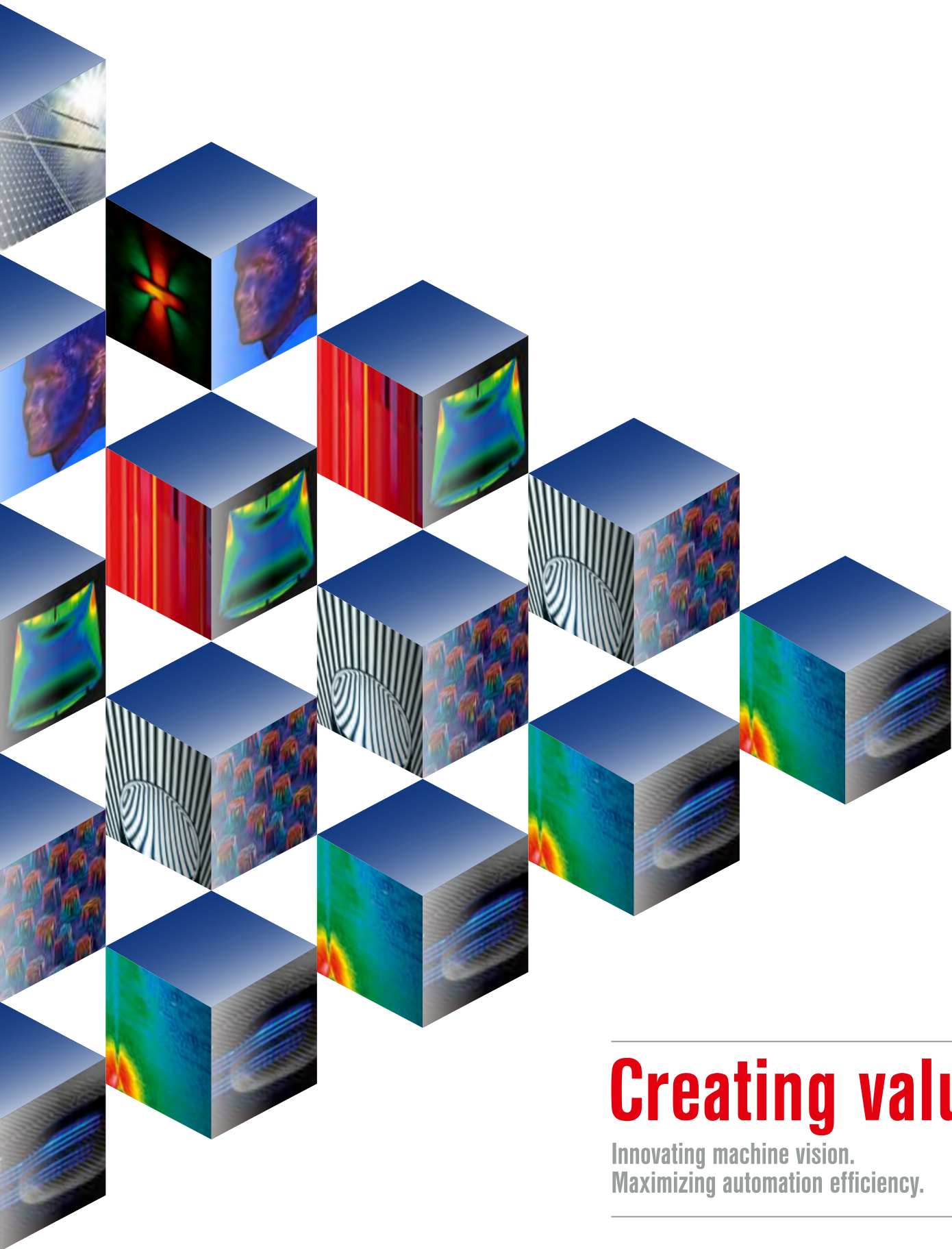




ISRA
VISION



Creating value.

Innovating machine vision.
Maximizing automation efficiency.

What was once a spin-off from the Technical University of Darmstadt has since become an internationally established supplier of Machine Vision systems: A global leader with 30 years of expertise, ISRA now employs a staff of more than 600 at 25 locations around the world.



Machine Vision Technology from a global market leader

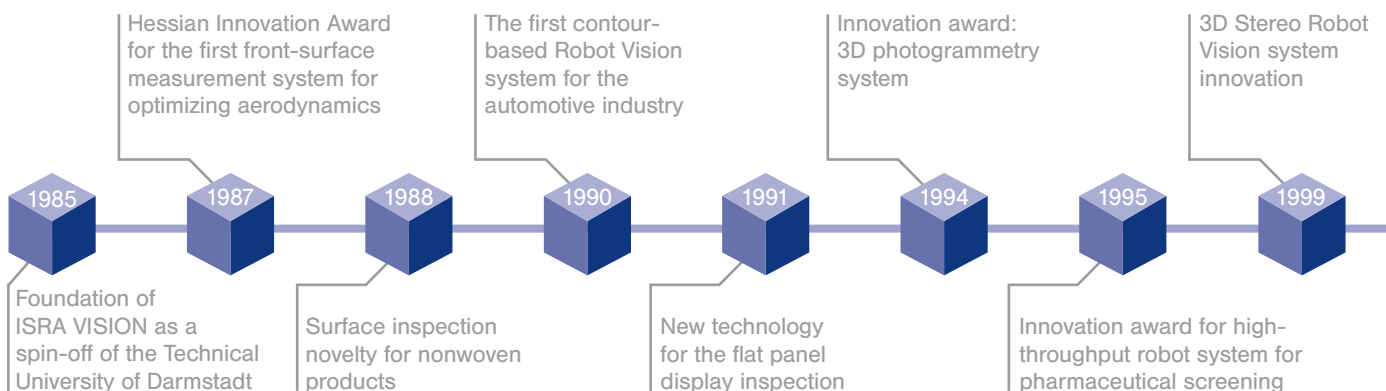
International major industry players place their trust in ISRA. Our core competence involves the development of surface inspection systems and 3D Machine Vision products. Over 10,000 successfully installed systems throughout the entire world are clear evidence of our technological leadership. With innovative solutions, we supply the answers to the various quality and processing demands of the global players.

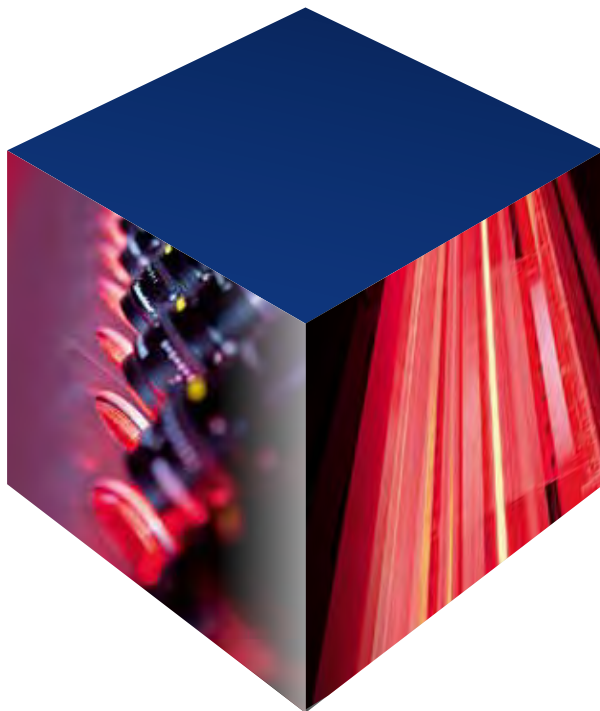
ISRA systems consist of the most advanced components developed in-house. The combination of high-performance camera and illumination units, special software and business intelligence architecture allows the detailed analysis of production flows.

Finding best solutions for the best - this is what distinguishes ISRA on the market. This is made possible by an intensive

dialogue: From the consulting meeting to the development stage through to the integration of the system and subsequent support services, we stay in close contact with our customers.

ISRA is listed on the stock exchange (ISIN: DE 0005488100) with a solid equity ratio of more than 50 percent, continuous growth ratios in the double-digit range and with annual sales of approximately 100 million euros. This makes us a solid and stable partner for the future. With great success comes great social responsibility. ISRA is fully aware of that: All corporate activities are performed with due consideration to the highest benchmarks in ethical, social and sustainable standards.



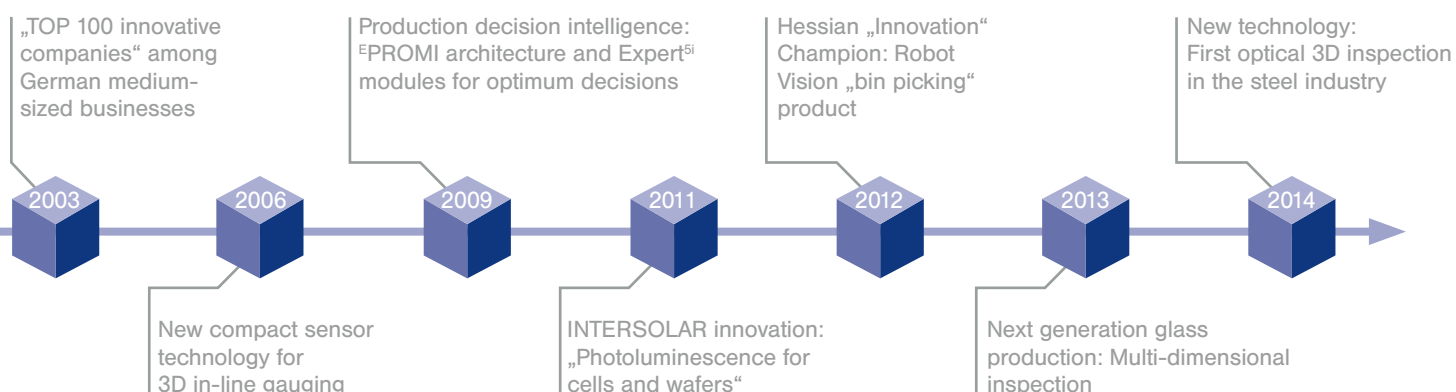


In modern production environments, the human eye alone is no longer a reliable option to ensure quality and production efficiency. Leading companies from a wide range of industries have recognized that in today's world, Machine Vision applications are critical for maintaining a competitive edge in the industrial production.

