Large Scale Oxygen Consumption Calorimetry – Room Corner Test

(ISO 9705; EN 14390; ASTM D5424; ASTM D5537; ASTM E603; ASTM E1537; ASTM E1590; ASTM E1822; NFPA 265; UL 1685; NT FIRE 25; NT FIRE 32)

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A Judges Scientific plc company

Gas Analysis Instrumentation Console

Among other options, **FTT** also offer burners constructed to ISO 9705 Annex A1 and A2 complete with gas train. A mass flow controller with digital display controls the gas flow.

The gas controls include an autoignition unit incorporating several safety features.

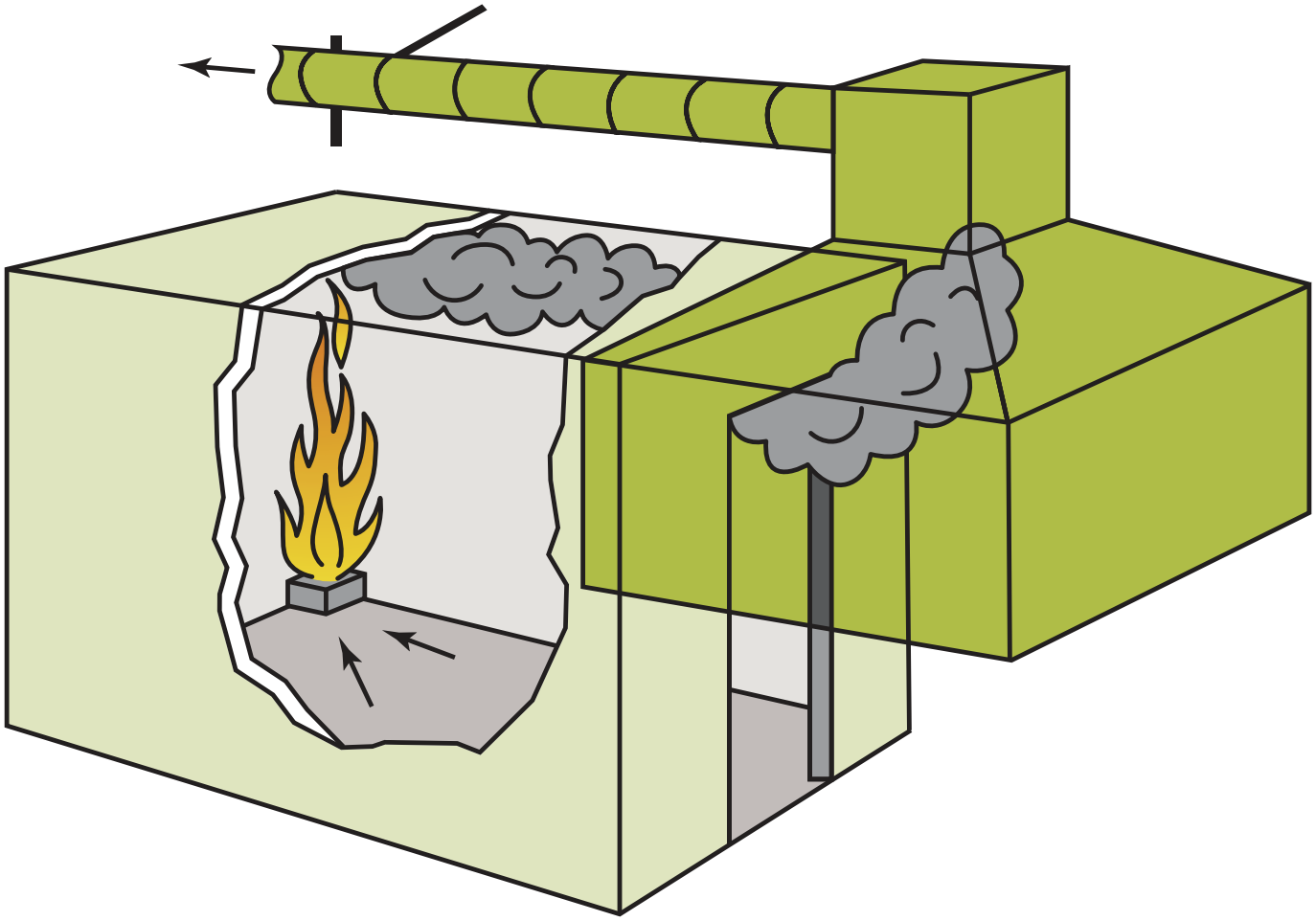
The method evaluates the fire characteristics of a surface product in a room fire scenario. The main field of application is for building products that, for some reason, cannot be tested in small scale, for example thermoplastic materials, joint systems and large irregular shaped materials. Other products can also be evaluated in the method, for example pipe insulation and upholstered furniture.

