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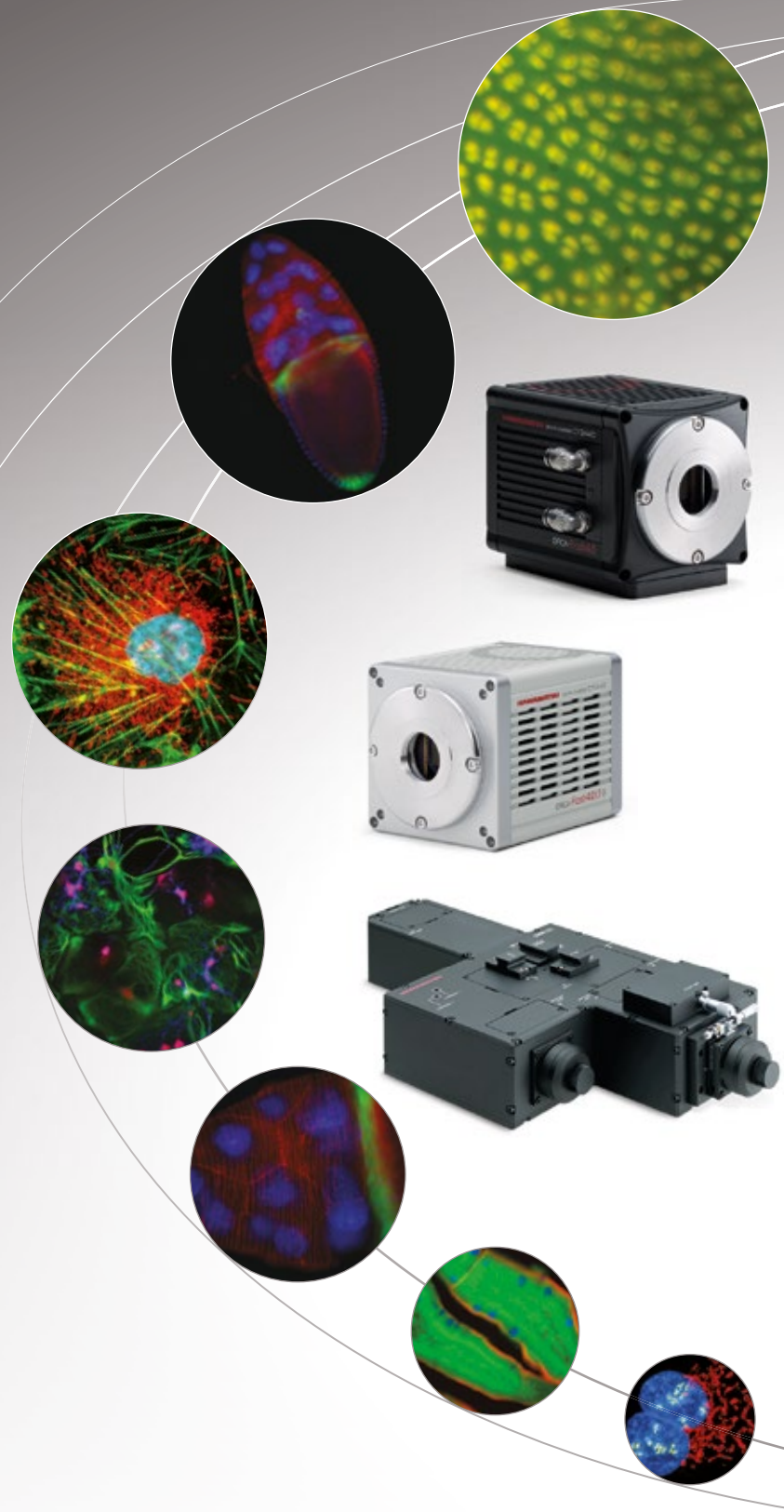

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Europe Second?

The year 2017 began with an ideal event for late-night talkers and comedians. US President Donald Trump, who was inaugurated on January 20, 2017, triggered a wave of not-so-serious videos, originating in the Netherlands, for second place in the world. We all laughed a lot.

Meanwhile, even those who are able to keep world events at a distance have lost the ability to laugh it all off. „America first!“ has quickly become a disturbing indication for the growth of nationalism and protectionism worldwide. European states, too, are „doing their thing“ as if there were no common European idea of peace, freedom and prosperity, no idea of a democracy based European Community and no common currency. They are acting as if there is no tomorrow, either that the European Union belongs to them or that it is already dead.

A sceptical observer might think that Europe is not even bidding for second place but for any place at all, somewhere near the back. And some, who are doing „their own thing“, are clearly speculating on a place far ahead in the competition of economies, although it is unclear whether these expectations are based on facts or rather on elevated testosterone levels of some state leaders.

All that being said, unquestionable facts prove that the Machine Vision Industry, especially in Europe, seems unaffected and is recording success on success. Figures are robust, trends are pointing upwards and forecasts are optimistic. The future being predicted is also based on conditions that should not significantly deteriorate.

At the moment, interested players may find the playing field a bit puzzling, the strategies of the teams confusing and the course of the game unpredictable. It is exactly at this point where we position ourselves with inspect. We certainly cannot interpret world events conclusively, but we can gather, process and present facts that give you, dear readers, something to help you better interpret the current situation and further development, at least for your industry.

This is what we are doing with this issue of the inspect Buyers Guide, providing you with an overview of the players on the field and tips on their performance. In addition, with nine issues of our inspect over the course of 2018, we will not only present facts and developments for the German-speaking market, but our three international editions will also take the international market into consideration in greater detail.

Use this 10th edition of the inspect Buyers Guide to find the right supplier or partner for your specific project. Be it a company from your country, from Europe or from another part of the world.

Bernhard Schroth

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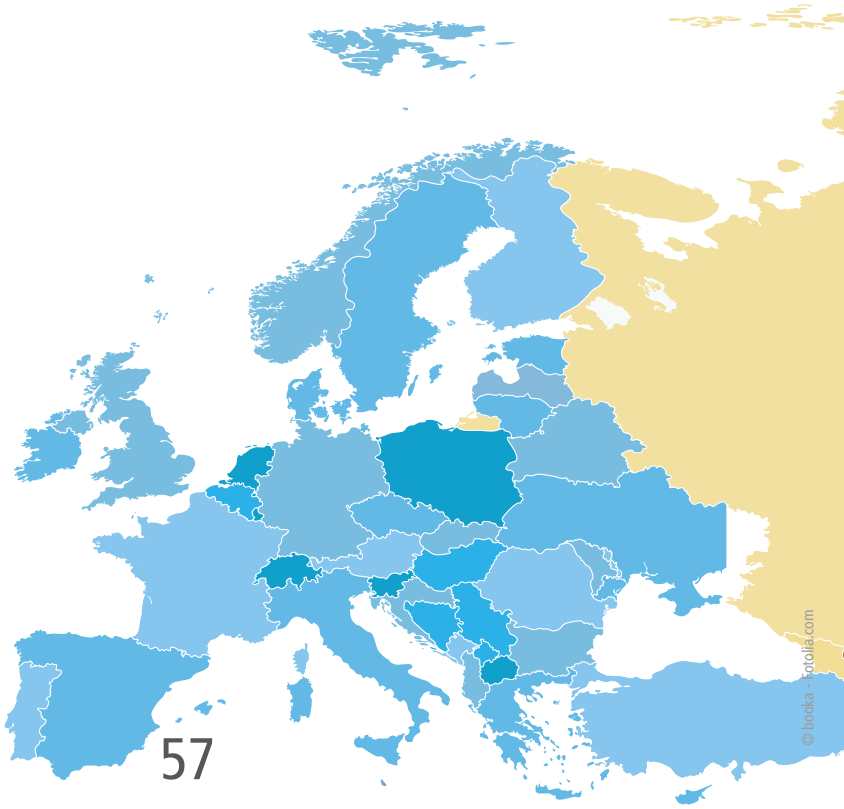

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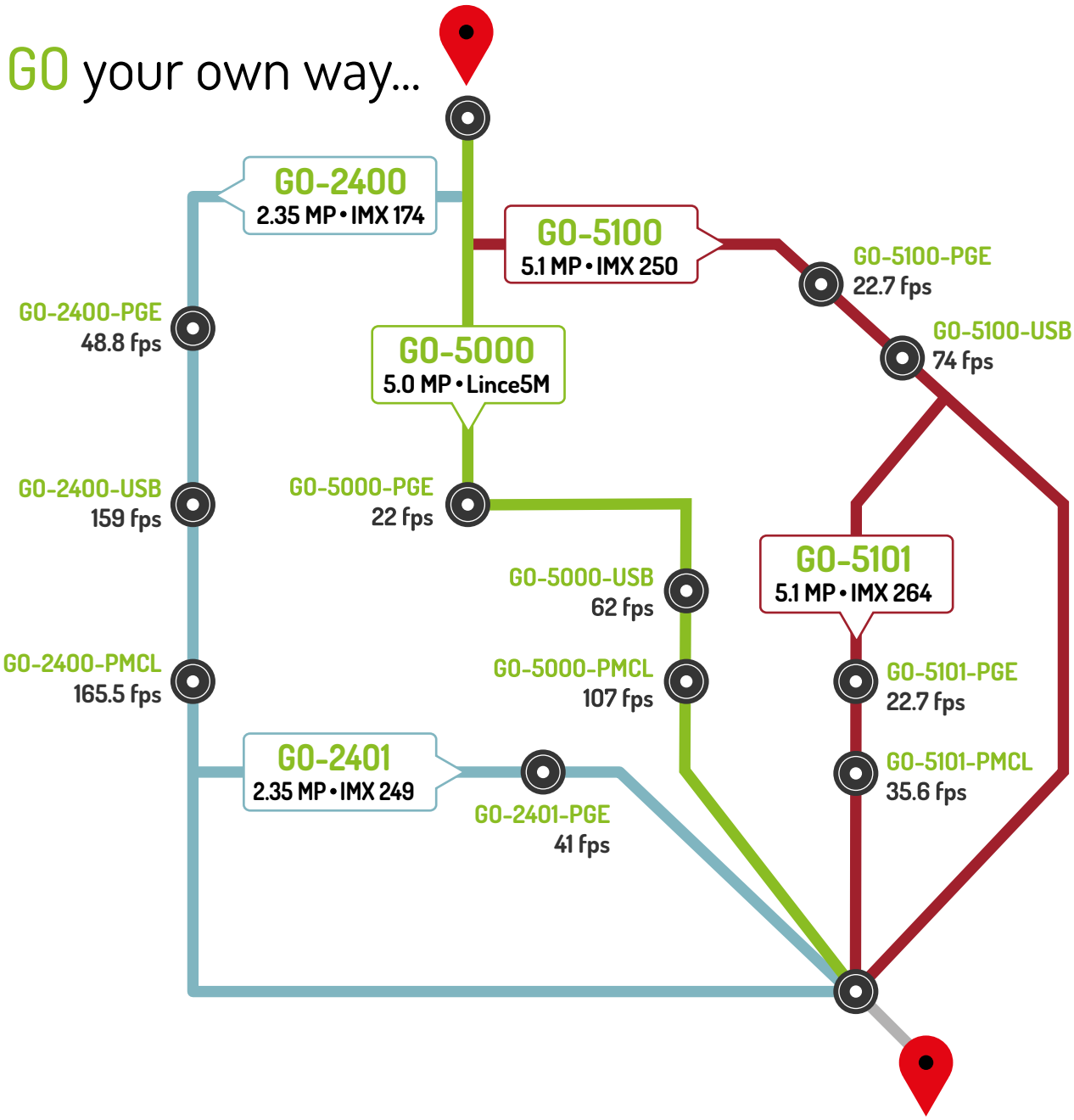

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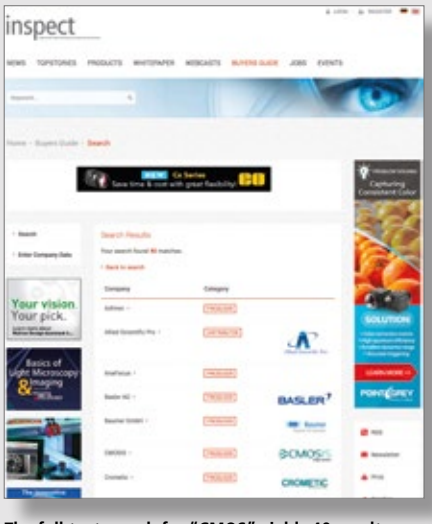
Machine Vision and Optical Metrology in Europe

The inspect Buyers Guide 2018

Throughout the year, we aim to provide you with information about new developments, technological trends, groundbreaking applications, new products and leading companies. Throughout the year, we are faced with the recurring challenge: What to select, what to highlight, what to point out. There is never enough room to cover it all. So once a year we seize the opportunity to present to you a comprehensive overview of the machine vision and optical metrology industries.

The Online Buyers Guide provides sophisticated search functions for all listed companies.

Companies providing a full-fledged company profile will be additionally found in multiple categories with the keyword search.



The full text search for "CMOS" yields 40 results: every company having used the word "CMOS" in their description is listed.

The inspect Buyers Guide is published in its ninth year now, for the 10th time it also serves as the official Buyers Guide of the EMVA, the European Machine Vision Association. The guide contains information about more than 500 companies from over 30 countries. The inspect Buyers Guide has a clear focus on companies doing business in Europe or exporting their goods to Europe. Naturally this comprehends companies and organizations from all over the world.

Online ...

The inspect Buyers Guide is a true cross-media product. At www.inspect-online.com/buyers-guide the online database provides sophisticated search functions for all listed companies. Every entry can be searched for with full-text search, and every listed company will be found here based on the individual company description. Additionally, every listed company will be found by name, company category (e.g. producer, integrator, research facility, association, etc.) and country of headquarters.

Companies wanting to provide more information and aiming at even better search results are listed with a company profile, including detailed company data and a listing of products offered, industries served and applications catered to. These, and only these, companies will be found in the respective search categories.

The online Buyers Guide is open for companies within the scope of the inspect all year round. In this way it is always up-to-date.

... and Print

The availability of data online is a clear benefit when presented with clever search functions. However, sometimes you do not want to bother going online, or you don't want to search specifically but rather obtain a quick overview. In these instances a printed version has its unchallenged advantages. Not to mention the ease-of-use when taking notes right next to the provided data. Thus, once a year the inspect Buyers Guide printed edition is provided to you. With this guide we aim to give you a full overview that is still easy-to-use, a complete set of information that is still not too sub-divided into too many categories.

The inspect Buyers Guide 2018 is divided into three main chapters: Topics, company profiles for the main global regions, and company listings for the main product categories. In an industry as innovative and dynamic as ours it will most likely never be possible to provide an overview that is final and complete, but we do our best to come as close as possible.

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News
EMVA 2017/2018

Conference Room of first Embedded Vision Europe conference ©EMVA

Premiere Event of Embedded Vision Europe at ICS Stuttgart Was Great Success

The first Embedded Vision Europe conference (EVE) which took place on 12 and 13 October 2017 at the ICS Stuttgart closed with a fully booked attendance of about 200 participants. The event has brought top-notch speakers from companies like Intel, AMD, Qualcomm, The Math Works, Xilinx, and others to Stuttgart. They have shared with the audience their insights about latest developments in vision processing, image acquisition and deep learning. "Machine Vision is a €10+ billion industry with annual growth rates north of 10%. Embedded Vision provides the hardware and software tools to boost this growth far beyond traditional growth rates and traditional expectations. This is happening right here and right now. Europe's rich ecosystem of vision manufacturers, vision machine builders and vision solution providers and the new hardware and software platforms from the embedded world will be a perfect match. This is what we wanted to support with our conference by connecting people to people and people to knowledge. We are very happy to see that our idea has caught on with our target audience," says Gabriele Jansen, Member of the Board of the EMVA which organized the conference. Florian Niethammer, Team Leader Vision at Landesmesse Stuttgart which hosted the first EVE added: „With around 200 attendees the debut of the Embedded Vision Europe was a full success. In this high-profile technical conference the latest developments in embedded vision were shown. We are especially proud that together with our partner EMVA we managed to provide this trend topic in imaging with the platform it deserves and to organize the first event of this kind on a European level here in Stuttgart." Participants, speakers and exhibitors at the accompanying table-top exhibition were fully convinced about the new conference: „Computer vision will soon give the power of sight to all our electronic devices. This conference brought together key engineers and executives that are pushing the boundaries of this technology, making it a great place to understand important trends and how vision will be embedded into powerful new products," said Marco Jacobs, VP Marketing at Videantis and one of the top-notch speakers. "This event has been an excellent initiative by the EMVA to provide a focus to discuss the advancement of embedded System-on-Chip technologies and how they may impact but also give opportunities in the machine vision industry. The speakers have been of a suitable high-caliber as I have come to expect from EMVA events and the topics presented have provided thought provoking material for networking discussions," says Colin Pearce, Managing Director Active Silicon.

Paul Maria Zalewski, Product Line Manager at Allied Vision Technologies confirmed the overall impression pointing out the necessity of addressing embedded vision in such a conference format: "The change to Embedded Vision already started a couple of years ago and will speed up further every year. Overall, I believe that in the classic machine vision applications within factory automation, the process of shifting to embedded systems will take longer than in applications and markets which demand embedded systems from the very start because they are restricted in terms of price and size. On the other hand, if smart factory approaches will be further pushed by the industry, it can make PC-based systems less attractive faster than expected. Embedded Vision has the potential to divide our machine vision industry. Not all players might be able to adapt quickly enough and may find themselves back in niche markets, where PC-based systems will be still the dominate system in the future."

With respect to the speed of development in the embedded vision market and the importance this topic gained in the machine vision sector plans are under way to establish the conference in the coming years.

EMVA Events 2018

Peering into 2018 the EMVA once again proposes a series of key events that have been established in the European and even more international machine vision community either as standalone conferences or alongside important trade shows. Starting point in spring is the forum 'Control Vision Talks' during the first three trade show days at the 32. Control trade fair in Stuttgart. From 24 to 26 April this series of application oriented presentations brings hands-on implementation examples and new machine vision technology to the visitors of this leading international trade fair for quality assurance. In the following month, the 'Parma Vision Night' again takes place on the evening prior to the opening of the SPS IPC Drives fair in Parma/Italy, offering a specific networking opportunity to the stakeholders of machine vision technology in Italy. This is followed by the highlight event in the first half year, the EMVA Business Conference which takes place in Dubrovnik/Croatia. Participants can already register under the attractive Early Bird conditions.

After the summer break, from 5 September on the third European Machine Vision Forum for three days brings together research and industry players in Bologna. The last quarter 2018 will clearly be dominated by Vision 2018 taking place from 6 to 8 November at Messe Stuttgart. Here, the EMVA again will act as leading organizer of the International Machine Vision Standards Booth jointly with its partner associations around the world. On the evening prior to the trade fair opening it has become tradition that the EMVA hosts the EMVA International Vision Night, a get-together event in the forefront of the busy trade show days.

In addition to this already rich event calendar some other formats are currently under discussion, amongst them is the repetition of the highly successful Embedded Vision Europe conference which took place for the first time in October 2017. Details will be announced soon.

Calendar:

emva
european machine vision association

24 - 26 April 2018, Stuttgart, Germany
Control Vision Talks during the 32. Control – International trade fair for quality assurance
www.emva.org/cvt2018

21 May 2018, Parma, Italy
Parma Vision Night

7 - 9 June 2018, Dubrovnik, Croatia
EMVA Business Conference
www.business-conference-emva.org

5 - 7 September 2018, Bologna, Italy
Third European Machine Vision Forum
www.emva-forum.org

5 November 2018, Stuttgart, Germany
EMVA International Vision Night

6 - 8 November 2018, Stuttgart, Germany
International Machine Vision Standards Booth at Vision 2018

VDMA Machine Vision

News, Activities and Upcoming Events 2018

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Following a successful year 2017, an intense and busy year 2018 lies ahead of the VDMA Machine Vision group. The list of planned activities and events proves that VDMA Machine Vision will keep its finger on the pulse of market and of technology development.

Fig. 1: VDMA panel discussion at the Embedded World 2017

©VDMA Robotics + Automation

Machine Vision Industry in Germany: New Forecast of 18% Growth in 2017

End of September, VDMA raised its 2017 growth forecast for the German robotics and automation industry from 7 to 11 % (fig. 2). "Both incoming orders and turnover development for the current year have greatly exceeded our expectations," said Dr. Norbert Stein, Chair of the Board of VDMA Robotics + Automation and Managing Director of Vitronic. "For the first time, we will hit the mark of € 14 billion in sector turnover." All three segments of German robotics and automation are on a strong growth trajectory for 2017 and the machine vision again beats them all (fig. 3). According to the new forecast, machine vision will achieve an 18 % increase in turnover instead of the initially expected 10 %. This corresponds to an industry turnover of € 2.6 billion. For 2018, VDMA forecasts a turnover growth of 13 % for the German machine vision industry, and + 10 % for the robotics + automation sector. For Europe, the prospects are good, but not quite as bright as for the German machine vision industry, as the development of the

monthly European machine vision index figures indicate.

VDMA Machine Vision Activities in 2018

Vision

The Vision/VDMA CEO roundtable on 6 February will discuss new developments, trends and future visions of the machine vision industry – official starting signal of the Vision year. The world's leading trade show for machine vision will take place nine months afterwards. Again, the Vision show is expected to be a "record" show regarding the number of exhibitors and visitors, as well as innovativeness. VDMA MV as conceptual sponsor will again promote and support the show. As in previous years, VDMA will organize the Industrial Vision days, the world's biggest and leading presentation forum for machine vision technology and will be involved in various other activities (VDMA Technology Days, panel discussion, International Vision Standards booth etc.)

Embedded World 2018 – Boost for Embedded Vision in Europe

From 27 February to 1 March 2018, the European embedded systems community will meet in Nuremberg at the Embedded World exhibition & conference – 2018 in its 16th year with about 1,700 participants in the conference and over 30,000 visitors of the show. In 2018, the embedded vision track of the conference will cover 1.5 days. As in 2017, VDMA and the Embedded World will organize a panel discussion at the trade show. Its topic will be Migration – from PC to Embedded and from Embedded to Vision. VDMA MV's motivation for connecting with the embedded systems community is quite obvious: embedded vision is one of the „hot topics", not only for machine vision, but also for the embedded systems community. The Embedded World is a well-established platform and market place for embedded technologies in Europe, targeting at developers, project and product managers that are looking for new trends and technologies – persons you need to connect with when approaching the topic in Europe.

International Vision Standards Meeting (IVSM)

The international vision standardisation community will meet from 14 to 18 May 2018 at the VDMA premises in Frankfurt to work on running G3 standards and standardization projects, such as GenICam, GigE Vision, CoaXPress, CameraLink HS, USB3 Vision, OPC Vision, and to discuss new projects (e.g. mipi CSI-2) during the Future Standards Forum. Host of the IVSM in spring 2018 is Silicon Software. Preparations are well under way.

Automatica 2018

Machine Vision will again play an important role at Automatica, the leading European innovation platform for the automation of production (19 to 22 June 2018 in Munich, Germany), sponsored by VDMA Robotics + Automation. A machine vision pavilion will offer a hassle-free and cost-effective possibility to exhibit. Of course, machine vision will play an important role in the VDMA R + A Industry 4.0-Demonstrator, as well as in the presentation forums and panel discussion.

VDMA Robotics + Automation Members Assembly in September

The 280 VDMA R + A members will meet in a two-day event at end of September 2018 to discuss future trends for the robotics and automation industry. There, the new VDMA Machine Vision Board for 2019 to 2021 will be elected. Without any doubt, many of the running projects will go on, also in the next period. The signals are set for further growth and expansion of the industry.

VDMA MV Standardization Activities – OPC Vision and VDI/VDE/VDMA 2632 Series

In 2014, VDMA Machine Vision joined G3, a cooperative initiative to coordinate the development of globally adopted vision standards, with the goal to bring in expertise of system integrators. Ever since, VDMA Machine

Continued on page 12

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The VPS-3100 is an embedded vision system with a 4-core, Intel® N3160 processor. Two independent network ports with up to 2.0 Gb/s speed easily provide great computing power and connectivity. The VPS-3100 also supports PoE (Power over Ethernet). With a compact, fanless design featuring IP40 protection, the VPS-3100 is an ideal solution, at home in the factory environment.

VPS-3100
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- Compact form factor, fanless vision system
- Built-in PWM lighting control

Quartz Industrial Camera
- 0.3-15.0 Megapixel PoE Industrial Camera
- Best price/performance ratio
- CCD and CMOS sensor options
- Resolutions up to 15.0 MP

WebAccess/EzBuilder
- No need to program
- Quickly deployed in diverse environments

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> A major and important project is the OPC Vision initiative.“

Vision has built up activities and capacities. In autumn 2016 Dr. Reinhard Heister joined the VDMA Machine Vision team to coordinate and drive standardisation development.

The VDMA Machine Vision group is currently actively driving two standardisation projects toward: The VDI/VDE/VDE 2632 series of standards – guidelines to structure and facilitate the communication between system integrators and end-users. In autumn 2017, part 3 (Machine vision/industrial image processing – Acceptance test of classifying machine vision systems) was published.

A major and important project is the OPC Vision initiative. Goal is to develop an OPC UA companion specification for machine vision aiming at a straightforward integration of machine vision systems into production control and IT systems. The scope is not only to complement or substitute existing interfaces between a machine vision system and its process environment by OPC UA, but also to create non-existent horizontal and vertical integration capabilities to communicate relevant data to other authorized process participants, e.g. right up to the IT enterprise level. Therefore, the OPC UA Vision interface exchanges information between a machine vision system and another machine vision system, a machine PLC, a line PLC, or any software system at the control device level accessing the machine vision system.

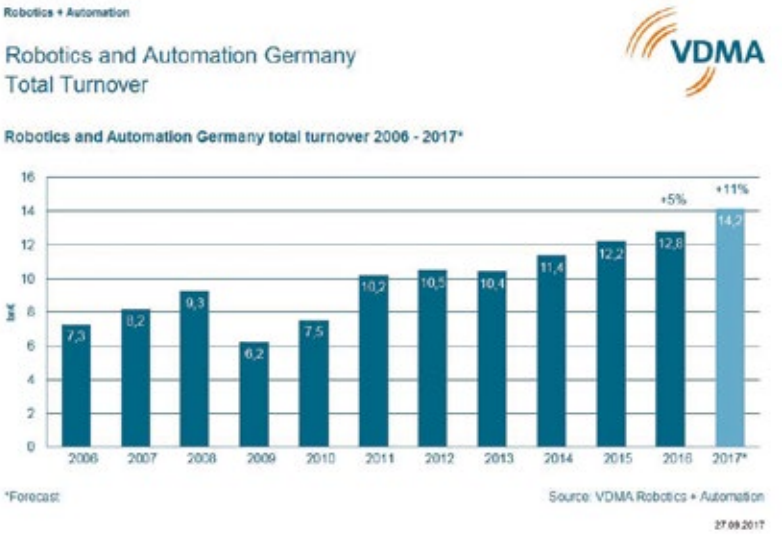

Fig. 2: Robotics and Automation Germany total turnover ©VDMA Robotics + Automation

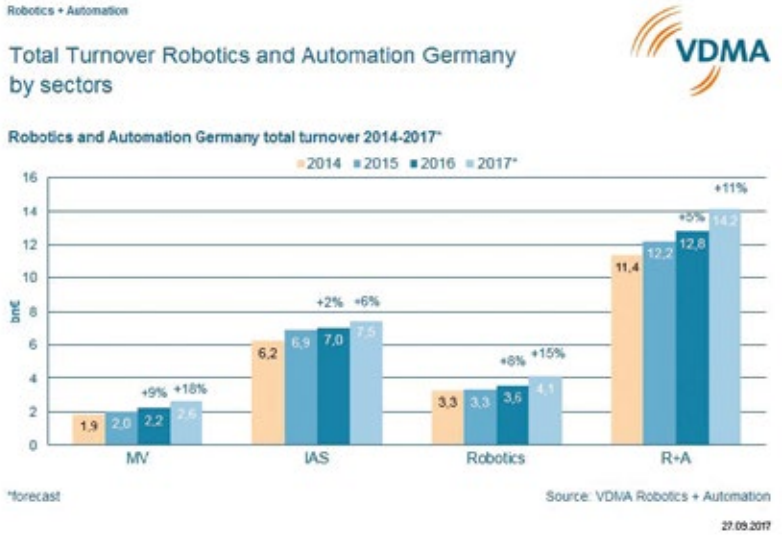

Fig. 3: Robotics and Automation Germany total turnover by sectors

©VDMA

About VDMA Machine Vision

The VDMA represents over 3,200 mainly small and medium size member companies in the engineering industry, making it one of the largest and most important industrial associations in Europe. As a part of the VDMA Robotics + Automation Association, VDMA Machine Vision unites more than 115 members: companies offering machine vision systems and components. The objective of this industry-driven platform is to support the machine vision sector through a wide spectrum of activities and services. Current activities include statistics and the annual VDMA Machine Vision Market Survey, standardisation, marketing services, public relations, trade fair policy, future radar, networking events and conferences.

www.vdma.com/vision

At Automatica in June 2018, a release candidate of the first part of the OPC UA companion specification for machine vision will be published. Part 1 covers the smallest common denominator of information and functions, which every type of machine vision system needs for the integration into the production environment. For example, functions for triggering or managing recipes are included. Subsequent parts will extend the basic machine vision description and cover the use cases.

