

Data Centre Solutions...energy efficient by design

# Case Study Host Europe Group

**HOST  
EUROPE  
GROUP**

Host Europe Creates Low Carbon 4MVA  
Managed Services Data Centre Facility

 2014 **RUNNER UP**  
**DCS awards**  
Data Centre Design & Build  
of the Year 2014

 **Workspace**  
Technology Limited

Creating an effective workspace environment



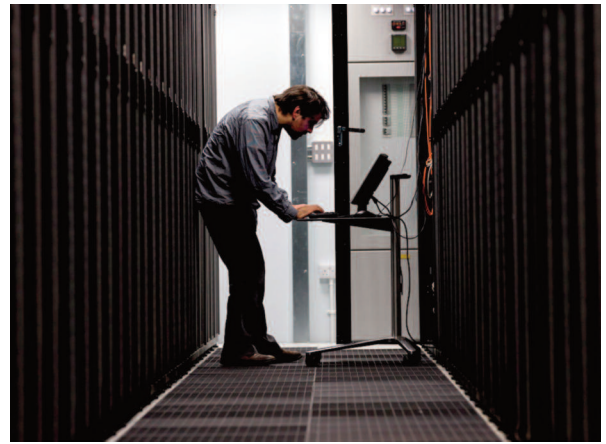
# HOST EUROPE GROUP

## Host Europe Creates Low Carbon 4MVA Managed Services Data Centre Facility

Founded in 1997, Host Europe Group, with over 1 million customers, provides domain registration, mass hosting, customised managed hosting, cloud hosting and software-as-a-service (SaaS) offerings. Host Europe Group delivers these hosting products to clients from around the world. Their core business includes delivery of highly secure infrastructure as well as individually managed hosting solutions for demanding Internet applications. Host Europe owns and operates its own data centres and partners with many other industry leaders to ensure flexibility and reliability that their customers demand.



Data Centre Design & Build  
of the Year 2014



## Client Situation

Host Europe was looking to invest in the 'next generation' data centre infrastructure to support its ongoing customer expansion programme and to help consolidate data centre real-estate. This new investment would enable Host Europe to concentrate customer services within a single exceptionally robust, resilient and energy efficient DC facility reducing operational costs and delivering enhanced value and service to their customers.

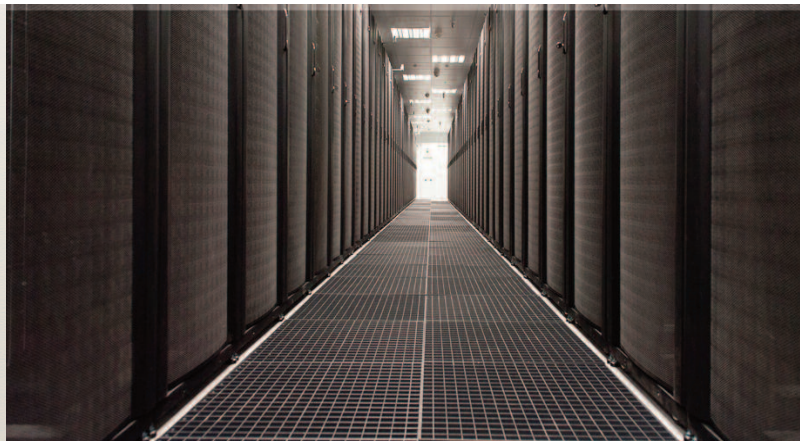
By partnering with Workspace Technology Ltd, an established and proven specialist Data Centre Design & Build company, Host Europe was able to reduce timescales for DC design and installation.

## Design Brief

Availability is essential for modern online businesses, and as a leading supplier of managed cloud computing, Host Europe was looking to create a technical environment that clients can trust. Any new facility should ensure client web services are always online delivering value and revenue for customers small and large.

The brief was both complex and challenging pushing conventional boundaries associated with Tier III architecture. The brief included the following requirements:-

- To design a cost effective Tier 3 data centre solution.
- To deliver world class levels of resilience beyond that of a typical 'out of the box' M&E designed Tier 3 installation.
- Provide industry leading levels of infrastructure monitoring
- Creation of a modular, resilient and interconnected data centre architecture.
- Transparent multi sub-systems provide a granular level of resilience against system failure and instant diagnosis should a fault occur.



### **‘Total Carbon Commitment’**

Workspace Technology’s design team looked at taking energy performance to extreme levels. By implementing its ‘Total Carbon Reduction Commitment’ approach Workspace Technology left no stone unturned when seeking low energy architecture or alternative technology. By ensuring, full system energy measurement, right size architecture, efficient cooling, effective airflow and efficient UPS technology, Workspace Technology were able to achieve Host Europe’s design goals.

