# Racing Ahead: How Oper8 Global Fuels a Leading Formula 1 Team's Drive to the Finish Line

A leading F1 team, which trusts Oper8 Global to support and maintain the existing Data Centre infrastructure across the campus, determined the urgent need for another on-premises facility.

Aerodynamics is a key focus of any F1 team, so the need to utilise the latest technologies, CFD (computational fluid dynamics), and wind tunnel metrics is critical in developing a car that will be at the forefront of the sport and reliably on the front row of the grid.

Unable to utilise cloud computing mainly due to latency and fees, there was only one option: a new, on-premises Data Centre.

The brief was simple: create a highly efficient, concurrently maintainable, and fault-tolerant Data Centre using a blend of HPC (High-Performance Compute) and standard rack densities that must be operational within 6 months.

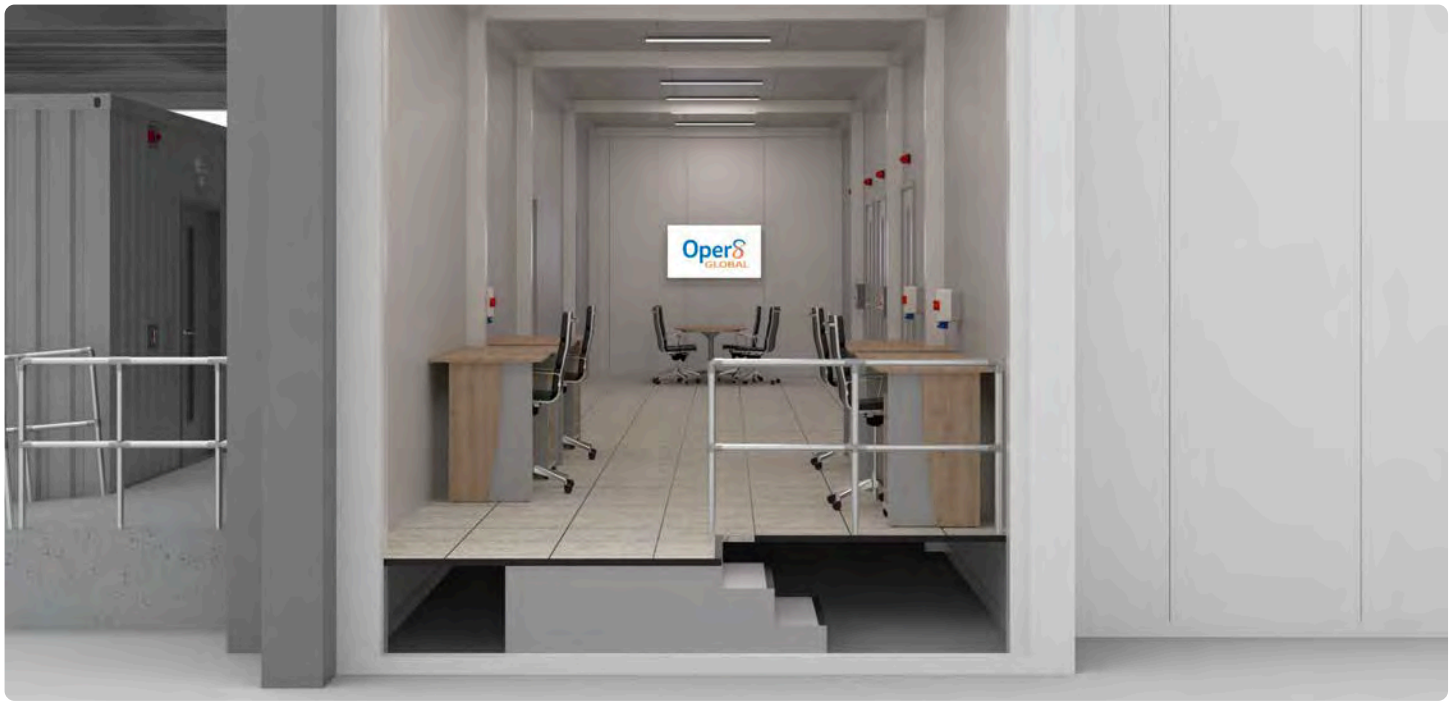
# Challenges

Several challenges faced Oper8 Global when looking to achieve the client brief.