New Digital Business Models – a Hot Topic

In January, VDMA will publish a study on the platform economy and ecosystems in the machinery industry – an ideal opportunity for the machine vision community to re-connect with questions that were raised at the VDMA European Machine Vision Summit: How to use IoT to create new business models? Will the machine vision industry create its own platform(s)? Will an external player come and “squeeze in” between you and your customers? Without any doubt will the digitalization of industry bring new challenges and chances to the machine vision industry and will require new digital business models. It’s rated as important topic. More and more players not only in IT, but also in the machinery industry have started with activities. VDMA’s role is to sensitize the machinery industry for the topic, give information support and guidance, as well as foster and accompany exchange among the membership.

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http://ibv.vdma.org

1288 EMVA Standard Compliant

The Standard EMVA 1288 for Camera Characterization

More than Just Camera Comparison

The Standard EMVA 1288 is now globally well established. All major camera vendors are using it in their development departments and with the publication of release 3.1 a standardized data sheet is now available for easy camera comparison. But the standard is an even more useful and versatile tool to study various properties of image sensors and to discover new ones. In this way, the standard 1288 can help to use image sensors for your application in the best possible way.

> **„The wavelength dependency of the quantum efficiency is an optional measurement in the standard 1288.“**

What the Standard 1288 Is All About

Simply spoken, it measures what limits the quality of a camera as a component without a lens. Essentially there are four effects.

- Each time we take an image, we get different values. This effect is called temporal noise. This effect also causes homogeneous regions to look noisy.
- Each pixel gives a different response. This effect is called spatial nonuniformity and also causes homogeneous regions to look noisy. For a camera with a linear response there are two basic types of nonuniformity. Each pixel can have a different offset, the dark signal nonuniformity, or DSNU, and each pixel can have a different sensitivity, the photoresponse nonuniformity, or PRNU.
- There is also a response if no light hits the image sensors and this signal increases with the exposure time and with it the noise in the image is increasing. This effect is called the dark current and limits the ability of an image sensor to see in the dark.
- Finally there are many types of artefacts, which means that the image sensor does not show an ideal behaviour. An important type of such an artefact, which was introduced with CMOS sensors, is the shutter efficiency. It turned out that the image sensor has a residual sensitivity even if the electronic shutter is closed.

How Are the Measurements Performed?

Three types of measurements must be performed:

- An illumination series from the dark to saturation in order to measure the standard deviation of the temporal noise in relation to the mean received signal. The essential quality parameters from this measurements are the standard deviation of the dark noise and the signal-to-noise ratio SNR.
- For a linear camera it is sufficient to measure the nonuniformities in the dark and at 50 % saturation. From these two measurements the DSNU and PRNU can be computed.

Continued on page 14

More information on the EMVA 1288 standard

- Standard documents: http://www.emva.org/standards-technology/emva-1288/emva-standard-1288-downloads/
- EMVA 1288 user community with data sheets: https://zenodo.org/communities/emva1288/
- Wiki page: https://en.wikipedia.org/wiki/EMVA1288

- The dark current is estimated from a series of measurements applying no light to the camera but varying the exposure time.

Wavelength Dependency of the PRNU

The standard EMVA 1288 requires to perform the measurements for monochrome cameras only for one wavelength close to the maximum sensitivity, typically with green light. Thus the interesting question arises, which parameters measured by the standard depend on the wavelength of the light. This is for sure the sensitivity of a camera expressed by the quantum efficiency, i.e., which fraction of photons are converted into charge units, which are converted into a digital number by the camera. The wavelength dependency of the quantum efficiency is an optional measurement in the standard 1288. But do other parameters also depend on the wavelength of the light?

This can easily be checked by performing 1288 measurements with different wavelengths. For this purpose an eight-color light source from Aeon, Hanau, Germany, with very low inhomogeneity for the sensor sizes used (< 0.3 % absolute, colour match of homogeneity better than +- 0.15 %) was used to investigate these effects, covering wavelengths from near UV (368 nm) to near IR (943 nm). This study was first published at the 2nd European Machine Vision Forum in Vienna in September 2017.

The residual colour PRNU was computed by dividing the PRNU at each colour by the PRNU averaged over all eight colours and plotting the difference from one in %. It is really surprising to see the very different re-

„The most critical case is if you use a monochromatic sensor and not to know the colour of the observed objects and/or the colour of the light source applied.“

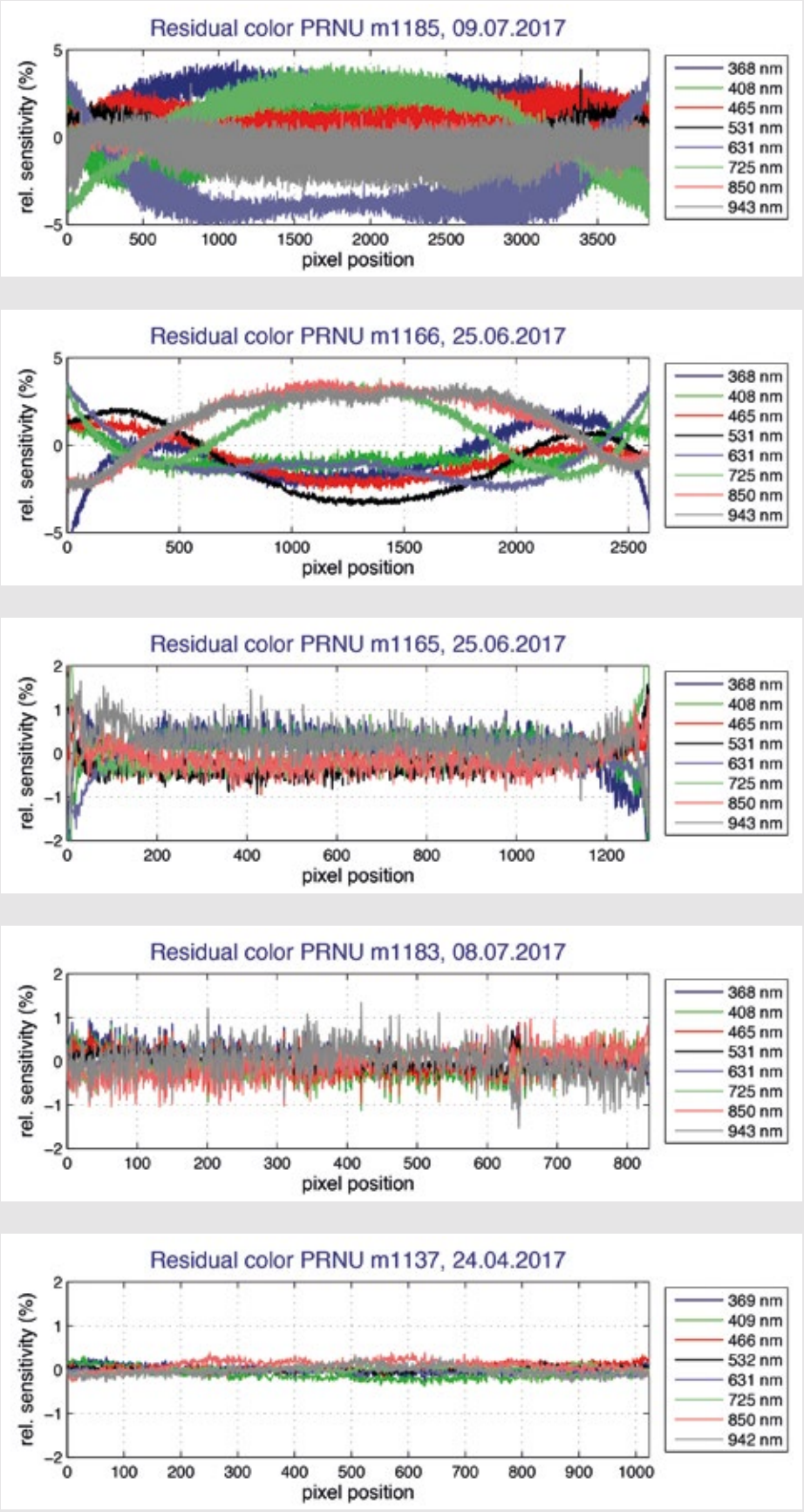

Fig. 1: Residual colour PRNU of monochrome image sensors after correcting pixel by pixel for the average PRNU of eight colours for (from top to down) the rolling shutter CMOS Aptina sensors MT9J003, MT9P031, the Sony CCD sensor ICX445, and the global shutter CMOS sensors Python 500 from OnSemi and Pregius IMX174 from Sony.

Table 1: Quantitative comparison of the PRNU measured at 50% saturation of the same five image sensors shown in figure 1. The second column shows the standard deviation of the temporal noise at 50% saturation, the third the standard deviation of the PRNU as defined by EMVA 1288, the forth the maximum standard deviation of the residual colour PRNU, and the last column the same high-pass filtered, I. e., considering only the variations from pixels in close neighborhood.

Sensor	Temporal noise	PRNU1288	Residual colour PRNU	Residual colour PRNU high-pass filtered
Aptina MT9J003 1.67 µm Pixel	3.25%	0.41% (531 nm) to 4.8%	<3.9%	< 1.4%
Aptina MT9P031 2.2 µm Pixel	1.73%	1.64% (631 nm) to 3.9%	<2.0%	< 0.24%
Sony CCD ICX445 3.75 µm Pixel	1.72%	0.57% (465 nm) to 1.19%	< 0.84%	< 0.28%
OnSemi Phyton 500 4.8 µm Pixel	1.77%	0.99% (725 nm) to 1.25%	< 0.46%	< 0.33%
Sony Pregius IMX174 5.86 µm Pixel	0.77%	0.33% (532 nm) to 0.38%	< 0.20%	< 0.06%

EMVA's Educational Initiative

The European Machine Vision Association (EMVA) has started an educational initiative to serve the Machine Vision Community. A first example is the free webinar "How to compare cameras with the new EMVA 1288 standard, Release 3.1", which was held on September 12, 2017 and has been recorded, see https://www.viewservice.de/EMVA-Webinar/7466/

sults, demonstrated in figure 1 and table 1 with five sensors. The two rolling shutter sensors with small pixels show very large variations in the PRNU with the colour of light up to almost +- 5%. The pixel-to-pixel variations (high-pass filtered PRNU) are very much different for the two sensors: 1.4% in comparison to only 0.24%. The two global shutter CMOS sensors are equally good or better than the CCD sensor ICX445 and the first generation Sony Pregius sensors show by far the best values.

What Does this Mean in Practice?

It depends on your application. The most critical case is if you use a monochromatic sensor and not to know the colour of the observed objects and/or the colour of the light source applied. Then you have no other choice but to use a sensor which exhibits only a low residual colour PRNU, if the PRNU is critical for your application. If you know the colour of your light source, then you can use almost every sensor and correct the PRNU for this colour, which leads to much better results than the PRNU correction of the manufacturer, which is normally done with white light.

Conclusions

The example of the colour dependency of the image sensor PRNU nicely demonstrated how useful the equipment and measuring procedures of the standard EMVA 1288 are in doing the right thing to get better image quality. It was just required to perform measurements under different conditions, here simply a light source with different colours to achieve this result. In a similar way, the equipment and tools developed for the standard can be used to investigate many other properties of image sensors and to discover other artefacts. It is for instance possible to study the change of image sensor properties over time, with the temperature of the environment or different exposure times. You name it.

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Industrial Cameras, Technical Features, and Market

Imaging Industry Market Study 2017

Each year, in cooperation with the trade journals Vision Systems Design and inspect, global imaging expert Framos identifies technical and commercial trends in the industry based on users' and manufacturers' views. For this 10th market study, 90 manufacturers and users from 22 countries responded to questions about the status quo of the imaging market, and its ongoing development.

In the Age of Automation and the Smart Factory, classic machine vision is the cornerstone of success for the Imaging industry. CMOS technology and fast processing are enabling real-time precision, while cognitive vision solutions using artificial intelligence are the bases for further growth. Customized embedded vision is expanding into a wider range of industries and innovative applications, boosting their performance and efficiency. Integrated image processing, which provides a combination of reliability, superior quality, and a high level of innovation, is now a basic building block in the digitally networked world.

This study is based on opinions from 61 users and 29 manufacturers who gave comprehensive information about the imaging market, cameras, sensors, applications and trends. European respondents, at 68 %, were the largest responding group, while North Americans accounted for 19 % with the rest coming from Asia and The Middle East, at 13 %. Relevance ranking was carried out based on purchase or production volumes. Purchase and production were concentrated in Europe, at 61 % and 50 %, respectively. Also, manufacturers built more products in both Asia (24 %) and North America (24 %), signaling an increase in these two regions compared to previous years. The Asian and North American purchasing trends rank behind Europe, accounting for 31 % and 8 % of users, respectively. The Asian purchase market declined compared to last year (28 %), partly because there were fewer survey participants from Asia, but these figures also suggest that the European and North American markets are stabilizing (Chart 1).

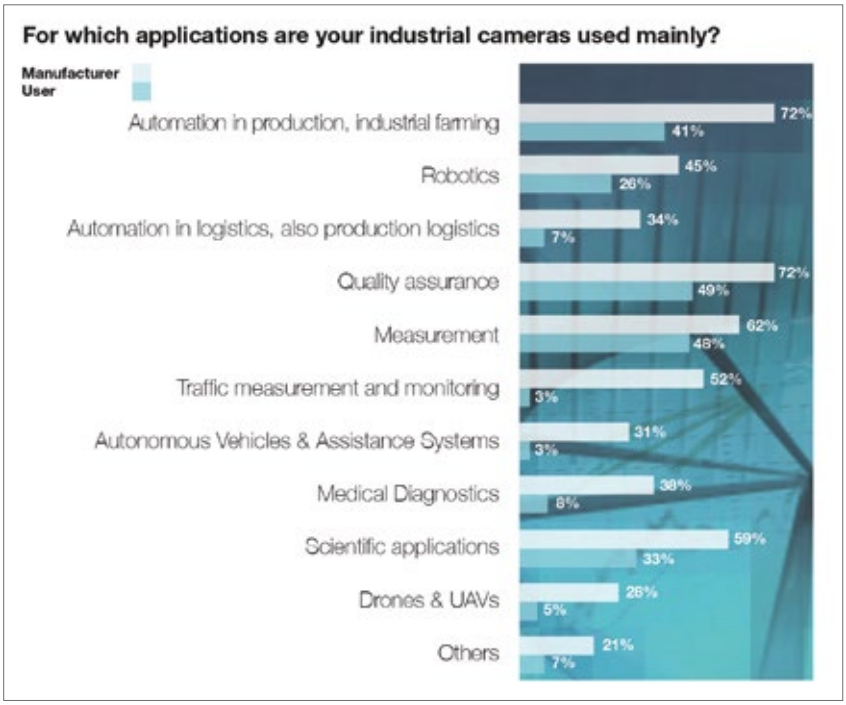

Chart 1: Industrial camera applications

> **Automation in production and agriculture, like in previous years, is the main imaging field according to both manufacturers and users.“**

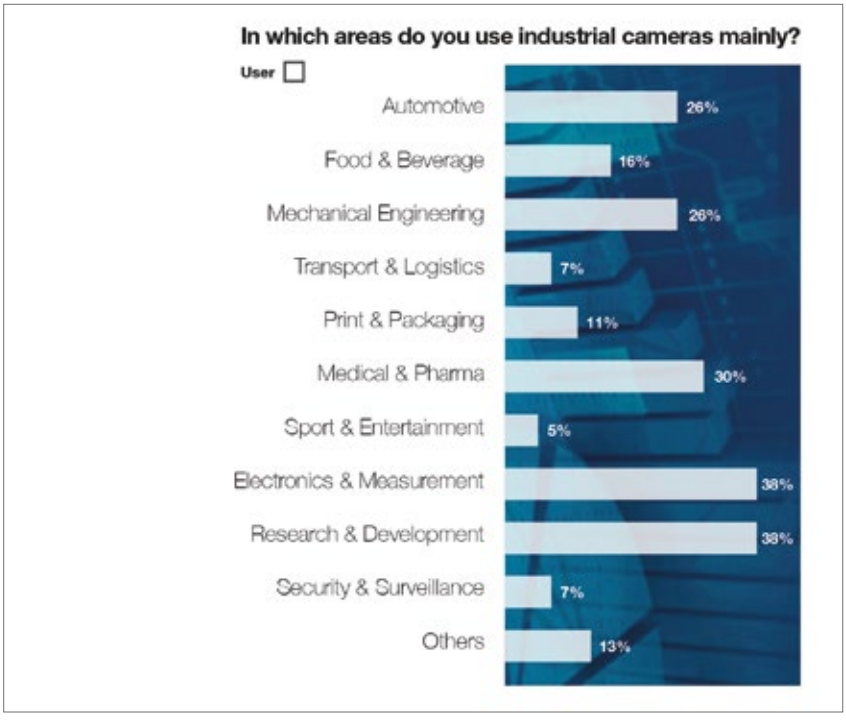

Chart 2: Image processing use by industry

A Market Based on Machine Vision, with Artificial Intelligence for Innovative Systems

Automation in production and agriculture, like in previous years, is the main imaging field according to both manufacturers and users. Quality assurance is the top camera application for both manufacturers (72 %) and users (49 %), followed by opto-sensory measurement tasks (62 % and 48 %, for manufacturers and users, respectively). Also, robotics and scientific applications still represent an important part in the total imaging sales and purchase decisions, as outlined by the responders of this survey. Manufacturers reported 115 % growth in the transportation sector compared to 2016, driven by autonomous vehicles and assistance systems applications. Meanwhile, medical technology was stagnant and did not grow in 2017. The fact that machine vision is expanding into more fields shows that manufacturers are capitalizing on the huge potential of innovative technologies: 28 % of respondents stated that their cameras are used for drones and unmanned aerial vehicles (UAVs). Other application areas that are seeing increases include those based on artificial intelligence, 3D scanning, gesture control, and virtual reality. While users recognize this potential, they are still firmly focused on traditional machine vision applications (Chart 2).

At the industrial level, electronics, mechanical engineering and measurement technology continue to dominate both production and sales; in fact, they increased their lead slightly compared to 2016. The automotive industry remains a key player, albeit with a 17 % drop compared to last year. Users and manufacturers agree on the importance of the R&D sector, including the

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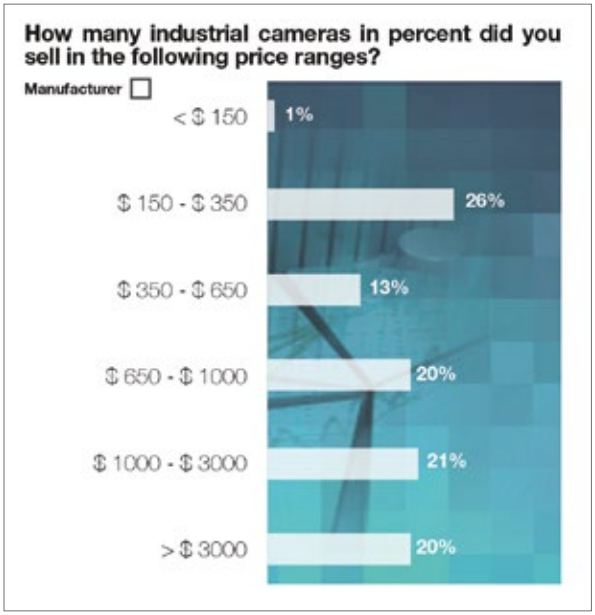

Chart 3: Industrial camera price ranges, manufacturers

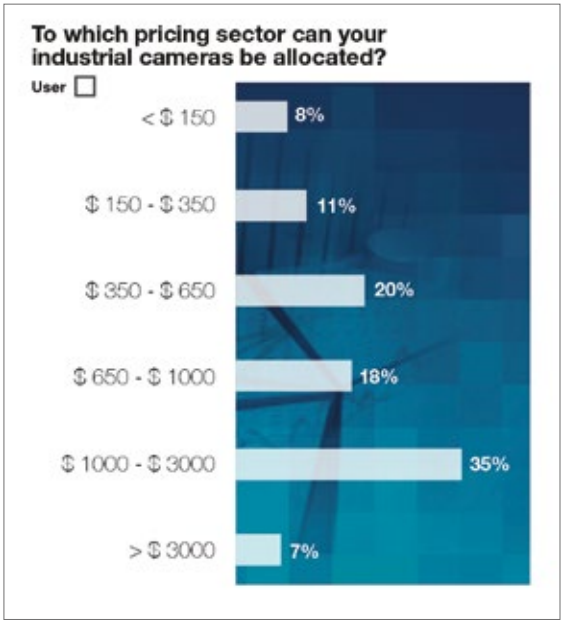

Chart 4: Industrial camera price ranges, users

medical and pharmaceutical fields, which retained their positions in the ranking. Other significant verticals for manufacturers are the food and beverage, print and packaging, security and surveillance, and, logistics. A growth area identified by manufacturers includes the multimedia and entertainment markets.

Generally, manufacturers who respond naturally cover a broader range of applications and industries than do users, who tend to be concentrated in certain markets. Manufacturers are more innovation-driven, while users are more focused on traditional vision applications.

Sustained Investment Confidence, Embedded Vision, and Possible Market Fragmentation

Camera manufacturers' main customers are OEMs and system suppliers who make up 39 % of their customer base – an increase of 30 % compared to 2016. This increase underlines how the imaging market is moving toward embedded vision with more complex systems and requirements. Consequently, end users are becoming less significant (-63 %), but this trend is largely offset by increased sales by distributors acting as intermediaries and consulting vision experts. System integrators remain a stable customer segment at 31 %. Both of these trends clearly show that users are looking to the technical expertise of external partners to develop their integrated systems. Fifty-seven percent (57 %) of users stated their vision systems were developed and implemented in-house, however, this is a declining trend – shown by an 11 % drop from last year – which infers that they are more likely to seek support from value added distributors more often in the coming years. Twenty-four percent (24 %) bought a complete system (a 9 % increase) with only 13 % supported by a system integrator. Given this increase, the proportion of system integrators remained consistent at 54 %. This is significant in terms of the role that intermediaries and experts are playing between manufacturers and end users.

> „Overall, the status of machine vision as a standalone discipline is on the decline as it becomes more of an embedded component to a more complete solution."

Manufacturers predict strong and secure ongoing growth in the machine vision industry. Thirty-eight percent (38 %) expect this growth to be driven by new users; 21 % by the modernization of existing systems; and, 41 % by customers who require a mix of the two. Manufacturers see artificial intelligence, 3D imaging, hyperspectral imaging, and embedded vision as key drivers; and, 21 % of manufacturers see embedded vison as an opportunity to grow further. The vast majority of users (91 %), plan to continue investing in imaging with 52 % of them intending to introduce either new or modernized vision systems over the next two years, while another 39 % anticipate doing a mix both types of investment. In line with the users in more traditional application fields and industries, 75 % stated they would be using off-the-shelf (OTS) components with 39 % of all user respondents stating they would like to develop their own solutions. This result outlines what manufacturers see as the risks of traditional machine vision markets: where 17 % of them believe that expansion into almost every industry will fragment the imaging market, due in part to industrial use of consumer devices. Also, twenty-one percent (21 %) feel that their business could be severely impacted by users who develop and build their own unique cameras and systems.

Overall, the status of machine vision as a standalone discipline is on the decline as it becomes more of an embedded component to a more complete solution. Forty-three percent (43 %) of users are currently using embedded vision as part of their integrated automation and control systems. Despite a predicted increase in market growth, some manufacturers were skeptical of this: though users are not about to defect en masse to the Asian market, 59 % of manufacturers see competition from this region as a threat. In addition, 38 % are still concerned about the risks relating to embedded vision, like industrial cameras being replaced by specific embedded solutions, as well as changes to traditional business models. As a result of the growth and ongoing development of machine vision technologies, the classical roles for manufacturers, integrators, and users are evolving and being constantly challenged. Embedded vision and the use of imaging technology in nearly every industry points to fragmentation. Users need and want specific solutions for their integrated systems and OEM solutions. This scenario is an opportunity for consulting distributors and system integrators to demonstrate their role as both advisors and partners in the development and implementation of individual and mod-

ular embedded vision solutions, far removed from the traditional industrial camera.

Healthy Price Levels, Matrix Cameras, and Global Brand Awareness

Besides the inherent desire for users to purchase cameras, the price range of these cameras is a key market development indicator. After a gradual decline in prices prior to and including 2015, the cost of mid- and high-price cameras is noticeably more stable in 2017, which should lessen manufacturers' concerns about low cost Asian competition (See Chart 3). Only 19% of users limited their budget to $350 for a camera, compared to 45% in 2016. Users paying between $350 and $1,000 (38%), or more than $1000 (42%) increased as compared to last year (+7 and +19 percentage points, respectively). The high price segment is clearly growing because more performance is now being added to higher priced cameras. User trends are largely confirmed by manufacturers, especially in terms of a decrease in demand for cameras priced below $150, and the steep increase for those over $1,000 (See Chart 4). Market fragmentation, embedded vision and highly specific modular vision systems also appear to be promoting quality awareness. Superior image quality with improved processing performance combined with integrated intelligence, speed, and simple connectivity, are key criteria for „smart" investments with good price-performance ratios.

In the 2017 study, demand was mainly for the type of cameras used in vision systems. Area scan cameras, at 60%, are, by far, the users' top choice followed by 3D and stereo vision cameras (8%), and OEM camera modules (8%). Twelve percent (12%) of users utilize a custom designed camera to solve their imaging problems. Seven percent (7%) use line scan cameras and only 5% use smart cameras – representing a sharp decline for smart cameras compared to 27% in 2016. A significant proportion of those who have changed their usage of smart cameras are likely now using area scan cameras. These cameras, like smart cameras, can be equipped with all the necessary features in a compact form. The view among manufacturers is more balanced: 37% sell area scan cameras, followed by 18% for 3D and stereo vision, 16% for smart cameras, and 10% for OEM modules. However, 16% sell cameras for various special solutions, which clearly plays a key role in their revenues.

