End Of Line Inspection

End of line inspection is one of the most important uses of vision in manufacturing industry with applications on both manufacturing and packaging lines. The combination of vision technology developments and the emergence of specialist vision systems integrators make the use of vision much more practicable. In addition, pressure from major players in industry and legislative requirements in the pharmaceutical industry are making the use of vision an essential requirement.

Industry pressure

Major players in a number of industries can impose stringent quality requirements on their suppliers. In the food industry, supermarkets wield a significant amount of power over their suppliers. Margins are squeezed, and penalties can be imposed on suppliers whose products or packaging do not meet their demanding standards. The use of vision technology can help meet such demands. The automotive industry is one of the world's most cost-sensitive industries and also one of the most demanding in terms of product quality and aversion to component failures. Both manufacturers and component suppliers rely increasingly on leading-edge vision technology to validate complex assembly processes. The use of vision also helps the industry's changing approach to quality inspection which now concentrates more on differentiating between critical and non-critical defects – those that affect the functionality of the object.

Tracking & traceability

Vision plays an important role in reading unique identifiers in the form of 1D or 2D codes, alphanumeric or even braille for tracking and tracing applications in industries as diverse as aerospace, automotive, food, healthcare and pharmaceutical. Human readable on-pack data, such as batch, lot numbers, best before or expiry dates are also critical for products such as food, pharmaceutical, medical devices and cosmetics. In the automotive industry, data management allows manufacturers to optimise processes and perform product traceability. Having the appropriate data on vehicles and related parts can also help to reduce costs and makes it possible to accurately and promptly respond to quality assurance and recall problems. In the pharmaceutical industry, the 2011 EU Falsified Medicines Directive (FMD) will require individual packs of medicines to carry a unique, machine-readable identifier which will provide traceability from the point of sale back to manufacture.

2D Datamatrix codes for traceability
(Courtesy Omron)

More on these and other topics can be found in our centre page spread feature. Thanks are due to UKIVA members Acrovision, Bytronic Automation, Olmec-UK, Omron, Sick UK and Stemmer Imaging for their contributions to these features.
Easy to use, simple to integrate and straightforward to maintain; SICK 3D vision systems will help to save you money, increase your quality levels and improve your production processes. The range includes tools for high speed object and feature detection, resulting in accurate measurement and positional data. In-built illumination and accessory options make them a tough and flexible solution. For 25 years, SICK have been at the forefront of 2D and 3D imaging technology.

We think that’s intelligent. [www.sick.co.uk](http://www.sick.co.uk)
The UK is behind the rest of Europe in using Vision and general automation in production. Whilst some people think that bringing in Automation is a threat to jobs, it has been proven to actually increase employment and the skill level of employees as well as productivity and quality.

There is much talk of Industry 4.0 where process and systems are developed in the Cyber world before any physical system or product is produced. However, at the moment, most organisations are still operating in the realms of ‘Industry 3.0’ where we have PLC and process control systems and there is a lot of data being collected and stored but not always used to improve quality or reduce costs. Consequently we are not even adequately processing the data being collected. For example, simply knowing the power consumption of a plant overnight and at weekends when it is not being used could lead to cost savings if, as a result, the plant was switched off or put into a standby state.

Machine vision can generate a lot of useful data at all stages of a manufacturing process, not just as a final quality control. This data can be used to identify any problems before the product goes out of tolerance allowing adjustments to be made to the process leading to a reduction in the number of production faults, hence improving the bottom line and generating a quicker return on investment.

You can see and discuss with our members what their systems and products can do for you at two shows this Autumn. These include our own PPMA Show where there has been an increase in UKIVA members exhibiting from 9 last year to 19 this year. We will also be supporting Photonex where we are pleased to be running our most ambitious series of seminars on the latest technology and applications involving vision. There are more details on these elsewhere in this issue. I look forward to meeting you at both of these events.

Ian Alderton, UKIVA Chairman
**ALRAD IMAGING**

**New SWIR InGaAs NIR camera**

The new WiDy SWIR 640U-S camera from Alrad Imaging features a new high quantum efficiency InGaAs sensor with a global shutter operating in the 900 nm to 1700 nm wavelength range. With VGA (640 x 512 pixel) resolution, a wide dynamic range (up to 140 dB) and in-pixel correlated double sampling (CDS) to reduce random noise and fixed pattern noise, this new camera is ideally suited to industrial NIR imaging applications in a wide range of industries, including pharmaceutical, food, welding semiconductor, agriculture and process control.

The camera has a USB 2.0 interface and can record images in .png, jpeg and .bmp format, or video in .ptw or .avi format. The user-friendly software WiDyVISION package provides control of frame rate, exposure time and the external or internal trigger. It is delivered as a turn-key package including camera, software tools and cables in a shock proof case for quick and easy integration in any equipment platform.

**Baumer**

**VeriSens IP 69K in stainless steel housing**

VeriSens vision sensors by Baumer can now handle demanding tasks in the food and pharmaceutical industry. The new XF series includes IP 69K protection and stainless steel housings. VeriSens in washdown design are the first vision sensors with high IP 69K certification.

The new XF-105/205 models are based on the proven functionalities of the VeriSens XF series, featuring sophisticated image processing capabilities. Offering high performance with up to 19 feature checks, the XF series can also read code and text and integrates the patented FEX image processor for stable image evaluation and the first configurable web interface. Configuration is simple with the standardised VeriSens Application Suite software. Other models incorporate infrared illumination and integrated daylight filter to suppress daylight impact on image evaluation or flash/night effects caused by integrated illumination.

**New UKIVA members**

We are delighted to welcome Pepperl+Fuchs GB Ltd and Altec Engineering Ltd as new members of the UKIVA.

**Pepperl+Fuchs** manufacture a wide range of sensing, positioning and identification solutions, including 1D & 2D code readers and print inspection and recognition solutions.

**Altec Engineering** designs and builds special purpose equipment for a variety of applications. Machine vision is used for tasks such as data capture, inspection, verification and robot guidance.

**High profile seminar program planned for Photonex**

UKIVA will be presenting its most ambitious seminar program as part of the Vision UK event at the Photonic Show on 14th and 15th October at The Ricoh Arena, Coventry. The free seminar program has been put together to highlight the wide range of imaging technologies available and their practical use in industrial applications and features 10 presentations. The Keynote Speech will be delivered by Dr Will Maddern from Oxford University at 11am on Wednesday 14th October. Entitled: ‘Vision for Autonomous Driving: Challenges and Opportunities’ this fascinating and stimulating presentation will explore the demands on vision technology in controlling a car. Will is the leader of the ‘Robotcar’ project (mrg.robots.ox.ac.uk/ application/robotcar) which is investigating methodologies for ‘life-long infrastructure-free navigation’ which will be needed to develop vehicles that can ultimately drive themselves completely autonomously.

