MACHINE VISION FOR
MECHANICAL &
PLANT ENGINEERING

INSPECT

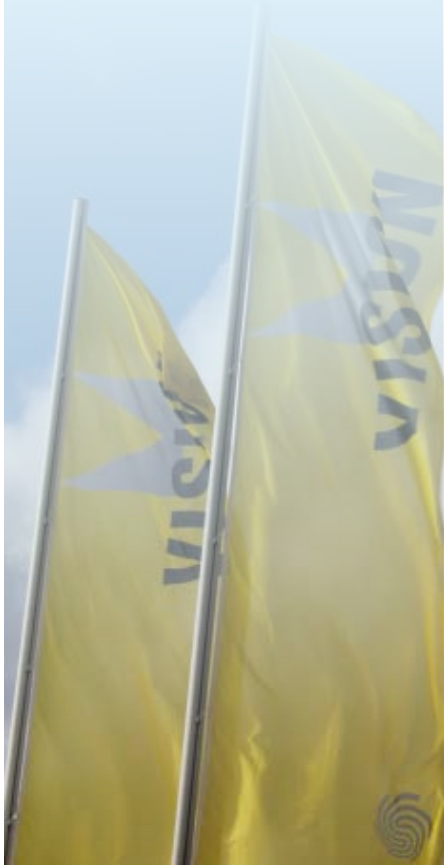
INSPECT's Branch Newsletter for VISION 2010 | September 2010

Dear Readers,

There is one date in the year a specialist in the industrial vision market can hardly miss: The VISION. From November 9 till November 11, this fair again takes place in Stuttgart – and again, the organizer expects professionals from all over the world to give you comprehensive information on the trade fair for machine vision and the many innovations in the industry. In this newsletter, we have compiled what you will be able to see there. We also supply you with some information on the solutions offered by exhibiting companies, especially the ones already in use all over the world. Maybe you are looking for a solution to a similar problem? Just check their booths – we have provided the relevant information above and below the articles.

Enjoy reading our newsletter,

The INSPECT team



Integrated Intelligence

Machine Vision Solutions for Solar Cell Production

In solar wafer manufacturing, fully automated production facilities are increasingly used to facilitate the handling of the fragile components and to increase productivity. For that purpose, image processing expert Vision Components supplies high-performance hardware and software modules that can be used to design reliable and cost-efficient solutions.

Real-time Laser Scribing

One application example is the SolarEye system from EVT GmbH which consists of a VC4002L line scan camera and application-specific software. The camera controls laser scribing of thin-film solar cells, i.e. the separation of conducting paths. The cells' substrate material is coated with a thin silicon film which is then structured by a laser. The conducting paths run in parallel and as close as possible without touching. The monitoring system controls the laser in real-time with a precision of 1 µm. The laser line position is scanned at a 5 ms rate, providing 200 measurements per second. All data can be read out directly from the camera via an Ethernet or RS232 interface. The camera can transmit the analyzed data and scan results to an optional display terminal and a computer in order to immediately display any error sources. As a result, any necessary corrections are automatically initiated in 5 ms intervals.

High-performance Line Scan Camera

The VC4002L features a 400 MHz processor and has a computing power of 3,200 MIPS. The unit supports three integration modes: autonomous operation or external triggering with a constant exposure time or with a triggered exposure. The maximum line frequency is 11 kHz. The sensor scans 2,048 pixels. The camera features 32 MB DRAM and 4 MB Flash EPROM for program and data storage, four digital PLC inputs and outputs each, an image trigger input, and a flash trigger output. Housing dimension of 90 x 50 x 35 mm allow for an easy integration into machines and plants.

VISION 2010
Hall 4 Booth D31

www.vision-components.com

Tough Enough for the Job

Cameras with GigE or USB for Hard Environments

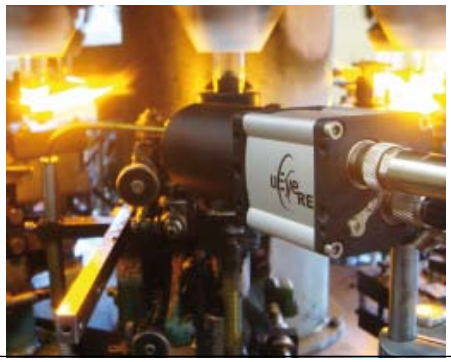
VISION 2010
Hall 4 Booth C53

In the area of industrial production processes, it is commonplace for systems and components to be confronted with seriously tough conditions.