The camera brand best known to users is Sony, with 67% brand awareness – no doubt influenced by its reputation as a high-quality sensor provider and its many consumer products in various segments. Basler and Baumer, each with 59%, and Flir (former Point Grey) with 56%, are all vying for second place behind the top brand. Among users, 54% are familiar with Matrox, Teledyne Dalsa and JAI. However, when it comes to actual use, Basler is the most popular brand

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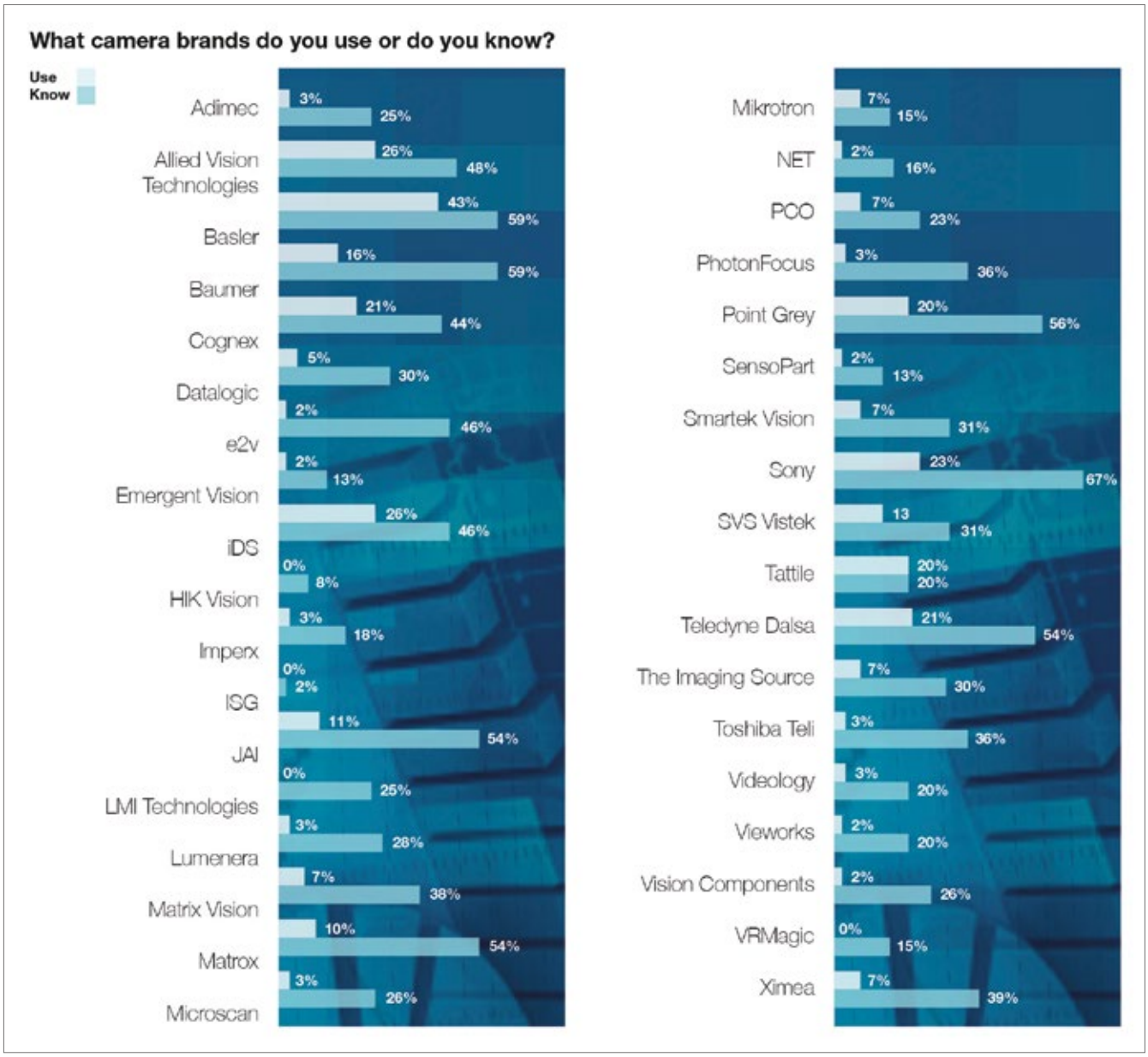

Chart 5: Camera brand awareness and usage

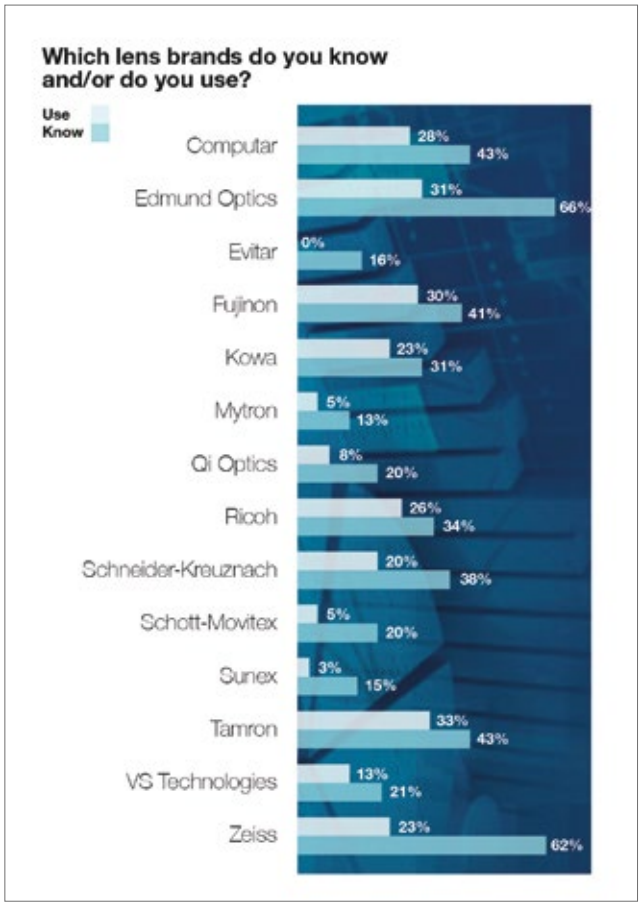

Chart 6: Lens brand awareness and usage

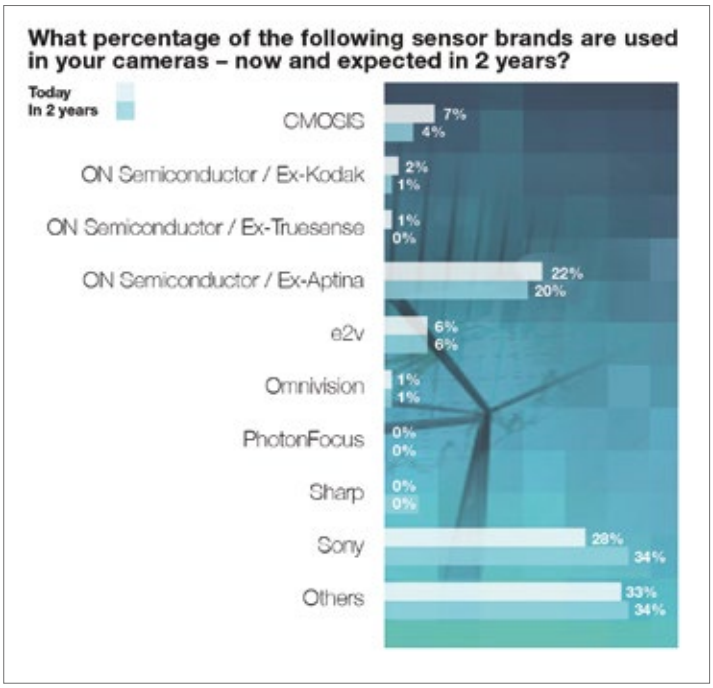

Chart 7: Sensor brand usage, manufacturers

(43 %), followed by Allied Vision and iDS (26 % each); then, Cognex, Sony and Teledyne Dalsa follow with 21 % each (Chart 5).

In conjunction with cameras, optics is an important part of any vision systems. The best known optical brand is Edmund Optics at 66 %, higher than Zeiss, at 62 %. Whether this is due to in-house Edmund lenses, or a familiarity of the distributor's name with users is not clear from the results. Computar and Tamron share third place in user brand awareness at 43 %. However, when it comes to actual usage, Tamron lenses are employed by 33 % of users – more than any other brand – followed by Edmund Optics and Fujinon at 31 % and 30 %, respectively (Chart 6).

CMOS Is the New Norm, Sony and On Semi Remain Popular, and Customized Sensors Gain Momentum

The previously announced decline of the CCD sensor usage is more evident as the switch to CMOS sensors is nearly complete: today, 73 % of manufacturers and users employ CMOS technology, while the remaining 27 % are still using CCD. This has been accelerated by Sony's discontinuation of CCD technology. The study predicts that CCD usage will fall to 22 % among manufacturers and 12 % among users – a clear confirmation of recent forecasts and changes in the sensor market landscape.

After the groundbreaking technological innovations and resulting upheavals in recent years, the sensor market is showing signs of stabilization. Sony remains the clear market leader with 49 % of users, and lost only 4 percentage points compared with 2016. ON Semiconductor's share changed little at 30 %, and the projected 175 % growth over last year in customized sensors, increasing their market share to 11 %, has been achieved. At 9 %, Cmosis still plays a significant role for users in a clearly segmented sensor market (See Chart 8). Manufacturers are still fiercely loyal to Sony, with percentages similar to those from 2016. Although Japan's top dog leads the market at 28 %, in-house development is a serious threat to traditional suppliers. According to manufacturers, 33 % of their cameras are currently using customized sensors. ON Semiconductor has a 25 % market share, almost bringing it level with Sony. Meanwhile, Cmosis, holds on to its 7 % market share. It is clear that camera manufacturers desire themselves to be far more independent of major suppliers and their potential limitations. Customized sensors allow manufacturers to respond more effectively to individual customer requirements, and those requirements for specific embedded vision components (Chart 7).

> „CMOS sensors are the new industry standard coming with high quality for those more demanding vision applications."

Innovative and Groundbreaking at the Same Time: It's All About the Application Area

What criteria are important to users and manufacturers when it comes to selecting and using a specific sensor? CMOS sensors are the new industry standard coming with high quality for those more demanding vision applications. The new market potential in VR/AR, autonomous vehicles and aircraft, intelligent automation and robotics solutions require high sensitivity and high quality for real-time processing and control. On the other hand, the traditional machine vision market still uses lower resolutions, monochrome sensors, and lower frame rates. These are perfectly sufficient for clas-

sic measurement and testing, like when it comes to inspecting the fill level inside a bottle on a conveyor belt traveling at 2 m per second, little more is required for automated quality inspection.

The breakdown of the required criteria by application is clear from the survey data on technical sensors. Looking at sensor resolution first, the main category being used is between 1 to 3 megapixels and comes in at 40 %. Although this figure represents a decrease of 15 percentage points from 2016, users expect this category to remain stable over the next two years. Last year's smallest usage category, that of sensors with less than 1 megapixel, made a modest gain of 22 %. Meanwhile, the high-resolution category, the one between 10 and 20 megapixels, increased significantly. Based on the feedback received, combined with the increased use of innovation-driven vision applications, manufacturers reported a decrease in all sensor categories under 5 megapixels but was offset by a rise in all those over 5 megapixels. While the 1–3 megapixel range remains in the lead at 24 %, the sensors forecasted to grow most significantly are those in the 5 to 10 megapixels range, and 10 and 20 megapixels range, at 88 % and 67 % respectively. However, in traditional machine vision, stable manufacturer forecasts for VGA resolution show that it remains an important component of their sales.

With sensor image formats, a little more than two-thirds of users prefer a 1/3–2/3 inch sensor format, while one-third (33 %) of users use a 1/2 inch and a 2/3 inch sensor format. This result is a clear shift toward the higher format category compared to last year, and is probably driven by increasing requirements for image and analysis quality. Despite big advances in miniaturization of sensors and their respected pixel sizes while still providing equal or even improved performance over previous generations, bigger pixel sizes ensure better utilization of incidental light. Sensors used by manufacturers varies widely by application area: 35 % use very large sensors over 1 inch, and 27 % use small sensors from 1/2 to 1/3 inch. Also, manufacturers are increasingly implementing color sensors in their designs, though the majority of users (76 %) are still working with monochrome (versus 24 % color). C-mount lenses, at 45 % (users) and 46 % (manufacturers), are the dominant lens type, with a strong tendency toward custom solutions. Manufacturers categorized 34 % of versions as „Other" (special solutions) for their lens mount of choice, but 19 % of users also specified this category when asked the same question. A significant majority of users seek global shutters as an on-sensor readout technology, thereby benefiting from excellent image quality without motion blur, especially in fast moving applications.

> **„The demand for high speed imaging systems for data analysis and control in real-time is driving developments in image frame rates and data transmission standards."**

High Image Frame Rates and High Bandwidths Are Making Real-Time Processing Feasible

The demand for high speed imaging systems for data analysis and control in real-time is driving developments in image frame rates and data transmission standards. Here too, the split between moderate-speed traditional machine vision systems and innovative high-speed applications is marked. The use of cameras below 25 frames per second (fps) recovered significantly at 51 % this year, while there was a corresponding decrease in last year's main category, that being the 25 to 60 fps group. However, applications using devices running at 60 to 100 fps doubled from 7 % to 14 % in this year's study. Manufacturers report that image rates between 25 and 60 fps are still their bestsellers, and are forecasting robust growth in their high-speed product lines: 60 to 100 fps (+ 53 %), 100 to 200 fps (+ 67 %) and over 200 fps (+ 21 %). This growth is a clear signal that users are looking for faster speeds from their imaging products (Chart 9).

Despite the difference in user and manufacturer responses about image rate requirements, almost 50 % of users view transmission rates of more than 5 gigabits per second as relevant or very relevant to their applications, which is expected to rise more than 70 % over the next two years. Real-time monitoring and analysis is one of the key benefits and is a driver for continued development when it comes to vision technology expansion. Fast image rates and rapid transmission of the data for immediate processing are seen as a must for high-precision applications. Users are recognizing this potential thus see the logical conclusion as a shift toward higher speeds (Chart 10).

When it comes to data interfaces for imaging systems, GigE Vision is the most accepted transmission standard among manufacturers and users, at 27 % and 26 %, respectively. FireWire and CoaxPress gained ground compared against the 2016 poll, but this might be a result of a different respondent mix in this year's study. Where future high-speed interfaces are concerned, users (at 48 %) and manufacturers (at 62 %) agree: 10GigE is going to be used to quickly transmit high data volumes in the near

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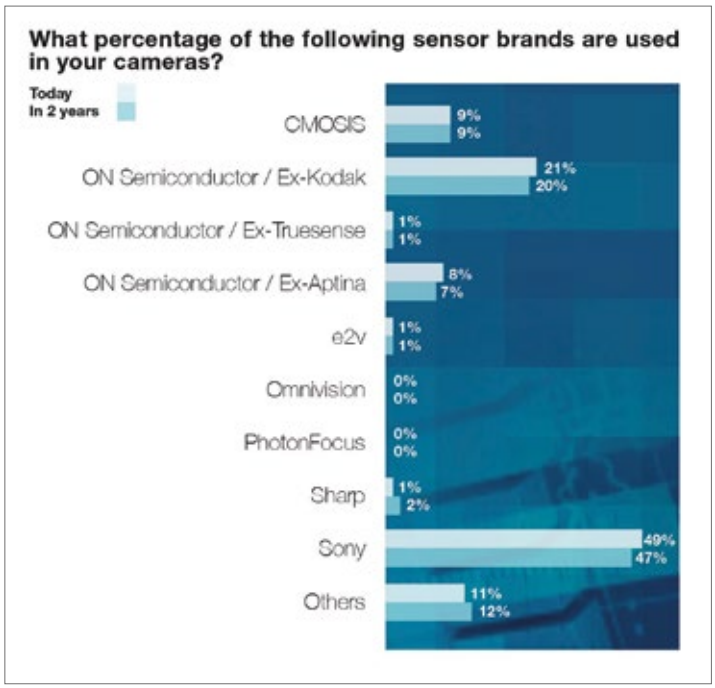

Chart 8: Sensor brand usage, users

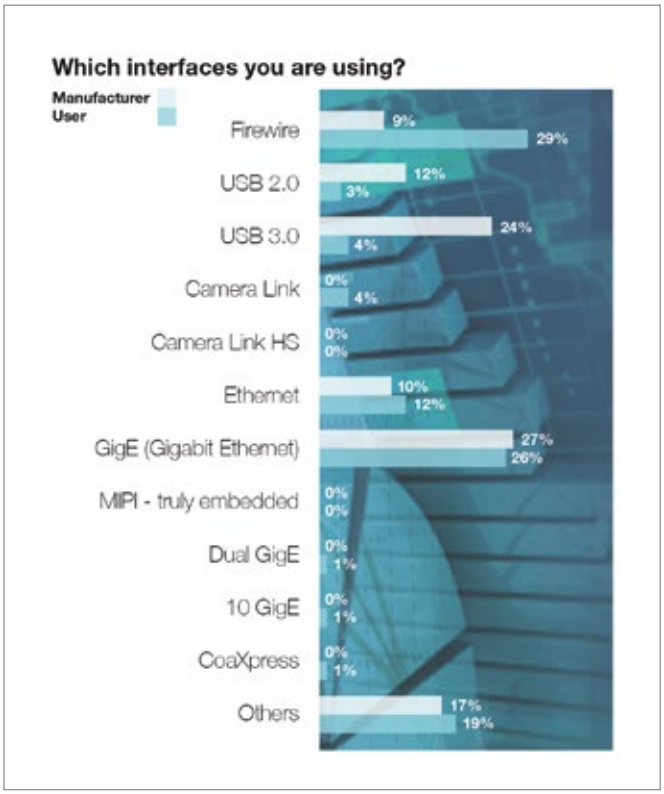

Chart 9: Interface usage

term. The ongoing development of the GigE Vision standard predicts a simple upgrade and straightforward connectivity, without additional components. Frame grabbers, despite a decrease of about 10 %, retain their position and their justification for specific applications: more than a fifth (+ 20 %) of both manufacturers and users employ them and plan to continue into 2019.

A Steady Trend: Precision, High Performance and Efficiency, Plus Ease-of-Use

"As always, the comments received are the most interesting aspect", says survey sponsor and Framos CEO Dr. Andreas Franz. "Alongside the purely technical survey data, these comments give us a completely unfiltered view of what participants expect from the imaging market and what kind of developments they are predicting. Since the survey guarantees anonymity, both manufacturers and users gave very revealing answers on their feel for the market and forthcoming changes."

In an era of zero-error production of systems starting at a small batch size of 1, many users emphasize the importance of greater precision in automation, measurement, and testing. They expect to achieve this goal through improved vision performance using higher resolutions, better sensor technologies, and high image frame and transmission rates to retrieve and consume this data very rapidly. At the same time, higher performance must come in at lower costs and at better price-performance ratios to make it viable for them to implement it into their systems. In particular, smaller operators along with new application markets are looking to capitalize on this improvement in efficiency but profitability and ROI (return on investment) are major factors across the board in their decision process. Participants, as in last year's study, stated that imaging must have a clear benefit for them but also needs to keep them profitable.

> **"In an era of zero-error production of systems starting at a small batch size of 1, many users emphasize the importance of greater precision in automation, measurement, and testing."**

The conditions for further growth are still the same this year according to users who also stated a need for easy system integration and straightforward component assembly. User-friendliness, open source software and libraries, intelligent algorithms, and consistent interfaces are a must for most users to allow for ongoing growth in imaging. These results come as no surprise considering the most recent vision system customizations and more frequent in-house implementations. Also, users expect the whole vision system to be supported by data security and wireless connections. Users want to expand the potential of their imaging applications with more analysis options, while maintaining and improving on quality assurance and significant production optimization.

Along with Smart Factory optimization and traditional machine vision, users see huge potential in embedded vision technologies for 3D applications and in deep learning using artificial intelligence. The imaging landscape, given the exhaustive application potential of sensors, has an opportunity to conquer and revolutionize new industries where the majority of users are still deliberating over specific applications. This is a big opportunity for system integrators and value add distributors to generate new custom solutions with practical examples and use cases, and to increase the market penetration of imaging systems.

Artificial Intelligence, Human-Machine Teamwork and Innovative Applications

Manufacturers agree with users on the following points: they are looking for higher performance at lower prices from vision technologies, and they want good usability and consistent interfaces. Manufacturers

> „User-friendliness, open source software and libraries, intelligent algorithms, and consistent interfaces are a must for most users to allow for ongoing growth in imaging.“

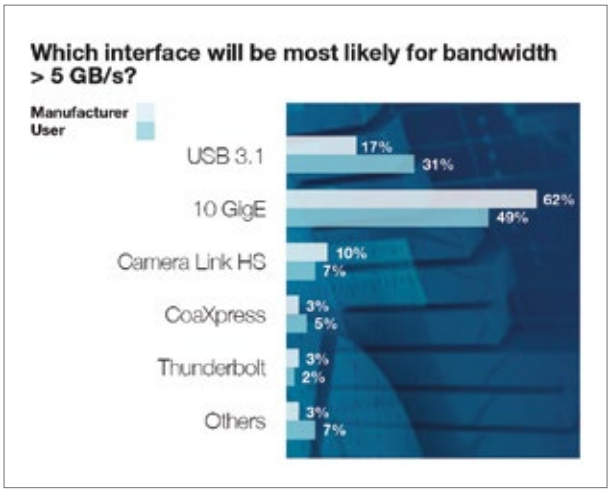

Chart 10: Bandwidth relevance

make it very clear that quality is a top priority, both in terms of differentiating themselves from Asian competitors, and to gain a solid foothold in new markets with more demanding requirements. Consequently, alongside increased automation and the Smart Factory, manufacturers have a far greater focus for using artificial intelligence. In their view, human-machine collaboration, specifically in robotics, and an increasing number of autonomous driving and aviation systems are key areas of growth. The new imaging solutions from Intel and Nvidia, who have capitalized on their processing expertise to produce innovative, cognitive vision systems, were frequently mentioned in manufacturers' comments. They believe the entire imaging industry will reap the benefits of this innovation. One obvious conclusion is that it will drive expansion into new industries, and into more consumer segments. Demands for standardization should help mitigate the resulting fragmentation and customization often seen with new technology introductions.

Conclusion

The results of the Framos 2017 Market Study clearly indicate that imaging is no longer a standalone discipline, but is increasingly an integral part of modern automation and control systems. Along with traditional machine vision applications, embedded vision now provides the capability to analyze images at lightning speed and to make independent decisions based on the captured visual data. The real growth potential of vision technology rests on increased penetration into the Smart Factory, together with the innovative use of artificial intelligence in new industries and consumer markets. Visual sensor technology is equipping machines with human senses and human intelligence, giving them the capability to "sense", understand, interact, and learn. New types of consumer goods, safety features, and industrial solutions are becoming viable thanks to reliable wireless devices like those used for eye-tracking, gesture, and face recognition. Self-aware robots, collision avoiding drones, and reliable monitoring solutions are just a few examples that are expected to be seen in industry. Now, smart homes can be controlled with a swipe of a finger, and cars can automatically brake if they detect the driver falling asleep at the wheel. Imaging is becoming a fundamental building block of the digitally networked world and is contributing to greater efficiency, security and comfort in every area of life.

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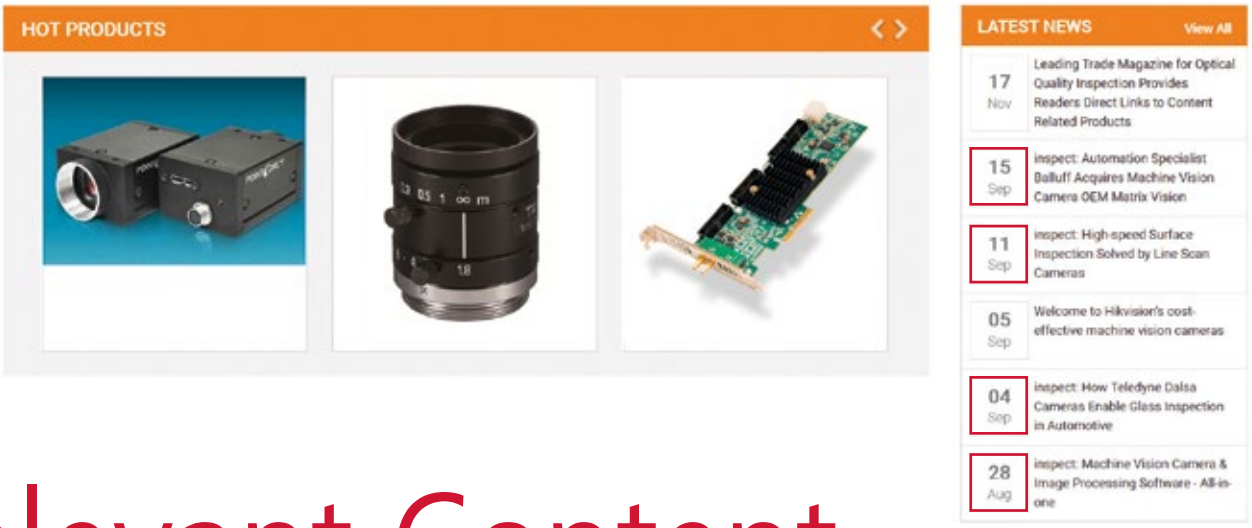

Relevant Content and Related Products

Linking Editorials to Fitting Machine Vision Components

inspect is keen on consistently providing you with high-quality information about latest market trends, technologies, case studies and more. The goal is to support the business success of inspect readers in industrial imaging. Now, inspect is going one step further: A new project with an online product platform for machine vision components will show how readers obtain instant product overviews tailored to the editorial content of their interest.

Imagine you are reading an article about the features of the new image sensors with CMOS Global Shutter technology. Appealed by the promising new opportunities, you likely want to find out, which cameras based on these sensors are available right now. What would you normally do? Probably, you would browse to the websites of your various preferred camera vendors, click your way to the product overview pages on each site, and you would try to find out by reading through the specs of the latest models.

Now inspect features an easier and faster way: Within a joint project with the online platform Imaging.market, selected articles

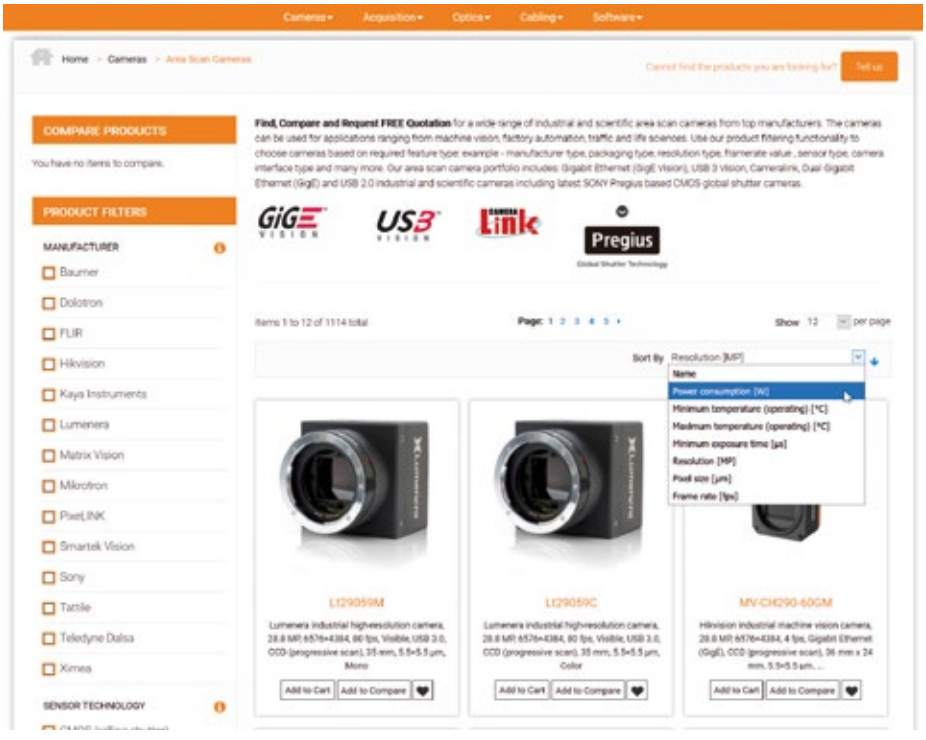

Fig. 2: Filtered and sorted selection of area scan cameras

Fig. 1: Sample QR-code linking to CMOS global shutter cameras

> Links to featured editorial content on inspect-online.com can be found on Imaging.market, providing useful background information with technical articles and application stories.“

on inspect-online.com will now provide one or more links to the online platform, showing you e.g. the tailored selection of machine vision cameras that utilize the CMOS global shutter sensors of interest. On the other hand, links to featured editorial content on inspect-online.com can be found on Imaging.market, providing useful background information with technical articles and application stories.

