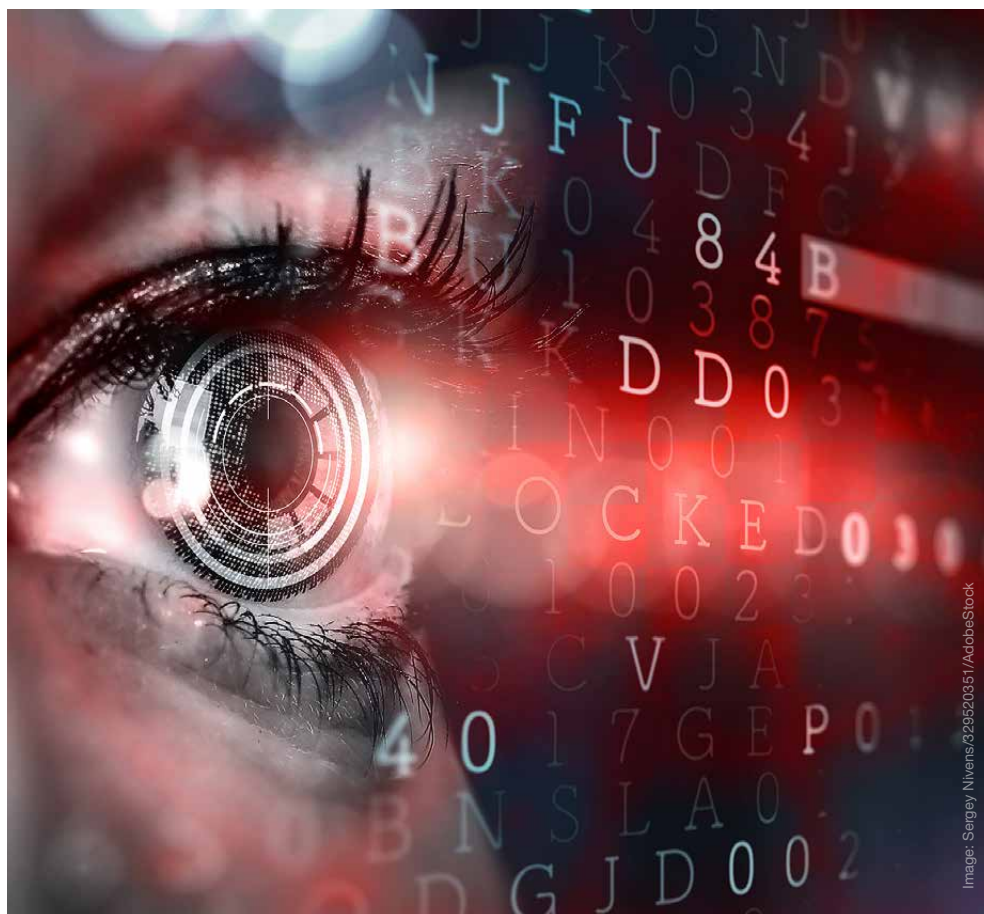


The Sensor People

Leuze

'25



International
Technology
Applications
#WeareLeuze

SENSOR

THE LEUZE MAGAZINE

Editorial



Helge Held
CFO of the Leuze group



Dr. Henning Grönzin
CTO of the Leuze Group



Salvatore Buccheri
CSO of the Leuze Group

Dear Reader,

With over 60 years of experience, Leuze has become an expert in innovative and efficient sensor and safety solutions in automation technology.

Today, around 1,600 Sensor People worldwide use curiosity, passion and determination to drive progress and change. Our goal and motivation is to help you, our customers, achieve even greater success in an ever-changing industry.

With their broad and at the same time in-depth application know-how in the mechanical and plant engineering sectors, the Sensor People are a competent and flexible partner for their customers with a wide range of industry requirements.

Immerse yourself in the world of the Sensor People and Leuze sensor technology. We hope you enjoy browsing through the 2025 annual edition of our Leuze magazine SENSOR!

Kind regards,

Helge Held
Dr. Henning Grönzin
Salvatore Buccheri

Contents

International

6



Applications

34



Technology

20



#WeareLeuze

56



“As an international company, we want to be even closer to our customers and partners worldwide through a more decentralized support model.”

Mr. Buccheri, you have been part of the three-person management team and CSO of the Leuze Group since the beginning of 2024. What does CSO stand for?

At many companies, the CSO is the Chief Security Officer – at Leuze, CSO stands for Chief Sales Officer. You could also call it the Chairman of Global Sales.

You may be new to the group management, but you're not a blank slate ...

No, not at all. I am, so to speak, a “child of our industry” and bring with me many years of international sales experience and intercultural expertise from other areas, companies and functions.

But you're not new to Leuze either, are you?

I've been with Leuze for nine years now. I know the company, the structures, the processes – and the sensor people – and I'm one of them myself, body and soul! Continuity and reliability are very important to us.

What was your previous role at Leuze?

I started here in 2017 as a sales manager, and then quickly became managing director of the Leuze sales company in Germany. Later, I took on the role of Vice President Europe, followed by Vice President Americas.

And for the last year, you have been CSO. What drives you?

I am a real “sales guy”. For me, the customer is always at the center of everything I do. My goal is to make our customers even more efficient and successful in the long term in an industry that is constantly changing.

Now, after nine years at Leuze, you no longer have the “outside perspective” that a newcomer might have. Does that mean everything stays the same, or what is your vision and mission?

To stand still is to fall back. Of course, not everything stays the same! I have the motivation to change some things. Always with the goal of achieving real added value for our customers.



For example?

In the past, Leuze has focused very heavily on specific industries within the mechanical and plant engineering sector. Thanks to their broad and, at the same time, in-depth application know-how, however, the Sensor People can do much more and are therefore a competent, reliable and agile partner for our customers with a wide range of industry requirements.

Does this mean that you are abandoning the previous industry focus?

You could put it that way, yes. The goal is to address potential customers with our sensor and safety solutions in significantly more markets and industries worldwide.

What are the consequences of this for the Leuze sales organization?

We are an international company. This means that we must increasingly think and act internationally and be even closer to our customers. We are therefore organizing ourselves in a more decentralized way and, on the sales side, are giving more responsibility to our colleagues in our subsidiaries.

In the sales organization, you have already achieved a lot internationally in the last year: a new office in France, a new office in India, a move to a new US location – what's next?

As a further building block in our decentralized approach, we want to offer our customers and partners in Eastern European markets closer customer support with our own Sensor People at an additional location in Vienna.

**Thank you for the interesting insights.
We wish you continued success and satisfaction as CSO with your entire team!**

Interview with Ibrahim Zuva, VP Operations & Technology Americas at Leuze

New Leuze US location

As part of its global growth strategy, Leuze has moved into new premises in the USA. For a few months now, Leuze US sales, production and development have been under one roof in Duluth, near Atlanta, Georgia.



Mr. Zuva, Leuze has chosen a new location in the US. Why is that?

Our new location provides us with a more favorable environment for working with our customers, distributors and partners. We are even closer to them: The connection to Atlanta is perfect and our logistics are more centralized. This way, we can reach our customers even better and supply them faster.

You yourself played a major role in setting up the new location in the USA ... What exactly was your role there?

First of all, we had to find a suitable new building in Atlanta. That wasn't so easy ... Once we had found it, we had it completely renovated and converted to meet our needs. At the same time, preparations were underway to close our previous location in Michigan completely and to master the move to Duluth.

That sounds challenging ...

Yes, it was. It was also not without its challenges to win our employees over to the new location and, in addition, to hire, equip and train new employees so that we were fully operational with the move seamlessly.

I believe that ... you also personally moved to the US for this.

Yes, in total I will be there for two years. That was a new experience for me personally, too. But an interesting one!

What was the biggest challenge for you personally?

Besides my job, it was not easy to build a new social life. It took some time before we found new friends. But now we have a small circle of friends in which we feel very comfortable.

What about this task attracted you personally and made you ideal for it?

I was already very familiar with the US location from previous projects and was therefore already familiar with the subject. I also already had experience with construction and renovation projects, relocations and building a new team. I was able to apply this very well here. In addition, I have intercultural skills and knowledge of SAP.

Thank you for the interview, Mr. Zuva. I wish you and your team continued success in the further development of the new Leuze US location.

Official opening in March 2024

From left to right:

**Salvatore Buccheri,
CSO of the Leuze Group**

**Aaron Henry,
President Leuze electronic Inc.**

**Stefan Leuze,
Chairman of the Board of Directors
of the Leuze Group**

**Ibrahim Zuva,
VP Operations & Technology
Americas at Leuze**



Leuze France celebrates its new office

Just 30 kilometers east of Paris, in Jossigny, Marne la Vallée, is the new office of the French Leuze sales company. Perfectly accessible for our customers by car, metro, train or plane. The new, more than 500-square-meter office has a modern and open design and offers a positive work environment for more than 20 sensor people.

The highlight of the new location, in addition to a large roof terrace for events of all kinds, is a generously and technologically innovatively designed showroom. In this showroom, we can present our products to our customers, train them and demonstrate applications to them in real life.



Video of the
opening ceremony



The official opening of the new location in France by the Leuze family took place in June 2024.

Leuze India moves into a new office

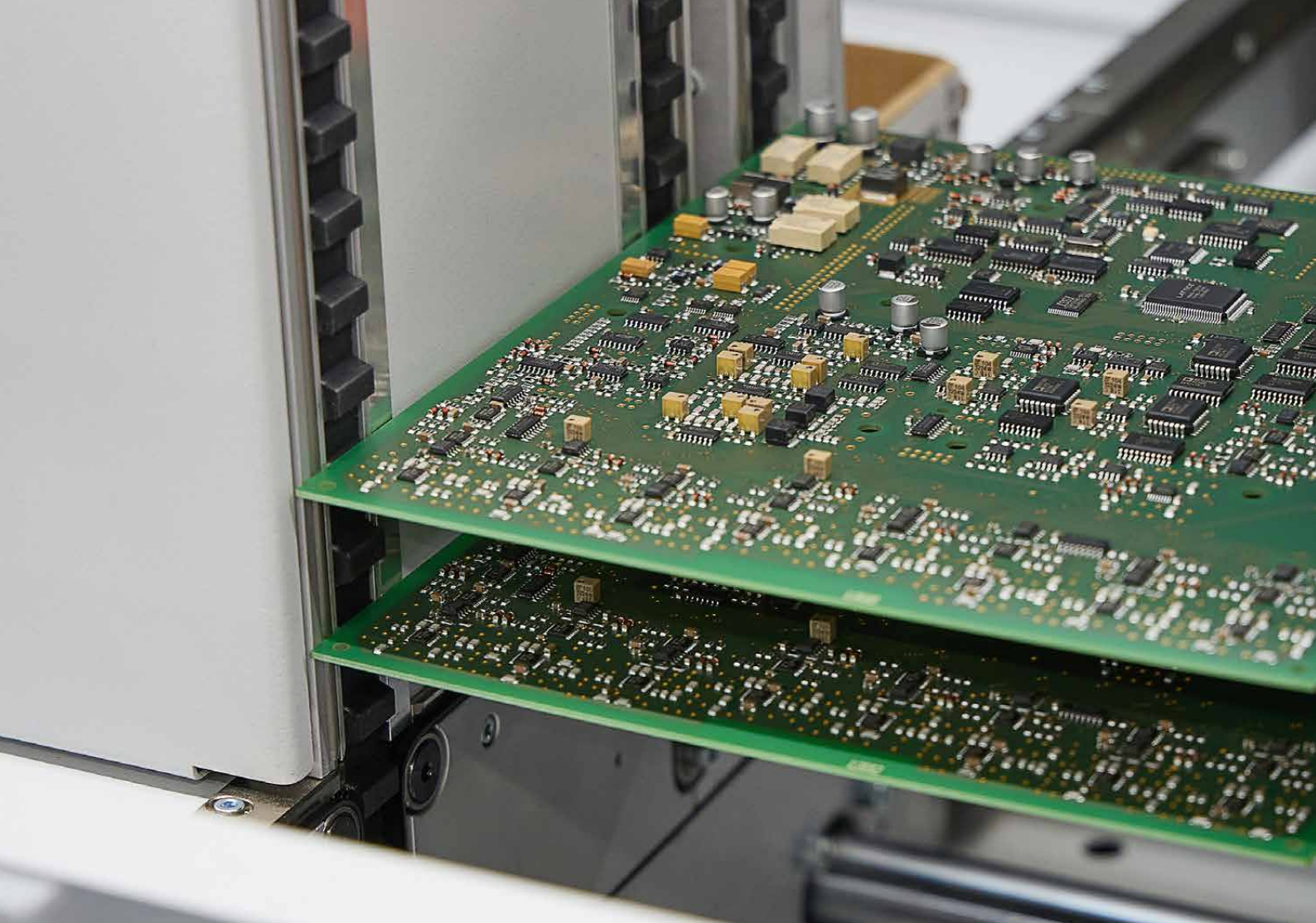
The new 800-square-meter office of the Indian subsidiary is located in a detached three-story building about a 25-minute drive from the Bangalore International Airport in the northern part of the city. Quiet but still close to the city center, very close to the largest "Mall of Asia". The building contains spacious, modern administrative areas, sales offices, a warehouse and sufficient expansion space for further growth. The absolute highlight – in addition to a terrace for events: an experience and training center. Here you can see Leuze products in action, for example, how they monitor automated guided vehicles and continuous conveyors. The official opening of the new location took place at the end of June 2024.



Video of the
opening ceremony



The official opening of our new location in India took place in June 2024.



EMS expertise: Leuze electronic assembly

With clever ideas to precise printed circuit boards

“We turn your challenges into solutions”

It takes a great deal of expertise to produce a printed circuit board with up to 1,500 electronic components of the highest quality. This expertise can be found in Unterstadion, a community of around 800 inhabitants in the Alb-Donau district: This is where Leuze electronic assembly GmbH is based. More than 200 employees work in three shifts in the 3,000-square-foot plant. LEA, a subsidiary of the Leuze Group, has existed since 1977.

To produce a printed circuit board with up to 1,500 electronic components of the highest quality, a great deal of Know-How is required. This can be found in Unterstadion, a community with around 800 inhabitants in the Alb-Donau district: This is where Leuze electronic assembly GmbH is based. More than 200 employees work in three shifts in the 3,000-square-foot plant. LEA, a subsidiary of the Leuze Group, has existed since 1977. It is one of five Leuze production sites worldwide specializing in Electronics Manufacturing Services (EMS) – the production of electronic assemblies.