The Consumption Corner tests simulate a fire that starts under well-ventilated conditions, in a corner of a small consumption with a single open doorway. The method is intended to evaluate the contribution to fire growth provided by a surface product using a specified ignition source. The test provides data for a specified ignition source for the early stages of a fire from ignition up to flashover. The standards listed above require specific measurement techniques inside and outside the consumption.

FTT Room Corner Test

FTT supply the Room Corner test with the appropriate instrumentation depending on customer's requirements; a complete system and installation, an upgrade to existing facilities or just the gas analysis instrumentation console and a duct section for those with a wish to build their own apparatus.

The analyser console contains all the necessary instrumentation to measure heat release rate and other associated parameters. The analyser has been developed specifically for **FTT** Calorimeters; incorporating a high stability temperature controlled paramagnetic oxygen sensor



On-site system in a fire research institute

(optional CO/CO_2) with flow control and by-pass for fast response. The specification of this instrumentation is the same for both large and small scale calorimeters and can therefore also be conveniently used with the **FTT** Cone Calorimeter.

When used with the Cone Calorimeter the console is conveniently located with the Cone Calorimeter unit.

The Duct Insert contains probes for gas sampling and exhaust flow measurement along with smoke measurement equipment (white light or laser). Most dynamic fire testing apparatuses can be instrumented with this equipment to measure heat release and smoke production rates from products burnt in them.

Main Features

- Gas Analysis Instrumentation Console. For the measurement of:
  - Oxygen consumption
  - CO_2 production
  - CO production (optional extra)
  - Laser measuring circuitry for dynamic smoke measurement (optional extra)
  - Cooling column/cold trap for the removal of moisture
  - Moisture and CO_2 drier tubes
  - Vent valve to ensure correct gas pressure
- Duct insert for Room Corner test showing laser smoke unit and sampling ports. Fitted with:
  - Sampling probe for the oxygen consumption and CO/CO_2 gas train
  - Bi-directional probe for volume flow monitoring
  - 0.5 mW Helium-neon laser system with photometric detector, all in a rigid cradle with a retaining strip around the duct (optional) or White Light Smoke Measurement System (optional)
  - Flow thermocouple and smoke thermocouple
  - Soot filter for removal of fine particulate

19" Gas Analysis Rack

Duct insert

LSHRCalc Software

LSHRCalc is a Microsoft Windows based software package that enables automatic data collection and manipulation from the sophisticated data logger supplied with the Gas Analysis Instrumentation Console. It automatically calculates the heat release rate and associated parameters generating a detailed report for the product(s) being tested.

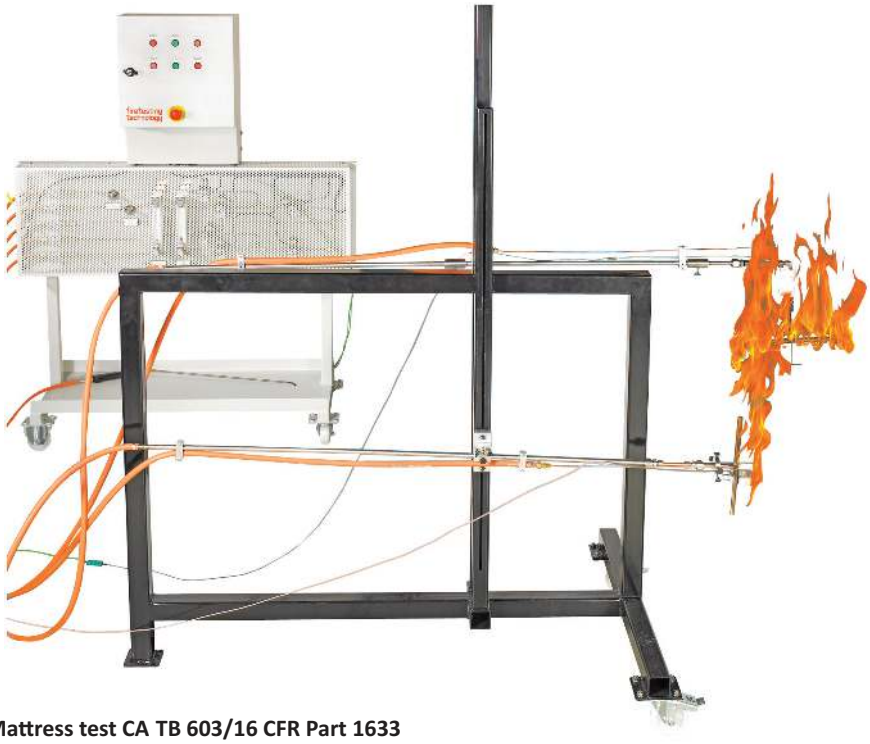
The user friendly software interface allows the operator:

- To see the status of the instrument
- Calculate the required parameters
- Calibrate the instrument and store calibration results
- Collect and view data generated during a test
- Present the results in a manner approved by the Standards

Options

- Laser smoke measurement system. A 0.5mW helium-neon laser system with twin photo detectors
- White light smoke measurement system. Tungsten filament lamp, lens and detector system
- Large scale mattress fire test CA TB 603/16 CFR Part 1633. This test method is a full scale flammability test which exposes a mattress specimen to a pair of T-shaped propane burners and allows it to burn for a specified period of time. The combination of burner stand-off distance and propane gas flow rate to the burners determines the heat flux they impose on the surface of the test specimen so that both of these parameters are tightly controlled. The heat release rate is measured by means of oxygen consumption calorimetry.

White light smoke measurement system



Mattress test CA TB 603/16 CFR Part 1633

TECHNICAL SPECIFICATIONS	
Measuring principle	Measurement of fire characteristics of a surface product in a room fire scenario
Dimensions of gas analysis console	600mm (W) × 600mm (D) × 1800mm (H)
Sampling probe	Cylindrical with a series of holes along its length. 10 mm external diameter stainless steel.
Burners	Twin sandbox (main and auxiliary) includes automatic safety cut-off solenoid valve
Cooling column	Operating temperature 0 to 4°C
Sample pump	Double ended Teflon coated diaphragm pump; capacity 30ℓ/min
Exhaust system	Stainless steel – (a minimum distance of 3500mm from exhaust hood to measurement system is required). Exhaust hood dimensions as per customer requirements
Duct insert	Stainless steel – 400mm/16 inches diameter (customer to specify), 762mm long. Custom inserts available on request.
Particle filter	Eliminates all particles > 0.3µm.
Oxygen analyser	0-25% for O_2 0-10% for CO_2 (option) 0-1% for CO (option)
Laser smoke measurement system (option)	0.5mW He-Ne laser system
White light smoke measurement system (option)	Tungsten filament lamp; colour temperature 2900 ± 100K
Mattress test (option)	T-shaped propane burners with flow control Portable burner frame Burner wand assembly

Due to **FTT**'s continuous development policy specifications could change without prior notice.

SERVICES	
Electrical power	220/240VAC 8A, 50Hz or 110/120VAC 16A, 60Hz (specify at the time of order)
Extraction	A fan rating of at least 12000m^3/hr is recommended
Gases	• Oxygen-free nitrogen is required for calibration of the oxygen analyser and for leak testing purposes. Commercial propane minimum 95% purity is required for the gas burner calibration • Span gas

A collection vessel is required for cold trap condensation

Unrivalled Experience in Design and Manufacturing

FTT's site in East Grinstead, is home to the largest group of fire scientists and instrumentation design engineers working on fire testing instrumentation, and is at the heart of our design and manufacturing. For almost 30 years **FTT** has provided the highest quality instruments and service for fire testing and research professionals worldwide, directly and through its extensive global sales and support network.

Quality

- World-class manufacturing in accordance with multiple international and national standards, including: EN, ISO & ASTM
- ISO 14001, ISO 9001 certified

Integrity

- A dedicated team passionate about fire testing instrumentation and continuous product improvement
- Delivering reliable, robust and easy-to-use instruments for the past 30 years

Excellence

- A world-class team made up of qualified fire scientists, mechanical, electrical and electronic fire instrument design engineers and production, installation and maintenance engineers

Global

- World-wide distribution network for global sales, installations, training, maintenance and technical support
- Leading global supplier of the Cone Calorimeter, Large Scale Calorimeter, NBS Smoke Chamber and Oxygen Index