

# MACHINE VISION FOR FOOD & BEVERAGE

VISION · AUTOMATION · CONTROL .....  
**INSPECT**

INSPECT's Branch Newsletter for VISION 2011 | October 2011

Dear Readers,

Records are there to be broken. This is something of which the Stuttgart trade fair is well aware – and with regard to the development of this year's VISION exhibition it is on the right path. At least the figures prove that the organizer is right: After the 300 mark was exceeded last year with 323 exhibitors, 340 exhibitors are expected this year. However, the international specialist exhibition not only showcases over 300 exhibitors on an area of 20.000 m<sup>2</sup> but also shows current trends and developments.

For example, the industry agrees that 3D image processing is one of the key topics of VISION 2011. According to surveys within the industry by the VDMA and the EMVA, „in image processing, the third dimension has turned out to be an innovation driver.“ As both innovations and the companies which exhibit them need space, if there is a further increase in the success of the exhibition, it will be relocating to hall 1 next year. However, this year the exhibition will be held as usual in halls 4 and 6 from November 8 to November 10. In spite of this, there will be a new feature this year: the Medical Discovery Tour. Because a survey revealed that medical technology is highly popular with both visitors and exhibitors, this year there will be a special show on this topic. As you can see, the fields of application for image processing are very varied. You can get a small preview of just how varied they are in this newsletter. Here we present applications in which image processing is the solution for many problems. And now, we hope you have fun on your discovery tour through the world of image processing.

Your INSPECT Team

## Packaging Inspector

### FireWire-Cameras for Food Packaging Control

For the food industry, nothing is more important than quality. Therefore Superfos, Europe's largest manufacturer of injection-molded plastic packaging, trusts in an advanced machine vision system using 53 digital cameras.



Based in Denmark, Superfos belongs to Europe's largest manufacturers of injection-molded plastic packaging for the food market. The quality of the cups and boxes produced in their Randers headquarters is essential to ensure the perfect preservation of butter and other dairy products they will contain. Therefore, Superfos partnered with TriVision, a Danish machine vision solution provider, to implement an advanced machine vision system for 100 % inspection.

TriVision's Packaging Inspector is a state-of-the art optical inspection system specially designed for 100 % inspection in the packaging industry. It can detect defects such as overmolding in injection-molded plastic containers and check printed labels. TriVision Packaging Inspector is a modular system that can be adapted to the products to be inspected and the tasks to be performed.

#### Inspection Top and Down

At Superfos' Randers factory alone, a total of 53 digital cameras are in operation as part of the TriVision Packaging Inspector systems. All are digital FireWire cameras from Allied Vision Technologies. For the inspection of square butter boxes and round cream cups, TriVision selected Stingray F-046B, Stingray F-201B and Marlin F-145C cameras to control material defects: Two cameras are positioned below a conveyor belt and inspect the inside surface of the box as it passes above them. Simultaneously, a third camera inspects the printed artwork from above to check the correct position of the label, barcode, etc. The lids used to seal the containers are controlled on separate lines using Stingray F-201C and Guppy F-146B cameras.

[www.alliedvisiontec.com](http://www.alliedvisiontec.com)

# Inspection of Printed Caps

## Machine Vision for Inspecting Bottle Cap Printing

Consumers judge food products by their packaging, and reject items that have poor quality packaging or appear damaged. For example, printing on bottle caps must be clear, free of gross defects, and have saturated colors for the product to be accepted by customers.

Injection molded plastic bottle caps are printed by using an offset transfer process. Teledyne Dalsa's cameras, vision systems, and software then inspects these caps at a rate of 2,000 per minute. The printed caps are inspected for print qual-

ity, print position on the cap, color density, and for gross defects. First the center of the cap is found and then individual components of the cap printing, such as a logo or text, are compared with template images taken from known good parts.



### Quick Reaction Required

A mismatch of the template and input images indicates a printing failure. The colors in the printing are also measured or verify the ink density and correct color. The loss of color contrast might indicate a problem with the offset transfer inking system. An operator can be alerted to correct the printing process. Acceptable quality caps are used for bottling the product and unacceptable caps are recycled. This application is challenging because of the speed, the fairly large but acceptable variability in the printing, and the need to quickly modify the inspection process when the printing changes. Teledyne Dalsa's Vision Appliance running Sherlock software meets the speed requirements. The Sherlock software performs the inspection and, as it has a graphical user interface, is easy to set up. Changes in product printing require an initial training, but then are available as a recipe for when the product is printed.