**Dr. Will Maddern with the Robotcar**

Other seminars in the program are: ‘Planning ideas for machine vision applications’, ‘SWIR applications with InGaAs sensors including on-line inspection’, ‘The rise of the CMOS sensor’, ‘3D robot vision applications’, ‘3D inspection applications’, ‘Direct part marking – the evolution of using indestructible barcodes in manufacturing’, ‘Vision system integration and labelling’, ‘Hyperspectral imaging in the machine vision world’ and ‘Liquid crystal optical components for polarisation control in machine vision applications’. The program will feature speakers from Acrovision, Alrad Imaging, Clearview Imaging, LC-Tec Displays, Multipix Imaging, Scorpion Vision, Stemmer Imaging, The Config Team and Ximea. The timetable for the seminar program will be published on both the Photonex (www.photonex.org) and UKIVA (www.ukiva.org) websites.

**Editorial material in this section is provided by UKIVA Members. Content accuracy is the responsibility of individual UKIVA Members.**
Three new models added to IDS USB3 camera range

The new generation of USB3 uEye CP industrial cameras from IDS now features three new CMOS sensors to provide further opportunities to choose the best imaging option for the application. All the new cameras are fully supported with IDS Software Suite 4.70.

The extremely light-sensitive Aptina colour rolling shutter sensor in the UI-3590CP provides 18 Megapixel resolution at 21 fps. It can also deliver live video in a variety of formats, including 4K Cinema (4096 x 2304, 38 fps), Ultra HD and Full HD.

The UI-3140CP features the 1.3 Megapixel Python 1300 monochrome or colour global shutter sensor from ON Semiconductor offering an excellent combination of image quality and speed, operating at 169 fps at full 1280 x 1024 pixel resolution. The camera is ideally suited to a wide range of applications including machine vision, inspection and automation.

The UI-3260CP contains the Sony IMX 249 2.3 Megapixel sensor. This 1920 x 1200 pixel sensor operates at frame rates up to 41 fps (full resolution) providing excellent image quality even in low-light conditions at a competitive price.

IMPERX

PoE LED ring light

IMPERX is now offering LED Lights as an additional solution to imaging systems. The Power over Ethernet (PoE) LED Ring Light is a patent pending product that simplifies cabling for your system by only needing one PoE cable to power and control the light and camera.

Although the PoE LED Ring Light can be used with any camera, this cutting-edge technology works best with all IMPERX C-Mount Bobcat 2.0 CCD Cameras because Bobcat cameras have a built-in pulse generator that can be used to control light intensity. Supporting both PoE and PoE+ the peak light intensity is 15,000 lux at 0.3m and 10,000 lux at 0.5m.

IMPERX’s PoE ring lights can operate in temperatures ranging from -20°C to +50°C and have an IP Rating of 50. The standard colours include: White (cool), White (neutral) and Red with custom colours such as Green, Blue, UV and IR available on request.

PPMA Show attracts record number of UKIVA exhibitors

No less than 19 UKIVA members are exhibiting at the PPMA Show from September 29th to October 1st. This is more than twice as many as exhibited in 2014, reflecting the continued importance of vision to the processing and packaging industries, and giving visitors to the show even more opportunities to meet the people who really understand how to solve real-life imaging problems. Visitors will have the chance to see smart cameras, code readers, 3D systems and high speed imaging systems in a variety of demonstrations ranging from product and packaging inspection to code reading and verification.

UKIVA members exhibiting at the PPMA Show are: Acrovision, Alrad Imaging, Bytronic Automation, Clearview Imaging, Cognex UK, Dimaco (UK), Framos Electronics, IFM Electronic, Lambda Photometrics, Leuze Electronic, Multivix Imaging, Multivac UK, Omron Electronics UK, Pepperl+Fuchs GB, Scorpion Vision, Sick UK, Stemmer Imaging, The Config Team and UPM Conveyors.

Special ‘Vision and robotics in automation’ seminar at PPMA Show

Andrew Jones, Sales Director at RG Luma Automation Ltd, is giving a seminar entitled ‘Vision and Robotics – unleashing the potential’ at this year’s PPMA show. Andrew has twenty-five years’ experience in the industrial automation sector and has been actively involved in the application of vision and robot technology during that time.

With practical experience from sectors as diverse as automotive, food, aggregates and defence, he has an in-depth knowledge of the do’s and don’ts of when and where to use vision and the benefits of coupling it with robotics to give efficient automation solutions. This promises to be a fascinating talk which will look at the technology involved in integrating robots with vision systems, supplemented by some real-life applications covering:

- Assembly (processing and verification)
- Product presentation & inspection (organic & non organic)
- Bead application (and inspection)
- Pick and place
- Volumetric analysis.

The seminar will take place at 10am on Wednesday 30th September in the Seminar Zone at the Show.
End of Line Packaging Validation Systems

Within the Food, Drink and Pharmaceutical industries, retailers are becoming more and more stringent about their suppliers meeting correct packaging specification criteria. The result of incorrect labelling can result in poor customer satisfaction at best – at worst, hefty fines or Emergency Product Withdrawals (EPW).

Check your Barcode
Check your Sell-By-Date
Check your Promotion Label
Check your Label Position
Save Reject Product Images

A cost-effective range of products to suit your end of line quality control needs.
- Easy to Select
- Easy to Install
- Easy to Operate

As well as monitoring and reporting the inspections of the labels / packaging we can also provide:
- Modular Conveying Systems
- Stainless Steel Enclosures
- Audit and Performance Logs
- Simultaneous Control of Line Printers
- Visual and Audible Indicators
- Reject Mechanisms

Watch our 5 minute overview video of Validator:
www.acrovision.co.uk/solutions/validator

Or see it in action at PPMA – visit us on Stand G62

Or contact us for a demo or more information @ info@acrovision.co.uk
0845 337 0250
Collaboration with DENSO on vision-based robot guidance

Collaboration between Matrox Imaging and DENSO WAVE has resulted in the implementation of a direct communication link between Matrox Design Assistant machine vision software and the DENSO RC8 robot controller.

Matrox Design Assistant is a powerful yet easy to use development environment and very versatile. The new communication link provides robot and vision systems integrators with an easier way to create guidance applications that interact seamlessly with DENSO robots. DENSO robots are widely used in manufacturing industries around the world to improve quality, increase productivity, ensure safety and provide flexibility.

The Matrox Design Assistant robot communication protocol is network socket-based whereby the robot program requests a connection, the vision system accepts the connection, the robot program asks the vision project to locate the next part and the vision system provides the part location to the robot program. DENSO WAVE created a “Provider Software” add-on to perform this communication on the RC8 robot controller.