Additionally, relevant print articles in the inspect journal will provide QR-codes which lead directly to the corresponding online articles with all the links to the Imaging.market online platform.

Looking through Product Categories

A traditional imaging system consists at least of four types of components: lenses, cameras, cables, and processing units. Often also lights, optical filters, extension tubes, frame grabbers, and advanced software libraries come into play. This makes it nine completely different product categories. Due to the current shape of the machine vision market, most OEMs produce only one single category of component. Thus, just finding suppliers for each product category, selecting one, and asking for a quotation is a considerable effort. What makes it worse, many organizations require developers to select at least three different suppliers per product category and to request quotations from each. A task that takes easily several months, delays development, and prolongs time-to-market, left alone the costs.

It is the mission of the Imaging.market product platform to improve, simplify, and accelerate the selection process of imaging components for vision system designers. Therefore the platform provides highly detailed product filtering and sorting features. For example, area scan cameras can be filtered by 12 different attributes, from manufacturer, frame rate, and resolution, to criteria like the image sensor brand or the sensitive spectrum. Once a buyer has filtered the portfolio of currently over 1,100 cameras from 14 OEMs based on his application requirements, he can sort the remaining selection by attributes like the minimum exposure time, power consumption, or min./max. operating temperature (see fig. 2).

Figure 3 shows the distribution of area scan cameras available on Imaging.market by resolution and frame rate. The radius of the circle indicates the number of cameras available with a certain specification, influenced by the image sensor type, the camera interface, and its technical design. While the portfolio is continuously growing and will comprise latest cameras with resolutions of 50 megapixels and more, the chart already indicates the broad coverage.

An Independent Product Finder

While various distributors also feature a more or less comprehensive range of machine vision components, their portfolio is designed to avoid internal competition among different brands. Thanks to the independence of

Continued on page 26

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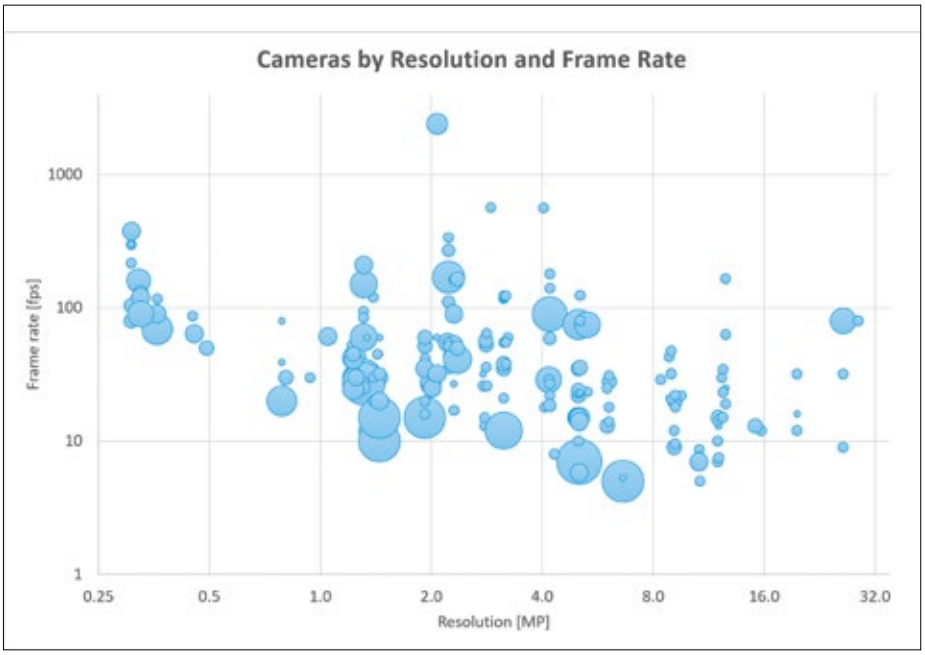

Fig. 3: Distribution of cameras by resolution and frame rate

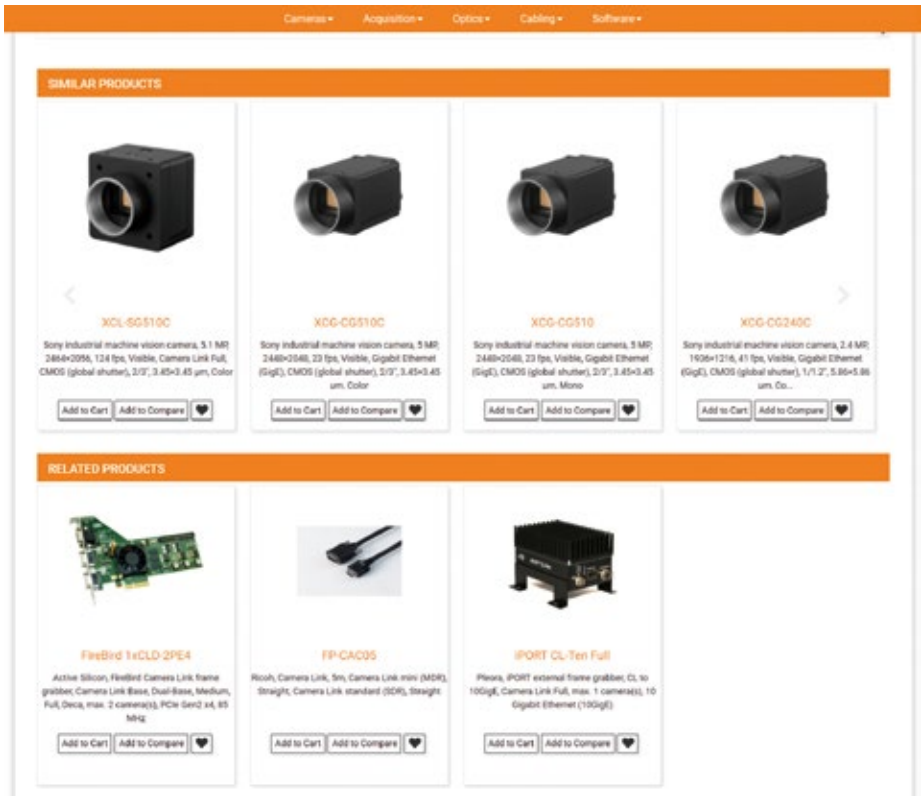

Fig. 4: Cross-linking with matching related products simplifies the system design process.

Imaging.market, this product finder is specifically designed to allow for the comparison of competing products.

For that purpose, a developer can dive in the details of each camera once he has narrowed down the selection to a handy number. Every product on the platform is specified by up to five vendor-defined unique selling propositions (USPs) as well as a comprehensive and standardized set of attributes, over 70 in case of area scan cameras. Only this standardization allows for the filtering and sorting but also for a convenient side-by-side comparison over all camera features (see fig. 3). Furthermore, every vendor is given the opportunity to add a detailed description of the camera and/or the manufacturing company as well as videos and various downloads, such as datasheets, manuals, white papers, case studies, CAD-data and the like. Currently close to 2,800 product-related files are available for download. Thus, every manufacturer has the opportunity to meet their customers' increasing desire of educating themselves about product features and the manufacturers' companies before talking to a sales representative.

To simplify the design process of a vision system, Imaging.market users obtain links to matching products. Figure 4 shows two exemplary frame grabbers and a cable which would well interoperate with the currently selected camera utilizing a Camera Link Full interface.

Finally, when a buyer has identified the set of cameras, lenses, cables and other components which fulfill his requirements, he can add all products to his inquiry cart and request a quotation from all manufacturers at once. This becomes especially efficient when detailed information about the application, requirements, and schedule of the development project is shared during the last step of sending the request for quotation (RFQ).

At the same time, as soft facts like responsiveness and the quality of the technical presales support are decisive for many imaging customers, this is a neat way to evaluate the performance of the different vendors.

> „Currently close to 2,800 product-related files are available for download."

Conclusion

Machine Vision has left its adolescence since long. More and more engineers have established expertise to develop vision solutions, design systems, derive requirements and pick imaging components themselves. A key to their success is a solid source of information about current market trends, technology developments, solved applications, as well as fast access to detailed product data. The joint project of inspect and Imaging.market entirely covers these needs and constitute an innovative yet obvious adaptation to the customers' changing buying process in the age of digitization.

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About Allied Vision

For more than 25 years, Allied Vision has been helping people to see the bigger picture and give their best in whatever they do. With our technologies and our know-how we help them to be faster, more efficient, precise and performant. With a deep understanding of customers' needs, Allied Vision finds individual solutions for every application, a practice which has made Allied Vision one of the leading camera manufacturers worldwide in the machine vision market.

Camera Solutions for Individual Requirements

Founded in 1989, Allied Vision supplies camera technology and image capture solutions for embedded systems as well as for industrial inspection, science, medicine, traffic monitoring and many more application areas in digital imaging. Our engineers design a wide range of digital cameras with a large scope of resolutions, frame rates, spectral sensitivities and sensor technologies. We have created modular platforms to ensure that your camera adapts to your requirements and not the other way around. Our job is to reliably deliver the image you need, when you need it and how you need it.

Modular Platforms

Acknowledging the special requirements of embedded vision systems as an alternative for PC-based machine vision, Allied Vision's engineers have completely reinvented camera architecture to create a new camera platform for embedded vision. The new Allied Vision 1 product line is a full range of digital cameras designed for embedded vision applications but fulfilling the high standards of industrial and scientific image processing also referred to as "machine vision". It combines the performance of a machine vision camera and the size, power consumption and price of an embedded camera.

High Quality

We manufacture our products according to the highest quality standards in state-of-the-art clean room facilities to deliver the precision and reliability our customers need. All our manufacturing sites are ISO 9001 certified and comply with the ISO 13485 quality standard for medical devices.

With eight locations in Germany, Canada, the United States, Singapore and China as well as a network of sales partners in over 30 countries Allied Vision offers an excellent worldwide service and support. Allied Vision is part of the TKH Group.

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Foundation
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Products
Cameras, Interfaces/Cables/Peripherals, Optics

Applications
Character Recognition, Digitalization, High Speed Analysis, Inspection Piece Parts, Metrology 2D/3D, Particle Analysis, Part Identification, Robot Vision 2D/3D, Symbol Recognition

Industries served
Automotive and Suppliers, Electronics/Semiconductors, Foodstuffs/Beverages, Mechanical Engineering/Line Building, Medical Technology, Packaging, Pharmaceuticals/Cosmetics/Chemicals, Plastics, Precision Engineering/Optics/Machine Vision, Traffic/Logistics

Associations
AIA, Embedded Vision Alliance, EMVA, JIIA, UKIVA, VDMA

Regions served
Asia, China, EMEA, Japan, Latin America, North America

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About Basler

The Future Is in Our Sight

For nearly three decades, Basler has pushed the limits of what industrial cameras are capable of. This dedication to research, development, and superior manufacturing has led us to become the world's largest producer of industrial digital cameras, with ideal solutions for factory automation, robotics, medical & life sciences, microscopy, retail, traffic, and a wide range of other applications. Our history of innovation is defining the future of vision, and our support is guiding you there. That's what makes Basler the most trusted brand and the world market leader in industrial cameras.

We Set Trends that Set Standards

Basler has always been in on the ground floor of game-changing technology. We developed unique ways to increase our efficiency so you decrease your costs. We championed the standardization of Camera Link, GigE Vision and USB3 Vision. And we pioneered the adoption of CMOS sensors to deliver dynamic performance, high speeds and high resolution with a superb performance for the price compared to CCD. At Basler, we establish advanced technologies that offer new and immediate value to you.

Outperforming Begins In-house

Basler has built the industry's largest and smartest industrial camera portfolio, featuring more than 300 models-with GigE Vision, USB3 Vision or Camera Link interfaces to ensure that there's a perfect camera for your application. In order to support such a robust offering, we're continually investing in new ways to maximize our manufacturing and testing capabilities and make sure that each product performs in the field. Our in-house production facilities in Germany and Singapore are living laboratories, where we learn through experience how to improve our cameras' performance in image quality, reliability, repeatability and ease of use. We're driven to grow our portfolio, so we can drive your results.

Basler's Components Enhance Your Vision

Basler puts everything you need to get the full picture in a single place. We offer a broad range of vision components that seamlessly integrate with the camera, such as lenses, I/O cables, hubs, PCI cards and other essential accessories. All of our cameras and components are rigorously tested before they leave our facility to ensure that they deliver the high quality and reliability that you expect from Basler.

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Alexander Temme,
Director of Sales
Herfried Beckdorf,
Head of European Sales

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Products
Cameras, Lenses

Applications
Character Recognition, Digitalization, High Speed Analysis, Inspection Piece Parts, Inspection Webbed Material, Material Testing, Metrology 2D, Metrology 3D, Part Identifikation, Particle Analysis, Robot Vision 2D, Robot Vision 3D, Symbol Recognition, Others

Industries served
Automotive and Suppliers, Electronics/Semiconductors, Energy/Water/SolarTechnology, Foodstuffs/Beverages, Glass/Ceramics, Mechanical Engineering/Line Building, Medical Technology, Metal, Packaging, Paper/Wood, Pharmaceuticals/Cosmetics/Chemicals, Plastics, Precision Engineering/Optics/Machine Vision, Traffic/Logistics, Other

Platforms supported
Windows, Linux

Associations
AIA, VDMA

Regions served
Africa, Asia, Australia, Central Europe, China, EMEA, Europe, Japan, Latin America, North America

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About Baumer

The Baumer Group is is one of the worldwide leading manufacturers of sensors, encoders, measuring instruments and components for automated image-processing. With around 2,400 employees and 38 subsidiaries in 19 countries, the family-owned group of companies is always close to the customer.

Capture the Essential: Industrial Cameras and Vision Sensors

Merging cutting-edge technologies and customer-focused consultancy has made us one of the leading manufacturers for image processing components. We offer a unique range of products, from industrial cameras and vision sensors to image processing components, for many different applications across varied industries. The location in Germany accommodates R&D and production under one roof which ensures our high product quality standards. Prior to delivery, every component undergoes rigid electrical and optical testing and inspection.

High-performance Industrial Cameras

High frame rates, exceptional image quality and ease of integration – that's what our industrial cameras stand for. Their robust, industrial design is the basis for long-term stability and precise image analysis. The portfolio includes CCD- and CMOS-based matrix cameras, standard-compliant with GigE Vision, Camera Link and USB3 Vision. Our many years of expertise make us understand your requirements to provide the optimum product for your application. Where standard products are too limited, we work together with you to develop customized components that fit perfectly to your application.

Easy and Intuitive Vision Sensors

Intuitive operation, fast and easy integration and configuration within minutes: These attributes characterize the Baumer VeriSens vision sensors. They can perform up to 22 different feature checks on object position and location, presence and completeness, reading and verifying human-readable imprints (OCR/OCV) or bar and matrix codes including GS1 codes. High process reliability is achieved with our patented FEX image processor. Models for color identification and inspection, with C-Mount design and integrated flash controller are also available as well as models with integrated white and infrared illumination.

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Dr. Oliver Vietze,
CEO and Chairman

Foundation
1952

Staff
> 2000

Products
Accessories, Cameras, Network Components, Software, Vision Sensors

Applications
Character Recognition, Inspection Piece Parts, Medical Imaging, Metrology 2D/3D, Part Identification, Particle Analysis, Pharmaceutical Applications, Robot Vision 2D/3D, Solar Cell Inspection, Surface Inspection, Symbol Recognition, Text/Code Reading, Others

Industries served
Automotive and Suppliers, Electronics/Semiconductors, Energy/Water/Solar Technology, Foodstuff/Beverages, Glass/Ceramics, Mechanical Engineering/Line Building, Medical Technology, Metal, Packaging, Paper/Wood, Pharmaceuticals/Cosmetics, Plastics, Precision Engineering/Optics/Machine Vision, Traffic/Logistics, Other

Associations
AIA, CMVU, EMVA, UKIVA, VDMA

Regions served
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Products
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Applications
Character Recognition, High Speed Analysis, Inspection Piece Parts, Inspection webbed Material, Material Testing, Metrology 2D/3D, Part Identification, Particle Analysis, Robot Vision 2D/3D, Symbol Recognition

Industries served
Automotive and Suppliers, Electronics/Semiconductors, Foodstuffs/Beverages, Glass/Ceramics, Mechanical Engineering/Line Building, Medical Technology, Packaging, Paper/Wood, Pharmaceuticals/Cosmetics/Chemicals, Precision Engineering/Optics/Machine Vision, Traffic/Logistics

Associations
AIA, CMVU, EMVA, JIIA

Regions served
Africa, Asia, Europe, Middle East, North America

About Flir Systems

Flir Systems is a global leader in the design and manufacture of innovative machine vision cameras. Starting with the acquisition of Point Grey in 2016, Flir is developing a machine vision center of excellence with the goal of delivering best-in-class customer experiences and helping our customers be more competitive.

Quick Facts:

- Designed and manufactured in Canada
- Global distribution network
- ISO 9001:2008 certified

Making our Customers More Competitive

At Flir, our goal is to help our customers be more competitive. We strive to give our customers access to the latest technologies first; whether it be the latest sensors or being first-to-market with link technologies. Flir (formerly Point Grey) innovations include the world's smallest GigE camera, the world's first machine vision USB 3.0 camera, and now, a 10GigE camera.

Delivering Excellence

To ensure our customers achieve maximum value from their relationship with Flir, we:

- Design camera systems based on what customers' current and future needs
- Manufacture and test every camera in our ISO 9001:2008 certified facility
- Offer world-class support program including quick response, friendly staff, rich online technical resources, a webstore, and regular firmware updates

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Staff
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About Schäfter+Kirchhoff

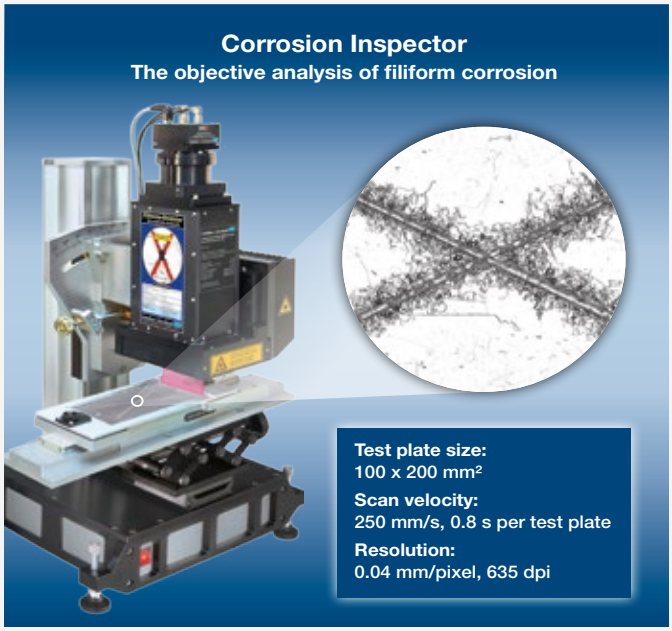
Located in central Hamburg, Schäfter + Kirchhoff's headquarter is home to 35 employees. From there they manufacture high quality products that are delivered to customers all around the world.

The company was founded over 60 years ago. Starting with classical lens design and customized optical solutions the focus shifted gradually towards the now offered three product lines: polarization-maintaining fiber optics, laser lines and line scan cameras. A special focus is set on a correct and advantageous combination of precision and optical components (optomechanics), which is the basis for high quality, stability and durability.

One example of successful optomechanics, e.g. in the field of fiber optics, is the laser beam coupler 60SMS, which is used to couple into polarization-maintaining fibers. This demanding task requires very high precision and quality in order to reach long-term stability and high coupling efficiencies. The SK010PA polarization analyzer is the optimum tool for aligning to the polarization-axis of the fibers in a very precise and fast way. Further fiber optics components are available for the wavelength range 360-2100 nm.

Another field using successful optomechanics is Machine Vision that uses two product lines, laser line or spot generators as well as line scan cameras. Ruggedized solutions for industrial purposes are only possible by using high-quality optics, mechanics and electronics, e.g. for complete line scan camera based scanner systems. The Corrosion Inspector, as an example, is an automated and objective analysis tool for corrosion phenomena that offers a fast and precise evaluation according to international standards. The line scan cameras used (monochrome or color) are also supplied as OEM components for worldwide use. They are offered with different Interfaces including USB3.0 or GigE.

The motor of the company is its extensive know-how and its highly qualified and strongly committed employees. To have sales, research and development as well as manufacturing so closely knit together ensures a quick and efficient response to customer needs. Since October 2016 the company is owned by the Gregor Federau foundation which is dedicated to child and youth welfare.



Management
Dr. Ulrich Oechsner, CEO

Foundation
1956

Staff
35

Products
Cameras, Frame Grabber, Interfaces/Cables/Peripherals, Lighting Equipment, Optics, Smart Cameras/Embedded Systems, Software, Turn-key Systems

Applications
Digitalization, High Speed Analysis, Inspection Piece Parts, Inspection webbed Material, Metrology 2D/3D

Industries served
Automotive and Suppliers, Electronics/Semiconductors, Energy/Water/Solar Technology, Mechanical Engineering/Line Building, Medical Technology, Metal, Packaging, Paper/Wood, Precision Engineering/Optics/Machine Vision

Regions served
Worldwide

Schäfter+Kirchhoff GmbH
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About Advantech

Founded in 1983, Advantech is a leader in providing trusted, innovative products, services, and solutions. Advantech offers comprehensive system integration, hardware, software, customer-centric design services, embedded systems, automation products, and global logistics support. We cooperate closely with our partners to help provide complete solutions for a wide array of applications across a diverse range of industries. Our mission is to enable an intelligent planet with Automation and Embedded Computing products and solutions that empower the development of smarter working and living. With Advantech, there is no limit to the applications and innovations our products make possible.

Management
Maurice van der Aa,
Senior PSM Intelligent Systems – IIoT Group

Foundation
1983

Staff
> 8000

Products
Frame Grabber, Smart Cameras/ Embedded Systems, Software

Applications
Character Recognition, High Speed Analysis, Inspection Piece Parts, Material Testing, Part Identification, Robot Vision 2D/3D, Symbol Recognition, Thermography

Industries served
Automotive and Suppliers, Electronics/Semiconductors, Energy/Water/Solar Technology, Foodstuffs/Beverages, Glass/ Ceramics, Mechanical Engineering/Line Building, Medical Technology, Metal, Packaging, Paper/ Wood, Pharmaceuticals/Cosmetics/Chemicals, Plastics, Precision Engineering/Optics/Machine Vision, Traffic/Logistics

Associations
AIA, EMVA, VDMA

Regions served
Worldwide

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Enabling an Intelligent Planet

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About AutoVimation

AutoVimation produces protective camera enclosures and a wide range of accessories that allows to use machine vision systems in almost any environment. Thanks to the patented camera mount the enclosure works like a heat-sink and can so be used in higher ambient temperatures. Water or Peltier cooling systems are available in order to extend the temperature range further. The „Machine-Vision Construction Kit“ makes it easy to integrate cameras, lights and other components into a machine – using pre-fabricated parts, avoiding

design time and allowing simpler adjustment to the application. New is the stainless steel enclosure series plus mounting system in hygienic design with IP69K protection.

Management
Peter Neuhaus, CEO
Andreas Beetz, Sales Manager

Foundation
2008

Staff
3

Products
Lighting Equipment, R&D, other

Applications
Character Recognition, Digitalization, High Speed Analysis, Inspection Piece Parts, Inspection Webbed Material, Material Testing, Metrology 2D/3D, Robot Vision 2D/3D, Particle Analysis. Part Identifcation, Symbol Recognition, Thermography

Industries served
Automotive and Suppliers, Electronics/Semiconductors, Energy/Water/Solar Technology, Foodstuffs/Beverages, Glass/ Ceramics, Mechanical Engineering/Line Building, Medical Technology, Metal, Packaging, Paper/Wood, Pharmaceuticals/ Cosmetics/Chemicals, Plastics, Precision Engineering/Optics/ Machine Vision, Traffic/Logistics

Companies represented
Swivellink

Regions served
Asia, Australia, Central Europe, Europe, Latin America, North America, national

autoVimation
building machine vision

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About Chromasens

Machine Vision 'Made in Germany'

Chromasens develops and produces both standardized machine vision components – such as color line scan cameras, spectral cameras, 3D stereo cameras and line scan lights – and custom-specific image processing solutions. Chromasens employees have comprehensive expertise in development, project management, application creation, system integration and professional services. The company's know-how is further enhanced through continuous dialogue with universities and research centers. The intensive cooperation with the customer in the form of comprehensive support throughout every project phase is a cornerstone of the company philosophy. Development and manufacturing takes place at the company's facility in Constance. In May 2017 Chromasens has joined the Lakesight Technologies group.

chromasens
Imaging for Professionals

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Management
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Markus Schnitzlein, CEO

Foundation
2004

Staff
63

Products
Cameras, Lighting Equipment

Applications
Colour Measurement, Document Scanning and Archiving, Glass and Flat Panel Inspection, High Speed Piece Parts and Web Inspection, Metrology 2D/3D, Print Inspection, Semiconductor Inspection, Sorting Processes

Industries served
Automotive, Ceramics, Electronics/Semiconductor, Food, Logistics, Machine Vision, Medical, Metal, Packaging, Paper/Wood, Pharma/Cosmetics, Plastics, Printing, Traffic, Other

Associations
AIA, EMVA, VDMA

Regions served
Asia and Pacific Rim, Europe, Latin America, North America, ROW, national

About Edmund Optics

Edmund Optics, leading supplier of optics, imaging, and photonics technology with manufacturing sites in the US, Asia and Europe as well as global sales offices, holds with a portfolio of about 30.000 products the world's largest inventory of optical components for immediate delivery. Building up great competency in imaging and imaging components, EO provides complete imaging solutions with a large product line, technical expertise, manufacturing capabilities, extensive technical support, and assists customers in every way possible to maximize the performance of their imaging system. From stock items in the catalog to custom imaging lenses, from prototype to high volume: "EO - Your Imaging Solutions Provider."

Edmund optics | worldwide

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Helge Vogt, Director Sales Europe

Dr. Boris Lange, Imaging Solutions Engineer, Germany

Foundation
1942 in USA, 2000 in Germany

Staff > 800

Products
Cameras, Imaging Lenses, Lighting Equipment, Microscopes, Optics

Industries served
Electronics/Semiconductors, Medical Technology, Mechanical Engineering/Line Building, Pharmaceuticals/Cosmetics/Chemicals, Precision Engineering/Optics/Machine Vision, Traffic/Logistics

Associations AIA, EMVA, JIIA

Regions served Worldwide

About Fujifilm Optical Devices

Fujinon Lenses from Fujifilm
Tapping into optical technologies and precision processing and assembling technologies nurtured over many years, Fujifilm offers a wide variety of Fujinon lenses. The Fujinon brand is world-renowned for its innovative and reliable products in the field of broadcast & cine lenses, binoculars, CCTV lenses, machine vision applications as well as for special custom made optical products, for example those used in digital projectors, automobiles and in many other applications.

CCTV and Machine Vision lenses: The extensive product range of Fujinon CCTV and Machine Vision lenses features the appropriate solution for almost every application. The Japanese manufacturer offers a continuously growing product range of high resolution megapixel Zoom and Varifocal lenses for security applications in HD quality. Lenses for Machine Vision are precise optics with minimized distortion for optimal image qualtiy – even in harsh environments. Special lenses round off the wide product range, like infrared-coated lenses for Day&Night, lenses for 3CCD cameras or high resolution 185° Fish Eye lenses. You no longer miss anything with Fujinon lenses.

Management
Christopher Brawley,
Homare Kai,
Masaru Yoshizawa,
Koichi Tamai
(Managing Directors)

Foundation
1934

Staff
500

Products
Optics

Applications
Character Recognition, Digitalization, High Speed Analysis, Inspection Piece Parts, Metrology 2D, Metrology 3D, Part Identifikation, Robot Vision 2D, Robot Vision 3D, Symbol Recognition

Industries served
Precision Engineering/Optics/Machine Vision

Regions served
Central Europe, EMEA, Europe, national

FUJIFILM

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cctv_eu@fujifilm.com
www.fujifilm.eu/fujinon

See our ad on page 59

About the JAI Group

JAI is a global manufacturer of digital cameras for machine vision, traffic imaging, surveillance, life science and scientific research.

