Providing a superior indoor environment using the latest air conditioning technology...

Frenger Systems
Corporate Overview

FRENGER® systems

Company Overview

Frenger Systems is a world-renowned specialist manufacturer of space conditioning products for indoor climate / environments. Frenger has extensive experience dating back some 70 years and is at the forefront of the design, development and manufacture of water driven cooling and heating technologies.

Frenger employs professionally qualified Mechanical Engineers, Electrical Engineers, Lighting Designers, Building Services Engineers and Project Managers to give customers an unrivalled level of in house expertise for Chilled Beam and Multiservice Chilled Beam (MSCB) technologies. Frenger builds sound business relationships with clients and has won many accolades to this extent which has warranted Frenger a justifiable reputation for delivering complex projects on time, within budget and to specification, every time. All aspects of Frengers business are accredited to BS EN ISO9001 and are regularly audited by the British Standards Institution (BSI).

Due to Frenger's continuing success, the shareholders of its parent company, the FTF Group, provided Frenger in 2009 with one of their fully owned multi million GBP buildings for fit out as a new Technical Facility. The building is situated in the East Midlands, UK and holds a prominent position on the prestigious Pride Park corporate business centre. Frenger have equipped this building to support all technical aspects of the companies' world wide operations.

The new headquarters are fully space conditioned with various different types of Chilled Beam, MSCB and Chilled Ceiling technologies each controlled by a full building management system (BMS) which can demonstrate exactly how well each chilled system is functioning and their efficiencies. This building also houses Frenger's specialist manufacturing, state-of-the-art Climatic Test facilities, Photometric test laboratories along with lighting design and 2D & 3D CAD operations.

Frenger has earned an enviable reputation as a dependable supply partner capable of developing effective space conditioning solutions for the most complex of projects.

Testing Facility

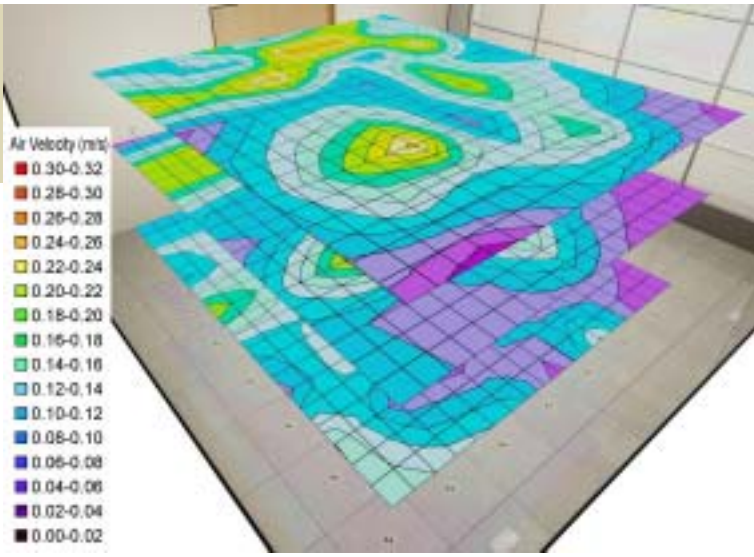
The 3 number state-of-the-art Climatic Testing Laboratories at Frenger's technical centre have internal dimensions of 6.3 x 5.7 x 3.3 m high and each includes a thermal wall so that both core and perimeter zones can be modelled.

The Frenger facilities combine the most advanced and accurate measuring equipment, skilled technical personnel with over 10 years experience in project specific testing and in house 3D visualization software to enable test results to be analysed and presented in an easily understood 3D graphical format.

Project specific mock-up testing is a valuable tool which allows the Client to fully asses the proposed system and determines the resulting indoor quality and comfort conditions; the physical modelling is achieved by installing a full scale representation of a building zone complete with internal & external heat gains (Lighting, Small Power, Occupancy & Solar Gains).

