EC Plug Fans Provide Energy Efficient Precision Cooling

In response to the increasing needs for data center and IT managers to both reduce costs and increase availability, Emerson Network Power has extended electrically commutated (EC) plug fans to all down-flow models of Liebert CW and Liebert DS precision cooling systems to allow data centers of all sizes to automatically adjust cooling unit capacities to match the IT server demands and improve energy savings and Power Usage Effectiveness (PUE). The product extension is available in: North America, Central and Latin America, China, India and Asia-Pacific.

EC plug fans are a backward-curved motorized impeller powered by a direct drive DC motor with integrated AC-DC conversion. The Emerson Network Power implementation of this technology allows the fan assembly to be lowered below the raised floor rather than remaining in its shipment configuration of being within the unit. This lowered condition reduces the energy consumption of the fan system an additional 10 percent by eliminating many internal system losses.

The Liebert CW, a chilled water-based computer room air handling unit, uses the building chilled water supply as the cooling source. It is available in up-flow and down-flow configurations and in cooling capacities up to 400 kW. Previously, only the largest down-flow models were available with optional EC plug fans, but with this extension they are now available in all down-flow models from 26-400 kW.

The Liebert DS, a refrigerant based direct expansion (DX) computer room air conditioning unit, uses the industry leading Digital Scroll™ variable capacity compressor technology as its primary method for cooling. It is available in up-flow and down-flow configurations and in cooling capacities up to 105 kW. With this

announcement all down-flow units are now available with optional EC plug fans. The use of the variable capacity compressors enables the fan speed to be automatically adjusted during operation—based on the IT server demand—down to 60 percent cubic feet per minute (CFM) without the coils freezing, because of the control algorithms utilizing variable capacity compressors.

The Liebert CW and Liebert DS both utilize the Liebert iCOM™ control system that enables multiple control algorithms depending upon the type of sensors connected. The most common advancements during the past several years include supply temperature control and utilizing sensors in the cold aisle to independently control the precision cooling unit's supply temperature while matching the CFM requirements of the IT servers.

The Liebert iCOM control also allows units to communicate and operate as a system to provide maximum control of temperature and humidity across a room or zone of influence while optimizing cooling efficiency. With intelligent control capabilities, data center managers can tune their cooling systems to dynamically adjust airflow patterns by controlling the speed of the EC plug fans to allow cooling unit capacities to adapt quickly to changing room conditions.

"Independent tests of the energy efficiency of different types of fan systems found that in raised-floor data centers, where it can be used to its best advantage, the EC plug fan offers the lowest annual operating cost," said Fred Stack, vice president of marketing, Emerson Network Power's Liebert precision cooling business in North America. "Emerson Network Power has conducted performance tests on Liebert CW and Liebert DS units that show that the use of the Liebert iCOM controls further delivers energy savings."

According to Stack, when the Liebert CW has its EC fans lowered below the floor and the Liebert iCOM reduces the fan speed by only 20 percent, the system's Sensible Coefficient of Performance (SCOP) was improved from 10.4 to 20.5. SCOP is the efficiency metric defined in ASHRAE Standard 127-2007, which establishes a uniform set of requirements for rating computer and data processing room unitary air conditioners. This doubling of the unit's efficiency was achieved without compromising the reliability standards required of computer room air conditioners.

With the Liebert CW and Liebert DS, customers may also purchase remote monitoring service for critical support equipment. Remote monitoring enables the experts at Emerson Network Power to proactively monitor systems, troubleshoot potential issues, and diagnose and respond to problems.

For more information on the Liebert CW or Liebert DS, or any other Liebert technologies and services from Emerson Network Power, visit www.liebert.com [1].

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[1] http://www.liebert.com