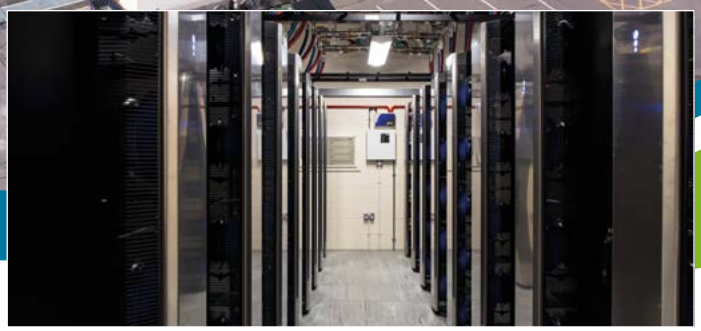
Case Study: High Power Data Centre Project for The Science and Technology Facilities Council



The Requirement

The Science and Technology Facilities Council (STFC) required the design, installation, and commissioning of a High Power Density (HPD) Computing Room within the data centre at Rutherford Appleton Laboratory (RAL). This aimed to support the increasing computational demands of STFC, handling between 500-600kW of computing power to meet data analysis and scientific computing requirements from FY24/25 to FY28.

The project necessitated an infrastructure solution that incorporated key elements, including:

- **16 IT racks** (APC NetShelter SX) with 34 power distribution units (PDUs).
- **A high-efficiency cooling system**, including two chillers with capacity for a third, and rear-door cooling units.
- **Fire protection and suppression systems**.
- Integration with a **Building Management System (BMS)** for energy and equipment monitoring.
- A focus on **environmental sustainability** in line with STFC's carbon emissions reduction strategy.

The project was to be delivered within a strict timeline, without disrupting the adjacent live data centre.

Workspace Technology's Response

Workspace Technology provided a structured plan to address the technical complexities of the HPD Computing Room project.

Technical Solution Overview

Design & Specification

Workspace Technology's in-house design team, with over 18 years of experience, developed a detailed set of drawings and specifications. The design process included calculating chilled water flow rates, determining pipework sizes, and conducting electrical due diligence.

IT Infrastructure

Workspace Technology planned the installation of 16 APC NetShelter SX IT racks and 34 APC PDUs to manage power distribution. Cat6 cabling was included to ensure a robust network infrastructure.

Cooling System

The cooling solution featured Coldlogik rear door cooling units (up to 35kW per cabinet) and two 600kW Trane chillers.

Fire Suppression & Detection

An IG-55 clean agent gas suppression system and an addressable fire detection system were proposed to ensure comprehensive fire protection.

BMS Integration

The Trend IQ Vision system was extended to monitor the new cooling systems, PDUs, and chillers.

Sustainability Considerations

Energy-efficient equipment, including cold aisle containment and modular cooling units, were implemented to maximise efficiency and contribute to energy savings.

Workspace Technology Limited
Data Centre Solutions Expertly Engineered

Mobilisation and Planning

Mobilisation Plan

Workspace Technology's mobilisation plan focused on timely procurement to meet the tight project deadlines. Key aspects included collaborative design reviews with STFC and the early ordering of long-lead items, such as rear door cooling units and switchgear.

Programme of Works

A detailed programme was developed, covering phases like site setup, cooling system installation, and electrical systems installation. The project also included commissioning and testing, with extensive subsystem testing and BMS integration.

Resources and Team Structure

Project Structure

Workspace Technology appointed a dedicated project team to manage scheduling, risk management, and client communication. The installation and commissioning were handled by experienced engineers, with specialist partners engaged for specific tasks such as chilled water systems and fire suppression installation.

Health & Safety Compliance

Strict health and safety standards were followed, ensuring the security of personnel and live data centre operations.

Risk Management and Quality Assurance

Risk Management

Workspace Technology identified potential risks, such as delays in receiving rear door coolers and chillers, and mitigated these through early procurement.

Quality Assurance

Regular audits and inspections were conducted to ensure compliance with specifications. Subcontractors underwent the same quality checks to maintain standards throughout the project.

Interested in finding out more?

Call us: 0121 354 4894
Email us: sales@workspace-technology.com
workspace-technology.com

Workspace Technology Limited
Data Centre Solutions Expertly Engineered