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Hadron Collider Benefits from Energy Savings using Eaton-Williams Cooling Solution

case study

One of the key data centers supporting the Large Hadron Collider is using Eaton-Williams ServerCool® units to achieve significant energy savings and channel the heat loads.

CERN's Large Hadron Collider (LHC) relies on many strategically placed data centers across the world to process the vast amounts of data generated by the world's largest experiment.

With heat loads and energy costs a major concern, Eaton-Williams, in close collaboration with Serviware and IBM in France, designed an energy efficient critical cooling solution for France's National Institute of Nuclear Physics and Particle Physics (IN2P3/CNRS) in Lyon, France, one of the eleven Tier 1 data centers (CC-IN2P3).

The project at the CC-IN2P3 data center was driven by the use of IBM iDataplex® cabinets, selected for their ability to deliver greater processing capabilities. The initial heat load generated by five cabinets was 100kW, which would increase ultimately to 160kW. Eaton-Williams recommended a strategy using ServerCool CDUs (cooling distribution units) on a common secondary manifold to provide N+N redundancy to the iDataplex systems and support SNMP connectivity. *continued*



At a Glance

CERN Hadron Collider

- Cooling system upgrade to accommodate high density computing expansion
- Eaton-Williams ServerCool cooling distribution units (CDU) on a common secondary manifold
- The use of CDUs and iDataplex cabinets consume 40% less power per kW than the original cooling system
- N+N redundancy

Case Study: Hadron Collider

The CDUs were installed as part of a high density computing upgrade within an existing data center. Air conditioning alone would not be able to manage such a highly concentrated heat load. The use of iDataplex and CDUs are a very effective and energy efficient upgrade solution, consuming 40% less power per kilowatt than the incumbent air handling systems.

“Power usage and efficiency were a major concern. With the ability to achieve significant energy savings over conventional server and data rack cooling systems, ServerCool offered a cooling solution that could meet IN2P3/CNRS exacting requirements,” says Mark Luxford, General Manager, Eaton-Williams ServerCool Products.

The LHC is one of the biggest scientific experiments ever and it is estimated that it will produce approximately 15 million gigabytes of data annually. To cope with the amount of material generated, CERN is collaborating with over 33 countries to operate a distributed computing and data storage infrastructure: the



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LHC Computing Grid (LCG) enabling scientists across the world to access and analyze data.

After initial processing, the LHC is distributed to 11 large Tier 1 computer centers strategically sited across the world. These data centers in turn make the LHC data available to over 120 Tier 2 data centers enabling scientists to access LHC material from their home country, using local computer clusters or even individual personal computers.

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*Mark Luxford
General Manager
Eaton-Williams ServerCool Products*

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