



# DATA CENTRE APPLICATIONS

Rainford Solutions has decades of experience designing and manufacturing solutions for data centres. Our engineers and designers continually innovate to meet the ever-changing infrastructure challenges of today's highly advanced technological centres.

We work with critical infrastructure organisations, systems integrators and global operators to provide solutions for every type of data centre, from micro to hyperscalers, new and existing facilities.

Here are just a few of our data centre applications.



## Nationwide bandwidth explosion needs flexible cooling solutions

**Project Objective:** To reduce cooling costs

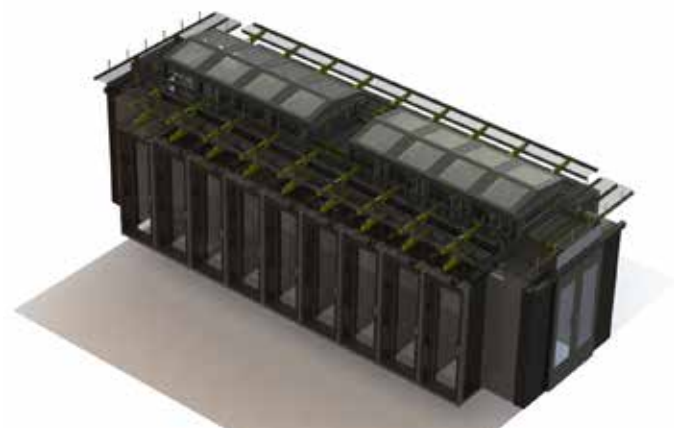
**Client:** Tier 1 Telecom Operator

This leading telecom operator was upgrading core backbone network bandwidth with very energy dense equipment that stretched existing cooling capabilities. They wanted to implement aisle containment to control air flow for more efficient heat management across 30/40 sites/110 metro node sites.

**The Challenge:**

Every project site was different, most having been built in the 1960s but not originally as data centres. Therefore, each site required a bespoke solution to get round challenges such as varying ceiling heights, columns located in different places and floors that weren't suspended.

We needed to implement hot and cold aisle containment to achieve the desired cooling efficiencies, while keeping existing rack format and security standards and integrate with existing overhead cable management systems that had been developed over many years.



**Our Approach:**

Following multiple site visits to understand the variety of mechanical challenges across the estate design, concepts for flexible configurability were developed in 3D and iteratively refined with the customer's project team and various specialist in-house standard owners.

Over six months our engineers worked closely with the in-house team revising solutions, involving electrical specifications, weigh considerations and security to set the blueprint for a flexible solution that could be rolled out.

A full-scale prototype was built for inspection and testing of the various features and any further fine tuning. Having completed over 4000 projects, we have a huge library of building blocks from previous designs and experience to draw upon. Therefore, unique solutions do not begin from a completely blank piece of paper, so development costs and, crucially time to market, are not inhibitors of a highly tailored product.

**The Outcome:**

Hot and cold aisle solutions with flexibility for installation into even the most awkward site that interfaces perfectly with legacy infrastructure were delivered. We easily overcame project complexities to satisfy the client's own rigorous standards as well as health and safety issues such as working above two metre heights while managing power and fibre optic cables.

The customer has, and continues to, deploy the new equipment upgrade while controlling energy utilisation for cost effectiveness as well as to meet its corporate sustainability objectives.



## Cloud hyperscaler needs to reduce complexity worldwide

### **Project Objective:** New high-density optical rack

### **Client:** Hyperscale Cloud Operator

A global leader in cloud computing needs to continually invest in high-capacity high density optical switch/router equipment to stay ahead of customer demand for bandwidth. To reduce operational complexity, the customer needed a standardised peering point build model that would be adopted across the world.

#### **The Challenge:**

This hyperscale cloud operator was unable to find a suitable rack in the market that would accommodate extremely high fibre count in a 600 mm x 600 mm footprint for lowest cost colocation fees, which also had the flexibility to accommodate likely future changes.

As with many of our clients, this customer liked some aspects of other vendors' products, but were unable to configure precisely what they needed from the product ranges.

#### **Our Approach:**

Following our proven Consult, Design, Make and Protect process enabled us to create the perfect solution for this customer without the usual cost of bespoke development.

Our design engineers worked on a solution that created more space to accommodate the high fibre count, but in the required footprint of 600 x 600. It contained specific cable management features including extra wide cable entry at the top and special protection features that would manage the bend radius and protect the fibres.

#### **The Outcome:**

The final racks combine extended 'Pandora' type wardrobe style doors to accommodate deep equipment profile as well as the hedgehog of fibre optics and power cabling, large managed entry/exit apertures to allow for very high fibre count, and special innovations to cater for unknown future requirements.

The racks are being deployed worldwide enabling the customer's sites to be built to a consistent specification everywhere, troubleshooting is simplified, errors reduced, and future upgrades will be much more straightforward to implement.

When operating at global scale, these benefits translate to significant operational efficiencies.



## Air containment for UK's national synchrotron

### **Project Objective:** High-density cold aisle containment system

### **Client:** Diamond Light Source

Diamond Light Source is the UK's national synchrotron located at the Harwell Science & Innovation Campus in Didcot, Oxfordshire. It works like a giant microscope, harnessing the power of electrons to produce bright light that scientists can use to study anything from fossils to jet engines to viruses and vaccines.

It is one of the most advanced scientific facilities in the world and its pioneering capabilities are critical in helping the UK stay at the forefront of scientific research. Over 14,000 researchers from across life and physical sciences both from academia and industry use Diamond to conduct experiments.

### **The Challenge:**

As a critical and high demand research source, Diamond needed high density racks and server cabinets to accommodate its need to process extensive research data, but to maintain the smallest footprint possible. We also had to create a prefabricated solution to accommodate the in-row cooling system required by the client.

### **Our Approach:**

Our design engineers developed a solution comprising a 10 cabinet (800 mm x 1200 mm), cold aisle containment system with 20 kW air to water heat exchanges built into eight of the cabinets. We designed, manufactured and installed the complete system - all pipeworks, overhead cabling, plus full site testing and commissioning.

### **The Outcome:**

The project was deployed exactly as per the designed plan and tested and commissioned in the very specific time frame set by the client, leading to work on phase two of the project.





## About Rainford Solutions

We have extensive experience designing and manufacturing data centre racks and cabinets, hot and cold aisle containment, modular caging and partitioning systems and many more data centre solutions.

We work with critical infrastructure operators, systems integrators and global operators to develop custom-made enclosures as well as standardised solutions for micro-data centres to hyperscalers, new or existing facilities.

Our Consult, Design, Make and Protect process allows our UK engineering team to develop solutions to your challenges, quickly and cost-effectively, ensuring your equipment will perform at its best, achieving high levels of reliability and in-life maintenance costs.

Our modern factory, including the UK's most advanced powder paint plant, can produce in volume for national and international scale infrastructure projects. We also offer factory pre-wiring to save valuable time on site.

Get in touch to see how we can help with your data centre project.

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