High-end solutions for highly complex tasks

Surface structures in the nanometer range, large web widths and speeds of several thousand meters per minute: State-of-the-art production can no longer work without advanced technology. Industrial image processing plays a major role. It offers solutions for the challenges of tomorrow and makes efficient automation possible in the first place: Optical systems inspect quality, control process flows, identify components, read codes and supply valuable data to optimize production. With the help of 3D Robot Vision applications, they allow the robot arm to determine the exact position of components in space so that its movements can be coordinated accordingly.

The array of ISRA Machine Vision products includes a wide range of expert solutions from an international top company. Our highly developed technologies provide the capability to improve value creation in every process step and to achieve optimum yields. They ensure an efficient automated production and at the same time help to lower scrap rates and manufacturing costs. This prevents expensive recalls, product liability cases and damage to a company's image. Users gain a decisive advantage over the competition.



Best performances in all technology disciplines

ISRA is able to realize highly efficient robot guidance with **3D STEREOGRAMMETRY**: Cameras of varying angles allow depth re-constructions for precise robot arm positioning.

As globally recognized technology leader for **3D PHOTOGRAMMETRY**, ISRA has enabled 3D vision with a single camera for the first time ever.

Whether 24,000 pixels at 800 MHz or 25 megapixel surface sensors: Our state-of-the-art **CAMERA TECHNOLOGY** is unique and future-proof.

As a specialist for **3D POINT CLOUDS**, we use latest detection algorithms as a means to extract 3D object positions as well as measured data from sensor-generated depth-maps.

With 30 years of experience in **2D AND 3D METROLOGY**, ISRA offers solutions for measuring tasks down to the μm range based on advanced algorithms.

With integrated lighting, vision processor, precise optics and highest speeds, ISRA offers the ideal **SENSOR DESIGN** for best possible results in any application.

Exclusive **LED ILLUMINATION** is essential for high-end Machine Vision solutions. Technologies such as Multi-Mode, Combi-Mode and UV or IR respectively ensure precise detection and classification.

The ISRA-developed **PHASE MEASURING 3D TRIANGULATION** enables the resolution of finest three-dimensional surface structures within seconds - both for positioning and for analyzing purposes.

COLOR MACHINE VISION competence is another technological key for complex applications where color fastness at high web speeds plays an important role.

Our many years of expertise in **EMBEDDED ARCHITECTURES** as requirement for high-speed applications includes the integration of vision processors and FPGA structures.

HIGH-SPEED DEFLECTOMETRY is ISRA's latest innovation for highly precise 3D measuring of reflective surfaces.

As an innovation leader in the fields of 3D Machine Vision and surface inspection, ISRA has a high degree of expertise in every single technology. Each element of this portfolio can be combined. Thus intelligent solutions are created for specific demands of different industries.

With its pioneering efforts, ISRA has established **3D ROBOT VISION** as the standard technology for robot automation in six degrees of freedom.

Textured and structured surfaces require special pattern recognition technology for in-line high-speed analysis: **PATTERN RECOGNITION**

SURFACE INSPECTION is extremely demanding. What matters is the right combination of the technologies – lighting, detection, classification and metrology.

The **DETECTION OF SURFACE DEFECTS**, which in part continues to expand the limits of what is even possible, has made ISRA the global leader in Machine Vision.

DEFLECTOMETRY is another core technology aimed to perform surface analyses to measure defects in the reflection in the μm range.

PRODUCTION DECISION INTELLIGENCE
The analysis of large quality and production data volumes leads to real production optimizations.

With its core competence in **3D MACHINE VISION** ISRA facilitates extraordinary efficiency improvements in different industries.

Ground-breaking **PHOTO-LUMINESCENCE** imagery methods for solar water inspection pave the way for whole new possibilities of measuring efficiency in the photovoltaic industry.

One of the most demanding inspection components is **CLASSIFICATION**: a highly cognitive performance integrated in ISRA systems.

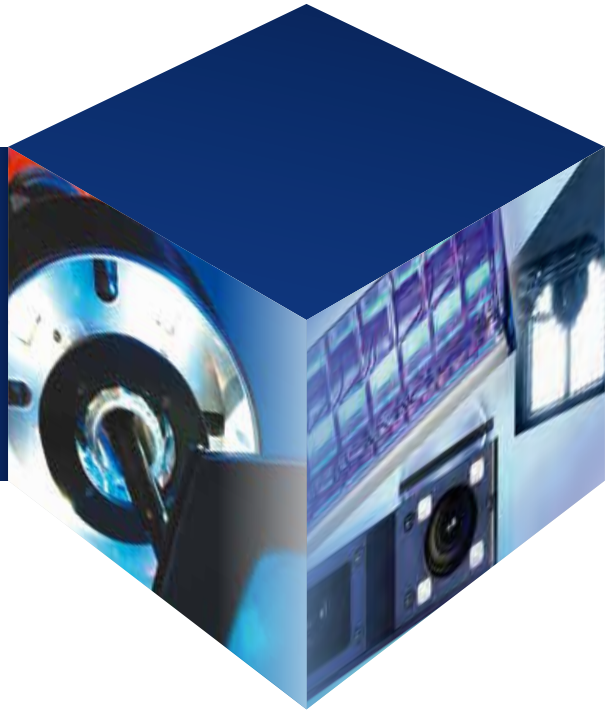
Complex mathematical methods are used to generate surfaces from 3D point data for **RE-ENGINEERING AND RAPID PROTOTYPING**.

ONLINE-MOIRÉ TECHNOLOGY is a patented method that is used today as a standard for float glass inspection in almost every production line around the world.

Unique algorithms for **CONTOUR-BASED OBJECT DETECTION** ensure a robust object positioning even in a rough industrial environment.

ISRA's **WHITE LIGHT INTERFEROMETRY** is a new standard in the industry that expands the limits of highly precise surface characterization in the μm range.

ISRA offers many different options to reach individual customer goals. The scope of our portfolio starts with quickly available standard products that can be used flexibly in any industry.



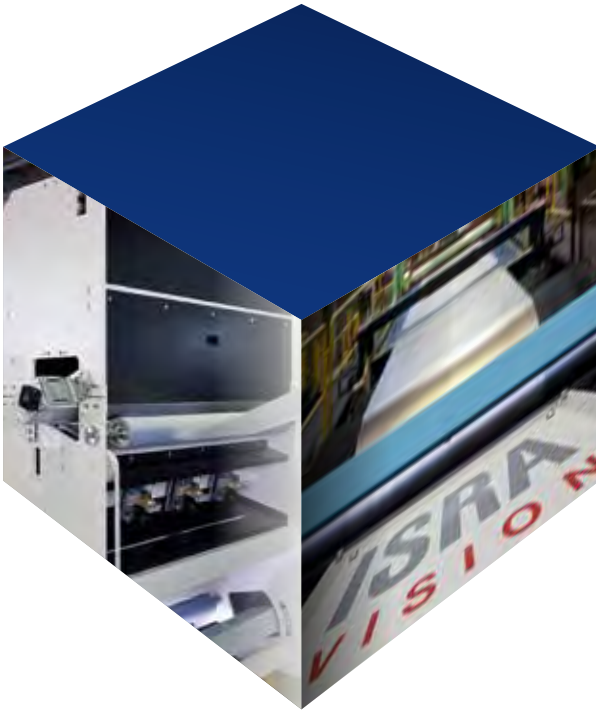
Solutions for any task: from standard product ...

Our technologies are specifically designed to increase productivity and efficiency. Which solution will be used depends entirely on the individual demands of our customers.

ISRA offers flexible standard products for many different tasks. They are based on broad technological know-how and can be easily adjusted to specific needs.

The „Plug & Automate“ and „Plug & Inspect“ product families greatly facilitate the integration into production lines. OEM partners, system integrators and operators can perform the integration on their own and quickly put the system into operation. There is no need for expert knowledge or programming skills – the technologies can be easily adjusted to the individual demands and integrated into the respective technical solutions.





We gladly face the challenge of highly complex tasks: Working hand in hand with our customers, ISRA designs applications for specific problems that bring about unique solutions to the most demanding requirements.

... to customized high-end system

We develop customer-specific solutions for applications with particularly high performance requirements. Many years of experience as well as a high degree of industry and integration expertise are applied. We break new grounds together with our customers towards a uniquely tailored system: From the design phase, to prototype development through to project training and servicing we are in constant communication.

Whether a generic standard application or an individually customized complete system for high-end applications – our seamless range of products focuses on economical solutions that make users even more competitive and more productive. Conclusion: ISRA is an international partner that gears technologies exactly towards requirements and demands of its customers, offering developments for new application areas with a global reach.



