



PhoenixTM
Phoenix Temperature Measurement

Optic System

Thru-process Optical and Temperature profiling of coating ovens



....a product's eye view thru your coating oven !

Phoenix™ Optic System Optical profiling of continuous ovens

Optic System

The video camera supplied with the Phoenix™ Optic system has been designed for use in hostile, high temperature environments, so is ideal for the optical profiling process. The compact camera offers an onboard memory card and rechargeable battery making it perfect for remote use and installation within the protective thermal barrier.

Video Camera

Video Resolution:	Customer selectable up to 4K: 3840x2160 @ 30fps
Memory card:	32 GB (Partitioned into separate video capture intervals)
Camera run time:	60 - 70 mins (battery and settings specific)
Battery:	USB Rechargeable
Video Transfer:	Via USB comms or Card Reader
Camera Status:	LED, Audio & Vibrate
Dimensions:	4.1 x 1.26 x 1.26 in / 104 x 32 x 32 mm



TS64 High Temperature Flashlight

The robust high temperature LED flashlight gives complete control over illumination with both intensity and field of view adjustment.

Flashlight Intensity:	Adjustable up to 1000 lumens (Medium 250 lm)
Flashlight lens:	Plastic polycarbonate rated to 275 °F / 135°C
Field of View:	User adjustable with lock (Tight – Product focus / wide oven focus)
Battery:	Rechargeable Li-ion Battery ICR18650 (140°F / 60°C)
Battery Life:	Medium intensity - 5 hours (between charges) High intensity - 3 hours (between charges)
Length Defocused:	62 in / 158 mm
Head diameter:	1.5 in / 37 mm



What is optical profiling?

Optical profiling is a complementary technique to that of temperature profiling where instead of measuring the temperature of a product or process the system records a video of the products journey through the oven. Such video evidence can be invaluable in understanding the operation and condition of the oven without the need to stop production, experience lengthy cool down periods and the pain of dismantling equipment. Problems with the oven or product transfer then can be quickly identified and corrected. Potential future problems can be detected and corrective action scheduled, preventing unwanted future line stoppages.

Phoenix™ can provide a solution:

The innovative unique Phoenix™ Optic system allows optical profiling of continuous thermal processes. With custom designed thermal barrier solutions, the video camera and flashlight, providing independent illumination can travel safely through the process collecting clear high-resolution video images of the product and interior of the oven. Review of the video record, post run, can highlight problems that may not have been apparent and exactly where they occur in the process. See exactly what your product sees as it travels through the oven during normal production conditions.



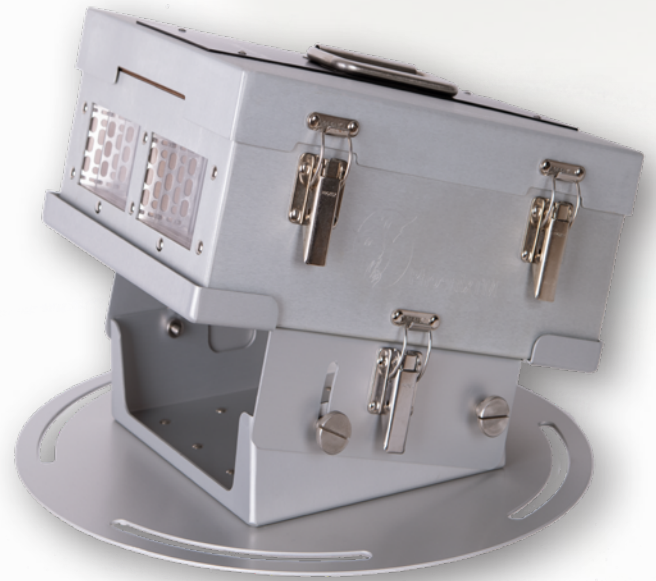


TS64 Thermal Barrier

Specifically designed for paint and powder coating applications the TS64 barrier offers a robust design providing protection up to 572 °F (300°C). Designed to allow use either as optic or temperature profiling system.

Design Feature benefits

- Easy access to both camera and flashlight or data logger.
- Custom heat sink to house either optic system and or data logger.
- Excellent field of view and image detail whilst maintaining camera and flashlight protection.
- User replaceable windows maximizing image quality and life.
- Optional adjustable mount to allow secure orientation of camera focus.
- Barrier allows simultaneous temperature and optical profiling.



AC40-095-1 Adjustable Barrier Mount

Thermal Barrier Specification Data:

Type	TS64-145-1-2
302 °F (150°C)	3.7 h
392 °F (200°C)	3.0 h
482 °F (250°C)	2.4 h
572 °F (300°C)	2.0 h
Height	5.7 in 145 mm
Length	12.6 in 320 mm
Width	9.8 in 250 mm
Weight	20.9 lb 9.5 Kg

Heatsink designed to fit both data logger and optic system.