MULTIPLEX IMAGING

3D sensors for inspection, guidance and measurement

Multipix Imaging have introduced 3D sensors from SmartRay GmbH. These compact new 3D-sensors can be installed easily and rapidly. SmartRay sensors combine laser triangulation with innovative image formation technology to create detailed 3D images that can be processed by 3rd party software such as MVTec’s powerful HALCON library for powerful 3D machine vision solutions without limits.

The latest ECCO family brings a new design philosophy to the 3D sensor market that delivers high performance, small size and lightweight construction at an affordable price.

With the help of this technology, manufacturers can improve the quality of their products, optimise automation processes and lower production costs. The latest model, the ECCO 75 is the first sensor of this type in the world and offers an image resolution at full HD quality. Every 3D-profile created by the sensor consists of 1,920 3D pixels rendering a resolution of 1.75 µm in all three dimensions.
New CMOS Cameras with Wide Dynamic Range.

For more information on the IMPERX CMOS Cameras and other IMPERX products, please contact us at +44 (0)1730 233332 or sales@multipix.com
RNA Automation are agents in the UK for the Universal Robots range of collaborative robots and can now offer the latest addition to the Universal Robots range, the UR 3 collaborative robot, a true power tool perfect for small-format precision tasks. ‘Collaborative robots’ detect the presence of other objects (humans or machines) working in the area and are programmed to prevent collisions and injury. Universal Robots manufacture small and low-cost collaborative robotic arms offering great precision, flexibility and programmability. They can be readily interfaced with industrial cameras for robot vision applications.

Designed for shorter reach environments, the UR3 has a reach radius of 500mm, allowing it to be deployed in tight spaces in virtually any production environment. The UR3 can modulate payloads of up to 3kg and excels at tasks such as mounting of small objects, gluing, screwing, operating tools, soldering and painting. The UR3 also has infinite spin on the last joint, allowing it to be used for screwing tasks without having to add additional devices.

Press Vision 4.0, the latest version of Scandinavian Machine Vision’s industry-leading solution for inspection of hot stamping presses, can now accommodate up to four thermal cameras. Press Vision 4.0 is designed to check the blank position in the die since a misplaced blank will cause unnecessary downtime, quality problems, excessive wear of the die and in the worst case crash the die.

The new system consists of 4 FLIR thermal cameras and 4 standard CCD cameras with one central unit for processing, integration and data storage. The thermal cameras cover both loading and unloading. The PC is modified with extra I/O facilities. The newly introduced third thermal camera provides better visibility of the die closest to the fix table, while extra lights and the fourth camera are used for the pre-run empty die check of the upper dies. This will check that there are no pressed parts in the dies and for dies with ejectors it will look for the ejectors. If the ejectors are not visible they may be behind a part or faulty. The new versions have already been sold to large automotive part suppliers in Shenyang and Guangdong in China.

Matrox Design Assistant vision software is an integrated development environment that lets you easily, and quickly, solve vision applications by constructing flowcharts instead of writing program code.

www.matrox.com/da4/ukiva

Press Vision 4.0
LSIS 400i smart cameras for industrial image processing can be integrated quickly and at low cost. They are used in quality assurance, object detection and position determination, for identification and for production process monitoring. With their sophisticated range of features, LSIS 400i cameras can also reliably handle complex tasks.
MEMBERS NEWS

SCORPION VISION

www.scorpionvision.co.uk

LED strobe controllers for high speed image capture

Scorpion Vision has now added an advanced new line of strobe controllers from Smartek to their extensive range of industrial imaging products. These LED Strobe Controllers are able to capture high definition images of fast moving objects using ultra-short, bright LED pulses which are synchronised to the camera image capture with fast exposure times. The high-power high frequency pulsing significantly increases illumination intensity but also results in reduced thermal effects for the LEDs. This allows LED illumination devices to be safely exploited to perform well beyond their standard mode of operation.

The outstanding performance of these LED Strobe Controllers series makes them ideally suited for high-speed production lines, guaranteeing quality assurance. They have been used in applications from luxury car production to print inspection of tokens.

SICK (UK) LTD

www.sick.co.uk

New SICK Lector 620 OCR for on-pack reading and verification

SICK’s new LECTOR 620 OCR combines Optical Character Reading, Optical Character Verification, 2D and barcode reading in a single device, making combined alphanumeric character and barcode reading, quality-checking and matching, faster, simpler and more reliable than was previously possible.

SICK spent several years researching the best decoding algorithms before developing the LECTOR 620 OCR to achieve outstanding speed and read reliability. With a built-in facility to teach font changes ‘on the fly’, there’s no need to stop the line for product changes.

The SICK LECTOR 620 OCR permits plain text letters, symbols and numbers at distance of between 30mm and 300mm to be detected both while stationary and at speeds of up to 4.0 m/s. A range of standard fonts are supported, as well as barcodes and data matrix codes, ensuring both legibility and placement for essential quality control. The device incorporates a microSD card for image storage and parameter back-up memory.
MORE CHOICE
**Starting at £159**
This fully featured camera offers 32 different models ranging from 0.3 MP to 5.0 MP and up to 90 fps.

**VERY SENSITIVE BITS**
The Blackfly offers high-quality progressive scan CCDs and global shutter CMOS sensors, such as the latest Sony IMX249.

**Pregius**

**ROCK SOLID**
Frame buffer for transmission reliability; a “Seal of Quality” label on every camera guarantees 100% testing and inspection, with a 3-year warranty.

**SIZE MATTERS**
The compact 29 x 29 x 30 mm metal case weighs only 36 grams and has multiple mounting points for easy integration.

**PLAYS WELL WITH OTHERS**
GigE Vision™ and USB3 Vision™ standard compliant to work seamlessly with Point Grey’s FlyCapture SDK and third-party software, drivers, and accessories.

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**ANATOMY LESSON: BLACKFLY**
Learn more at [www.clearviewimaging.co.uk](http://www.clearviewimaging.co.uk)

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Point Grey is a world-leading designer and manufacturer of innovative, high performance digital cameras for industrial, life science, and traffic applications, and ClearView Imaging is their sole distributor for the UK and Ireland. Point Grey have a comprehensive portfolio of USB3 Vision, GigE Vision, FireWire, and USB2 products known for their outstanding quality, ease of use and unbeatable price-performance.

Learn more at [www.clearviewimaging.co.uk](http://www.clearviewimaging.co.uk) or contact info@clearviewimaging.co.uk
New high resolution smart camera for parts and assembly inspection

Stemmer Imaging can now offer the new Boa2 smart camera from Teledyne DALSA. With resolutions up to 5 Megapixels, inspections up to 80 parts/second, enhanced embedded measurement and processing software, and a variety of I/O and mounting options, this versatile new camera can automate identification, measurement, guiding and verification requirements in a host of applications.

