



VISION IN ACTION

Editor: Dr Denis Bulgin
Advertising Sales: David Chadd

Winter 2021

Industry update from the UK Industrial Vision Association

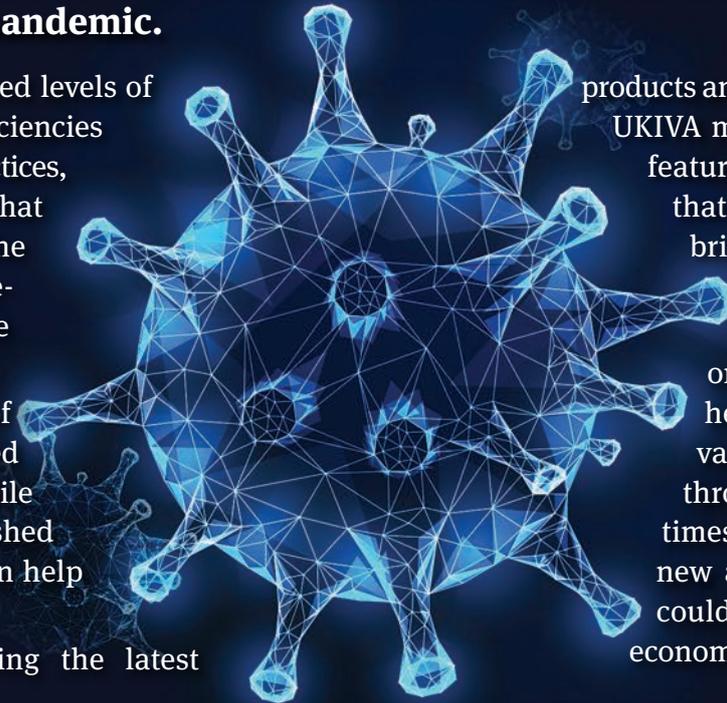
Vision set to help economic recovery

Allan Anderson, Chairman of UKIVA, believes that machine vision is in a prime position to help economies around the world recover from the devastating effects of the coronavirus pandemic.

With the aid of increased levels of automation, improved efficiencies and changing working practices, Anderson believes that industrial vision has the potential to be a real game-changer to overcome austerity.

As such, this issue of Vision in Action is devoted to the extensive and versatile range of new and established vision technology that can help with these challenges.

In addition to covering the latest



products and application stories from UKIVA members, the centre page feature highlights the benefits that vision technology can bring across many different industries.

There is a special focus on how vision systems have helped organisations in a variety of market sectors through these challenging times, and how investing in a new age of vision technology could pave the way towards economic recovery.

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Our next event has moved to 15 July 2021



UKIVA
machine vision
conference
& EXHIBITION

Marshall Arena, Milton Keynes, UK



Top Performance in 2D and 3D



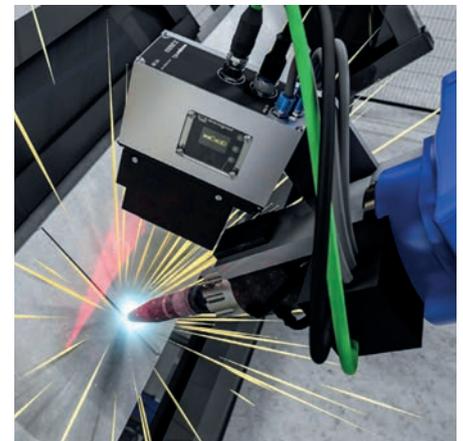
Digitalization of Shape Changes

During the prototype design phase, changes can be immediately digitalized and imported as a data record into 3D design engineering programs such as CAD.



Visual Quality Checks

In the food industry, quality checks such as counting, presence or pattern match can be operated via weQube Smart Camera and the intelligent image processing software uniVision.



Welding Seam Guidance

With micrometer precision, the 2D/3D Profile Sensors weCat3D enable the tracking of weld seams in robot cells. Edges, angles or steps are detected automatically.



Do you need help or advice? Feel free to contact us for our expert guidance and product demonstrations by our fully trained camera technology experts.

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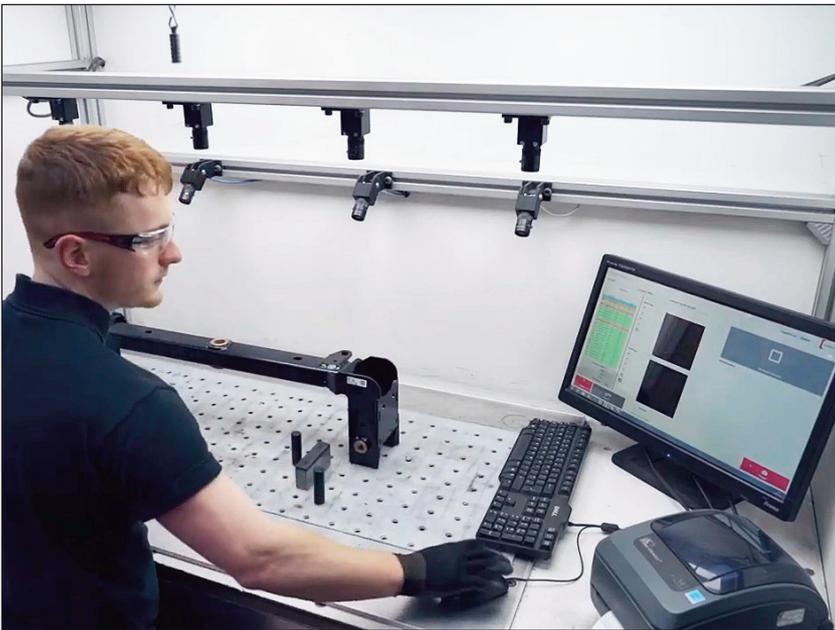
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CLEARVIEW IMAGING
MATROX IMAGING

www.clearviewimaging.co.uk
www.matrox.co/imaging

Metal Inspection For Hydrum Sheet Metalwork

ClearView Imaging and Matrox Imaging have delivered a machine vision solution for precise evaluation of finished assemblies at Hydrum Sheet Metalwork, one of the largest sheet metal fabrication companies in Europe. Hydrum supplies metal products, components, and precision sheet metal fabrications, with some products being subsequently manufactured into large machinery or automotive parts. The real-time automated inspection system designed by ClearView Imaging was installed at the end of the assembly line, replacing manual final inspection prior to packaging. A major component of this system is ClearView Imaging's VisionBox, based on Matrox Design Assistant software. The solution devised for Hydrum uses Model Finder, Measurement,