### **Design Overview**

In response to the design brief Workspace Technology were able to design and deliver World Class levels of resilience beyond that of a typical Tier 3 solution. By using an innovative ‘modular architecture’ Workspace Technology was able to create a scalable highly resilient facility for Host Europe Group. Unlike conventional Tier 3 facilities where 50% ‘over capacity’ is required to achieve ‘concurrently maintainable’ Tier 3 architecture, **Workspace Technology’s design delivered true Tier 3 availability with less than 25% over provisioning.**

Workspace Technology developed a ‘modular’ architecture consisting of four independent 1MVA cooling and power paths supporting an N+1 concurrently maintainable solution. Not stopping at minimum Tier III technical requirements each sub module delivers internal N+1 resilience combined with cross module connectivity via static switch arrangements.



Typical PUE figures associated with perimeter based cooling are > 1.4. Workspace Technology was able to challenge this barrier by selecting highly efficient chilled water based Computer Room Air Conditioning (CRAC) units manufactured in the UK by GEA Denco. Careful sizing and selection of coils meant that cooling duties under normal mode operation could be achieved at 21°C chilled water flow temperatures. By combining CRAC's with Cooling Tower Technology (CTT), low energy pumps, high performance heat exchange modules and EU fan technology Workspace Technology were able to ensure minimum energy and maximum free cooling was obtained. With a measured PUE3 reading of < 1.2 the design goals were easily achieved.

#### **Electrical Design**

Workspace Technology's in house data centre design team used AMTECH ProDesign tools to design electrical services as part of the pre installation design process ensuring appropriate cable sizes, discrimination, breaker ratings and settings were implemented for Host Europe.

By using AMTECH ProDesign, Workspace Technology's engineers were able to ensure both reliability and electrical safety for Host Europe Group.

#### **Switchgear**

All switchgear provided was designed by our in-house data centre team. Schneider Electric switchgear was used throughout incorporating ION7650 and PM750 meter technology combined with EGX100 Modbus over TCP gateway technology to allow integration with energy management systems.



### Technical Challenges

One of the key challenges was to deliver modular architecture within a very limited space whilst ensuring ongoing system maintainability. This was a difficult challenge that took many weeks of space planning and engineering by Workspace Technology's in house data centre design team to achieve.

The deployment of external containerised double stacked power modules was the key to solving this design challenge. With 1MVA transformers and mains intake power modules on the lower deck combined with UPS and battery power modules on the upper deck, Workspace Technology maximised the use of compound space.

Mechanical services were also deployed within a containerised solution with challenging engineering to ensure all subsystems including buffer tanks could be accommodated. Every centimetre was used with perimeter support frames for chilled water pipework and cantilever arms to support interconnecting power cables.

**A total of 4 x 1MVA double stacked power modules, generator sets, chillers and mechanical housings were all supported in less than 400m<sup>2</sup>.**

An additional challenge was to split an existing live data hall into two halves whilst maintaining all customer services throughout the duration of this major construction project. Workspace Technology's team ensured all live power and I.T services were fully protected throughout the project with zero hours downtime reported after a 12 month programme.

### Project Team Success

By implementing a strict design review and agreement regime, the delivery team were able to engineer absolute levels of accuracy which paid back many times over by ensuring first time success. The risk analysis to every potential failure permutation enabled the team to eliminate the loss of customer service through engineering excellence and innovation.

The project team left no stone unturned by applying a 'what if' analysis strategy as part of the design phase. This 'getting back to basics' approach, ensured electrical and cooling design principles were correctly applied with appropriate discrimination and safety margins to deliver a robust data centre design.



Cooling Tower

### Cooling Tower Technology (CTT)

Workspace Technology deployed forced draft counter-flow cooling tower technology manufactured in the UK by Carter Engineering. The tower is fitted with a direct inverter driven axial fan. This technology delivers exceptional energy performance in closed loop chilled water based cooling solutions.

Modern cooling towers offer safe and efficient cooling enabling 'free air cooling' to be achieved at wet bulb temperatures of up to 30°C, well beyond the capability of conventional dry coolers.

The installation was combined with an access platform complete with a galvanised ladder to extend from tower base level to pack platform level, an additional galvanised ladder to extend from platform level to tower top level complete with galvanised hand railing around the tower top periphery.

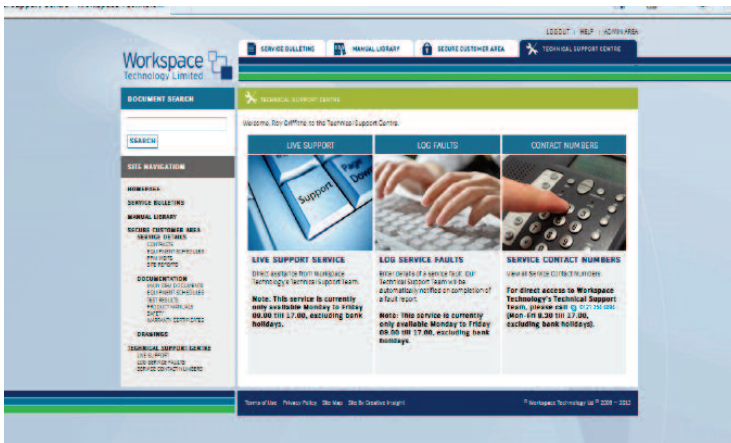
This permanent decking allows for safe internal access at pack level base across the whole tower plan area and is designed to be walked upon when removing the pack.