A reliable partner

Leuze electronic assembly GmbH has consistently and successfully developed since its founding in 1977. In 2022, the company's revenue amounted to around 64.5 million euros, while production has grown by an average of 17 percent annually over the past ten years. This success story is also based on a special feature of the location, as Production Manager Georg Denkinger explains: “Two-thirds of our production is for the global Leuze Group and one-third is for external customers. This combination of in-house and contract manufacturing is quite unique. Many competitors try it, but don't make it.” According to Denkinger, it requires a different way of thinking and adapted structures, also with regard to the software used. And last but not least, a lot of staying power, because some investments only pay off with a delay. The customers of Leuze electronic assembly know that they are in good hands here: “We treat external and internal customers equally. That's easy to claim in the good times. But in difficult times, you also have to prove it and, of course, give priority to an external order when the customer has a problem. You can only do that if you're prepared for it,” explains Georg Denkinger. And that's the Leuze electronic assembly in Unterstadion, as a glance at the ultra-modern production facility with three production lines shows.

Georg Denkinger, production manager at Leuze electronic assembly, Unterstadion, presents a printed circuit board. This contains up to 1,500 electronic components.



Million small parts

“Populating a printed circuit board is just as complex as building a modern smartphone,” says Georg Denking. In 2022, Leuze electronic assembly processed more than 320 million SMDs (surface-mounted devices). These are small electronic components that are soldered onto the printed circuit board. In addition, there were around ten million THTs (through-hole technology). These are components with wires that are inserted through the printed circuit board and soldered on the back.

“Populating a printed circuit board is similarly complex to building a modern Smartphone.”

Precision required

The first step in printed circuit board assembly is programming. Leuze uses a machine for this that programs all types of components. A good 500,000 components go through this step every year. After that, a data matrix code is lasered on, which contains the article, order and serial number. The advantage: If a component turns out to be defective at a later stage, everything can be traced exactly via the code – for example, when the part was manufactured, which stations it passed through and how it was tested. Once the code has been lasered on, it goes to the SMD line for “solder paste printing”: A matrix is now placed on the empty printed circuit board as a template. Soldering paste is applied to the cavities of the matrix. “The paste is comparable to the solder wire of the past; it connects the surface-mounted components with the printed circuit board,” says Georg Denking. The height of the paste is important – it is applied with high precision to within one micrometer. By way of comparison: a human hair is on average around 50 to 80 micrometers thick. A machine measures whether the paste has been applied correctly at every point by performing a 3D scan of the circuit board.



Production Manager Georg Denking with a stencil. It is used to apply the solder paste specifically to the circuit boards.

Three flexibly deployable lines

In the further process, pre-tested rolls with standard components are sent to an assembler. The assembler removes the components and places them in the respective soldering paste deposits. Thanks to a “pick-by-light” system, the picking process is designed for efficiency and accuracy: Light signals show the employee responsible exactly where to place which reel – this is then acknowledged. Another advantage of PCB assembly at Leuze: all three lines can process all types of components, from small to large. This is controlled by a central ASYS line computer. Now it's off to the oven: The right temperature is crucial here for the paste to melt. The profiling of the temperature curve is carried out in accordance with J-STD-020 and the soldering takes place under a defined inert gas atmosphere.



The standard electronic components are located on rolls. The individual conveyor belts are fed into a placement machine. This places the components on the printed circuit board.



It is used to apply the solder paste to the printed circuit boards in a targeted manner.

Quality in view

This is followed by a visual inspection of the assembled printed circuit board – also fully automated. High-tech is used here: an Automated Optical Inspection System (AOI-3D) from KohYoung. A laser projects a checkerboard pattern onto the printed circuit board, which allows the surface to be measured. In addition, the machine checks the components using image processing. With absolute precision, as Georg Denkinger emphasizes: “Nothing escapes the system. Whether an electronic component is missing, not properly soldered, or the alignment and height are incorrect – these and many other possible defects are reliably detected, and the plate is then ejected and reworked.” It takes a maximum of 17 seconds to inspect a printed circuit board in this way. With several hundred extremely small components, that’s an impressive performance. For the production manager, AOI-3D is an important step in quality assurance: “We have been using the AOI process since 2007. We switched to the 3D version as early as 2019. This puts us well ahead of many of our competitors.” Customers of Leuze electronic assembly benefit from the maximum operational reliability of the electronic assemblies manufactured in Unterstadion.

PCBs for harsh environments

In the next step, a machine places apertures on the sensors intended for them – with an accuracy of about 15 microm-

eters. This gives them a clear switching threshold from dark to light. Between 600,000 and 700,000 apertures are glued here every year. This is followed by the flying probe test: A probe with up to eight needles moves across the printed circuit board. The needles make contact with the electronic components and test their functionality. The same is done on the underside. In addition, a needle bed test system with more than 1,500 needles is available – in case the assembly is produced in higher quantities. If the customer requests it, Leuze electronic assembly will coat the circuit boards with a protective varnish. “Among other things, a varnish is useful in environments where condensation can occur,” explains Georg Denkinger. “For example, we manufacture PCBs for large mining trucks and snow groomers. These must function reliably even under rough conditions.” The printed circuit boards are almost finished: They are now automatically cut out using a milling machine or laser. If the customer requests complete modules, the employees in Unterstadion install the PCBs in the housing and mount additional components. Programming, parameterization and function tests at the module level round off the whole process. Modules such as these are produced for blood analysis devices, for example.

High demand

With its extensive expertise in EMS production and high quality standards, Leuze electronic assembly GmbH is a reliable partner for its customers. 99.7 percent of the electronic components manufactured in Unterstadion are error-free in the first process run. With employees trained in-house, state-of-the-art machinery and patents on self-developed systems, LEA has set the course for continued success in the future: “We want to continue to grow and increase the share of contract manufacturing to around 50 percent. There is great potential for this. We are getting a lot of customer inquiries,” says Georg Denkinger. So, the prospects are good for the printed circuit board specialists in Unterstadion.



Open House for our customers:

Technology Day: Electronics Manufacturing

– from circuit diagram to PCBA

Our Leuze electronic assembly in Unterstadion, South Germany, invited you to a Leuze Technology Day for electronics manufacturing under the motto “The future today – innovation in PCBA technology”. Speakers from the areas of development, PCB delivery, project process and component distribution showed numerous interested parties how electronics – from the circuit diagram to the PCBA – can be manufactured efficiently, cost-effectively and cleverly with the world’s best processes. In addition to a production tour, there were plenty of opportunities for in-depth technological discussions with our Leuze experts.

Leuze
electronic
assembly



Leuze

New Leuze Truck on Tour



Our Leuze Truck is coming to you

The new Leuze show truck has been touring Germany since May 2024. Packed full of sensor and safety solutions, it visits our customers directly. You have the opportunity to test the most diverse applications yourself in live operation on site. The Leuze Showtruck is accompanied by our Leuze experts.

Are you interested in the Leuze show truck visiting your company in Germany?



Request the Leuze show truck:
info@leuze.de



Salvatore Buccheri (right), CSO of the Leuze Group, hands over the key for the new Leuze truck to Stefan Sandkuhl, Director Sales of the Leuze sales company in Germany.

CHALLeuzeTENGE

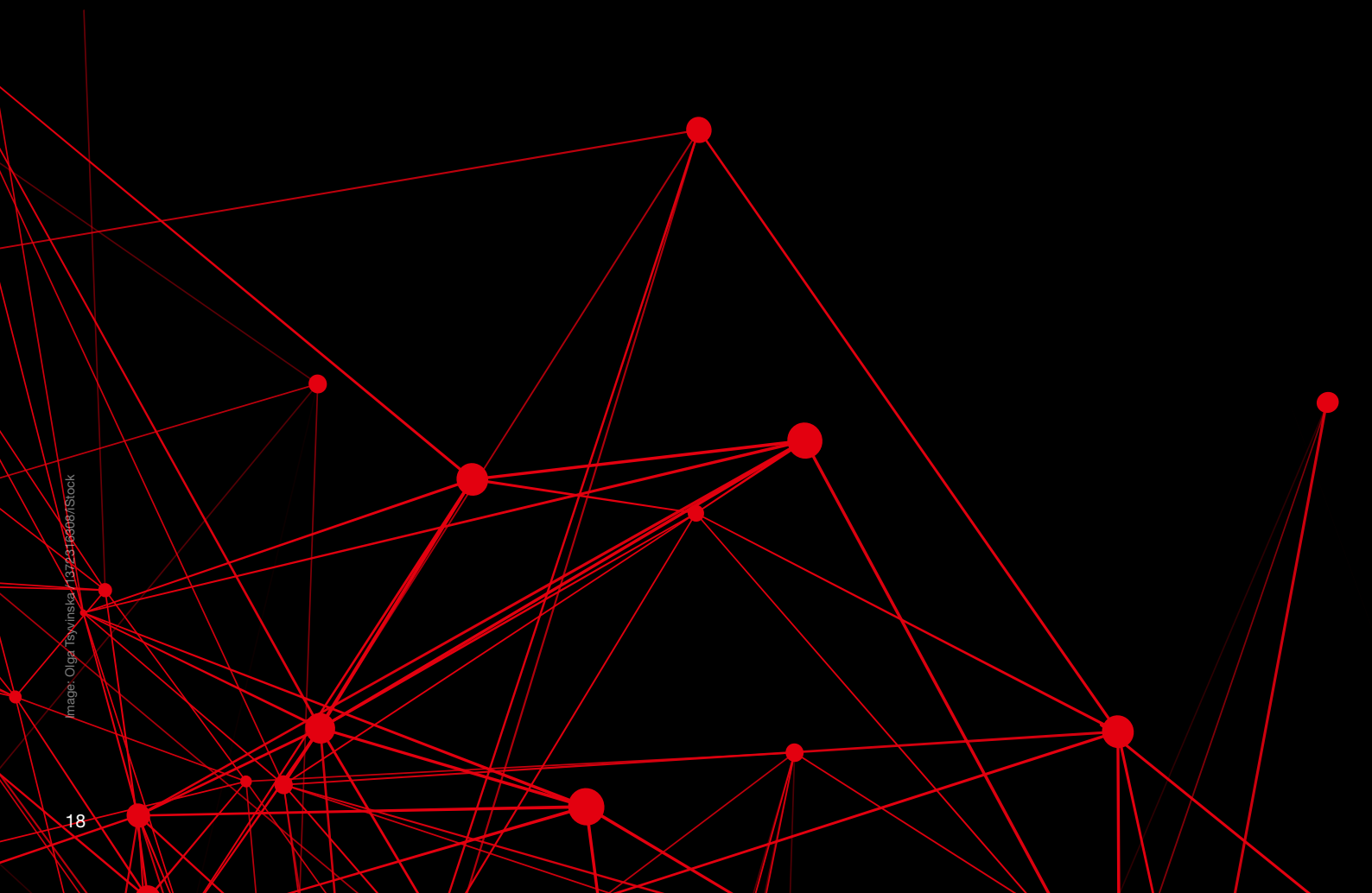


Image: Olga Tsyvinskaya 1572316680/Stock

Hackathon Leuze Tschechien



Dan Mikulič,
Human Resources
Leuze Czech Republic



You conducted a hackathon at the Leuze subsidiary in the Czech Republic. What exactly did that entail?

Yes, and it was a huge success! A hackathon is a collaborative software and hardware development event. In our case, the goal was to create a functioning prototype or a proof of concept for a software application.

That sounds exciting and very creative.

Yes, that's ultimately what it's about. We want to use it to increase problem-solving skills and creativity as well as to promote innovation. At the same time, we can increase our profile and reputation as an attractive employer at universities and get in touch with students.

Who takes part in a hackathon?

They are mainly external students from technical universities. So to a certain extent, the hackathon is also an employer-branding measure for us.

Is there a real winner too?

Of course! No competition without prizes! And, of course, all the technical prizes :-). The first-place winner received a notebook, the second-place winner a drone and the third-place winner a cell phone.

Is the hackathon only held at Leuze in the Czech Republic?

We, developers from the "Windows apps and GUI" department, are the organizational team behind the idea of the hackathon and were the pioneers of it. We are currently in talks with the HR department at our headquarters in Germany and are discussing a cross-border development into an international Leuze Hackathon. That would certainly be a great thing for the future!

Thank you for the interview.

“Thanks to our in-depth understanding of applications, we offer our customers customized sensor and safety solutions.”



Benjamin Schmid,
Chief Innovation Officer
of the Leuze Group

Mr. Schmid, you have been working at Leuze for quite a while now ... You have held the position of Chief Innovation Officer since 2024 ...

Yes, that's right. Just over 20 years, to be exact. I started my professional training at Leuze as an "Electronics Technician for Devices and Systems" in 2003. Since then, I have been able to gain experience in several company divisions: Initially as a skilled worker in series assembly. Then as a developer in the optical sensors hardware division. There I managed several projects in our product center for binary switching sensors, including those of two series of our current "C" generation. After completing further training to become a technical business manager, I became the first assistant to our managing director in 2017 and took over the technical equipment for our automated small parts warehouse. In 2019, I returned to the product center for binary switching sensors and managed it for four years. And as you said: I have been CIO since 2024.

What exactly can I expect your role to entail? Can you tell me a little about your new role as CIO?

Gladly. As Chief Innovation Officer, I am fundamentally responsible for our product roadmap. Beyond that, it is my job to recognize new sensor technologies and develop new business models that will advance our company. This includes identifying new technology and market trends, their structured introduction into the company and the promotion of a culture of innovation.

How do you identify new technologies or trends that could be relevant for Leuze?

There are basically several approaches in innovation management: the consideration of new technologies as well as new developments in our markets. For example, the identification of new customer needs. My team analyzes, evaluates and prioritizes these.

That means you integrate customer feedback into the innovation process ... How specifically do you do that?

We maintain a good exchange with our customers. We talk to them because we want to understand what they are currently working on, what challenges they are facing, where the problems lie. This helps us to generate ideas on how we can help them to become even better and more efficient by using our sensor and safety solutions.

Which trends or technologies do you currently see as particularly forward-looking for your company?

For example, I see great potential in the area of camera systems and in applications related to the topic of data analysis and processing in edge and cloud. But, of course, we are also not neglecting further developments in the area of our switching and measuring sensor technology.

