

The selection of conditioning system can have a major impact on operating costs, energy efficiency and occupant comfort. BRE can help with getting the design right and diagnosing problems in existing buildings.

BRE's specialist laboratory and mock-up testing facilities can also be used for investigating and optimising the design and performance of a wide range of equipment and systems.



#### Design reviews and client advice

BRE can review designs and advise clients on innovative hvac systems including low energy cooling and ventilation systems and strategies.

#### Building diagnostics and surveys

BRE specialists can carry out investigative building diagnostics and surveys into the cause of poor cooling and ventilation system operation and occupant comfort, and advise on solutions.

#### Mock-up testing and performance tests

BRE can undertake full-scale mock-up testing in a large environmental chamber or on-site to optimise and prove cooling and ventilation performance and thermal comfort. BRE also has HVAC laboratory facilities for standard performance tests and specialist one-off and R&D testing.

#### SAP Appendix Q testing

We can test whole house ventilation systems, including MVHR and MEV systems, in our laboratory for obtaining performance factors for SAP Appendix Q listing.

#### Testing domestic heat pumps

We have been approved for testing domestic air to water and water to water heat pumps to EN14511 1-4 for MCS 007 accreditation.

#### Recent projects include

- Case study 1 overleaf: on-site system performance test
- Case study 2 overleaf: investigation into extent and cause of poor comfort in an air conditioned office building
- Case study 3 overleaf: mock-up test of a dealer desk cooling system
- Case study 4 overleaf: test chamber performance tests of air to water heat pumps to BS EN 14511

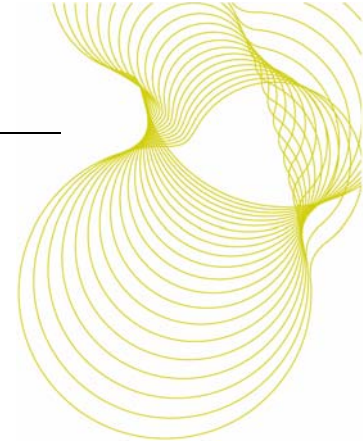
#### For more information

Please contact: David Butler  
BRE, Garston, Watford WD25 9XX

T +44 (0) 1923 664763  
M +44 (0) 7528 976216  
E [butlerd@bre.co.uk](mailto:butlerd@bre.co.uk)  
W [www.bre.co.uk/HVAC](http://www.bre.co.uk/HVAC)

---

## Case studies



bre

---

### On-site system performance test



BRE carried out fullscale system tests to accurately measure the cooling performance of the installed air conditioning system and to assess thermal comfort in the occupied spaces. The tests were carried out under controlled design load conditions using simulated occupant and office heat gains and solar heat gain 'patches'. The test areas were fully instrumented so that thermal comfort could be assessed throughout the space. The tests were carried out before the building was occupied. The tests enabled the client to optimise the position of cooling and ventilation terminals and system control. The tests also allowed the client to provide independent proof of performance.

---

---

### Laboratory mock-up test of a trading floor and dealer desk cooling system



BRE and the client built a fully functioning mock-up of part of a trading floor with chilled water cooled desks to investigate and optimise the design of the desks and the cooling system. The mock-up was built within a controlled environmental chamber at BRE. The objective was to optimise cooling of the CPUs and ensure good thermal comfort for the people sat at the desks. The tests involved detailed analysis of cooling performance with different levels of IT equipment load and the effect on CPU operating temperatures and thermal comfort around the desks. BRE has also undertaken similar environmental chamber mock-up tests of other types of buildings.

---

---

### Investigation into the extent and cause of poor comfort in an air conditioned office building



BRE was commissioned to undertake a detailed survey of the building air conditioning system and measurement of thermal comfort to investigate the extent and cause of complaints about poor occupant comfort. BRE was able to advise the client on probable causes and a range of options to alleviate the problems.

---

---

### Performance tests of air to water heat pumps to EN14511 1-4 including noise ratings



BRE has undertaken standard performance tests of a range of air to water and water to water heat pumps for a number of clients to BS EN 14511 1-4. BRE is also involved with performance sensitivity testing in order to develop a new test methodology for realistic in-use performance tests of domestic sized heat pumps.

BRE can also undertake site trials and house monitoring of heat pumps and other low energy and renewable energy systems.

---