With timescales being critical, it was imperative to identify a suitable location for the facility and ensure stakeholder approval in a timely manner. The Oper8 Global team needed an area where the necessary services and utilities could be provided whilst ensuring the new facility was independent of other Data Centres on the campus.

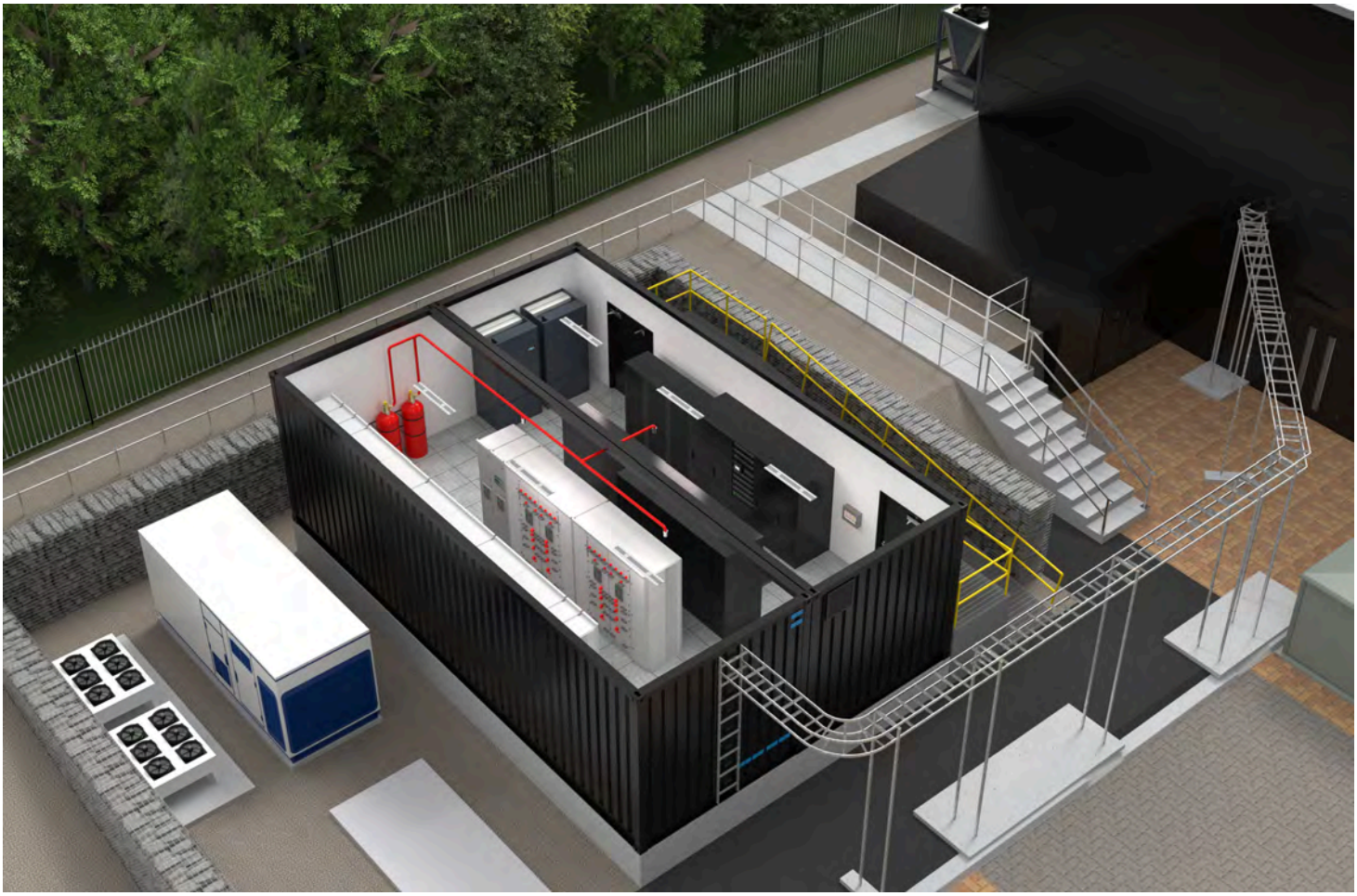
Timescales presented a further challenge within the supply chain. Ensuring the latest technology would be available within the allotted programme was crucial and would shape the design process. Switchgear, generator, UPS, cooling and more had to be available within the agenda from client-approved design sign-off.