Are there other technical areas in which you want to further develop Leuze?

We are working on various initiatives. These include, for example, the most intuitive operation of our sensor solutions and the simplest possible integration into our customers' controls. These are not fundamentally new topics for us. Nevertheless, we want to continue to develop in these areas as well.

What exactly do you mean by that?

Building on a broad technological base, we use our in-depth understanding of applications to offer our customers sensor and safety solutions that are tailored to the respective application. The regionalization of our products and the lowest possible setup effort create individual customer value.

That sounds challenging. What challenges do you face most often in your role as CIO?

One of the biggest challenges is to find a balance between innovation and day-to-day business requirements. It is important that we continuously develop new ideas without losing sight of existing processes and products.

Thank you for the interesting conversation, Mr. Schmid, and all the best for the future in your role as CIO.

Find out more



Sensor data as a door opener for factory automation

Artificial intelligence: Sensor data for greater efficiency

In intelligent production systems, data is the key to success. In daily operation, sensors generate large volumes of process data that are transmitted via a communication interface to the control system and processed. This data is already being used to control systems or production lines more efficiently and to evaluate information in order to make processes more flexible and increase system availability.



Artificial intelligence provides the context

With artificial intelligence, processes in your production can be made even more intelligent, flexible and economical with the help of the data generated by field components. AI algorithms evaluate large amounts of data and determine key figures or necessary actions to continuously improve plant productivity. For example, artificial intelligence can help to separate different causes of faults and to quickly identify disruptive factors. AI-based evaluation allows sensor data to be aggregated and correlations to be displayed.



From the sensor to the cloud

Topics such as condition monitoring or predictive maintenance require sensors which are able to provide data worldwide and in a standardized format. We have been pioneers in this field from the outset and are working on the standardization of industrial communication. We offer sensors that deliver data to the controller, for example via IO-Link or OPC UA, or make it available to the cloud and edge devices. Our smart sensors are able to control production processes and evaluate information in order to detect problems at an early stage.



Clearly measuring contours

Leuze is expanding its product portfolio with LiDAR technology: New laser scanner series ROD 300 for efficient contour measurement and ROD 500 for precise AGV navigation



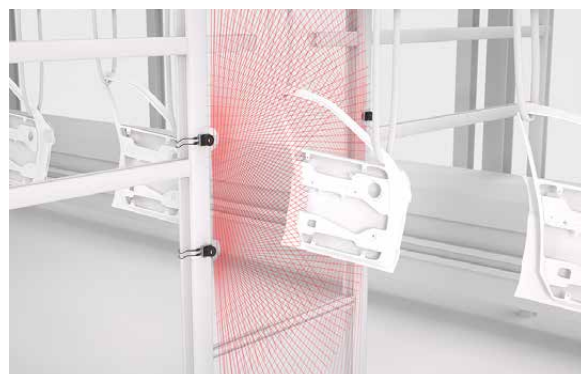
Whether on the conveyor belt or on the automated guided vehicle system: When sensors are used to detect contours, precision and attention to detail are essential. Leuze is launching two new laser scanner series that are perfect for the job. The devices of the ROD 300 series reliably detect contours even in fast manufacturing and logistics processes. Thanks to their high scanning rates and angular resolution, the laser scanners of the ROD 500 series are ideal for navigation tasks. Another advantage is the sensors' integrated window monitoring, which detects when the optics window is dirty. This enables predictive maintenance and thus contributes to high system availability.

Perfection in precision

The devices of the ROD 300/500 series scan at a frequency of up to 80 Hz. This means that objects in motion are reliably detected, and the data quality remains optimal even at high speeds. With their high angular resolution of 0.025° at 10 Hz, the laser scanners of the ROD 500 series determine the contour of the parts even with different high-gloss or matt surfaces. The new laser scanners can be integrated into almost all production processes. Their robust design also contributes to this: With an IP67 rating, a high-quality aluminum base and a built-in laser diode, the ROD 300/500 laser scanners are resistant to external influences. The sensors also work in temperature ranges from -30°C to $+60^\circ\text{C}$. This makes them suitable for applications in both the deep-freeze and high-temperature areas, such as in battery production.

Natural Navigation made easy

The new laser scanners can also be used for navigating driverless transport systems (DTS). They create a highly accurate map of the environment, such as the material storage area. During ongoing logistics operations, a scanner from the ROD 500 series enables collision-free DTS navigation via Natural Navigation. Those responsible for intralogistics also benefit from the compact design of the laser scanners: With dimensions of around 80 x 80 x 80 millimeters, the sensors can be integrated even into the small installation spaces of mobile vehicles.



With their high resolution of 0.025° , the laser scanners of the ROD 500 series can precisely determine the contour of parts, even with different surfaces (high-gloss or matt).



The laser scanners in the ROD 500 series can create a very precise map of the environment. In ongoing logistics operations, the ROD 500 is ideal for collision-free navigation of the AGV via natural navigation.



If the integrated window monitoring detects dirt on the window, it issues a maintenance message. The warning threshold can be adjusted. This predictive maintenance contributes to a high level of system availability.

Secure firmware download with OPC UA

The background features a 3D perspective of a honeycomb-like structure made of grey hexagonal cells. Several cells contain red icons or text. One cell prominently displays the text 'OPC UA' in red. Other cells contain red icons, including a Wi-Fi symbol, a factory or industrial building, and a circular arrow. The word 'Security' is also visible in red on a cell to the right. The overall theme is industrial automation and security.

OPC UA

Digitization and networking are central topics of our time. In the industrial environment, they shape concepts such as Industry 4.0 and the Industrial Internet of Things (IIoT). Networking plays a particularly crucial role in today's automation systems within production and logistics. But how secure is the communication between the network participants?



Oliver Pütz-Gerbig
Senior Market & Technology
Expert AutoID-Systems
at Leuze

Modern automation systems in production or in intralogistics have a number of control systems, sensors and actuators that are networked with one another through Ethernet-based communication and can exchange data. Sensors generate event-based signals to activate production processes or provide measurement values for monitoring correct production processes and quality requirements. AutoID systems such as 2D camera systems and RFID readers identify objects, load carriers and containers in production and in the material flow. To meet the high demands for adaptability, precision and performance, modern automation components are designed so that necessary updates to the device firmware can be carried out quickly and reliably. This ensures that recognized functional improvements can be implemented without replacing the device, and that new functions can be added.

Many modern automation components that communicate via Ethernet-based interfaces or field buses such as ProfiNet, Ethernet/IP or EtherCAT have integrated web servers that allow convenient access to the devices within the local network.

This makes it possible to carry out firmware updates very quickly. But what about the security of the update process? How can you ensure that only authorized firmware is loaded into the device and that the data transfer cannot be manipulated? These requirements

for the security of data transmission are becoming fundamental cornerstones of modern automation systems, which communicate in networks locally and via cloud systems, not least due to the EU Cyber Resilience Act.

OPC UA provides an interoperable, Ethernet-based communication platform that features integrated end-to-end encryption. In addition, the OPC UA Device Interface Specification Part 100 defines a vendor-independent procedure for performing and managing software updates. The direct loading procedure is recommended for devices with limited hardware resources. The new software is transferred as a file archive, whereby each file is checked by its specific header and installed immediately after unzipping. After a final check, the device is restarted.

All communication via OPC UA and thus also the software download are secured by exchanging certificates between client and server. Automated certificate exchange via an external GDS (Global Discovery Server) ensures central management of applications and certificates in the entire OPC UA network.

Communication between the network participants thereby meets the highest security requirements: Data cannot be manipulated. It is ensured that each device is always operated with the current and, above all, only with the original firmware.

A guaranteed view

IVS 1048i



DCR 1048i



The devices are used for presence or absence detection, for detecting parts, for inspection, for measurement or counting tasks and for print quality verification.



In image processing for industrial automation, three aspects are particularly crucial for sensor technology: performance, flexibility and usability. Simple vision sensors meet these requirements. They are as easy to operate as optical sensors and are just as powerful as camera systems. With this concept, we offer a quick and easy introduction to vision technology.

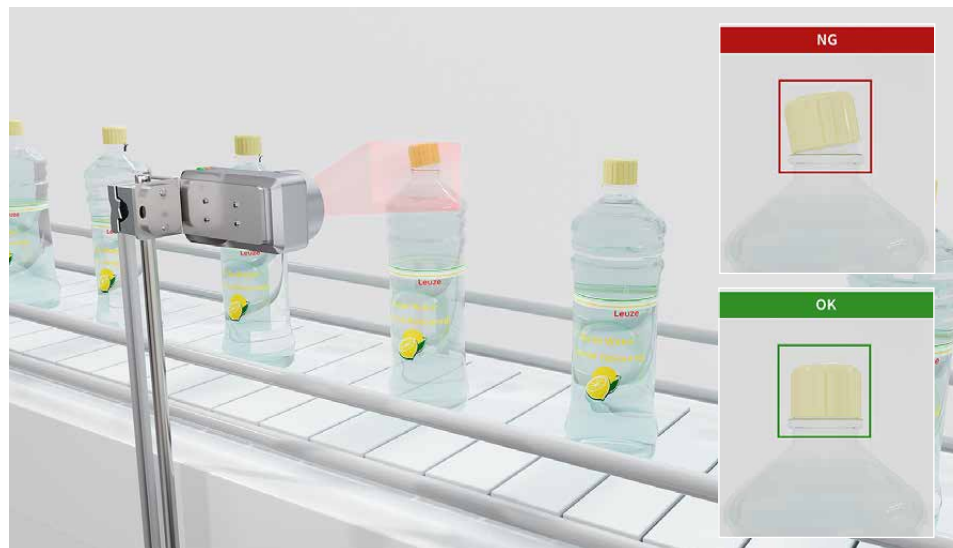
Vision sensors are the “eyes of industrial automation”. These small marvels enable machines to see and interpret their environment. They are easier to integrate and operate than camera systems. The devices are suitable for many different tasks: They are used for presence or absence detection, for detecting parts, for inspection, for code reading, for measuring or counting tasks, and for print quality verification. When selecting the optimal sensor technology, it is worth taking a look at the performance for the corresponding detection, identification, and inspection tasks. In addition, the configuration and parameterization of the sensors should be as easy as possible – this saves time and money. With our Simple Vision concept, we have implemented a product portfolio that meets these requirements.

Easy to set up, efficient to detect

Leuze image processing tools are powerful: They combine image recording, processing and communication functions in a single device. A common area of application for the sensors is the detection of the presence and absence of objects. For example, in bottling plants: Closures, labels or imprints on bottles or flacons must be reliably detected here. A sensor can also be used to check the orientation of an object, regardless of its format, material, color or dimensions. Users should look for a device that offers strong performance. For example, the IVS 108 simple vision sensor consistently offers a response time of just 50 milliseconds, even with changing objects or ambient or application conditions. This makes it very easy for

system operators to decide whether the sensor meets their production process requirements. A quick sensor setup is also important. The IVS 108 requires neither programming nor lengthy configurations. All you need to do is position 'GOOD' and 'NOT GOOD' objects in front of the sensor and confirm by pressing the teach button.

Vision sensors are recommended in many cases for image processing in industrial automation. Leuze Simple Vision product portfolio has the right solution for almost any application.



The IVS 108 from Leuze is suitable for any application that requires checking the presence or absence of objects. For example, bottle caps, labels or imprints on bottles or flacons in filling systems. It can also be used to check the correct alignment of objects, regardless of their shape, material, color or dimensions.



Code reading made easy

Vision sensors can also be used to read 1D- or 2D-codes. Practical: sensors such as the DCR 1048i from Leuze can read individual or multiple codes at the same time. This is relevant, for example, for packages with multiple secondary packaging. Multi-code decoding makes this possible. If DPM codes printed on the packaging are to be detected, a sensor such as the DCR 1048i DPM is recommended. It is equipped with an optimized reading algorithm to decode these reliably. If you are looking for a particularly powerful sensor for print quality verification, the DCR 1048i OCV is the right choice: It can both read 1D-/2D-codes and check the print quality of a marking (such as best-before date, batch and other) using the OCV method within an application. OCV stands for "Optical Character Verification". The vision sensor is particularly easy and quick to teach for this purpose, without the need for complex parameters: Simply present a reference image of the optimal print. The DCR 1048i OCV then reliably detects faulty prints – for example, when print heads are clogged, ink is used up or there are adhesion issues.

Also as an all-rounder

Depending on the application and system design, an all-round model vision sensor can pay off. With this, system operators can quickly react to market demands and product changes. The all-rounders among vision sensors, such as the IVS 1048i from Leuze, are recommended for detection, inspection and identification tasks. For example, in a packaging line to check

whether labels or adhesive have been correctly applied. Or in beverage bottling plants to check whether the bottle cap is correctly seated. Some manufacturers offer devices with different resolutions. The IVS 1048i, for example, is available with either a low (736 x 480 px) or high resolution (1,440 x 1,080 px). This allows for a very flexible use of the sensor. In addition, four interchangeable S-mount lenses with variable focus settings are available. This makes it possible to adjust the reading distance, field of view and depth of field to the requirements of your own system.

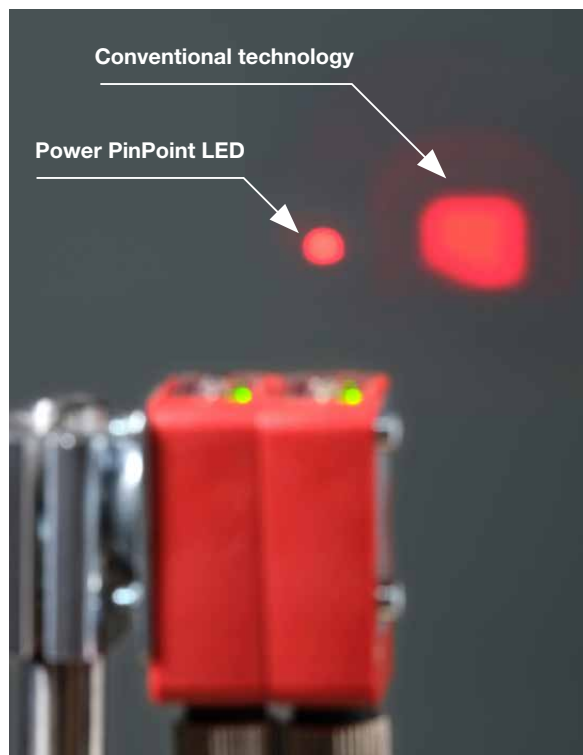
Convenient configuration

No vision sensor without software: When selecting the sensor system, the usability of the associated image processing program should be a deciding factor. It saves time and effort in system operation when the software includes powerful tools and also delivers statistics for image processing and inspection that can be used offline. Common interface protocols such as TCP/IP, PROFINET, FTP and SFTP (Secure File Transfer Protocol) are integrated into the devices. This simplifies communication and data collection. With Leuze Vision Studio, Leuze provides PC-based configuration software that meets all of these requirements. It is suitable for the IVS 1048i and DCR 1048i simple vision sensors. Leuze Vision Studio makes it possible to configure the various sensors virtually by means of an emulator and to test the applications with real images without a device being physically present.