A choice of 2, 3 and 5 Megapixel sensors makes Boa2 capable of imaging small defects that can be missed or difficult to distinguish with lower resolution cameras. In addition the increased number of pixels gives higher measurement accuracy for precision measurement applications and a larger inspection area for verification applications. The Boa2 range offers externally controlled lighting configurations and an optional integrated high-intensity ring light is available for the 2 Megapixel version.

The well-respected iInspect Express embedded processing and measurement toolset has been even further enhanced with new tools which include multi-point calibration, the ability to mask unimportant or unreliable areas when using the match tool, a trainable verification tool for defect detection and a measurement tool for thread inspection. Video link: www.stemmer-imaging.co.uk/en/videos/introducing-the-boa2-smart-camera-from-teledyne-dalsa/

Turnkey warehouse management project

UPM Conveyors has undertaken a turnkey warehouse management project for Cengage Learning (EMEA) Ltd. Cengage is a leading educational publisher and distribution services provider based in Andover, Hampshire with a 60,000 square foot distribution facility which supports clients in education, academic, reference and legal businesses servicing the global market.

A new belt / roller conveyor system operates in conjunction with a LogisticsPRO warehouse management system. LogisticsPRO downloads data to the UPM PC i.e. orders for the day and this information is then transferred to the UPM PLC bar code readers to divert boxes to the appropriate picking, packing and shipping areas of which there are ten and at each stage the conveyor system sends data back to LogisticsPRO keeping the status of each order completely updated.
VISON TECHNOLOGY PROVIDERS

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Alrad Imaging is a prime UK distributor of vision products. Products include cameras and sensors, frame grabbers, illumination, imaging software and sub system solutions for OEMs and system integrators.

Baumer is one of the leading global manufacturers of innovative image processing components and offers an extensive product range of high quality industrial cameras and vision sensors.

ClearView Imaging is a supplier of vision components, including a wide range of cameras, frame grabbers, software, embedded systems, smart cameras, vision processors, lighting and optics.

Cognex is the world’s leading vision company, with over 150,000 systems delivered. We offer a complete range of vision solutions, from smart cameras to powerful framegrabbers.

Framos is a specialist distributor of digital and electronic imaging devices and complete cameras. Both area and linear CCD and CMOS devices are offered with full technical support for design and integration.

IDS Imaging Development Systems is a global leader in medical vision and machine vision technology, offering industrial cameras with USB 2.0, 3.0 and GigE interface and OEM plus customised solutions.

Im strpos electronic develops, produces and sells sensors, controllers and systems for industrial automation worldwide and is a leading provider of vision systems including 2D and 3D sensors and cameras.

Imperex, Inc. designs and manufactures high performance cameras, frame grabbers and industrial imaging systems for a variety of markets. Our multi-service brand is recognised for superior performance, reliability, and cutting-edge design.

Lambda distributes a broad range of MV products for industrial, research and logistics applications. Providing digital cameras, frame grabbers, software, lenses and lighting team together a wealth of technical experience.

Leuze electronic’s ‘the sensor people’ are the experts for sensors. They also specialise in smart cameras and identification products.

Matrix Imaging is a leading developer of hardware & software for machine vision and imaging technology.

The wide range of products offered includes frame grabbers, cameras, lenses and imaging software together with a highly experienced support service.

National Instruments manufactures hundreds of integrated software and hardware products, which are used to replace and/or complement traditional instrumentation.

Omnex manufactures a wide range of vision-based industrial solutions, ranging from cost effective vision sensor products to high-end vision controller and camera products.

Omron Electronics manufactures hundreds of integrated software and hardware products, which are used to replace and/or complement traditional instrumentation.

Our range covers Vision, Control and Machine vision components, and GenVIs and RoboVis PC-based vision systems and vision training.

Easy to use vision systems, purpose vision machines & smart cameras. Improve yield and remove defects with our automated quality control machine vision solutions. Practical and simple to maintain.

Loop Technology specialises in offering 2D and 3D vision solutions for advanced assembly and inspection processes including robot guidance, quality checking and surface profiling.

Specialists in product handling, controls automation and validation; Omlec deliver complete inline and standalone vision inspection into existing, new and OEM machinery processes.

Panther Vision provides independent consultancy and bespoke product development and is interested in joint development opportunities.

DNA are specialists in the supply of purpose machinery including automated vision inspection systems and pick & place handling units.

Scandinavian Machine Vision Ltd is an independent machine vision integrator providing complete solutions and tailored services for a wide range of manufacturing and process industries.

Sick manufacture and supply a complete range of Vision Systems & Solutions, including vision sensors, smart cameras, full 3D and colour multi-scan systems. Just part of the Sick automation portfolio.

Europe’s premier Machine Vision technology provider. Offering the widest range of 2D and 3D vision systems and components along with independent technology training and extended technical services delivered with passion.

Specialist SAP consultant and producer of CodingControl™, a SAP-Certified software platform that connects vision systems, coders and labelers to your SAP ERP system to eliminate coding errors.

Quality conveying solutions for the packaging industries including slat, modular, cable, roller and endless belt, gripper, magnetic elevators and lowerators, I/O solutions, quarderail upgrades, line modifications.

Altec designs and builds special purpose equipment for a variety of applications. Machine vision is used for tasks such as data capture, inspection, verification and robot guidance.

Dimaco is the UK’s leading provider of vision inspection systems in the food industry. Our VeniPACK series is designed to meet the packaging validation requirements of the major supermarkets.

Mettler-Toledo Ltd is one of the world’s leading suppliers of industrial weighing and inspection solutions, including checkweighing, metal detection, x-ray and vision inspection systems.

Multivac UK is a wholly-owned subsidiary of Multivac Sepp Haggenmüller GmbH & Co, the world’s leading supplier of packaging machines.

Pepperl+Fuchs manufacture a wide range of sensing, positioning and identification solutions, including 1D & 2D code readers and print inspection & recognition solutions.

Stein Solutions provide inspection and optical sorters.

UPM Conveyors provide complete automated conveyor and vision systems.
CORE TECHNOLOGY FOR VISION DEVELOPERS.

Explore state of the art vision technology from Europe’s largest provider. Discover how we combine leading products with outstanding competence and service to make you stronger!

