



# CASE STUDY

## Loughborough University Drives Data Centre Efficiency with Schneider Electric

Loughborough University partners with on365 and Schneider Electric for increased reliability and more sustainable operations using EcoStruxure™ Data Centre solutions.



### Story Overview

Loughborough, one of the UK's leading universities, has worked with on365 and Schneider Electric to ensure operational continuity for the university's data centre and distributed IT environments. By modernising its infrastructure with the latest in resilient and energy efficient technologies and harnessing the power of data analytics and predictive maintenance, the university has futureproofed its campus to support its excellent research and academic reputation.

### Customer Background

With an attending student body of 19,500 across its 523 acre campus, Loughborough is one of the UK's leading universities, with an international reputation for research that matters, excellence in teaching, strong links with industry, and unrivalled achievement in sport and its underpinning academic disciplines. Today it is ranked world number one for sports related subjects, Loughborough was also named Sports University of the Year in 2022 by The Times and Sunday Times.

### Goal

Increase resiliency and efficiency, ensure reliable data centre infrastructure to support ongoing provision of IT services for academic, administration and research purposes.

### Approach

Deployment of a modular scalable data centre architecture based on Schneider Electric's EcoStruxure™ For Data Centres solutions.

### Story

Loughborough University worked with Schneider Electric and its Elite Partners, on365, to modernise its infrastructure with the latest in resilient and energy efficient technologies, to ensure operational continuity and sustainable operations for its data centre, distributed IT environments, and critical applications.

### Results

- Higher levels of data centre performance and transition towards sustainable university operation via the successful upgrade of its main data centre, and the installation of EcoStruxure™ Row Data Centre
- Futureproofed environment for new technological advances.
- Improved cooling control and efficiency.
- Schneider Electric's Galaxy™ UPS with Li-ion batteries, offering increased resiliency, efficiency and the opportunity for load shedding.
- Real-time visibility and data-driven insights to mitigate critical faults and 24x7 services support.



## Seventy Years of Data Centre Evolution

Established in 1909, today Loughborough University has two primary data centres that act as a failover to one another; its older Haslegrave site, constructed in the 1950s, and a newer facility named Holywell Park, which became operational in 2010.

When Mark Newall first became part of the IT team at Loughborough, the Haslegrave data centre hosted around 60 server racks. Layout had evolved over the years, with different faculties adding new racks on an ad-hoc basis. Challenges surfaced gradually as the dynamics of the server load developed, with hotspots emerging when the room's cooling units were unable to deliver sufficient cool air.

"Different users would introduce racks into different parts of the room at different times, so there was nothing systematic about the cooling effort. One sections' IT racks might literally be blowing hot air into another, negatively impacting the data centre's reliability, capacity and efficiency," said Newall.

When the University virtualised its server load, the resulting reduction in the number of IT racks meant redesigning the Haslegrave's data centre layout. Mark Newall said: "Because my first degree is in thermodynamics and fluid mechanics, I had a good understanding of the complexity of airflows and so cooling design became my responsibility. It was clear to me that to optimise the data centres cooling efficiency, it was vital to segregate the air supplies."

Tasked with recommending a solution, Newall researched the available options and after a rigorous due diligence process, Loughborough became an early adopter of Schneider Electric's Hot Aisle Containment Solution (HACS) (formerly InfraStruxure) – now known as its EcoStruxure™ Row Data Center", part of Schneider Electric's EcoStruxure™ for Data Centers system.

Schneider Electric EcoStruxure™ Row Data Centers are pre-engineered, modular, scalable and highly-configurable systems, which include integrated power, racks, cooling and management software. Its use enables organisations like Loughborough to reduce install time, decrease risk and drive data centre efficiency.

"We stopped cooling the room and focussed on directly cooling the racks and IT equipment. Containment enabled us to upgrade a data centre designed in the 50s and make it a suitable environment for a new generation of more compact and powerful servers," continued Newall. Subsequently, the solution was also deployed in the new Holywell Park facility.



"The EcoStruxure™ Row Data Centers - or Pods as we call them at Loughborough - immediately gave us a more structured and efficient data centre design, helping us to make better use of space, and enabling us to improve cooling, for more reliable IT services. A secondary advantage is that it gave us more control over the cooling," said Newall.

## Customer background

IT is fundamental to the university, from its highperformance computing (HPC) servers, which support analytical research projects, to a highly virtualised data centre environment that provisions critical applications including finance, administration, and security. A primary example of this is the fire alarm system, which is mobilised by its data centre; any downtime would require a team to undertake continuous physical checks of all the university buildings – a tall order on such an extensive campus.