It can be beneficial for system operators to focus on vision sensors that can be set up and operated without any specialist knowledge. This makes integration and ongoing operation easier, even if production process requirements change. The system sensors can thus be designed cost-effectively with minimal effort. It is also important to choose a device with a powerful performance. The sensors in the Simple Vision concept from Leuze Vision combine all of this. This enables the efficient use of image processing technology in industrial automation.

To the Point

Leuze launches first ever sensors with Power PinPoint LED. With the innovative light source technology, optical sensors are easy to put into operation and objects can be detected with particular reliability.

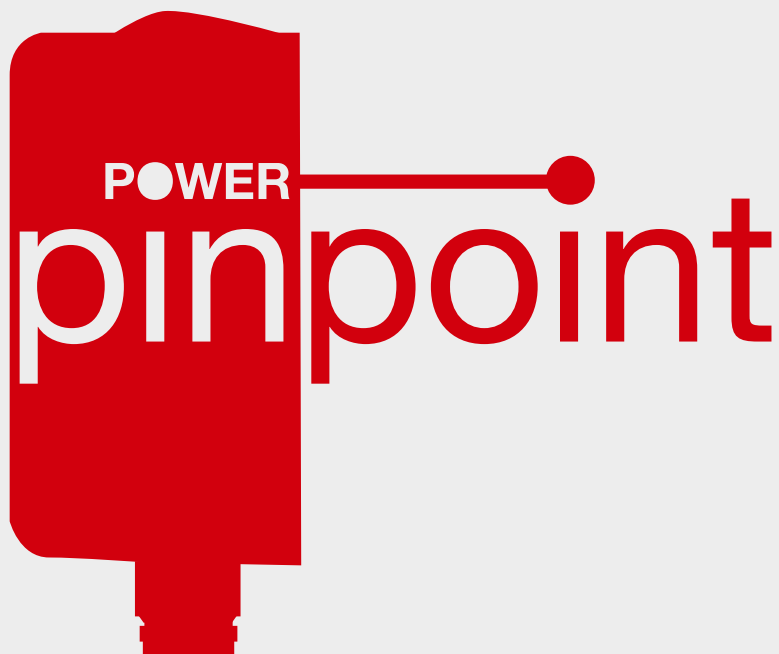


Aligning and putting into operation many sensors in a system is often very time-consuming. This is now significantly faster and easier thanks to the Power PinPoint LED from Leuze: The sensor's LED emits maximum light power from a very small area. The Power PinPoint LED produces a light spot that maintains its size, shape and homogeneity in the entire operating range of the sensor. System operators benefit from particularly easy start-up. In addition, the technology increases process reliability thanks to precise detection. The innovative light source is available for the first time with the new Leuze sensors of the 33C and 35C series as well as with the diffuse sensors of the 25C, 3C and 5B series.

Small, bright and precise

Sensors with Power PinPoint LED generate a small, round light spot with sharply defined contours. This makes the sensors extremely reliable and enables precise start and end detection of the object with highly accurate response behavior when tracking objects. Sensors with Power PinPoint LED optimally detect even small objects due to their precise response behavior. In some cases, sensors with the new light source technology can therefore be used as an alternative to laser photoelectric sen-

Test setup



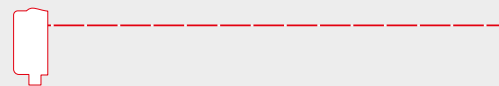
sors. Another advantage: In applications with small reflectors and large distances, photoelectric sensors with Power PinPoint LED have higher function reserves. When several throughbeam photoelectric sensors are operated in parallel, detection reliability increases because the compact light beam minimizes stray light. In addition, the Power PinPoint LED reduces reflections from extraneous light – which also contributes to high detection reliability.

Power PinPoint LED in stainless steel sensors

The Power PinPoint LED is already being used in the 33C and 35C series sensors, among others. The range of both series includes diffuse sensors, retroreflective sensors and through-beam photoelectric sensors in smooth stainless steel housings. These are particularly suitable for hygiene-sensitive production and packaging processes. They cover almost all applications in harsh, wet or hygiene-sensitive environments. The sensors withstand high mechanical loads and intensive cleaning processes. The 33C and 35C series also include special solutions for packaging processes – including sensors for film irradiation and for clear glass or PET detection.



Standard LED



Laser



Power PinPoint LED

With sensor expertise to the high-voltage battery

Precise processes for the electric drive



In the north of the city of Leipzig stands one of the most modern automobile factories in the world: the BMW Group Plant Leipzig. The Saxon location produces both combustion and electric models in parallel. E-mobility requires high-voltage batteries that supply the BMW Group's electric or hybrid vehicles with the necessary drive energy. The automotive group also manufactures these on site. Leuze sensor technology, implemented by Schaeffler Special Machinery, the machine manufacturing arm of the Schaeffler Group, makes an important contribution to an efficient and safe process on the line.

It all starts with the cell

From the first component to the finished high-voltage battery, three consecutive production steps are required: Only after cell painting, module production and, finally, assembly is a high-voltage battery ready for use as an energy source for an electric vehicle. Precision and safe processes are essential at every step. Leuze supports this with sensor solutions in cell painting and module production. Cell painting marks the start of high-voltage battery production. Each battery module in turn consists of several cells. These are delivered to BMW in large load carriers (LLCs). To ensure that the LLCs can be unloaded automatically by robot, a Leuze MLC series safety light curtain

protects the hazard zone against access by persons. Muting ensures that only the LLC can pass. The robot always unloads 16 cells at once and places them on a conveyor belt. Here, switching light curtains of the CSL series, installed horizontally, detect whether the cells are correctly placed. "The switching light curtains are very well suited for monitoring large detection fields," explains Jürgen Schweiß, KAM-Automotive and Safety Application Specialist at Leuze. In addition, thanks to quick configuration and easy operation, they are usually more cost-efficient than imaging procedures.

A robot places the cells, which have been removed from a large load carrier, on the conveyor belt. Here, horizontally installed switching light curtains of the CSL series detect whether the cells are correctly placed.



High-gloss surfaces

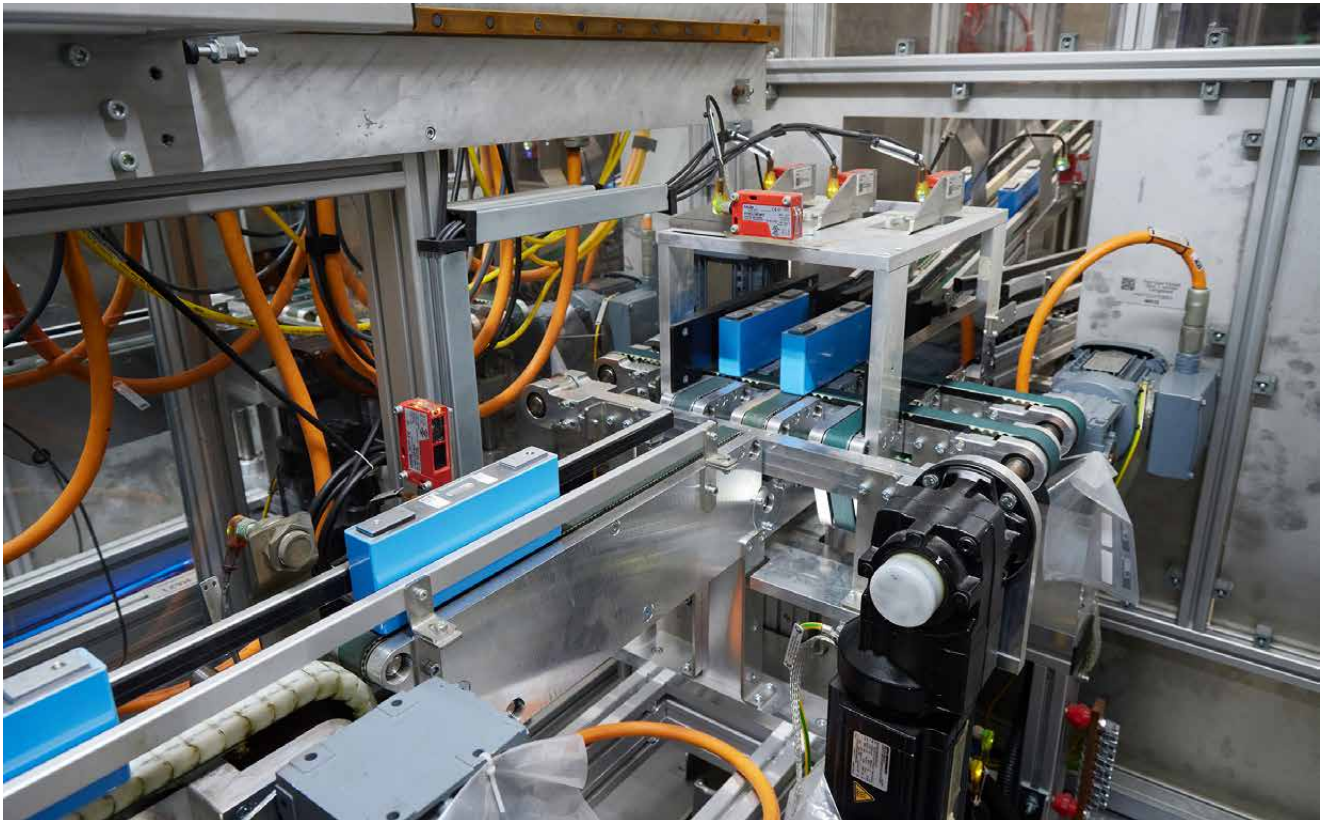
Leuze light scanners ensure several functions at various points: “Sensors mounted on the conveyor belt detect the presence and correct position of the cells. If these are present and correctly positioned, the process continues,” says Jürgen Schweiß. The advantage of the sensors of the PRK 25C series: They detect the high-gloss surface of the cells with absolute reliability. In addition, the transmitter and receiver are located in the same housing. This makes it easy to implement applications in a cost-effective manner, even in confined spaces. The sensor variant optimized for reflective objects achieves operating ranges of up to 16 meters. Plant operators can also easily adjust the sensitivity, because with their bright light spot, they can be quickly and easily adjusted. To detect individual cells, PRK 25C sensors with reflectors are used, as well as HT25C series light scanners with background suppression.



When separating the cells, sensors detect the positions of the objects. This is a prerequisite for an automated process.

**The advantage of the Leuze PRK 25C series sensors used:
They detect the high-gloss surface of the cells with absolute reliability.**





The blue-painted cells on their way to the next production step. Leuze sensor technology always has everything in view. The scanners with background suppression HT46CL detect the individual cells and control the belt.



To ensure that the large load carriers (GLT) can be safely loaded and unloaded, a Leuze MLC series safety light curtain protects the hazardous area against access by persons. Muting ensures that only the LLC can pass.

Compact safety

Leuze sensor technology keeps everything in view in the cell painting process: HT46CL series laser diffuse reflection scanners detect the individual cells and control the belt – with maximum detection reliability thanks to background suppression. Before the cells are loaded into a GLT, they are ejected by a Leuze MLC safety light curtain. Advantages of Leuze light curtains: They score points not only with high resolution, protective field height and range, as Jürgen Schweiß emphasizes: “With light curtains, compact construction and short safety distances are often also important. Only then can they be well integrated in tight installation situations.”



At this station, each cell receives a “heat shield”—a protective heat insulation—which is pressed onto the longitudinal sides. Leuze PRK 25 reflection light barriers detect the presence of the objects.



Perfectly positioned

Leuze laser reflection light scanners also monitor the unloading of the cells from a GLT into a module line from thyssenkrupp Automation Engineering. Each cell also receives a so-called “heat shield” – a protective heat insulation – which is pressed onto the longitudinal sides. On a circular machine, robots turn the cells to the respectively desired position. Here, too, sensors from Leuze provide support: PRK 25 reflection light barriers detect the presence of the objects. The heat shield process runs in parallel at two stations to achieve a high throughput time.

By stacking to the module

In the “stacking” process, as experts call the stacking of several cells to form a battery module, several cells are placed next to each other and a pressure plate is attached to each end. PRK 25C sensors from Leuze detect the height and presence of the cells and recognize whether the tool carriers are correctly closed. Sensors are also used when placing the cell contact system (ZKS) on the module. A machine lifts the complete module so that the paint on the cell floor can be inspected: “Here, Leuze sensors help with tasks such as detecting the height and at stop positions,” says Schweiß.



