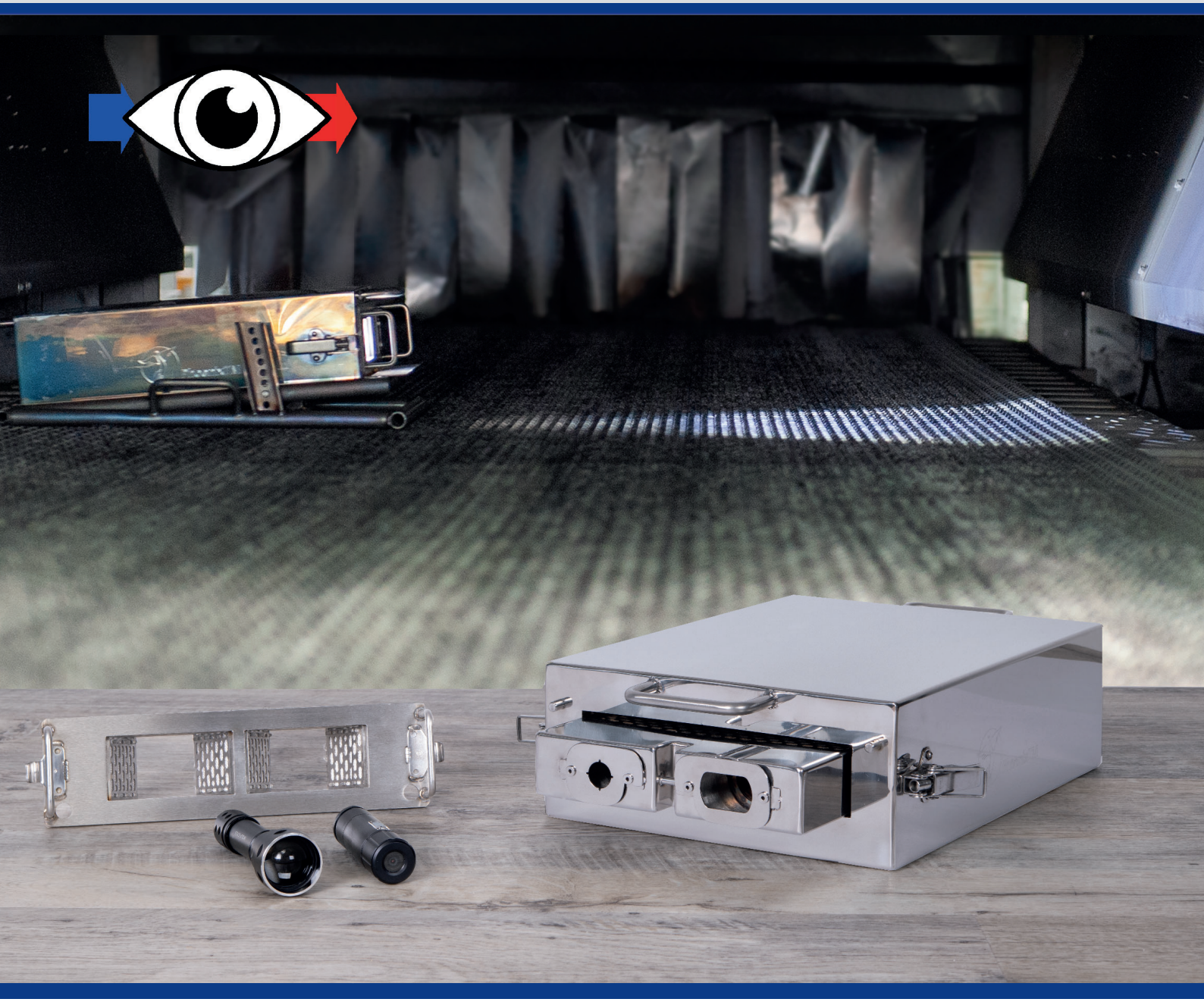
PhoenixTM
Phoenix Temperature Measurement

Optic System

Optical Profiling of continuous furnaces



....a product's eye view thru your furnace !