Hydrum inspection system

Metrology, and Code Reading software tools from Design Assistant to perform the required inspections. A Matrox 4Sight Gpm vision controller powers the entire system, which also comprises FLIR Blackfly® cameras paired with VS Technology (VST) V- and H-series lenses. This scalable system can accommodate from one to 99 cameras, as required. An operator loads a part into the inspection cell and scans the barcode, which identifies the part, and triggers the system to load the appropriate job. During each scan, the part is located and sub-pixel measurements and validation are performed, even when the part presents at an angle. Design Assistant's Network Step is used to log each part's inspection result and a label is printed indicating a quality control (QC) pass/fail result. The VisionBox system could also integrate with a back-end database. Hydrum is already investigating the possibility of adding a second vision system that would be capable of accommodating larger parts.

FISHER SMITH

www.fishersmith.co.uk

Fisher Smith collaborates with the PCE Group on multiple vision automation projects

Within the past 12 months, Fisher Smith has collaborated with automation specialist, PCE Group, on several high-profile projects, combining diverse vision inspection solutions with automation excellence. Thanks to a technical relationship that has been established over several years, each project has been characterised by the attention to detail to ensure that all customer requirements are considered. The first application, for a well-known household brand, involves checking that a consistent quantity of glue has been applied to the correct designated path on two components pre-assembled using a hot melt glue system, before an additional component is added. An image of the

NEW CHAIRMAN FOR UKIVA

In January 2021, current UKIVA vice-chairman, Neil Sandhu (Product Manager for Imaging, Measurement, Ranging & Systems at SICK (UK)), takes over as chairman from Allan Anderson as he completes his two years' tenure. Neil is a well-established member of the UKIVA committee, including two years as vice-chairman, and



brings a wealth of experience to his new role. He paid tribute to Anderson, saying: "Allan has done a superb job in taking the Association forward. In particular, he has been hugely instrumental in establishing the Machine Vision Conference and Exhibition (MVC) in the machine vision calendar." Looking ahead, he continued: "Machine vision can provide the tools for increased automation and improved productivity. I look forward to encouraging the use of this powerful and diverse technology to aid economic recovery across a host of industries as we emerge from the pandemic."

NEXT MVC RESCHEDULED TO 15 JULY 2021

UKIVA's next Machine Vision Conference and Exhibition has been rescheduled from 11 May 2021 to 15 July 2021 to allow more time for the UK events sector to re-open. The live event, with a comprehensive conference programme, supported by an exhibition of the latest vision technology, creates a stimulating environment where visitors can readily network with experts from all aspects of the machine vision industry. If it is not possible to stage the conference and exhibition as planned, there will again be an online event which will provide access to the 2021 programme of technical seminars.

VISION TECHNOLOGY PRESENTATION HUB STILL LIVE

The UKIVA Vision Technology Presentation Hub, which was introduced when MVC 2020 was postponed due to the coronavirus pandemic, is still live at: www.machinevisionconference.co.uk/technology-presentation-hub-2020/.

Featuring 38 audio-visual technical seminars across eight different technical themes, together with keynote presentations from Richard Love (NVIDIA) and Kieran Edge (Advanced Manufacturing Research Centre), the Hub provides an important platform to highlight the capabilities that vision has to offer.

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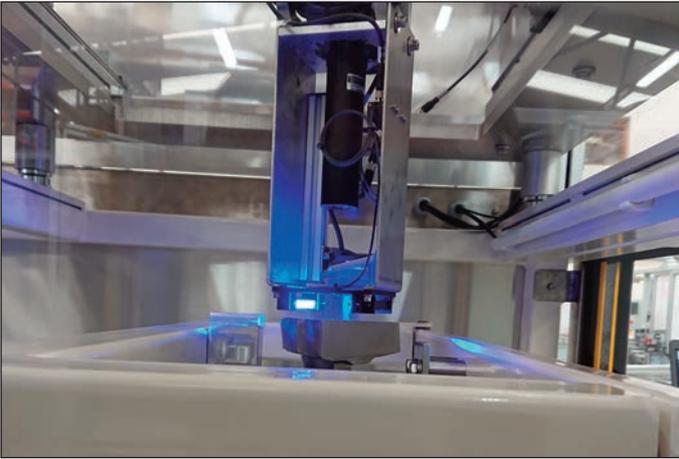


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APPLICATION ARTICLES



Surface scanning bonded material

glued component is compared against a reference template image and items that do not reach the required standard are automatically rejected from the system. The second application was for an aerospace client requiring very specific motion control. A vision inspection system was built into a gantry by PCE, which follows along the critical joint line between the shapely bonded surfaces of a highly stressed component at a consistent height. For the third application, a vision system was designed to carry out multiple verification tasks as part of a project for a leading global tool brand. These checks involve ensuring that three separate components are all present and that the adjustable components are assembled to the correct specification. In addition, the camera system detects whether the components are of the correct colour for the product specification.

MULTIPIX IMAGING

www.multipix.com

Independent assessment of bin picking system

With random bin picking currently of great interest to many manufacturers, the Irish Manufacturing Research (IMR) decided to evaluate bin picking to give confidence for consumers and members who are considering this technology. Although commercial bin picking solutions exist in the marketplace, robotic systems can still struggle with object identification when it comes to clear,



Picking different bread types

deformable, variable, and reflective parts. IMR's Robotics and Automation team evaluated the Photoneo Bin Picking Studio (BPS), in bread picking applications.