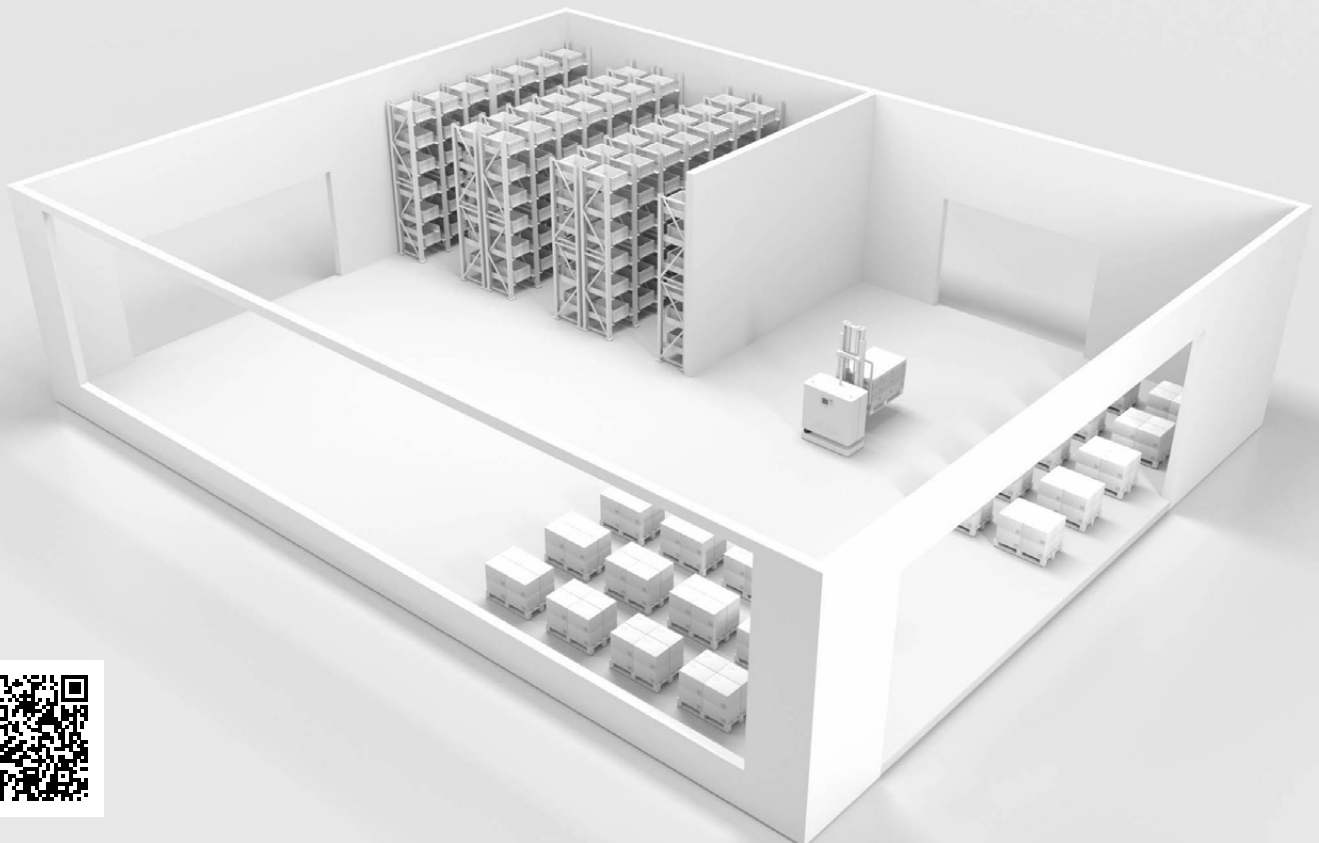
A double module including cell contact system on the upper side. In the last step, a cooling unit is added. The double module then goes to the assembly area. Leuze sensors detect the position of the modules on the conveyor belt.

Everything in sync

Leuze sensors perform important tasks in the cell paint line and module production at the BMW Group's Leipzig plant: They reliably detect objects and also meet demanding requirements, such as in the detection of high-gloss surfaces. In addition, Leuze safety technology ensures seamless safety on machines and systems. The sensor people thus contribute to efficient processes in the automotive industry and are always available to support system operators in the design and implementation of sensor and safety solutions.

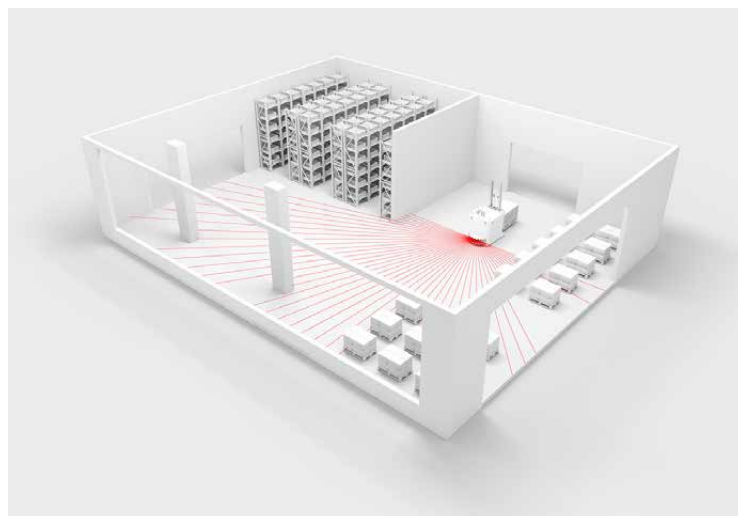
Know the way

Automated Guided Vehicles (AGVs) navigate using different technologies. Each has its own strengths and weaknesses. The technical requirements and the conditions on site are crucial for selecting the optimal solution. The sensor system also plays a role in reliable navigation.



Particularly precise positioning

For particularly precise and flexible AGV navigation, **laser navigation**, also known as contour navigation or natural navigation, is recommended. This is based on laser scanners or lidar (light detection and ranging). In this case, the AGV first moves through its environment in “learning mode”, detects fixed points using a rotating laser beam and uses them to create a map. The AGV uses this to navigate autonomously in the room. Obstacles can be reliably detected and, if necessary, avoided. Compared to camera-based systems, laser navigation works even in dark environments and in low light conditions. Please note: Dust or dirt can affect the precision of the system. Regular maintenance and cleaning are therefore required. In addition, the range of the laser beams is limited. Laser navigation is therefore better suited for work areas with clearly defined contours than for wide, featureless environments.



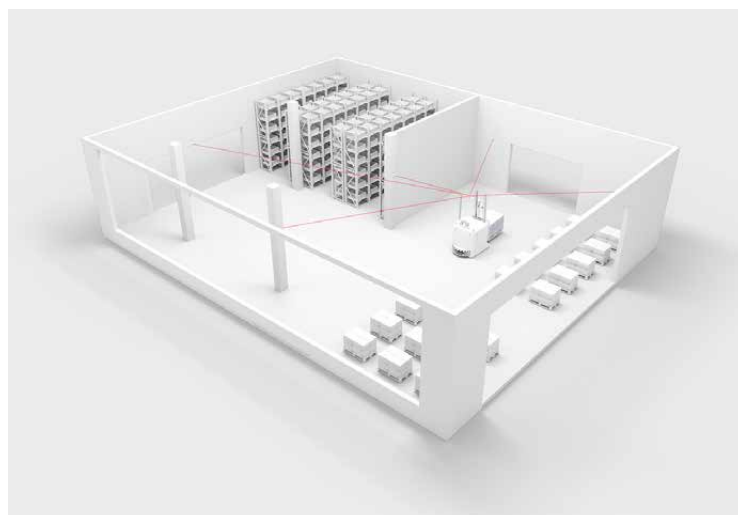
The main advantage of laser navigation:
precise and flexible navigation.

Deployable sensor system:

safety laser scanners, such as the RSL 400 safety laser scanner from Leuze. It combines safety technology and measurement value output in a single device.

For dynamic environments

Laser triangulation uses reflectors in the room to determine the AGV's position with a laser scanner. The scanner requires visual contact with at least three reflectors, which are installed at a height of several meters. This enables highly precise position determination and navigation of the AGV. This technology is useful in dynamic, frequently changing environments. On the cost side, it should be noted that the sensor must be mounted on the AGV at reflector height. In addition, the reflectors must be installed in the room. These must be recognizable at all times for reliable positioning of the AGV. Please note: Additional sensors are required for route protection.



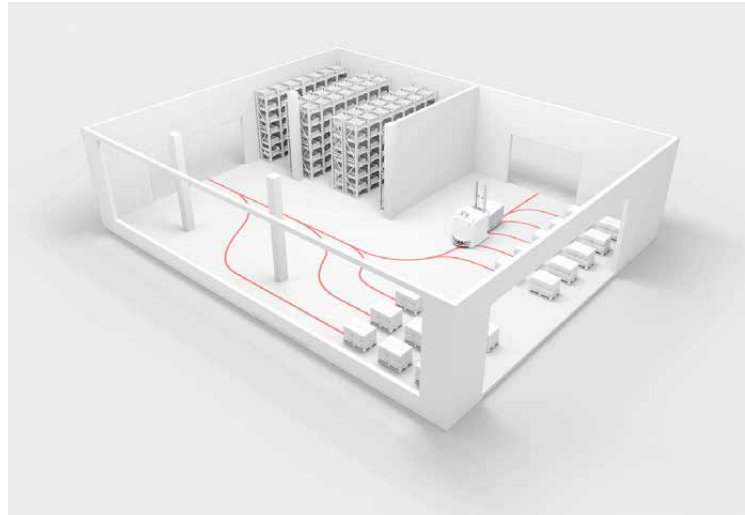
Main advantage of laser triangulation:
Suitable for dynamic environments.

Deployable sensor system:

Lidar sensors.

Always following the path

Another way of navigating AGVs is through **optical or inductive guidance**. With inductive guidance, the AGV follows a magnetic tape, or an induction cable laid in the floor; with optical guidance, it follows a lane marked on the floor. Sensors installed on the AGV detect the path, enabling precise alignment of the vehicle. The advantage is that the acquisition and installation costs for the sensor technology are manageable. This technology is particularly suitable for environments with clear and predictable paths. It is independent of the type of vehicle: the sensor is simply attached to the AGV at a low distance from the ground. The disadvantages include the construction effort required if magnetic tape or induction cable is laid. In this case, vehicles are also restricted to the predefined lane. This limits flexibility with new layouts or routes. Furthermore, compared to LiDAR or camera technology, the navigation can be less precise with many curves or narrow passages.

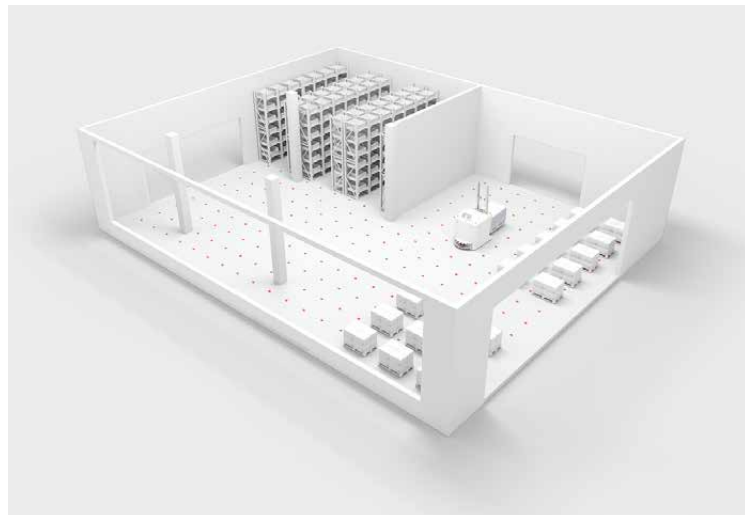


Main advantage of optical/inductive lane guidance:
optimal for environments with clear paths.

Deployable sensor technology:
optical tracking sensor, for example the OGS 600 from Leuze.
The sensor detects the lane by means of edge detection and sends corresponding signals to the control.

Grid-based navigation

Grid-based navigation is based on a coordinate system. This consists of 2D codes on the floor or transponders embedded in the floor. These are arranged in a grid and serve as reference points that the AGV uses to determine its position. The AGV moves along predefined grid paths. This technology is easy to implement. The coordinate system enables precise positioning and high navigation accuracy. Grid navigation is particularly useful in environments with predictable and structured paths. For example, in warehouses or production facilities with clear lanes. The disadvantage is the low flexibility for new routes or frequently changing environments. The installation of transponders also requires physical intervention in the floor.

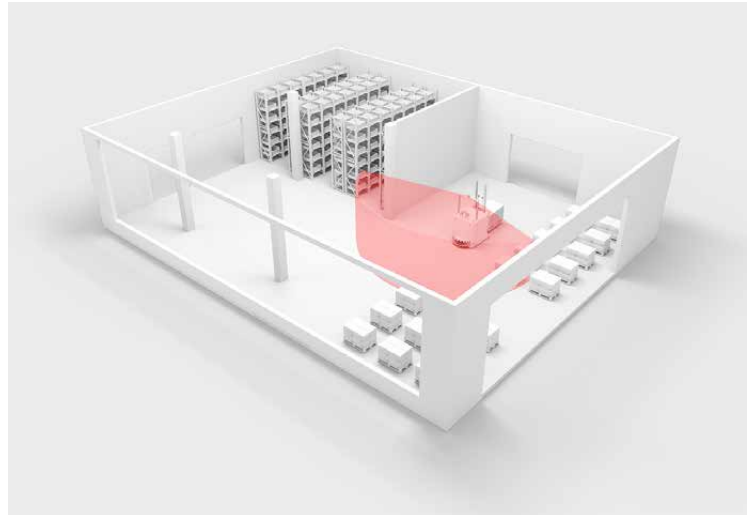


Main advantage of grid navigation:
recommended for clear lanes.

Deployable sensor system:
2D-code reader, such as the DCR 200i from Leuze. Installed on the AGV, the sensor reads the codes when driving over them. The advantages are the extremely compact design and the large operating range of 40 – 360 mm.

Flexible driving

In the case of **camera-based navigation** or vision guidance, cameras detect markings or patterns in the environment. The navigation software uses this data to determine the position and navigate the AGV. The main advantage is the high degree of flexibility when paths change frequently. However, camera-based systems often work only to a limited extent in low light or with weak contrasts. In addition, their range is limited; objects at a greater distance cannot always be detected accurately. Compared to other navigation methods, the implementation of camera-based systems into the overall system can be more complex. The acquisition costs are also often higher, as investments must be made in high-quality cameras and image processing technology.



Main advantage of camera-based navigation:
flexible for frequently changing paths.

Applicable sensor technology:
TOF cameras



Matthias Göhner,
Global Industry Manager
Intralogistics at Leuze

“The navigation technology for AGVs, including the sensor system, must be compatible with our customers’ intralogistics.

Only then can material transport be designed for maximum efficiency. Leuze is at your side to help you choose the optimal solution.“

“Sensors that are tailored to the application ensure that our customers’ production and packaging processes are efficient.”



Packaging processes must become more and more flexible, efficient and intelligent. How can a sensor manufacturer support its customers in this?