PhoenixTM Optic System Optical profiling of continuous furnaces

Optic System

The video camera supplied with the PhoenixTM 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)
Video length:	60 - 70 min Battery condition and settings specific
Battery:	USB Rechargeable
Video Transfer:	Via USB comms or Card Reader
Camera Status:	LED, Audio & Vibrate
Dimensions:	104 x 32 x 32 mm

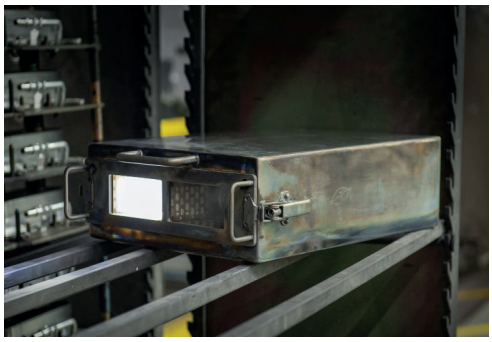
High Temperature Torch

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

Torch Intensity:	Fixed Intensity Setting (Medium)
Torch lens:	Borosilicate rated up to 500 °C
Field of View:	User adjustable (Tight – Product focus, Wide – Furnace focus)
Battery:	User replaceable Lithium CR123 (70 °C)
Battery Life:	90 mins

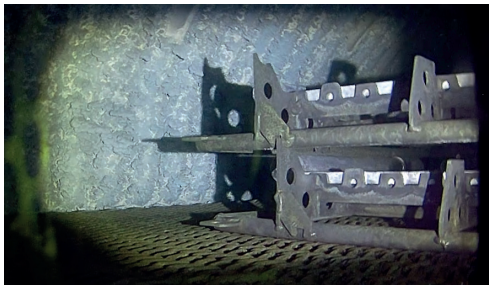
What is optical profiling?

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 furnace. Such video evidence can be invaluable in understanding the operation and condition of the furnace without the need to stop production, experience lengthy cool down periods and the pain of dismantling equipment. Problems with the furnace 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.



PhoenixTM can provide a solution:

The innovative unique PhoenixTM Optic system allows optical profiling of continuous thermal processes. With custom designed thermal barrier solutions, the video camera and torch, providing independent illumination can travel safely through the process collecting clear high-resolution video images of the product and interior of the Furnace. 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 furnace during normal production conditions.



TS68 Thermal Barrier

Specifically designed for high temperature applications either Atmosphere or Vacuum the TS68 barrier offers a robust design providing protection up to 600 °C in a potentially hostile environment. With a low height the thermal barrier will fit through conveyorized furnaces with limited clearance with ease.
The front face plate design allows easy access to both camera and torch.

Design Feature benefits

- Easy access to both camera and torch.
- Excellent field of view and image detail whilst maintaining camera and torch protection.
- User replaceable windows maximizing image quality and life.
- Optional adjustable mount to allow secure orientation of camera focus.
- Barrier can be adapted to allow Temperature profile use.

TS68-125-2 Optic System Thermal Barrier

Thermal Barrier Specification Data:

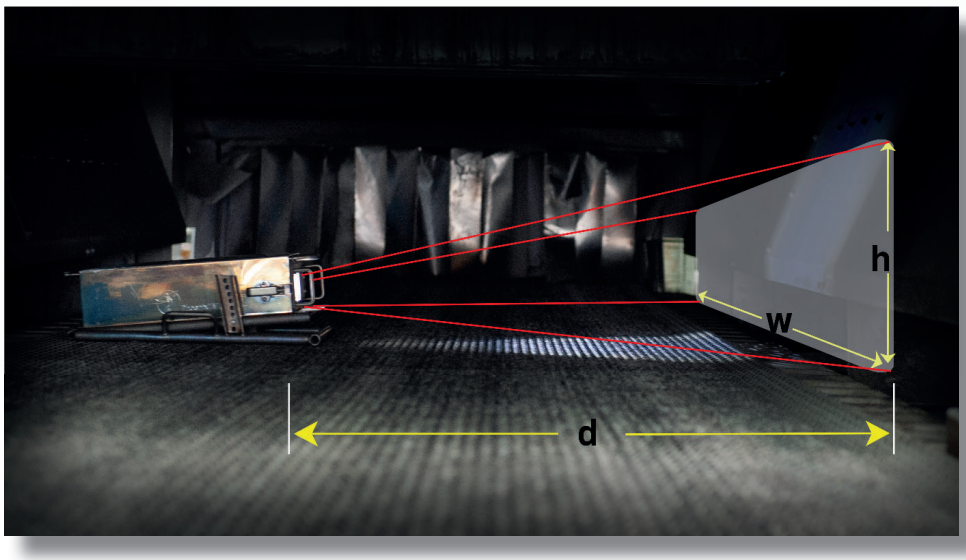
Type	TS68-125-2
400°C /min	75
450°C /min	45
500°C /min	40
600°C /min	33
Height /mm	125
Width /mm	338
Length /mm	511
Weight /kg	19.5