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WWW.STEMMER-IMAGING.CO.UK  IMAGING IS OUR PASSION
Technology

There are many ways in which vision technology can be used in end of line applications

Off the shelf vision systems

These are frequently ‘smart’ cameras which can be set up at the end of a production line by the customer’s production engineers. These are particularly appropriate for single inspection applications. Smart cameras combine image capture, processing and measurement in a single housing and output the results from the analysis over industry standard connections. They can be used for high volume component inspection, 1D and 2D code reading and verification, optical character recognition etc. For solely code reading applications, dedicated high speed code readers also featuring integrated lighting, camera, processing, software and communications are available.

More complex systems

Where multiple inspections are required (for example, where the same object may need to be viewed from different directions), the use of multiple smart cameras may not be the most cost effective. Using multiple cameras controlled by a single PC may offer a better solution and these type of systems can generally be set up and installed with the help of the manufacturers or vision component distributors.

Major integration projects

Challenging end of line inspection applications (or indeed any in line inspection), where the installation set up is complex, or a complete turnkey solution including product reconciliation, rejection and handling is required, are generally handled by specialist vision system integrators. Systems integrators will also provide the detailed documentation needed to support validation and auditing of equipment (essential in the healthcare and pharmaceutical industries), manuals, commissioning, training and post installation support.

Stand-alone EOL systems

Stand-alone EOL systems may be added to the manufacturing environment to provide in-line inspection when it is simply not possible to integrate a vision system into an existing line. Featuring an integral transport and reject mechanism, they will be equipped with the appropriate illumination, camera, control software and reject and failsafe mechanisms for the particular application.

Systems Integration Challenges

Projects involving the integration of cameras into existing production lines, will generally require the combination of vision systems with ancillary equipment such as conveyors, product rejection mechanisms, pick and place and robotics as well as production control systems, or the provision of stand-alone inspection systems separate to the process. This requires expertise in fields as diverse as mechanical design, mechanical handling and transport systems, software, electronics, robotics, control systems and factory networks and CAD. A dedicated user interface will also be required. Some vision integrators will work with a machine builder partner to deliver the solution, while others will undertake the complete project themselves. In addition, it is important to have a good understanding of the specific requirements and standards required in different industries. This could range from environmental considerations such as hygiene and washdown requirements in the food and beverage industries to the need for part traceability and identification in safety critical industries such as aerospace industry, to the security and auditing requirements for 21 CFR Part 11 validation in the healthcare and pharmaceutical industries.

Implementing a project

The process begins by understanding the customer’s unique requirements in order to develop proposals to meet the specific manufacturing needs in terms of performance, reliability and adaptability. Typical factors to be considered could include the linear speed of the system; the number of parts per minute for inspection, the product spacing and orientation and whether they arrive singly or in an array. These latter factors are important for the reject process, which must be configured so that the correct item is rejected and that the system can be certain that the correct item has indeed been rejected. When these and all the other factors are assessed, a detailed project proposal can be prepared. Once this is accepted, there are a number of discrete stages for an integration project which would include proof of process, system build, installation, commissioning, training and post-installation support.

Proof of process

The proof of process phase is crucial. This essentially allows a preliminary vision system to be designed, built and tested on real-life samples under conditions as close to production line conditions as possible. This is where the key decisions about individual vision components and their compatibility to work in a system are evaluated. Timing is always a key issue, so the choice between an area scan or line scan camera may be influenced by the image processing and measurement time required, since image processing using a line scan camera cannot be completed until the object has passed by the sensor. Similarly, the use of a fast read-out area scan camera may give the extra time needed for complex image processing. Then there are the physical considerations of the amount of space available to mount a camera and lens.

Once the proof of process is deemed satisfactory, the system can be scaled up to the production-line environment. Proof of process is a relatively low cost exercise, compared to the overall project. Ultimately the proof of process needs to prove the robustness of an inspection – and be capable of identifying all necessary faults without producing false waste.

Making it happen

The culmination of the project is the installation and commissioning of the vision system on site. Ultimately the systems integrator is responsible for ensuring that the system installed will run consistently for years to come and not just for a short demonstration phase.
Inspection applications

Since machine vision can make simple or complex repetitive measurements accurately, at speed and objectively, it is used in a wide range of end of line inspections in a host of different industries.

Product conformity

This is perhaps the most traditional application where the final product must be inspected as part of the quality control procedure. Typically, this involves checking parameters such as shape, size, volume, geometry, surface finish, colour etc to ensure that the final product meets the required specification. Products that fail the inspection will be rejected, and can possibly be reworked depending on the application. The speed and accuracy offered by the latest vision technology means that in many applications, 100% inspection can be carried out, and the quality of the final product can be controlled to demanding standards. Almost any product manufactured on a production line is a potential candidate for this type of inspection.

Package integrity

Ensuring that packaging is “right” is of paramount importance, ranging from consistency in colours and logo positioning to checking the integrity of packaging enclosures for product purity and shelf-life. Typical applications include:

- Packaging defects e.g. rim damage on tins, straightness of bottle caps, presence of tamper-proof bands, correct application of foil seals
- Packaging contents checking e.g. fill levels, dimensional checking of end-of-line packaging to ensure inclusion of correct contents, positioning of product within packaging

Supermarkets, in particular, can impose stringent requirements on suppliers with regards to packaging appearance.

Consumer safety

Correct package labelling is critical for consumer safety, especially in the food, beverage, pharmaceutical and medical industries. Ingredients must be listed accurately, together with nutritional information. Omitting a warning that a product could contain nuts could be catastrophic for a consumer allergic to nuts. Inserting the wrong patient information in a medicine packet could be equally catastrophic. Other applications include checking the presence or absence of labels, character recognition and print verification. A huge array of products are tagged either by a stick-on label or by information printed directly onto the packaging to ensure inclusion of correct contents, positioning of product within packaging.

In spite of the obvious benefits of this “cradle to grave” tracking, factors such as shiny surfaces, curved surfaces, rough finishes and dirt or oil contamination can lead to unreliability and low read rates. However, recent enhancements in code reading cameras and lighting, with economies of scale driving down pricing, means that direct part marking and identification is now becoming a more cost-effective and robust technology.
Within the Food, Drink and Healthcare industries, retailers are becoming more stringent about their suppliers meeting correct packaging specification criteria. Incorrect labelling can result in poor customer satisfaction, hefty fines or even emergency product withdrawals. A leading manufacturer of pre-packed meals had two areas where they required validation of correct packaging with the correct product. Firstly they needed to identify that the correct pouch has been loaded on the filler and then 100% inspection, prior to it being filled. Then at the ready meals sleeve lines it was necessary to ensure the correct sleeves were being applied to the correct product. The sleeves are provided by a 3rd party supplier so 100% guarantee of the accuracy and quality of the product is not assured.

