Data center tips

Performance matters

This month's topic: Think modular for new construction and retrofits

When discussing advancements in data center infrastructure, few concepts are as flexible and far-reaching as modular solutions. The term encompasses rapid deployment, lean construction, containerization, prefabrication, equipment retrofits and contingency planning for add-on computing power. All forms of modularity share the common goals of speed, cost efficiency, energy efficiency and consideration of the environment, with no loss of reliability.

A key advantage of modular solutions is that they can be scaled. According to Christopher Belcastro, an electrical engineer with ABB Power Solutions, "Scalability means that there is no need to over-specify a configuration as modules can simply be added, as needed, in the future. Think of modular as a building block that can be replicated to increase capacity."

The term modular solutions is sometimes used synonymously with containerized data center solutions: components and systems that are assembled and tested in a container at the factory, before being transported to the installation site. A second type of modularity is the prefabrication of components that can be added quickly as more capacity is needed at a facility. Prefabrication can range from better use of existing racks and surrounding space, to entire "spoke" build-outs from a central hub to house incremental capacity.

When it comes to retrofits, a modular strategy is particularly well suited to the replacement of existing electrical equipment. It can be deployed to update legacy Uninterruptable Power Supply (UPS) equipment, as well as transformers, including those in Power Distribution Units (PDUs) and server power supply systems.

An example of a power-dense, space-saving technology that adapts seamlessly to various modularization strategies is the Cyberex® Remote Power Panel (RPP). Designed for integration into standard rack lineups, a Cyberex unit will distribute a higher voltage and amperage with a smaller, more versatile footprint. With available configurations of 225A and 400A, up to 415 volts, the Cyberex RPP can significantly lower a data center's utility costs.

Replacing older, inefficient electrical equipment can have an immediate benefit, since studies indicate that power loss represents as much as 10 percent of the total energy use in a typical data center. A 50 percent reduction in power chain loss can save the average data center an estimated 44 kWh per year per square foot, a reduction of approximately 5 percent in total energy use.

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