Fujitsu increases energy and resource efficiency in its North London data centre

"The installation of Daxten's containment solution at the end of the rack aisles was a key factor in eliminating temperature differences in our environment," said Simon Levey, Data Centre Development Specialist at Fujitsu UK.

3,500 square metres in size, room for 1,500 racks, 966 cabinets deployed and more than 1,850 operational servers: these are just a few of the impressive statistics relating to the Fujitsu data centre in north London. With corporate data and hosted customer data being managed from this location it is important to maximise not only security and performance but also energy- and cost-efficiency. The people responsible for the data centre infrastructure are constantly on the lookout for new methods, technologies and best practices to optimise the existing environment.

Efficiency boost with cooling optimisation

Fujitsu takes a systematic approach: As an official endorser of and participant in the EU Code of Conduct on Data Centre Efficiency, Fujitsu has voluntarily committed to improving overall energy efficiency in its own data centre's over the long term. The code outlines concrete recommendations for action in its best practice guidelines and shows how this goal can be reached in every area of the data centre. One place where there is a lot of potential for optimisation in data centre's is cooling systems – and this is exactly where Fujitsu wanted to focus its efforts to boost efficiency. To figure out where to start, the data centre team measured temperatures in the hot and cold aisles, analysed thermal images, took environmental readings and evaluated power consumption. The following goals were defined on the basis of their findings:

- To prevent the hot and cold air from mixing throughout the entire data centre environment
- To reduce the temperatures of the individual racks at the end of the cold aisles

The containment of the cold aisles is the undisputed top best practice for optimising data centre cooling. The simple separation of hot and cold air can achieve up to 30 percent energy savings whilst eliminating hot spots and reducing hardware failures. CoolControl Containment systems are provided in soft (with curtain), solid (with solid panels) or hybrid (with a combination of soft and solid) materials for seamless integration in data centres with differing cabinet dimensions or existing fire suppression systems.

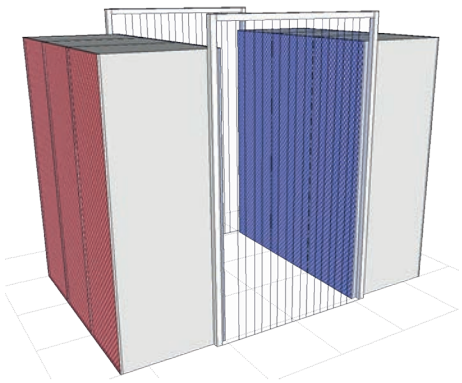
The end of aisle containment solution consists of a "goal-post" frame housing antistatic curtain to prevent the mixing of hot and cold air.

- To be able to install additional hardware to existing racks and operate at full kW capacity without having to set limits due to heat limitations
- To prevent hot spot formation
- To ensure even temperature distribution in the data centre
- To use existing cooling resources even more efficiently
- To increase the density of active IT devices in the racks at the end of the cold aisle
- To optimise cooling system load management
- To lower energy consumption

This was exactly the list of requirements that Simon Levey, Data Centre Development Specialist at Fujitsu UK, took to Daxten when he and one of his colleagues visited the Data Centre World IT trade show in London at the beginning of 2013. Simon and his colleagues had a number of ideas around a curtain goal post system for sealing the end of aisles. They had trialled an in-house mock up but wanted a professional solution for their high performing data centre. Daxten were able to work in conjunction with Simon and the team to develop an end of aisle curtain system.

Flexibility, cost-effectiveness and modular design matters

In contrast to containment systems with solid panels and rigid frames that had previously been seen by Fujitsu, Daxten's curtain containment solution was convincing. The clincher was its modular design which makes it scalable and easy to adjust during installation. Also appealing was the solution's flexibility which allows it to be easily integrated into areas with different rack sizes – and last but not least, of course, the much lower price compared to structurally integrated containment systems. The solution scores points because it separates the warm and cold aisles from one another just as effectively as a rigid containment system and can keep the temperature constant at every rack level within the contained cold aisle.



The image shows a 3D drawing representation of the Fujitsu cold aisle containment solution.

Depending on the DC environment containment solutions are available as hybrid configurations utilising both soft and solid materials.

Curtain containment and sealing of unoccupied rack space

A decision was reached in favour of the Daxten solution and as a first step 21 aisles were contained by a curtain in Fujitsu's data centre. This complemented the existing 25,000 blanking panels that Simon used to effectively seal the fronts of all unoccupied rack positions, both in the contained and uncontained racks. This important measure prevents the hot air from the warm aisle from recirculating back through the racks into the cold aisle. This sealing of the open rack space stops the cold aisle temperature from rising which would have occurred had this not been done. As a result no additional cooling would be required saving energy and costs.

Balanced thermal conditions prevents hot spots and system disruptions

"The installation of Daxten's containment solution at the end of the rack aisles was a key factor in eliminating temperature differences in our environment. Now that the thermal conditions are balanced, we can add more active hardware to the racks at the ends of the aisle corridors and maximise capacity without having to worry about hot spots and heat-related system disruptions," said Simon Levey, capturing the benefits in a nutshell. According to Simon, another advantage is that target and threshold values for critical environmental parameters can be redefined as a result of the measure. This improves load management of the CRAC units overall so that the capacities of individual systems can be reduced in certain circumstances or they can even be completely turned off temporarily.

And, of course, these optimisation efforts won't end there at Fujitsu. Simon and his team are already working with Daxten on a follow-up project to further boost energy and resource management.

About Fujitsu

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Fujitsu UK & Ireland

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Company profile Daxten

Daxten was founded in 1994 as Dakota Computer Solutions. As a manufacturer and distributor of innovative solutions, Daxten is at the forefront of promoting energy efficiency within the data centre. The company offers cutting edge cooling optimisation (CoolControl), power distribution and monitoring solutions which improve the resource efficiency and reliability of the data centre. Daxten is headquartered in London and Berlin. For further information please visit www.daxten.com

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