High technology for industries of today and tomorrow



Automotive – The worldwide industrial standard, used by international premium manufacturers along the entire production chain



Glass – The most complete and worldwide unique inspection program for glass



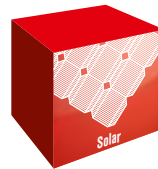
Metals – 100 percent data quality with trend-setting, multi-level classification technology and excellent defect recognition



Pulp & Paper – A combination of integrated surface inspection and web break solution for better production efficiency



Plastic Film & Sheets – Detection of even the finest defects in the μm range - the invisible becomes visible



Solar – Geometric control, color analysis and coating monitoring with accuracy levels down to the μm range



Nonwovens – Highly reliable identification of smallest defects, even at speeds exceeding 1,000 meters a minute



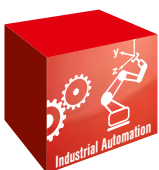
Flat Panel Display Glas – Quality inspection in every processing step from the bare glass to the final product



Print – From the PDF to the folded box: 100 percent inspection of printed image and material surface



Packaging – Extensive quality inspection including color monitoring for various packaging materials and further processing steps



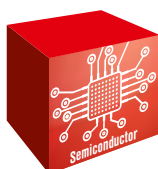
Industrial Automation – Solutions for automating highly complex tasks in the most important applications in industrial production



Security Foil & Paper – A sign of confidence: Over 80 percent of bank note paper in circulation around the world today is inspected by ISRA



Tissue – Significant increase in production efficiency via most advanced inspection



Semiconductor & Electronics – The combination of 3D technologies and high-resolution 2D measuring methods to assure quality within industry-compliant cycle times



Composite Products – Our important contribution to safety in automotive and aviation traffic



Yield Management – Business intelligence software to supply all available production-relevant data in concentrated and clearly laid out form



ISRA's state-of-the-art 3D Machine Vision systems open up new potentials in industrial production. Robot-controlled high-end automation solutions are the key to increasing flexibility, product quality and resource efficiency in production.

The automation of automation

ISRA has established 3D Machine Vision as the global industry standard. Our technologies allow robots to maneuver in six degrees of freedom. This paves the way for automated production to an unprecedented level of efficiency. Welcome to the age of automated automation!

Our Robot Vision applications make robots considerably more powerful. Thanks to ISRA technology, they can react flexibly to their environment: The system detects the spatial position of a work piece and adjusts the work flows to specifically match it. Highly complex handling, assembling and machining processes can be automated quickly and efficiently as a result.

Wherever the exact object location is relevant for smooth production flows, we offer options for fast and highly precise positioning in space. ISRA applies contour-oriented algorithms in order to detect the features used to position a component.

ISRA's compact 3D sensors guarantee the best possible dimensional and fitting accuracy for highest flexibility requirements. They allow the three-dimensional gauging of work pieces to ensure predefined gap and flushness. The measuring process is extremely quick, adhering to the production cycle. Even on-the-fly, results are highly precise to the tenth of a millimeter.



Standardized products: this is how easy 3D Machine Vision can be

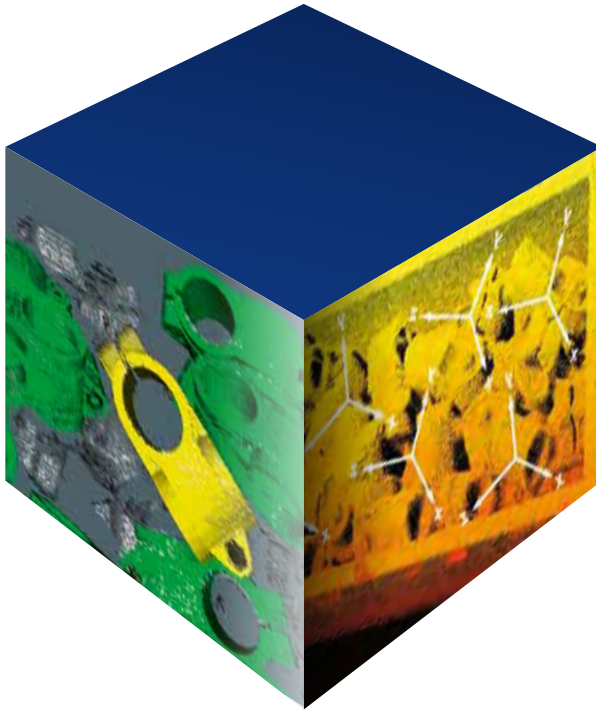


Our family of standardized 3D sensor products based on „Plug & Automate“ technology offers applications for 3D robot guidance, 3D in-line gauging and 3D form definition. The innovative technology can be put into operation quickly and easily. No expert knowledge is required to do so. Thus, „parameterizing instead of programming“ becomes the mission statement of highly efficient automation projects of the future.

In many areas, up until now integration has been considered too challenging and complicated. ISRA has managed to impressively prove the exact opposite: For every application from 2D to 6D, there is a sensor and software product line available that can be applied easily. This includes ground-breaking solutions such as the

algorithm-based 3D detection of an object's position and orientation using only a single sensor and intelligent "bin picking": This application makes it possible to remove unsorted components from containers in an easy and highly flexible manner.

The GigE sensors are either stationary or mobile and offer the highest degree of accuracy, even for large components. All common robot and automation architectures are supported: The systems feature every important communication interface for connection. ISRA's new philosophy makes 3D Machine Vision an interesting option for new industries. With „Plug & Automate“, users themselves have the opportunity of automating processes with high efficiency.



How can complex 3D robot guidance tasks be implemented intuitively? ISRA's innovative line of standard products offers the fast and easy solution: You do not need to be an expert to integrate the technology yourself. The modular designed systems are individually scalable, thus ensuring the highest level of flexibility on the factory floor.

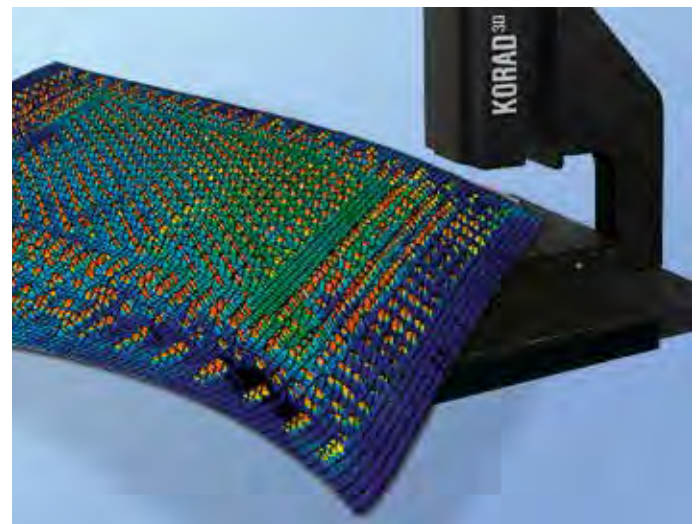
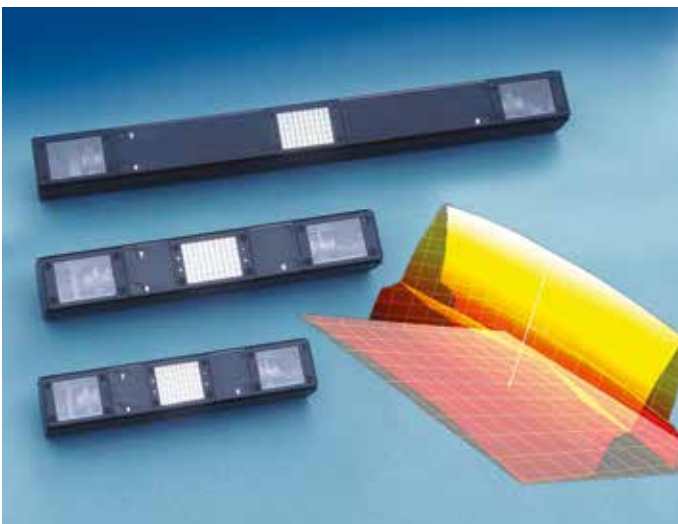
Precise standard measuring systems for more reliability in production

With non-contact optical 3D precision measuring technology, ISRA is introducing an entirely new perspective in the realm of industrial quality inspection. Highly accurate measuring instruments offer ultra-fast 100 percent inspection directly in the production line. The technology is based on optimized 3D methods such as phase measuring deflectometry and white light interferometry. They make surface structures visible into the nanometer range, even on rough, reflecting and curved objects.

The systems are available as standardized product with an intuitively-controllable graphical user interface. This gives even users without previous experience an easy start into

non-contact measurement and recognition of objects and surfaces.

The technology is suitable for precise measurements under laboratory conditions, but also for in-line quality inspection during production in industrial manufacturing environments. Developed for extremely fast applications, our measuring systems achieve cycle rates of well below one second and measurement uncertainties of below one μm .



Robot Vision sensors allow a variety of components to be installed with maximum precision. They thereby set a new milestone for assembly efficiency and product quality.