[www.teledynedalsa.com](http://www.teledynedalsa.com)



Hall 4, Booth D51

# Boxes in Rank and File

## Inspection System for Juice Boxes

For fast packaging, juice boxes have to be in the right position on the conveyor belt. An inspection system with a smart camera counts and verifies the orientation of the boxes to avoid down time of the case packer.

A beverage manufacturer was experiencing issues with case packing orienta-

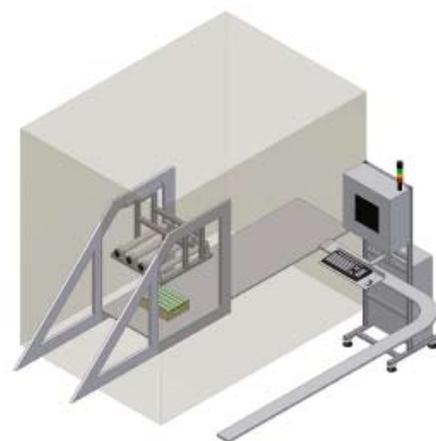
tion and count errors, which were resulting in customer complaints and machine downtime due to jams. Acquire Automation, an automation solutions and services provider and Matrox Imaging authorized Integrator, developed a complete inspection system integrated to an existing case packer to solve these issues.

The intuitive Human Machine Interface (HMI) and inspection system uses a Matrox Iris GT smart camera for imaging and tool algorithm execution. The solution was installed within the case packer to count and verify the orientation of 40- and 50-count cases of shrink-wrapped and non-shrink wrapped juice boxes. The system has been able to detect the following errors: box flap/tab up, crushed

boxes/extra boxes/rotated boxes (result in crushing), missing boxes, splices, and damaged and floating trays.

A complete packaging inspection system is integrated within an existing case packer to accurately count and verify the orientation of juice boxes. The system automatically saves failed inspection images for subsequent evaluation. The HMI provides log-in access control to prevent unauthorized personnel from altering the system, and includes detailed product counters for data collection and trend estimation. The vision system not only works to identify product issues, but it also helps to quickly identify a process issue and, often, the root cause of the failure.

[www.matrox.com](http://www.matrox.com)

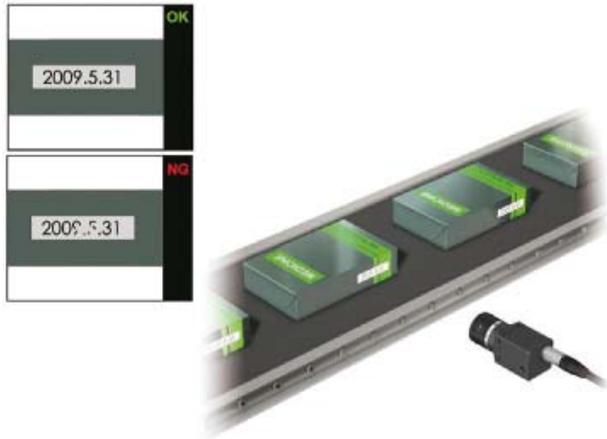


Hall 4, Booth C18

# Focus on Multilayer Products

## Image Processing for Fast Manufacturing Processes

Because of its huge speed, the manufacturing process of diapers has to be monitored by image processing – a human eye can't solve the problem. For this task, High Speed Matrix or Line Scan cameras are available.



Diapers are a multilayer product. Moreover, the manufacturing process is very fast. Therefore it is important to guarantee the 100% quality even at the highest speed. No human eye can control 1,000 units per minute. But Keyence Machine Vision can realize that.

### Process Parameters Read-just Immediately

Because Keyence image processing systems inspect

specific characteristics of every diaper and indicate process parameter values to show changes of process quality.

In this way a machine operator is able to readjust process parameters immediately. The ratio of defective products can be reduced, which also helps to protect the environment. Less waste means less waste of resources. Thus, machine vision not only ensures better diapers, but also helps the environment. Keyence offers different products: One the one hand High Speed Vision systems with a High Speed Matrix camera for small targets and on the other hand the new Line Scan camera with 2K, 4K und 8K line resolution. Thus, the cameras can also generate large images even if only little space is available.