High availability and cost-effectiveness of packaging systems are among the biggest challenges for our customers. There are many ways in which we can support manufacturers and operators of packaging machines. On the one hand, with a wide range of sensors that are perfectly matched to the respective application in the packaging process. On the other hand, with very individual advice: Our field service colleagues are on site with our customers worldwide and work with them to analyze existing processes. In this close cooperation, innovative automation solutions are actually created on a daily basis. This helps our customers to make their packaging processes and machine operations even more efficient.

What challenges do consumer goods manufacturers face? What trends do you see in this area?

What food, beverage and pharmaceutical manufacturers have in common is that they need to produce quickly, safely and economically. Downtimes, for example during format changes, should be as short as possible. If sensors with IO-Link interfaces are used in the systems, downtime can be significantly reduced by means of recipe management in the sensor or in the controller. If process data is collected in real time via sensors, systems can be proactively maintained in line with Industry 4.0 (predictive maintenance).

What special market requirements do you see for packaging machine manufacturers?

A major challenge for internationally operating machine builders in the food industry is that the requirements for packaging machines differ from country to country. In Europe, for example, high-performance systems are required for the most part, which minimize downtime during format changes with the help of the IO-Link interface, for example. In Asia, on the other hand, there is often demand for more cost-effective packaging machines with simpler sensor technology. For this reason, we have been offering sensor series with different performance data for years; however, the mounting concept and the electrical connection are always identical. For our customers, this has the advantage that different machine configurations can be implemented quickly, easily and flexibly with one system design.

How can sensor technology specifically contribute to more efficient packaging processes?

That depends on the individual application ... We always look at the complete packaging process. As a matter of principle, we develop new sensor technology in such a way that it either provides our customers with technological added value compared to the previous version and/or the same results can be achieved even more economically. An example of the first case is the GSX 14E fork sensor. It combines the two operating principles of ultrasound and light in a single housing and can therefore detect all types of labels. For our customers, this means that for an application for which two sensors were previously required (an optical and an ultrasonic sensor), only one label fork has to be installed, both mechanically and electrically. During operation, the adjustment of just one sensor can also be carried out significantly faster and more reliably.

Do you have examples of a more economical solution?

Here I am thinking of our compact standard sensors in the 5B series for presence checks in packaging processes. The sensors can be used flexibly and can be quickly and easily mounted, aligned and adjusted. The advantage is particularly noticeable in large

plants when many sensors are in use. Another example is our new simple vision sensors. The IVS 108 vision sensors, for example, detect whether labels have been correctly applied after the labeling process. The sensors are less expensive than other camera systems and do not require any complex software. They are easily configured using a teach button located directly on the sensor.

You mentioned working closely with customers. What does that look like in practice?

Proximity to the customer is very important to us. Our field service employees test new solutions on-site at the customer's location or quickly and easily provide samples. We also offer a free 24-hour hotline that supports customers worldwide with all technical questions related to sensor systems. This way, our customers quickly find the optimal solution. That's efficient, too.

Thank you for the interview, Andreas Eberle.

Andreas Eberle,
Corporate Industry Manager Packaging
at Leuze



A true distance miracle

Small housing, long range: Thanks to TOF technology, our new compact ODT3CL1-2M photoelectric proximity switch has an operating range of up to two meters. The 2-in-1 sensor detects the presence of objects and simultaneously transmits measured values.



With the new ODT3CL1-2M laser light scanner, we are expanding the range of our 3C series distance sensors. The switching and measuring sensor with background suppression works with an operating range of up to two meters thanks to innovative time-of-flight technology (TOF). This makes it suitable for all applications in intralogistics where long distances have to be covered: for example, in driverless transport vehicles for monitoring the position of goods, for controlling robotic grippers or for quality control. Reliable use is always guaranteed, even under harsh conditions. This is because the sensor meets the high requirements of the IP69K protection rating.

Practical 2-in-1 solution

As a 2-in-1 solution, the ODT3CL1-2M reduces the effort for users in terms of procurement, installation, commissioning and operation. With its two independent switching points, it can perform both detection and measurement tasks. This allows system operators to solve both requirements with just one sensor. This is an advantage, for example, when using shuttles: They can optimally adjust and vary their speed via the independent switching points. This allows goods to be transported quickly to their destination.

Everything at a glance via IO-Link

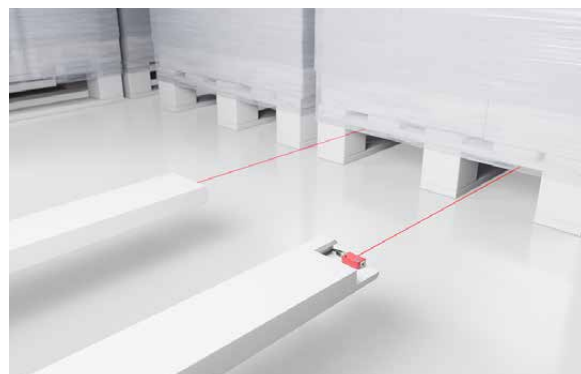
Measured values and process data from the sensor can be transmitted to the machine control system via IO-Link. This makes it easy for users to utilize the extensive diagnostic data from the light scanner, such as temperature data, information on signal quality, and warnings. Device replacement is also convenient: The IO-Link can be used to transfer the presetting to the new device without any loss and without having to reattach the sensor.

Fits in every gap

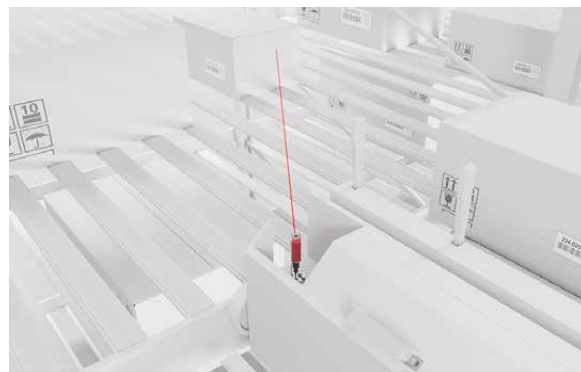
Thanks to its compact design (11.4 x 34.2 x 18.3 millimeters; W x H x L), our new laser light scanner can also be used in tight spaces. For example, it can be used in the gripper of a robot arm, on shuttles or on storage and retrieval units. The small, highly visible light spot allows for quick alignment during commissioning. The scanning range can be set numerically via IO-Link. Another advantage: its integrated object test. This allows the function reserve to be checked quickly.

3C series: for every range

With the 3C series, we also provide the right sensor solution for distances of less than two meters. Our ODT3C photoelectric proximity switch is ideal for ranges of up to 150 millimeters – for example, for packaging processes.



Our ODT3CL1-2M optical sensors, for example, monitor the correct pick-up and transfer of pallets on automated guided vehicles.



The light scanners are ideally suited for checking the occupancy of compartments with shuttles. They detect whether a space to be occupied is free.



Our ODT3CL1-2M laser light scanners can not only detect the presence of the component but also defined reference points on a component, thus controlling quality. The sensors also work reliably with different surface finishes.

Easy switching at a distance

The new Leuze inductive sensors of the IS 200 series offer scanning ranges up to three times greater than those of standard inductive sensors.



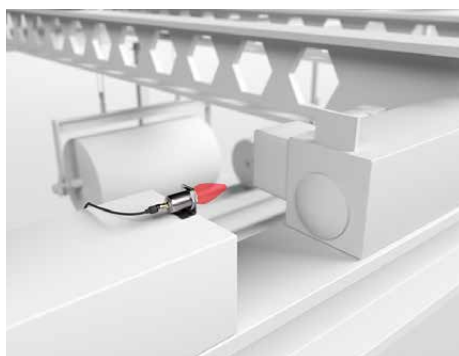
Inductive sensors are used when metal objects are to be detected. These proximity sensors perform contact-free detection at short distances. If the object to be detected is too far away, however, inductive sensors reach their limits. The Sensor People from Leuze solve this problem with a new, more cost-effective solution than before: The inductive Leuze sensors with the designation IS 200MM.2 enable switching distances of up to 40 millimeters in compact, cylindrical housings. This makes them suitable for applications with limited space, larger distances or for machine concepts with larger tolerances. At the same time, imprecisely placed metallic objects are also detected and the risk of collisions during operation is minimized.

Flexible in use

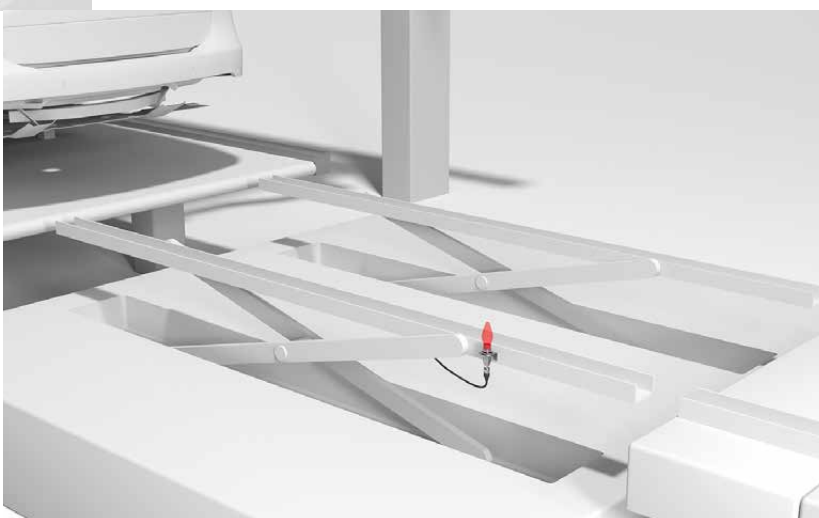
The sensors of the IS 200 series are available in cylindrical M12, M18 and M30 housings made of nickel-plated brass. Leuze offers each sensor type in two mounting variants, for quasi-flush and for non-flush installation. With the sensors, users benefit from reliable detection: The devices detect both moving machine components and tools, incoming materials or end products made of steel, aluminum, copper alloy or stainless steel. The high switching distance makes it possible to use only one compact sensor model for multiple scanning distances. This standardization also reduces warehousing costs. It also contributes to a cost-efficient system design.

Robust construction

The devices of the IS 200 series fulfill the requirements of protection rating IP 67. They impress with a high level of durability: Thanks to their robust construction, they can be very well installed in harsh environments with dirt or vibrations. In addition, the devices function in a large temperature range from -25°C to +70°C. This also contributes to a versatile range of applications.



The sensors of the IS 200 series can be flexibly used for various applications – such as for detecting the end position of an industrial crane system. The greater switching distance is even better at preventing possible collisions than standard inductive sensors.



Leuze IS 200 series sensors are also ideal for detecting the position of a conveyor system, for example in the automotive industry. The small design, large switching distance and flexible mounting options contribute to this.

Clean solution

New stainless steel sensors from Leuze: 33C series in hygienic design and 35C series in robust wash-down design. Thanks to the Power PinPoint LED, the sensors are easy to put into operation and align.



The Sensor People are launching two new series with sensors in stainless steel housings: 33C series in hygienic design and 35C series in robust wash-down design. They are suitable for hygiene-sensitive production and packaging processes.



Stringent requirements apply to sensor systems used in hygiene-sensitive production and packaging processes. These systems must be durable, reliable and approved for direct contact with food. With two new sensor series from Leuze in stainless steel housings, plant operators are on the safe side: Thanks to smooth housing contours without mounting holes, the 33C series is particularly suitable for applications in the food, beverage, or pharmaceutical industry – even in plant areas with unpackaged products. The 35C series is designed to be robust. It is ideal for applications with high mechanical loads and intensive cleaning processes. The 35C series sensors can also be used in the food industry. They are also suitable for the automotive industry or toolmaking.

Solutions for packaging processes

Both series include photoelectric proximity sensors, through-beam and reflection light barriers. The 33C and 35C series also include special solutions for packaging processes: These include, among others, retro-reflective photoelectric sensors for glass and PET detection, scanners with background suppression for detecting small objects, as well as dynamic reference scanners and throughbeam photoelectric sensors for film. In the “small” housing size, the new 33C and 35C series supplement the stainless steel miniature sensors of the 53C and 55C series.

With Power PinPoint LED, quickly operational

With the new 33C and 35C series, Leuze is offering sensors with Power PinPoint LED for the first time. This light technology makes it possible to align the sensors particularly quickly and easily and to put them into operation. This is achieved thanks to a bright, round and homogeneous light spot. It precisely reflects the response behavior of the sensor. The size, shape, and homogeneity of the light spot remain constant throughout the entire operating range. As an alternative to the Power PinPoint LED, devices with laser or infrared light sources can also be used.

Absolutely sealed

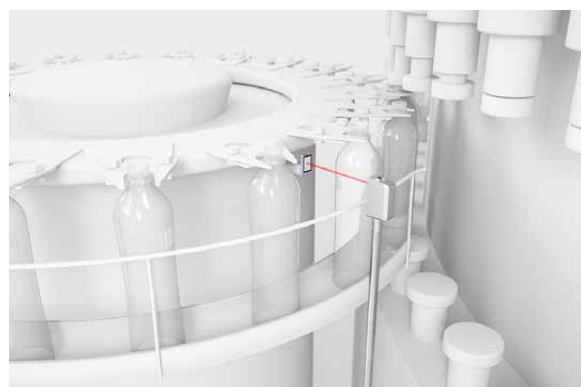
Sensors with plastic housings often have to be protected in harsh environments with specially manufactured and structurally complex stainless steel housings. Only then can they withstand the high hygiene standards and cleaning with high-pressure cleaners. This is not necessary with the 33C and 35C series stainless steel sensors. This reduces the complexity of the system, lowers the installation effort and thus saves money. Protection ratings such as IP67, IP68 and IP69K, as well as certifications in accordance with ECOLAB, CleanProof+ and Diversey, confirm that the devices also work reliably in wet areas and during intensive cleaning processes.

Smart communication

Another advantage: the two series are equipped with IO-Link interface. This enables simple and fast configuration. The interface also provides plant operators with diagnostic data, enabling them to plan predictive maintenance.



The requirements for sensors installed above open foodstuffs are very high. Only components that are approved for food contact may be used. With its stainless steel housing, the DRT35C dynamic reference scanner of the 35C series is the optimal choice for this. An additional housing for the sensor system is not necessary.



The PRK33C.PPTT3 retro-reflective photoelectric sensor of series 33C is suitable for detecting transparent bottles in an aseptic filling application. The hygienic design with an especially smooth housing without mounting holes prevents the formation of deposits. In addition, the sensor is mounted in a gas-tight manner via a mounting spigot.

