Four Strategies for Data Center Safety and Reliability

A recent Data Center Knowledge article points out that an awareness of safety in general, and data center electrical safety in particular, is key to maintaining data center uptime and minimizing operational risk to the facility and personnel.

But there are other ways to solve the problem.

The greatest temptations facing data center operators are adding circuits or doing cutovers live. In traditional power distribution schemes, RPPs or busway handle branch circuit distribution via whips or modular tap boxes, which in turn power the rack. Bringing new racks online can require new whips to be run with outlets that match the rack power strip receptacles. In some cases, more than one whip is needed. More often than not, adding racks also brings with it a change in the density of the power required.

One solution to this problem is to move the power distribution decision-making closer to the rack. The Zonit Z-PDS allows you to do just that. Imagine a smaller distribution form factor. Rather than an RPP with two or four 42-pole panel boards, think about the same job being done within the rack itself.

In addition to saving space, it turns out that this approach allows you to distribute power more safely and reliably too.

First, you can add circuits without powering down the units, which means that work can be done cold, not hot. You can do move, add, and change work while the rest of the circuits remain hot, so you do not have to schedule an outage. At the same time, you can add a circuit to the unit cold, which means that you are safely adding whips to a deenergized circuit. Imagine being able to manage power in the data center on a whip by whip basis rather than planning an entire RPP's worth of distribution.

A failure within an RPP can be catastrophic. It often means bad news for the both the A and B feeds, since they are often both in the same cabinet. In addition to risk to personnel from high levels of energy, entire rows of racks can be impacted by an issue inside a single RPP. With Z-PDS, individual circuit breakers limit the domain of failure. By reducing the number of circuit breakers per device to X instead of 84, the domain of failure is limited to a single Z-PDS. And since the Z-PDS is an end of service device (ref. NFPA 1270), the individual breakers do not need to be tied together.

Another feature of this revolutionary power distribution unit is that it automatically balances power utilization across the phases. This is 'automatic' in the sense that you don't have to revisit it once the circuit is plugged in, not in the dynamic sense of the term. Each circuit is pre-balanced, so once you add a circuit, you will not need to go back to the panel to balance the electrical load. This automatic load balancing is accomplished by rotating the x, y, and z phases circuit by circuit. Since you can set it and forget it, you no longer have to worry about the downtime associated with overloading a phase.

Finally, this is an electrical distribution system that is modular and can be built off site. The Z-PDS is particularly conducive to rack and stack environments, as well as environments that rely on testing prior to installing a rack inside the data center. In these applications, the power distribution to the rack can be installed outside the operating environment and tested before moving into the data center, too. Because of the modular nature of the Z-PDS, you can do just that.

The Z-PDS provides at least four new strategies for making power distribution in your data center both safer and more reliable. To learn how you can improve safety and reliability at your site, click here for more information about the revolutionary Z-PDS.