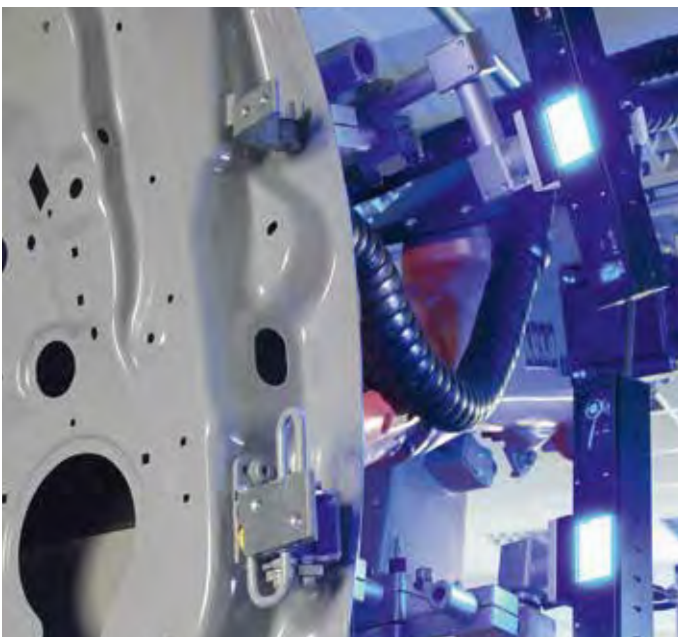


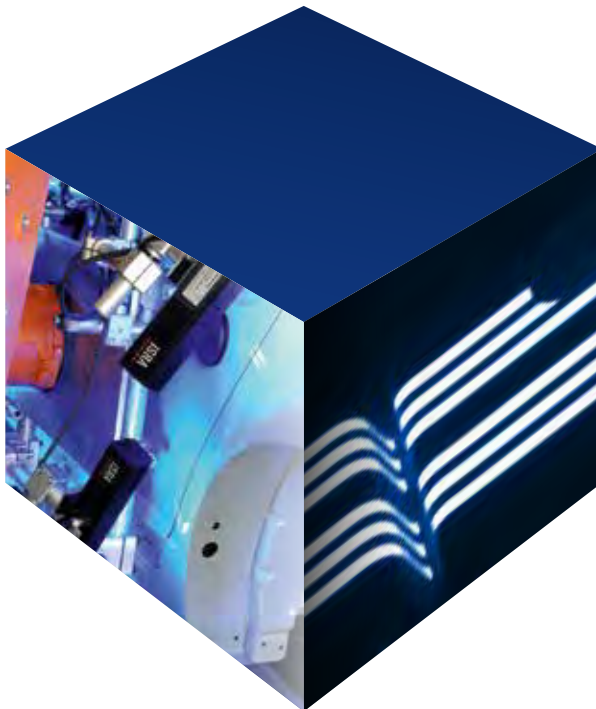
Optimum fitting accuracy in highly flexible 3D assembly

Our 3D sensors enable the fully automated assembly of components. They use flexible BestFit manufacturing processes to do so: The 3D vision system determines both measurements of the raw product and geometry of the component to be mounted. It also defines the ideal installation position. This makes it possible to achieve the highest fitting accuracy for all components - no matter what shape, color or surface characteristics the parts have. Refinishing is therefore practically unnecessary.

The technology is based on smart ISRA sensors that work either in a stationary application or mounted onto the robot. They combine the exact position determination of any free-form surface with precise 3D gauging possibilities. With their compact design, they can be integrated flexibly in existing production lines.

3D assembly according to the BestFit principle ensures fast, flexible and cost-efficient production. Quality and through-put are increased.





ISRA technologies determine the exact three-dimensional position of the object so that the robot can machine it with highest precision.

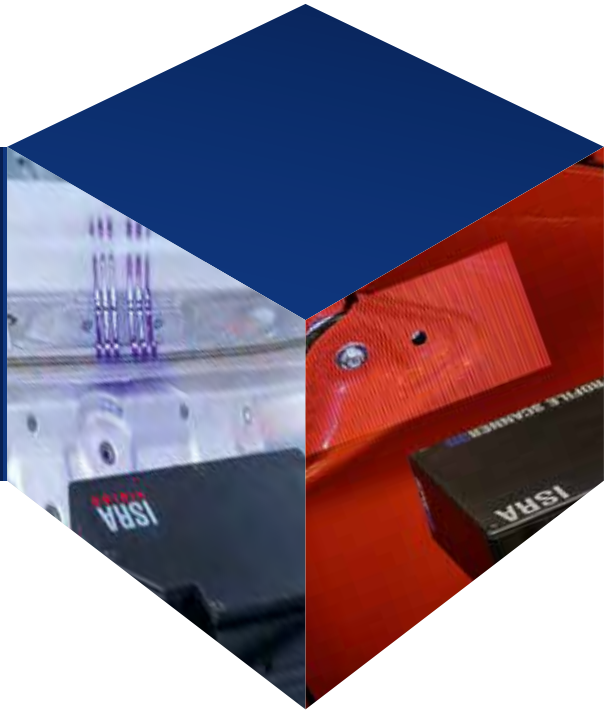
Determining the exact spatial coordination of the component

Exact 3D position determination of even large objects is easy to implement with ISRA technology. Fast non-contact 3D measurements make it possible. 3D Robot Vision applications link the information of multiple camera systems using stereogrammetry or photogrammetry. The setup is adjustable at will. Even an installation outside of the robot's working area is possible. Only three features are needed to determine the position of the workpiece to the exact millimeter in all six degrees of freedom.

The teach-in process runs reliably and efficiently from a CAD file. Even for multi-camera setups, the measuring time remains significantly below one second – even at a very high measuring accuracy: The smallest deviations from the specified target position are detected and visualized. This gives the user complete certainty about the quality of the product.



In order to test the dimensional accuracy, ISRA provides an intelligent toolbox consisting of 3D in-line measurement technology.

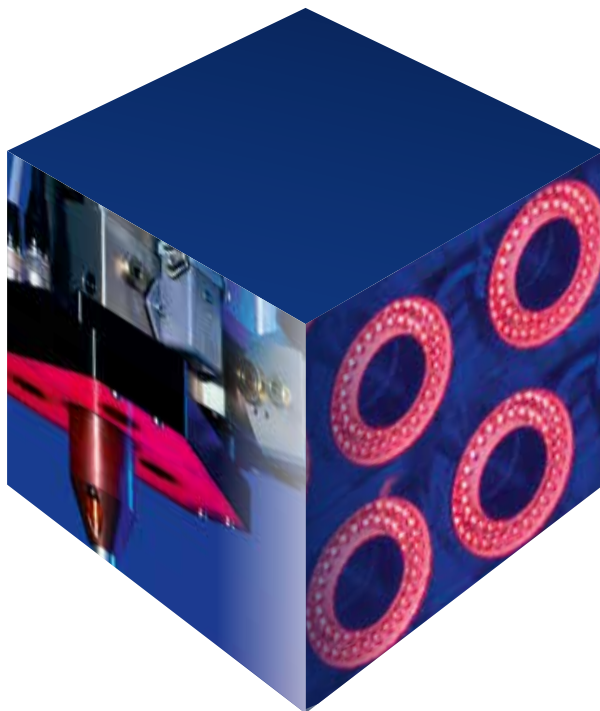


3D in-line gauging in a nutshell

Our metrology packages for in-line quality gauging represent a significant expansion and supplement to BestFit systems. Temperature compensated sensors are capable of handling measuring tasks on-the-fly. For example, a reliable quality inspection of each gap and flushness measurement can be performed after the joining process.

Due to their compact design, the sensors reach even hardly accessible positions. Even larger features can be determined impeccably and accurately by having the robot approach several gauging points and then analyzing them intelligently. Specifically developed algorithms verify that tolerances are complied with. The robust and exact measurement is the key for dimensional accuracy with precision into the μm range. There is one principle for all applications: highest reliability for best possible quality. Manufacturers are able to supply high-quality products to the smallest detail.





The final quality check is performed at the end of the process chain. It ensures that only flawless products make their way to the customer.

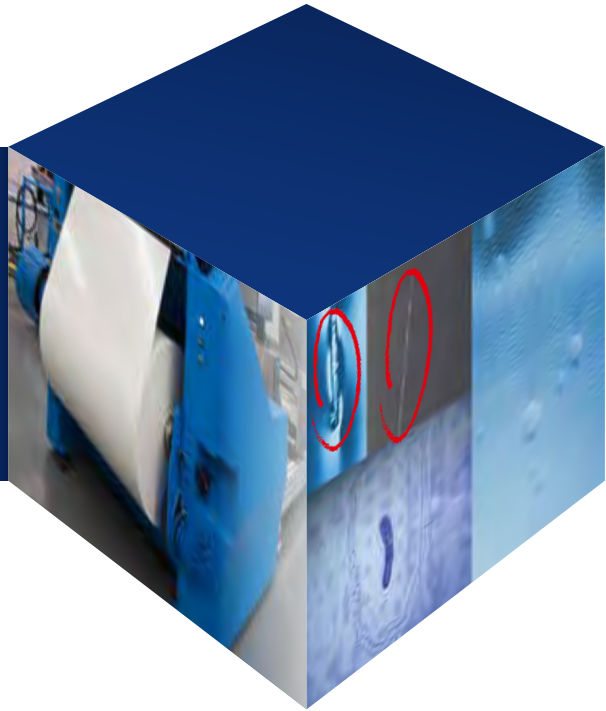
Perfect end product through multiple quality control

During various production steps, ISRA technology is used to inspect the quality of the applied adhesive for continuity, width and position. A perfect connection between components is made possible only with innovative image processing adjusted to the processing speed. In addition, the optimization of the amount of adhesive applied saves users material.

