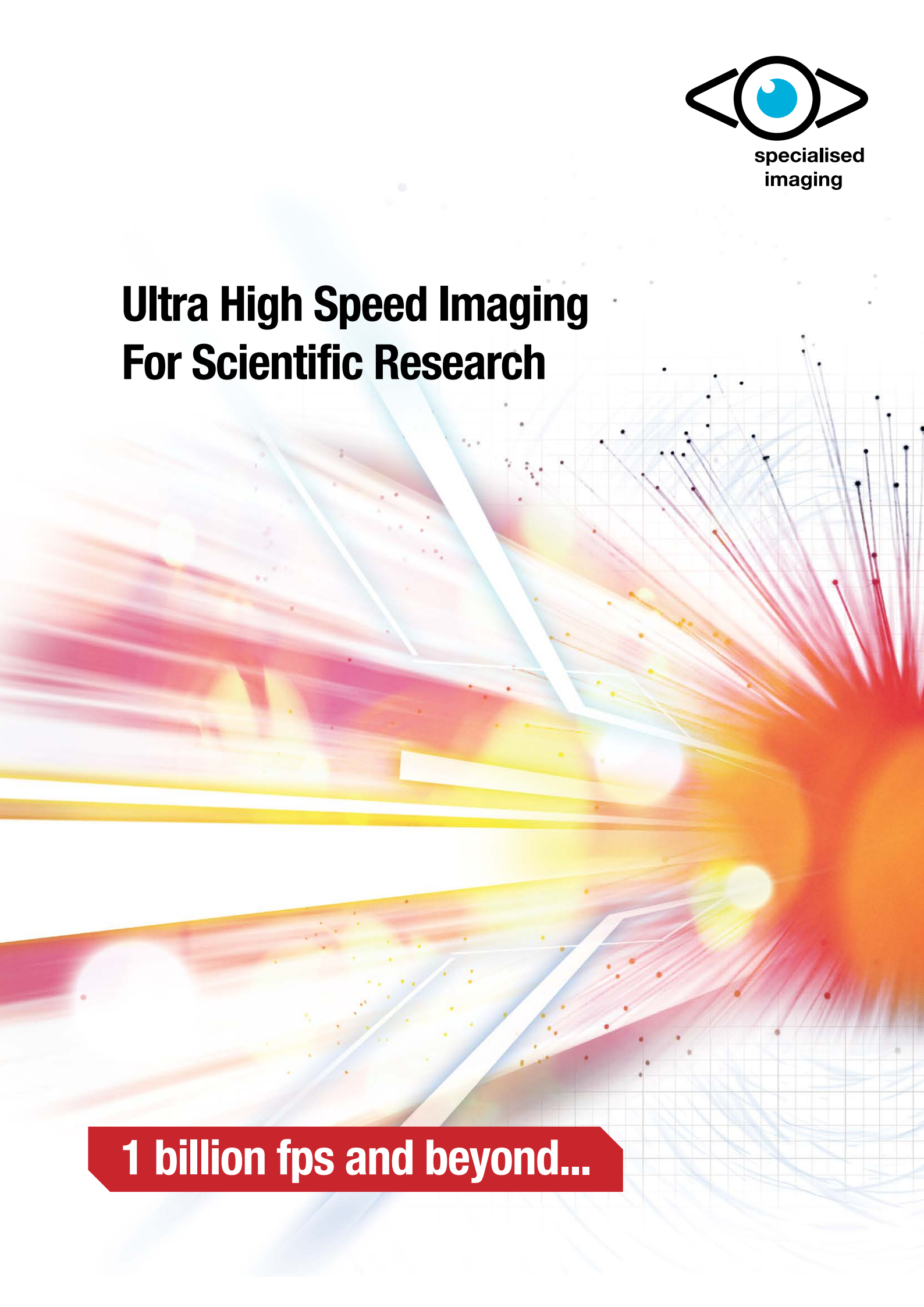
specialised
imaging

Ultra High Speed Imaging For Scientific Research



1 billion fps and beyond...

specialised imaging

Delivering individual, specific ultra high-speed solutions that meet our clients needs exactly, whatever the application.
That's our commitment.