Methods for risk estimation



Link Podcast

The European Machinery Directive and the Machinery Ordinance replacing it require a risk analysis for every machine before it is placed on the market or after it has been modified. Risk estimation is a significant component of the risk analysis. In addition to the legal principles, various procedures for risk estimation are presented below and their characteristics explained.



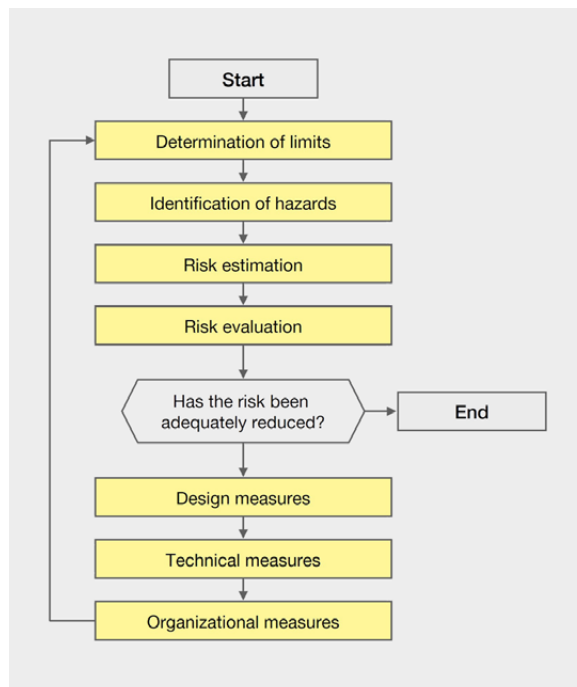
Rolf Brunner
Senior Safety Expert
at Leuze

“Risk estimation is an important part of the risk analysis. Leuze’s specialists support system manufacturers and operators in the risk analysis and the entire CE-marking process. For risk estimation, they use the HARMONY method developed by Leuze, with which the risk can be determined efficiently and in detail.”

Legal basis

According to the EU Machinery Directive 2006/42/EC and the Machinery Ordinance EU 2023/1230, which will replace it in 2027, machines must not pose any danger, even after a conversion. As proof, a risk analysis is carried out as part of the CE conformity assessment. The CE mark may only be removed from the machine if it is no longer dangerous.

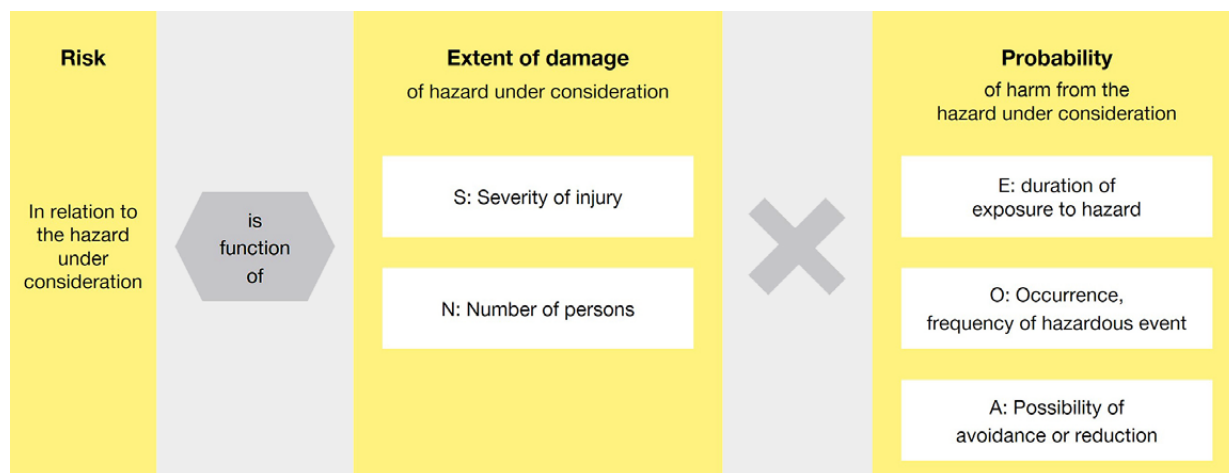
The Machinery Directive describes the risk analysis process in very general terms. A more precise description can be found in the ISO 12100 standard – risk assessment and risk minimization. It defines an iterative process in which hazards are identified, assessed and evaluated. Unacceptable hazards must be minimized. The procedure for reducing hazards is divided into three stages: constructive, technical and organizational measures. The sequence of the stages must be adhered to.



Parameters of risk assessment.

How do you assess whether a hazard is unacceptably high and poses a risk?

According to the Machinery Directive, two parameters must be considered when assessing the risk of a hazard: the extent of the damage and the probability of damage. These two parameters can be further subdivided into further parameters, depending on the method used for risk assessment.



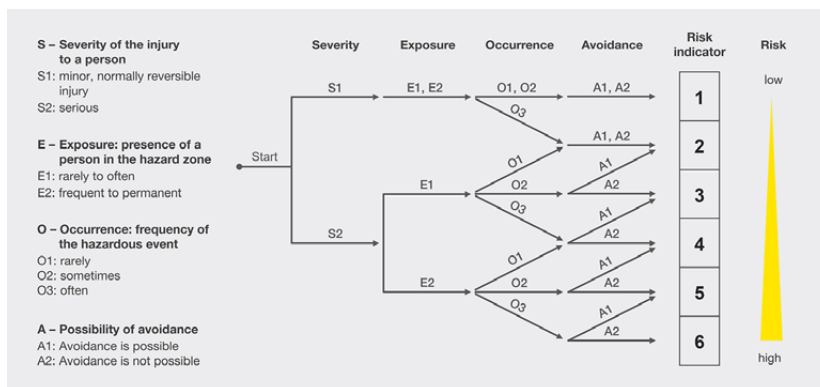
Procedure for risk assessment

Risk assessment quantifies the risk and represents it as a numerical value using a risk index.

There are no legal or normative requirements for the procedure. Sources for procedures can be informative annexes in standards, technical reports from standardization organizations or other publications.

In general, the methods for risk assessment can be divided into three classes:

Graphical methods determine the risk using a graph. Each parameter is represented by a node, and the branches define the values of the parameter. The values are described in text form and each node usually has only two branches, otherwise the graph becomes confusing. The risk is usually only roughly classified because of the limited selection options, but the graph is easy to understand and follow.



Tabular methods have more than two values per parameter, which are also described in text form. This means that there are more selection options per parameter than with graphical methods. Nevertheless, the classification is also rough because the number of parameters is limited in order to keep the table clear.

Category of probability	Severity of the damage			
	1 – High	2 – Middle	3 – Low	4 – negligible
A – Very likely	1A	2A	3A	4A
B – Likely	1B	2B	3B	4B
C – Occasionally	1C	2C	3C	4C
D – Seldom	1D	2D	3D	4D
E – Unlikely	1E	2E	3E	4E
F – Very unlikely	1F	2F	3F	4F

Numerical methods determine the risk index by multiplying the parameter values. Many parameters with many different values are possible. Due to the many parameters and options, numerical methods are not as simple and clear as graphical or tabular methods. On the other hand, they determine the risk more precisely. This makes it easier to compare risks and identify the greatest risk. This can be important, for example, for prioritizing the steps for revising a system.

PE Probability of Exposure			FE Frequency of Exposure	
0	Impossible	cannot happen	0.1	Infrequently
1	Unlikely	tough conceivable	0.2	Annually
2	Possible	but unusual	1	Monthly
5	Even Chance	could happen	1.5	Weekly
8	Probable	not suprised	2.5	Daily
10	Likely	to be expected	4	Hourly
15	Certain	no doubt	5	Constantly

MPH Maximum Probable Harm		NP Number of Persons at Risk	
0.1	Scratch or bruise	1	1 – 2 persons
0.5	Laceration or mild ill health effect	2	3 – 7 persons
1	Break of a minor bone or minor illness (temporarily)	4	8 – 15 persons
2	Break of a major bone or minor illness (permanent)	8	16 – 50 persons
4	Loss of a limb, eye or serious illnes (temporarily)	12	> 50 persons
8	Loss of a limbs, eye or serious illnes (permanent)		
15	Fatality		

$$\text{HRN} = \text{PE} \times \text{FE} \times \text{MPH} \times \text{NP}$$

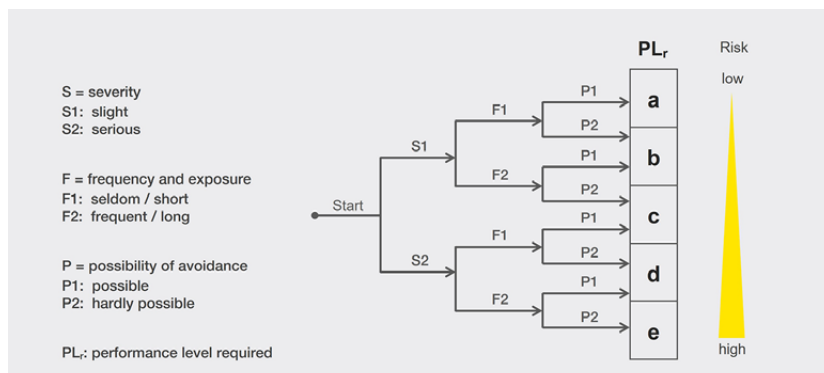
RISK	Negligible	Very low	Low	Substantial	High	Very high	Extreme	Unaccep- table
HRN	0 – 1	1 – 5	5 – 10	10 – 50	50 – 100	100 – 500	500 – 1000	> 1000

Risk reduction through technical measures

Unacceptable hazards must be reduced by appropriate measures. If constructive measures are not possible, technical measures are used.

These are often implemented with safety-related control systems and consist of safe components, i.e. safe sensors, a safe control and safe actuators. The components are available with different safety levels. It defines the robustness in the face of dangerous failures of the component and must be greater the greater the hazard. The necessary safety level is therefore defined by a risk assessment.

Standards for functional safety contain procedures for risk assessment in informative annexes to determine the necessary safety level. The ISO 13849-1 standard refers to the safety level as the Performance Level, PL_r, while the IEC 62061 standard describes the safety level with the Safety Integrity Level, SILCL.



		Class of probability of harm (K)				
		3 to 4	5 to 7	8 to 10	11 to 13	14 to 15
Severity (S)	4	SIL 2	SIL 2	SIL 2	SIL 3	SIL 3
	3	-	(AM)	SIL 1	SIL 2	SIL 3
	2	-	-	(AM)	SIL 1	SIL 2
	1	-	-	-	(AM)	SIL 1

Risk assessment with HARMONY

The process described shows that the risk estimation is carried out twice with different methods and different objectives: first with method 1 for estimating the initial or final risk of a hazard and additionally with method 2 for determining the safety level of the control system.

This approach appears unnecessarily complicated. It would be simpler if a single method could define a risk rating and, at the same time, a safety level for technical measures. For this reason, Leuze has created the HARMONY method, which fulfills this requirement. The term HARMONY is short for HAZard Rating for Machinery and prOcess iNdustry.

HARMONY is based on the numerical method of Hazard Rating Numbers (HRN) and determines a risk rating R by multiplying parameter values. A Performance Level PL_r in accordance with ISO 13849-1

and a Safety Integrity Level SILCL in accordance with IEC 62061 are directly assigned to the value ranges of the risk rating.

Risk R = S x E x O x A			
Degree of risk	Assessment	Corresponds to ISO 13849-1	Corresponds to IEC 62061
< 11	Negligible	-	-
11 - 60	Small	PL b	SIL 1
60 - 400	Increased	PL c	SIL 1
400 - 1000	High	PL d	SIL 2
> 1000	Extreme	PL e	SIL 3

S (Severity): Extent of damage, severity of possible injury
 E (Exposure): Duration of exposure to hazard
 O (Occurrence): Probability of hazard occurring
 A (Avoidance): Possibility of avoiding a hazard or its effect

**“We fill up
with Leuze”**



Together with our managers, we have intensively examined the effects of hybrid working. In doing so, we have developed and found the best possible solution for the Sensor People for the “new normal” at Leuze.



Isabel Bob,
Team lead Development &
Vocational Training at Leuze

Of course, mobile working and the flexibility that goes with it are now indispensable – and often it is also the most efficient way, replacing travel distances, saving time and travel costs. Nevertheless, there are many topics and content that we want to continue to discuss in person, brainstorming together and looking our counterparts directly in the eye. Nothing beats human contact and appreciative, cooperative interaction! As a family-owned company, this is very important to us and one of our strengths. Our sensor people culture makes us special and successful!

To maintain and further promote this sense of belonging, we have come up with so-called “culture filling stations”. These various formats are always about “filling up” on Leuze corporate culture. In line with the motto “those who work hard can also party hard”, we enjoy spending time together at parties such as our annual summer party. And we also meet outside of work within our teams – whether it’s for a joint sports activity, a short hike or an after-work drink.



Sensor People meet Management



After-work drinks



Leuze cycling group



Sensor People at the annual running event

Sensor People celebrate summer party



**Those who
work hard
can also
party hard**



What characterizes us, the Sensor People?



For many years, the employees at Leuze have referred to themselves as Sensor People. We talk to Boris Wörter, Senior Vice President of HR at Leuze, about why this is so.

Mr. Wörter, why do the employees at Leuze actually call themselves Sensor People and what do you understand by it?

The term “Sensor People” is more than just a name or slogan. We work in the field of sensor technology and identify strongly with our work and with Leuze as a family-owned company. For us, Sensor People is a very important part of our corporate culture and our self-image.

What would you say: What specifically makes the Sensor People special or sets them apart?

On the one hand, it is certainly our curiosity, passion and deep enthusiasm for sensor technology and technological innovations. On the other hand, it is our

absolute customer orientation. Our customers’ needs are our top priority. We work closely with our customers to develop customized solutions for them in a wide range of industries and applications that meet their specific requirements and make them even more efficient and sustainably successful.

“Sensor People” is a strong word and to me it sounds like team spirit and a sense of belonging ...

That’s exactly how it is! Mutual respect and collegial cohesion are important and special to us. We work together in interdisciplinary teams, each of us contributing our knowledge and sharing it with our colleagues to achieve the best results together. And each individual also takes responsibility for their actions, their decisions and for the quality of our work and the safety of our products.