The flawlessness of the end product is assured by our 3D Robot Vision systems during the final inspection: At this stage, they check for dimensional accuracy and correct assembly of the different parts and verify the font on the nameplate. Even painted surfaces can be inspected 100 percent at this point. The robots guided by ISRA systems perform the final inspection points over and over again with exact same results, without fatigue and with consistent accuracy while in motion.



One of our core competences involves developing innovative fully automated surface vision solutions. The systems used for 100 percent inspection of surfaces give manufacturers of web products full control over high-speed processes and the opportunity to optimize them.



Flawless surfaces – inspected by the world market leader

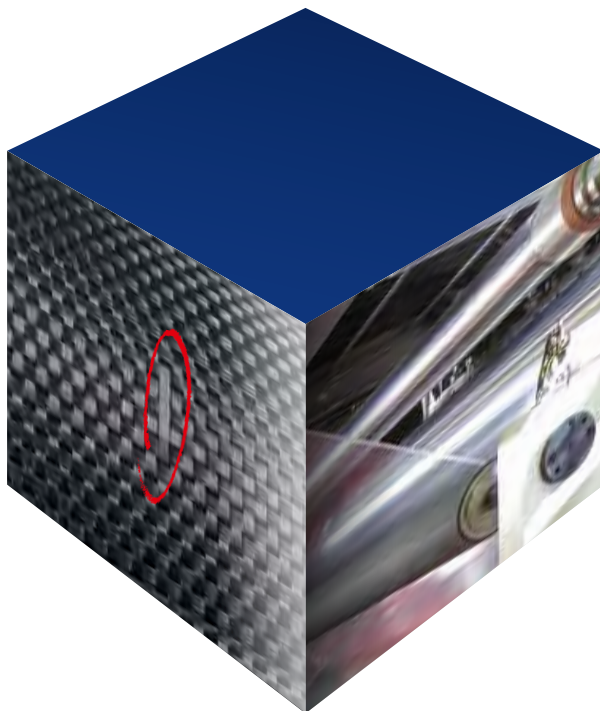
The combination of powerful cameras, innovative illumination technology and intelligent software is the key to a consistently perfect delivery quality. When inspecting endless material, our surface vision systems can even keep up with highest production speeds and detect smallest defects. The reliable classification gives the producer the ability to take quick, targeted corrective measures. This reduces losses caused by scrap production and saves cash.

Our technology consists of standard modules that we develop in-house. Because of their design, they can be adjusted to the specific needs of the customer. The strong system

performance is enabled by the reliable, repeatedly accurate defect detection, the worldwide unique real-time classification, and optimum attributes with regard to ruggedness and reliability.

Detailed, automatically generated inspection protocols give manufacturers in-depth insight into their production. The information recorded is stored centrally in databases. Analyzing it provides important information on how production processes can be optimized. Transparent processes create documentable quality: It can be verified against customer claims at any time.





Quality at a glance: ISRA inspection systems lead to impeccable products. The optical high-tech solutions inspect even special plastics such as battery film and pre-impregnated fibers with utmost precision.

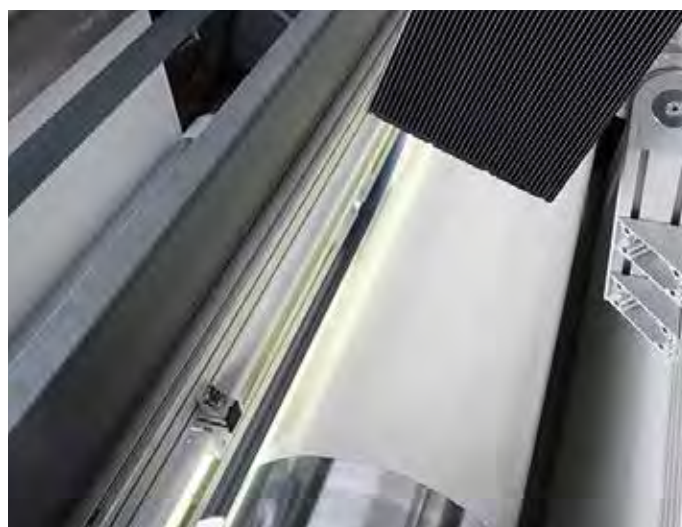
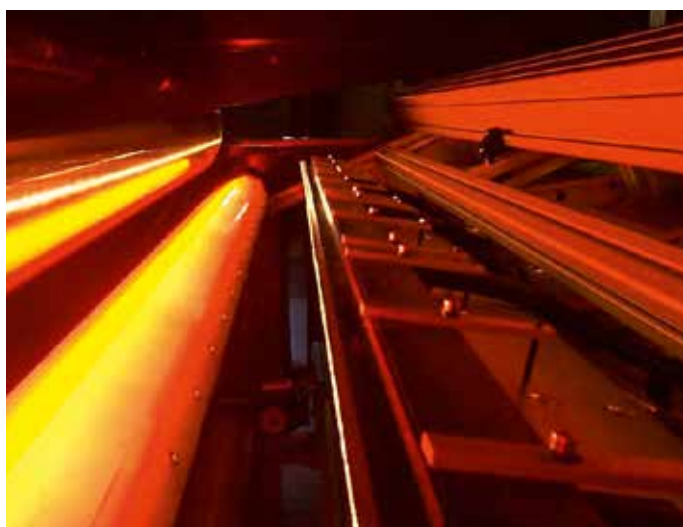
Flawlessness into the μm range

Our high-performance technology allows insight into dimensions that cannot be seen with mere eyes. Even low contrast, μm -sized surface defects on films, nonwovens and other materials are identified and classified completely by high-resolution cameras. The results are impeccable products and process reliability for every web width, any speed and each production step.

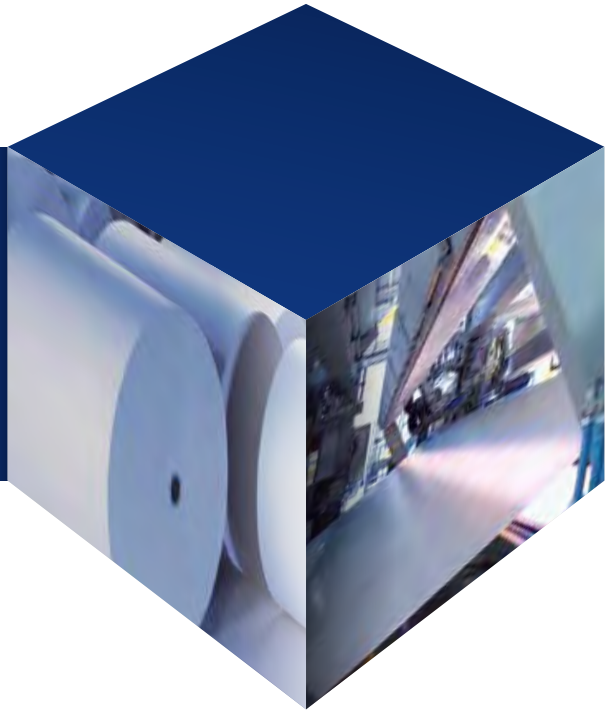
ISRA's collected know-how about industries and processes is now also used to the benefit of developments in electric mobility. By providing the technology to inspect separator films for lithium ion batteries, we are laying the foundation for power trains used in electric cars.

With the ability to inspect in color, ISRA is providing a breakthrough innovative solution to the nonwovens industry. In addition to tiny defects on highly textured material, colored extraneous fibers can also be detected.

Fiber-reinforced plastics are the way of the future. Especially in aircraft construction, its use is increasing rapidly. ISRA recognized this trend at a very early stage and developed innovative inspection technologies for these materials, precise to the hundredth of a millimeter. We assure the quality of composites by inspecting and measuring fibers, thus making an important contribution to aviation safety.



In paper manufacturing, product quality and processing efficiency must be at the highest level. Innovative ISRA technology makes this happen by effectively combining features for both web inspection and web break monitoring.



Product efficiency with combined inspection solutions

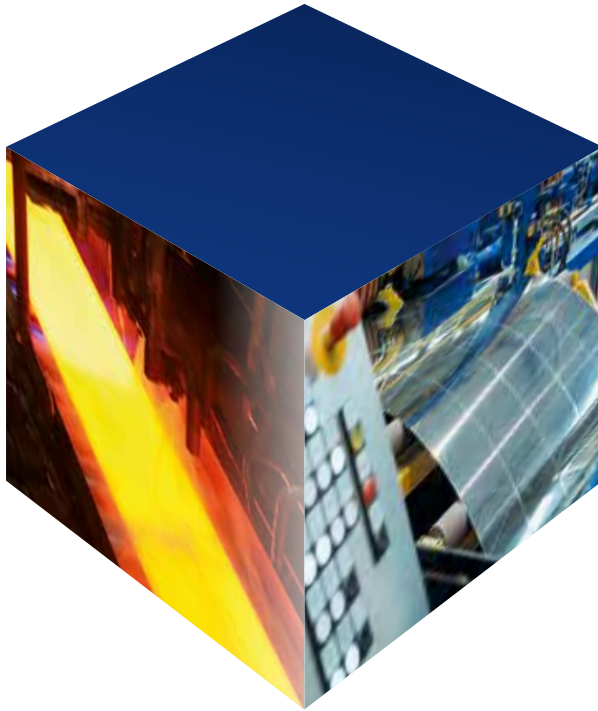
As an integrated solution that combines a web inspection system (WIS) and web break monitoring (WBM), our applications provide the answer to the demand for more quality and efficiency in the paper mill. They detect the smallest surface defects and alarm the operator of impending web breaks. This way, 50 percent of all web breaks can be prevented. Even thermo paper or coated material are challenges that we are able to master.

