BRE Burn Hall

The facility for fire performance, research and testing

One of Europe’s largest dedicated facilities and part of BRE’s world leading services for independent fire research, fire products and systems certification (including fire suppression) and forensic reconstruction.
Burning issues

From sprinkler systems and small enclosure suppression to full scale fire reconstructions, demonstrations and research, BRE is the only truly independent UK fire laboratory providing robust, independent and authoritative support to the UK construction and transport industries.

BRE’s expertise is recognised internationally and is in demand at the cutting edge of 21st century understanding of fire behaviour and the effects of fire.

Our world class fire facilities and expertise meet a continuum of fire testing needs, from the familiar to the pioneering. Whether it’s predicting the effects of fire in zero gravity for aerospace engineering, reconstructing specific conditions associated with a real fire, determining the fire performance of products in accordance with the requirements of specific test standards or developing new knowledge and understanding of fire phenomena to underpin the protection of people, property, businesses and/or the environment.

BRE has an unrivalled reputation, earned over decades of fire research and testing, for integrity, independence and technical excellence. Our eminent specialists are in demand for landmark research and sensitive fire-related investigations where reputation matters.

BRE expertise is trusted in unravelling the unexpected impacts and causes of fire events. Acting as expert witnesses, we have staged many forensic reconstructions to inform investigations of high profile fire events including – at the Bradford City football ground, King’s Cross railway station, the Piper Alpha North Sea platform, the Atherstone on Stour warehouse and for Lakanal House fire.

Consumer investigation: BRE provided independent expert opinion for an investigation into faulty lithium batteries featured on BBC’sFake Britain.
Crucible of knowledge

Founded in 1995, BRE’s Burn Hall; one of the largest facilities in Europe dedicated to research, testing and assessment of fire performance including the area of fire suppression, is the experimental facility for providing the support you need to solve your fire problems in buildings, infrastructure, industry, energy and transport; such as automotive, defence, rail and marine sectors in support of fire engineering design.

Its towering 15m frame provides essential data on the behaviour of fire – smoke, heat and flames. This knowledge allows engineers, designers and manufacturers to innovate and design safer, more cost-efficient and more sustainable places to live, work and play.

This world class facility has a large and comprehensive smoke management system and calorimeter used for determining heat release rates and smoke production rates which can be used as input parameters for fire safety engineering (FSE) design.

Our state-of-the-art calorimeter measures heat release rates up to 10MW, for large scale reconstruction and research projects. Coupled to this is a bespoke smoke extract and ventilation system which filters the smoke and provides a balanced environment for testing whilst maintaining a volume extraction rate up to 80m$^3$/s through the ductwork coupled to the 9m x 6m smoke hood.

Testing times

Fire is unpredictable, powerful, and its effects can be catastrophic.

If you need to know and understand the hazards and consequences of a fire, you can rely on BRE to deliver technically robust solutions, options and outcomes to assist you to meet your project objectives, whether they relate to regulation, compliance, risk or liability.

We can assure you that your research, products, prototypes or reconstructions will be handled by highly competent, professional, skilled and experienced engineers in the strictest of confidence, working to stringent quality management systems.

Standards to which we can test include, but not limited to, the following:

- BS8414-1:2015 – Cladding
- BS8414-2:2015 – Cladding
- EN 1869 – Fire Blanket Testing
- EN 3 – Fire Extinguisher Testing
- LPS 1582 – Cladding Systems
- LPS 1181 Pt1 – Composite Panels
- LPS 1181 Pt2 – Composite Panels
- LPS 1501 – Methods of Construction
- UBC 26-3 – Room Fire Test
- SD198 – Staircase Testing
- STA – Structural Timber Association Small Room Test
- STA – Structural Timber Association Ignition Test
- LPS 1219 – Pipe couplings and Fittings Fire Test
- TS1599 – Lightweight Piping Fire Test
- EN 12259 Pt2 – Wet Alarm Valve Flow Testing (Limited Scope)
- EN 12259 Pt3 – Dry Alarm Valve Flow Testing (Limited Scope)
- EN 12259 Pt5 – Flow-Switch Flow Testing

Also located within the Burn Hall

- A sprinkler performance and water distribution test facility, with adjustable ceiling height
- LPS 1230 test room for halon replacement fire suppression system evaluation in support of LPCB approval
- BS 8414 (part 1 and 2) external cladding test rigs (also used in support of LPCB approval to LPS 1581 and 1582 schemes)
- Flexible space for fire recreations, research and ad hoc experimental investigations
- Facilities and expertise for sampling and analysis of chemical species
The BRE Trust uses profits made by BRE Group to fund new research and education programmes, that will help it meet its goal of ‘building a better world together’.

The BRE Trust is a registered charity in England & Wales: No. 1092193, and Scotland: No. SC039320.

Other work undertaken:

- Egyptology: BRE experts carried out delicate forensic tests for evidence of the burning of Tutankhamun’s body prior to mummification.
- Lakanal: Commissioned by Metropolitan Police and LFB to stage a full-scale reconstruction of part of the flat at the centre of the investigation.

To find out more on how we can help you, please contact enquiries@bre.co.uk