



by [redacted]

In recent years to provide high efficiencies at less than full load levels. This is significant, since it is not uncommon for a data center to be operating under partial loads. The last few years have seen the introduction of static UPSs with advanced capability integral silicon carbide (SiC) semiconductors possessing extremely flat efficiency curves. Such units have specs stating 98.2% efficiency in doubleconversion mode and can achieve 98% efficiency at loads as low as 30%.

A high capacity static UPS is a superior alternative to the space requirements, complex installation, and maintenance demands of utilizing multiple low-capacity static systems strung together in a multi-module configuration. A single large system occupies less floor space than multiple UPSs. Less square footage occupied by the equipment composing the gray space of a data center frees up more room for IT equipment, and therefore, increased customer and profitability for the data center owner.

A single large system also requires less cooling, again freeing up valuable real estate that can be used for more income-generating racks and servers. A single UPS with one input and one output has fewer connection points and, therefore, fewer potential points of failure and less opportunities for things to go awry. It also greatly simplifies installation complexity and reduces the electrician hours required to install it. This is particularly relevant today given the current economic boom in the U.S.

When the economy is healthy, there is a wealth of jobs for skilled labor, including electricians. Unfortunately, this plethora of jobs often leads to a shortage of electricians, so anything that can be done to reduce the need for an electrician is worth considering. Time is money, and when electricians are not available to perform the work, the completion date gets pushed out, adding unnecessary cost to the project.

EXPANDABILITY IS A MUST

A common feature in today's high-capacity static UPS models is expandability, meaning that additional modules can be added over time as dictated by an increase in capacity needs. IT equipment procurement professionals can be caught between a rock and a hard place at times, being challenged to stay under budget, yet specify equipment that will last indefinitely. An expandable UPS will thankfully meet both criteria. This means a data center can be built out over time,

and also paid for over time. The total capacity utilized on day one in the life of a data center will never be 100%, so it doesn't stand to reason to furnish it with equipment to handle total capacity at the onset. Also, cloud data centers and colos don't fill up instantaneously—it takes some time to match what's offered by the data center with appropriate clientele. Then, over time, as customers, servers, and necessary power capacity increase, additional modules can be added to the UPS to provide sufficient backup capacity.

One final advantage worthy of mentioning concerns redundancy. These new high-capacity UPSs feature built-in redundancy and are typically constructed of several modular sections in parallel. If one of these modules were to fail, internal controls would isolate the damaged module and allow the UPS to continue to operate normally. As an example, let's assume that the required load is one megawatt and a big box UPS consisting of a quantity of four 350 kVA modules (a total of 1,400 kVA) is being used. In this scenario, there is an N+1 redundancy, since 1,050 kVA is all that is really required to sufficiently support the 1 MW load. If one of the four modules were to go down, the UPS would be reduced to N redundancy, but would remain operational. It needs to be noted that not all UPSs are created equal. It would be wise to keep in mind that you get what you pay for. So buyer, beware. Take time to review all options wisely and keep in mind that the average life span of a UPS is about 15 years. The total cost of ownership (TCO) begins with the initial capital expenditure, but there are ongoing maintenance and operational costs associated over its 15 years, including warranty costs, cooling costs, parts, preventive maintenance, and, of course, the UPS's operating cost in terms of efficiency and corresponding electric bill.

By the very nature of its business, the data center industry is adverse to risk, and a big box UPS goes a long way in reducing a number of risks. Its simpler installation means less chance for mistakes and lower installation cost. Fewer equipment components will lead to fewer potential points of failure, and a lower mean time between failure (MTBF) as an overall system. Redundancy is always desirable in a mission-critical system, and these boxes offer N+1 redundancy inherently. And finally, incorporating a large capacity UPS reduces the overall footprint of gray space in a data center, leading to more available income-generating white space. All of this combined leads to a better bottom line for the data center owner.