# Datum
## Case Study

## About

Datum offers state-of-the-art colocation services designed to meet the demands of modern businesses. Located in strategically chosen locations in both Manchester and Farnborough, Datum provides a robust environment for hosting critical IT infrastructure, ensuring unparalleled uptime, security, and operational efficiency.

At their Manchester facility, Datum had a requirement for a planned lifecycle replacement of an existing condenser system serving the critical data centre space. In addition to the replacement, Datum appreciated that there was also an opportunity to improve the system through careful design and selection.

The original condensers and systems had been designed prior to the increases in UK climate temperatures. Datum wanted to provide additional resilience and reliability for a higher ambient temperature whilst reducing energy consumption in line with the company's commitment to sustainability and net zero targets.

Sudlows were selected to support the client team with the design, installation and testing of new condensers, and to review the internal performance of the cooling systems for potential optimisation opportunities.

## The Project

Throughout the works it was critical that the data centre remained live and operational, without any increased risk or detriment to performance; something the Sudlows Team is well versed in achieving due to our experience in live plant replacement and critical upgrade projects.

To protect cooling performance and redundancy during the works, we undertook meticulous planning and sequencing of the project and assessed the performance at each key stage, using in-house computational fluid dynamics (CFD) simulations.

Works were sequenced not only to individual units, but to an individual circuit level, with concurrent works limited within the space to carefully manage and balance risk.

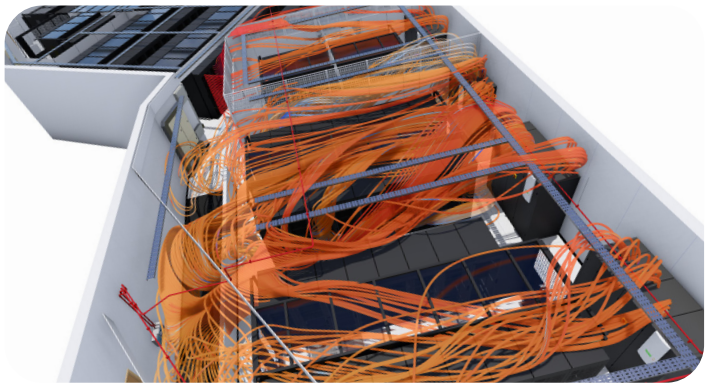
To ensure that the facility's ability to tolerate failure was not compromised during the works, temporary cooling systems were incorporated into the project, with positioning assessed and validated via the CFD analysis.

Due to the phasing of the works, the new systems were to be installed prior to the removal of the existing ones, which presented additional logistical challenges and spatial constraints in design and layout. To achieve this, we established a separate compound in which the majority of works could be completed away from the existing systems.

The design and planning carried out by our team allowed the works required to switch over to the new condensers to be completed in a shorter time frame and with reduced risk and impact on the live facility than would typically be expected for such a project.

The second phase focused on the operational efficiency of the space and demonstrates how large improvements can be made without a fundamental redesign or change in cooling technology. During this phase, we identified and addressed a number of small inefficiencies, which, cumulatively, had led to the equivalent of approximately 100kW of cooling losses in the summer months.

Finally, our in-house CFD Team modelled the facility, incorporating the changes proposed and identifying optimal configuration of the systems to deliver the best performance with the lowest energy consumption, and to stress test the facility against a number of in-design failure scenarios.



The project was a major success. The works were delivered to schedule and without downtime or interruption, and with minimal risk and disruption to the live and operational facility.

By not simply selecting a like-for-like replacement, this project re-aligned the facility with current design philosophies to accommodate higher peak ambient conditions of up to 40°C. This robust system, in an already very resilient facility, will improve long-term resilience, reliability, and performance.

The works also delivered a substantial improvement in efficiency and performance of the white space cooling systems, without changing the fundamental cooling technology in use within the facility, and without requiring any major reconfigurations to the space.

During the months since the works, energy savings of up to 16% have been recorded when compared to matching periods from the previous year, and savings into the upcoming summer are expected to exceed 20% due to the improved peak ambient operation. This equates to a substantial reduction in operational costs and a reduction in carbon emissions of around 55,000 kg CO2 p.a.

While growing demand for data centre space necessitates new construction projects to expand capacity, building new facilities is not the only option. This initiative has optimised existing infrastructure to maintain peak efficiency and effectiveness – a sustainable and cost-effective solution to meet growing demand.

## Testimonial

**Matt Edgley, Chief Operating Officer at Datum Datacentres commented;**

"Datum have had an excellent working relationship with Sudlows for many years. Their experience and professionalism, combined with their ability to resolve complex engineering obstacles, gives us peace of mind.

"This project is a great example of substantial efficiency improvements being delivered through a combination of complex engineering and the right choice of technology.

"The results of this project speak for themselves. Our facility has seen a significant reduction in energy consumption, helping us stay in line with our commitment to reducing energy, carbon emissions, and our overall footprint."