Fast systems don’t wait for slow sensors

Meerstetter HFS for dynamic heat-flux measurement

EPIC Members New Product Release · 9 June 2026

meerstetter engineering

Member of Berndorf Group

Company profile

30+ years
engineering experience

Rubigen, Switzerland
development and manufacturing

LDD + TEC ecosystem
drivers, controllers, firmware, software

Industrial + research use
medical, industrial, research and space equipment

Why Measure Heat Flux at all?

Temperature:

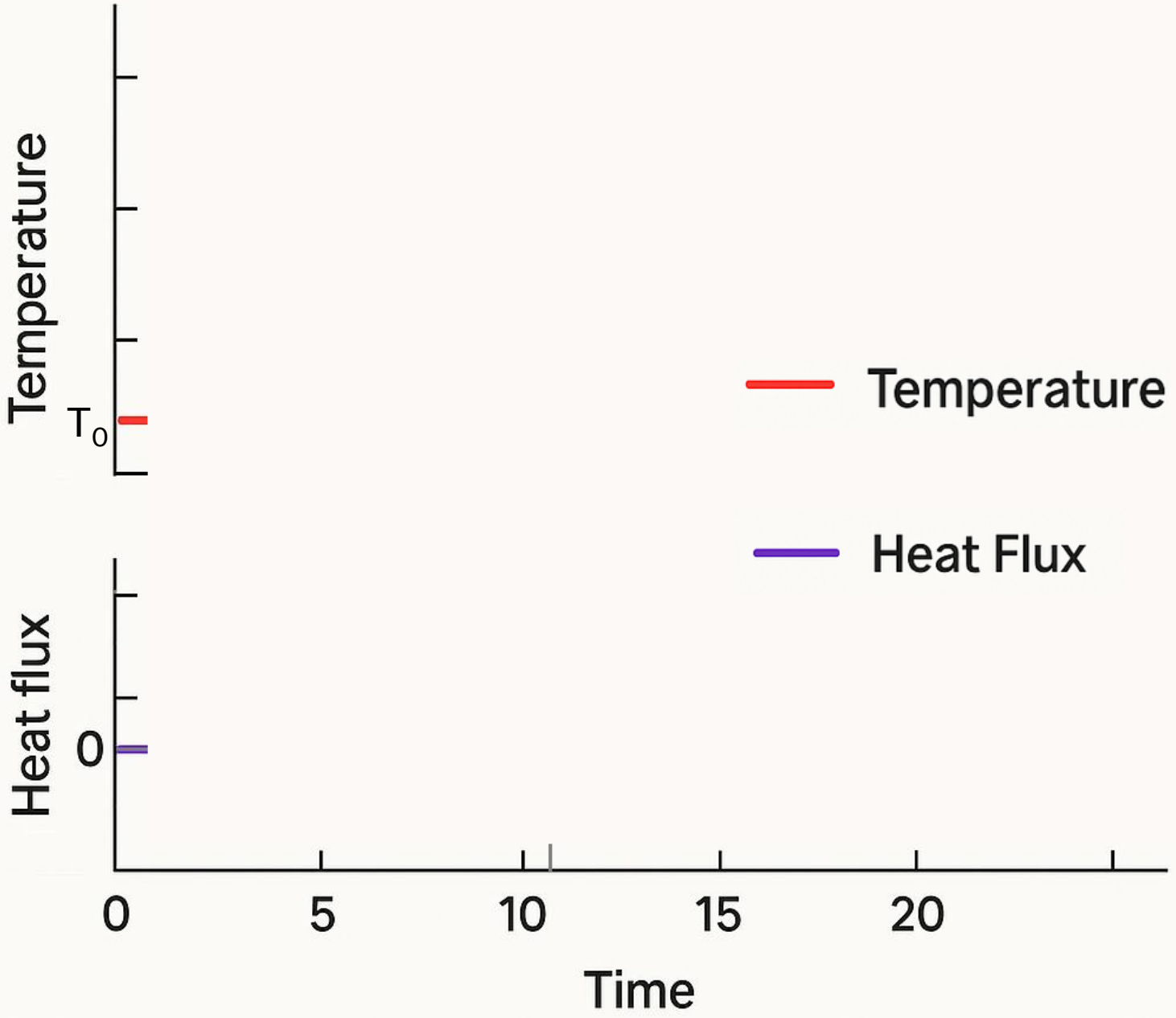
- delayed response, accumulation of heat
- like the distance traveled over time.

Heat Flux:

- instantaneous value, current rate of heat transfer
- like the velocity of travel.