Besides a broad range of leading-edge 1-CCD and 1-CMOS progressive area scan and line scan cameras, JAI is a leading provider of multi-imager cameras incorporating advanced prism-block technology, including 3-CCD/3-CMOS RGB area scan cameras, 2-CCD multi-spectral/HDR cameras plus a complete family of 3-CMOS/4-CCD/4-CMOS line scan cameras. JAI's product program includes cameras for visible, UV, NIR and SWIR imaging with GigE Vision, Camera Link, USB 3.0 Vision and CoaXPress interfaces.

See the possibilities

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Valby Torvegade 17, 1st floor
2500 Valby
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Tel.: +45 4457 8888
Fax: +45 4491 3252
camerasales.emea@jai.com
www.jai.com

See our ad on page 5

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camerasales.emea@jai.com

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camerasales.americas@jai.com

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Management
Jørgen Andersen, CEO
Masao Watabe,
President of JAI Ltd. Japan
Flemming W. Maunsbach,
Group VP of Finance
Christian Felsheim,
VP Sales EMEA
Shuichi Suibui, Global
Marketing and Product Manager

Foundation
1963

Staff 101–250

Products
Cameras, Interfaces/Cables/Peripherals, Software, Other

Applications
Character Recognition, High Speed Analysis, Inspection Piece Parts, Inspection Webbed Material, Metrology 2D, Part Identification, Robot Vision 2D, Symbol Recognition

Industries served
Automotive and Suppliers, Electronics/Semiconductors, Energy/Water/Solar Technology, Foodstuffs/Beverages, Glass/Ceramics, Mechanical Engineering/Line Building, Medical Technology, Metal, Packaging, Paper/Wood, Pharmaceuticals/Cosmetics/Chemicals, Precision Engineering/Optics/Machine Vision, Traffic/Logistics, Other

Associations AIA, EMVA, JIIA

Regions served
APAC, EMEA, The Americas

About Matrix Vision

Matrix Vision is a leading manufacturer and offers a large spectrum of digital cameras – from USB, GigE with Power over Ethernet to smart cameras with integrated easy configurable machine vision software. A wide range of USB 3.0 cameras with CMOS sensors up to 12 megapixels are provided with the USB3 Vision Standard. Matrix Vision introduced a new, revolutionary 6D perception camera. It detects objects in space by means of motion, depth information and experience. The perception camera is ideal for palletizing, de-palletizing and pick & place applications in logistic, packaging and

automotive sectors. Besides an extensive range of standard products we offer custom solutions, which provide maximum utility for users as a result of continuous development. Join our vision world and benefit from cutting-edge technologies and extensive services.

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www.matrix-vision.com

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France
Italy
UK & Ireland
Scandinavia
India

Management
Erhard Meier, CEO
Uwe Furtner, CTO
Dirk Muschert, Sales Manager
Marcus Bleise, Sales Manager International

Foundation
1986

Staff
51-100

Products
3D Cameras, Digital Cameras, Frame Grabber, Smart Cameras, USB 3.0 and GigE Cameras, Software

Applications
Digitalization, High Speed Analysis, Inspection Piece Parts, Inspection Webbed Material, Material Testing, Metrology 2D, Metrology 3D, Part Identification, Particle Analysis, Robot Vision 2D, Robot Vision 3D, Symbol Recognition, Others

Industries served
Automotive and Suppliers, Electronics/Semiconductors, Energy/Water/Solar Technology, Foodstuffs/Beverages, Glass/Ceramics, Mechanical Engineering/Line Building, Medical Technology, Metal, Packaging, Paper/Wood, Pharmaceuticals/Cosmetics/Chemicals, Plastics, Precision Engineering/Optics/Machine Vision, Traffic/Logistics, Other

Associations
AIA, DNHK, VDMA

Regions served
Africa, Asia, Australia, Central Europe, China, EMEA, Europe, Japan, Latin America, North America

About Micro-Epsilon

Micro-Epsilon is a medium-sized family-run company which plays a leading role in measurement technology. For more than 45 years we have continuously offered reliable, high performance, unique solutions particularly when high precision measurement or inspection is required. Our product range covers sensors for the measurement of distance and displacement, sensors for IR temperature measurement and color detection, as well as systems for dimensional measurement and defect detection.

Innovative products that provide the highest level of precision are created through intensive research and development processes, unique know-how and a broad network of collaborative operations.

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See our ad on page 3

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Foundation
1968

Staff
800

Products
Vision Sensors/Smart Cameras, Optical Instruments, Turn-Key Sytems, Other

Applications
Inspection Piece Parts, Metrology 2D, Metrology 3D, Robot Vision 2D, Robot Vision 3D, Part Identification, High Speed Analysis, Thermography

Industries served
Automotive and Suppliers, Electronics/Semiconductors, Foodstuffs/Beverages, Glass/Ceramics, Mechanical Engineering/Line Building, Medical Technology, Metal, Paper/Wood, Pharmaceuticals/Cosmetics/Chemicals, Plastics, Precision Engineering/Optics/Machine Vision, Traffic/Logistics

Associations
AMA

Regions served
Asia, China, Europe, North America, South/Central America, national

About Optics Balzers

Optics Balzers is the innovative and independent industry partner for the development and production of coated optical components and subassemblies. The company possesses a broad and in-depth know-how in optical thin-film coating processes, complemented by sophisticated patterning, glass bonding and sealing, and further processing capabilities necessary for producing optical thin-film coated components up to optical subassemblies.

Highly experienced and skilled development and engineering teams closely collaborate with customers to develop innovative solutions meeting their requirements and design robust processes to manufacture the customer specific components. The combination of these capabilities and skills places Optics Balzers at the forefront of markets in the photonics industry such as Automotive, Biophotonics, Laser, Space & Defence, Lighting & Projection, Sensors & Imaging, and Industrial Applications.

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See our ad on page 43

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Switzerland, Austria
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Singapore
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Foundation
2009 / 1946

Staff
251-500

Products
Optics, Optical Coatings, Optical Components

Industries served
Automotive, Medical Technology, Packaging, Precision Engineering/ Optics/Machine Vision, Others

Applications
Others

Regions served
Asia, EMEA, Europe, North America

About Opto

Opto delivers integrated imaging modules that consist of optic, light, camera and intelligence for integrators, product manufacturers and machine builder in the domains of medtech and industry. Opto is a globally recognised solution provider, able to support customers from around the globe.

Together with our subsidiaries AllianceVision and RobSwiss we extend our optics know how with imaging and automation skills on a solution level for high precision demands in photonics and machine vision applications.Through its deep application knowledge, Opto provides its clients with special optomechanical solutions that are reduced to the essentials of the application and perfectly cost optimised.

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See our ad on page 23

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info@opto-uk.com

RobSwiss Sarl
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contact@robswiss.ch

Management
Markus Riedi, CEO
Klaus Flügel, CTO
Martin Price, CMO
Roman Hartwich, COO

Foundation
1980

Staff
11-50

Products
Custom OEM Modules, Imaging Modules, Machine Vision Objectives, Optical Instruments, Optics, R&D, Vision Sensors

Applications
Cell Analysis, Inspection, Material Testing, Metrology 2D/3D

Industries served
Aerospace, Automotive and Suppliers, Biotechnology, Electronics/Semiconductors, Energy/Water/Solar Technology, Glass/Ceramics, Mechanical Engineering/Line Building, Medical Technology, Metal, Packaging, Paper/Wood, Precision Engineering/Optics/ Machine Vision, Security

Associations
AIA, EMVA, VDMA, Bayern Photonics

Regions served
Asia, Australia, China, EMEA, Europe, Japan, Latin America, North America

About Qioptiq Photonics

Qioptiq, an Excelitas Technologies Company since 2013, is a photonics technology leader focused on delivering innovative, market-driven solutions to meet the high-performance lighting, detection and optical technology needs of today's global markets. We are committed to enabling our customers' success in applications across the fields of biotechnology, consumer products, defense & aerospace, medicine, scientific discovery, safety & security, automotive, energy & environment, semiconductor and industrial manufacturing. Through the acquisition by Excelitas, Qioptiq is now part of a network of 19 state-of-the-art photonics technology centers staffed with more than 5,500 photonics professionals across North America, Europe and Asia.

Learn more at www.excelitas.com and www.qioptiq.com.

QIOPTIQ
Photonics for Innovation
An Excelitas Technologies Company

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www.qioptiq.de / www.excelitas.com

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Fax: +1 781 290 4702

Management
Georg Zeitelhack
georg.zeitelhack@excelitas.com

Matthias Endig
matthias.endig@excelitas.com

Foundation
Rodenstock Präzisionsoptik became Linos (established in 2006) and Linos became Qioptiq (established in 2010)

Staff
1,000

Products
Lighting Equipment, Optical Instruments, Optics, X-ray equipment, Other

Applications
Character Recognition, Digitalization, High Speed Analysis, Inspection Piece Parts, Inspection webbed Material, Material Testing, Metrology 2D/3D, Particle Analysis, Part Identification, Robot Vision 2D, Symbol Recognition, Thermography

Industries served
Automotive and Suppliers, Electronics/Semiconductors, Energy /Water/Solar Technology, Foodstuffs/Beverages, Glass/Ceramics, Mechanical Engineering/ Line Building, Medical Technology, Metal, Packaging, Paper/ Wood, Pharmaceuticals/Cosmetics/Chemicals, Plastics, Precision Engineering/Optics /Machine Vision, Traffic/Logistics

Associations
EMVA

Regions served
Worldwide

About Ricoh International

On 1st April 2017, Ricoh (formerly Pentax) moved from Ricoh Imaging Europe S.A.S in Hamburg to Ricoh International B.V. - German Branch in Düsseldorf.

Ricoh International has 60 years of experience in the manufacture of CCTV lenses (including machine vision). Ricoh's goal is to always offer their machine vision customers the best lens with which to meet the technical constraints of an application. The focus during the development of our lenses is on quality, performance, durability and longevity. Therefore, since 1st November 2017 all Ricoh lenses come with a three year warranty.

RICOH
imagine. change.

Ricoh International B.V. - German Branch
Oberrather Str. 6
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Fax: +49 211 654 645 01
iosd@ricoh-europe.com
www.ricoh-iosd.eu

Management (EMEA)
David Mills, Managing Director
Hisashi Arai, Division Manager

Foundation
1987

Staff
53

Products
Optics, Other

Applications
Character Recognition, High Speed Analysis, Inspection Piece Parts, Inspection webbed Material, Part Identification, Robot Vision 2D/3D, Symbol Recognition

Industries served
Precision Engineering/Optics/ Machine Vision

Regions served
EMEA

About Stemmer Imaging

Stemmer Imaging is Europe's largest machine vision technology provider for science and industry. The perfect combination of innovative products, intelligent consulting and extensive service helps our customers solve their imaging projects with speed and ease. Our experienced specialists are available to you in 19 European countries, ensuring easy contact and optimum local consultancy service.

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Belgium
Denmark
Finland
France
Germany
Ireland
Poland
Sweden
Switzerland
The Netherlands
United Kingdom

Additional served countries:
Austria, Estonia, Iceland, Latvia, Liechtenstein, Lithuana, Luxembourg, Norway

Foundation
1987

Staff
> 260

Products
Acquisition, Cabling, Cameras, Consulting, Illumination, Optics, Software, Vision Computers, Vision Systems

Applications
Character Recognition, Digitalization, High Speed Analysis, Inspection Piece Parts, Inspection Webbed Material, Material Testing, Metrology 2D, Metrology 3D, Part Identification, Particle Analysis, Robot Vision 2D, Robot Vision 3D, Symbol Recognition, Thermography, Others

Industries served
Automotive and Suppliers, Electronics/Semiconductors, Energy/Water/Solar Technology, Foodstuffs/Beverages, Glass/Ceramics, Mechanical Engineering/Line Building, Medical Technology, Metal, Packaging, Paper/Wood, Pharmaceuticals/Cosmetics/Chemicals, Plastics, Precision Engineering/Optics/Machine Vision, Traffic/Logistics, Other

Associations
AIA, EMVA, UKIVA, VDMA

Regions served
Asia, Europe

About SVS-Vistek

As a producer of cameras for industrial machine vision, SVS-Vistek GmbH has been synonymous with innovation and precision for over 30 years. The SVCam-series cameras are used wherever a precise view is required for materials handling or assembly technology, logistics, traffic monitoring or quality assurance.

Known all over the world for its industrial cameras, the mid-size company develops and produces exclusively in Seefeld near Munich, Germany.

It provides specially customized solutions for system integrators and OEM customers. With the broad expertise of its own specialists and the experience which it has gained as a pioneer of numerous technical developments, SVS-Vistek advises customers on the selection and combination of the appropriate elements, additionally offering custom-made cameras and machine vision components.

SVS-Vistek GmbH
Mühlbachstr. 20
82229 Seefeld
Germany
Tel.: +49 8152 99 85 0
info@svs-vistek.com
www.svs-vistek.com

See our ad on page 43

Management
Walter Denk, CEO
Andreas Schaarschmidt, CMO

Foundation
1987

Staff
11-50

Products
Cameras, Consulting, Frame Grabber, Integration Services, Interfaces/Cables/Peripherals, Lighting Equipment, Optics, Software, Vision Sensors

Applications
Character Recognition, High Speed Analysis, Inspection Piece Parts, Metrology, Part Identification, Robot Vision, Symbol Recognition, Others

Industries served
Automotive and Suppliers, Electronics/Semiconductors, Engery/Water/Solar Technology, Foodstuffs/Beverages, Glass/Ceramics, Mechanical Engineering/Line Building, Medical Technology, Metal, Packaging, Paper/Wood, Pharmaceuticals/Cosmetics/Chemicals, Plastics, Precision Engineering/Optics/Machine Vision, Traffic/Logistics

Companies represented
Euresys, Moritex, Myutron, Kowa, Neosys

Associations
AIA, EMVA, VDMA, CMVU, JIIA

Regions served
Asia, Central Europe, China, EMEA, Europe, Japan, Latin America, North America

About Teledyne Dalsa

Teledyne Dalsa is a global leader in the design, development, and manufacture of digital imaging products and solutions. In addition, Teledyne Dalsa specializes in the engineering and fabrication of semiconductor components and services. The company employs approximately 1,000 people world-wide with sales offices across North America, Europe and Asia which support an international distribution network serving more than 40 countries.

Today, Teledyne Dalsa image sensors, cameras, frame grabbers and software are used in thousands of automated inspection systems around the world and across multiple industries.

Teledyne Dalsa
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www.teledynedalsa.com/mv

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82152 Krailling (Munich)
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sales.europe@teledynedalsa.com

Management
Edwin Roks, President,
Teledyne Dalsa,
Vice President,
Teledyne Technologies, Inc.

Foundation
1980

Staff
501–1000

Products
Cameras, Factory Floor Automation Solutions, Frame Grabber, Processors, Software, Vision Sensors/Smart Cameras/Embedded Systems, X-ray Equipment

Applications
Character Recognition, Digitalization, High Speed Analysis, Inspection Piece Parts, Web Inspection, Material Testing, Metrology 2D, Metrology 3D, Part Identification, Particle Analysis, Robot Vision 2D, Robot Vision 3D, Symbol Recognition, Thermography, Others

Industries served
Automotive and Suppliers, Electronics/Semiconductors, Energy/Water/Solar Technology, Foodstuffs/Beverages, Glass/Ceramics, Mechanical Engineering/Line Building, Medical Technology, Metal, Packaging, Paper/Wood, Pharmaceuticals/Cosmetics/Chemicals, Plastics, Precision Engineering/Optics/Machine Vision, Traffic (ITS)/Logistics

Platforms supported
Windows/Linux/DSP/ARM/FPGA/x86/32 & 64 bit

Associations
AIA, EMVA, JIIA

Regions served
Asia Pacific, Europe, North America, South America

About Vision Components

Vision Components GmbH is a leading supplier in the field of machine vision and develops and distributes intelligent, network-compatible real-time Smart Cameras which are able to operate without a PC. These embedded vision solutions can be easily integrated into almost any application. Customers can choose between models with ARM processors with freely programmable FPGA and VC Linux OS or DSP-based models with the proprietary VCRT OS. The product portfolio includes Smart Cameras with/without protective housing, single board cameras, vision sensors. Providing custom-tailored OEM solutions for all kinds of applications are the core of the more than 20 years experience in machine vision and imaging.

Vision Components GmbH
Ottostr. 2
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7-10 Hara Shinmachi, Ageo-shi,
Japan
minobe@vision-components.com

Foundation
1996

Staff
12

Products
Customized Camera Solutions, Embedded Vision Systems/Smart Cameras, OEM Cameras, Vision Sensors, Software, other

Applications
Character Recognition, High Speed Analysis, Inspection Piece Parts, Inspection Webbed Material, LPR, Material Testing, Metrology 2D/3D, Part Identification, Particle Analysis, Robot Vision 2D/3D, Symbol Recognition, 3D Vision

Industries served
Automotive and Suppliers, Electronics/Semiconductors, Energy/Water/Solar Technology, Entertainment + Sports, Foodstuffs/Beverages, Glass/Ceramics, ITS, Mechanical Engineering/Line Building, Medical Technology, Metal, Packaging, Paper/Wood, Pharmaceuticals/Cosmetics/Chemicals, Plastics, Precision Engineering/Optics/Machine Vision, Traffic/Logistics, Non-industrial Applications

Platforms supported
ARM, DSP, FPGA, PC platforms (Windows, Linux, RTOS)

Associations
AIA, Embedded Vision Alliance, EMVA, JIIA, SPIE, VDMA

Regions served
Worldwide

About Ximea

For 25 years Ximea has developed and manufactured leading-edge, high-performance standard or OEM cameras with main distinction based on the highly optimized and extremely robust way the imaging solutions are built (USB 3.1 series) while still providing fastest speed like PCIe camera line.

Our cameras flexible platform designs include an application programming interface (API) for many common Vision libraries and Operating Systems like Windows, macOS and Linux (ARM) as well as compliance with standards like USB3 Vision.

Drawing on decades of experience in the industry, Ximea's offer consists of state-of-the-art cameras with USB3, PCI Express, Thunderbolt and FireWire interface as well as X-Ray or Hyperspectral imaging technologies.

To ensure the highest quality at the best price, Ximea owns and operates its agile RnD and production facilities. This allows to design your solution with only the best components and shortest lead times. Customers can further leverage Ximea's extensive engineering services.

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Management
Dr. Vasant Desai
Max Larin

Foundation
2010 / 1992

Staff
11–50

Products
Hyperspectral-, X-Ray-, USB-, PCIe-, Subminiature Cameras, Thunderbolt-, Firewire- and OEM Cameras

Applications
Astronomy, (Aerial) Mapping, Digitalization, Metrology 2D/3D, Microscopy, Part Identification,

Particle Analysis, Robot Vision 2D/3D, Symbol Recognition, Virtual Reality, Other

Industries served
Agriculture, Automotive and Suppliers, Defense, Electronics/ Semiconductors, Embedded Vision, Machine Vision, Medical Technology, Packaging, Paper/ Wood, Plastics, Traffic/Logistics, UAV, Other

Associations
AIA, EMVA, VDMA, Embedded Vision Alliance, Other

Regions served
Worldwide

Germany
Austria
Switzerland

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Distributor, Machine Builder/OEM, Producer, Solution Provider

-4H-Jena engineering GmbH · Muehlenstr. 126, 7745 Jena, Germany, Tel.: +49 3641 288 70, oi@4h-jena.de, www.4h-jena.de

Producer, Solution Provider

ABW GmbH · Siemensstr. 3, 72636 Frickenhausen, Germany, Tel.: +49 7022 949 292, info@abw-3d.de, www.abw-3d.de

Distributor

Acal BFi Germany GmbH · Oppelner Str. 5, 82194 Gröbenzell, , Germany, T el.: +49 8142 652 00, info.de@bfioptilas.com, www.bfioptilas.com

Other

ACM Coatings GmbH · Rudelsburgpromenade 20c, 6628 Naumburg - Bad Kösen, Germany, Tel.: +49 34463 621 340, alexander.telle@acm-coatings.de, www.acm-coatings.de

Distributor, Producer

ACS-Control-System GmbH · Lauterbachstr. 57, 84307 Eggenfelden, Germany, Tel.: +49 8721 966 80, info@acs-controlsystem.de, www.acs-controlsystem.de

Producer

Adlink Technology provides a wide range of embedded computing products and services to the test & measurement, automation & process control, gaming, communications, medical, network security, and transportation industries. Adlink products include ETX and COM Express modules for industrial computing, AdvancedTCA, CompactPCI, PCI Express-based data acquisition and I/O and vision and motion control. Adlink provides customization and system integration services, and maintains low manufacturing costs.

Adlink Technology GmbH · Hans-Thoma-Str. 11, 68163 Mannheim, Germany, Tel.: +49 621 432 140, emea@adlinktech.com, www.adlinktech.eu

Producer

Founded in 1983, Advantech is a leader in providing trusted, innovative products, services, and solutions. Advantech offers comprehensive system integration, hardware, software, customer-centric design services, embedded systems, automation products, and global logistics support. We cooperate closely with our partners to help provide complete solutions for a wide array of applications across a diverse range of industries. Our mission is to enable an intelligent planet with Automation and Embedded Computing products and solutions that empower the development of smarter working and living.

Advantech · Hochdahler Str. 14, 40724 Hilden, Germany, Tel.: +49 2103 978 850, customercare@advantech.eu, www.advantech.eu

Producer, Solution Provider

Software: Image processing toolkit heurisko Quick heurisko-based custom image processing solution
Camera and image sensor testing according to EMVA 1288 and beyond: Measuring services Customizable test equipment Consulting.

Education: EMVA 1288 standard Computational imaging 3D image acquisition Technical optics for image processing

Aeon Verlag & Studio GmbH & Co. KG · Alter Rückinger Weg 31, 63452 Hanau, Germany, Tel.: +49 6181 520 510, info@aeon.de, www.aeon.de

Producer

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Distributor

AHF Analysentechnik AG · Kohlplattenweg 18, 72074 Tübingen, Germany, Tel.: +49 7071 970 90 10, info@ahf.de, www.ahf.de

Machine Builder/OEM

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Integrator

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Distributor

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Integrator

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Solution Provider

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Producer

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Producer

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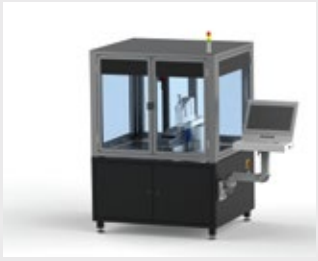

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Research Facility

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Holoeye Photonics AG · Albert-Einstein-Str. 14, 12489 Berlin, Germany, Tel.: +49 30 639 236 60, contact@holoeye.com, www.holoeye.com

Integrator

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Producer, Solution Provider

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Integrator

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Integrator, Solution Provider

ICW [industrie-elektronik] · Engelschalkstr. 32, 86316 Friedberg, Germany, Tel.: +49 821 609 95 26, anfrage@icw-news.de, www.icw-news.de

Producer

IDS Imaging Development Systems GmbH · Dimbacher Str. 6-8, 74182 Obersulm, Germany, Tel.: +49 7134 961 96 0, info@ids-imaging.com, www.ids-imaging.com

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Ifm electronic GmbH · Friedrichstr. 1, 45128 Essen, Germany, Tel.: +49 201 242 20, info@ifm.com, www.ifm.com

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Producer

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Integrator

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Producer

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Solution Provider

In-Situ GmbH · Mühlweg 2c, 82054 Sauerlach / München, Germany, Tel.: +49 8104 909 600, vision@in-situ.de, www.in-situ.de

Producer

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Integrator, Solution Provider

Ioss GmbH · Fritz-Reichle-Ring 18, 78315 Radolfzell, Germany, Tel.: +49 7732 982 79 60, info@ioss.de, www.ioss.de

Producer

Ircam GmbH · Nürnberger Str. 71, 91052 Erlangen, Germany, Tel.: +49 9131 970 09 80, info@ircam.de, www.ircam.de

Distributor, Producer, Solution Provider

IS - Imaging Solutions GmbH · Arbachtalstr. 6, 72800 Eningen, Germany, Tel.: +49 7121 680 85 31, info@imaging-solutions.de, www.imaging-solutions.de

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Integrator, Machine Builder/OEM, Producer, Solution Provider

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Producer

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Producer

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Producer, Solution Provider

Kappa optronics GmbH · Kleines Feld 6, 37130 Gleichen, Germany, Tel.: +49 5508 974 0, info@kappa-optronic.com, www.kappa-optronics.com

Integrator, Solution Provider

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Producer

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Producer

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Producer

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Producer

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Media

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Producer

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Producer

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Producer

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Producer

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Machine Builder/OEM, Producer

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Producer

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Producer

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Producer

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Integrator, Producer, Solution Provider

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Producer

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Producer

Otto Vision Technology GmbH · Im Steinfeld 3, 7751 Jena, Germany, Tel.: +49 3641 671 50, info@otto-jena.de, www.otto-jena.de

Producer, Solution Provider

Panasonic Electric Works Europe AG · Rudolf-Diesel-Ring 2, 83607 Holzkirchen, Germany, Tel.: +49 8024 648 0, info.peweu@eu.panasonic.com, www.panasonic-electric-works.de

Producer

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Solution Provider

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Producer

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Producer, Solution Provider

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Integrator, Solution Provider

Pi4_robotics GmbH · Gustav-Meyer-Allee 25, 13355 Berlin, Germany, Tel.: +49 30 700 969 40, sales@pi4.de, www.pi4.de

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Producer

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Producer

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Integrator

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Distributor

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Solution Provider

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Producer

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Producer, Solution Provider

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Machine Builder/OEM, Solution Provider

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Integrator, Solution Provider

Seritec GmbH · Gottlieb-Keim-Str. 60, 95448 Bayreuth, Germany, Tel.: +49 921 990 093 30, info@seritec.de, www.seritec.de

Machine Builder/OEM

Sglux GmbH · Ostendstr. 25, 12459 Berlin, Germany, Tel.: +49 30 530 152 14, welcome@sglux.de, www.sglux.com

Producer

Shape Drive GmbH · Bindingstr. 11, 82131 Stockdorf, Germany, Tel.: +49 89 454 612 46, info@shape-drive.com, www.shape-drive.com

Producer

Sharp Microelectronics Europe · Sonninstr. 3, 20097 Hamburg, Germany, Tel.: +49 40 237 60, info.sme@sharp.eu, www.sharpsme.com

Producer

Sick is one of the world leading suppliers of Industrial Sensors and Safety solutions. Sick provides industrial vision cameras for factory and logistics automation. The product line includes Vision Sensors, Smart Cameras, Code readers, Accessories and Cameras for high speed 3D Machine Vision. Target customers are Machine Builders, System Integrators and End Users.

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Producer

Siemens AG Process Industries and Drives · Gleiwitzer Str. 555, 90475 Nürnberg, Germany, Tel.: +49 911 895 0, simatic-ident.i-ia@siemens.com, www.siemens.de/ident

Solution Provider

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Producer

Silicon Software is one of the international technology leaders with innovative product lines for industrial applications in Machine Vision and service provider for customized adaptations. The company produces off-the-shelf products as well as customized OEM solutions. Hardware products are the series of intelligent image acquisition and processing boards. VisualApplets offers a graphical programming of FPGA processors in frame grabbers and cameras.