IMR took two approaches on the picking of different bread products. Firstly, Photoneo BPS was used straight out-of-the-box, in combination with a Universal Robot 5 to prove stability and set-up for picking randomly placed croissants from a bin. Secondly, the team looked at picking three different bread products from random bins. The selection of highly variable complex shaped parts requires further image processing tools, so the IMR used MVTec's HALCON software tools, with Kuka's robot software and robot operating system path planning. This approach was more involved and required a range of skills to set-up, but successfully demonstrated repeatable picking and emptying of random bins at a pick rate of six parts per minute. Both approaches use hardware and software supplied by Multipix Imaging. The IMR concluded faster processing speeds would be achievable with symmetrical geometric shaped products.

WENGLOR SENSORIC

www.wenglor.com

Automated bin picking cells at BMW plant in Leipzig

Two fully automated bin-picking cells for series production of passenger cars, developed by Danish bin-picking expert Scape Technologies, have been deployed by the BMW automotive group at its state-of-the-art plant in Leipzig, Germany. The cells are used to pick vehicle body cross members or sheet metal panels for the luggage compartment floor. One thousand vehicles are produced daily at this plant. The cells feature a robot, gripper unit, software, and control, together with the ShapeDrive 3D camera from Wenglor which is used to identify the location of the components for picking. Structured light is used to project stripe patterns onto the objects which are recorded by the integrated camera with micrometre



Vision-guided robot bin picking

accuracy. The resulting 3D point cloud is transferred to the analysis module via a 10GigE data interface for fast transfer of the huge data volumes. A virtual 3D model of the box contents is created, which is used to derive exact coordinates for the picking process. Both the sensor and object are fixed during the measurement which guarantees precision and increased speed during the measurement processes.

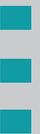


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Meeting the challenges of Covid-19

Keeping key industries running, often at increased capacity or with reduced workforce availability due to infection or self-isolation, is easier where vision systems are used for automated inspection. Established and versatile vision technology is already used in a variety of industries and can be easily adapted to meet emerging requirements. Building blocks, such as the latest camera technology, high speed imaging, embedded vision, deep learning, 3D vision and vision-guided robots, are key to delivering automated solutions. Restrictions to site access and travel also highlight the benefits of vision systems with remote access for adjustment and trouble-shooting. The use of infrared imaging to detect elevated body temperature for screening in high-traffic public places has become more widely adopted. The application articles on the next two pages highlight how some vision systems that were already deployed when the pandemic began have made a real difference. Machine vision can be used to overcome a multitude of challenges across a large and diverse number of market sectors; some of which are discussed below.

General manufacturing

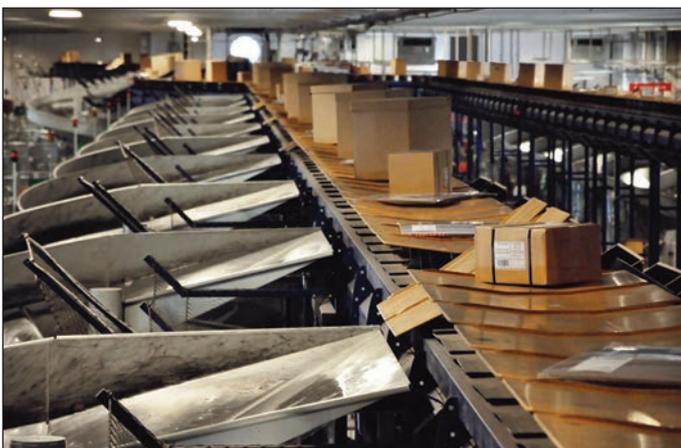
High speed data transmission standards, such as Camera Link HS, CoaXPress, 5GBASE-T, and 10 GigE combined with faster, high resolution cameras, enable more sophisticated quality control inspections at ever increasing speeds. 50GigE and 100GigE cameras are now coming to market. Scalable vision systems can accommodate increased throughput or different batch types. Rapidly maturing 3D imaging methods have broadened the scope for vision-guided robots for applications such as pick and place and robot assembly.

Packaging

Package inspection includes reading 1D and 2D codes and checking human readable data such as batch, lot numbers, best before or expiry dates for consumer safety across many industries. Code reading is an essential component of the item-level serialisation capability needed in the pharmaceutical industry to meet the EU Falsified Medicines Directive. Vision systems can check the integrity of packaging enclosures since any failures can affect product purity and shelf life. Again, scalability is important to meet any increased production demands. Checking consistency in colours and logo positioning is also important for brand image purposes.

Logistics

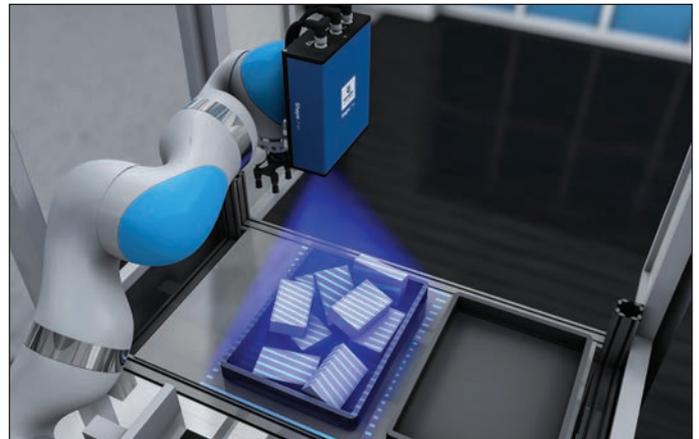
Lockdown has seen a surge in home deliveries across all retail sectors including groceries, whilst supermarkets also required increased deliveries to meet in-store demand. Vision systems can be used in the automation of warehouse and distribution centre activities. Code reading enables packages or even whole pallets to be identified and checked before dispatch. Vision can be used in automated systems to optimise storage in high bay storage units and vision-guided robots can be used for pick and place and depalletising.



Parcel sorting (Courtesy SICK (UK))

Automotive

Vision is used throughout the entire automotive supply chain, from parts and components, through to vehicle manufacture. As the industry recovers from the effects of the pandemic, further automation may be required to reduce production costs as more electric vehicles are manufactured. Automated cells for bin picking using vision-guided robots are used extensively in the industry.



