NATIONAL AWARDS 2022 WINNER BESA BUILDING ENGINEERING SERVICES ASSOCIATION

ER & DCR EXCELLENCE AWARDS 2022

2021 WINNER DCD >Awards Data Center Architecture Award

Ashton Old Baths

Case Study

Tameside Metropolitan Borough

ASHTON OLD BATHS

About

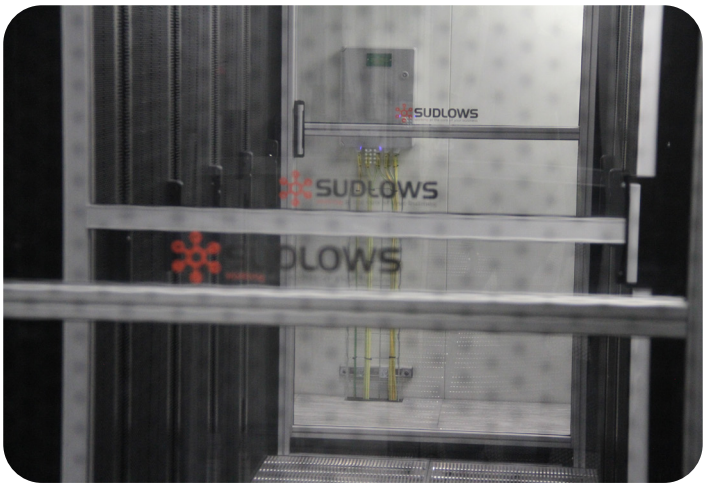
Ashton Old Baths is a contemporary office space for small and medium sized businesses forged from the rejuvenated Grade II listed Victorian public bath house in Ashton-Under-Lyne, Greater Manchester. The building is now a dynamic digital hub and home to several likeminded businesses and entrepreneurs.

The Brief

Ashton Old Baths required Sudlows to design and install a data centre at their site in Ashton-Under-Lyne. The critical infrastructure was to be utilised by Tameside Metropolitan Borough Council. The facility was required to support a total of 36no. cabinets at 2.5kW per CAB.

Due to the listed nature of the building, the project had many challenges that were overcome by Sudlows' in-house Design and Delivery Teams, one of which was the requirement for the data centre to be constructed within the former bathing area utilising a steel frame and modular wall and ceiling panel construction.

Our client also had the requirement for a Video Surveillance System (VSS) and access control solution to secure the building and monitor visitor activity.



Data Centre

Data Centre Building Works

Sudlows constructed a unique freestanding steel-supported arrangement and fire rated modular wall and ceiling panels to create the required modular structure. A waterproof membrane was then applied to the top face of the modular room ceiling panels to protect against water ingress.

A heavy duty raised access floor was then installed in the data centre alongside floor tiles covered with a layer of anti-static vinyl to help create a dust-free environment.

Data Centre Distribution

2no. A and B custom manufactured data centre submain boards were installed to provide N+N critical power distribution to the server cabinets, backed by UPS systems. Each submain board includes input connections for mains and generator with automatic controls for switching between sources. The panels incorporate all required input and output metering, UPS bypass with castell interlocking system, surge protection and critical UPS output sections.

A distribution board was installed to provide general lighting and ancillary power supplies throughout the data centre.

UPS Systems

The data centre has 2no. independent UPS systems on both the A and B power streams, each suitably rated to support the IT load and independent battery storage systems with an autonomy of 10 minutes.

The UPS and battery systems were installed in a separate plant room adjacent to the data hall. This room has its own climate control which will improve operating efficiencies of the proposed UPS system. Each UPS unit is also provided with an SNMP or Volt Interface card for monitoring purposes to give full sight of UPS status, function and operating parameters.

Critical Distribution

- 26no. cabinets are supplied with 4 no. 32A SP&N power supplies (2no. fed from A path and 2no. fed from B path).
- 5no. cabinets are supplied with 4no. 16Amp SP&N power supplies (2no. fed from A path and 2no. fed from B path).
- 5no. cabinets are supplied with 8no. 16Amp SP&N power supplies (4no. fed from A path and 4no. fed from B path).

Fire Alarm System

The data hall is equipped with a gaseous fire suppression system with coverage/ protection to the IT room and associated floor void. The system consists of an environmentally friendly gas discharge system and double-knock point detection to protect against false alarms and nuisance discharge.

The system is monitored via wall mounted control panels located externally to the room which operate independently of the ‘house’ fire alarm system. An aspirating smoke detection system was also installed which can provide very early detection over a standard fire alarm system.

Data Centre Cooling

The data centre is cooled by utilising 3no. Downflow Cooling Systems each rated at 45kW to provide cooling to a fully functional contained aisle system. The system is connected to the BMS control system.

