

CASE STUDY · HEAT NETWORKS & COMMERCIAL

The Excel Centre, London

Steadier exhibition halls with less energy

AT A GLANCE

CLIENT
The Excel Centre, London

SECTOR
Exhibition and events venue

SYSTEM
Exhibition-hall air handling units on the existing BMS

PROGRAMME
SBRI open-source controls field trial

YEAR
2023

HEATWEB SERVICES
BEMS 2.3 monitoring, data analysis, controls strategy

Monitoring the air handling units that heat and ventilate the exhibition halls showed heating and cooling fighting each other. A handful of control changes lets the halls reach temperature faster, hold it steadily and stop throwing heat away.

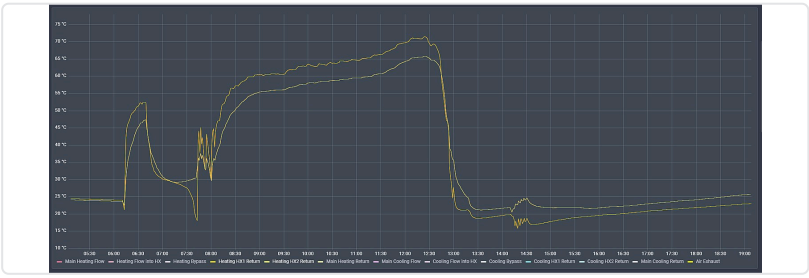
The challenge

The halls are heated, cooled and ventilated by large air handling units under the building management system. Exhibitions run live, so hall conditions must stay within agreed limits and any change to the controls has to be fully reasoned before it is made.

The targets: reach hall temperature on time, hold it at setpoint, and cut the energy wasted through overshoot.

What we did

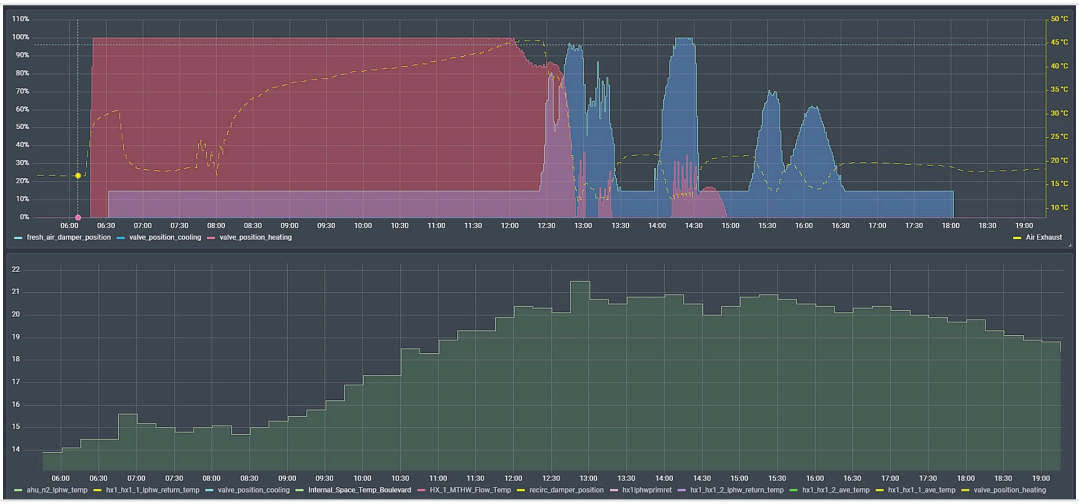
- Installed Heatweb BEMS 2.3 monitoring alongside the BMS, combining exported BMS data with high-resolution retrofitted sensors.
- Captured and analysed the data continuously on an online dashboard with red, amber and green highlighting.
- Reported the findings and a staged set of control changes to the client.



Return temperatures from the heating coils climb above 60 °C as the halls approach setpoint.

What we found

- The 20 °C setpoint has a very tight proportional band and no damping, so heat stays at full load up to setpoint, the hall overshoots and immediately needs cooling.
- Passive cooling with outside air then throws the excess heat away, and the lack of damping means more heating is needed straight after.
- In the mornings heating and passive cooling run together, competing.



One day of operation: heating (red) and cooling (blue) demand against hall temperature.

3 h
morning heat-up with no fresh air or cooling unless CO_2 calls for it

60 °C
return temperature limit to land smoothly at setpoint

2
steady control loops: fresh air to CO_2, heat to hall temperature

The outcome

- Start heating half an hour earlier with fans at 100% and no fresh air for the first three hours, then throttle heat back as returns pass 60 °C and drop fans to 70%.
- Run the day on two steady loops, with heat meters added so every change can be measured in daily energy use.
- With the data being collected, before-and-after savings are straightforward to calculate and track as KPIs on the dashboard.

About Heatweb. Heatweb Solutions is a UK provider of engineering support for heat networks and commercial HVAC: monitoring, fault diagnostics, technical compliance, optimisation, commissioning and maintenance.

Talk to an engineer

The full case study: www.heatweb.co.uk/blog/case-study/excel-london/

0345 241 1441
enquiries@heatweb.co.uk
www.heatweb.co.uk