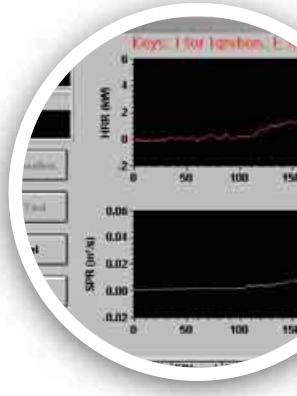
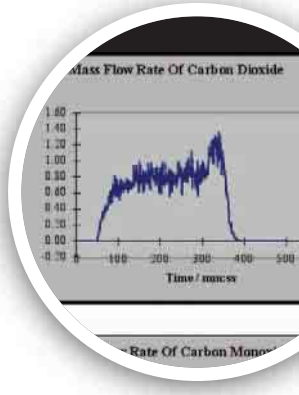
FPA

Fire Propagation Apparatus
ASTM E 2058 FM 4910





THE BENCHMARK IN FIRE TESTING

ASTM E 2058 FM 4910

FTT manufactures the FM Global Fire Propagation Apparatus (FPA), a heat release calorimeter.

The FTT FPA can be used to determine:

- Critical heat flux for ignition
- Thermal response parameter
- Effective heat of combustion
- Chemical and convective heat release rates
- Fire Propagation Index

It can also be instrumented to measure:

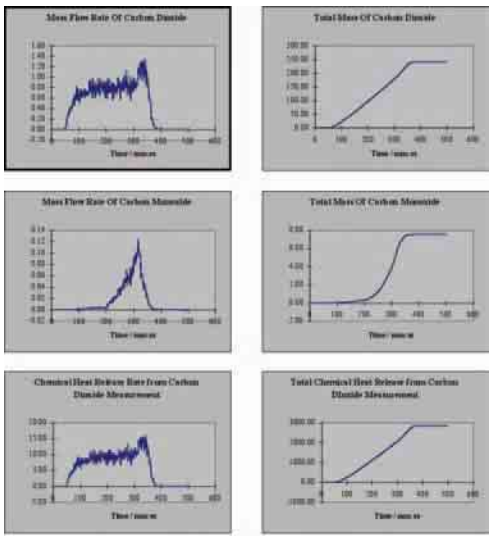
- Average Corrosion Index
- Smoke yield

Instrument features:

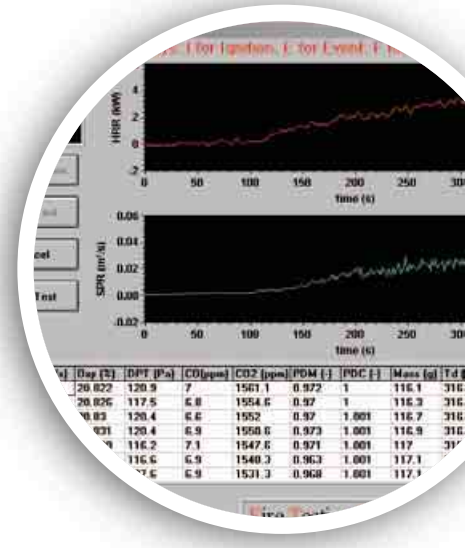
- Infrared Heaters: Four heaters each supplied with six 500W lamps, at 120-144V, and associated water and air cooling connectors, controlled by a single phase power controller to provide heat flux up to 65 kW/m^2.
- Mass Loss Measurement: A 0-2000 g load cell, with an accuracy of 0.1g.
- Air Distribution Chamber and Air Supply Pipes: Quartz Cylinder and Water Cooled Shield: Two quartz cylinders fitted above the aluminium cylinder, allow supply of oxidant to the specimen flame, while enabling radiant energy from the Infrared heating system to reach the specimen surface. A water-cooled shield protects the specimen from the heat from the Infrared heaters prior to testing.
- Ignition Pilot Tube: A pilot ignition tube, with a 4-hole ceramic insert.
- Exhaust System: Intake funnel, mixing duct, and test section.
- Gas Sampling: Sampling probe, filters, traps, and flow control.
- Oxygen, Carbon Dioxide and Carbon Monoxide Analysis: Inlet concentration of oxygen and exhaust concentrations of oxygen, carbon dioxide and carbon monoxide are measured.
- Heat Flux Meter: For calibration of the Infrared heating system.
- Instrument Frame: Developed for 19" rack mounting.