The installed mock-up enables the client to verify the following:

- product performance under project specific conditions
- spatial air temperature distribution
- spatial air velocities
- experience thermal comfort
- project specific aesthetics
- experience lighting levels (where relevant)
- investigate the specific design and allow the system to be enhanced.



The project-specific installation and test is normally conducted to verify:

- Product capacity under design conditions
- Comfort levels - air temperature distribution
  - thermal stratification
  - draft risk
  - radiant temperature analysis
- Smoke test video illustrating air movement

Photometric Labs

Frenger's latest addition to its new purpose built Technical Centre includes Photometric testing capabilities, lighting design and manufacture. The new Photometric testing laboratories and manufacturing department compliments Frenger's already impressive array of in-house project specific testing and manufacturing facilities.

The new lighting facility includes two separate photometric testing studios; the 'Goniphotometer Room' is a 9.8m (L) x 3.35m (W) x 2.9m (H) sealed blacked-out room which is used for plotting luminaire intensity distribution (the "Polar Curve" or otherwise know as a "Photometric Data"). While the 'Integrator Room' is a 3.4m (L) x 2.4m (W) x 2.4m (H) studio finished in a special white paint used to measure the LOR ("Light Output Ratio") of the luminaire. Calibrated traceable light sources are used for absolute testing.

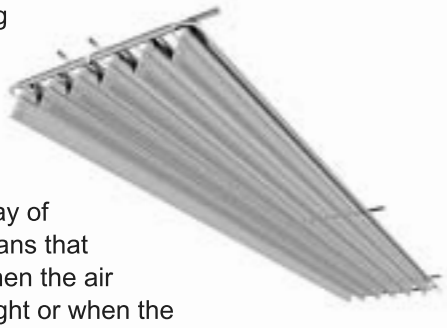
Both the testing and manufacturing facilities house state-of-the-art photometric equipment with a dedicated 'Lighting Team' consisting of designers and lighting engineers.

Solutions

With Frenger's manufacturing capabilities, bespoke products can be delivered to suit different requirements, all backed up through Frenger's impressive array of performance testing facilities and after care technical support to give the client complete piece of mind the solution will work from the out set.

Passive Chilled Beams - For more information & downloadable literature visit www.frenger.co.uk

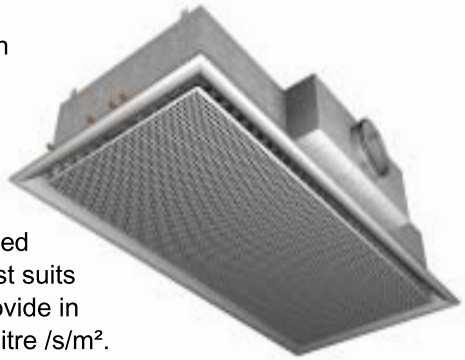
Frenger's passive chilled beams represent the very best in beam technology by employing convective **"Radiant"** cooling principles and are designed to deliver high cooling duties (up to 150 w/m²) with no noise and minimal air movement.

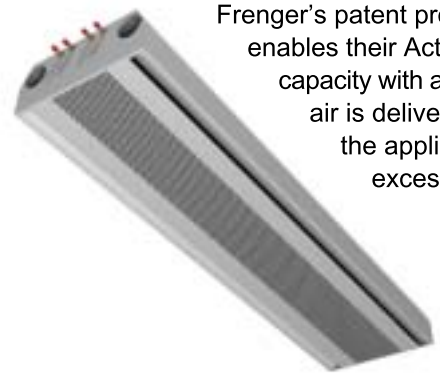


The efficiency of the cooling for the building can also be enhanced by the ability of Frenger's "Radiant Beam" product to exchange energy by way of long-wave radiation as well as convection, this means that the beams can retain a high cooling effect even when the air temperature in the room is relatively low (e.g. at night or when the building is unoccupied). In this way large amounts of cold energy can be stored in the building structure during low load periods, and used to offset heat gains when the need arises.

