



**TROX<sup>®</sup> TECHNİK**

The art of handling air

**TROX UK**  
**Laboratory 1**



## TROX Test Laboratory



### Laboratory 1

Length = 9.0m

Width = 6.0m

Height = 3.5m

- Floor - Kingspan floor tiles (600 x 600 x 30mm thick with galvanised finish) create 500mm void that can be used to duct individual floor outlets or the whole floor area can be pressurised, (plenum not yet created)
- Walls - One 9m long wall is built from Perspex and if incorporated into the module it creates a viewing area. One 6m long wall is built from chilled ceiling panels and can be used to simulate glazing in the module with temperature range about 10 to 40°C. Module walls are usually constructed from Kingspan (40mm thick lightweight partition boards)
- Ceiling - 12mm plywood, test cell ceilings (usually Kingspan) can be suspended from the plywood, heavier constructions are suspended from the beams above the plywood

Within the main cell dimensions any room module can be created with any air / water based product.

### Simulated heat Loads

Glazing is represented by hot and cold water mixing circuit through chilled wall elements. Solar gain can be also represented by low density heating mats these also simulate small power gains.

Person heat load is represented by thermal dummies (Din Men).

Computer load can be represented using metal boxes with light bulbs and fans.

## Instrumentation

Temperatures are measured via a 32 channel Quat system. The probes are Quartz based and work on the frequency/vibration of the Quartz probe tip. The probes are individually addressed and produce a digital frequency count that is sent to the monitoring computer via hardware that converts frequency to temperature.

Dantec Omnidirectional Transducers measure local velocities. These are precision flow sensors specifically suited for use a low velocities where direction of flow is not known. A voltage signal from the velocity probe is converted by software to a local velocity reading. Local velocities in this report are time average values taken over a sampling period of 120 seconds, with each probe taking between 7 and 12 readings per second.

Temperatures and velocities can be also measured using 'Dantec Dynamics VIVO' combined temperature and velocity probes on a moveable stand. The instantaneous temperature and velocity values are recorded by the probes every second. The device is set to record data at this collection frequency for a period of 120 seconds. On completion of the data acquisition period the probes relay the collected data back to a lap top computer which is converted to meaningful data by software developed by 'Dantec Dynamics'. Other probes also measure space humidity and radiant temperature.

Sound pressure levels can be measured using CEL-593 Sound level analyzer.

The supply air flow rate can be measured by a sharp edged orifice plate built and maintained to the British standard or Venturi nozzles (different sizes). The pressure drop across the measuring device is converted into airflow rate and sent to the computer.

Water flow volume is measured using a Danfoss Magflow 2500 water meter. This instrument is accurate to +/- 2%.

All our instruments are calibrated on regular basis and records are available in the laboratory.

Apart from recording videos of smoke visualizations we can also carry out thermal imaging with ThermaCAM E45. The camera measures and images the emitted infrared radiation from the objects and temperatures are displayed via a range of colours.

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