Vision-guided robot bin picking (Courtesy wenglor sensoric)

Food, beverage and agriculture

Vision capabilities in these sectors include checking product parameters, such as shape, size and defects, and packaging fill levels. Vision-based portion control for sliced products maximise on-weight percentages and minimise giveaway. The inspection of bottle closures and other packaging seals ensure shelf life is not compromised. Deep learning methods make it easier to automate classification processes of goods with lots of natural variation, such as fruit and vegetables, as well as baked goods. Near infrared imaging is useful for detecting subsurface defects, such as bruising in fruit. It is also used in hyperspectral imaging methods for the identification of contaminants or adulterated food.

Pharmaceutical and medical devices

Uninterrupted supplies of medicines and medical devices have been required throughout the pandemic. Integrated machine vision systems for high-speed in-line quality control are essential for maintaining product quality and can further ensure that the correct product at the correct dosage is in the correct packaging. Monitoring tablet size, shape and colour; checking for ampoules without labels, and the inspection of closures on pharmaceutical bottles are all good examples. The demands on vision will no doubt be even greater as the industry adapts to vaccine production at the huge scale required for global distribution.

MEETING THE CHALLENGES OF COVID-19

CREST SOLUTIONS

www.crestsolutions.ie

Unit-level product traceability and pack verification for medical devices

Crest Solutions has delivered a component verification, serialisation, and device management system for a world-leading medical device manufacturer. The system has been deployed on several lines in Europe and the US for a device that transforms the lives of over 1.5 million patients daily and must be maintained through the coronavirus pandemic.



Label inspection

The high-speed assembly/packaging line OEM's system controls movement of physical product and Crest Solutions' LineDirector™ software is used to control the movement of data on these lines. LineDirector™ is a centralised software control system that guarantees product and packaging quality while managing all production line peripherals and associated data in a regulated manufacturing environment. For component verification, LineDirector™ systems provide: item identification pre-pairing; pairing of sub-assemblies into a single component identifier; pack confirmation/product mix avoidance via 1D and 2D reading; checkweigher integration for pack verification; carton laser printing and carton labelling; batch-level verification of carton artwork and instructions for use through pharmacode and datamatrix verification. For serialisation, there are 100 million+ unique component identifiers and this is growing; unit-level serialised data management; aggregation of serialised units to case; identifier label printing and carton marking and verification. This manufacturer has leveraged the experience and expertise of Crest Solutions in pharmaceutical serialisation to deliver unit-level pack verification and product traceability.

FT SYSTEM

www.ftsystem.com

Remote support for the food and beverage industries

During the coronavirus pandemic period, food and beverage manufacturers and processors have faced many challenges in their internal operating practices, with a shifting demand in format sizes, a peak of buying in retail, and restrictions in



Remote Assistance

shift working to provide safe working environments. Automated inspection systems play an important role in this and the flexibility needed to adapt to these changing requirements, coupled with extreme limitations on international travel, heightens the need for remote service and support. FT System — part of Antares Vision — produces a complete portfolio of inspection solutions, mainly for the food and beverage industries. The range includes all automated quality control, track and trace solutions and smart data management. Critically, FT System can guarantee to support any customer needs via a remote connection and any kind of assistance through the dedicated service platform provided. The simplicity of the operator interface means that new operators on site can quickly learn how to operate the equipment. In addition, the Windows 10 IOT controller platform enables FT Support staff to log on to the network to carry out tasks on the machine remotely from their headquarters. Systems can also be provided with a secure remote gateway for extra safety to provide direct access to the machine without navigating to the client's network.

SCORPION VISION

www.scorpionvision.co.uk

Keeping the nation supplied with tea

Six years ago, Scorpion Vision installed a Scorpion Stinger system for robot depalletisation at one of UK's largest tea-producers. They process thousands of tons of tea for the home-based consumer market, producing millions of tea bags each year. The system enables two-metre high pallets of tea to be de-palletised by generating 2D image data and 3D point clouds to enable a robot to accurately



Teas sack depalletisation

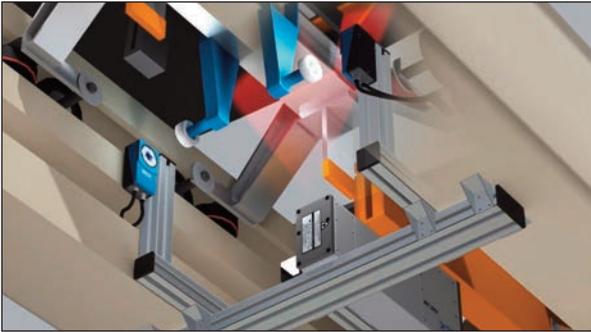
pinpoint each sack of tea for removal. If the sack is split, or the angle at which the sack is lying is too extreme, the vision system will stop and await intervention to rectify the problem to minimise the likelihood of split sacks being picked. At the beginning of the UK lockdown, the system developed a problem and tea production stops if the sacks cannot be unloaded from the pallets. The problem, caused by a failure of the hard drive of one of the PCs, was diagnosed remotely by Scorpion Vision without the need for a site visit. The hard drive was fixed and the software reinstalled with the result that the tea production was virtually uninterrupted. The system has picked 1.62m sacks since installation, and this was only the second problem experienced in six years. It highlights the importance of remote support of vision systems to minimise production downtime, especially at a time when UK travel was being restricted.