Silicon Software GmbH · Steubenstr. 46, 68163 Mannheim, Germany, Tel.: +49 621 789 507 0, info@silicon-software.de, silicon.software

Producer

Sill Optics GmbH & Co. KG · Johann-Höllfritsch-Str. 13, 90530 Wendelstein, Germany, Tel.: +49 9129 902 30, info@silloptics.de, www.silloptics.de

Solution Provider

Simon IBV GmbH · Bayreuther Str. 5b, 95494 Gesees, Germany, Tel.: +49 9201 917 420, info@simon-ibv.de, www.simavis.de

Producer, Solution Provider

Slomotec, Dr. Frank Gabler · Grimmelshausenstr. 14, 63628 Bad Soden-Salmünster, Germany, Tel.: +49 6056 983 66 74, info@slomotec.de, www.slomotec.de

Producer, Solution Provider

Smartray GmbH · BGM-Finsterwalder-Ring 12, 82515 Wolfratshausen, Germany, Tel.: +49 8171 968 34 00, info@smartray.de, www.smartray.de

Integrator, Solution Provider

SmartSurv Vision Systems GmbH · Malmsheimer Str. 7, 71063 Sindelfingen, Germany, Tel.: +49 7031 304 18 00, info@smartsurv.de, www.smartsurv.de

Producer

Steinbichler Optotechnik GmbH · Georg-Wiesböck-Ring 12, 83115 Neubeuern, Germany, Tel.: +49 8035 870 40, sales@steinbichler.de, www.steinbichler.de

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Machine Builder/OEM

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Integrator

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Producer

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Consultant

Strategema | Frank Olschewski Consulting
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Producer

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Producer

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Producer

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Solution Provider

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Producer

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Producer, Solution Provider

Thermosensorik GmbH · Am Weichselgarten 7, 91058 Erlangen, Germany, Tel.: +49 9131 691 400, info@thermosensorik.de, www.thermosensorik.de

Producer

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Producer

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Machine Builder/OEM

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Integrator

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Producer, Solution Provider

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Producer

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Consultant, Integrator, Machine Builder/OEM, Producer, Solution Provider, Other

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Consultant

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Solution Provider

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Consultant

Vision Ventures is an independent, internationally operating boutique M&A advisory that focuses on SMEs active in machine vision and optical technologies. Our services cover strategy consulting, identification and improvement of value drivers – especially in preparation of company transactions –, market-based enterprise valuation and the end-to-end management of sell-side and buy-side M&A. For investors we also provide expert opinions on enterprise value, business plan and market environment.

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Integrator, Solution Provider

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Distributor

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Producer, Solution Provider

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Distributor, Integrator, Producer, Solution Provider

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Distributor

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Solution Provider

VMT Vision Machine Technic Bildverarbeitungssysteme GmbH · Mallaustr. 50-56, 68219 Mannheim, Germany, Tel.: +49 621 842 500, info@vmt-gmbh.com, www.vmt-gmbh.com

Producer

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Solution Provider

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Producer

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Integrator, Solution Provider

Weber Systemtechnik · Hans-Sachs-Str. 10, 35576 Wetzlar, Germany,
Tel.: +49 6441 378 040, info@wesys.de, www.wesys.de

Distributor, Integrator, Solution Provider

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Producer

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Machine Builder/OEM, Solution Provider

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Producer

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Solution Provider

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Solution Provider

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Integrator, Solution Provider

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Machine Builder/OEM, Producer, Solution Provider

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Producer

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Active Silicon
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Producer

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Producer

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Producer

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Producer

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Association

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Solution Provider

FDS Research, d.o.o. · Suhadolcânova 28, 1231 Ljubljana-Črnuče, Slovenia, Tel.: +386 1 589 75 81, info@fdsresearch.si, www.fdsresearch.si

Machine Builder/OEM

Flir Advanced Thermal Solutions · 19, bld Bidault, 77183 Croissy-Beaubourg, France, Tel.: +33 1 413 397 97, info@flir.com, www.flir.com

Producer

Fort SA · 3 rue Lambert ZL de la Gaudre, 91410 Dourdan, France, Tel.: +33 1 608 118 18, info@fort-fr.com, www.fort-fr.com

Producer

Global Laser Ltd. · Units 9-10 Roseheyworth Business Park, NP131SP Abertillery, Gwent, United Kingdom, Tel.: +44 1495 212 213, sales@globallasertech.com, www.globallasertech.com

Solution Provider

Hexagon Manufacturing Intelligence · World Headquarters Office, Cedar House, 78 Portsmouth Road, KT11 1AN Cobham, Surrey, United Kingdom, Tel.: +44 20 706 865 80, marketing@hexagonmi.com, www.hexagonmi.com

Solution Provider

Icos Vision Systems · Industriepark Haasrode zone 1 Esperantolaan 8, 3001 Heverlee, Belgium, Tel.: +32 16 398 220, info@icos.be, www.icos.be

Distributor

Infaimon, S.L. · Vergós, 55, 8017 Barcelona, Spain, Tel.: +34 93 252 57 57, infaimon@infaimon.com, www.infaimon.com

Producer, Solution Provider

InRay Solutions Ltd. · 125 Tzarigradsko shosse blvd., block 2, room 510, 1113 Sofia, Bulgaria, Tel.: +359 2 971 57 51, inrays@inrays.com, www.inrays.com

Machine Builder/OEM, Solution Provider

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Producer

JAI is a global manufacturer of digital cameras for machine vision, traffic imaging, global security, medical imaging and scientific research.Besides a broad range of leading-edge 1-CCD and 1-CMOS progressive area scan and line scan cameras, JAI is a leading provider of multi-imager cameras incorporating advanced prism-block technology, including 3-CCD/3-CMOS RGB area scan cameras, 2-CCD multi-spectral/HDR cameras plus a complete family of 3-CMOS/4-CCD/4-CMOS line scan cameras. JAI's product program includes cameras for visible, UV, NIR and SWIR imaging with GigE Vision, Camera Link, USB 3.0 Vision and CoaXPress interfaces.

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Producer

JAI is a global manufacturer of digital cameras for machine vision, traffic imaging, global security, medical imaging and scientific research.Besides a broad range of leading-edge 1-CCD and 1-CMOS progressive area scan and line scan cameras, JAI is a leading provider of multi-imager cameras incorporating advanced prism-block technology, including 3-CCD/3-CMOS RGB area scan cameras, 2-CCD multi-spectral/HDR cameras plus a complete family of 3-CMOS/4-CCD/4-CMOS line scan cameras. The product program includes cameras for visible, UV, NIR and SWIR imaging.

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Integrator, Solution Provider

JasVisio - Vision Artificial · Olivera, 3, 25286 Olius, Spain, Tel.: +34 973 100 602, info@jasvisio.com, www.jasvisio.com

Solution Provider

JLI Vision A/S · Poppelgaardvej 7-9, 2860 Soeborg, Denmark, Tel.: +45 396 608 09, info@jli.dk, www.jli.dk

Distributor

Lambda Photometrics Ltd. · Lambda House, Batford Mill, AL5 5BZ Harpenden, United Kingdom, Tel.: +44 1582 764 334, adrian@lambdaphoto.co.uk, www.lambdaphoto.co.uk

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Lambert Instruments · Leonard Springerlaan 19 (5th floor), 9727 KB Groningen, Netherlands, Tel.: +31 50 501 84 61, info@lambertinstruments.com, www.lambertinstruments.com

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LAT elektronik AB · Krossgatan 18, 16250 Vällingby, Sweden, Tel.: +46 87 049 225, info@latab.se, www.latab.se

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Microtec · Julius-Durst 98, 39042 Brixen, Italy, Tel.: +39 0472 273 611, info@microtec.eu, raymetic.com

Distributor

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New Imaging Technologies (NIT) · 1-4 Impasse de la noisette, Bat D-1er étage, 91370 Verrières le Buisson, France, Tel.: +33 1 644 788 58, info@new-imaging-technologies.com, www.new-imaging-technologies.com

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Omron Europe B.V. · Wegalaan 67-69, 2132 JD Hoofddorp, Netherlands, Tel.: +31 23 568 13 00, info@eu.omron.com, www.industrial.omron.eu

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Producer

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Producer

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Association

UKIVA - UK Industrial Vision Association · Stafford Road, SM6 9AA Wallington, Surrey, United Kingdom, Tel.: +44 20 8773 8111, chris.valdes@ppma.co.uk, www.ukiva.org

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Distributor, Integrator, Solution Provider

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Producer

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Integrator

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Machine Builder/OEM

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Producer

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Solution Provider

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Machine Builder/OEM

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Producer

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Machine Builder/OEM, Solution Provider

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Other

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Producer

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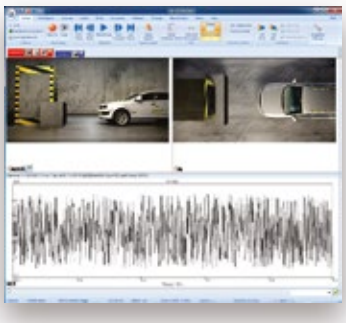

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JAI is a global manufacturer of digital cameras for machine vision, traffic imaging, global security, medical imaging and scientific research.Besides a broad range of leading-edge 1-CCD and 1-CMOS progressive area scan and line scan cameras, JAI is a leading provider of multi-imager cameras incorporating advanced prism-block technology, including 3-CCD/3-CMOS RGB area scan cameras, 2-CCD multispectral/HDR cameras plus a complete family of 3-CMOS/4-CCD/4-CMOS line scan cameras. JAI's product program includes cameras for visible, UV, NIR and SWIR imaging with GigE Vision, Camera Link, USB 3.0 Vision and CoaXPress interfaces.

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Producer

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Distributor

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Machine Builder/OEM

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Producer

Mad City Labs, Inc. · 2524 Todd Drive, 53713 Madison, WI, United States of America, Tel.: +1 608 298 08 55, sales@madcitylabs.com, www.madcitylabs.com

Producer

Matrox Imaging · 1055 St. Regis Blvd., H9P 2T4 Dorval, QC, Canada, Tel.: +1 514 822 60 20, imaging.info@matrox.com, www.matroximaging.com

Producer

Metaphase Technologies, Inc. · 3412 Progress Drive (unit C), Bensalem, PA 19020, United States of America, Tel.: +1 215 639 86 99, info@metaphase-tech.com, www.metaphase-tech.com

Consultant

Michigan Metrology LLC · 17199 N. Laurel Park Drive Ste. #51, 48152-2679 Livonia, MI, United States of America, Tel.: +1 734 953 50 30, info@michmet.com, www.michmet.com

Producer

Midwest Optical Systems, Inc. · 322 N. Woodwork Lane, 60067 Palatine, IL, United States of America, Tel.: +1 847 359 35 50, info@midopt.com, www.midopt.com

Distributor, Integrator, Solution Provider

MsiVision · 5 Herbert Drive, Suite 1N, 12309 Latham, NY, United States of America, Tel.: +1 518 346 71 36, info@msivision.com, www.msivision.com

Consultant, Integrator, Machine Builder/OEM, Producer, Research Facility, Solution Provider

Nanovea · 6 Morgan Ste 156, 92618 Irvine, CA, United States of America, Tel.: +1 949 461 92 92, info@nanovea.com, nanovea.com/profilometers

Producer, Solution Provider

Navitar · 200 Commerce Drive, 14623 Rochester, NY, United States of America, Tel.: +1 585 359 40 00, info@navitar.com, www.navitar.com

Association, Machine Builder/OEM, Solution Provider, Other

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Producer

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Solution Provider

Optel Vision · 2680, boul. du Parc Technologique, G1P 4S6 Quebec City, QC, Canada, Tel.: +1 418 688 334, info@optelvision.com, www.optelvision.com

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Producer

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Producer

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Solution Provider

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Integrator

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Producer

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Solution Provider

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Machine Builder/OEM

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Solution Provider

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Distributor

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Integrator, Solution Provider

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Association

Japan Industrial Imaging Association · 2-10-15, Nakameguro, Yamate Ave. K Bldg., 153-0061 Meguro, Tokyo, Japan, Tel.: +81 3 371 639 33, info@jiia.org, www.jiia.org

Producer

Kamiera · 6A Massada St., 45294 Hod Hasharon, Israel, Tel.: +972 9 760 34 25, info@kamiera.com, www.kamiera.com

Producer

Kaya Instruments · 20 HaMesila St., 3688520 Nesher, Israel, Tel.: +972 72 272 35 00, george@kayainstruments.com, www.kayainstruments.com

Machine Builder/OEM, Solution Provider

KOS Laboratory Homogenizer · A18 Second Floor, Building 1, Shunlian Machinery Plaza, ChenCun Town, 528313 Foshan, Guangdong, China, Tel.: +86 757 293 185 41, drbluejack@yahoo.com, www.emulsifyingmixer.com/homogenizer/lab-homogenizer.html

Distributor, Machine Builder/OEM, Producer, Solution Provider

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Machine Builder/OEM

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Producer

NED (Nippon Electro-Sensory Devices Ltd. · Shinagawa-ku, Ohi 1-45-2 Gibraltar Ohi Bldg, 4f, 140-0014 Tokyo, Japan, Tel.: +81 3 571 831 81, info@ned-sensor.com, www.ned-sensor.co.jp/en

Integrator

Nexus Engiconsults · A 115 2nd floor Shakarpur, 110092 New Delhi, India, Tel.: +91 98 107 698 31, info@nexusengiconsults.com, www.nexusengiconsults.com

Producer

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optmv1@optmv.com
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Distributor, Machine Builder/OEM, Solution Provider

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Machine Builder/OEM

RAA Vision Pvt Ltd. · Om vihar, 110058 New Delhi, Delhi, India, Tel.: +91 99 116 902 40, amit@raavision.com, www.raavision.com

Producer

Shenzhen Kuangshi Communication Technology · 6/F, No.1 Building, Zhongyuntai Industry Park, Tangtou Shiyan, 51818 Shenzhen, China, Tel.: +86 755 297 818 35, zteyhb@gmail.com, www.ksfiberoptic.com

Producer

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Integrator

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Producer

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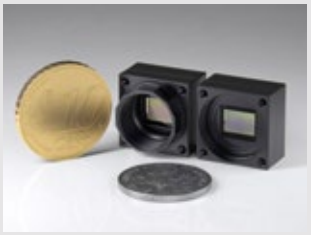

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Eureca Messtechnik	www.eureca.de
Euresys	www.euresys.com
EVision Systems	www.evision-systems.de
Fabrimex Systems	www.fabrimex-systems.ch
Fairchild Imaging	www.fairchildimaging.com
Fastec Imaging	www.fastecimaging.com
FiberVision	www.fibervision.de
FJW Optical Systems	www.findrscope.com
Flir Advanced Thermal Solutions	www.flir.com
Flir Systems	www.flir.com
Flir Systems	www.flir.com/mv
Fluke	www.fluke.de
Fort	www.fort-fr.com
Framos	www.framos.eu
Fraunhofer IMS	www.ims.fraunhofer.de
FSI Technologies	www.fsinet.com
Fuzhou Feihua Optoelectronic Technology	www.fzfh.com
G4 Technology	www.g4.com.tw
Gevicam	www.gevicam.com
Gsvitec	www.gsvitec.com
Hamamatsu Photonics	www.hamamatsu.com
Helion	www.helionvision.com
Heliotis	www.heliotis.ch
High Speed Vision	www.hsvision.de
Hitachi Kokusai Electric Europe	www.Hitachi-keu.com
Horn Imaging	www.horn-imaging.de
Ico Data	www.icodata.de
IDS	www.ids-imaging.com
Ifm electronic	www.ifm.com
Ikegami	www.ikegami.de
Illunis	www.illunis.com
Image House	www.imagehouse.dk
Image S	www.imagessrl.com

Imaging Solutions Group	www.isgcameras.com
Imi tech	www.imi-tech.com
Imperx	www.imperx.com
IMS Chips	www.ims-chips.de
Industrial Vision Systems	www.industrialvision.co.uk
Infaimon	www.infaimon.com
InfraTec	www.infratec.de
Insensiv	www.insensiv.de
IOS	www.ios-web.de
Ircam	www.ircam.de
IS Imaging Solutions	www.imaging-solutions.de
ISVI	www.isvi-corp.com
JAI	www.jai.com
Japan F.A. Systems	www.jfas.co.jp
JenCam	www.jencam.de
Jenoptik	www.jenoptik.de
Kamera Werke Dresden	www.kwdo.de
Kappa opto-electronics	www.kappa.de
Karlheinz Hinze Opto-engineering	www.hinze-opto.de
KeeKoon Electronics	www.keekoon.com
Klughammer	www.klughammer.de
Kvant	www.kvant.sk
Lambda Photometrics	www.lambdaphoto.co.uk
Lambert Instruments	www.lambert-instruments.com
Leitner Industrial Endoscopy	www.leitner-efer.de
Leutron Vision	www.leutron.com
Leuze Electronic	www.leuze.com
LMI Technologies	www.lmi3d.com
Lord Ingenierie	www.lord-ing.com
LOT Quantum Design	http://lot-qd.de
Lumasense Technology	www.lumasenseinc.com
Lumenera	www.lumenera.com
Luster LightVision Tech	www.lusterinc.com
MAK Bildtechnik	www.mak-bildtechnik.de
Matrix Vision	www.matrix-vision.de
MaxxVision	www.maxxvision.com
Menzel Vision and Robotics	www.menzelab.com
Mesa Imaging	www.mesa-imaging.ch
MG Optical Solutions	www.mgopticalsolutions.com
Micro-Epsilon	www.micro-epsilon.com
Microsystems	www.microsystems.it
Mikromak Service	www.mikromak.com
Mikrotron	www.mikrotron.de
MsiVision	www.msivision.com
NAC	www.nacinc.de
Narragansett Imaging	www.nimaging.com
National Instruments	www.ni.com
NED	www.ned-sensor.co.jp
NET	www.net-gmbh.com
NeuPro Solutions	www.neupro-solutions.com
New Imaging Technologies	www.new-imaging-technologies.com
NTI	www.nti-measure.com
Odem Technologies	www.odem.co.il
Olympus	www.olympus-europa.com
Omron Microscan Systems	www.microscan.com
Omron	www.industrial.omron.de
Opto Fidelity	www.optofidelity.com
Opto Sonderbedarf	www.opto.de
Optrima	www.optrima.com
Optris	www.optris.de
Optronis	www.optronis.com
Orbis	www.orbis.eu
Panasonic Electric Works	www.panasonic-electric-works.de
Parameter	www.parameter.se
PCO	www.pco.de
Pentacon	www.pentacon.de
PerkinElmer Optoelectronics	www.perkinelmer.com
Philips	www.apptech.philips.com/vision
Photonfocus	www.photonfocus.com
Photron	www.photron.com
Phytec Messtechnik	www.phytec.de
Pi4_robotics	www.pi4.de
Pieper	www.pieper-video.de
PixeLink	www.pixelink.com
PMDTec	www.pmdtec.com
Polytec	www.polytec.de/bv

Premier Electronics	www.premierelect.co.uk
Princeton Instruments	www.princetoninstruments.com
Proxitronic	www.proxitronic.com
Qualimatest	www.qmt.ch
Quest Innovations	www.quest-innovations.com
Rad-icon Imaging	www.rad-icon.com
Rauscher	www.rauscher.de
Redlake	www.redlake.com
RH Engineering	www.rhengineering.de
Ricoh International B.V. - German Branch	www.ricoh-iosd.eu
Roper Scientific	www.roperscientific.de
Rubroeder	www.rubroeder.de
Salvador Imaging	www.salvadorimaging.com
Schael-Optik	www.schael-optik.de
Schäfter + Kirchhoff	www.sukhamburg.de
Schmachtl	www.schmachtl.at
SDT - Dr. Seitner	www.sdt-seitner.com
Second2None	www.visiondragon.com
Secube	www.secube.co.kr
Sedeco Vision Components	www.sedeco.nl
Seiwa Optical	www.seiwaopt.co.jp
Sensor to Image	www.sensor-to-image.de
Sensors Unlimited	www.sensorsinc.com
Sentech	www.sentech.co.jp
Sglux	www.sglux.com
Sharp Microelectronics	www.sharpsme.com
SKS Vision Systems	www.visionsystems.fi
Slomotec	www.slomotec.de
Smartek	www.smartek.hr
Smartray	www.smartray.de
Soliton Technologies	www.solitontech.com
Sony	www.pro.sony.eu/vision
Stemmer Imaging	www.stemmer-imaging.com
STZ Qualitätssicherung und Bildverarbeitung	www.stz-ilmenau.de
Sugitoh	www.sugitoh.jp
SVS Vistek	www.svs-vistek.com
Symco	www.symco.co.jp
Systematic Vision	www.systematicvision.com
Tattile	www.tattile.com
Tekno Optik	www.teknooptik.se
Tekstar Optical	www.tekstaroptical.com
Teledyne Dalsa	www.teledynedalsa.com
The Imaging Source	www.theimagingnsource.com
Thermosensorik	www.thermosensorik.de
Tichawa Vision	www.tichawa.de
Toshiba Teli	www.toshiba-teli.co.jp
Toshiba	www.toshiba.ch
TriDiCam	www.tridicam.de
TVI Vision	www.tvivision.com
Unibrain	www.unibrain.com
VDS Vosskühler	www.vdsvossk.de
Vega Technology Group	www.vegatcgroup.com
Vialux	www.vialux.de
Vicon Motion Systems	www.vicon.com
Videology Imaging Solutions	www.videologyinc.com
Videor Technical	www.videor.com
Vidisys	www.vidisys.de
Vieworks	www.vieworks.com
Visicontrol	www.visicontrol.com
Visiolaser	www.vannier-photelec.fr/visiolaser
Vision & Control	www.vision-control.com
Vision Components	www.vision-components.com
Vision Research	www.visionresearch.com
Vision Tools	www.vision-tools.com
Visiosens	www.visiosens.de
Vistas	www.vistas-gmbh.de
Vitronic	www.vitronic.com
Vizaar	www.vizaar.de
VKT	www.vkt.de
VRmagic	www.vrmagic.com
Weiss Imaging and Solutions	www.weiss-imaging.de
Werner Nophut	www.dsam.de
Xenics	www.xenics.com
Ximea	www.ximea.com
Zertrox	www.zertrox.de

Consulting, Marketing, Education & Other Services

AIA Automated Imaging Association	www.machinevisiononline.org
Alfavision	www.alfavision.de
AMC	www.amc-hofmann.com
Arvoo Imaging Products	www.arvoo.com
AS Thermographie	www.as-thermografie.de
Asentics	www.asentics.de
CMES - Chinese Mechanical Engineering Society	www.cmes.org
Cmos Vision	www.cmosvision.com
CMOSIS	www.cmosis.com
Cognex	www.cognex.com
Collischon Optik-Design	www.mikro-optik.de
CSEM	www.csem.ch
CTMV	www.ctmv.de
Datapixel	www.datapixel.com
De Man Industrie-Automation	www.deman.de
Digital West Imaging	www.highspeedvideos.com
Duwe 3D	www.duwe-3d.de
EMVA European Machine Vision Association	www.emva.org
Entner Electronics	www.entner-electronics.com
Erhard + Leimer	www.erhardt-leimer.com
Farbmessung Schröder	www.farbmessung.com
FiberVision	www.fibervision.de
Framos	www.framos.eu
Fraunhofer Allianz Vision	www.vision.fraunhofer.de
G4 Technology	www.g4.com.tw
Gesellschaft für Bild- und Signalverarbeitung (GBS)	www.gbs-ilmenau.de
GFaI	www.gfai.de
GIT Verlag	www.gitverlag.com
IDS	www.ids-imaging.com
Imaging Lab	www.imaginglab.it
Impuls	www.impuls-imaging.com
INB Vision	www.inb-vision.com
Infaimon	www.infaimon.com
InRay Solutions	www.inrays.com
Inspect	www.inspect-online.com
Irida Labs	www.iridalabs.gr
IS Imaging Solutions	www.imaging-solutions.de
IVAN	www.feda.nl
JIIA Japan Industrial Imaging Association	www.jiia.org
Joanneum Research	www.joanneum.at
Kappa opto-electronics	www.kappa.de
Landesmesse Stuttgart	www.vision-fair.de
Lincoln Laser Company	www.lincolnlaser.com
Messe München	www.messe-muenchen.de
Michigan Metrology	www.michmet.com
MsiVision	www.msivision.com
Neurocheck	www.neurocheck.com
Norman N. Axelrod Associates	www.axelrodassociates.com
NTI	www.nti-measure.com
Omron	www.industrial.omron.de
Optical Research Associates	www.opticalres.com
Opto	www.opto.de
Opto Fidelity	www.optofidelity.com
P.E. Schall	www.schall-messen.de
Phytec Messtechnik	www.phytec.de
Pi4_robotics	www.pi4.de
Polytec	www.polytec.de/bv
Rubroeder	www.rubroeder.de
Sensor to Image	www.sensor-to-image.de
SmartSurv	www.smartsurv.de
Solving3D	www.solving3d.de
SPG Data 3D	www.spgdata3d.com
Stemmer Imaging	www.stemmer-imaging.com
Strategema | Frank Olschewski Consulting	www.stra-te-gema.com
STZ Qualitätssicherung und Bildverarbeitung	www.stz-ilmenau.de
Supercomputing Systems	www.scs-vision.ch
SVS Vistek	www.svs-vistek.com
Symop	www.symop.com
Systematic Vision	www.systematicvision.com
UKIVA	www.ukiva.org
University of Applied Scienes	www.fbmn.h-da.de
Univision	www.univision.it

Consulting, Marketing, Education & Other Services

Van de Loosdrecht Machine Vision	www.vdlmv.nl
VDMA Industrielle Bildverarbeitung	www.vdma.org/vision
Vega Technology Group	www.vegatcgroup.com
Vision & Control	www.vision-control.com
Vision Club of Finland	www.automaatioseura.fi
Vision Machines	www.vision-machines.com
Vision Tools	www.vision-tools.com
Vision Ventures	www.vision-ventures.eu
Visionlink	www.visionlink.it
Vitronic	www.vitronic.com
VMT	www.vmt-gmbh.com
Wenglor Sensoric	www.wenglor.com
Zertrox	www.zertrox.de

Frame Grabber

Active Silicon	www.activesilicon.com
Adlink	www.adlinktech.eu
Advantech Europe	www.advantech.eu
Alacron	www.alacron.com
Alrad Imaging	www.alrad.co.uk
Arvoo Imaging Products	www.arvoo.com
Baumer	www.baumer.com
Beijing Microview	www.microview.com.cn
BitFlow	www.bitflow.com
Bock Optronics	www.bockoptronics.ca
China Daheng Group	www.daheng-image.com
Cognex	www.cognex.com
Cosyco	www.cosyco.de
Cyberoptics Semiconductor	www.imagenation.com
EDT	www.edt.com
EHD imaging	www.ehd.de
Ellips	www.ellips.nl
Eltec Elektronik	www.eltec.com
Epix	www.epixinc.com
Fabrimex Systems	www.fabrimex-systems.ch
Fast	www.fast-corp.co.jp
Framos	www.framos.eu
G4 Technology	www.g4.com.tw
Gidel	www.gidel.com
HaSoTec	www.hasotec.com
IDS	www.ids-imaging.com
Image House	www.imagehouse.dk
Image S	www.imagessrl.com
Imaging Solutions Group	www.isgcameras.com
Imperx	www.imperx.com
Infaimon	www.infaimon.com
IS Imaging Solutions	www.imaging-solutions.de
Isra Vision	www.isravision.com
Japan F.A. Systems	www.jfas.co.jp
Karlheinz Hinze Optoengineering	www.hinze-opto.de
Kvant	www.kvant.sk
Lambda Photometrics	www.lambdaphoto.co.uk
Leutron Vision	www.leutron.com
Luster LightVision Tech	www.lusterinc.com
Matrix Vision	www.matrix-vision.de