The systems are built upon compact sensors. They combine camera, LED lighting and intelligent cleaning mechanisms

into a robust housing. Equipped with a resolution many times higher than that of traditional cameras, they supply crystal clear images even at speeds of several thousand meters a minute.

The sensors can be positioned anywhere between the wet and dry area. Image sequences from different processing steps help to efficiently analyze the defect causes. The intelligent concept is being used successfully by globally leading manufacturers.





Thanks to ISRA, customers are achieving the highest possible value creation while using the lowest possible resources. The secret behind this success are our surface inspection systems for steel and aluminum that are known around the world for their excellent defect classification performance.

Trend-setting classification for the perfect product

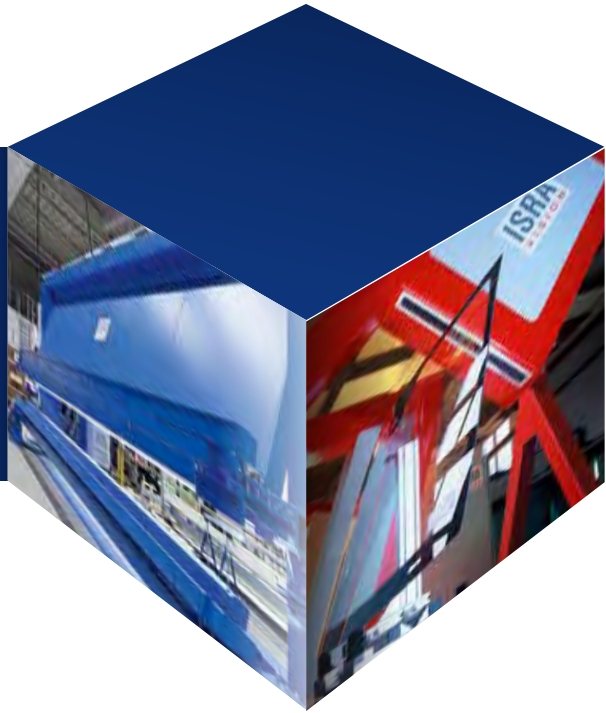
In view of highest quality demands on the metal industry, a reliable classification performance along the entire production is essential. Here, ISRA systems are in a class of their own: Multi-level, self-learning classifiers ensure that all surface defects are reliably categorized. The results of the defect identification are used to trigger alarms in order to introduce corrective measures during the running production process. The result is a top inspection performance of close to 100 percent.

The technology's strong performance capability is also clearly evident in the quality of the inspection data supplied. Users are given concentrated information that is relevant for a specific problem. This data quality is a reliable basis for making correct production decisions, which prompt significant improvements in quality and efficiency.

The interaction between detection, classification and data quality at the highest level is matchless. ISRA is setting a new standard in the inspection of steel and aluminum.



ISRA systems use patented methods for automated quality assurance along the entire process chain. The ability to provide overall 100 percent inspection from the hot end to the finished product is unmatched around the world. This satisfies highest quality expectations for any type of glass.



Clear advantage via multi-dimensional inspection

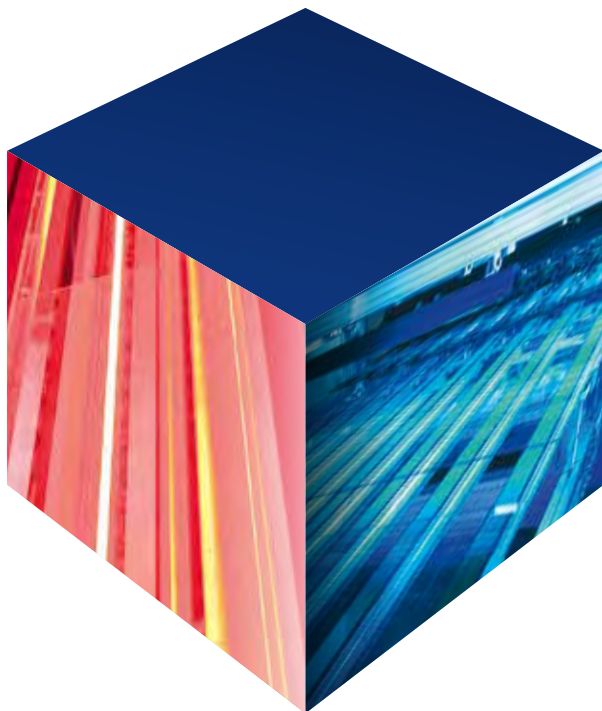
At nine out of ten production facilities around the world, our systems supply the answers to quality and processing issues. Each individual system is a piece of high-end technology. As a whole, the solutions form the most complete product program for optical glass inspection.

The future of float glass inspection is multi-dimensional: Based on Online Moiré Technology, Multi-Mode and Multi-View illumination, ISRA has created a unique optical concept. It allows any surface and edge defect to be reliably detected and differentiated. Specifically for the strict

requirements of coated glass, a technology has been developed that inspects color, coating and the presence of process defects at the same time.

Multi-dimensionality assures flawless quality even on structured glass. Finest defects such as stones or open bubbles are reliably detected and classified by ISRA systems. They can be used directly at the production line, prior to cutting or for sheets that have already been cut. ISRA-inspected glass even fulfills the strict market requirements of the photovoltaic industry.





The characteristic properties of different glass types demand a high degree of flexibility from an inspection system. ISRA's array of products offers versatile solutions to ensure the highest possible level of product quality and simultaneously reveal optimization potentials.

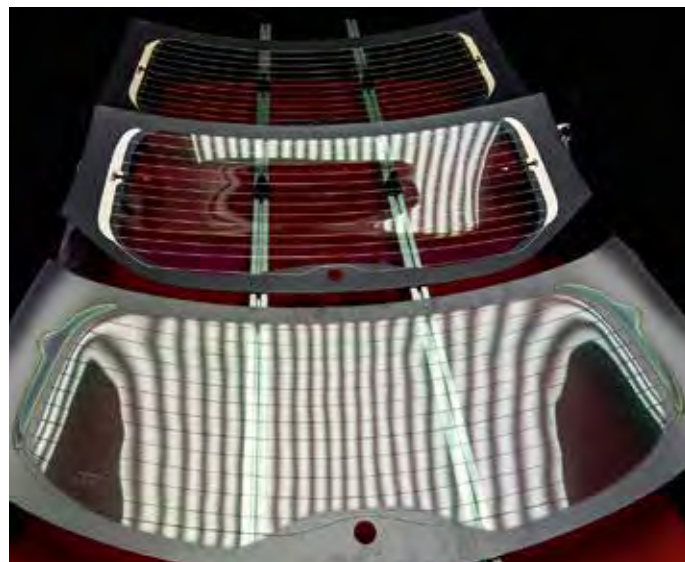
Sustainable solutions for transparent quality

For glass plate manufacturers ISRA offers a reliable quality control for each and every processing step. The choices consist of individually combinable modules, each featuring innovative applications for glass plates in any shape. They are available as single application or as specially configured combination, allowing several inspection solutions to be performed at the same time.

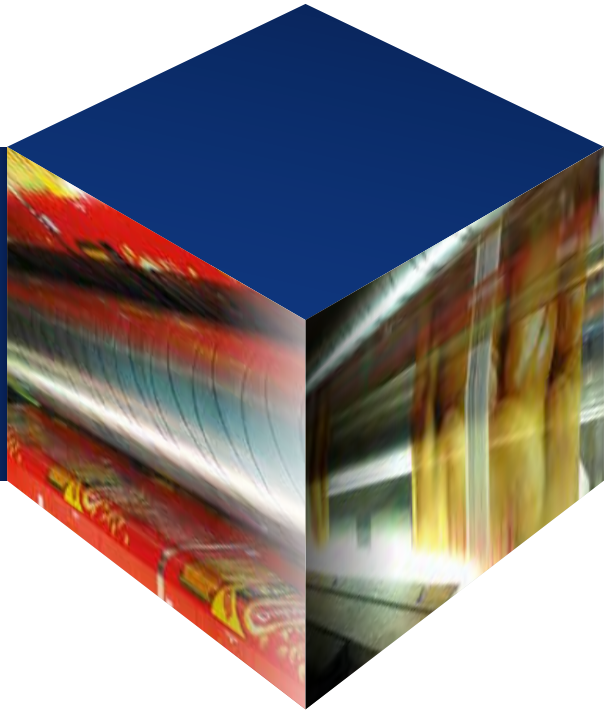
An entire industry relies on the innovations provided by ISRA in the field of automotive glass. They allow fully automated 3D in-line measurement of curved glass with an accuracy of a fraction of a millimeter. Unrivaled anywhere else in the world

is the calculation of optical distortion in the reflection of windshields, using deflectometry. The product portfolio is completed by an in-line inspection system for patterns applied via screen printing.

The core of our unique inspection technology for extremely thin glass substrates are cameras with a resolution of a few μm . As an integral part of a modular designed system, they make it possible to perform a 100 percent inspection throughout the entire manufacturing process of flat panel displays. The tiniest dust particle-sized defects can be detected and classified reliably.