SICK (UK)

www.sick.co.uk

Keeping a close eye on parcel operations

One of the UK's major parcel centres is coping with huge increases in volumes during the pandemic, with the help of an innovative 2D and 3D vision solution from SICK that minimises maintenance interventions on its hard-working sorting lines. Featuring a SICK IVC-3D smart vision sensor and three SICK Inspector 2D cameras, the solution continually inspects the mechanisms of more than 4,000 tilting trays for signs of wear or damage as they pass through the centre's network of sorting systems. On unloading to the infeed belt, each parcel's destination is



Checking tilt tray mechanisms

identified by a SICK auto-ident reading device and assigned a numbered tray, which is logged in the control system. Each tray proceeds through the sorting centre until it reaches the exit chute, where it can be tilted to direct the parcel onto an outfeed belt destined for the correct HGV bay for its onward journey. If the wheels become cracked, broken or missing, the tray's tilt operation could fail and require manual intervention. Wheel misalignment can also cause the tray to drop too low and collide with the motor, leading to costly damage and unplanned downtime. Data from vision inspections at a number of installations positioned around the centre's warehouses, both of the underside of the tray and of the tilt-wheels, are processed by specially-developed software that enables engineers to run excel-based maintenance reports for timely planning of interventions. The system has successfully increased availability and machine uptime, and has now been adapted by SICK to offer a Maintenance Check System suitable for any similar courier, parcel or logistics operation.

STEMMER IMAGING

www.stemmer-imaging.co.uk

Raman spectroscopy measures corona infected cells

The second generation of the BioRam[®] Raman-Trapping-Microscope system from medical technology company CellTool improves analysis of virus based infections and can contribute to the effective fight against the coronavirus pandemic. The microscope features a Manta GigE colour area scan camera from Allied Vision, chosen following an extensive feasibility study carried out in Stemmer Imaging's application laboratory. The Raman microscope system enables the identification and characterisation of cells based solely on the



CellTool BioRam microscope system

interaction of photons with biomolecules of the cell, with no labelling needed. The recorded Raman spectra are as unique as a fingerprint. The camera resolution of 1388 x 1038 pixels provides the necessary detailed information for the subsequent automatic analysis. The microscope can be used in many areas of biomedical research, including automated analysis of blood cells to monitor their loss of functionality. It has recently been used to identify corona-infected cells and to measure patient blood cells.

VISION TECHNOLOGY PROVIDERS

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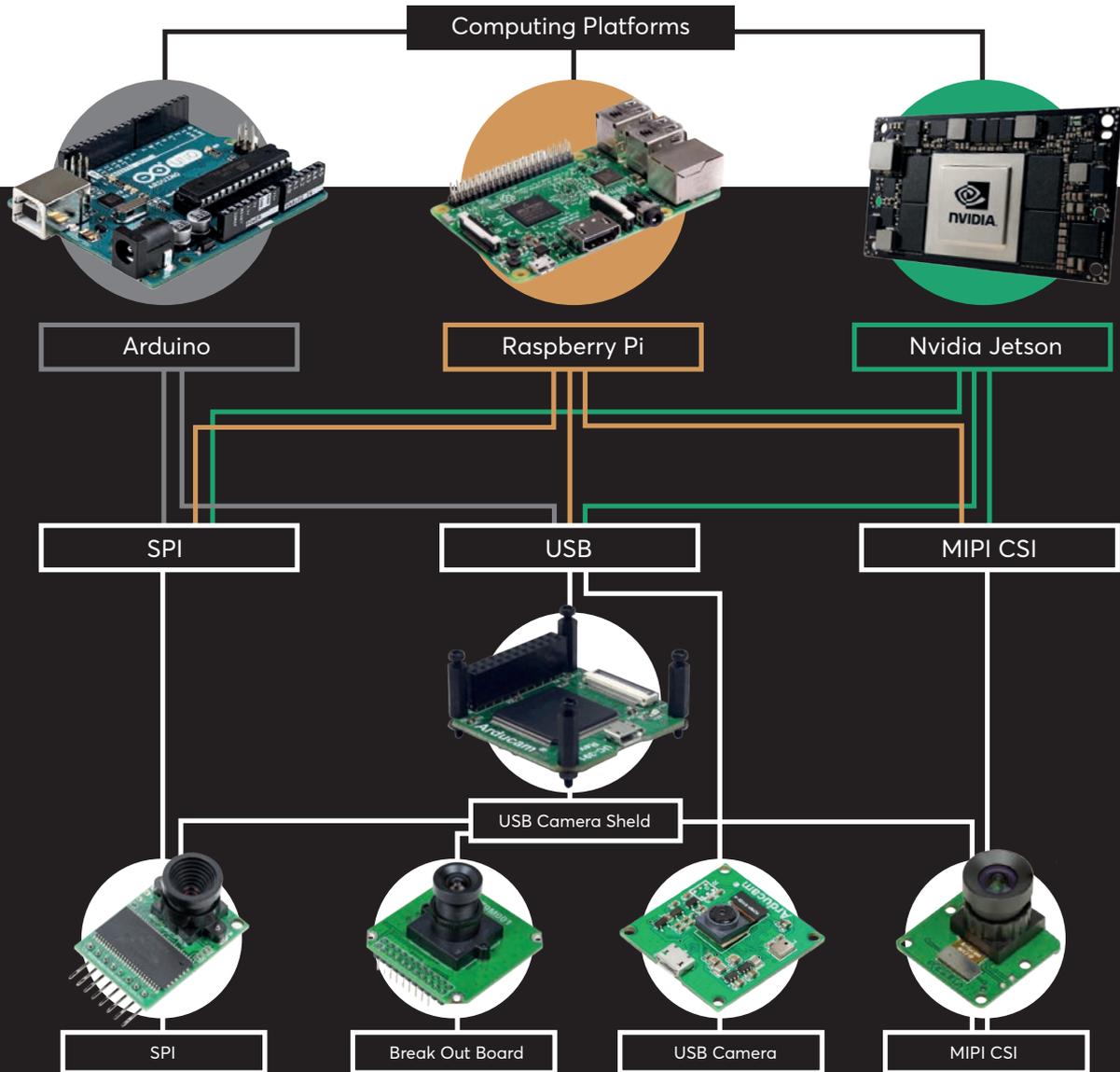
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For all advertising enquiries, please contact David Chadd on +44 (0) 20 8773 5505 or email: david.chadd@ppma.co.uk