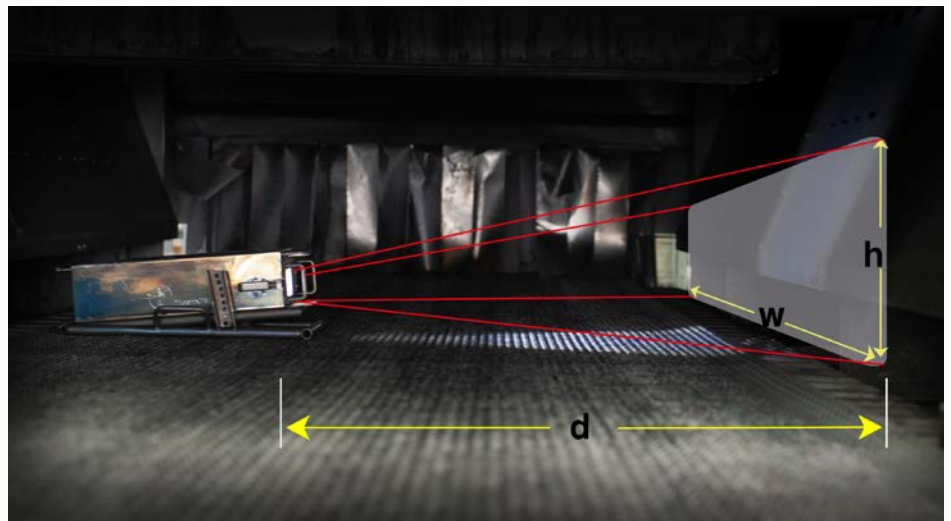
The glass used is especially suitable for high temperatures and reflects IR radiation.



Need a thermal barrier to suit your application? Tell us your requirements, and if it's possible, we'll design and manufacture it for you! We are constantly developing and looking forward to any new challenge.

Field of view:

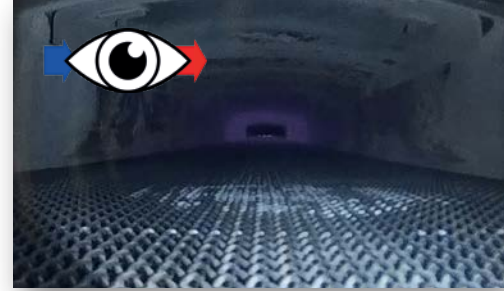
Distance (d)	Viewing Width (w)	Viewing Height (h)
19.7 inch 500 mm	25.2 inch 640 mm	16.8 inch 426 mm
39.4 inch 1000 mm	48.3 inch 1226 mm	32.2 inch 818 mm
78.7 inch 2000 mm	94.5 inch 2400 mm	63.0 inch 1600 mm
118.1 inch 3000 mm	140.7 inch 3574 mm	93.9 inch 2384 mm
157.5 inch 4000 mm	186.9 inch 4747 mm	124.6 inch 3164 mm
196.8 inch 5000 mm	233.1 inch 5921 mm	155.4 inch 3948 mm





Oven Condition

- Identify oven structural damage (damage to insulation/panels or framework).
- Detect faulty oven furniture such as recirculating fans, ducting, control thermocouples or heater elements.
- Accurately schedule service and clean down preventing future unplanned costly line stoppages.
- Identify ignition events or other safety related issues in situ.



Product Transfer Problems

- Locate conveyor system issues at any point in the oven(s).
- Detect and erratic movement or vibration of products through the oven.
- Detect buildup of unwanted dirt or even product lost off-line.



Coating Defects

- Collect visual evidence of process behavior from paint/powder application to end of coating process.
- Identify the root cause of surface or paint defects and where they occur in process (drips, sags, curtains).
- Detect condensate contamination/damage problems and the specific location in the oven.

Optical Profiling - The technology benefits

Instant - View the inner workings of your oven without the need to dismantle the oven or stop production.

New Understanding - See actual heat treat process occurring where this results in visual changes to the product.

Production Conditions - See the operation of the oven under actual production conditions fully loaded.

Time Saving - No delay to cool, disassemble, reassemble as with normal inspection procedures etc.

Complementary - Run video profile simultaneously with temperature profile to combine Thermal and Visual information.

PhoenixTM for the last ten years have been supplying 'thru-process' temperature profiling systems to many different Industrial applications globally. With a wide range of data logger and thermal barrier options both temperature profiling and TUS solutions allow you to understand, control, improve and validate your thermal process. Contact PhoenixTM to discover more how Optical and Temperature profiling can help you get the best out of your heat treat process.



PhoenixTM LLC

4600 140th Avenue North, Suite 180

Clearwater

FL 33762 USA

Tel.: +1 (727) 608 4314



www.phoenixtm.com

info@phoenixtm.com