Active Chilled Beams - For more information & downloadable literature visit www.frenger.co.uk

Frenger manufactures and supplies a range of active chilled beams. Frenger draw upon high performance technologies and patented design features to deliver efficient cooling to commercial, educational and healthcare environments.

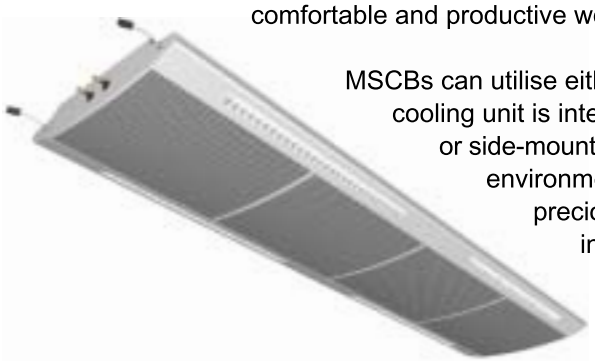




Frenger's patent protected battery and air chamber geometry enables their Active Beams to deliver unrivalled levels of cooling capacity with a given air volume and ensuring that the reconditioned air is delivered into the space in a controlled manner that best suits the application. The units are so efficient that they can provide in excess of 200w/m² with fresh air supply of as little as 1litre /s/m².

Multiservice Chilled Beams - For more information & downloadable literature visit www.frenger.co.uk

Frenger designs, manufactures and supplies "Multiservice Chilled Beams" (MSCBs). These units facilitate energy efficient water driven cooling, heating, fresh air supply, lighting and pretty much what ever else you want to integrate to provide flexible space conditioning that can be tailored in terms of appearance (to make an Architectural Feature) and the services provided. In this way MSCBs can help to create attractive, comfortable and productive working environments.



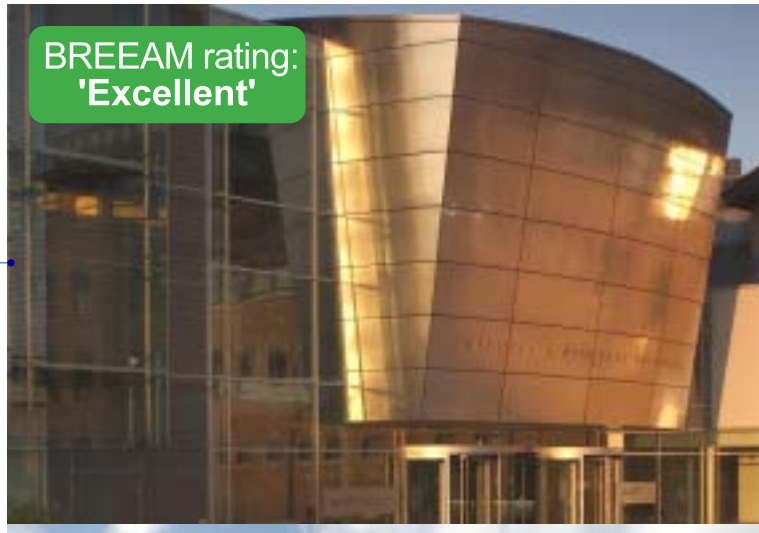
MSCBs can utilise either active or passive chilled beam technologies. The cooling unit is integrated into a perforated architectural casing with central or side-mounted lighting. All services are prefabricated off site in a controlled environment and factory tested for both mechanical and electrical disciplines; saving precious time on site as these MSCB units are delivered for simple "Plug and Play" installation.