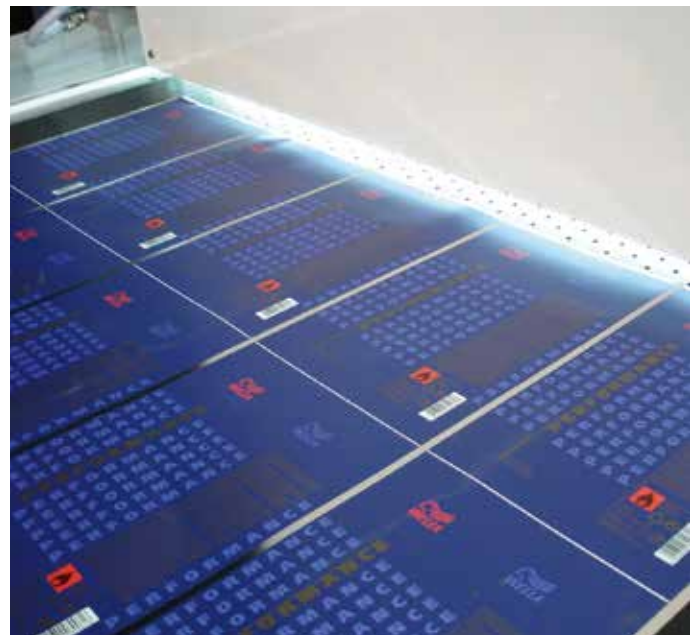
The decisive criteria for preventing maculature is the ability to discover defects as early as possible. ISRA takes this literally: Our inspection systems identify defects in material and print image as they occur.



Innovative features for more quality and less maculature

Our portfolio of products for packaging and job printing includes solutions for all printing methods, substrates and processes. The wide range of tools helps to ensure an effective and complete monitoring of quality and processes along the entire value creation chain. The result is an improved quality and an increase in through-put at a reduced reject rate. The competitive advantages are obvious: more satisfied end customers and a higher profitability.

The 100 percent inspection is based on high-resolution optical sensors. Multi-camera setups ensure reliable results when identifying and classifying defects. Even at highest speeds, the system does not miss a single defect. Our Online Monitoring detects color deviations and visualizes them as relative Delta E color difference. A single reference image is all that ISRA systems need for the in-line PDF color inspection. In the roll-to-roll process, we offer an inspection method that is not affected by shift and web movements.





ISRA optical inspection systems are the security promise for special paper and foil. They guarantee premium quality from the supplied material up to the cutting process. This creates confidence where it is needed most.

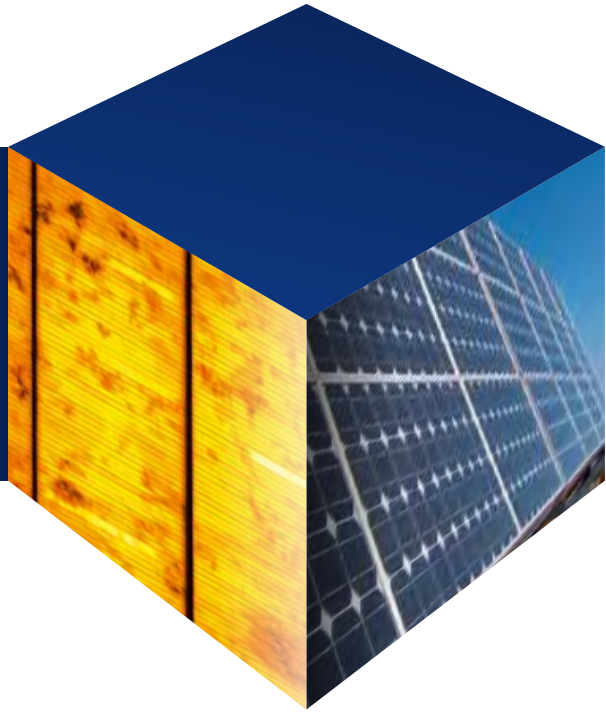
Creating values and confidence – the secure choice is ISRA

Our highly developed technology provides the capability to perform an automated optical inspection of base material and complex security features for identification documents and bank notes. The high-performance components such as high-resolution line cameras, latest LED illumination modules and current-generation processors supply reliably precise inspection results in real time. For many years, our inspection systems have been recognized as the standard in the industry: The paper of more than 80 percent of the bank notes in global circulation has been inspected by ISRA.

Where materials are subject to extremely demanding aesthetic and security-related requirements, compromise cannot be an option: State-of-the-art technology and decades of experience guarantee maximum reliability in each single production step. From the supplied material to the cutting process, an excellent inspection performance with real-time defect classification is assured – even at fast web speeds. Operators gain an excellent product quality and optimized processes that meet highest security standards.



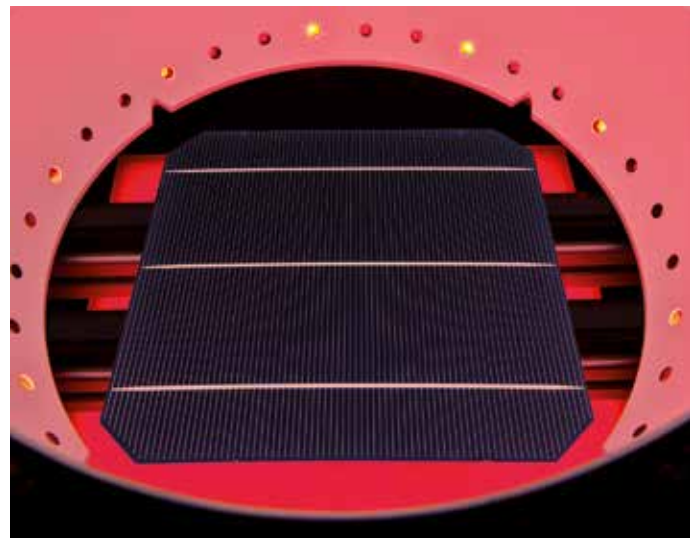
A day's worth of sun energy is able to cover the entire global energy demand for a full year - this is the idea that drives our efforts in the development of technologies for the solar and photovoltaic industry. Systems for automated production, quality assurance and cost reduction show ISRA's commitment to serving a sustainable growth market.

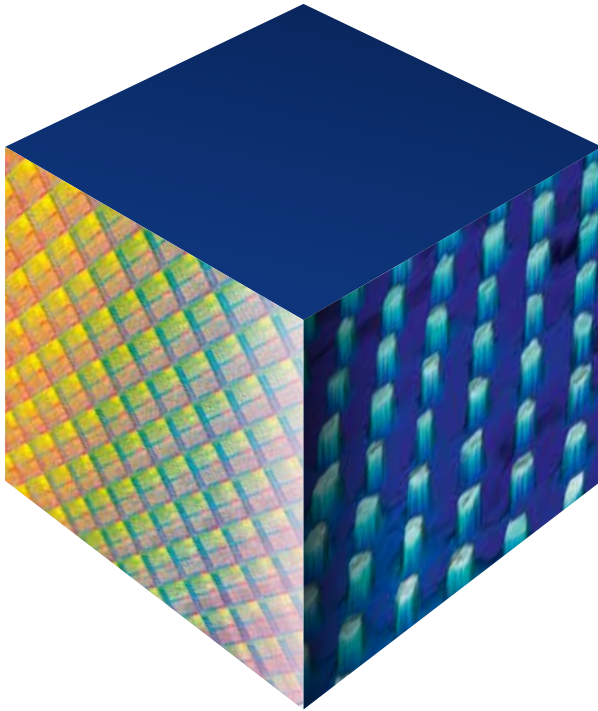


New benchmarks for measuring accuracy and detection reliability

From the wafer to the module stage, ISRA inspection systems cover all critical processing steps performed in the photovoltaic industry. The highly precise optical in-line inspection focuses on optimizing production quality and processes to improve efficiency, performance and through-put. Thanks to a resolution into the μm range, the innovative technologies offer a complete inspection. Particularly fine structures such as those used for solar cell contacting on the front and rear side can be ideally monitored. In case of irregularities, manufacturers are given feedback immediately and automatically.

With the new generation of non-contact photoluminescence inspection systems (PL), we have managed to take yet another quantum leap: ISRA now supplies the fastest PL inspection, allowing cycle rates in production to be maintained today and in the future. Moreover, the system is equipped with the most exact defect classification technology available on the market that reduces costly pseudo-rejects. Thanks to the one-of-a-kind contact-free series resistance measurement, cracks or breakage are avoided which regularly occur as a result of electrical contact of traditional systems. The reliable distinction between material and processing defects makes an important contribution to the manufacturing of highest quality products while reducing production costs at the same time.





Innovation is created by combining proven methods: ISRA inspection systems for the semiconductor and flat panel display industry for the first time ever link high-resolution 2D measuring methods with 3D technologies within industry-compliant cycle times.