Processes in the range below 15 ms per piece (2,500 pcs/min) are already possible to inspect – and the applications are getting faster.

[www.keyence.de](http://www.keyence.de)

**VISION**  
2011

Hall 4, Booth A75

# This Is Where Trends Are Set

## VISION 2011 from November 8 to 10 in Stuttgart

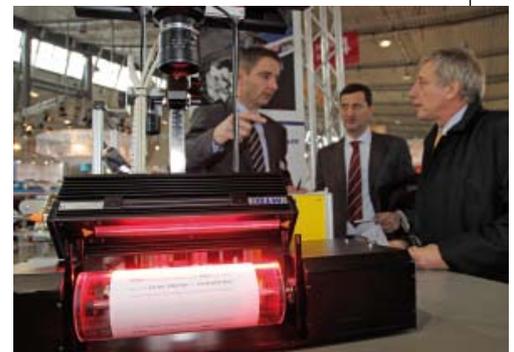
If the Who is Who of image processing gets together, it must be the VISION in Stuttgart.

You can look forward to new products, solutions and systems – and the trends which will be set at this year's Vision.

At last year's VISION, Olaf Munkelt, the chairman of the committee of the VDMA association for industrial image processing and manager of MVTec, defined 3D as the trend which will dominate image processing. The fact that 3D is one of the central topics of this year's VISION shows how fast developments are progressing. In the period from 2008 to 2009, industry surveys by the VDMA in the field of Machine Vision showed a dramatic increase of 10% to 15% in the proportion of 3D measurement applications. Relative to European image processing this was as high as 16%. Because of this, among other things, the more than 300 exhibitors at the VISION 2011 are presenting new 3D im-

age processing products, systems and application solutions. These include new equipment for recording 3D images as well as software tools for the evaluation and display of 3D data.

However, the third dimension is not the only trend which is occupying the image processing industry. Medical technology is just as popular. The Medical Discovery Tour is being initiated for the first time this year as a result of a survey of visitors and exhibitors, which named medical technology as a subject of increasing importance. With the exhibitors, medical technology takes fifth place with regard to relevance to visitors. The special show is a kind of medical technology obstacle



course. This means that products, applications or services concerned with the subject of medical technology are provided with a special logo in order to give visitors a better orientation.

In spite of the new program, visitors will still find familiar features such as the Integration Area or the Application Park. In 2011 the Application Park is starting its fourth round. Here, real-life applications are shown, e.g. how Playmobile figures are inspected, labeled and packaged. The Vision Academy and the special show of international image processing standards will be held once again.

[www.vision-messe.de](http://www.vision-messe.de)

# VISION 2011 – Highlights

## Medical Discovery Tour

Image processing is making its way into medical technology, and the Medical Discovery Tour, which is being presented for the first time this year, eases the path to the relevant exhibitors. The companies participating in this special exhibit on the subject of medical technology are indicated with a Medical Discovery Tour logo in both the exhibition catalog and in the exhibition itself and are therefore easy to find.

► Halls 4 + 6

## VISION Academy

You never stop learning. There is always something new. Because of this, as in previous years, free seminars will be held on all three days of the exhibition. These will present application knowledge and technological know-how for both beginners and experts. Four seminars will be dedicated to subjects ranging from maintenance to mechanical engineering.

► Entry East/Atrium, opposite to the VIP Lounge

## Industrial VISION Days

If you want to know which image processing topics are at the present focus of attention, you should not miss the lecture forum of the VDMA on industrial image processing. In specialized lectures, experts will describe the present state-of-the-art, discuss new camera interfaces and show new solution approaches.

► Hall 6, Booth A81

## Integration Area

If you look, you will find. The Integration Area is intended for everyone who is looking for a very special solution. Here you can see at first hand how image processing is used in the car industry, mechanical engineering or in the food industry. However, you do not need to search for the way to the Integration Area – just follow the yellow carpet in Hall 4 and discover how varied image processing solutions can be.

