanced stormwater management, and resilient site design is critical to meeting the demands of next-generation digital infrastructure," adds Mark Knudsen, PE, QSD, Vice President.

Next: The Future of Data Centers

As demand continues to grow, data center developers face new challenges. Emerging trends like Al-driven automation, quantum computing, and edge computing are pushing engineers to rethink traditional designs. Sustainability will also be a defining factor, as regulations and public demand call for facilities that minimize carbon footprints while maximizing efficiency.

"The next generation of facilities need to be designed not just for current demands but for the evolving landscape of digital infrastructure, ensuring they remain efficient and scalable for years to come," says Ryan Amaya, PLS, Vice President.

What's Next for Data Center Development?

The next generation of data centers will focus on:

Al-Optimized Operations: Automated cooling and power distribution to improve efficiency. Renewable Energy Integration: Solar, wind, and battery storage solutions to power operations sustainably.

Edge Computing Expansion: Moving processing power closer to end-users to reduce latency. Autonomous Data Centers: Al-driven facilities that self-regulate and minimize human intervention.

At K+W, we don't just engineer data centers—we partner with developers to build infrastructure that meets the demands of an ever-changing digital world. Whether you're planning a hyperscale expansion, edge deployment, or sustainable retrofits, our team is ready to help you navigate the future of data center development.

Partner with K+W for Your Next Data Center Project

The facilities built today will define the digital world for decades to come. Are you ready to develop a future-proof data center? Contact K+W to discuss how we can bring your next project to life.

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