AC40-099-1 Adjustable Barrier Mount

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

Field of view:

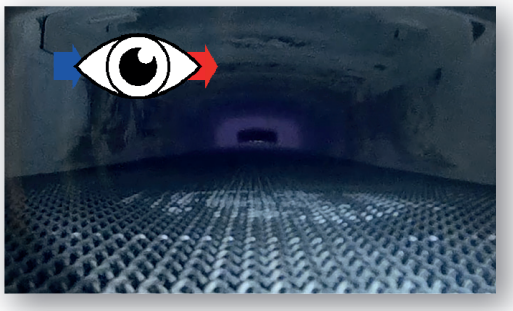
Distance (d) (mm)	Viewing Width (w) (mm)	Viewing Height (h) (mm)
500	563	157
1000	1075	300
2000	2100	586
3000	3125	871
4000	4150	1157
5000	5175	1443



Optical Profiling - The Value

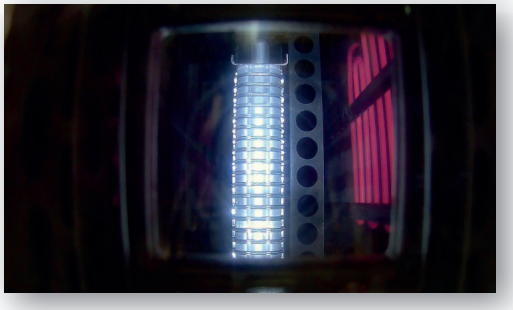
PhoenixTM
Phoenix Temperature Measurement

Furnace Condition



Check the condition of the internal walls to ensure they are fit for purpose
- Damaged or Distorted panels / Sealing gaps / Corrosion
- Build-up of dirt/flux/condensate or general processing debris
  Contamination risk - identify critical cleaning action
- Correct alignment adjustment of ducting to allow correct air flow / convective heat transfer
- Identify ignition events or other safety related issues

Product Transfer



Check that the product travels safely and smoothly through the process without conflict or obstruction
- Conveyor belts run flat and product orientation is kept constant – No belt damage or distortion
- No product vibration or excessive movement which may cause damage to product or affect processing step
- Check that products are able to pass through without clashing with furnace furniture or product clumping

Condition & Operation of Key Furnace Features

Check that key features are working correctly and not damaged
- Fans, Ducting, Control thermocouples, Gas Feed pipes, Zone separation curtains/brushes

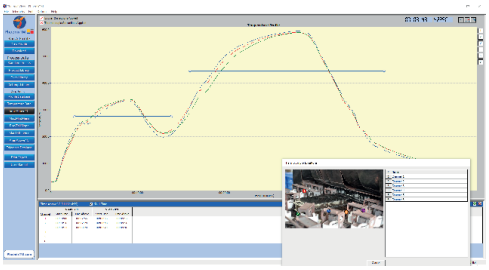
Thermal Process Observation

Check that the process is being performed correctly where heat treatment action is physically visible.

Optical Profiling - The technology benefits

Instant - View the inner workings of your furnace without the need to dismantle the oven / furnace 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 / furnace 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 Ltd
25 Earith Business Park
Meadow Drove,
Earith, Cambridgeshire
PE28 3QF, UK
Tel.: +44 1353 223100
www.phoenixtm.com
sales@phoenixtm.com

PhoenixTM LLC, USA
info@phoenixtm.com

PhoenixTM GmbH, Germany
info@phoenixtm.de