High temperatures, dust and lubricants are particularly hard on sensitive electronic equipment. This especially goes for modern cameras that are used in systems and robots. With the uEye RE series, however, IDS offers a family of cameras with either a GigE or USB interface which are tough enough to withstand such conditions and are ideal for use in industrial production processes. These special camera models are also the solution of choice for Kaiser Computersystems (Breitscheid) and Isotronic Image Processing Systems GmbH (Bad Koenigshofen), who offer optoelectronic measurement and testing equipment for many industrial areas under the product name Isotronika. Key areas of application include surface inspection, integrity checking and optical measurement.

Close Exposure

IDS cameras are also used in quality assurance systems, for example in the pharmaceutical industry. In such cases conditions are not always perfect; for instance when medication containers made from glass tubing need to be checked directly in the machine during the industrial molding process – without interrupting the production run. The uEye RE models are perfectly equipped to withstand such close exposure to harsh production environments. They meet the standards of protection classes IP65 and IP67 and are protected against penetration by dust particles or splash water. Despite their robust design, the cameras are highly compact; the smallest version, without an objective lens, measures a mere 41 x 41 mm.



Thanks to comprehensive software support, it is possible to integrate the camera into an OEM-specific application without the need for costly engineering. The driver kit is identical in all IDS camera models – from the basic VGA model equipped with a USB connector right through to the high-resolution GigE camera. This software philosophy accommodates the wishes of many machine and system builders who usually use software they have developed themselves for their systems. It is even possible to easily change from one camera model to another.

www.ids-imaging.de

Direct and Intelligent Delivery

Cameras Improve the Palettization Management of Food Boxes

VISION 2010
Hall 4 Booth D25

The phrase 'Time to Market' becomes much more important when talking about organic products. Customers accept only fresh vegetables or fruits.

A reliable and fast palettization management is the key for success. Therefore specialized vision systems have been invented to insure a direct and intelligent delivery. In this example, SBII located in western France, as a major company involved in traceability for over 20 years, has developed a turnkey type solution for food processing. The 'VisiFlex' automatic inspection solution for palettes prior to shipment, based on two IP67 cameras from Baumer, is an optimization of the current solutions in the market. The aim was to minimize the equipment in order to make installation and maintenance simpler while maximizing performances. The advantage Baumer was able to deliver with its IP67 cameras is the all-in-one solution for environments which are demanding special camera enclosures.

Water and Dust Proof

The cameras are coming already in a water proof and dust proof housing. The flexible design of the cameras with their different tube lengths can easily match the selected lens for the specific application. Therefore, without additionally concerns about the hardware, SBII was able to develop a new system design which convinces with very short reading and processing times, high reliability of shipment inspections as well as 100% detection of missing or unreadable labels. At the same time the productivity time was improved by factor 10. Additionally to code recognition an optimal traceability was achieved by taking photographs as well as the accurate location of the contents of each palette when it is being shipped. Overall, by fewer disputes the new system helps SBII to improve their customer's relationship and provide a perfect solution for important 'Time to Market' products.

www.baumer.com

Compact Housing

Improved Quality Control with USB 2.0 Camera

Until recently, function and circuit tests for printed circuit boards had two essential disadvantages: the check adapter had to be reprogrammed for every printed circuit board separately, and, in spite of careful programming, there could be contact problems.

VISION 2010
Hall 4 Booth B31

Now ic-automation GmbH is breaking new ground with its CtC Paneltester which optically detects contacts with a camera. With the images taken by the camera the measuring adapter of the Paneltester can be placed exactly on the contacts. Consequently, possible contact problems as they exist with programmable ICTs are omitted. Furthermore, the camera checks the presence of the components before the test and afterwards it checks the good/bad markings which have been printed on the components.

Very Flexible

ic-automation chose a USB-based solution to be flexible during the integration of the camera but also to save using a frame grabber. The mvBlueFox USB 2.0 camera from Matrix Vision was chosen. The company was convinced by the camera's very compact housing and the many different camera models offered by Matrix Vision within the same housing. The latter was an important criterion during the decision because ic-automation uses up to five cameras with different resolutions in one machine and as a result they need a standard housing.