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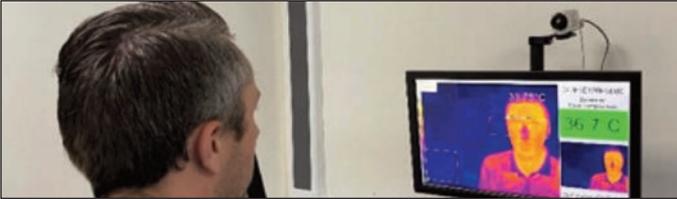
PRODUCT UPDATES

ACROVISION

www.acrovision.co.uk

Accurate and versatile fever screening solution

Acrovision's AFS-100 Fever Screening Solution meets the ISO 80601-2-59:2017 standard for "Basic Safety and Essential Performance of Screening for Human Febrile Temperature". The system comprises a high-resolution thermal imaging camera to image the area around the human ear duct, feedback monitor and a "reference box" to ensure accuracy of +/-0.5 °C. An optional data collection bolt-on enables the use of Personnel ID cards to both trigger the camera and to log individual's temperature measurements for further analysis.



AFS-100

ALRAD IMAGING

www.alrad.co.uk

50GigE and 100GigE cameras added to Alrad portfolio

Alrad Instruments now offers the 50GigE Xtreme Series and 100GigE Zenith Series ultra-high data/frame rate cameras from Emergent Vision Technologies. Both



Zenith 100 GigE cameras

series provide resolution from 21 to 103.7 megapixels with full resolution frame rates up to 300 fps possible with the Xtreme Series and 600 fps with the Zenith Series. Options include direct attach copper and single and multi-mode module transceivers for cable lengths up to 10 kilometres.

BECKHOFF AUTOMATION

www.beckhoff.co.uk

Image processing incorporated into PLC environments

Beckhoff Automation UK's new TwinCAT Vision software brings image processing into programmable logic controller (PLC) environments, simplifying the configuration and programming of vision systems. Image processing joins a single platform alongside PLC, human-machine interface (HMI), motion control and Internet of Things (IoT) device management. Geometric cameras can be reconfigured and calibrated, and machine vision systems controlled using PLC programming languages and the same configuration tools as used for fieldbuses.

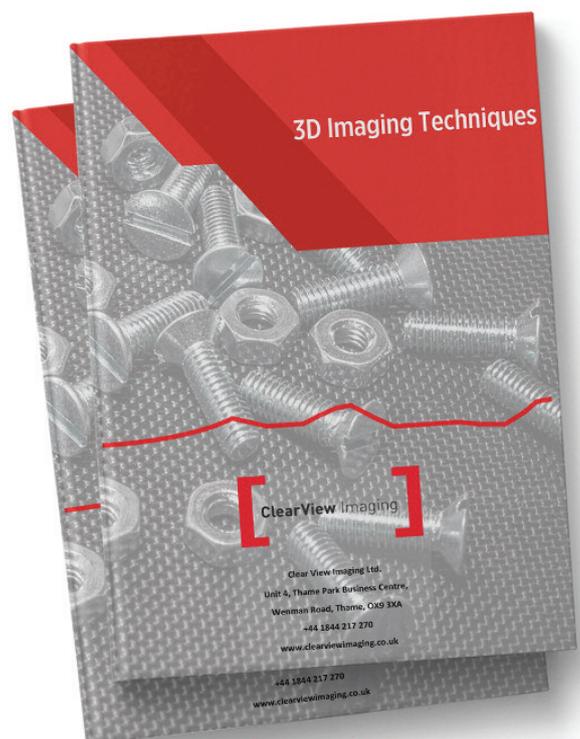
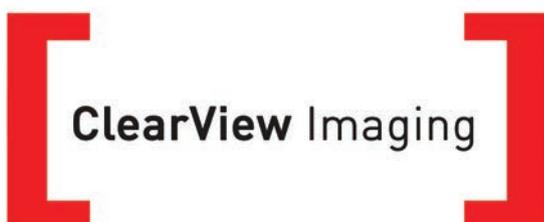


TwinCAT₃ Vision software

Want to learn more about 3D?

Download our Guide to
3D Imaging Techniques

www.clearviewimaging.co.uk/3d



PRODUCT UPDATES

BYTRONIC AUTOMATION

www.bytronic.com

Elevated body temperature detection system

A new elevated body temperature detection system from Bytronic Automation combines a high-resolution infrared camera with HotSpot software. The screening solution can be installed at existing barriers or entrances and is compliant with ISO and FDA regulations. It scans the area around the tear duct of one face at a time and compares measured temperatures to a fixed and constantly recalibrated 'black body' temperature emitter to give accuracy to within half-a-degree centigrade.



EBT system result

DAHUA TECHNOLOGY UK

www.dahuasecurity.com

600 MPixel CXP camera using pixel shift technology

HuaRay Technology, a subsidiary of Dahua Technology, has introduced the AX7Q10MX670 CoaXPress camera which utilises pixel shift technology to achieve 600MPixel resolution. With a transmission rate up to 25Gb/s, and frame rates up to 1.55 fps at the full resolution of 28,320 x 21,280 pixels, it is widely used in FPD inspection, electronic, semiconductor and various machine vision applications. This camera is characterised by ultra-high resolution, high detection precision, a wide field of view and good stability.



AX7Q10MX670 CXP camera

EDMUND OPTICS

www.edmundoptics.co.uk

Compact fixed focal length lenses for 1.1" sensors

Edmund Optics is releasing a flexible liquid lens solution for 1.1-inch sensors. These new high-resolution large format fixed focal length lenses are designed around the Optotune liquid lens. They can be focussed in just a few milliseconds over a wide working distance range with no mechanical adjustment. In 2021, a new line of environmentally sealed fixed focal length lenses will be launched. These will meet IPX7 and IPX9K ingress protection standards, with a hydrophobic front window.