Illumination & Lighting Systems

Matrox Imaging	www.matrox.com/imaging
MaxxVision	www.maxxvision.com
Menzel Vision and Robotics	www.menzelab.com
Microsystems	www.microsystems.it
Mikrotron	www.mikrotron.de
MsiVision	www.msivision.com
National Instruments	www.ni.com
Odem Technologies	www.odem.co.il
Omron Microscan Systems	www.microscan.com
Orbis	www.orbis.eu
Parameter	www.parameter.se
Phytec Messtechnik	www.phytec.de
Pi4_robotics	www.pi4.de
Polytec	www.polytec.de/bv
Premier Electronics	www.premierelect.co.uk
Qualimatest	www.qmt.ch
Rauscher	www.rauscher.de
Schael-Optik	www.schael-optik.de
Schäfter+Kirchhoff	www.sukhamburg.de
Schmachtl	www.schmachtl.at
Second2None	www.visiondragon.com
Sensor to Image	www.sensor-to-image.de
Silicon Software	www.silicon-software.de
Stemmer Imaging	www.stemmer-imaging.com
STZ Qualitätssicherung und Bildverarbeitung	www.stz-ilmenau.de
Sundance Multiprocessor Technology	www.sundance.com
SVS Vistek	www.svs-vistek.com
Symco	www.symco.co.jp
Systematic Vision	www.systematicvision.com
Teledyne Dalsa	www.teledynedalsa.com
The Imaging Source	www.theimagingnsource.com
Videology Imaging Solutions	www.videologyinc.com
Vidisys	www.vidisys.de
Vision Tools	www.vision-tools.com
Visionlink	www.visionlink.it
Vistek	www.vistekas.com
Weiss Imaging and Solutions	www.weiss-imaging.de

ABW	www.abw-3d.de
Acal BFi Germany	www.bfioptilas.com
Advanced Illumiation	www.advancedillumination.com
Allison Park Group	www.apgvision.com
Alrad Imaging	www.alrad.co.uk
AutoVimation	www.autovimation.com
Balluff	www.balluff.com
Baumer	www.baumer.com
Bock Optronics	www.bockoptronics.ca
Büchner Lichtsysteme	www.buechner-lichtsysteme.de
Cavitar	www.cavitar.com
CCS Europe	www.ccs-grp.com
Ceres Vision	www.ceresvision.de
Chromasens	www.chromasens.de
Cognex	www.cognex.com
Coherent	www.coherent.com
Collischon Optik-Design	www.mikro-optik.de
DCM Sistemes	www.dcmsistemes.com
Dedo Weigert	www.dedoweigertfilm.de
Digital West Imaging	www.highspeedvideos.com
Edmund Optics	www.edmundoptics.de
Effilux	www.effilux.fr
Erhard + Leimer	www.erhardt-leimer.com
Fabrimex Systems	www.fabrimex-systems.ch
Falcon Illumination MV	www.falcon-illumination.de
Faseroptik Henning	www.faseroptik-henning.de
Fiberoptics Technology	www.fiberoptix.com
FiberVision	www.fibervision.de
Finger	www.finger-kg.de
Framos	www.framos.eu
Frankfurt Laser Company	www.frlaserco.com
FSI Technologies	www.fsinet.com
G4 Technology	www.g4.com.tw
Gardasoft Vision	www.gardasoft.com
GPP Chemnitz	www.gppc.de
Hamamatsu Photonics	www.hamamatsu.com
Helmut Hund	www.hund.de
Hema	www.hema.de
Herbert Waldmann	www.waldmann.com
IB/E Optics	www.ibe-optics.com

Ifm electronic	www.ifm.com
IiM	www.iimag.de
ILEE	www.ilee.ch
Image House	www.imagehouse.dk
Image S	www.imagessrl.com
Infaimon	www.infaimon.com
Insensiv	www.insensiv.de
IS Imaging Solutions	www.imaging-solutions.de
ISVI	www.isvi-corp.com
Japan F.A. Systems	www.jfas.co.jp
Jenoptik Laser, Optik, Systeme	www.jenoptik-los.de
Jos. Schneider Optische Werke	www.schneiderindustrialoptics.com
Karlheinz Hinze Optoengineering	www.hinze-opto.de
Keyence	www.keyence.de
Klastech	www.klastech.com
Klughammer	http://kms-e.de
Kvant	www.kvant.sk
Lambda Photometrics	www.lambdaphoto.co.uk
Laser 2000	www.laser2000.de
Laser Components	www.lasercomponents.com
LAT elektronik	www.latab.se
LDD Trading Associates	www.lddlight.com
Leistungselektronik	Jena
Leitner Industrial Endoscopy	www.leitner-efer.de
Leutron Vision	www.leutron.com
LMI Technologies	www.lmi3d.com
LOT Quantum Design	http://lot-qd.de
Luster LightVision Tech	www.lusterinc.com
Matrix Vision	www.matrix-vision.de
MaxxVision	www.maxxvision.com
Menzel Vision and Robotics	www.menzelab.com
Metaphase Technologies	www.metaphase-tech.com
MG Optical Solutions	www.mgopticalsolutions.com
Microsystems	www.microsystems.it
Moritex	www.moritex.com
MsiVision	www.msivision.com
MTD	www.mtd-light.com
Myutron	www.myutron.com
NET	www.net-.com
NeuPro Solutions	www.neupro-solutions.com
Odem Technologies	www.odem.co.il
Olympus	www.olympus-europa.com
Omicron Laserage	www.omicron-laser.de
Omron Microscan Systems	www.microscan.com
Omron	www.industrial.omron.de
Opto	www.opto.de
Opto Engineering	www.opto-engineering.com
Opto Precision	www.optoprecision.de
Optometron	www.optometron.de
OptoPolymer	www.optopolymer.de
Orbis	www.orbis.eu
Parameter	www.parameter.se
PerkinElmer Optoelectronics	www.perkinelmer.com
Phaer	www.phaer.be
Phlox	www.phlox-gc.com
Phytec Messtechnik	www.phytec.de
Pi4_robotics	www.pi4.de
Planistar Lichttechnik	www.planistar.de
POG Präzisionsoptik Gera	www.pog.eu
Polytec	www.polytec.de/bv
Power Technology	www.powertechnology.com
Profactor	www.profactor.at
Qualimatest	www.qmt.ch
Quioptiq	www.quioptiq.de
Rauscher	www.rauscher.de
RH Engineering	www.rhengineering.de
Rheintacho Messtechnik	www.rheintacho.com
Schael-Optik	www.schael-optik.de
Schäfter + Kirchhoff	www.sukhamburg.de
Schmachtl	www.schmachtl.at
Schott Lighting and Imaging	www.schott.com
Second2None	www.visiondragon.com
Sedeco Vision Components	www.sedeco.nl
Seiwa Optical	www.seiwaopt.co.jp
Sharp Microelectronics	www.sharpsme.com
Sill Optics	www.silloptics.de
Smart Vision Lights	www.smartvisionlights.com
Smartek Vision	www.smartekvision.com

Microscopes, Endoscopes & Equipment

Soliton Technologies	www.solitontech.com
Special Application Products	www.sapltd.co.uk
Spectrum Illumination	www.spectrumillumination.com
Stemmer Imaging	www.stemmer-imaging.com
StockerYale	www.stockeryale.com
STZ Qualitätssicherung und Bildverarbeitung	www.stz-ilmenau.de
SVS Vistek	www.svs-vistek.com
Symco	www.symco.co.jp
Tecin	www.tecin.de
Tekno Optik	www.teknooptik.se
Tema	www.temavisio.com
The Imaging Source	www.theimagingnsource.com
Univision	www.univision.it
V Cubed	www.vcubed.co.uk
Vialux	www.vialux.de
Visicontrol	www.visicontrol.com
Visiolaser	www.vannier-photelec.fr/visiolaser
Vision & Control	www.vision-control.com
Vision Light Tech	www.visionlighttech.com
Vision Tools	www.vision-tools.com
Visionlink	www.visionlink.it
Visitool	www.visitool.de
Vistas	www.vistas-gmbh.de
Volpi	www.volpi.ch
Weiss Imaging and Solutions	www.weiss-imaging.de
Wenglor Sensoric	www.wenglor.com
Zertrox	www.zertrox.de

Alrad Imaging	www.alrad.co.uk
AMS Technologies	www.amstechnologies.com
Andor Technology	www.andor.com
Asylum Research	www.asylumresearch.com
Bock Optronics	www.bockoptronics.ca
Breitmeier Messtechnik	www.breitmeier.de
Carl Zeiss Microimaging	www.zeiss.de/microscopy
Deben UK	www.deben.co.uk
Dr. Heinrich Schneider Messtechnik	www.dr-schneider.de
Edmund Optics	www.edmundoptics.de
EHD Imaging	www.ehd.de
Fei Company	www.fei.com
Fort SA	www.fort-fr.com
FRT Fries Research & Technology	www.frt-gmbh.com
G4 Technology	www.g4.com.tw
Heliotis	www.heliotis.ch
Helmut Hund	www.hund.de
Hipp Endoskop Service	www.hipp-endoskopservice.com
Horn Imaging	www.horn-imaging.de
Infaimon	www.infaimon.com
Infinity Photo-Optical	www.infinity-usa.com
Karl Storz	www.karlstorz.com
Karlheinz Hinze Optoengineering	www.hinze-opto.de
Kdorf Automation	www.kdorf.de
Keyence	www.keyence.de
Klughammer	www.klughammer.de
Kvant	www.kvant.sk
Leica Microsystems	www.leica-microsystems.com
Leitner Industrial Endoscopy	www.leitner-efer.de
LOT Quantum Design	http://lot-qd.de
MBR	www.mbr-gmbh.com
Micos	www.micos.ws
Micro-Epsilon	www.eltrotec.com
Mikroskoptechnik Rathenow	www.askania.de
Mitutoyo	www.mitutoyo.de
Moritex	www.moritex.com
MsiVision	www.msivision.com
NanoFocus	www.nanofocus.de

Nanosurf	www.nanosurf.com
Nikon	www.nikoninstruments.eu
Olympus	www.olympus-europa.com
Opto	www.opto.de
OptoMess	www.optomess.de
Optometron	www.optometron.de
Optoprim	www.optoprim.de
Oxford Instruments	www.oxford-instruments.com
Panasonic	http://business.panasonic.co.uk/imv
PCE Power Control	www.pce-powercontrol.de
Physik Instrumente	www.pi.ws
Pi4_robotics	www.pi4.de
Pro Design Electronic	www.prodesign-europe.com
Richard Wolf	www.richard-wolf.com
Rubroeder	www.rubroeder.de
Schael-Optik	www.schael-optik.de
Schäfer Technologie	www.schaefer-tec.com
Seiwa Optical	www.seiwaopt.co.jp
STZ Qualitätssicherung und Bildverarbeitung	www.stz-ilmenau.de
Tecin	www.tecin.de
Tekno Optik	www.teknooptik.se
Thermosensorik	www.thermosensorik.de
Vega Technology Group	www.vegatcgroup.com
Vision Engineering	www.visioneng.de
Visitool	www.visitool.de
Walter Uhl	www.walteruhl.de
Weiss Imaging and Solutions	www.weiss-imaging.de
Werth Messtechnik	www.werthmesstechnik.de
Wild	www.wild.at

Optical Metrology

3D Shape	www.3d-shape.com
Alicona Imaging	www.alicona.com
Allsens Messtechnik	www.allsens.de
AMS Technologies	www.amstechnologies.com
Andor Technology	www.andor.com
Applied Electro-Optics	www.aeousa.com
Applied Scintillation Technologies	www.scintacor.com
Armstrong Optical	www.armstrongoptical.co.uk
Avantes	www.avantes.com
Benteler Maschinenbau	www.benteler.de
Bentham Instruments	www.bentham.co.uk
Berliner Glas Gruppe	www.berlinerglas.de
Breitmeier Messtechnik	www.breitmeier.de
BST eltromat International	www.bst-international.com
BST International	www.bst-international.com
Carl Zeiss IMT	www.zeiss.de/Messtechnik
Carl Zeiss Microimaging	www.zeiss.de/microscopy
Chunghwa Leading Photonics Tech (CLPT)	www.clpt.com.tw
CMC Kuhnke	www.cmc-kuhnke.de
ColorLite	www.colorlite.de
Confovis	www.confovis.com
Creaform Deutschland	www.creaform3d.com
Dantec Dynamics	www.dantecdynamics.com
Datapixel	www.datapixel.com
Digital Surf	www.digitalsurf.com
Dr. Heinrich Schneider Messtechnik	www.dr-schneider.de
Dr. Wehrhahn Messsysteme	www.drwehrhahn.com
Dyoptyka	www.dyoptyka.com
EHD Imaging	www.ehd.de
Electronic Systems	www.electronicsystems.it
ElektroPhysik Dr. Steingroever	www.elektrophysik.com
EVK DI Kerschhaggl	www.evk.biz
Farbmessung Schröder	www.farbmessung.com
Faro	www.faro.com
FJW Optical Systems	www.findrscope.com
Fraunhofer IFF	www.mpt.iff.fraunhofer.de

FRT Fries Research & Technology	www.frt-gmbh.com
G4 Technology	www.g4.com.tw
GE Sensing & Inspection Technologies	www.gemeasurement.com
GOM	www.gom.com
Hamamatsu Photonics	www.hamamatsu.com
Heitronics Infrarot Messtechnik	www.heitronics.com
Hexagon Manufacturing Intelligence	www.hexagonmi.com
Hipp Endoskop Service	www.hipp-endoskopservice.com
IB/E Optics	www.ibe-optics.com
Ico Data	www.icodata.de
iiM	www.iimag.de
ILEE	www.ilee.ch
Imetric	www.imetric.com
Infaimon	www.infaimon.com
Infinity Photo-Optical	www.infinity-usa.com
InfraTec	www.infratec.de
Innowep	www.innowep.com
InSystems Automation	www.insystems.de
Isi-sys	www.isi-sys.com
Jenoptik	www.jenoptik.de
Jos. Schneider Optische Werke	www.schneiderkreuznach.com
Kleiber Infrared	www.kleiberinfrared.com
Konica Minolta	www.konicaminolta.eu
Kreon Technologies	www.kreon3d.com
Lambda Photometrics	www.lambdaphoto.co.uk
LamTech	www.lamtech.de
Land Instruments	www.landinst.com
LAP	www.lap-laser.com
Laser 2000	www.laser2000.de
Laser Components	www.lasercomponents.com
Laser Quantum	www.laserquantum.com
LayTec	www.laytec.de
LDV Systeme	www.ldv-systeme.de
Leitner Industrial Endoscopy	www.leitner-efer.de
Limess	www.limess.com
LOT Quantum Design	http://lot-qd.de
Mahr	www.mahr.de
Meta Vision Systems	www.meta-mvs.co.uk
Metris	www.metris.com
MG Optical Solutions	www.mgopticalsolutions.com
Michigan Metrology	www.michmet.com
Mikropack	www.mikropack.de
Mirco-Epsilon Eltrotec	www.eltrotec.com
Mitutoyo	www.mitutoyo.de
Moeller-Wedel Optical	www.moeller-wedel-optical.com
Molenaar Optics	www.molenaar-optics.com
Moritex	www.moritex.com
M-u-t	www.mut-group.com
Mycrona	www.mycrona.de
NanoFocus	www.nanofocus.de
Nikon Metrology	www.nikonmetrology.com
Novacam Technologies Inc.	www.novacam.com
NTI	www.nti-measure.com
Nub3d	www.nub3d.com
Odem Technologies	www.odem.co.il
OGP Messtechnik	www.ogpmesstechnik.de
Olympus	www.olympus-europa.com
Opsira	www.opsira.de
Optimet Optical Metrology	www.optimet.com
Opto	www.opto.de
Opto Fidelity	www.optofidelity.com
Opto Precision	www.optoprecision.de
OptoMess	www.optomess.de
Optometron	www.optometron.de
OptoPolymer	www.optopolymer.de
Optoprim	www.optoprim.de
OptoSurf	www.optosurf.com
Optris	www.optris.de
Orbis	www.orbis.eu
Oxford Instruments	www.oxford-instruments.com
Parameter	www.parameter.se
Pentacon	www.pentacon.de
Perceptron	www.perceptron.com
PerkinElmer Optoelectronics	www.perkinelmer.com
Phaer	www.phaer.be
Phynix	www.phynix.de

Pi4_robotics	www.pi4.de
Plasmo Industrietechnik	www.plasmo.eu
Polygon	www.polygon-technology.de
Polytec	www.polytec.de/bv
Precitec Optronik	www.precitec-optronik.de
Premosys	www.premosys.com
Princeton Instruments	www.princetoninstruments.com
Proxitronic	www.proxitronic.com
Quest Innovations	www.quest-innovations.com
Raytek	www.raytek.de
Rheintacho Messtechnik	www.rheintacho.com
Richard Wolf	www.richard-wolf.com
Roper Scientific	www.roperscientific.de
Rudolph Technologies	www.rudolphtech.com
Schäfer Technologie	www.schaefer-tec.com
Schäfter + Kirchhoff	www.sukhamburg.de
Sensor Instruments	www.sensorinstruments.de
Sensors Unlimited	www.sensorsinc.com
SGM Schut	www.schut.com
Shape Drive	www.shape-drive.com
Sick	www.sick.com
SIOS Meßtechnik	www.sios.de
SKS Vision Systems	www.visionsystems.fi
Soliton	www.soliton-gmbh.de
Specim Spectral Imaging	www.specim.fi
Steinbichler Optotechnik	www.steinbichler.com
Stiefelmayer	www.stiefelmayer.de
STIL	www.stilsa.com
SynView	www.synview.com
Taylor Hobson	www.taylor-hobson.com
Tec5	www.tec5.com
TechnoTeam	www.technoteam.de
Tekno Optik	www.teknooptik.se
Topometric	www.topometric.net
Tordivel	www.scorpionvision.com
Ulis	www.ulis-ir.com
Vialux	www.vialux.de
Videometer	www.videometer.com
Visiolaser	www.vannier-photelec.fr/visiolaser
Vision Engineering	www.visioneng.de
Vision Machines	www.vision-machines.com
ViZaar	www.vizaar.de
Volform	www.volform.se
Wente/Thiedig	www.wente-thiedig.de
Werth Messtechnik	www.werthmesstechnik.de
Wild	www.wild.at
Xenics	www.xenics.com
X-Rite	www.xrite.com
Yxlon International	www.yxlon.com
Z-Laser	www.z-laser.com
Zwick	www.zwick.de
ZygoLOT	www.zygolot.de

Optics

Acal BFi Germany	www.bfioptilas.com
AHF Analysentechnik	www.ahf.de
Allied Vision Technologies	www.alliedvisiontec.com
Alrad Imaging	www.alrad.co.uk
AMS Technologies	www.amstechnologies.com
Anteryon	www.anteryon.com
Armstrong Optical	www.armstrongoptical.co.uk
Azure Photonics	www.azurephotonics.com
B & M Optik	www.bm-optik.de
Basler	www.baslerweb.com
Baumer	www.baumer.com
Berliner Glas Gruppe	www.berlinerglas.com
BK Interferenzoptik	www.interferenzoptik.de
Bock Optronics	www.bockoptronics.ca
Carl Zeiss IMT	www.zeiss.de/messtechnik
Carl Zeiss Microimaging	www.zeiss.de/microscopy
Carl Zeiss	www.zeiss.com/lenses4industry
CBC Deutschland	www.cbc-de.com
Collischon Optik-Design	www.mikro-optik.de
Cosyco	www.cosyco.de
Deposition Sciences	www.depsci.com
Docter Optics	www.docteroptics.com
Edmund Optics	www.edmundoptics.de
EHD imaging	www.ehd.de
Eureca Messtechnik	www.eureca.de
Fabrimex Systems	www.fabrimex-systems.ch
FiberVision	www.fibervision.de
Finger	www.finger-kg.de
Fisba Optik	www.fisba.ch
Flir Advanced Thermal Solutions	www.flir.com/mv
Framos	www.framos.eu
FRT Fries Research & Technology	www.frt-gmbh.com
Fujifilm	www.fujifilm.eu
G4 Technology	www.g4.com.tw
Goyo Optical	www.goyooptical.com
Helmut Hund	www.hund.de
Holoeye Photonics	www.holoeye.com
IB/E Optics	www.ibe-optics.com
IDS	www.ids-imaging.com
Ifm Electronic	www.ifm.com
IiM	www.iimag.de
Image House	www.imagehouse.dk
Image S	www.imagessrl.com
IMT	www.imtag.ch
Infaimon	www.infaimon.com
Ircam	www.ircam.de
IS Imaging Solutions	www.imaging-solutions.de
ISVI	www.isvi-corp.com
Japan F.A. Systems	www.jfas.co.jp
Jenoptik	www.jenoptik.de
Jos. Schneider Optische Werke	www.schneiderkreuznach.com
Karlheinz Hinze Optoengineering	www.hinze-opto.de
KeeKoon Electronics	www.keekoon.com
Keyence	www.keyence.de
Kowa Europe	www.kowa.eu
Kvant	www.kvant.sk
Lambda Photometrics	www.lambdaphoto.co.uk
Laser 2000	www.laser2000.de
Laser Components	www.lasercomponents.com
Leading-Tech Laser	www.leading-techlaser.com
Lensation	www.lensation.de
Leoni	www.leoni-fiber-optics.com
Lincoln Laser Company	www.lincolnlaser.com
LMI Technologies	www.lmi3d.com
LOT Quantum Design	http://lot-qd.de
Luster LightVision Tech	www.lusterinc.com
Matrix Vision	www.matrix-vision.de
MaxxVision	www.maxxvision.com
Menzel Vision and Robotics	www.menzelab.com
Meuser Optik	www.meuser-optik.com
MG Optical Solutions	www.mgopticalsolutions.com
Micos	www.micos.ws
Micro-Epsilon	www.eltrotec.com
Microsystems	www.microsystems.it
Midwest Optical Systems	www.midopt.com
Moeller-Wedel Optical	www.moeller-wedel-optical.com
Molenaar Optics	www.molenaar-optics.com
Moritex	www.moritex.com
MsiVision	www.msivision.com
Myutron	www.myutron.com

Navitar	www.navitar.com
NET	www.net-gmbh.com
NeuPro Solutions	www.neupro-solutions.com
Odem Technologies	www.odem.co.il
Olympus	www.olympus-europa.com
Omron	www.industrial.omron.de
Optec	www.optec.eu
Optics Balzers	www.opticsbalzers.com
Opto	www.opto.de
Opto Engineering	www.opto-engineering.com
Opto Precision	www.optoprecision.de
Optometron	www.optometron.de
Orbis	www.orbis.eu
Parameter	www.parameter.se
Phaer	www.phaer.be
Photonic Products	www.photonic-products.com
Pi4_robotics	www.pi4.de
POG Präzisionsoptik Gera	www.pog.eu
Polytec	www.polytec.de/bv
Profactor	www.profactor.at
Qioptiq	www.qioptiq.de
Qualimatest	www.qmt.ch
Rauscher	www.rauscher.de
Resolve Optics	www.resolveoptics.com
RH Engineering	www.rhengineering.de
Ricoh International B.V. - German Branch	www.ricoh-iosd.eu
Schael-Optik	www.schael-optik.de
Schäfter + Kirchhoff	www.sukhamburg.de
Schmachtl	www.schmachtl.at
Schott Lighting and Imaging	www.schott.com
Second2None	www.visiondragon.com
Sedeco Vision Components	www.sedeco.nl
Seiwa Optical	www.seiwaopt.co.jp
Sill Optics	www.silloptics.de
Space	www.spacecom.co.jp
Spectros	www.spectros.ch
Spectrum Illumination	www.spectrumillumination.com
Stemmer Imaging	www.stemmer-imaging.com
STZ Qualitätssicherung und Bildverarbeitung	www.stz-ilmenau.de
Sugitoh	www.sugitoh.jp
Sunex	www.sunex.com
SVS Vistek	www.svs-vistek.com
Sydor Optics	www.sydor.com
Symco	www.symco.co.jp
Tamron	www.tamron.de
Tekno Optik	www.teknooptik.se
Tekstar Optical	www.tekstaroptical.com
The Imaging Source	www.theimagingnsource.com
Thermosensorik	www.thermosensorik.de
Vega Technology Group	www.vegatcgroup.com
Videology Imaging Solutions	www.videologyinc.com
Videor Technical	www.videor.com
Vision & Control	www.vision-control.com
Vision Engineering	www.visioneng.de
Vision Light Tech	www.visionlighttech.com
Visitool	www.visitool.de
Volpi	www.volpi.ch
VS Technology	www.vst.co.jp
Weiss Imaging and Solutions	www.weiss-imaging.de
ZygoLOT	www.zygolot.de

Processors, Interfaces, Cables, Peripherals

ABS	www.abs-jena.de
Active Silicon	www.activesilicon.com
Adaptive Vision	www.adaptive-vision.com
Adlink	www.adlinktech.eu
Aerotech	www.aerotech.com
Allied Vision Technologies	www.alliedvisiontec.com
Alysium-Tech	www.alysium-tech.com
AMS Technologies	www.amstechnologies.com
Andon Electronics	www.andonelect.com
Arvoo Imaging Products	www.arvoo.com
AutoVimation	www.autovimation.com
BAP Image Systems	www.bapimgsys.com
Baumer	www.baumer.com
Bock Optronics	www.bockoptronics.ca
Components Express	www.componentsexpress.com
D.SignT	www.dsignt.de
De Man Industrie-Automation	www.deman.de
EDT	www.edt.com
Eltec Elektronik	www.eltec.com
Epix	www.epixinc.com
Ernst & Engbring	www.eue-kabel.de
Evision Systems	www.evision-systems.de
Fabrimex Systems	www.fabrimex-systems.ch
FiberVision	www.fibervision.de
Framos	www.framos.eu
G4 Technology	www.g4.com.tw
Gidel	www.gidel.com
GigaLinx	www.gigalinx.net
HaSoTec	www.hasotec.com
Hema	www.hema.de
IDS	www.ids-imaging.com
Igus	www.igus.de
Image House	www.imagehouse.dk
Image S	www.imagessrl.com
Imaging Solutions Group	www.isgcameras.com
Infaimon	www.infaimon.com
Intercon1	www.intercon-1.com
JAI	www.jai.com
Japan F.A. Systems Corporation	www.jfas.co.jp
Lemo	www.lemo.com
Leoni	www.leoni-fiber-optics.com
LMI Technologies	www.lmi3d.com
Luster LightVision Tech	www.lusterinc.com
Mad City Labs	www.madcitylabs.com
Matrix Vision	www.matrix-vision.de
Matrox Imaging	www.matrox.com/imaging
MaxxVision	www.maxxvision.com
MaZet	www.mazet.de
Menzel Vision and Robotics	www.menzelab.com
Micro-Epsilon	www.eltrotec.com
Micron	www.micron.com
Microsystems	www.microsystems.it
Mikrotron	www.mikrotron.de
NET New Electronic Technology	www.net-gmbh.com
Newnex Technology	www.newnex.com
Northwire Technical Cable	www.northwire.com
Orbis	www.orbis.eu
Parameter	www.parameter.se
Phytec Messtechnik	www.phytec.de
Pi4_robotics	www.pi4.de
Pleora Technologies	www.pleora.com
Pro Design Electronic	www.prodesign-europe.com
Schäfter+Kirchhoff	www.sukhamburg.de
Schmachtl	www.schmachtl.at
Seidenader	www.seidenader.de
Serview	www.serview.net
Sglux	www.sglux.com
Silicon Software	www.silicon-software.de
Stemmer Imaging	www.stemmer-imaging.com
STZ Qualitätssicherung und Bildverarbeitung	www.stz-ilmenau.de
Supercomputing Systems	www.scs-vision.ch
SVS Vistek	www.svs-vistek.com
Symco	www.symco.co.jp
Teledyne Dalsa	www.teledynedalsa.com
The Imaging Source	www.theimagingnsource.com
Thinklogical	www.thinklogical.com
Unibrain	www.unibrain.com
USBFireWire	www.usbfirewire.com
Vidisys	www.vidisys.de
Vision & Control	www.vision-control.com
Vision Tools	www.vision-tools.com
Vistas	www.vistas-gmbh.de
WIR Electronic	www.wir-electronic.de
Xilinx	www.xilinx.com

