



## CASE STUDY: Kingston University



### Facts & Figures

- Kingston University has 24,720 students in total (as of 1 December 2011)
- 4,124 non-UK students from 151 countries, ranging from Australia to Zambia (as of 1 December 2011)
- 5 faculties divided into schools
- 4 campuses in and around Kingston upon Thames
- More than 2,000 networked computers
- 2,916 members of staff (as of 6 February 2012, excluding temporary staff)

[www.kingston.ac.uk/aboutkingstonuniversity/factsandfigures](http://www.kingston.ac.uk/aboutkingstonuniversity/factsandfigures)

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### **Cannon Technologies comes top of the class at Kingston University**

Kingston University has carved out an enviable reputation for the standard of education it offers and staff and students rely on its IT infrastructure to provide 24/7 access to learning resources. However, when equipment began overheating in its data centre and threatened extended periods of downtime, it called on Cannon Technologies to provide an energy efficient cooling solution.

Located in Kingston upon Thames in south west London, Kingston Technical Institute first opened its doors to students in 1899 offering courses ranging from chemistry, electric wiring and building construction to nursing, dressmaking and clay modelling. It became a polytechnic in 1970 and was subsequently granted university status under the Further and Higher Education Act 1992. Now called Kingston University it prides itself on the diversity of the courses it offers and has developed a growing research reputation alongside a rapidly expanding international presence.

#### **Carry on campus**

Kingston University comprises four campuses scattered around the town. More than 25,000 students study in seven faculties and at partner colleges, with a couple of thousand more abroad. It is diverse and proud of it, with one of the UK's most ethnically mixed student populations including over 4,000 non-UK students. Kingston is known for its cutting edge e-learning systems with students now able to access almost all of its course modules online.

During recent years, Kingston has embarked on an ambitious investment programme costing £123m and running till 2018. Three new buildings are up and running, including an impressive £20m six storey building for teaching and learning. Further developments are planned including a new home for the business school and extensive refurbishment at the University's Knights Park site, home to the faculty of art, design and architecture.

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There have also been extensive upgrades to Kingston's learning resource centres, bringing together the very latest in library, computing and multimedia facilities. This facility now comprises more than 2,000 networked computers plus 437,000 books, 1,800 printed journals, 49,000 electronic journals and 136,500 e-books.

### The heat is on

Like any modern educational establishment an 'always on' IT infrastructure is relied upon by staff and students alike. However, Kingston's uptime was threatened when equipment started overheating in its main data centre at the Penrhyn Road site. This data centre serves all the campuses and is a vital component of the University's ability to offer remote access to learning materials.

For Kingston's IT operations manager, Bill Lowe, it was vital to address the problem quickly and to configure a solution that would eliminate the likelihood of a similar situation occurring in the future. He comments, 'As the University has grown, so too has the amount of equipment housed in its data centre. As new racks and cabinets have been added, the amount of heat generated started to cause issues with reliability and we realised that the only way to deal with it was to install an effective cooling system.'

Kingston acts as a civic university, working closely the wider community and with local schools and colleges. After discussing the problem in the data centre with Kingston College's IT manager, he recommended that Lowe contact Cannon Technologies, which had recently completed a project for the College with excellent results.

### Research study

After speaking to Max Zaccaria, sales director at Cannon Technologies, and explaining the nature of the

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It didn't take Zaccaria long to discover the cause of the overheating. He explains, 'The data centre consisted of cabinets and racks from a variety of manufacturers. While this in itself wasn't a problem, the fact that some were different heights and widths meant that they did not suite together well and there were sizable gaps between them. This meant that the data centre's existing computer room air conditioning (CRAC) system was highly inefficient both in terms of cooling effectiveness and energy use.'

After completing the site survey a number of options were outlined including shutting down and reconfiguring the entire data centre. However, it was decided that this was not feasible because a complete shutdown would make it impossible for staff and students to access information and the resulting disruption could have a negative impact on their studies.