Cooling systems were installed to provide N+1 resilience using downflow CRAC systems providing redundancy at a system level so that in the event of a system failure, it will not affect the ability of the space to support the load.

To allow for the customers future growth and expansion vision, a 4th set of interconnecting services and CRAC floor stand has been installed to allow for an efficient and quick installation as and when required.

BMS and Environmental Monitoring System

A bespoke BMS system that has been developed by Sudlows and one of our partners, specifically for the data centre environment, was installed, tested and commissioned to prove the full visibility of all the services connected and to prove critical alarms were received and sent to the Sudlows 24/7 remote helpdesk to allow an Engineer to attend the facility within the strict SLA's.

The installed system is a full BMS which accommodates all plant and equipment over varying applications, multiple platforms and protocols – catering for all site monitoring and control needs. A simplistic, intuitive interface that is fully bespoke to Sudlows' customers and site specific requirements.

Data Cabinets and Aisle Containment

Sudlows supplied and installed the following cabinets within the new data hall;

- 26no. Server Cabinets 42U x 600 x 1000mm
- 4no. Additional 2-Section Co-Lo Cabinets 42U x 600 x 1000mm
- 3no. Additional 4-Section Co-Lo Cabinets 42U x 600 x 1000mm

We also relocated 2no. existing 4-Section Co-Lo Cabinets, and 1no. existing 2-Section Co-Lo Cabinets from their temporary location, to the new DC Co-Lo POD (including existing Rack PDU's).

A full and complete Data Centre Intelligent Monitoring (DCIM) system is installed that records and monitors the IT load at server level as well as environmental conditions around the racks, to allow interrogation and historic data to be reviewed as well as sending out alerts in the event of thresholds being exceeded.

VSS and Access Control

In order to meet the requirements for a standards compliant access control and VSS solution within the space, Sudlows produced a proposal using the Tyco range of security products. Sudlows have achieved accredited CEM Systems installer status by demonstrating excellent product knowledge, support and service. As well as meeting the standard requirements for a space such as the data centre at Ashton Old Baths, the product sets chosen also promote integration between the EACS and VSS elements.

VSS Works

We chose to install a video surveillance system from the Tyco Exacq video management portfolio. Comprised of video management software (VMS), video servers, and network video storage servers, Exacq products are known for their easy use and low maintenance costs.

The VSS equipment installed consists of a server/recorder, 9 internal dome cameras and 11 external bullet cameras.

The internal dome cameras were installed into the ceiling using screw fixings and the patch leads were run through the false ceiling. The external bullet cameras were installed onto an Altron security mounting pole installed within the compound.

Electronic Access Control Works

For the door hardware installation, Sudlows proposed a variety of access control measures to be installed, these included using a range of access methods including card, pin and biometric scanners to ensure that the facility would remain as secure as possible.

Wireless server locks by Assa Abloy were also installed to each cabinet. These connect wirelessly to the security hub and communicate with the CEM Systems software.

Facilities Management

Following the completion of the design and build of their state of the art critical facility, Ashton Old Baths have also instructed Sudlows to deliver a 10 year facilities management and maintenance package to ensure peak operation for the data centre and to prolong the lifespan of its equipment.

Sudlows' highly experienced Facilities Management Team deliver reactive and preventative maintenance offering businesses protection 24 hours a day, 7 days a week, 52 weeks a year.

The contract will cover the management and maintenance of;

- The cooling systems
- The UPS
- Generators and load bank testing
- Generator fuel management plan with 24/7 emergency delivery
- Fire suppression systems
- Electrical services and thermal imaging
- The BMS and BMS remote monitoring systems
- CCTV and access control systems
- Specialist cleaning
- Intelligent PDU software support
- Dedicated site management

Conclusion

Sudlows have designed and built a state of the art critical facility, using best technologies to be utilised by Tameside Metropolitan Borough Council that is highly resilient, efficient and secure within the stunning Ashton Old Baths building, without affecting the building's Grade II listing or any aesthetics. Ashton Old Baths now also have a robust security system to protect their data and that of their clients comprising of leading access control and video surveillance technology, along with associated security management software. The 10 year contract for facilities management and maintenance contract will also keep the equipment at peak performance and prolong its lifespan.

Testimonial

Tim Rainey, Assistant Director, Tameside Metropolitan Borough Council commented;

"From the first meeting we had with Sudlows to discuss our new Data Centre requirements it was clear by virtue of the people they brought into the room that the company were highly proficient, experienced and professional. At every stage from concept, through design, procurement and the final build they managed the project and our expectations to a high standard. This gave us the confidence and assurance that looking forward over the next 10 years they were the right partners for us to have in place for the management and maintenance of our new facility."