Conclusion

The use of industrial image processing offers extensive room for improvement in many industrial areas. The example of ic-automation's CtC Paneltester shows that with the help of optical systems existing test systems can be extended and improved, opening up new possibilities. Furthermore the image processing industry is increasingly using standard interfaces like USB 2.0 and Gigabit Ethernet which additionally creates incentives due to the prevalence of these interfaces on the customer's side, easy handling and fast integration in existing projects.

www.matrix-vision.com

The Images of the Industry

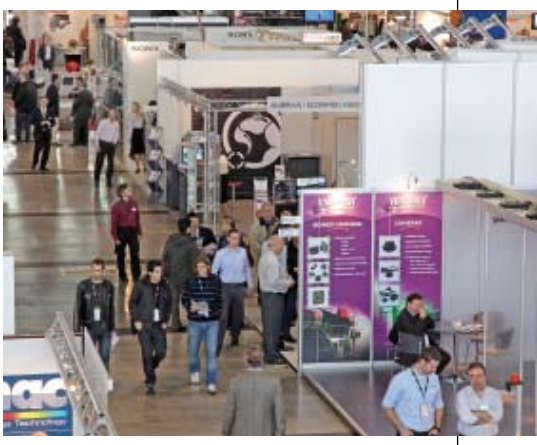
VISION 2010 from November 9 till November 11 in Stuttgart

Waiting is over – at last, all friends of machine vision again can enjoy developments and innovations for three days.

This year, the fair of all fairs for those who work in the machine vision market will take place in Stuttgart again: VISION 2010 will open early in November at Stuttgart Exhibition Centre. The entire international who's who in the machine vision industry will present their innovations at VISION 2010: world market leaders and small, highly specialized companies, component manufacturers and system integrators. As in the past, special attention will be paid to systems, solutions and applications in addition to components. What role is played by machine vision in recycling? How are products inspected and classified at high speed and in changing light conditions? What state-of-the-art system solutions and machine vision applications are available in different industries? Visitors will obtain answers to all these questions during the exhibition.

General Program

Visitors not only can come to see the exhibitors' booths for information on the latest developments, an attractive general program has been organized on top by Messe Stuttgart. The Application Park, where the complex interplay of image processing, handling technology and automation will be shown, takes place for the third time. The VISION Academy offers free entry-level seminars for newcomers in the imaging industry, and at the special exhibition "International Machine Vision Standards" visitors will learn how standards will make the application of machine vision easier.



www.vision-messe.de

VISION 2010 – Highlights

VISION Academy

For newcomers of the machine vision industry: On all three trade fair days, the VISION Academy offers free seminars for beginners. Therein, system and solution providers present examples out of the industry and aim at making machine vision solutions more transparent.

▶ **East Entrance (opposite the VIP Lounge)**

VISION Integration Area

Sponsored by INSPECT

For those who look for customized solutions: Applications for different branches – from automotive industry to mechanical engineering, from food industry up to medical technology – are presented at the VISION Integration Area. Just follow the yellow carpet in hall 4 and discover the manifold solutions for your industry.

▶ **Hall 4 Booth A74–E50**

Expert Panel

For visitors who want to know how machine vision protects our environment, an expert panel on "Green VISION – Driving Factor for a Green Future" takes place on the second trade fair day. Five experts report in 10-minute impulse lectures how machine vision solutions help to preserve resources and to increase energy efficiency.

Sponsored by INSPECT

▶ **Hall 6 Booth A81**

Application Park

For those who playfully learn: On an area of 200 m², playmobil figures will be tested thoroughly. In 10 modular testing and machining centers, the figures pass color recognition, inspection on scratches and geometrical measurement. Finally, a housing-free robot hands the packed playmobil figure over to the visitor – to take home as a souvenir.

▶ **Hall 4 Booth A75**

Industrial VISION Days

For those with curious minds, the VDMA industrial machine vision again organizes the Industrial VISION Days. On all three days high-quality information is offered. In special lectures, state-of-the-art technology is described, standardization efforts are picked out, but also innovative and practical solutions will be shown.

▶ **Hall 6 Booth A81**

Robocup

Machine vision in an entertaining way: This is possible with the autonomous football robots from the Dutch University Eindhoven. At the VISION, they will pit against each other in a game of „two against two" or during penalty kicks.

▶ **Hall 4 Booth E32**

Special Show International Machine Vision Standards

Learn how standards make it easier to use machine vision, ask experts, talk to developers and see standards being applied in palpable applications.