Acrovision’s solution was the Validator 100 Barcode reader which features a camera-based reader to read and check 100% of the products. The reader can be taught the matchcode either via a Push-button, Hand-held barcode reader or external Touchscreen PC. The latter also provides the ability to show images and statistics in run-time. The Cognex DataMan 302 readers used were chosen for their extremely high read-rates and their communication interfaces, enabling quick and simple integration.

Since the DataMan 302 is a camera-based reader, it offers many benefits over traditional laser-based readers, such as omnidirectional scanning, no moving parts and the ability to store images. For the filling machines, the reader was housed in a stainless steel wash-down enclosure to protect from ingress of water during cleaning.
3D Robot guidance for decorating ginger bread figures

The baking process for ginger bread figures results in slightly uneven surface texture for each figure. Automated robot decoration with sugar icing requires individual orientation and height information from each ginger bread figure to ensure that the robot is in the right position. The robot positions the camera system above the ginger bread in order to measure and decorate the cookie.

Equipping an industrial robot with ‘Intelligent’ sensors such as the EyeScan AT 3D smart camera running Eye Vision software, from Alrad Imaging principal, Eye Vision Technology, offers the ideal solution for this application, enabling the robot to carry out the task largely by itself.

The camera features a complete calibrated 3D sensor and integrated laser line source to allow 3D data to be generated by triangulation methods. The sensor takes an image from which a 3D point cloud is generated for evaluation by EyeVision’s advanced algorithms. For robot guidance, the drag-and-drop programmable software detects the 3D-position and geometrical characteristics of the measured object. In addition, position discrepancy is calculated and the corrected data is forwarded to the robot system, making it easy to follow the surface texture of the ginger bread figures. Communication with the robots is carried out using a powerful built-in library of command sets. Additional command sets can be easily added if required.

Improved production efficiency with smart solutions

The UK manufacturing plant and distribution centre of a global consumer product manufacturer has six production lines handling large volumes of deodorant and shaving foam aerosol cans. Bytronic worked alongside the customer to develop an integrated inspection, scanning and networking system complete with cross-technology communications and real-time insight into production line performance. This solution is an excellent example of Industry 4.0 concepts being implemented today.

Six Cognex In-Sight series cameras, chosen for their high speed, read accuracy and reliability, were installed on each of six production lines. The cameras, mounted in a custom designed stainless steel enclosure, inspected the shaving foam cans to check that valves, actuators and caps were correctly assembled, the gassing bung was undamaged during filling, the heat shrink wrap was applied correctly, and that no cans or caps were missing from multi-packs. Each item arrives for inspection via a conveyor or in a star wheel; any non-compliant product is either blown or pushed from the line for further assessment.

Once passed as compliant, the items move to the labelling section where the label printer was set up to apply the appropriate product information to each item. A new barcode scanning system featuring Cognex DataMan scanners then verify each label to ensure it is present, accurate, and of appropriate quality. Finally, a factory network and PLC based Manufacturing Execution System (MES) system was required to monitor and control the line equipment.

The final inspection system checks the shrink-wrapped product for presence, quantity and packaging defects before passing on for final packaging and shipment. This replaces the customer’s existing mechanical shrink wrap inspector.

Data from each camera are linked via a factory network to the new MES system for verification and also to a Manufacturing Intelligence System that provides real-time performance feedback for each of the production lines. Bytronic developed the MES level interface to automatically set up the printers, cameras and scanners for each new production batch. The MES interface obtains production information directly from the customer’s ERP system.

In addition to eliminating defects across the six production lines, Bytronic’s own MES system allowed automated setup of production line equipment for multiple SKUs. This removed any potential errors from manual setup, or incorrect tolerance for all inspections.
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- Determine root cause
- Save engineering time

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- Standardisation

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Determining the quality of aircraft fan blades

A custom designed PC-based vision system from Fisher Smith LLP, designed for a large UK-based manufacturer of aero engines, assists with turbine blade inspection. The system captures images for human inspection and electronic documentation of any potential faults, replacing the previous inspection method using micro-binoculars and documenting faults on paper. This meets the regulatory requirements for manual inspection, while providing greater traceability and repeatability.

The turbine blades are formed from three sheets of titanium, bonded together to give an internal honeycomb structure. The complex blade shape includes a curved ‘root’ at its base. Inspection of the membrane bond line in the root shows whether the sheets of titanium have been bonded together effectively along its length and whether there is any porosity in the membrane itself.

The vision system captures images of the membrane using a 2048 pixel-wide Basler Runner monochrome GigE line scan camera fitted with a T45/2.0L telecentric lens from Vision and Control for uniform magnification. Illumination is provided by a LED bar lights mounted on either side of the camera enclosure at a 10° angle. The camera traverses the curved length of the blade and images are stored for later analysis. In order to capture a linear, rather than curved, image of the central membrane - and to compensate for any variations in height - the system allows the camera to be moved in the x, y and z planes as well as rotated.

The process is calibrated by scanning a calibration object before and after image acquisition and comparing the calibration images in size and intensity using HALCON image processing software from MVTec Software. The full set of acquired membrane images are stitched together and displayed along with the calibration images. The human inspector can then check for faults. The location, size and type of any potential faults can then be marked on the image and details stored in the system. At the end of the inspection a set of predefined criteria is used to accept or reject the blade although inspectors must also annotate the data with their own comments. If a blade fails the inspection process, a laboratory technologist reviews the images to provide a second opinion and enters his own findings into the system.


IDS IMAGING DEVELOPMENT SYSTEMS GMBH www(ids-imaging.com)

3D pick and place for pharmacies

The Ensenso 3D stereo camera is an integral part of the Maru automatic pick and place system developed for pharmacies by Magazino GmbH. Maru can pack up to 80% more packages per square metre compared with conventional high-bay racking systems. Depending on the height of the system installed, up to 15,000 packages of medication can be stored in a space of just 7 square metres. The packages are sorted by height and stored on discs spaced at irregular distances from one another. The system is compatible with all standard warehouse management systems but needs much less space than a conventional drawer system, and also enables a significant reduction in the amount of time spent putting medication into storage and managing stock.

Maru can transfer packages directly from the box delivered by the wholesaler, and can independently recognise barcodes and expiry dates. The specially designed suction gripper is controlled by means of 3D images.

continued on page 23
Maximise product safety and maintain the latest food labelling regulations with vision inspection solutions from METTLER TOLEDO.

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APPLICATION ARTICLES

captured by the Ensenso camera which is located centrally and relatively close to the bin that is to be emptied. Levels are extracted from the point cloud delivered by the 3D camera, and the best possible position for the gripper is determined.