To put it in a nutshell: Sensor People are much more than just employees. They are part of a community characterized by a high level of technical expertise, commitment and a strong customer focus ...

Exactly. There’s nothing more to add :-)

Thank you for the conversation, Mr. Words.





School's out – and then what?

Interview



Carina Maier,
head of training at Leuze

At the beginning of September 2024, over 30 new apprentices and dual-study students started their careers at Leuze. More than ever before. We wish everyone an exciting and successful training period.

Ms. Maier, you are still very young yourself and already responsible for the apprentices and dual-study students at Leuze ...

Well, I'm not that young anymore :-). But it certainly is an advantage to be close to the next generation and to know their needs and expectations well.

Is Gen Z fundamentally different from previous generations?

Let's put it this way: It is extremely important to young people today to work independently at an early stage, to be involved, to take on responsibility and to be able to develop further.

To what extent do you align your training with this?

We try to enable our young colleagues to develop holistically into professional specialists. In other words, it's not just about imparting technical skills – although that is important too, of course. But at least as important to us are the methodological and social skills and the team spirit of the sensor people.

How do you learn these skills in practice?

We have created a "Learning Journey" for our apprentices and dual-study students. The Learning Journey covers four areas: professional expertise, methodological expertise, social expertise and team spirit. In each year of training, the expertise is taught using different methods. The training is designed according to the 70-20-10 model.

What does that mean?

Let's start with the ten percent: This is where we provide off-the-job training, i.e. outside of the daily work routine, by means of further training, for example, in the form of lectures on topics such as "How do I learn properly?" 20 percent of the training takes place near the job, i.e. in the course of day-to-day work, through dialog with colleagues and managers, for example by keeping a learning diary. And then there is the on-the-job training. This makes up about 70 percent. This takes place in the course of everyday work and is achieved through independent study and practical experience. One example is that our apprentices are responsible for supervising student interns in production.

You offer apprenticeships in a range of different occupations – does the Learning Journey differ greatly depending on the occupation, or is it the same for all?

When it comes to learning the technical skills, there are naturally differences depending on the occupation or course of study. When it comes to methodological and social skills, not really... The goal is always to prepare our apprentices as well as possible for their professional lives and the working world of the future.

Can social skills really be learned? Or rather: How?

Of course they can be learned! Social skills are not a single skill. They include a variety of "subskills". For example, communication skills and resilience, but also skills such as learning ability, self-reflection, conflict resolution and assertiveness.

That's quite a lot ... You certainly can't learn them all at once ...

No, but you don't have to either. We have developed a milestone concept for this. Internally, we also speak of the different stations of a "circuit board". All stations must be passed through in the three years of training. In each year of training, the focus is on different social skills, which are developed using appropriate methods.

**What methods are these?
Can you give me examples?**

The methods in turn depend on the social skill to be developed. For example, there is a workshop in the first year of training to develop resilience. This workshop defines what eustress is and where distress begins. They are given recommendations for action on time management and on how to recharge their batteries in between. To teach self-reflection and learning skills, our second-year apprentices keep a so-called learning diary. In the third year, apprentices learn conflict (resolution) skills in a workshop with concrete practical examples and peer counseling.

That sounds very well thought out!

And it is! We have put a lot of energy into this together with our specialist trainers in the respective areas and are convinced that this is how we develop our apprentices into true professionals!



How many apprentices do you currently have?

Including our dual students, we currently have 32 apprentices of different nationalities and ages. Our youngest trainee is 16. The oldest is 51! It's never too late for your dream job :-). We promote lifelong learning and learning from and with each other across different generations!

Team spirit is very important at Leuze in any case.

That's right! For example, we have a regulars' table for trainees and students. And, of course, we also do things together outside of the workplace, whether it's bowling, hiking, or escape rooms – the focus is always on having fun together!

Thank you very much for the interesting conversation, Ms. Maier. It almost makes you wish you were an apprentice again :-)

Our apprenticeships (m/f/d)

- Electronics technician for devices and systems
- Mechatronics technician
- Industrial management assistant with additional qualification "International Business Management with foreign languages"
- Warehouse logistics specialist
- IT specialist for system integration

Our dual degree programs (m/f/d)

Bachelor of Engineering

- Electrical Engineering (Automation and Electronics)
- Mechatronics
- Embedded Systems – General Engineering
- Mechanical Engineering (Construction and Development)
- General Business Engineering

Bachelor of Arts

- Business Administration – Industry
- Business Administration – Service Management
Focus: Media, Sales and Communication (MVK)

Bachelor of Science

- Business Informatics – International Management for Business and Information Technology (IMBIT)



Training and dual studies at Leuze
www.leuze.com/karriere

Sponsored by
Leuze



Linn Kazmaier is 18 years young and comes from Lenningen. She learned to ski as a child at the Römerstein Ski Club. Today she is a successful winter athlete. She has already won numerous gold and silver medals in the disciplines of para-cross-country skiing and para-biathlon at international competitions and the Olympics. Leuze is sponsoring the ambitious athlete.



Linn Kazmaier



Image: Kelly Bergman

On a walk and talk with Linn Kazmaier

Today, I'm looking forward to meeting Linn Kazmaier in person for a walk and talk together at Teck Castle.

Linn, you originally come from Overlining, just around the corner. Our chosen destination today, the Teck, is your local mountain. You now attend a sports boarding school in Freiburg and in 2022 you were honored as an elite student for your outstanding academic and athletic achievements. How do you manage to balance it all with your heavy training schedule?

For three years I have been going to an elite sports school. This means that my school has a cooperation with the Olympic Training Center (OSP) and there is a coordination teacher who is responsible for us athletes. We can turn to him with questions. In addition, I am exempt from certain lessons so that I can train during this time. In addition, the OSP offers various services, such as physiotherapy or a sports psychologist and a career advisor, who also help us.

You have already achieved incredible success at a young age: At just 15 years old, you were the second youngest participant in the 2022 Paralympic Winter Games in China. You came home with five medals, including one gold. In the 2022/2023 season, you stood at the top of the podium in both the para-biathlon and cross-country skiing in the overall World Cup. At the 2023 World Championships in Östersund,

Sweden, and at the 2024 Para-Biathlon World Championships in Canada, you and your guide Florian Baumann continued to do just as well.

Congratulations on these impressive achievements and successes! Talent or hard work?

Both to some extent. Of course, to be at the top, you also need a bit of talent. But I would say that the most important part of success is training and discipline.



Linn Kazmaier
with her guide Florian Baumann

Image: Kelly Bergman



**You have been born with a visual impairment ...
You don't shoot with a normal rifle, do you?**

I shoot with a laser rifle. I wear headphones. A sound tells me how well I am hitting the target. The higher the tone, the closer I am to the center of the target. When I hit the target, there is a high tone, a low tone and then a high tone again. However, if I have missed a shot, I am notified of this by a continuous low tone.

Where do you get this extraordinarily admirable discipline and motivation? What gives you strength?

I draw the discipline mainly from within. I have a very strong will that drives me in training and in competition. Besides, I am very perfectionist and want to do things as well as possible. I am fascinated by the search for the last screws that I can turn, the last things I can change to become even faster. This fascination, my perfectionism and also the joy of performing keep driving me forward and give me strength. Positive experiences and, of course, a sense of achievement also give me strength and further motivation and show me that I am on the right track. My biggest motivation, however, is the fun of the sport itself. For me, sport is freedom, an outlet when I'm angry or sad, a way to clear my mind. I also love being in nature, moving and also seeing and feeling the beautiful snowy winter landscape ...

You have an enormous workload ... Is there such a thing as free time for you at all? If so, what do you like to do – apart from sport? :-)

Unfortunately, I rarely have any free time, as I still go to school and also have a lot of appointments be-

cause of the sport. But when I do have free time, I like to read, play the guitar and sing. I also like to listen to music and podcasts that teach me something for my life. I also enjoy meeting up with friends. And I also really enjoy watching other sporting events, such as cycling and track and field in the summer and cross-country skiing, biathlon, Nordic combined and ski jumping in the winter.

You are a role model for many people with and without disabilities. I am also a huge fan of yours. What advice would you give to people with disabilities in particular?

I want to encourage these people in particular and show them that life is not over just because they have a disability. If we look for solutions, we will find them. There is a saying that goes: "Those who want to find a way will find a way, those who don't want to find a reason will find a reason." I think that saying is so true. It is always worth fighting for what you love and also going through valleys, because it is only when you have been through a valley that you appreciate the beautiful phase that comes afterwards. Life is never just easy, and it's okay to be angry, sad, resigned and frustrated. However, I want to show everyone and motivate them to keep going through these difficult phases.

How important are sponsors for you?

Sponsors like Leuze are very important to me because we don't get any prize money in our sport and the sports funding is also too low to make a living from it. In addition, I only receive a portion of the material provided; I have to pay for most of the equipment out of my own pocket. Sponsors can help me as an athlete and thus help para-sports by supporting me and promoting the sport to the public.

I am very happy that we sponsor such a disciplined, young athlete and team player like you right here in our neighborhood.



Attack!!!

Basketball is a cult sport in Kirchheim. For many years, the Bozic Estriche Knights Kirchheim have played in the 2nd German Basketball League. A full gymnasium in the city center at every home game. Great atmosphere, our own Knights supporters and cheerleaders. The stands are lit up in black and yellow – the colors of the “Kirchheim Knights”. And when the announcer’s trumpet sounds, it’s time to: “Stand up if you’re for our Knights, attack!”





Leuze is an official partner of the Bozic Estriche Knights Kirchheim basketball team in the 2nd German Basketball League.



Leuze also sponsors the youth basketball teams in the NBBL and JBBL.



Foto: Elbner-Pressfoto/Nina Sander

Interview with Demetrius Ward, Bozic Estriche Knights Kirchheim

You have been with the Bozic Estriche Knights Kirchheim since 2023 – how does it feel to be a “knight”?

The “knight” spirit is not just about playing basketball; it’s about being part of a family that works hard every day to improve, support each other and compete at a high level. The fans in Kirchheim are fantastic. They bring energy and excitement to every game. This support creates a deep connection between the players and the community. It’s a special feeling to wear the Knights jersey and know that you represent a club with a rich tradition and strong values.

You moved to Kirchheim with your family – after a year in Teckstadt, do you already feel a bit at home?

Yes, after a year in Kirchheim, we really do feel quite at home. Of course, the move was a big change, but the city and the people here made it easy for us to settle in quickly. Kirchheim is a city that offers the perfect blend of small-town charm and a vibrant community. Its location at the foot of the Swabian Alb, with the Teck as its landmark, offers beautiful nature that we enjoy exploring as a family. We quickly found our favorite places, whether for walks or just to relax in the city. The people in Kirchheim are very friendly and open, which helped us to quickly find our feet. There is a real sense of community here, and especially through basketball and club life, you feel very connected. Of course, a year is not that long, but it already feels like Kirchheim has become a home for us. We enjoy living here and are excited about everything that’s still to come.

What makes the team, the team around the team and the fans so special for you?

The team, the environment and the entire community around the Kirchheim Knights are really something special. What impresses me the most is the strong sense of community and the passion that everyone – from the players to the fans – brings to the club. The team itself is like a family. We fight for each other and support each other, both on and off the field. There is an atmosphere of respect and trust that makes it easy to feel comfortable and do your best.

We push each other to get better, but also to develop as people. The team around the team, i.e. the coaches, support staff, medical staff and organizers, are always there for us. Their professionalism and dedication create the basis for our success. And then there are the fans: The passion and energy they bring to the games is simply overwhelming. Whether in the arena or outside – the support of the fans is incredible. They are loud, they live for basketball, and that gives us players a real boost. This close connection to the fans is rare and makes playing for the Knights special.

And the sponsors?

Sponsors like Leuze are more than just supporters, they are true partners. They not only invest financially, but also with passion in the club. You can feel that they believe in the team and want to be part of this community. This creates a special bond because we know that we can count on their support, whether things are going well or we are going through difficult phases.

This year, you have some new players on board alongside long-standing players. It must be hard to “get into the groove” as a team at the beginning again ... What does team building look like for you?

Yes, definitely – when new players join, it takes a while to get back together as a team and develop a feel for each other. It’s important that we not only work well together on the field, but also function well as a group outside of games. Team building therefore plays a big role for us. It’s important to us that the chemistry is right not only on the field, but also off the field.

You are the captain of the team: What do you think are the qualities that make you perfect for this role?

What makes me perfect for this role is, above all, the combination of experience and communication skills. Experience is an important factor. I have been through many different situations in my career – victories, defeats, challenges and successes. This experience helps me to stay calm in critical moments and keep the team on track. I know what it means to take

responsibility in high-pressure situations, and I try to set an example for younger or newer players. Communication is one of my strengths. As captain, I not only have to express my own thoughts clearly, but also listen to the concerns of others. It is important that everyone on the team knows that they are heard and that we are all pulling in the same direction. I try to be a link between the players and the coaching staff to make sure everyone understands what we are trying to accomplish and how we are going about it.

What do your training sessions look like – do you train daily?

Our training schedule usually includes weight training on Monday and Wednesday mornings and basketball training in the afternoons. Tuesday and Thursday mornings are spent on shooting practice and team training in the evenings.

What are your goals for this season?

My personal goals are to play in every game this season. Making the playoffs and surviving the first round, as well as taking 40% of my shots from beyond the arc. Most important to me is to be a good teammate/brother to the other guys on the team. We help each other throughout the season and help each other take the next step in our careers.

Thank you for the nice interview and good luck for this season! It's always fun to watch and cheer for you on Saturday nights.

#82 Demetrius Ward

Player position: Small Forward
Height: 188 cm
Weight: 105 kg
Nationality: GER
Date of birth: 08/20/1990
in: Detroit, Michigan, (USA)
Ritter since: 2023



Leuze supports youth and adult handball in Owen-Lenningen

In addition to jersey sponsoring in the children and youth area, the Leuze Cup is played for at the start of the annual Owener SV Cup. For over 25 years, the handball tournament has been one of the best handball tournaments in Baden-Württemberg. The Cup starts on Fridays with a leisure tournament that offers amateur handball players the opportunity to prove their skills.





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Pokal
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LGBTQ* For better readability, the simultaneous use of the linguistic forms male, female and diverse (m/f/d) is avoided.

**We are
shaping
change.
Help us
shape it!**



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