

Nominee: AIMES Grid Services

Supporting Vendor: Keysource

Nomination title: AIMES Grid Services partners with Keysource to deliver an innovative highly efficient and resilient new data centre facility

THE CHALLENGE

Liverpool based AIMES has undergone considerable growth in recent years and is working with an increasing number of customers in the northwest, delivering a range of managed digital services including both co-location, Cloud, platform as a service (PaaS) and software as a service (SaaS). As a result of this rapid expansion the company outgrew its existing data centre and needed to develop a resilient and highly energy efficient facility that was capable of being flexibly scaled to meet both AIMES' and its clients immediate and future business needs. AIMES commitment to maximising environmental and commercial sustainability narrowed the outline solution to utilising an existing building in an existing secure environment in order to limit both costs and the embedded carbon footprint of the new facility. The design brief was to create an innovative, modular and flexible facility, which would use its operational efficiencies to lower operational costs and enhance AIMES' ability to deliver significant financial and carbon savings for clients without compromising resilience. As a further complication the initial phase had to be completed in a tight timescale and within a clearly defined budget.

THE SOLUTION

AIMES partnered with Keysource to plan and create an initial footprint for a flexible 10,000 sq ft data centre within a 35,000 sq ft building located on the secure Liverpool Innovation Park. As part of an ongoing £5 million infrastructure investment, AIMES selected Keysource following a detailed analysis of the marketplace, looking at the approaches and costs of leading data centre systems integrators, followed by an extensive, rigorous tender process. Keysource was able to demonstrate its innovative design philosophies, proven track record of successful project management, and a partnership approach that demonstrated a very real willingness to share risk. Working closely with AIMES technical staff and liaising with the Liverpool Innovation Park management team to refine the brief, Keysource developed a detailed design which fitted harmoniously within the building envelope whilst delivering industry leading levels of energy efficiency, security and resilience, and ensuring that AIMES future expansion plans could be met in an equally cost effective way. The initial project was designed to provide both an initial 60 cabinet facility and a resilient infrastructure capable of supporting an IT load of 1MW with up to 180 rack positions and an annualised design Power Usage Effectiveness (PUE) of below 1.4. This ensured that AIMES clients benefitted from effective energy management from day one. This first phase provides an initial "clean room" environment with 60 rack positions and an IT load of up to 375kW, coupled with the ability to cool up to 20kW per rack. Meanwhile, as part of AIMES client centric approach, the areas within the facility earmarked for future expansion space have been engineered to deliver complete flexibility, in order that they can be precisely configured to meet the future business and operational requirements of AIMES clients. The new facility utilises Ecofris, an innovative cooling solution that achieves free cooling for the majority of the year by taking advantage of the lower ambient temperatures in the North of England

and making use of dynamic water temperature strategies. It combines variable speed control fans and pumps with free cooling chillers and effective hot and cold air separation to deliver an efficient solution. The Ecofris cooling solution adopts a flooded air-flow approach, where relatively slow moving air is discharged into the data centre ensuring an optimal inlet temperature for the full height of every rack. Air is drawn in across the servers and warm air is ducted into the ceiling and back to the recirculation units location in a separate corridor. This hot air is then drawn across a cooling coil in the recirculation units and back into the data centre with the amount of air matched to demand using temperature and pressure controls. The coil transfers heat from the air to water, which is pumped outside to the external cooling module. Here the water is cooled to the required level by drawing external ambient air across a second coil and this cooled water is then pumped back to the internal recirculation unit. Normally free cooling is delivered but when external ambient temperatures rise, free cooling augmented by mechanical refrigeration.

However, given the ambient temperature profile in Liverpool, it is anticipated that this will be the case for less than 200 hours a year ensuring that client's energy costs are reduced accordingly. High levels of redundancy have also been adopted with 2N UPS and electrical infrastructure, N+1 standby power generation and cooling systems. As a result, the mechanical and electrical infrastructure provides concurrent maintainability throughout. In addition to the Liverpool Innovation Park's 24/7 manned security, the facility has its own comprehensive security and protection solution that adopts a steel clad "building within a building" approach to constructing the data suites with access control and continuous CCTV monitoring. Smoke detection and fire suppression also covers all live areas, along with an advanced monitoring and metering system to help evaluate performance and identify areas of improvement. With more than adequate resilient power to expand to up to 3MW of IT load if desired, AIMES can now provide its growing client base with commercial and environmental benefits for some years to come.

THE BENEFITS

Scalability: modular cooling system that possesses the ability to be effectively scaled to deliver an initial 10,000 sq ft of technical space, with the capacity to develop a total of 35,000 sq ft in the longer term.

Efficiency: uses an innovative free cooling solution to achieve an annualised design PUE of below 1.4 from day one, along with advanced monitoring to identify areas of improvement and opportunities for fine-tuning.

Availability: high levels of resilience with 2N UPS and electrical infrastructure, with N+1 standby power generation and cooling systems. Partnership – an approach that combines effective project management capabilities and a willingness to risk share to provide a close and mutually beneficial working relationship. Improved competitiveness through operational cost reductions for AIMES and their clients, combined with a lower carbon impact.

Why nominee should win

1. Anchor phase of a new Cloud Computing Campus, providing flexible data centre space that supports high-density equipment highly resiliently and cost effectively.

2. Environmentally responsible and commercially competitive approach of innovative combination of operational efficiency (annualised PUE of below 1.4 from day one) and low embedded carbon impact.
3. True modular development with the capacity to scale to a total of 35,000 sq ft in the longer term.
4. High levels of resilience with 2N UPS and electrical infrastructure, with N+1 standby power generation and cooling systems.
5. Advanced monitoring to identify opportunities for fine-tuning to further improve efficiency.