The individual package is then retrieved and placed on a surface for precise measurement since the height of the package cannot be measured in the storage bin. These measurements allow the ideal storage location for the box to be selected. In addition, a 2D camera records a reference image, for later location of the package in the disc storage area, for example in order to guide the gripper or to perform a fully automated stock-take. The gripper then picks up the package again and holds it against an illumination unit. This detects the package’s barcode and the expiry date stamped onto its surface. Finally, the package is placed on a buffer washer and, from there, is picked up by another suction gripper and taken to its defined storage location.

INDUSTRIAL VISION SYSTEMS
www.industrialvision.co.uk

Automated final assembly vision inspection for jet fighters’ heads-up display

The HUD (Heads-up Display) for the latest generation jet fighters is a complex assembly housing advanced optical components within a precision machined aluminium casting. A leading UK manufacturer designs, manufactures, assembles and calibrates these specialised units. With numerous operations carried out by different highly skilled technicians, a final inspection is a key requirement to verify that all tasks have been completed before the unit is integrated into the aircraft.

Industrial Vision Systems Ltd (IVS) has developed a machine to automate this final inspection process, removing the human error element and freeing up technicians’ time for other tasks.

IVS split the vision inspection tasks into simple surface level inspections such as the presence of various screws, bolts or covers, and more intricate inspections that require precise lighting and camera setups to determine between the pass and fail criteria. In view of the number and variety of simpler inspections that needed to be performed across the six surfaces of the HUD unit, the inspection process was split into two parts. The first required the HUD to be placed into a nest upside down to allow three of the faces to be inspected. A gantry of cameras mounted on a linear drive can move in the Z axis. The nest was mounted on two further linear drives for travel in X and Y axes. This allowed any point on the three inspection faces to be presented to a camera and light module for inspection. After inspection the HUD can be reloaded the right way up for inspection of the remaining surfaces.

The machine control and human machine interface can display the key data in a clear format during inspection, with a large number of diagnostic and configuration tools and pages accessible from the various secure menus. This allows the user to adjust positions, configure new inspection areas and even configure new nests for future variants without needing access to the machine code.

USB3.0 Cameras offer compact solutions for many Machine Vision applications

EVT RAZERCAM is a smart and robust IP65 housed camera system for end of line machine vision inspection applications

Alrad offers a great choice of cameras featuring SONY’s superior IMX174 Pregius GS-CMOS sensor coupled to the fast USB3.0 interface

Alrad also supply frame grabbers, lenses, lighting solutions and imaging software
Infrared tracking of mosquito behaviour

Despite massive improvements in diagnostics and treatment, malaria continues to infect around 200m people each year, killing nearly 600,000. Among the new tools and tactics being deployed to help counter the spread of the disease are optical techniques and quantitative data analysis. A multi-camera infrared tracking system has been developed for the Liverpool School of Tropical Medicine and the University of Warwick by Lambda Photometrics and Norpix in order to monitor mosquito behaviour with a view to designing more effective controls of malaria transmission.

Norpix recording and tracking software records images from two 4 MPixel Baumer Optronics NIR cameras at 100 frames per second for 6 hours. The system was evaluated at Liverpool School of Tropical Medicine before being deployed in Tanzania to understand mosquito behaviour in sub-Saharan dwellings. These field tests were carried out on the edge of a swamp which is a mosquito breeding area, with the equipment powered by generators. The research team has submitted a publication to Nature Scientific Reports with follow up papers in the Royal Society Interface and in the Malaria Journal. There are plans to add 2 further cameras which would allow the research to expand to other parts of Africa where there are insecticide resistant mosquito populations. A third project would require the use of 8 cameras, all capturing moving mosquitoes in sync.

3D product labelling of fresh produce

Loop Technology has developed a robot and 3D imaging system capable of automatically identifying and labelling individual fresh produce items as they pass along a conveyor belt. Developed for a major supermarket chain, the new system provides the versatility to deal with a variety of lower volume products such as pomegranates, or melons allowing a previously labour-intensive process to be automated. The manual process of individual labelling requires the removal from the growers packaging, manual label application and subsequent repackaging.

The system uses a 3D time of flight camera from Creative (Singapore) to produce a 3D point cloud of the conveyor scene, as it moves through the vision enclosure. The camera was chosen for the way it responds to organic surfaces such as the skin of fruit. A conveyor runs the full length of the system allowing for manual loading or integration into a larger production line. The 3D camera scans and produces a 3D image of the product as it is placed on the conveyor. This information is communicated to the robot(s) resulting in automatic identification of the product; feature avoidance information such as stalk position; product orientation and the particular label required. It then picks the correct label and by matching the scanned data to the product details selected, ensures it is placed in the correct position, even though the products may come down the line in a random orientation. Labels are printed as they are required to minimise wastage.

A major benefit of the system is that new products can be added to the system using a simple training routine, via a browser-based setup interface even whilst the machine is in operation. This is ideal for applications where label location varies and where products and batch sizes need to be changed quickly and easily.

Video link: www.youtube.com/watch?v=R6j2d22meils

Pharmaceutical tablet packing and inspection

UK-based Pharma Packaging Systems (PPS) specialise in the design and manufacture of electronic counting systems for tablets and capsules for the pharmaceutical industry. Machine Vision Technology Ltd, an independent vision systems integrator, in conjunction with Multipix Imaging, has developed an integrated inspection system for these machines. This measures tablet length, width, area and completeness as well as verifying the tablet is correct to avoid cross contamination (rogue tablets from another batch). Cross contamination could result in the whole factory being shut down for a period in addition to crippling fines being imposed.

Cameras are placed above the final vibrating trays that feed and separate the product in order to inspect the tablets or capsules just before they are counted and bottled. Each camera images 6 lanes of tablets having a typical feed rate of up to 2500 tablets/minute. Eighty images/second are captured across 24 lanes of continuous tablet flow. Each tablet is typically inspected ten or more times as it passes through the camera’s field of view. The vibrating tablets can touch and move irregularly and therefore can present to the camera in any possible orientation.

The vibratory feeders start and stop several times a minute and feed at varying rates to maximise the throughput into each bottle as the bottles index past. Very sophisticated software was developed in order to track each individual tablet. The system has to find...
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every tablet in each image, predict where it will be in the next image and
match its new position and orientation in the new image to be able to
identify it as the same tablet and so individually track it, building up its
good/bad history. Since the tablet can appear to be either good or bad at
any one instant depending on which face it is presenting to the camera, the
system must record a ‘good’ result from at least one of the images tracked
for each individual tablet for that tablet to be accepted. The vision system
outputs the tablet inspection result as the tablets leave the tray and are
counted into the bottle. If there is no ‘good’ result for an individual tablet
the bottle it enters is rejected.