Our company

Specialised Imaging is an internationally renowned company that focuses on the design and manufacture of ultra-high-speed imaging cameras for industrial, scientific and defence research applications.

The company was formed in 2003, its founder members having previously worked together in the high-speed imaging field and bringing over 80 years' combined experience to the venture.

Specialised Imaging has successfully launched many new and innovative ultra-high-speed imaging systems.

The company is at the forefront of world-wide innovation in the high-speed imaging field, having won the BEEA's Small Company of the Year award in 2009 and the Queen's Award for Enterprise in 2011.

This commitment to development has enabled the company to establish a reputation as an exciting and creative player in the high-speed camera market.

1 billion fps and beyond...

Innovative imaging solutions that incorporate the latest technological advances.
That's our passion.

Supporting you… and your camera

At Specialised Imaging we relish new technological challenges, and we enjoy creating effective solutions. Producing a system that exactly meets your requirements, demands a company prepared and able to create specific optimised solutions.

Specialised Imaging has a strong track record in working with clients to design and develop new functions and facilities that fulfil their requirements.

This level of commitment and support continues throughout the life of your product – on-going advice, problem-solving and the design and reconfiguration of software are all part of our after-sales service.

World-wide partnerships

To provide you with a total ultra-high-speed imaging solution, we have formed strong, strategic relationships with manufacturers in a variety of related fields. These strategic partnerships enable us to offer fully optimised imaging systems that include illumination, optical components, supports and triggering devices.

Close cooperation with our major suppliers also allows us to access and incorporate custom-designed components to specifically enhance the performance of our systems.

Our reputation today extends worldwide with customers in North America, Asia-Pacific, Europe and the Middle East regions.

SIMX

High quality images free from lag or ghosting.

50lp/mm dynamic resolution

MULTI-SPECTRAL IMAGERY R G B

Using high resolution image intensifiers and no-compromise optical design, provides high quality ultra fast framing images.

The Specialised Imaging Ultra Fast Framing Cameras offer the ultimate in ultra-high-speed imaging performance to scientists and engineers across all disciplines. The all-new custom optical design offers up to 16 images without compromising shading, or parallax. High resolution intensified CCD sensors controlled by state-of-the-art electronics provide almost infinite control over gain and exposure to allow researchers the flexibility to capture even the most difficult phenomena.

Full remote control using Ethernet is offered as standard, either the integral viewfinder or a laptop computer can be used for local focus. Comprehensive triggering facilities, highly accurate timing control, and a wide range of output signals, coupled with a custom software package that includes full measurement and image enhancement functions simplifies image capture.

All SIM cameras can be configured to give up to 16 different multi-spectral images with an R. G and B filter on each channel. In this configuration it is possible to take 10 colour images and 2 monochrome.

The *SIM* series of multi-channel framing cameras.

1,000,000,000 fps

SIMD

Double pulse technique giving up to 32 images.

36lp/mm dynamic resolution

MULTI-SPECTRAL IMAGERY R G B

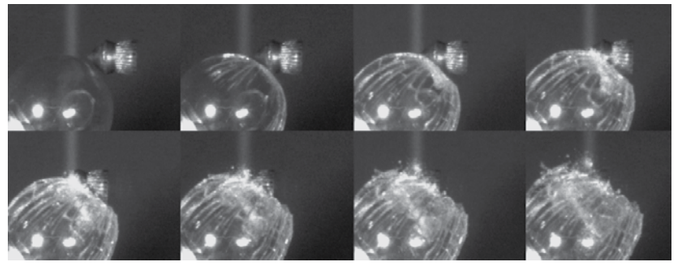
SIM SERIES APPLICATIONS

- Ballistics
- Combustion Research
- Failure Dynamics
- Elasticity, Crack Propagation and Shock resistance
- Medical Research and testing
- Detonics
- Impact Studies
- Spray and Particle Analysis
- Automotive testing
- Nanotechnology and micro-machines