Benefits of heat flux measurement:

- Directly quantifies energy transfer, not just stored heat
- Reveals real thermal dynamics that temperature alone cannot capture
- Key in systems with concentrated heat sources, complex heat paths, or critical thermal interfaces



Where conventional heat-flux sensors reach practical limits

Dynamic response

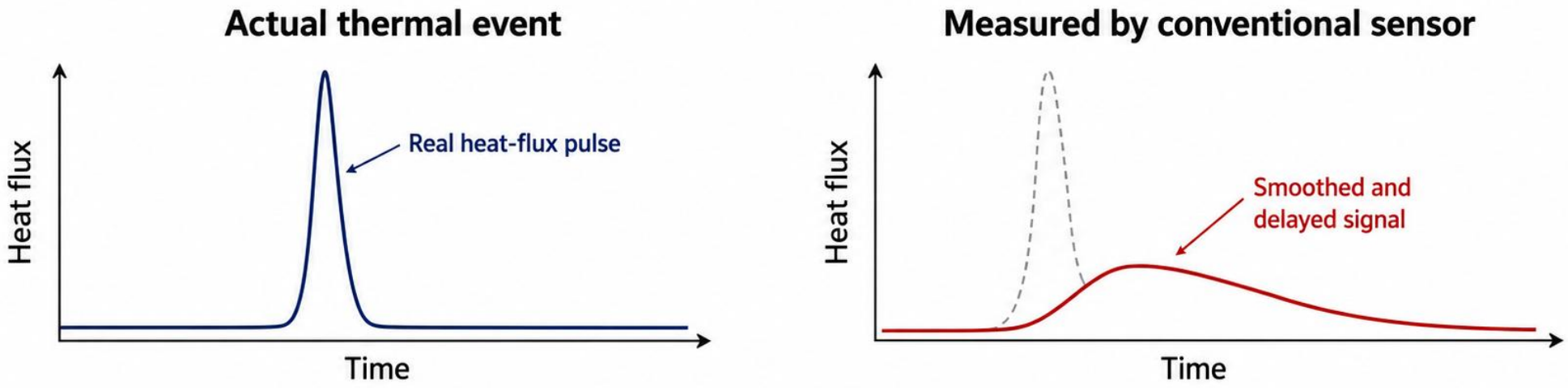
Slow sensors smooth out peaks and delay the event.

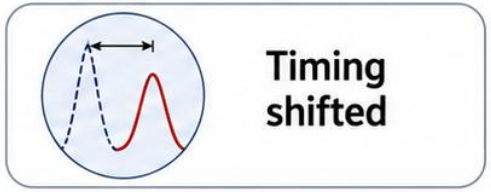
Thermal disturbance

Added thickness or thermal mass changes the heat path.

Mechanical integration

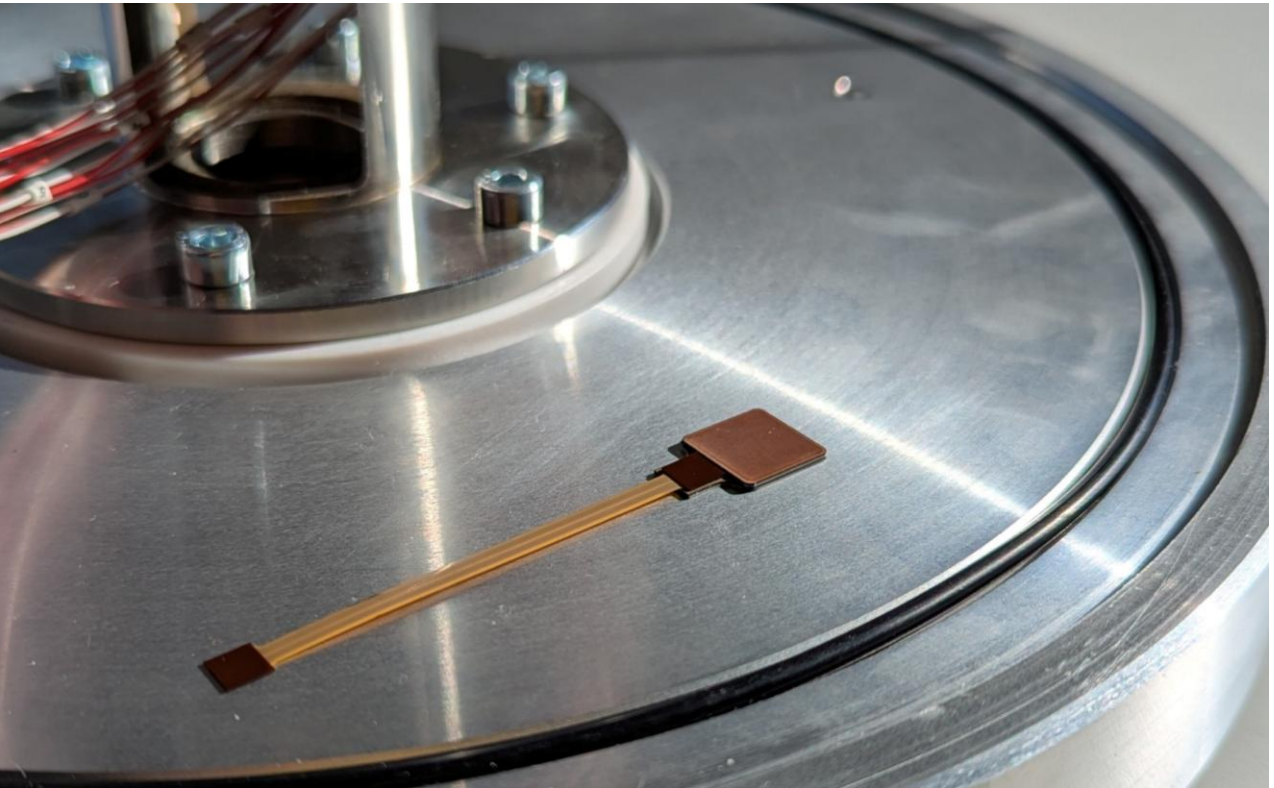
Compact setups leave little space for bulky gauges or complex mounting.