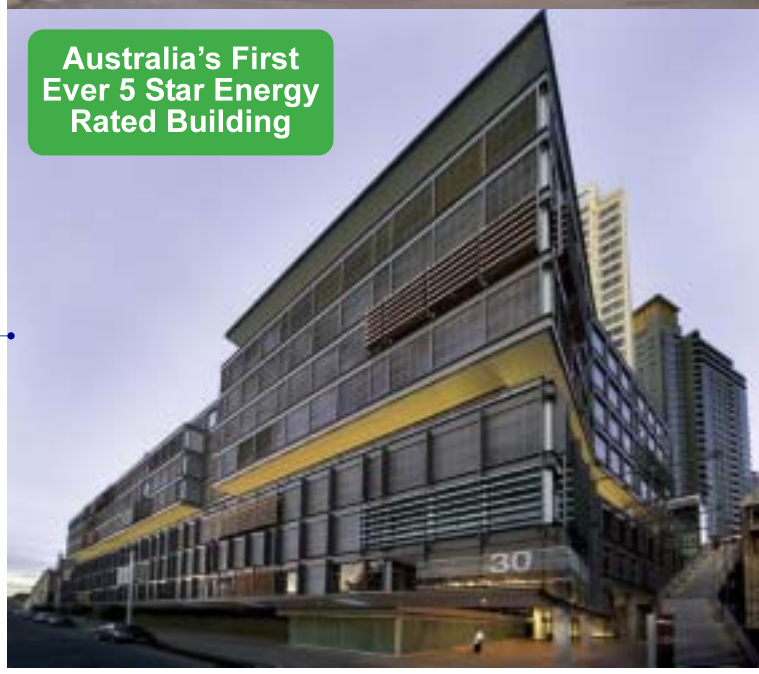
Project References

Frenger designed, supplied and installed the World's first chilled ceiling system in 1962; the 175,000 square meter, 27 stories high, Shell Oil headquarters, situated on the river Thames in London. This was revolutionary at it's time as this Frenger Chilled Ceiling used the River Thames water to cool the building down by pumping in cool water from upstream to a secondary heat exchanger which in turn cooled (took heat out of the building by "Radiant" absorption) the building down, then depositing the warmer return water from the secondary heat exchanger down stream. This installation is still operating after nearly 50 years and is a testament to the integrity of the product and to Frenger's design capabilities. Frenger also supplied Australia's First ever 5 Star Energy Rated project in 2003 ("The Bond" Sydney) which was Australia's first ever "Radiant" Chilled Beam Ceiling.

Since then Frenger has designed, supplied and installed numerous high-profile projects worldwide that utilise chilled beam technologies. The following represents a small number of the projects that the company is proud to be associated with.

Megawatt Park, South Africa - 2011
24 Britton Street, London - 2010
Anglia Ruskin University, Cambridge - 2010
123 Albert Street, Brisbane - 2010
500 Collins Street, Melbourne - 2010
Google Head Office, Sydney - 2010
Sudima Hotel, Auckland - 2010
Royal Hobart Hospital, Tasmania - 2010
CIT, Canberra - 2010
1 Shelley Street, Sydney - 2009
Skipton HML Headquarters, Skipton - 2009
1 Lancaster Circus, Birmingham - 2009
101 New Cavendish Street, London - 2009
Cambridge Library, Cambridge - 2009
South Australia Police, Adelaide - 2009
115 Batman Street, Melbourne - 2009
55 Baker Street, London - 2008
QMC Hospital, Nottingham - 2008
International Business Centre, Liverpool - 2008
Transport House, Sydney - 2008
Hallward Library, Nottingham - 2007
Duke Street, London - 2007
Sydney Olympic Park, Sydney - 2007
Council Offices, Edinburgh - 2006
National Farmers Union, Warwickshire - 2006
Project Vauxhall, Nottinghamshire - 2006
Malvern Hills Science Park, Malvern - 2006
National Audit Office, London - 2005
10 Green Coat Place, London - 2004
Merck Sharp & Dohme, Hoddesdon - 2004
Saffron Hill, London - 2003
Woolworth House, London - 2003
Experian, Nottingham - 2003
The Bond, Sydney - 2003
Royal Sussex Hospital, Brighton - 2003
Ealing Studios, London - 2002
Gordon House, London - 2001
Vodafone, Hayes - 2001
BT, Leavesden - 2001
British Gas, Manchester - 1999
BT, Nottingham - 1997





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Local Agent

World-renowned specialist manufacturer of space conditioning products

Frenger Systems Limited is an **FTF Group** Company