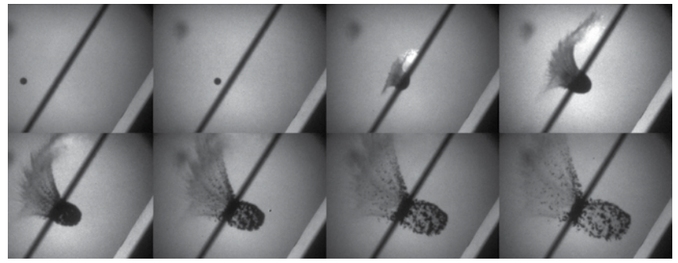
SIMD & *SIMX* FEATURES

- NEW Multi-Spectral Imaging Functions
- Up to 16 discrete intensified optical channels
- Hybrid beamsplitter to overcome parallax and improve resolution
- Viewfinder focus
- Customisable spectral response
- 1360(H) x 1024(V) 12 bit images

SIMD & *SIMX* RESULT EXAMPLES



Crack Propagation in glass. Exposure = 200ns. Interframe time = 25µs



Experimental Studies of High Velocity Impact Phenomena.
Courtesy – Thiot-Ingeniere. Exposure = 20ns. Interframe time = 2µs

Call **+44 (0) 1442 827728** or visit **specialised-imaging.com**

The ultimate high-speed video camera

VIDEO up to 5 million fps

Kirana

924 x 768px / 180 frames
5,000,000 fps

The ultimate high-speed video camera that combines the flexibility of video technology with the resolution of the ultra high speed framing camera.

Unique hybrid sensor design enables a new breed of camera combining high resolution and high speed in a no compromise design. Full resolution maintained at all speeds.

Up to 11 consecutive events can be captured at a rate of 250ms per event. 2s of video can be stored when operating at 1,000fps.

Kirana-01M Up to 1Mfps
Kirana-05M Up to 5Mfps

Kirana FEATURES

- Up to 5Mfps
- Shuttering 100ns
- 924(W) x 768(H)
- 10bits
- 180 frames at all speeds
- 11 consecutive events at a cyclic rate of 250ms per event
- Compact, rugged design
- Gigabit Ethernet

Kirana APPLICATIONS

- Combustion research
- Biological/Microscopy
- Ballistics
- Mechanics
- Cavitation
- Materials research
- Aerospace
- Digital Image Correlation
- PIV

Zero-dynamic, in-flight studies.

Award winning system

Tracker²

Flight follower system

Multiple triggers
Full remote control

Built-in multiple triggers for real-time tracking and full remote control of the sturdy mount contribute to the natural evolution of this award-winning system.

The Specialised Imaging Tracker2 is the successor to the popular Trajectory Tracker Flight Follower System.

In order to fully evaluate the failure modes of projectiles, it is often necessary to observe the performance of the round over a significant portion of its trajectory. To achieve this with a number of single shot cameras would be prohibitively expensive.

Tracker² APPLICATIONS

- Ballistics
- Impact Studies
- In-flight behavior
- Sports Science

Tracker² FEATURES

- Sturdy, motorised, remotely adjustable mount
- Ergonomic design for ease of handling
- Low profile layout
- Low inertia Silicon Carbide mirror
- Improved motor drive for faster mirror acceleration
- Motor accuracy of better than 0.2º over full scan
- Scanning ratio from 0.1 to 100
- Choice of integrated high speed video camera – system with in-built DC supply for cameras
- 8 trigger input as standard
- 3D analysis available with 2 systems
- Custom control and analysis software
- Control via standard 1Gbps Ethernet link
- Optional multi trigger modules for up to 32 triggers

Enhanced ballistic imaging

11 megapixel images

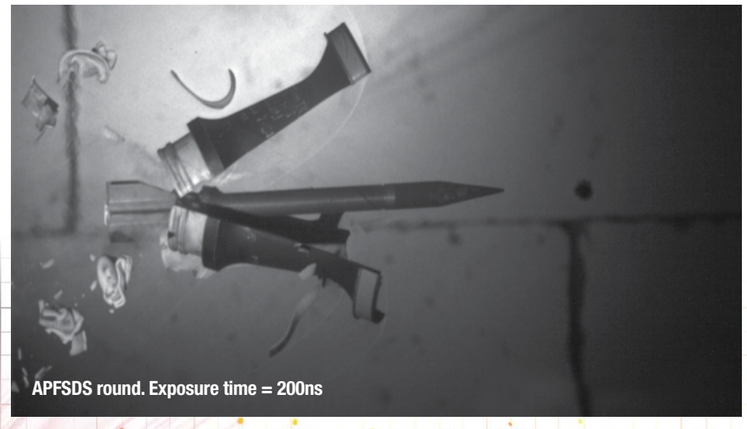
SIR3

Compact Range Camera
Highly Detailed images
up to 4008 × 2688px
Lightweight & Robust