IT also provides the student community with digital access to course materials, the ability to take exams online and the provision of internet services to campus halls of residence. At the same time, Loughborough's IT department offers a range of services to support the intensive commercial research being undertaken at the university. This requires the hosting of servers and storage equipment at the universities data centre, meaning the team not only has to ensure services stack up against those of commercial service providers, but also that they can guarantee that data is protected safely and securely.



"We pride ourselves on the quality of our students' experience," said Mark Newall, Senior IT Specialist at the University. "And one of the things that students really rely on is good IT infrastructure. We also want the research groups to be confident that their systems will be available exactly to their research requirements."



## New Challenges Brought on by a Decade of Use

Fast forward more than ten years, and with the containment system approaching the end of its useful operating life, there was a requirement to refresh the university's entire physical infrastructure. It was decided this could also be used as an inflection point to make other significant upgrades.

The raised floor, which had been installed when the Haslegrave facility was originally built, had become unstable in places, and to ensure the safety of IT and services personnel, the decision was made to replace the floor, creating a new challenge to do so with no break in IT operations. The team at Loughborough had also designed the infrastructure to have no single point of failure - a design feature which extends to both the Haslegrave and Holywell Park data centres.

"If we have a power or cooling issue at one of the data centres, we're able to migrate those workloads live from one data centre to another, without any impact. Occasionally we might migrate as a precautionary measure to ensure resilience or if we need to undertake maintenance. Transferring the workloads from one server to another ensures there's no risk to the operations and guarantees our disaster recovery and cyber security procedures are frequently tested and robust," said Newall.

## Solution – EcoStruxure™ for Data Centers

Working with **on365** and Schneider Electric, specialists in providing energy efficient, physical IT infrastructure services for public sector, SME and corporate clients, the upgrade project was undertaken in two phases; Firstly by moving the IT so the floor could be upgraded in the first half of the facility, followed by the installation of the new EcoStruxure™ Row Data Center; and secondly, migrating the IT back into that new installation to address the second half of the floor. At the same time, more floor space in the data centre was created for future IT deployments.

**on365** had been a strategic partner to the university for many years, providing preventative maintenance and physical infrastructure replacement services to ensure operational continuity. **on365's** work as a services partner was also vital during the pandemic where the dependency on digital applications had accelerated. In this instance, all services procedures were quickly adapted to make them covid-safe, ensuring the university received essential ongoing support but with controls to limit contact and access for **on365** engineers, IT staff and students.

“We work with **on365** because they have the specialist skills we require in-house,” said Newall. “They don’t subcontract to other organisations, and we know we can trust them to know exactly what they’re doing to service and maintain our data centre equipment to the highest possible standards.”

Whilst upgrading to the next generation of Schneider Electric’s EcoStruxure™ Row Data Center solution, the team took the opportunity to bring other parts of the dependent infrastructure under IT’s control, including the cooling systems. Mark Newall explained: “Previously we had a chilled water system, and whilst we had control of the InRow cooling and the data centre, we were still reliant upon facilities management to look after the chillers on the roof.” This, it turns out, had not created problems until the searing hot summer of 2022, when local temperatures reached nearly 40 degrees C.

“During that period the chillers broke down,” said Newall, “fortunately most of the campus was on holiday. The cooling system wasn’t designed for those sorts of conditions, there weren’t dual chilled water circuits or chillers. We’d built the data centre to be resilient with no single point of failure, but that strategy was impacted as we had no control over the fabric of the room, which included the external systems supporting the air conditioning.”

As such the university selected Schneider Electric InRow DX (direct expansion) units to accompany the new EcoStruxure™ Row Data Center, creating two separate circuits to extend the ‘no single points of failure’ design throughout the facility. It also used containment to gain more cooling control and cool the IT racks directly. This made the environment more suitable for a new generation of compact and powerful servers, and subsequently, the solution was replicated at Holywell Park.

Along with the installation of the new containment system, the university upgraded the management software used to control its infrastructure. Previously, Loughborough had used Schneider Electric’s EcoStruxure™ Data Center Expert software but has now deployed its EcoStruxure™ IT platform for improved manageability, real-time visibility and data-driven insights. This enables it to proactively anticipate any failures and take steps to mitigate them before they become critical.