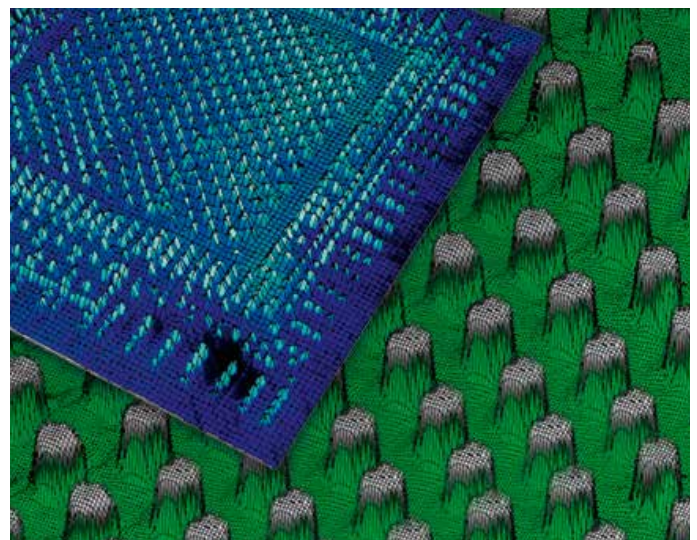
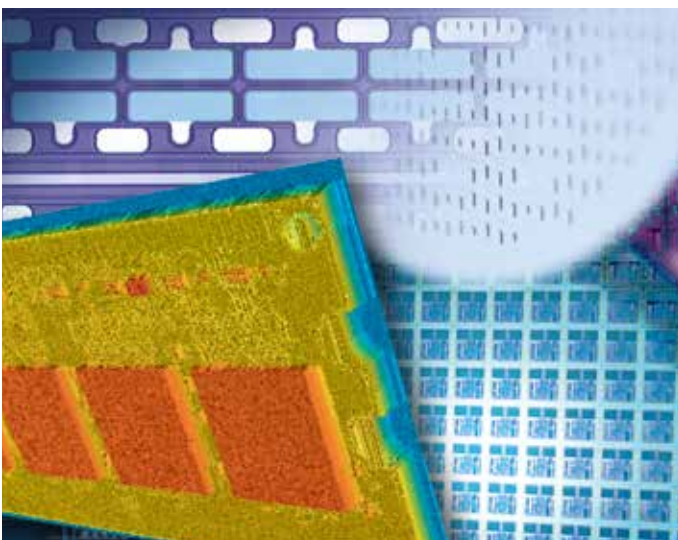
The high-end of optical quality inspection

The measuring methods applied play a key role in efficiently implementing zero-defect concepts. They enable precise quality control measures of semiconductor products and electronic components at highest production speeds. This is an absolute novelty for the industry.

Our flexible solutions for semiconductor products cover a variety of inspection tasks for wafering, front-end-of-line and back-end-of-line. State-of-the-art image processing methods into the μm range allow highly precise 3D surface topographies and are able to identify microscopically small cracks

and breakage. Thus, previously unreachable cycle times are achieved.

The interaction between various ultra-fast measuring methods leads to an effective quality management and best possible productivity. Inspection solutions can be combined individually. The available options range from the stand-alone measuring device through to the completely automated multifunction inspection cluster. Each system is clean room-suitable and meets all established industrial standards.



In order to be able to make sound economic decisions, management from the production level to corporate headquarters depends on reliable analyses. This is where ISRA's intelligent yield management software [®]PROMI provides an optimum level of support. It processes terabytes of aggregated inspection data to enable a quick decision-making.



Yield Management: analyzing data, improving processes

Automated inspection systems monitor and document the individual process steps in production lines. However, that alone is not enough to make processes more efficient and to systematically optimize production. In order to be able to make fast, targeted and economically feasible decisions at every level of a company, access to all relevant information and their subsequent analysis are mandatory. This is where the software architecture Enterprise PROduction Management Intelligence, or in short: [®]PROMI gives strong support.

Yield optimization via intelligent software – the [®]PROMI architecture provides all available production-relevant data in a quality database. Users can obtain information, for example, about surface, thickness, width and flatness in concentrated and coherently structured form. Per standardized interfaces, the user is given access to order, resource and planning data as well as to information from materials logistics and staff planning from the MES systems.





Our EXPERT⁵ⁱ modules provide solutions for the specific demands of different production lines. The potential for increasing productivity is efficiently realized with these modules: quality can be planned, processes and manufacturing can be optimized systematically.

Intelligent software mentors support output optimization

The EXPERT⁵ⁱ modules evaluate and weight information based on specific problems and generate action suggestions for decision makers. Those in charge of production are informed about any approaching problems and possible corrective measures at an early stage. This may include, for example, a recording of defect trends and means to protect the production line from damage. As a result, employees of all company levels receive sustainable support for the optimization of yields and production.

The use of the EXPERT⁵ⁱ modules improves quality and analyzes the processes, even if they are based on large data volumes. This makes them the perfect solution for an effective resource management. Still, data flow is not a one-way-street. The knowledge obtained can also be passed along for use in process control, manufacturing execution and ERP systems. All of the necessary interfaces are available to do so. This is process-oriented quality management intelligence at its purest.



Take our word for it: Our service team is on duty around the globe so that you can benefit from the full potential of your ISRA system at any time.



In the service of customer satisfaction: 24/7 service & support

At ISRA, the relationship to the customer does not end once a product is delivered. To the contrary, it marks the beginning of a long-term partnership. Our Customer Support and Service Center plays a major role: It supports operators in the use of the systems. Thanks to the more than 25 locations around the globe, we are always close to the customer and can provide an optimum level of support day and night. Within the space of just two hours, we present a solution for any problem.

ISRA systems use high-performance technologies with maximum user benefit. In order to maintain this top performance in the long-term, we offer a wide range of services from which

the customer can compile a customized package. Whether it is a system check via remote access, an on-site maintenance at short notice or spare parts to be acquired quickly – our engineers and highly qualified system operators provide immediate assistance.

Maximum productivity can only be achieved by a optimally instructed staff. Our training programs impart concentrated knowledge and turn employees into experts.





Just as varied as the capabilities of our systems is the diverse range of its users. As a global technology leader, we develop solutions for top international companies in many different industries.

Technology partner of the world's elite

Renowned global players in the automotive, glass, metal, plastics, paper, printing, electronics and solar industries benefit from ISRA Machine Vision solutions. These companies place their trust in us, because they are convinced of our technologies. ISRA systems have already become the established standard in many industries.

High investments in Research & Development also secure the success of our customers. Many years of experience and a global service network speak for ISRA. We are close at hand anywhere in the world, which enables us to provide first-class support at a moment's notice.

This success is the result of a dedicated collaboration with our customers. Ideas worked out in a dialogue regularly flow into the further development of our systems.

Some of our customers, who are already optimizing their production with ISRA systems today ...

+++ 3M +++ AGFA +++ Amcor +++ ArcelorMittal +++ Asahi Glass +++ Audi +++
 Avery Dennison +++ BMW +++ Celgard +++ China Southern Glass +++ China Steel Corporation +++
 Clopay +++ Constantia +++ Cytec +++ Daimler +++ Dürr +++ DuPont +++ Fiat +++
 Ford +++ FUYAO +++ Georgia-Pacific +++ Gintech +++ GM +++ Guardian +++ Hexcel +++ Hyundai +++
 International Paper +++ Kimberly-Clark +++ LG Electronics +++ Magna +++ manroland +++ Nippon Steel +++
 Sumitomo Metal +++ Norske Skog +++ Novelis +++ NSG +++ Outokumpu +++ POSCO +++ REC Solar +++
 Renault +++ Saint-Gobain +++ SCA +++ SEAT +++ Severstal +++ Shougang +++ SIG +++ Şişecam +++
 Solartech +++ Solutia +++ SWM +++ Taiwan Glass +++ Tata Steel +++ ThyssenKrupp Steel +++ Trina +++ UPM +++
 Voith +++ VW +++ Weyerhaeuser +++ WUHAN +++ Xinyi Glass +++ Yaohua +++ Yingli +++

ISRA's advanced technologies have assisted countless companies in increasing quality, efficiency and productivity. Yet, there is still a lot left to do. The Machine Vision sector offers further fascinating potentials that should be realized. Equipped with our passion for innovation and a high level of technical expert knowledge, we are ready to take on the challenges of the future.



Today's actions for tomorrow's success

Primary objective of ISRA is the consolidation and the expansion of our technological leadership. High investments in Research & Development emphasize this fact. This is what makes us strong to take the next steps.

We strive to make automation technology even safer, easier and better. These are important prerequisites for entering new markets. Many other industries shall be entitled to benefit from the advantages of ISRA technologies. The focus is on meeting specific requirements in the energy, health,

infrastructure, food, mobility and information sectors. As a team player by conviction, we are always open to any potential technology and development partnerships.

With its innovations, the technology leader ISRA will keep shaping the developments in the Machine Vision industry in the coming years. We are convinced that our solutions for more security, quality of life and sustainability will continue their contribution towards making the world a little bit better.





We are represented globally at more than 25 locations with a complete portfolio of solutions designed to increase quality and efficiency throughout the entire process chain of the automated production. This ensures a close contact to our worldwide customer base of international industry leaders. A global 24/7 service network provides support for more than 10,000 installed ISRA systems.

Servicing our customers for higher productivity and cost efficiency



Dear Madam or Sir,

Thank you for your interest in ISRA VISION. With much dedication, our more than 600 employees worldwide commit themselves to the success of our customers every day. From the idea to the prototype through to the finished application – leading companies from a range of different industries place their trust in ISRA's 30 years of expertise. Our innovative solutions are used for quality assurance and automation even in the most complex production lines. At the same time, we meet highest requirements with regard to flexibility, precision and speed – all while offering easily usable systems. This makes us a valuable partner to our customers, allowing them to achieve significant improvements in productivity and cost efficiency

around the world. However, we take our commitment one step further: Our portfolio of future-proof 3D Machine Vision technologies and surface inspection systems is completed by ISRA's global service and support team. We are available around the clock to support our customers in maintaining the high performance level of their production. ISRA's solid financial standing provides a stable basis for a sustainable cooperation. Ideal preconditions for a long-term relationship – challenge us!

Enis Ersü, founder and CEO, ISRA VISION AG



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