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Validus: A New Power Player

The startup has raised \$10 million in venture funding to develop direct current as an alternative to AC for computer data centers

by [Steve Hamm](#)

In the 1880s, power industry pioneers Thomas Edison and George Westinghouse Jr. engaged in a fierce public debate dubbed the "war of currents" about whether alternative current (AC) or direct current (DC) was the superior way to distribute electricity. Westinghouse and AC ultimately won. And there hasn't been much debate on the issue for more than 120 years.

Until now. A handful of entrepreneurs and scientists have argued in recent years that DC is superior to AC for certain uses—especially inside the walls of a computing data center. On Dec. 18, Validus DC Systems, a startup in Brookfield, Conn., made a bold public statement when it announced \$10 million in venture funding and a product line aimed at transforming the way electricity is used inside data centers. "We think this is revolutionary for any electronically intense environment, and data centers are the most intense electrical applications today," says Validus Chief Executive Rudy Kraus, a former U.S. Marine Corps attack helicopter pilot.

DC: "THE TIME IS RIGHT"

Validus claims that its systems for distributing and transforming electricity within data centers can deliver 40% efficiency improvements. Today, most electricity is transported in the AC format, but since DC power runs most electronics, it has to be converted into DC power. Validus' system avoids multiple AC-to-DC and DC-to-AC conversions within data centers, each of which results in lost power. Much of the underlying technology was developed in conjunction with Marcel Gaudreau, formerly head of MIT's Plasma Science & Fusion Center.

The company says some of the perceived drawbacks of DC power, including the danger of electrocution and the need for large-scale cabling, have been dealt with via its technology. It's entering the market at a time when companies that own or run data centers are coping with rapidly rising electricity bills and are scrambling for ways to reduce their energy consumption.

Validus was started in 2002 as an offshoot of Kraus' Data Support Associates (DSA), a designer and operator of data centers. The company was originally funded by \$4 million from DSA, but raised the additional \$10 million from a handful of venture capitalists, including lead investor [Oak Hill Venture Partners](#), to help finance marketing and sales of its product line, which is just now going to market. "What we see is a big market, a disruptive technology, and the time is right," says David Brown, managing partner of Oak Hill.

LINGERING DEBATE

Validus received a credibility boost earlier this year when a study from the [Lawrence Berkeley National Laboratory](#) showed a 28% efficiency savings when comparing DC vs. AC in a typical data center. "The numbers are pretty damned staggering. These guys are right on the money with respect to the energy consumption issues," says Jack McCarthy, a principal with the Boston-based data center design and engineering firm [Integrated Design Group](#). He recently toured Validus' facility

and saw a demonstration of its technology.

But the debate over whether AC or DC is the best solution for data centers is far from over. Carl Cottuli, a vice-president at APC, a major provider of power and cooling equipment, says the Lawrence Berkeley study compares new DC equipment with old AC equipment. APC's own studies show just a 1.5%-to-2% efficiency advantage for DC in the data center. "There's a very small difference, and the amount of change you'd need to make within the data center to support it is major, so we're not seeing a lot of opportunity for overall savings," he says.

Validus points out that data center operators don't have to rip out their existing power systems to take advantage of its new technology. They can use it when they build new facilities or expand existing ones. The costs of new DC and AC power systems are about the same. "We're working with the principles that Edison put forth a long time ago," says Oak Hill's Brown. "You can now get the best out of DC."

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