Lens selection

IDS IMAGING DEVELOPMENT SYSTEMS

www.ids-imaging.com

IDS extends the Ensenso N 3D camera series

N40 and N45 Gigabit Ethernet stereo vision cameras have been added to the Ensenso N-Series camera system for 3D applications in robotics and automated production. Due to the lightweight IP65/67-rated plastic composite housing, the robot mechanics are placed under less stress when mounted on a robot arm. The

rounded edges are ideal for collaborative robotics. The new models include two monochrome 1280 x 1024 pixels global shutter CMOS sensors. Power-over-Ethernet enables data transfer and power supply even over long cable distances.



Ensenso N40 & N45 cameras

INDUSTRIAL VISION SYSTEMS

www.industrialvision.co.uk

Smart AI vision sensors for high speed inspection



Command Ai vision system

The new IVS-COMMAND-Ai™ in-line high-speed automated inspection solution integrates directly with factory information and control systems. It enables complete part inspection, guidance, tracking and traceability with built-in image and data saving. New multi-layered "bio-inspired" deep neural networks mimic human brain activity in task learning, which enables vision systems to recognise images, perceive trends and understand subtle changes in images which represent defects. The systems are fitted with adaptable HD smart cameras to provide inspection from all angles and with high precision.

LEUZE ELECTRONIC

www.leuze.co.uk

Complementary technologies integrated for Blockchain registration and authentication

The integration of the Leuze DCR 200i range of camera-based code readers into the iTRACE 2DMI® from iTRACE Technologies, Inc, enables the capture of transaction and authentication information automatically anywhere in the supply chain. The part being scanned can be securely identified and the transaction recorded on digital ledger technologies like blockchain. Application security comes from the ability to create the digital twin of the physical product. This ensures that it is the original item that is scanned at each location.



DCR200

MATRIX VISION

www.matrix-vision.de

Compact, waterproof version of mvBlue COUGAR-X Gigabit Ethernet camera

The IP67C option is a cost-effective compact and waterproof variant of the mvBlueCOUGAR-X industrial camera for use in harsh environments. Integrating



Waterproof mvBlueCOUGAR-X camera

the waterproofing into the standard housing enables installation in small spaces. Either a standard lens can be used in connection with a protective tube available in various lengths (40 mm, 71 mm, 100 mm), or IP67 lenses are used such as the waterproof BAM LS-VS-008 lens series from Kowa.

PRODUCT UPDATES

METTLER TOLEDO
www.mt.com

New label inspection solution to minimise reworking

Two new Product Data Check options feature smart camera technology for integration into existing C-Series checkweighers. These can verify the presence



Product Data Check

of correct labels for food safety and compliance with EU Labelling Directive 2000/13/EC. The Product Data Check option features up to three cameras to verify data on the front, back and top of each product. Product Data Check 360 uses a unique configuration of six sensors to generate a 360° view of the product label on round products that may rotate on a conveyor belt.

MULTIPIX IMAGING
www.multipix.com

GPU enabled vision systems

Deep Learning tools in high-performance vision solutions frequently utilise a GPU. The ADLINK EOS-iX platform offers the 4-CH GigE Vision System with 6th Gen Intel® Core™ i7-6700 processor, NVIDIA® Quadro™ P1000, 16GB



ADLINK EOS-iX platform

DDR4, and 512GB SSD – with options for GPU memory size. These systems include software support for Windows® 10 / Linux Ubuntu 18.04, CUDA, TensorRT, TensorFlow, Python, cuDNN and ADLINK EdgeSDK. Multipix Imaging also offers deep learning libraries from Euresys, MVTec and PEKAT.

QUBBER PC
www.qubbervision.com

Pharmaceutical container closure inspection

Qubber Inspection Systems specialise in the design and manufacture of integrated machine vision systems for in-line quality control. Q-PHARMA CRA is a cost-effective solution for the inspection of closures in plastic collyrium containers in pharmaceutical bottling industries. It can detect defects in closure in PET collyrium containers of various sizes and colours. It provides improved safety for the supply chain (storage, transportation, and distribution) as well as end customer safety, while avoiding costly production downtimes.



Q-PHARMA CRA EOS-iX platform

SICK (UK)
www.sick.co.uk

SICK deep learning brings simplicity to AI inspection

The SICK suite of deep learning apps and services radically reduce set-up time and cost by enabling Artificial Intelligence image classification to run directly onboard SICK smart devices. With Deep Learning, programmable SICK devices

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Further information is to be found using the link www.stemmer-imaging.com/eia or via the QR code.



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PRODUCT UPDATES

take decisions automatically using specially optimised cloud-based neural networks to run accurate and reliable inspections. These would have previously been extremely challenging or simply impossible to achieve in high-speed automated processes. The Intelligent Inspection SensorApp is available on-board the new SICK Inspector P621 2D smart camera.

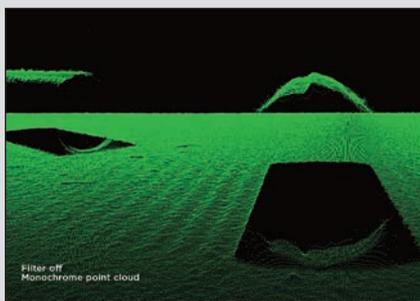


Deep Learning

STEMMER IMAGING www.stemmer-imaging.co.uk

Eliminating contrast distortion in 3D fringe projection cameras

New contrast distortion correction functionality in Zivid's SDK 2.1 software update addresses a fundamental source of error in active 3D measurement technology, including structured light-based systems. Signal blur at high-contrast transitions, notably on metal surfaces with strong highlights, cause



Point cloud cylinders without correction

artefacts and heavily distorted or deformed 3D point clouds. A real-time distortion filter in the new software for raw data corrects for this and can be used with all Zivid One+ structured light colour cameras.

WENGLOR SENSORIC

www.wenglor.com

ShapeDrive series features structured light for high accuracy bin picking

The ShapeDrive series of camera-based 3D sensors utilise structured light, giving a precise detection of parts even in the micrometre range. The sensor can be mounted above the bin or directly on the robot arm. The cameras have a resolution of up to 12 megapixels and provide a maximum Z-axis resolution of 3 µm. The camera takes just 0.35 seconds to record images for measuring volumes from 300 x 360 x 300 mm up to 1,300 x 1,000 x 1,000 mm. Data are transferred to the software via a 10 Gigabit Ethernet interface for processing.