A key client driver was ensuring the acoustics of the Data Centre were managed successfully. With adjoining offices, it was critical to ensure that the walling solution would not exceed 32dBA while still complying with the technical brief to ensure a one-hour fire-rated envelope.



# Challenges

A significant challenge the client aims to achieve revolves around introducing a new directive from the FIA. The FIA website explains, “In 2019, Formula 1 announced our commitment to be Net-Zero Carbon by 2030 as part of our wider Sustainability Strategy, setting ambitious targets from ‘factory to flag’ and key members of our sporting community including our Teams, Race Promoters, Partners, Suppliers, Broadcasters, the FIA and many more are rising to the challenge and are contributing to our carbon reduction goals.” (Source: https://corp.formula1.com/impact/net-zero-carbon/) For Oper8 Global, it was imperative to identify solutions that would contribute to the client’s goal of achieving the carbon neutral target by 2030.



## Solution

A final design and location were agreed upon after undertaking the necessary feasibility studies. The proposed solution would offer a modular Data Centre within an existing building. This would include:

- Staging Area
- Pump Room
- Service Corridor
- Data Centre
- POP Room

The initial exercise required removing the existing warehouse, offices and unnecessary services to make way for the new Data Centre. The area would be replaced with a fire-rated, easy-clean composite panelled room supported by a steel structure. As listed above, various rooms were created within the new building envelope using this construction technique as it allowed for a high-performing clean room environment, all installed within a few weeks.

With the room constructed, the fit-out could commence. The new spaces incorporate conventional room hardware such as containment, raised access floor, suspended ceiling, electrical distribution, earthing and bonding, fire detection and suppression, CCTV, door access control, monitoring and asset management, IT racks, intelligent rack PDUs, stairs, ramps, goods lifts, and more.

External to the building, Oper8 located a new plant room manufactured using the Oper8 Global prefabricated module. The unit was manufactured and fitted out off-site, split into two modules for transport. On arrival at the client site, having the groundwork prepared in advance, the modules were offloaded, positioned, and mechanically fixed together. Electrical supplies and interconnections, mechanical pipework for the redundant cooling system, and data were all installed locally, offering a quick deployment of the Plant Room.

The electrical infrastructure is designed to be concurrently maintainable and fault-tolerant to ensure uptime for the facility. This is supported by a new generator and UPS using lithium-ion batteries, all controlled from the dedicated switchgear. Resilient UPS-backed supplies to the rack ensure that the intelligent rack PDUs provide clean power to the compute.

With the driver of high efficiency and low PUE being key deliverables of the project, Oper8 sought to cool the IT racks using HiRef's FanWall cooling solution. Each indoor unit is connected to its own CO2 chiller for high efficiency and low running cost to aid compliance.

To help future proof the Data Centre, both power and cooling can scale using the current mains supply to meet the Day 2 power density. Any further increase in power would necessitate the need to upgrade the transformer.

**Hi-Ref C02 Chillers on Site**

**Temperature & Humidity Sensor**

Oper8 Global continues to maintain the campus, and the newly installed RF Code monitoring and asset management services provide the client with tremendous visibility over their IT estate for a truly holistic understanding.

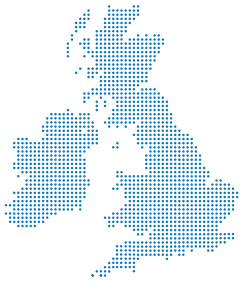
Oper8 Global utilised 48U Racks from Chatsworth with VEDs ( vertical exhaust ducts). Due to the high rack density each rack was 800mm wide and 1450mm deep,  to maximise the return air from the server back to the FanWall units. The significant impact of utilising this technology is significant savings on running costs as much as 15% and far more effective than HACs (hot aisled contained solutions).

## Conclusion

The project was successfully delivered on time and on budget. The expected annualised PUE for the facility is expected to be 1.18.  Oper8 Global is already looking to bring the next 200kW online to support the organisation's rapid growth.

## Solution Renders

# Solution Renders

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