



Full-field Thermoelastic Stress Measurement System

The *DELTA THERM*, by Stress Photonics, is a unique IR differential thermography system suited to Thermoelastic Stress Analysis (TSA) and Thermal Nondestructive Evaluation (TNDE). By coupling special high-speed image processing electronics with a high-performance infrared array detector, it is now possible to image stresses in **just seconds!**

Applications

- Thermoelastic Stress Analysis
- Lock-In Thermography
- Standard Thermography
- Forced-diffusion Thermography
- Coating Tolerant Thermography
- Fracture Mechanics
- Crack and Flaw Detection
- Structural Integrity Assessment
- Composite Material Damage Evolution
- Composite Material Fatigue Life Prediction

*Stress
Photonics*

Thermoelastic Stress Analysis

Fast

DELTA THERM is remarkably fast. The detector array contains thousands of on-chip integrators which collect data simultaneously, producing a near-live full-field stress image.

The high-speed digital electronics correlate load and stress induced temperature changes for immediate video presentation of stress patterns.

Portable

When portability is required, *DELTA THERM*'s small size and light weight make set up quick and easy.

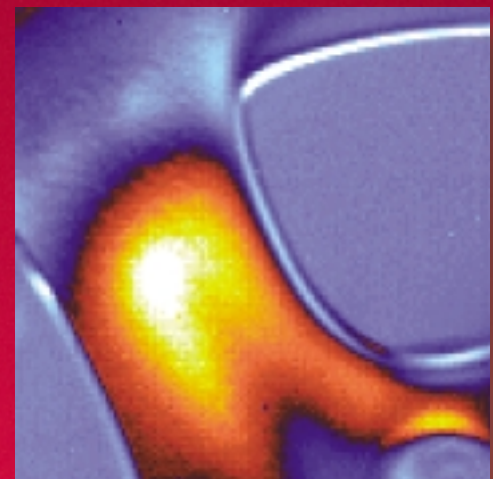
- The camera head weighs less than 3.5kg (8 lb).
- A rugged portable computer with integral display and keyboard is available.
- Complete system fits in two hand-carried cases.

Versatile

- Simple optics feature interchangeable lenses.
- Camera operates over wide temperature range.
- Constant or variable amplitude loading accepted.
- Microsoft Visual Basic control software provides user integration capability.
- Customizable software can be tailored for special applications.

Robust

- Closed-cycle cooling (*DELTA THERM* can be operated in any position in a wide range of environments.)
- Long camera cable for safe and convenient operation
- Padded shipping and storage case
- Multiple hard mounting points on camera



Stress in an Automobile Wheel



TECHNICAL SPECIFICATIONS

System Performance

Frame Rate:	> 1000 frames/s standard thermography. Stress image processing speed depends on processing options purchased.
Specimen Temperature:	Room temperature to more than 1000°C.
Frequency Range:	Thermoelastic loading: 0.6 - 1000Hz Lock-in thermography for TNDE heating control: No limit
Attainable Thermal Resolution:	1mK full-field (30s acquisition time)
Cooler Life:	5000 Hour MTBF Closed-cycle Cooler

Camera Head and Optics

Detector <i>DELTA THERM 1350:</i> <i>DELTA THERM 1450:</i> <i>DELTA THERM 1550:</i>	128 × 128 InSb, 3-5µm sensitivity 256 × 256 InSb, 3-5µm sensitivity 320 × 256 InSb, 3-5µm sensitivity
Available Lenses (interchangeable):	25mm, 50mm, 100mm, f/2.3 Two Position-Zoom Lens with better than 15µ/pixel Other lenses available upon request.
Cooling Method:	Closed-cycle Cooler
Overall Size:	11.4cm. (4.5in.) × 11.4cm. (4.5in.) × 21.6cm. (8.5in)
Weight:	3.5 kg (8 lb)
Best Spatial Resolution:	0.19mm (0.007in.), better than 15 micron with Two Position Zoom Lens

Computer and Electronics

Processing Cards:	PCI processing card, PCI digital interface card, PCI A/D card
System Support Electronics:	21.6cm. (8.5in.), × 30.5cm. (12in.) × 13.3cm. (5.25in.)

DELTA THERM Includes

- IR camera head with optics
- High-speed image processor
- Computer
- DELTA VISION Software
- Tripod
- Instrument shipping/storage case

DELTA VISION Software

- Controls all aspects of system operation
- Receives and stores images
- Provides a full suite of post-processing capabilities
- Presents and reports image data
- Windows NT operating system
- Compatible with TSA, PSA & TNDE instruments

Specifications subject to change without notice.

© 2000 Stress Photonics Inc.

DELTA THERM and DELTA VISION are trademarks of Stress Photonics Inc.

**Stress
Photonics**

DELTA THERM
Stress Photonics Inc.
3002 Progress Road • Madison, WI 53716
Phone (608) 224-1230
Fax (608) 224-1233
email: info@StressPhotonics.com
<http://www.StressPhotonics.com>

Learn more about
DELTA THERM as well as other
exciting full-field stress and strain
measurement products at
StressPhotonics.com

DELTA THERM[®]