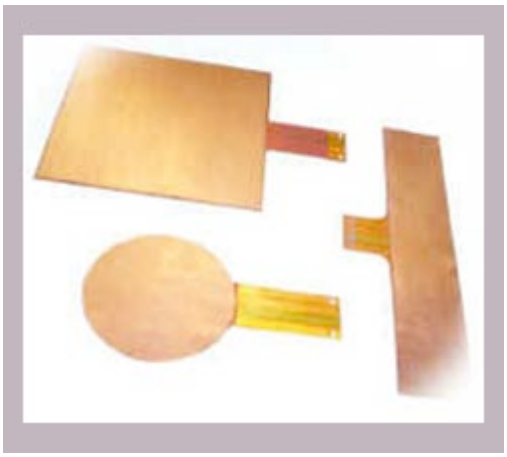

Heat flux sensors

AN ULTRATHIN HEAT FLUXMETER

Thin foil flexible heat flux sensors consist of a thermoelectric panel laminated between flexible heterogeneous plastic layers. Since their introduction by CAPTEC over 10 years ago, these thin etched foil balanced heat flux sensors have demonstrated significant advantage over conventional gradient layer heat flux sensors.

Advantages

The thinner, the better: The main difficulty in measuring heat flux comes from the disturbance created by the sensor itself. By keeping a high accuracy of heat flux measurement through thin thermal resistant material, Captec's technology makes it possible to...

• Reduce the increase of temperature of the sensor, and thus limit the impact of the sensor on the incident flux.

• Get an accurate reading very rapidly as there is no need for a gradient of temperature to stabilize across a thick thermal resistant material.

Custom tailored for better fit: Size and shape possibilities are unlimited. Captec builds sensors as large as 300*300mm square, as small as 5*5mm square. You can specify intricate geometries to follow the curves of your hardware. Computed aided design produces uniform or profiled heat flux sensing elements to meet your precise needs.

Integral temperature sensor: Captec can furnish heat flux sensors with integral thermocouple built in the sensing area ideal for heat transfer controllers.

Electric resistance : lower than 500 Ohm

Output wires : since a positive or negative voltage is provided depending on the heat flux orientation, no special wiring or referring junction is required.

APPLICATIONS:
Numerous applications: Heat flux measurement, thermal process regulation, testing of thermal insulation, detection of frost/polymerisation/state change…

SPECIFICATIONS:

Accuracy: Thickness of 0.4 mm, guarantees minimal disturbance
Sensing Area: Up to several square feet (precisely shaped and sized on request)
Operating temperature: From - 180℃ to 200 (-330F to 500F)
Input range: - 500 kW/ m2 to 500 kW/ m2
Electrical resistance: About 100 ohms for a sensing area of one dm2 (0.1 ft square).
Instrumentation: Any voltage measuring instrument having a 0.1 mV range
Connection: Either by welding or by copper Teflon insulated color coded wires.
Response time: 0.3 sec
Possibility to measure the temperature also with thermocouples type T integrated in the sensor.
Sensitivity:

DIMENSIONS (mm)	SENSING SURFACE AREA (c m^2)	SENSITIVITY μV/（W/m^2）	SENSITIVITY mV/($W/c\ m^2$)
10x10	1	0.3	3
50x50	25	7.5	75

100x100	100	30	300
150x150	225	67.5	675
300x300	900	180	1800

Dimensions (mm)	Resistance electrical (Ohm)	Sensitivity μV/(W/m²)	Sensitivity mV/(W/cm²)
10x10	20	0,3	3
50x50	200	7,5	75
100x100	800	30	300
30(diameter)	60	2	20
15x130	150	6	60