The SIR3 series of cameras are compact, lightweight and robust, making them ideally suited for the harsh indoor and outdoor environments associated with proofing ground and industrial use.

The camera series is an evolution of the successful SIR2 series of cameras. Advances in technology have allowed us to make it more compact, whilst retaining all its predecessor's functionality and now enhanced by Gigabit Ethernet connectivity and optical viewfinder.

The ability to acquire 2 separate full resolution images along with our SURESHOT triggering system makes this the camera of choice for acquiring crucial data for analysis.


APFSDS round. Exposure time = 200ns

SIR3 FEATURES

- Up to 11 megapixel images with superior quality, improved detail and better measurement accuracy
- Single image mode when ultimate dynamic range is required
- Double image mode (two full frames) when displacement and velocity information is required
- Comprehensive triggering facilities
- SURESHOT velocity measuring trigger
- Multiple flash triggers
- Computer controlled via standard ethernet link

SIR3 APPLICATIONS

- Ballistics
- Detonics
- Plasma
- Impact Studies
- Elasticity, Crack Propagation and shock resistance
- Spray Particle Analysis

The first multi head ultra high speed framing camera

Up to 200 million fps

Cerberus

1360 × 1040px
up to 128 frames
up to 64 camera heads
up to 200 Million fps
3D Stereo Imaging

Cerberus is the first camera of its kind offering the speed, resolution and sensitivity of an ultra high speed framing camera but with the versatility and flexibility of multiple heads for a wide range of applications.

Cerberus can produce two frames per head and by using two heads will allow two frames to be captured within 5 ns interframe time (200 Million fps).
For example a 2 headed system will allow 2 pairs of images, that can be taken as short as 500ns apart, for stereoscopic analysis.

A complete system (64 heads) can allow up to 64 independently controlled stations for research into aerodynamic flow, mechanical analysis of rotating machinery, combustion engine research.

Cerberus FEATURES

- Up to 200 Million FPS
- Exposure times down to 5 ns
- 1360 x 1040 pixels per frame
- 12 bits
- Gain to 7,000X
- 2 to 128 frames
- Up to 8 multi Exposures per frame
- Rugged and Compact 100 x 100 x 120 mm
- Nikon F mount

Cerberus APPLICATIONS

- Combustion research
- Biological/Microscopy
- Ballistics
- Mechanics
- Cavitation
- Materials research
- Aerospace
- Digital Image Correlation
- PIV
- 3D Stereo Imaging

Compact hi-spec scientific camera

11 megapixel images

T-Cam

Scientific ccd camera

Highly detailed images in ambient or low light

Up to 4008 × 2688px

Permits high resolution imaging of ultra fast events in either ambient or low light environments coupled with instantaneous access to the data to provide an invaluable tool to engineers studying aerodynamics and flow mechanics.

Modern image sensors allow the design of a camera that captures 11-million-pixel images with the ability to shutter as fast as 1µs. Integrating this camera with an ultra fast high intensity spark source has resulted in a sophisticated Shadowgraph camera that is capable of image quality that was previously only achievable with film cameras.

Courtesy of Fraunhofer Institut für Kurzzeitdynamik, Ernst-Mach-Institut. Shadowgraph image captured using the T-Cam camera with 1ms electronic shuttering and a spark source of 400ns duration.

T-Cam FEATURES

- Up to 4008(H) x 2688(V) 12 bit images
- Shuttering speed down to 1µs
- Comprehensive triggering

T-Cam APPLICATIONS

- Aeronautical Engineering
- Combustion Research
- Ballistics
- Detonics
- Testing of glass

Compact image intensifier

Up to 1 million fps

SIL2

High gain
High resolution

Specialised Imaging lens intensifiers are a family of custom designed gated image intensifier systems to improve the sensitivity of high-speed video and image converter cameras.