“One of the features we really like about EcoStruxure™ IT is that it sends alerts to our mobile phones,” said Newall. “When needed, we can talk directly to Schneider Electric’s support staff and if we do experience an issue, it’s good to know they’ve already started compiling data to remedy the situation.”

The University also invested in a three-year contract for Schneider Electric’s full manufacturer’s service support, which has been executed via **on365**. As an EcoExpert™, **on365** provides Schneider Electric Service functions alongside complete electrical and mechanical services such as Fgas and pipework installation. This ongoing commitment protects the university’s investments in new infrastructure by ensuring the equipment is fully operational, reliable and quality maintained.

“Having a well-structured preventative maintenance program is vital to ensure that the data centre and IT systems are optimised and operationally efficient,” said Carl Richardson, Technology Support Manager, **on365** Ltd. “At **on365**, we’ve continued to collaborate closely with the university, not only to provide them with significant value, but to ensure they can meet their strict procurement governance whilst having access to our extensive support and services capabilities.”



The university also utilises a large distributed, edge network environment, which has in-excess of 60 single-phase, APCTM Smart-UPSTM UPS’s protecting it. As part of its service agreement, these critical power systems are monitored and maintained via Schneider Electric’s EcoStruxure™ IT, providing real-time visibility into their UPSs’ health and status, and helping IT personnel to manage the network across the campus.

Further improvements in resilience and efficiency were also achieved by replacing legacy UPSs with Schneider Electric’s Galaxy™ VS uninterruptible power supplies (UPS) with lithium-ion batteries. Galaxy VS incorporates Schneider Electric’s patented eConversion operating mode as standard, offering up to 99% energy efficiency, without compromising availability.

Galaxy UPS with lithium-ion not only have the advantage of a much smaller footprint than lead-acid batteries, but can withstand many more charge/ recharge cycles, providing the possibility of novel energy-saving methodologies to reduce power demands. “The new UPS batteries provide us considerable runtime and give us a lot of confidence. We’re starting to explore potential uses, including if we can use it to supplement mains power at times of peak demand, or run the data centre off-grid,” said Newall.

Questions about power use at Loughborough are becoming more important as the University looks for new ways to increase its sustainability efforts and reduce its carbon footprint. Through its work with Schneider Electric and **on365**, the university now has multiple systems installed which monitor electrical consumption as well as identifying where electricity is used. Decisions can then be made about how to use energy more intelligently or reduce it. This is vital for an institution with so many large and power-hungry sports halls and two data centres which operate continuously.



## Results

The newly modernised data centre environments have immediately provided Loughborough with higher levels of performance and operational efficiency. Adopting a second generation EcoStruxure™ Row Data Center solution with hot aisle containment and InRow cooling has both improved cooling control and energy efficiency, while removing all remaining single points of failure. Further, the use of Galaxy VS UPS has increased resilience for the universities research applications and ensures optimum levels of uptime.

Adopting Schneider Electric's EcoStruxure™ IT platform has provided Loughborough with enhanced levels of visibility and data-driven insights that quickly help to identify and mitigate potential faults before they become critical across the campus. This, in conjunction with its new services plan delivered via **on365**, has given the university 24x7 access to expert maintenance support.

Looking forward, Schneider Electric and **on365's** work with Loughborough University has been invaluable and will play a key role in its future IT sustainability strategy. By modernising its infrastructure with the latest in resilient and energy efficient technologies and harnessing the power of both data analytics and predictive maintenance, the university has futureproofed its campus to support new breakthroughs in sporting research.



***“At the foundational level of everything which is data-driven at the university, the Haslegrave and Holywell data centres are the power behind a host of advancements in sports science, and our transition towards a more sustainable university operation,” said Mark Newall. “Working with Schneider Electric and on365 has enabled our data centre to become more efficient, effective and operate with more resilience.”***

**Mark Newall, Senior IT Specialist,  
Loughborough University**

## About on365

As a leading Schneider Electric EcoXpert™ partner for the UK and Ireland, on365 holds the full suite of EcoXpert™ accreditations across data centre and critical physical infrastructure products, solutions and services. Backed by the longest-standing partnership with Schneider Electric, our unrivalled expertise gives you a truly holistic view of your entire critical infrastructure and enables us to deliver best-in-class solutions.

Wherever you are in your lifecycle, our Schneider Electric-certified experts provide the support you need to plan, install and maintain your critical equipment—helping you meet your sustainability, efficiency and operational goals.