### Power Generation

Workspace Technology's Power Generation Division supplied 4 x 1MVA generator sets designed with MTU low emission engine, Stamford Alternator and Deep Sea Controls.

The selected MTU engine is fully compliant to the latest emission targets meeting both EU- and US- regulatory requirements.

Workspace Technology Power Generation included a shared 48 hour fuel and associated components fuel systems, including, fuel-water separators, pump, tank level sensing equipment and dump valve.



## I.T Infrastructure

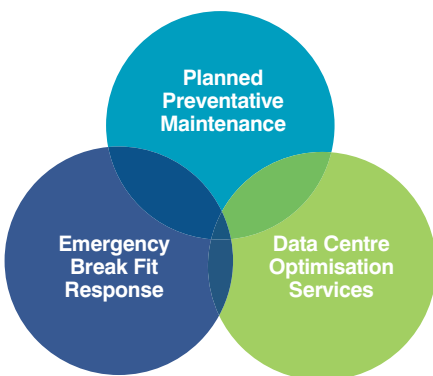
As part of the installation Workspace Technology deployed 120 x Schneider Electric APC NetShelter SX multivendor equipment racks, APC intelligent metered rack PDU's and Connectix Cat6A I/O rack to rack cabling links.

### Intelligent PDUs

Workspace Technology supplied and installed APC's Intelligent Rack Power Distribution Units (PDUs) as part of the overall solution for Host Europe. The products enable user customisable power control and metering functions. Workspace Technology integrated the PDUs with the Data Centre Infrastructure Management System programming thresholds to help avoid circuit overload. The PDU systems include current and real power monitoring; they also support a temperature/humidity sensor port, and have locking IEC receptacles fitted for additional cable security.

### Structured Cabling

Workspace Technology installed Connectix 10GX cabling for Host Europe. The Connectix 10GX System is specifically designed to support mission critical needs of data centres. Workspace Technology is a Certified Systems Vendors for Connectix and the solution was supplied with a full 25 Year System Warranty.



## Complete Integration & Support Services

Workspace Technology's **Engineering & Support Services** division deliver a comprehensive range of expert 24/7 service, support & optimisation plans for Host Europe Group.

Workspace Technology's Service Team delivers unprecedented levels of expert help 24/7 through planned preventative maintenance, emergency callout and optimisation services.







## Support... planned and contract maintenance services

### Planned Preventative Maintenance

Workspace Technology delivers Planned Preventative Maintenance (PPM) scheduled maintenance services to all installed equipment throughout the data centre halls. Performed by experienced and highly trained engineers, Workspace Technology's Engineering & Support Services team helps Host Europe ensure that equipment is operating correctly avoiding unscheduled breakdowns.

### Call Out Contracts

Workspace Technology's Engineering & Support Services provide a comprehensive break fix callout service for all Host Europe critical equipment.

### Support Plan Options

Service	Standard	Premium	Comprehensive
Planned Preventative Maintenance Schedule	•	•	•
New Equipment 12 Month Warranty	•	•	•
Minor Adjustments During Service Visits	•	•	•
Availability of Technicians 24 x 7 x 365	•	•	•
Engineers Callout Charges		•	•
Variable Response Time Options		•	•
Out of Warranty Equipment Replacement			•

### Site Spares

As part of the service contract Workspace Technology provides a range of strategic 'Site Spares' for Host Europe. This approach has significantly improved the meantime to repair providing field service engineers with instant access to replacement parts.

# About Workspace Technology

**Workspace Technology's Data Centre Solutions division offer clients Data Centre, Server and Communications Room solutions and services which are 'Energy Efficient by Design'. By engaging you and taking the time to understand the business and performance related issues Workspace Technology is able to effectively address the demands of your business.**

Workspace Technology welcomes this opportunity to connect with you as a valued customer. We would like to share our vision and expertise through a partnership approach. Our ability to deliver integrated, scalable, energy efficient solutions has made us the preferred choice for many public sector and commercial businesses today.

Operating throughout the UK, Workspace Technology offers clients an enthusiastic and refreshing approach, combined with teamwork that takes performance and service to new levels of excellence.

Further details of Workspace Technology's products and services can be found at **[www.workspace-technology.com](http://www.workspace-technology.com)**.



Approved Endorser EU Code of  
Conduct on Data Centre Efficiency



APC Elite Partner  
Data Centre Certified



Workspace Technology's "Commitment to help clients reduce their carbon footprint through the deployment of energy efficient technology and design".

REGISTERED MEMBER



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Creating an effective workspace environment