Windows based software

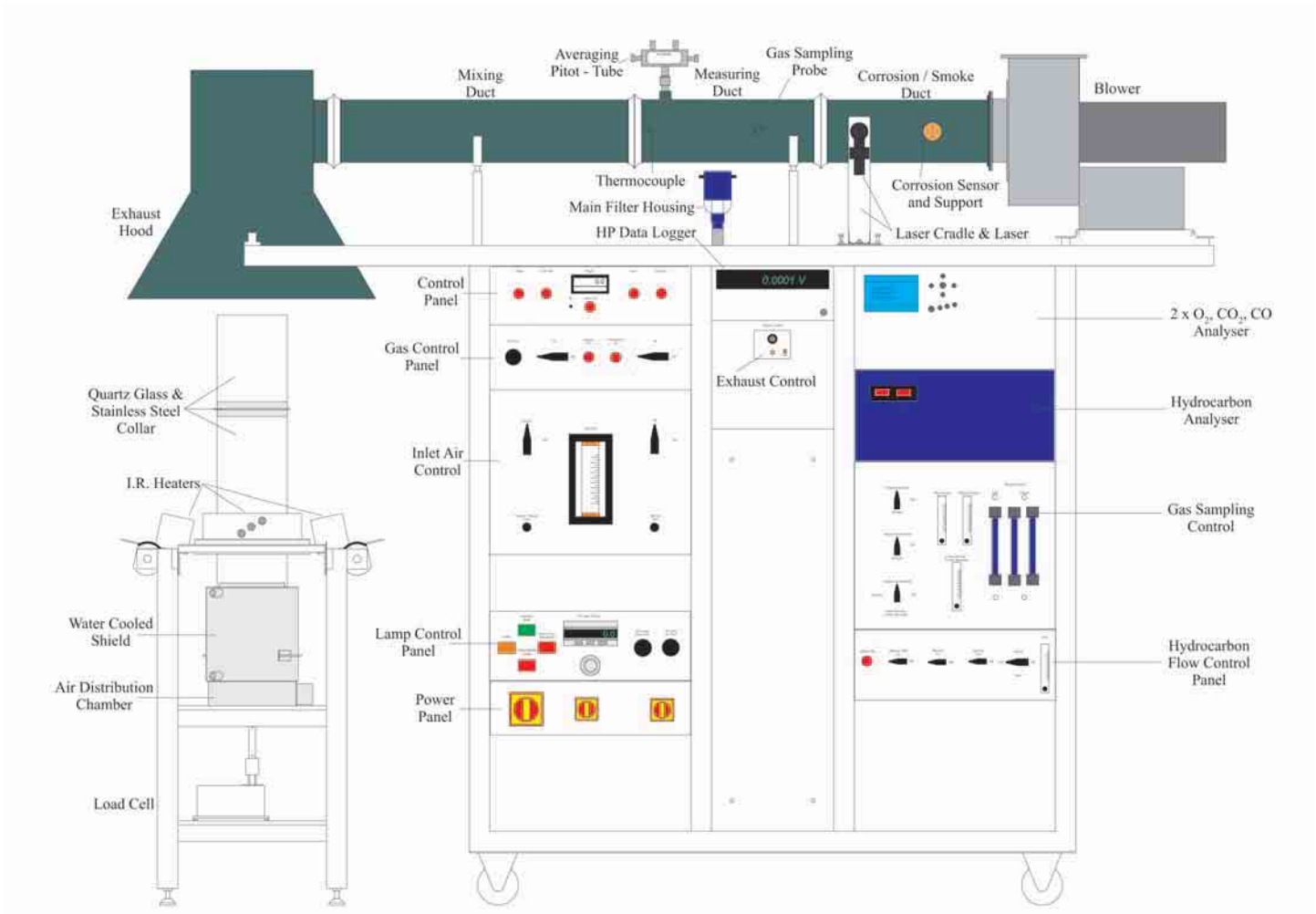
A Windows based software package enables simple data acquisition, analysis and storage via a 22-bit data logger.



All parameters are displayed. The versatile data logger may be used in other applications and is supplied with software that allows the data stored in the logger to be downloaded to a PC for further analysis.



Schematic Diagram



fire testing technology limited

Services required

Prior to operating the Fire Propagation Apparatus, the following services must be provided for the laboratory:

a) Fire Products Extraction – a collection hood system is required above the FPA exhaust stack. The blower of the collection hood system shall have the flow capacity in excess of 300 l/s (0.3 m^3/s)(635 cfm) of the FPA.

b) Electrical Power – 277 VAC, 50/60 Hz, single phase – single hot leg from 480 VAC referenced to ground – 2 AWG wire and 125/160 ampere fuse disconnect or circuit breaker for the IR heaters and power controller.

c) Water Supply – pressure regulated clean water (on line filter should be used) with a flow rate of 2.0 l/min allowing each IR heater to receive at least 0.34 l/min at 50 psi. The inlet temperature shall not exceed 70°F (22°C). A supply is also necessary for the water-cooled sample shield, which should prevent a temperature increase of the shield in the up-position of more than 4-5°C. For safety reasons, no quick disconnects shall be used on water lines.

d) Air Supply – Pressure regulated clean, oil free air (a desiccant dryer should be used to verify this) at a flow rate of 1.5 m^3/min allowing each IR heater to receive at least 0.3 m^3/min.

e) Drain – a drain is required to handle the water being provided for the IR heaters and water-cooled sample shield (a close-loop system is also an option).

f) Calibration Gases – Primary standard grade 'span gases' and grade 5 N_2 for 'zero gas' for CO_2, CO analyzers; Ethylene gas and compressed air for pilot flame. Typical span gases are required: 2300 ppm CO_2 balance N_2; 400 ppm CO balance N_2; 21% O_2 balance N_2.

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