

Climate Testing Facility

Frenger has three climatic test laboratories located at its technical centre which is located at the prestigious Pride Park, Derby, England.

These purpose designed and built laboratories have nominal internal dimensions of 6.3m (L) x 5.7m (W) x 3.2m (H) and each environmental chamber includes its own thermal wall so that both core and perimeter zones can be physically modelled in any of the rigs.

All three environmental chambers are fixed in size however the fitment of partition walling and false ceilings can be positioned to match the physical constraints of a project specific installation. Frenger also have in-house thermal imaging capabilities.

Catalogue Data - Standard Product

All Frenger's products are designed by Frenger's in-house Research and Development (R & D) department. Once any new product is ready for mass production these are tested in-house to the following British Standards for Catalogue Data to be collated / published:

- BS EN 14240:2004 – Ventilation for buildings – Chilled ceilings – Testing and rating.
- BS EN 14518:2005 – Ventilation for buildings – Chilled beams – Testing and rating of passive chilled beams.
- BS EN 15116:2008 – Ventilation in buildings – Chilled beams – Testing and rating of active chilled beams.
- BS EN 14037-2 – Radiant Panel Test Methods for Thermal Output.
- ISO 7730 – Ergonomics of the indoor environment.

In addition to the above in-house comprehensive testing which utilises state of the art equipment and BSRIA calibrated instrumentation to reduce the amount of uncertainty to an accuracy of $\pm 2.5\%$, Frenger also subscribe to third part Validation Testing by Eurovent.

Eurovent certification testing is only for performance and takes no account of the indoor environment, whereas all Frenger testing and published catalogue data is compliant to **ISO 7730** (Technical data available to download from Frenger's website under 'Technical Downloads'. TDS 04A & TDS244), ergonomics of the indoor environment to ensure that occupancy comfort is maintained to the highest of standards.



1 of 3 climatic test laboratories



Project Specific Testing

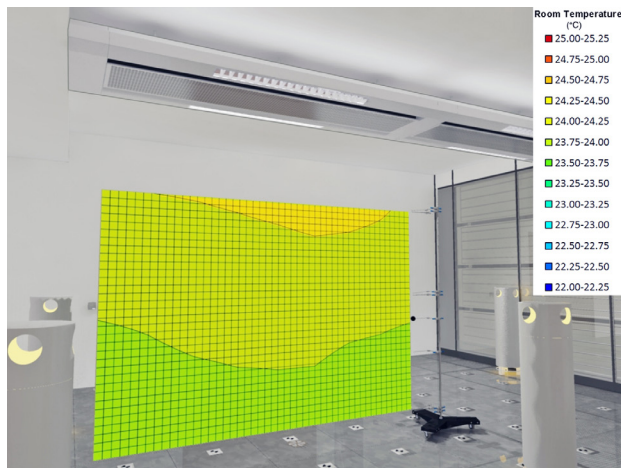
Project specific mock-up testing is a valuable tool which allows the Client to fully assess the proposed system and determine the resulting indoor quality and comfort conditions; the physical modelling is achieved by installing a full scale representation of a building zone complete with internal & external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

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

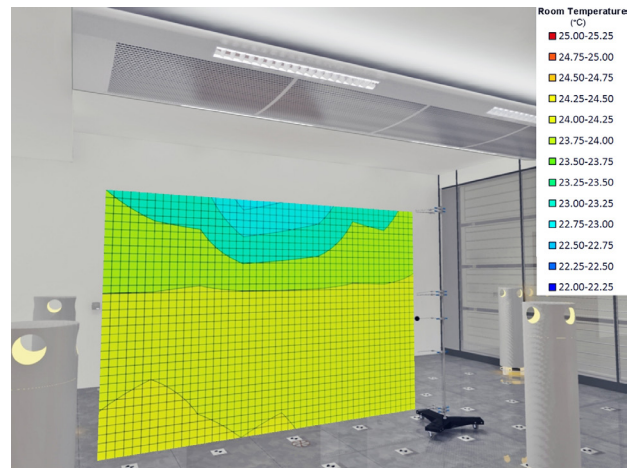
- Product performance under project specific conditions.
- Spatial air temperature distribution.
- Spatial air velocities.
- Experience thermal comfort.
- Thermal imaging (still images and video footage).
- Project specific aesthetics.
- Experience lighting levels (where relevant).
- Investigate the specific design and allow the system to be enhanced.

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

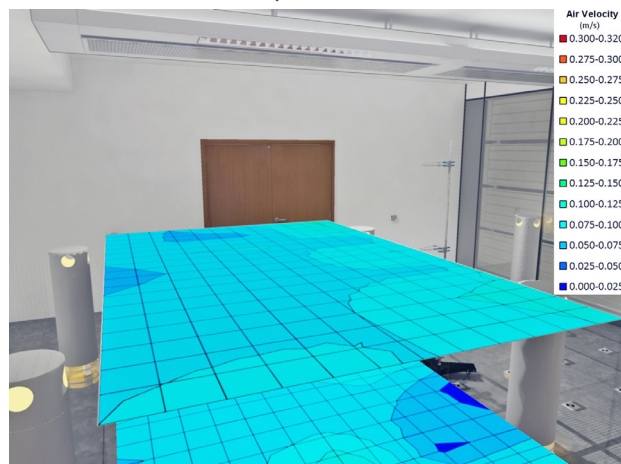
- Product capacity under design conditions.
- Comfort levels - Air temperature distribution.
 - Thermal stratification.
 - Draught risk.
 - Radiant temperature analysis.
- Smoke test video illustrating air movement.



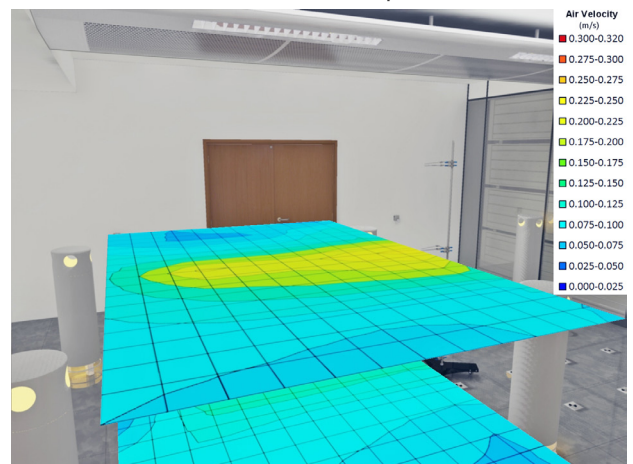
Active MSCB Room Temperature



Radiant Passive MSCB Room Temperature



Active MSCB Air Velocity



Radiant Passive MSCB Air Velocity