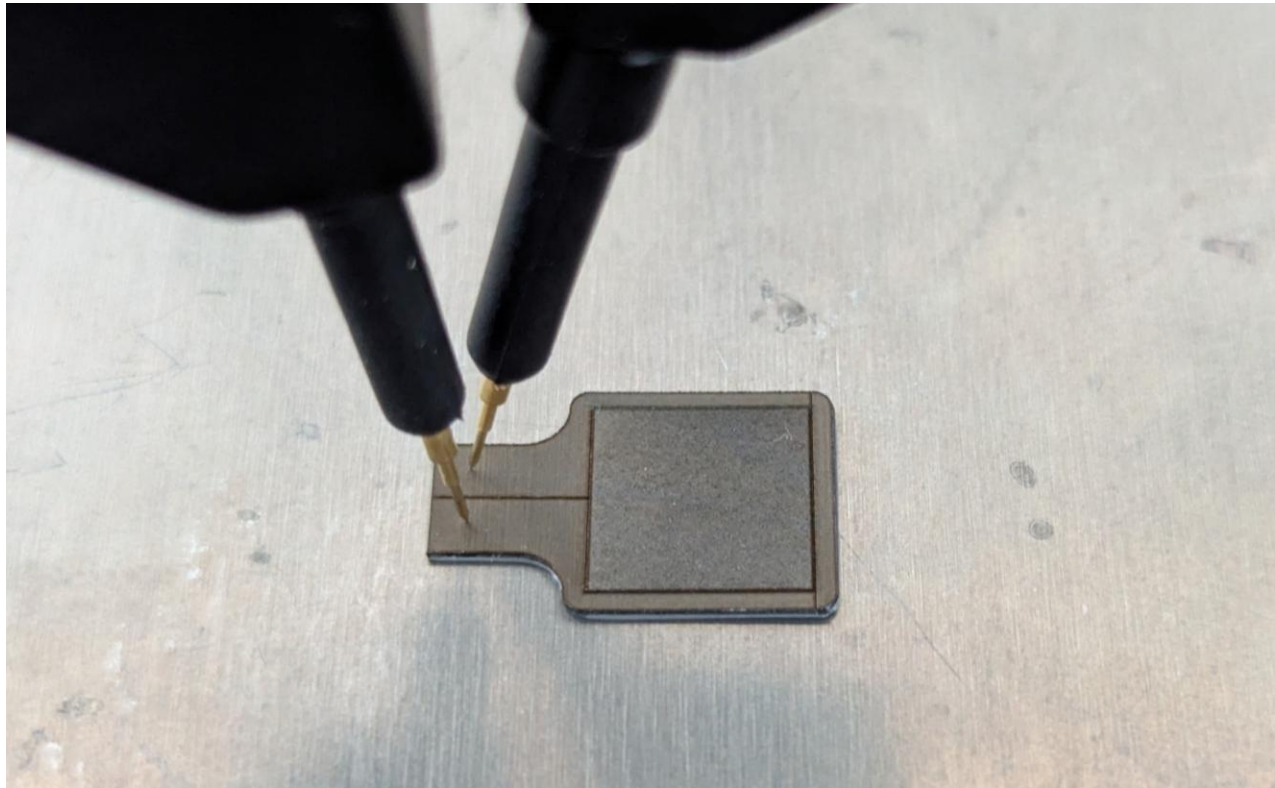




Meerstetter Dynamic Heat Flux Sensor

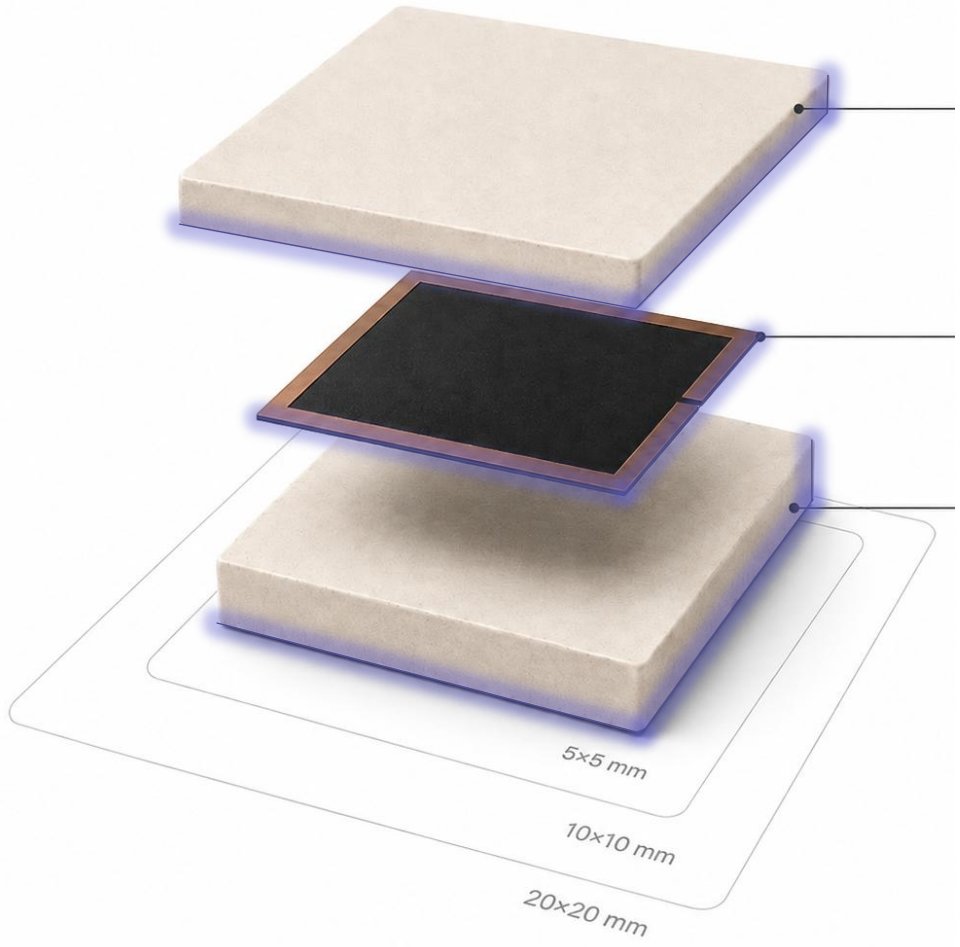
A passive solid-state heat-flux sensor using a proprietary sensing element for direct, ultra-fast measurement of energy flow in compact and dynamic thermal systems.