Therefore, Zaccaria suggested that Cannon Technologies produce special infill panels at the end of the aisles to complete the rows and join the cabinets. This would allow the effective deployment of cold aisle containment using the company's innovative Aisle Cocoon concept.

### **Cold front**

Although well designed for internal cable management, racks and cabinets from structured cabling manufacturers tend not to suite well with server cabinets and this inconsistent approach can play havoc with even the best cooling system. Aisle Cocoon is a technically advanced temperature control solution that provides a system of overhead aisle panels and aisle end doors that effectively seal off the cold aisle.

Cannon Technologies' Max Zaccaria, adds, 'This ensures that the cold air emitted from the floor is sealed in a "cocoon" and is therefore unaffected by hot exhaust air. It also means that cooling air can only exit through the equipment for which it is intended. All Aisle Cocoon components, such as overhead panels and aisle end doors, are fixed to the cabinet bay structure alone and not connected to the room structure.'

As one of the first systems of this type to be developed it has the significant advantage of worldwide installation and customer experience is fed back into the latest designs. Although configured to fully integrate with Cannon Technologies' ranges of server and patching cabinets, Aisle Cocoon is believed to be the only top tier solution capable of retrofitting to almost any make of legacy or new cabinet. Hundreds of such mixed manufacturer and retrofit installations have now been installed worldwide, including Kingston University.

### Green thinking

The University is committed to reducing its CO2 emissions, achieving compliance with all applicable environmental legal and other requirements, and driving sustainability. It does this in line with ISO 14001, through the five strands of its environmental management system – community and outreach, curriculum, governance, research and consultancy, and estates and facilities.

Its objectives reflect its commitment to continual improvement of sustainability and include reducing carbon emissions by integrating sustainability issues into campus based construction and refurbishment projects. The University communicates this policy internally and externally to relevant stakeholders and all other interested parties, and its executive and board of governors have ultimate accountability for the sustainability performance of the organisation.

As a result, any modification to the University's infrastructure has to undergo a strict approvals process. Bill Lowe explains, 'One of the board's key assessment criteria is whether any change will result in improved energy efficiency. Data centres are notoriously high consumers of energy and the facility at Kingston is no exception. Therefore, we had to be able to state the case in favour for the energy saving qualities of the Cannon Technologies products and systems.'

This presented no problems at all as customers that have already installed Aisle Cocoon have reported energy reductions of up to 40 per cent from its use.

### Up on the roof

In order to meet the University's fire prevention policy Lowe also requested the use of a failsafe door release solution that, in the event of a fire, will unlock to allow fire suppression equipment to take effect. By reverse engineering Cannon Technologies' CannonGuard management system this could be achieved.

CannonGuard comprises a suite of hardware modules and software that provides local and remote control of racks, cabinets, hot and cold aisles, cages, data rooms or outside enclosures. The system is based on 'plug and play' modules that can be used stand alone or daisy chained together into a high security, resilient system. It enables remote control from multiple locations concurrently, with full event recording and a rolling 24 hour audit trail.

Kingston also specified the use of Cannon Technologies' passive roof panels, which, due to limited space availability, also had to be redesigned exclusively for this project. However, thanks to meticulous planning and close cooperation between the University's IT department and Cannon Technologies' engineers, the entire installation went extremely smoothly, despite the fact that some of the cabinets had different electrical phases that had to be isolated separately

### A wise move

Since installing Aisle Cocoon, Kingston University hasn't had any problems with overheating active equipment. What's more, there has also been a noticeable reduction in the amount of energy used by the data centre, with the additional benefit of major cost savings.

'The way that Cannon Technologies responded to our initial request and provided a solution that met our exacting requirements was extremely impressive,' concludes Bill Lowe. 'Using Aisle Cocoon means that we will make a return on investment in less than a year and I have already recommended Cannon Technologies to other IT colleagues in this sector as a result of my experience with them.'