▶ **Hall 6 Booth B73**

Venue:
Messe Stuttgart

Date:
09.11.–11.11.2010

Opening times:
daily from 9.00 to 17.00

Admission:
one-day ticket (including VVS) € 25, reduced admission ticket € 15, students, pensioners, military and civil service, severely disabled (with ID) (including VVS), season ticket € 40

Internet:
www.vision-messe.de

Organizer:
Stuttgart Exhibition GmbH
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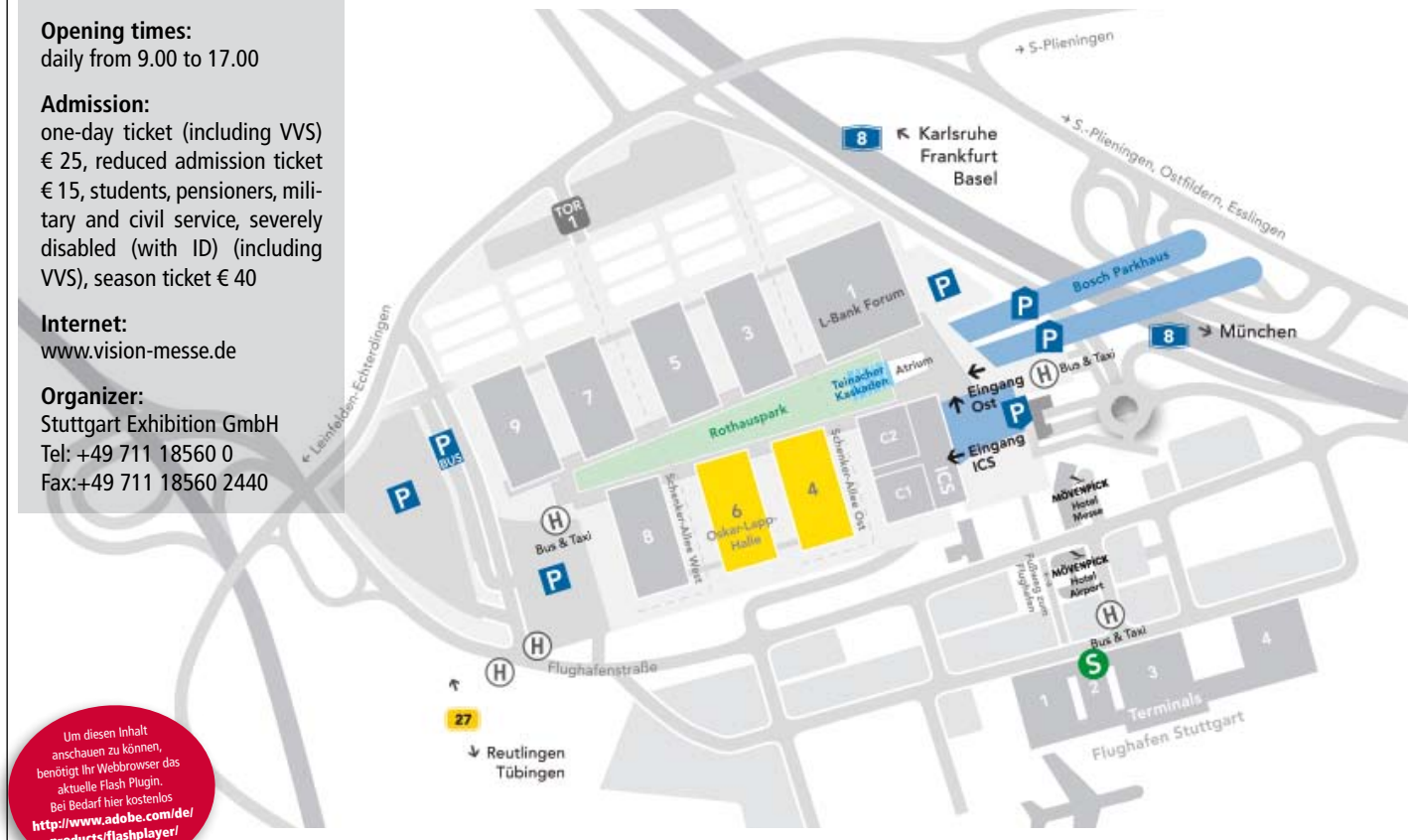
NEW STUTTGART TRADE FAIR CENTRE



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