A leading manufacturer of OTC healthcare products has commissioned a
5 camera inspection system on a cartoning machine with two separate
leaflet feeders to ensure that cartons not only contain a patient
information leaflet but that it is also the correct one. The vision system,
designed and installed by Olmec, also provides the option to ensure that
the correct bottle has also been inserted into the carton. Linked into the
existing reject mechanism, this substantially reduces the chances of costly
product recalls due to packaging errors. Since considerable costs can be
associated with recall notification, product retrieval and liability, the overall
effect on the finances and credibility of a business during and post recall
can be significant.

The vision system was installed on a cartoning machine that cycles up
to 70 times per minute and is used for two different product lines.
Individual area scan cameras read the carton pharma code and check that
the leaflet is in the carton as well as reading the leaflet pharma codes on
two separate leaflet feeders. For one product range the leaflet is inserted
into the carton and the product bottle pushed down on top of it. For the
other product, the leaflet is inserted into a dedicated pouch inside the
carton, next to the bottle.

On receipt of a trigger command, each of the 5 networked cameras
sends data back to the line PLC which is responsible for all of the critical
data flow, error handling and interfacing with the existing cartoning
machine. The cameras send a combination of two leaflet and one pharma-
code verification strings and pass/fail result for the leaflet in carton checks.
The PLC compares the data being read at each inspection point to stored
data and confirms it is as expected. It also manages all of the results and
updates the shift register for the existing reject gate.
Omron has helped Kraus Maschinenbau, a designer and manufacturer of friction feeders and specialised systems for the printing and packaging industry, to add serialisation capabilities to its printed code inspection system. The inspection tool is part of a friction feeder on an e-cigarette packaging line.

The optical inspection system, which was required to verify GS1 barcodes, includes an Omron FH Vision System, matched with an Omron HMI for use in high-speed applications. The system maintains the required levels of precision and accuracy and provides 100% quality inspection, along with code and content verification.

The addition of this serialisation capability allows for the printing and verification of a unique code onto each package without compromising either production speed or print quality. This required interaction between the database, the PLC and the vision system. Data relating to the codes was quickly shared between the database and the inspection system, via a PLC. The camera takes a picture of the printed code on the package and compares it with what should be on the pack. A signal is then sent back to the PLC to confirm whether the code is correct or not.

It is easily programmed and quickly set up, saving time and maintaining production uptime. In addition to delivering reliable and repeatable results, it is easy to use, modular and scalable meaning that it can be adapted to meet the needs of other customers with similar requirements.

The trend towards individualised information on packaging for tracking and tracing of individual products throughout the supply chain is increasing, following the introduction of recent regulations such as the Falsified Medicine Directive 2011/62/EU.

Using a UR5 collaborative robot from Universal Robots to tend four CNC machines milling dental crowns, Glidewell Laboratories in California was able to optimise a substantial part of the production cycle. It usually takes five days from the time a dentist sends an impression of a patient’s teeth to the laboratory, until the finished crown is returned.

The 10-minute milling cycle, made it unrealistic to have an operator stationed at the machine. Instead the crowns were manually inserted in batches of 15 every two hours. A UR5 robot was easily programmed to pick a crown from the dispensers, place it in the milling lathe, retrieve it, and place it on a conveyor after the 10 minute milling cycle, thus optimising the process.

By communicating with a vision camera, the robot was programmed to move on to a different shade if dispensers run out, ensuring fluent production. Overall, this dynamic, single part flow has cut the production-cycle time from 28 to 17 hours, saving two milling operators per shift. The robot has freed up employees to focus on complex tasks to improve the overall product quality.
Contact lens packaging inspection

Vision systems integrator, Siga Vision, has worked closely with Stemmer Imaging to develop an integrated inspection system for a packaging production line for a contact lens manufacturer. The system reads 1D, 2D and human readable codes as well as checking that the lens packets are actually in the box. This application was particularly challenging due to the number of part variances, and the incredibly tight physical constraints for the cameras and illumination.

For this application (and many other complex vision projects), Siga Vision makes use of Sherlock, an advanced machine vision software interface from Teledyne DALSA. This features a comprehensive suite of proven tools and capabilities that includes advanced pattern finding tools for object alignment and tools to read and verify 1D and 2D codes, as well as printed, moulded or stamped text (OCR). The software can readily accommodate the mixture of cameras used in this application. It supports synchronous and asynchronous triggering and can be used with multicore processors, offering the flexibility needed for different inspection speeds and machine cycle times. It is possible to set the software to allow intensive processing inspections to use one or more cores with less intensive inspections using one core.

For this application, 5 asynchronous cameras are used for the individual inspection tasks. Processing is carried out with multiple Sherlocks running on a single high speed vision processor, developed by Siga Vision. A custom-designed GUI allows the simultaneous display of the different code reading activities on the packaging line, together with the box contents inspection, complete with pass/fail status for each inspection.

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Some useful technical tips from UKIVA members

CCTV Lens Terminology (Alrad Imaging)
www.alrad.co.uk/datasheets/Imaging/CCTV%20LENS%20TERMINOLOGY.pdf

Using multiple Areas of Interest (AOI) (IDS Imaging Development Systems GmbH)

The benefits of a CMOS Sensor and when it makes sense to use a camera with one (Multipix Imaging)
multipix.com/whitepaper/cmos-sensor-technology

How line scan cameras work (Stemmer Imaging)
www.stemmer-imaging.co.uk/en/videos/how-line-scan-cameras-work

EVENTS & TRAINING

EVENTS

The PPMA Show: 29 September – 1 October, NEC, Birmingham
Many UKIVA members will be exhibiting at this complete production line event. RG Luma Automation will deliver a seminar entitled ‘Vision and Robotics - unleashing the potential’.
www.ppma-show.co.uk

Vision UK@Photonex: 14 – 15 October, Ricoh Arena, Coventry
UKIVA will present a program of ten free seminars. Keynote Speech: ‘Vision for Autonomous Driving: Challenges and Opportunities’, Dr. Will Maddern, Oxford University.
www.photonex.org

Stemmer Imaging Machine Vision Technical Forum: 3 March 2016, Silverstone Wing Exhibition and Conference Centre, Towcester, Northants
Multi-track technical sessions, hands-on workshops and machine vision exhibition.
www.stemmer-imaging.co.uk/en/events/machine-vision-technology-forum-uk-2016/

TRAINING

Training courses offered by UKIVA members:

Matrox Imaging
‘Matrox Design Assistant 4’, October 14 – 6, 2015
‘Matrox Imaging Library’ (MIL) Processing, October 21 – 23, 2015
All courses in Montreal, Canada
www.matrox.com/imaging/en/support/training

Stemmer Imaging
(in association with the European Imaging Academy)
‘Imaging using the LMI Gocator’, November 18, 2015
All courses at Tongham, UK
www.stemmer-imaging.co.uk/en/events/training

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