Extensive triggering facilities allow the SIL to be readily interfaced to most manufacturer's high-speed cameras, and in particular to high-speed video systems. Constructed around high gain micro-channel-plate image intensifiers, these units provide a wide range of sensitivity, gain and resolution options to satisfy even the most demanding imaging applications.

The comprehensive range of operating parameters are programmed from the intuitive local keypad or from a remote PC via Ethernet link, which also allows archiving and loading of timing set-ups.

SIL2 FEATURES

- High gain & high resolution Image Intensifier
- Up to 1,000,000 fps with electronic shuttering down to 50ns
- Extensive triggering facilities
- Flexible outputs for triggering external events or instruments
- Choice of lens mounts
- Compact, rugged mechanical design
- Intuitive operation from the controller keypad
- Computer controlled via Ethernet

SIL2 APPLICATIONS

- Combustion research
- Biological/Microscopy
- Low Light Machine Vision System
- Mechanics
- Luminescence
- Automotive testing

Close cooperation with our major suppliers also allows us to access and incorporate custom-designed components to specifically enhance the performance of our systems.

Flash x-ray

L3 X-ray System

These systems provide a unique method of imaging very fast events which cannot be captured using normal photographic techniques.

X-ray images can be obtained in 20 to 50 nanoseconds even through smoke, fire and metal. Even under the harshest conditions precise details of a test event can be recorded.

Steak camera

Optoscope-SC range

Optronis
Make time visible

The optoscope-sc streak camera family consists of different systems to provide maximum flexibility for a broad range of applications. They are all designed to be first in their class.

Each system is based on a particular main unit SC-10, SC-20 or SC-51 for example. The main unit integrates a dedicated streak tube defining key features like maximum temporal resolution and photocathode size.

Camera trigger

SI-OT3

The Specialised Imaging Optical Trigger is a general purpose ruggedised optical detector.

Employing the combination of a unique multi-segment photodiode array coupled with both high and low pass filtering results in a highly reliable trigger that is sensitive from 300nm to 700nm.

Velocity measurement system

SI-VT-SYS

Our Cascadable Velocity Trap measurement system uses two independent trigger inputs to accurately measure speed or time of flight of projectiles.

The unit can also be used to automatically compensate for velocity dependent timing errors in high speed image capture. Four independent output channels give maximum flexibility in measurement regime integration.

High intensity flash unit

SI-IF300

The Specialised Imaging IF300 flash unit offers the user a very high intensity flash source with a very short duration. Ideal for both scientific and industrial processes that occur over a short time window.

High intensity flash system

SI-AD500

The Specialised Imaging AD500 Flash system offers the flexibility of four controllable high intensity flash lights for use in scientific and industrial environments.

Laser illumination system

SI-LUX640

Laser illumination system for high speed imaging applications.

The first laser of this type to offer high power, variable pulse width and ease of use in a small light weight package. Low coherence allows imaging of shadowgraphs and Schlieren imaging with no minimal speckle or fringe effects.

- **Ballistics**
- **Detonics**
- **Plasma**
- **Impact studies**
- **Combustion research**
- **Low light machine vision system**
- **Elasticity, crack propagation and shock resistance**
- **Medical testing and research**
- **Spray and particle analysis**
- **Nanotechnology and micro-machines**

BS EN ISO 9001:2008 FM 87429

THE QUEEN'S AWARDS FOR ENTERPRISE: INNOVATION 2011

www.specialised-imaging.com

Email **info@specialised-imaging.com**

Edition 15a

UK (HEAD OFFICE / FACTORY)

Unit 32, Silk Mill Industrial Estate
Brook Street, Tring, Herts
HP23 5EF England

Tel **+44 (0) 1442 827728**
Fax **+44 (0) 1442 827830**

USA

41690 Enterprise Circle North, Suite 104,
Temecula, California
92590 USA

Tel **+1 951-296-6406**

GERMANY

Hauptstr. 10,
82275 Emmering
Germany

Tel **+49 8141 666 89 50**
Fax **+49 8141 666 89 33**