ShapeDrive sensors

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imaging



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multipix.com/visionaries

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Machine Vision Components

ALRAD INSTRUMENTS LIMITED has been providing high quality components and scientific equipment to the OEM market, industry and research for the past 50 years. Our technology areas cover: Imaging (for machine vision, automation, embedded, scientific and medical applications), Electronics, Photonics, Vacuum, Thermal and Logistics products for warehouse automation.

10, 25, 50 and 100 GigE HIGH-SPEED CAMERAS

ALRAD is pleased to provide the industries first high-speed, high-resolution cameras with 10, 25, 50 and 100 GigE interface option from Emergent Vision Technologies. The Area Scan cameras feature connector options allowing for cable lengths ranging from 1 meter up to 10 kilometers.



LIGHTING AND STRUCTURED LIGHT LASERS FOR MACHINE VISION APPLICATIONS

ALRAD's machine vision lighting includes: Backlights, On-Axis lighting, field illumination and structured lighting including lasers for 3D and shape analysis. Our StingRay lasers from Coherent enable fast accurate 3D Triangulation, high performance laser pattern generation and address a wide range of applications. Features include: wavelengths from 450 to 830nm, power from 1 to 200mW, Line Uniformity up to 95% on 100% of the line, and optional RS-232 communication with GUI interface.



THE IMAGING SOURCE

The Imaging Source offers a comprehensive range of embedded, board level and housed machine vision cameras, ranging from VGA to 42 Megapixel resolution and using Sony and On-Semiconductor sensors. The latest board level and MIPI cameras are suitable for Automation, Robotics and Automotive applications.



OPTICS FOR MACHINE VISION

ALRAD has a wide range of S-mount or M12 lenses to complement our board and embedded MIPI camera modules, including macro close-up lenses and lenses for distance applications. Our C-mount portfolio includes Ricoh's 9 Mega-Pixel Lens range, featuring a manual iris compatible with 1" format cameras and a floating mechanism to ensure high-resolution, low-distortion images at all ranges (from infinity down to 80mm), enclosed in a competitively priced compact ($\varnothing 42\text{mm}$) design.



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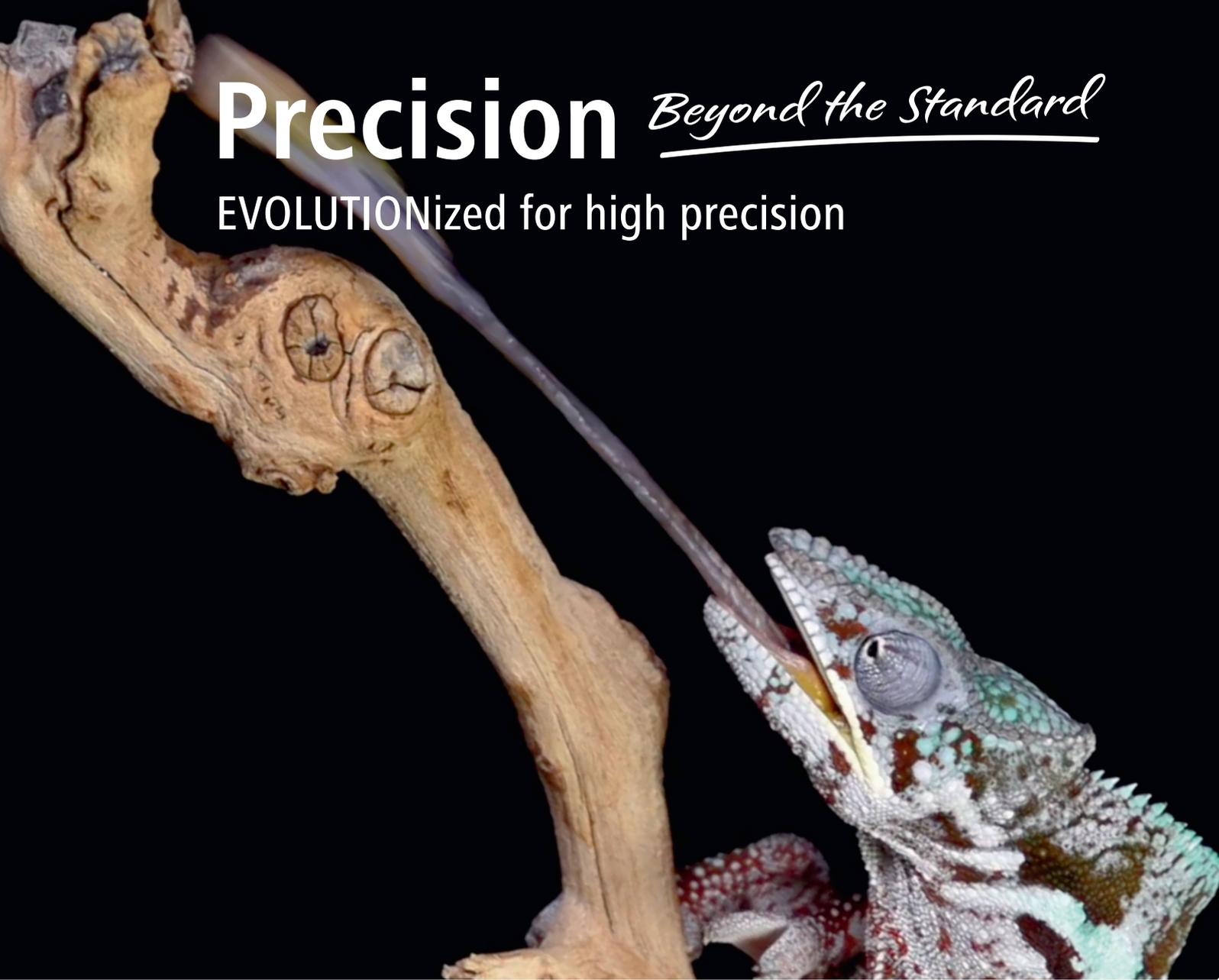
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