Acal BFi Germany	www.bfioptilas.com
Alfavision	www.alfavision.de
Alicona Imaging	www.alicona.com
Anafocus	www.anafocus.com
AutoVimation	www.autovimation.com
Cmos Vision	www.cmosvision.com
Cognex	www.cognex.com
Collischon Optik-Design	www.mikro-optik.de
Creaform Deutschland	www.creaform3d.com
CSEM	www.csem.ch
CTR Carinthian Tech Research	www.ctr.at
Cypress Semiconductor	www.cypress.com
De Man Industrie-Automation	www.deman.de
Docter Optics	www.docteroptics.com
Eltec Elektronik	www.eltec.com
Entner Electronics	www.entner-electronics.com
Erhard + Leimer	www.erhardt-leimer.com
FiberVision	www.fibervision.de
Flir Advanced Thermal Solutions	www.flir.com
Fraunhofer Allianz Vision	www.vision.fraunhofer.de
Fraunhofer IFF	www.mpt.iff.fraunhofer.de
Fraunhofer IMS	www.ims.fraunhofer.de
FRT Fries Research & Technology	www.frt-gmbh.com
Gesellschaft für Bild- und Signalverarbeitung	www.gbs-ilmenau.de
Gevicam	www.gevicam.com
GFaI	www.gfai.de
HaSoTec	www.hasotec.com
Helion	www.helionvision.com
IDS	www.ids-imaging.com
Imaging Lab	www.imaginglab.it
Impuls	www.impuls-imaging.com
IMS Chips	www.ims-chips.de
Infaimon	www.infaimon.com
Isomorph	www.isomorph.it
Joanneum Research	www.joanneum.at
Jos. Schneider Optische Werke	www.schneiderkreuznach.com
Kamera Werke Dresden	www.kwdo.de
Kappa opto-electronics	www.kappa.de
Lincoln Laser Company	www.lincolnlaser.com
LMI Technologies	www.lmi3d.com
Matrix Vision	www.matrix-vision.de
Mazet	www.mazet.de
Micro-Epsilon	www.eltrotec.com
Mikromak Service	www.mikromak.com
MsiVision	www.msivision.com
Norpix	www.norpix.com
Opto	www.opto.de
Panavision Imaging	www.panavisionimaging.com
PCO	www.pco.de
Photonfocus	www.photonfocus.com
Phytec Messtechnik	www.phytec.de
Pi4_robotics	www.pi4.de
Profactor	www.profactor.at
Schäfter + Kirchhoff	www.sukhamburg.de
Sensor to Image	www.sensor-to-image.de
Smartsurv	www.smartsurv.de
SPG Data 3D	www.spgdata3d.com
SPIE	www.spieeurope.org
Stemmer Imaging	www.stemmer-imaging.com
STZ Qualitätssicherung und Bildverarbeitung	www.stz-ilmenau.de
Tekno Optik	www.teknooptik.se
Tema	www.temavisio.com
Thermosensorik	www.thermosensorik.de
Tichawa Vision	www.tichawa.de
Tordivel	www.scorpionvision.com
Univision	www.univision.it
Vega Technology Group	www.vegatcgroup.com
Vision & Control	www.vision-control.com
Vision Machines	www.vision-machines.com
Vision Tools	www.vision-tools.com
V-Research	www.v-research.at
Zertrox	www.zertrox.de

Software

A&B Software	www.ab-soft.com
ABW	www.abw-3d.de
Adaptive Vision	www.adaptive-vision.com
Advantech Europe	www.advantech.eu
Alditech	www.alditech.ru
Alfavision	www.alfavision.de
Alicona Imaging	www.alicona.com
Alliance Vision	www.alliancevision.com
Alrad Imaging	www.alrad.co.uk
AMS Technologies	www.amstechnologies.com
Andor Technology	www.andor.com
AOS Technologies	www.aostechnologies.com
Applied Electro-Optics	www.aeousa.com
Artray	www.artray.co.jp
Asentics	www.asentics.de
Attentra	www.attentra.de
Baumer	www.baumer.com
Cimetrix	www.cimetrix.com
Cognex	www.cognex.com
Cosyco	www.cosyco.de
De Man Industrie-Automation	www.deman.de
Dhs Solutions	www.dhssolution.com
Digital Surf	www.digitalsurf.com
Duwe 3D	www.duwe-3d.de
Dynalog	www.dynalog-us.com
Ebs Automatisierte Thermo-graphie und Systemtechnik	www.irpod.net
EHD Imaging	www.ehd.de
Eltec Elektronik	www.eltec.com
Energid	www.energid.com
Epix	www.epixinc.com
Erhard + Leimer	www.erhardt-leimer.com
Euresys	www.euresys.com
EVT Eye Vision Techology	www.evt-web.com
Fabrimex Systems	www.fabrimex-systems.ch
Fast	www.fast-corp.co.jp
FDS Research	www.fdsresearch.si
FiberVision	www.fibervision.de
Flir Advanced Thermal Solutions	www.flir.com
Framos	www.framos.eu
FSI Technologies	www.fsinet.com
G4 Technology	www.g4.com.tw
Gefasoft	www.gefasoft.com
Geomagic	www.geomagic.com
Gesellschaft für Bild- und Signalverarbeitung	www.gbs-ilmenau.de
Gevicam	www.gevicam.com
Goldlücke Ingenieurleistungen	www.giib.de
Hasotec	www.hasotec.com
Hexagon Manufacturing Intelligence	www.hexagonmi.com
IB/E Optics	www.ibe-optics.com
IDS	www.ids-imaging.com
IiM	www.iimag.de
Image House	www.imagehouse.dk
Image S	www.imagessrl.com
Imagic	www.imagic-imaging.com
Imaging Lab	www.imaginglab.it
Impuls	www.impuls-imaging.com
INB Vision	www.inb-vision.com
Industrial Vision Systems	www.industrialvision.co.uk
Infaimon	www.infaimon.com
Inray Solutions	www.inrays.com
In-situ	www.in-situ.de
Ircam	www.ircam.de
IS Imaging Solutions	www.imaging-solutions.de
Isomorph	www.isomorph.it
Isra Vision	www.isravision.com
IVS	www.industrialvision.co.uk
JAI	www.jai.com
Japan F.A. Systems	www.jfas.co.jp
Joanneum Research	www.joanneum.at
Kappa opto-electronics	www.kappa.de
Karlheinz Hinze Optoengineering	www.hinze-opto.de
Klughammer	www.klughammer.de
Kvant	www.kvant.sk
Lambda Photometrics	www.lambdaphoto.co.uk
Lambda Research	www.lambdares.com
Leica Microsystems	www.leica-microsystems.com

Leutron Vision	www.leutron.com
LMI Technologies	www.lmi3d.com
Luster Lightvision Tech	www.lusterinc.com
Math & Tech Engineering	www.mathtech.eu
Matrix Vision	www.matrix-vision.de
Matrox Imaging	www.matrox.com/imaging
MaxxVision	www.maxxvision.com
Menzel Vision and Robotics	www.menzelab.com
Micro Epsilon	www.micro-epsilon.com
Microsystems	www.microsystems.it
Mikromak Service	www.mikromak.com
Mitutoyo	www.mitutoyo.de
Msivision	www.msivision.com
MVTec Software	www.mvtec.com
National Instruments	www.ni.com
Neogramm	www.neogramm.de
NET New Electronic Technology	www.net-gmbh.com
Neurocheck	www.neurocheck.com
Norpix	www.norpix.com
Odem Technologies	www.odem.co.il
Olympus	www.olympus-europa.com
Omron Microscan Systems	www.microscan.com
Omron	www.industrial.omron.de
Optical Research Associates	www.opticalres.com
Optis	www.optis-world.com
Opto	www.opto.de
Optometron	www.optometron.de
Orbis	www.orbis.eu
Parameter	www.parameter.se
Photonfocus	www.photonfocus.com
Pi4_robotics	www.pi4.de
Pleora Technologies	www.pleora.com
Polytec	www.polytec.de/bv
Profactor	www.profactor.at
Qualimatest	www.qmt.ch
Rapidform	www.rapidform.com
Rauscher	www.rauscher.de
RH Engineering	www.rhengineering.de
Rubroeder	www.rubroeder.de
SAC	www.sac-vision.de
Schäfter+Kirchhoff	www.sukhamburg.de
Schmachtl	www.schmachtl.at
Second2None	www.visiondragon.com
Sedeco Vision Components	www.sedeco.nl
SensorDesk	www.sensordesk.com
Silicon Software	www.silicon-software.de
Simon IBV	www.simon-ibv.de
SmartSurv	www.smartsurv.de
SPG Data 3D	www.spgdata3d.com
Stemmer Imaging	www.stemmer-imaging.com
STZ Qualitätssicherung und Bildverarbeitung	www.stz-ilmenau.de
Supercomputing Systems	www.scs-vision.ch
SVS Vistek	www.svs-vistek.com
Symco	www.symco.co.jp
Systematic Vision	www.systematicvision.com
Tekno Optik	www.teknooptik.se
Teledyne Dalsa	www.teledynedalsa.com
Tema	www.temavisio.com
The Imaging Source	www.theimagingnsource.com
The Mathworks	www.mathworks.com
Thermosensorik	www.thermosensorik.de
Tordivel	www.scorpionvision.com
Trivision	www.trivision.dk
TYZX	www.tyzx.com
Unique Vision	www.unique-vision.net
Univision	www.univision.it
Van de Loosdrecht Machine Vision	www.vdlmv.nl
Vega Technology Group	www.vegatcgroup.com
Visicontrol	www.visicontrol.com
Visiolaser	www.vannier-photelec.fr/visiolaser
Vision & Control	www.vision-control.com
Vision Components	www.vision-components.com
Vision Machines	www.vision-machines.com
Vision Tools	www.vision-tools.com
Visionlink	www.visionlink.it
Vitronic	www.vitronic.com
Vizzion	www.vizzion.com
Weiss Imaging and Solutions	www.weiss-imaging.de
Wenzel	www.wenzel-group.com

Vision Sensors, Smart Cameras & Embedded Systems

Acal BFi Germany	www.bfioptilas.com
Active Silicon	www.activesilicon.com
Adaptive Vision	www.adaptive-vision.com
Adlink	www.adlinktech.eu
Advantech Europe	www.advantech.eu
AIT Göhner	www.visionandid.com
Alfavision	www.alfavision.de
AMS Technologies	www.amstechnologies.com
Asentics	www.asentics.de
Banner Engineering	www.bannerengineering.com
Basler Vision Technologies	www.baslerweb.com
Baumer	www.baumer.com
Camsensor Technologies	www.camsensor.com
Cmos Vision	www.cmosvision.com
Cognex	www.cognex.com
Compar	www.compar.ch
Computer Dynamics	www.cdynamics.com
Cosyco	www.cosyco.de
Datalogic	www.datalogic.com
De Man Industrie-Automation	www.deman.de
Si-soric	www.di-soric.de
Eltec Elektronik	www.eltec.com
Erhard + Leimer	www.erhardt-leimer.com
EVT Eye Vision Techology	www.evt-web.com
Fabrimex Systems	www.fabrimex-systems.ch
Fastvision	www.fast-vision.com
Festo	www.festo.com
Fibervision	www.fibervision.de
Finger	www.finger-kg.de
Flir Advanced Thermal Solutions	www.flir.com
Framos	www.framos.com
FSI Technologies	www.fsinet.com
G4 Technology	www.g4.com.tw
Hans Turck	www.turck.com
Hema	www.hema.de
Hexagon Manufacturing Intelligence	www.hexagonmi.com
IBN	www.ibn-gmbh.de
IDS Imaging Development Systems	www.ids-imaging.com
Ifm Electronic	www.ifm.de
Image House	www.imagehouse.dk
Image S	www.imagessrl.com
Imaging Solutions Group	www.isgcameras.com
Imago Technologies	www.imago-technologies.com
Imagsa Technologies	www.imagsa.com
IMR Automatisierungstechnik	www.imr-le.de
Infaimon	www.infaimon.com
IOS	www.ios-web.de
IOSS	www.ioss.de
Ipf Electronic	www.ipf-electronic.de
IS Imaging Solutions	www.imaging-solutions.de
Isra Vision	www.isravision.com
ISW	www.isw-gmbh.biz
Japan F.A. Systems Corporation	www.jfas.co.jp
K + P Krempien + Petersen	www.kup-image.de
Keyence	www.keyence.de
Kontron	www.kontron.com
Lambda Photometrics	www.lambdaphoto.co.uk
Leutron Vision	www.leutron.com
Leuze Electronic	www.leuze.com
LMI Technologies	www.lmi3d.com
Lord Ingenierie	www.lord-ing.com
Luster LightVision Tech	www.lusterinc.com
Matrix Vision	www.matrix-vision.de
Matrox Imaging	www.matrox.com/imaging
MaxxVision	www.maxxvision.com
MaZet	www.mazet.de
Menzel Vision and Robotics	www.menzelab.com
Micro Epsilon	www.micro-epsilon.com
Microsystems	www.microsystems.it
Msivision	www.msivision.com
National Instruments	www.ni.com
NET New Electronic Technology	www.net-gmbh.com
Neupro Solutions	www.neupro-solutions.com
Neuricam	www.neuricam.com
Norpix	www.norpix.com
Odem Technologies	www.odem.co.il
Omron Microscan Systems	www.microscan.com
Omron	www.industrial.omron.de

Opto	www.opto.de
Optomotive	www.optomotive.si
Orbis	www.orbis.eu
Panasonic Electric Works	www.panasonic-electric-works.de
Parameter	www.parameter.se
Pepperl & Fuchs	www.pepperl-fuchs.com
Peter Scholz Software + Engineering	www.scholzsue.de
Phytec Messtechnik	www.phytec.de
Pi4_robotics	www.pi4.de
PMDTec	www.pmdtec.com
Pollux	www.pollux.com.br
Polytec	www.polytec.de/bv
PPT Vision	www.pptvision.com
Profactor	www.profactor.at
Pulsotronic	www.bildverarbeitung.pulsotronic.de
Qualimatest	www.qmt.ch
Rauscher	www.rauscher.de
RSB Optotechnik	www.rsb-optotechnik.de
SAC	www.sac-vision.de
Schäfter+Kirchhoff	www.sukhamburg.de
Schmachtl	www.schmachtl.at
Schunk	www.schunk.com
Scintacor	www.scintacor.com
Second2none	www.visiondragon.com
Sedeco Vision Components	www.sedeco.nl
Sensopart Industriesensorik	www.sensopart.de
Sensor to Image	www.sensor-to-image.de
Shape Drive	www.shape-drive.com
Sharp Microelectronics	www.sharpsme.com
Sick	www.sick.com
Siemens	www.siemens.de/simatic-sensors/mv
SKS Vision Systems	www.visionsystems.fi
Smartek Vision	www.smartekvision.com
Smartray	www.smartray.de
Smartsurv	www.smartsurv.de
Soliton Technologies	www.solitontech.com
Sony	www.pro.sony.eu/vision
Stemmer Imaging	www.stemmer-imaging.com
Supercomputing Systems	www.scs-vision.ch
SVS Vistek	www.svs-vistek.com
Symco	www.symco.co.jp
Tattile	www.tattile.com
Tekno Optik	www.teknooptik.se
Teledyne Dalsa	www.teledynedalsa.com
Tichawa Vision	www.tichawa.de
Topsenso	www.topsenso.de
Tordivel	www.scorpionvision.com
Turck	www.turck.de
TYZX	www.tyzx.com
Vega Technology Group	www.vegatcgroup.com
Vialux	www.vialux.de
Videor Technical	www.videor.com
Visicontrol	www.visicontrol.com
Visiolaser	www.vannier-photelec.fr/visiolaser
Vision & Control	www.vision-control.com
Vision Components	www.vision-components.com
Vision Tools	www.vision-tools.com
Visionlink	www.visionlink.it
VRmagic	www.vrmagic.com
Webview	www.webspec.com
Wenglor Sensoric	www.wenglor.com
Werth Messtechnik	www.werthmesstechnik.de
Wintriss Engineering	www.weco.com
Ximea	www.ximea.com
Xiris Automation	www.xiris.com
Zertrox	www.zertrox.de

Vision Systems, Turnkey Solutions, Integration Services

3D Shape	www.3d-shape.com
ABB	new.abb.com
Act Smartware	wp.act-smartware.de
Adaptive Vision	www.adaptive-vision.com
Adept Electronic Solutions	www.adept.net.au
Adept Technology	www.adept.de
AGR International	www.agrintl.com
AIT Göhner	www.ait.de
AKU Vision Technologie	www.aku.eu
Alfa Vision Systems	www.alfavisionsystems.com
Alfavision	www.alfavision.de
Alliance Vision	www.alliancevision.com
Altair Industries	www.altairindustriesinc.com
Applied Vision	www.appliedvision.com
Asentics	www.asentics.de
ATM Vision	www.atmvision.de
ATN Automatisierungstechnik	www.atn-gmbh.com
Attentra	www.attentra.de
Automation Technology	www.automationtechnology.de
Automation W+R	www.automationwr.de
Autoware	www.autoware.it
AVT Advanced Vision Technology	www.avt-inc.com
Balluf	www.balluf.com
Basler Vision Technologies	www.baslerweb.com
Baumer	www.baumer.com
Beratronic	www.beratronic.de
Bertram Elektrotechnik	www.bertram-bevern.de
Bi-Ber	www.bilderkennung.de
Böwe Systec	www.boewe-systec.com
Brainware Solutions	www.null-ppm.info
BST eltromat International	www.bst-international.com
BST International	www.bst-international.com
Camsensor Technologies	www.camsensor.com
Ceres Vision	www.ceresvision.de
China Daheng Group	www.daheng-image.com
CLK	www.clkgmbh.de
CLK	www.clkgmbh.de
Cognex	www.cognex.com
Coherix	www.coherix.com
Compar	www.compar.ch
Cosyco	www.cosyco.de
Cosynth	www.cosynth.com
Cyth Systems	www.cyth.com
Datalogic	www.datalogic.com
Datapixel	www.datapixel.com
De Man Industrie-Automation	www.deman.de
DE Software & Control	www.de-gmbh.com
Desconpro Engineering	www.desconpro.de
Digital West Imaging	www.highspeedvideos.com
Divisoft	www.divisoft.com
DMC Vision & Motion	www.dmc-vision-motion.de
Dr. Schenk Industriemesstechnik	www.drschenk.com
Dr. Schwab Inspection Technology	www.schwabinspection.com
Dunkley International	www.dunkleymachinevision.com
Dutch Vision Systems	www.dvs-vision.de
E3tam	www.e3tam.com
Eckelmann	www.eckelmann.de
Edixia	www.edixia.com
EHR	www.ehr.de
Eines	www.eines.es
Electronic Systems	www.electronicsystems.it
Ellips	www.ellips.nl
Emhart Glass	www.emhartglass.com
Epix	www.epixinc.com
Epson Deutschland	www.epson.de/robots
Erhard + Leimer	www.erhardt-leimer.com
EVK DI Kerschaggl	www.evk.biz
EVT Eye Vision Techology	www.evt-web.com
Eyec-UK	www.eyec-ukandireland.co.uk
Fast	www.fast-corp.co.jp
Faude Automatisierungstechnik	www.faude.de
FAW Freudenberg Anlagen und Werkzeugtechnik	www.faw-freudenberg.de
FDS Research	www.fdsresearch.si
FiberVision	www.fibervision.de
Finger	www.finger-kg.de
Fuchs engineering	www.fuchs-engineering.de

Fuetec	www.fuetec.de
Futec Europe	www.futeceurope.com
G4 Technology	www.g4.com.tw
Gefasoft	www.gefasoft.com
Gefat Engineering	www.gefat-engineering.de
Gesellschaft für Bild- und Signalverarbeitung	www.gbs-ilmenau.de
GFaI	www.gfai.de
Gidel	www.gidel.com
Goldlücke Ingenieurleistungen	www.giib.de
GOM	www.gom.com
Göpel Electronic	www.goepel.com
GPP Chemnitz	www.gppc.de
Grecon	www.grecon.de
Hasotec	www.hasotec.com
Heitec	www.heitec.de
Helms Technologie	www.helms-technologie.de
Hengstmann Solutions	www.hengstmann.com
Hexagon Manufacturing Intelligence	www.hexagonmi.com
I3 Tech	www.i3tech.de
Ibea	www.ibea.de
ICW [industrie-elektronik]	www.icw-news.de
IiM	www.iimag.de
Ikegami	www.ikegami.de
Image House	www.imagehouse.dk
Image S	www.imagessrl.com
Imago Technologies	www.imago-technologies.com
I-mation	www.i-mation.de
Imess	www.imess.com
Impuls	www.impuls-imaging.com
IMR Automatisierungstechnik	www.imr-le.de
INB Vision	www.inb-vision.com
Industrial Vision Systems	www.industrialvision.co.uk
Infaimon	www.infaimon.com
Infratec	www.infratec.de
Inos Automationssoftware	www.inos-automation.com
Inray Solutions	www.inrays.com
Insensiv	www.insensiv.de
In-situ	www.in-situ.de
Inspectron	www.inspectron.ch
Insystems Automation	www.insystems.de
Intego	www.intego.de
Intopii	www.intopii.fi
IOS	www.ios-web.de
Ioss	www.ioss.de
Irida Labs	www.iridalabs.gr
IS Imaging Solutions	www.imaging-solutions.de
Isa Industrielektronik	www.isaweiden.de
Isomorph	www.isomorph.it
Isra Vision	www.isravision.com
ISW	www.isw-gmbh.biz
Itech Engineering	www.itecheng.com
IVS	www.industrialvision.co.uk
J&P Vision	www.jupvision.de
Japan F.A. Systems	www.jfas.co.jp
Jasvisio - Vision Artificial	www.jasvisio.com
JLI Vision	www.jli.dk
Joanneum Research	www.joanneum.at
K + P Krempien + Petersen	www.kup-image.de
Kaiser Computersysteme	www.isotronika.de
Kdorf Automation	www.kdorf.de
Keyence	www.keyence.de
Kirin Techno-System	www.kirintechno.co.jp
KMS Engineering	http://kms-e.de
L&P	www.lp-gmbh.de
Laetus	www.laetus.com
Leuze Electronic	www.leuze.com
Limess	www.limess.com
Lincoln Laser Company	www.lincolnlaser.com
Machine Vision Technology	www.machine-vision-technology.co.uk
Menzel Vision and Robotics	www.menzelab.com
Meta Vision Systems	www.meta-mvs.co.uk
Mevisco	www.mevisco.com
Micro Epsilon	www.micro-epsilon.com
Omron Microscan Systems	www.microscan.com
Mikrotron	www.mikrotron.de
Modi Modular Digits	www.modi-gmbh.de

Moser Industrielektronik	www.moser-gmbh.de
Msivision	www.msivision.com
Neogramm	www.neogramm.de
Neupro Solutions	www.neupro-solutions.com
Neuricam	www.neuricam.com
Neurocheck	www.neurocheck.com
Neurotechnology	www.neurotechnology.com
Nikka Research Deutschland	www.nikka-research.com
Nikon Metrology	www.nikonmetrology.com
Nokra	www.nokra.de
Norman N. Axelrod Associates	www.axelrodassociates.com
Norpix	www.norpix.com
Northwire	www.northwire.com
OCS	www.ocsgmbh.com
Octum	www.octum.de
Omron	www.industrial.omron.de
Opsis	www.opsis.de
Optel Vision	www.optelvision.com
OptoFidelity	www.optofidelity.com
OptoNova	www.optonova.se
Orbis	www.orbis.eu
Orbotech	www.orbotech.com
Orus Integration	www.orusintegration.com
Otto Vision Technology	www.otto-jena.de
Panasonic Electric Works	www.panasonic-electric-works.de
Parameter	www.parameter.se
Pattern Recognition Company	www.pattern-recognition-company.de
Paul Leibinger	www.leibinger-group.com
PCE Pharmacontrol	www.pharmacontrol.de
PCS Industries	www.pcindustries.com
Pepperl & Fuchs	www.pepperl-fuchs.com
Perceptron	www.perceptron.com
Peter Scholz Software + Engineering	www.scholzsue.de
Phytec Messtechnik	www.phytec.de
Pi4_robotics	www.pi4.de
Pilz	www.pilz.de
Pixargus	www.pixargus.de
Plasmo Industrietechnik	www.plasmo.eu
POG Präzisionsoptik Gera	www.pog.eu
Pollux	www.pollux.com.br
Polygon	www.polygon-technology.de
Polytec	www.polytec.de/bv
PPT Vision	www.pptvision.com
Pressco Technology	www.pressco.com
Profactor	www.profactor.at
Prüftechnik Schneider & Koch	www.prsuk.de
Pulsotronic	www.bildverarbeitung.pulsotronic.de
Qualimatest	www.qmt.ch
Quiss	www.quiss.com
R&W Industrieautomation	www.r-u-w.de
Radix Controls	www.radixcontrols.com
Rbc robotics	www.rbc-robotics.de
Recognitec	www.recognitec.de
RH Engineering	www.rhengineering.de
Rohwedder	www.rohwedder.com
RSB Optotechnik	www.rsb-optotechnik.de
Rubroeder	www.rubroeder.de
Rudolph Technologies	www.rudolphtech.com
SAC	www.sac-vision.de
Scanware electronic	www.scanware.de
Schäfter+Kirchhoff	www.sukhamburg.de
Schmachtl	www.schmachtl.at
Schönherr Elektronik	www.schoenherr-elektronik.com
Second2none	www.visiondragon.com
Seidenader	www.seidenader.de
Sensor Control	sensor-control.de
Serview	www.serview.net
Servo-Robot	www.servorobot.com
Sidonia Systems	www.sidoniasystems.de
Signum	www.signum-vision.de
Simac Masic	www.simacmasic.nl
Simon IBV	www.simon-ibv.de
SL Tec	www.sltec.de
Smartray	www.smartray.de

Solex	www.solexvision.com
Solving3D	www.solving3d.de
Soma	www.soma.de
SPG Data 3D	www.spgdata3d.com
Steinbichler Optotechnik	www.steinbichler.com
Stemmer Imaging	www.stemmer-imaging.com
Stöhrmann Systemtechnik	www.stöhrmann.de
Stratec Control Systems	www.bbull.com
STZ Qualitätssicherung und Bildverarbeitung	www.stz-ilmenau.de
Sundance Multiprocessor Technology	www.sundance.com
Surface Inspection	www.surface-inspection.com
SVS Vistek	www.svs-vistek.com
Symacon Engineering	www.symacon.de
Symetix	www.symetix.com
Sys Vision	www.isys-vision.de
Syscon	www.syscon-vision.de
Systech	www.systech-tips.com
Systematic Vision	www.systematicvision.com
Tattile	www.tattile.com
Technoteam	www.technoteam.de
Teledyne Dalsa	www.teledynedalsa.com
Tema	www.temavisio.com
Thermosensorik	www.thermosensorik.de
Tiama	www.tiama.com
Tichawa Vision	www.tichawa.de
Tordivel	www.scorpionvision.com
Trivision	www.trivision.dk
TST Technological Solutions	www.tst.pt
TYZX	www.tyzx.com
Unique Vision	www.unique-vision.net
Univision	www.univision.it
Vega Technology Group	www.vegatcgroup.com
Vester Elektronik	www.vester.de
Videometer	www.videometer.com
View-Factor	www.view-factor.com
Vigitek	www.vigitek.com
Viscom	www.viscom.com
Visicontrol	www.visicontrol.com
Visimation	www.visimation.de
Visio Nerf	www.visionerf.com
Visiolaser	www.vannier-photelec.fr/visiolaser
Vision Automation	www.visionautomation.dk
Vision Experts	www.vision-experts.com
Vision Machines	www.vision-machines.com
Vision Tools	www.vision-tools.com
Vision-Consult Bildverarbeitung	www.vision-consult.com
Visionlink	www.visionlink.it
Visiotek	www.visiotek.com.tr
Visolution	www.visolution.de
Visotect	www.visotect.de
Visuelle Technik	www.visuelle-technik.de
Vitronic	www.vitronic.com
VMT	www.vmt-gmbh.com
V-Research	www.v-research.at
Weber Systemtechnik	www.wesys.de
Weiss Imaging and Solutions	www.weiss-imaging.de
Weitblick Systems	www.weitblick-systems.at
Wenglor Sensoric	www.wenglor.com
Wente/Thiedig	www.wente-thiedig.de
Wickon Hightech	www.wickon.com
Wintriss Engineering	www.weco.com
Wolf Systeme	www.wolfsysteme.de
Zertrox	www.zertrox.de
Ziemann & Urban	www.ziemann-urban.de

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