Sponsored by INSPECT

► Hall 4, Booth A74-E31

## Application Park

Return to childhood – you can do this in the Application Park, because here, Playmobile figures play a leading role. Here it is explained how image processing, handling technology and automation intermesh in the production of the figures. In 11 modular inspection and processing cells, color detection, inspection for scratches and geometrical measurements are carried out. And as usual, the very best comes at the end: you can take the Playmobile figures home with you as souvenirs.

► Hall 4, Booth A75

## Special Presentation of International Image Processing Standards

Whether CameraLink, CoaXPress, CameraLink HS or GigE-Vision – each interface has its own strengths. In this special presentation, you can find out what these are, and which product provides the optimum solution for your application.

► Hall 6, Booth B73

## Podium Discussion

As in previous years, INSPECT invites you to attend and investigate the question: What is Embedded Vision? Many questions about new markets, potentials and opportunities for image processing will be answered in the course of this round of discussions.

► Hall 6, Booth A81 (November 9, 14:00)

Venue:  
Messe Stuttgart



Entry for navigation system:  
Flughafenrandstraße/Flughafen in 70629 Stuttgart

Dates:  
November 8-10, 2011

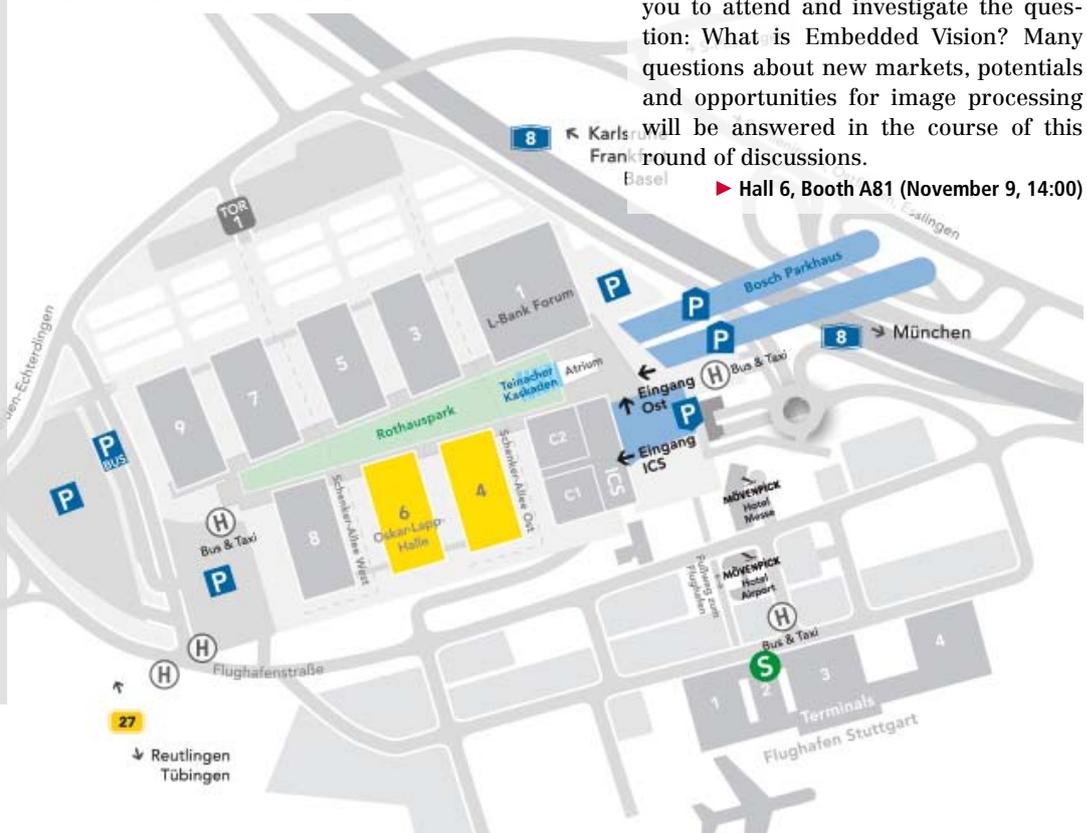
Opening times:  
daily from 9:00 to 17:00

Ticket price:  
Day ticket (incl. VVS) € 25.00  
Reduced day ticket (incl. VVS) € 15.00  
Full exhibition ticket € 40.00

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