HFS architecture

Ultra-low thermal mass enables fast response

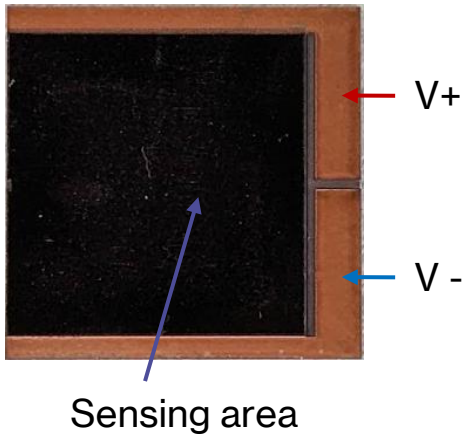


Optional ceramic Protection layer
0.3-0.8 mm

Ultra-thin sensing layer
≈30 µm

High conductivity Ceramic substrate
0.3-0.8 mm

From layer stack to device



Assembled HFS

Why HFS fits dynamic compact systems

From physics-driven design to industrial-scale sensing

Fast & Low-Impact

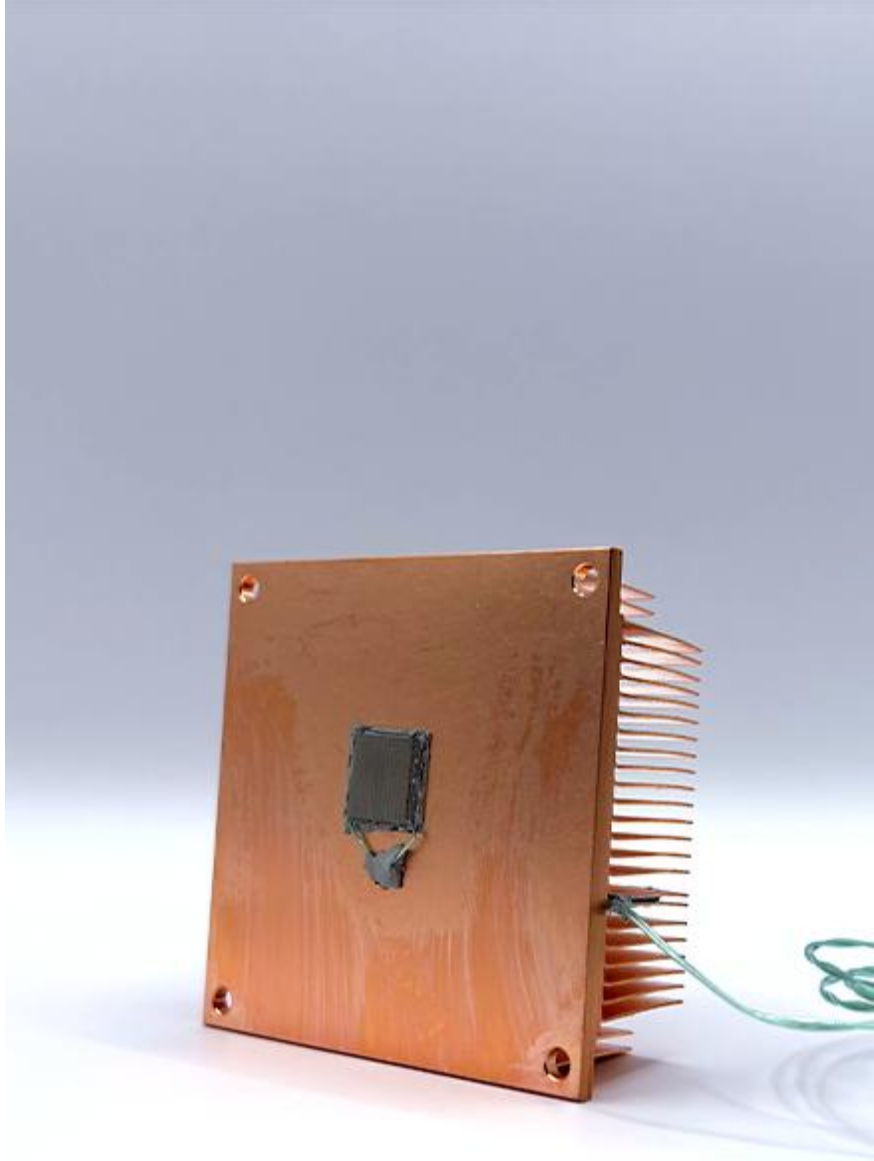
- Ultra-fast response time (nanoseconds)
- High thermal conductivity (150 W/mK) with minimal thickness

Robust

- Stable operation in extreme environments
- High-temperature capability up to 1300 K (material-dependent), 700 K standard

Integrable & Scalable

- Simple architecture based on a single thermoelectric composite
- Customizable geometry and multi-sensor layouts
- Integrates with Meerstetter electronics and software



Where HFS fits first

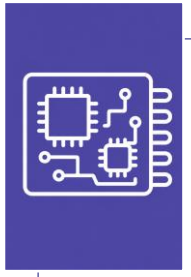
For compact systems where fast local heat-flux data matters.

Photonics / laser systems

- localized heat loads and optical assemblies

Fast thermal test fixtures

- transients, qualification, validation



Power electronics / batteries

- thermal load mapping and diagnostics

OEM integration

- embedded measurement and control concepts

HFS sweet spot

High heat flux

Fast transients

Tight space constraints

Bring us your toughest thermal measurement problem

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