Easy.Robot.Vision.

Smart vision and sensor solutions for robotics applications

Optical sensors and vision sensors for the most diverse sectors and applications

Automation without robots is unimaginable today throughout multiple industry sectors: Collaborative robot systems (cobots) working side by side with people are in widespread use, gaining popularity as time progresses and **VISOR®** Vision sensors from SensoPart serve as the "eyes" of these robots.

Our easy to integrate expert sensor **VISOR® Robotic** supplies the robot with all the necessary information concerning the position of parts. This data is converted into robot coordinates directly within the vision sensor, so without further complex conversion, the robot can accurately seize or process parts. Distance sensors can also be used when necessary: Our range starts with the sub-miniature sensor **FT 10-RLA** – the smallest optical distance sensor in the world – and extends to the versatile **FT 55-RLAM** with its very high accuracy, resolution, linearity and repeatability across its entire range. This guarantees the precise position of the gripper, even when parts vary shapes and/or position.

Our solutions can be used across all sectors – from the automotive industry to packaging technology.
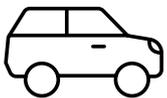
Automotive industry   Assembly & handling   Plastics technology   Electronics   Pharmaceuticals & cosmetics
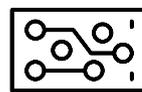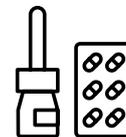
Medical technology   Food & beverages   Solar industry   Laboratory automation   Packaging technology
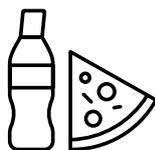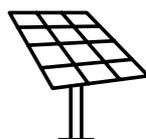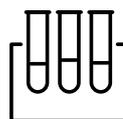
Our products effortlessly connect to robot systems from leading manufacturers, for example:

MITSUBISHI ELECTRIC

ABB

UNIVERSAL ROBOTS

KUKA

FANUC

YASKAWA

STÄUBLI

EASY.ROBOT.VISION.
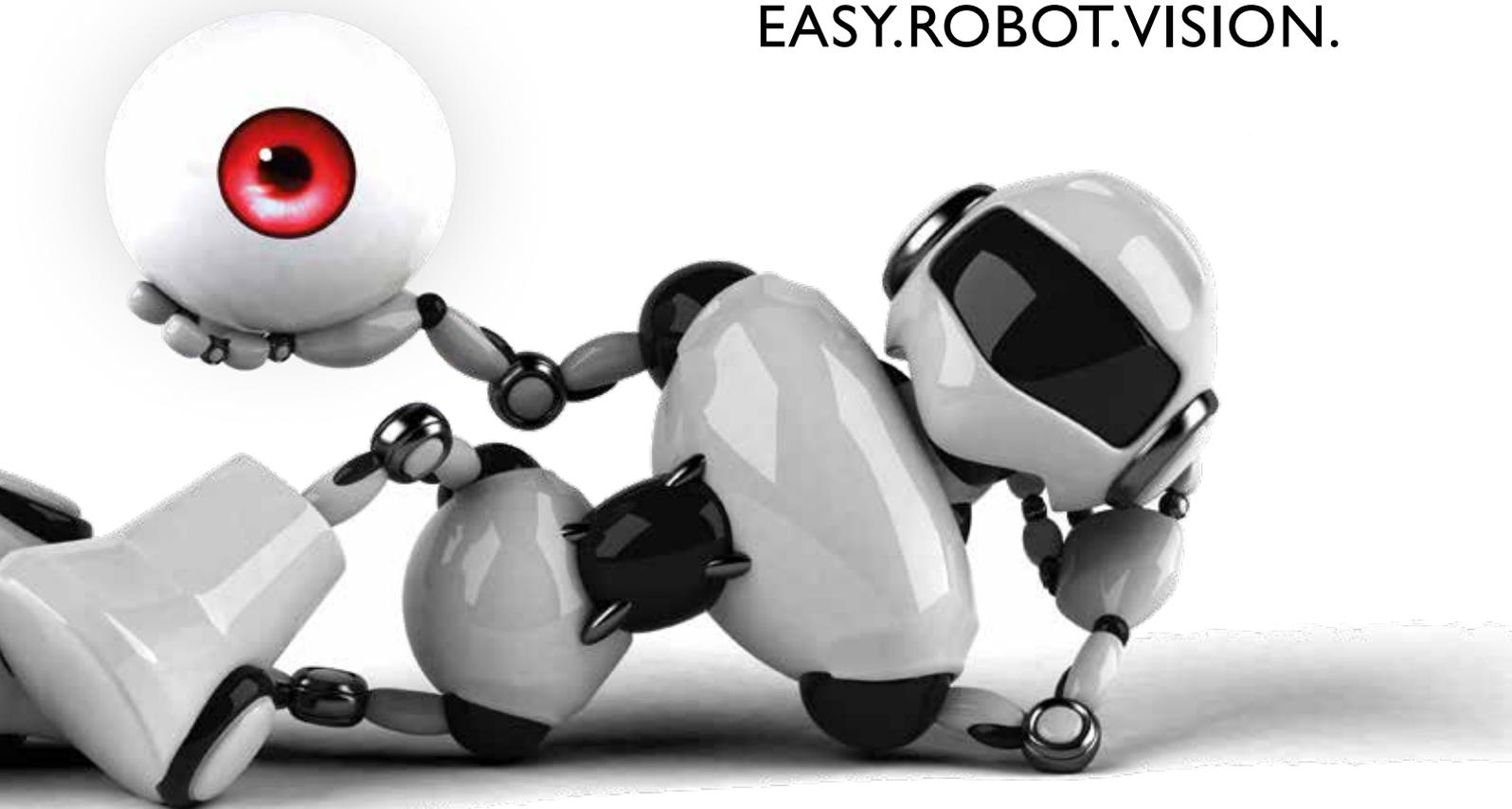
Smart solutions for the entire production process

3. Clean: Automatic dispensing of lubricant

2. Undeviating: Robot feeder system with a vibrating conveyor

1. Smooth: Material feed from a carrier (casing parts)

7. In stacks: Palletisation of packaging
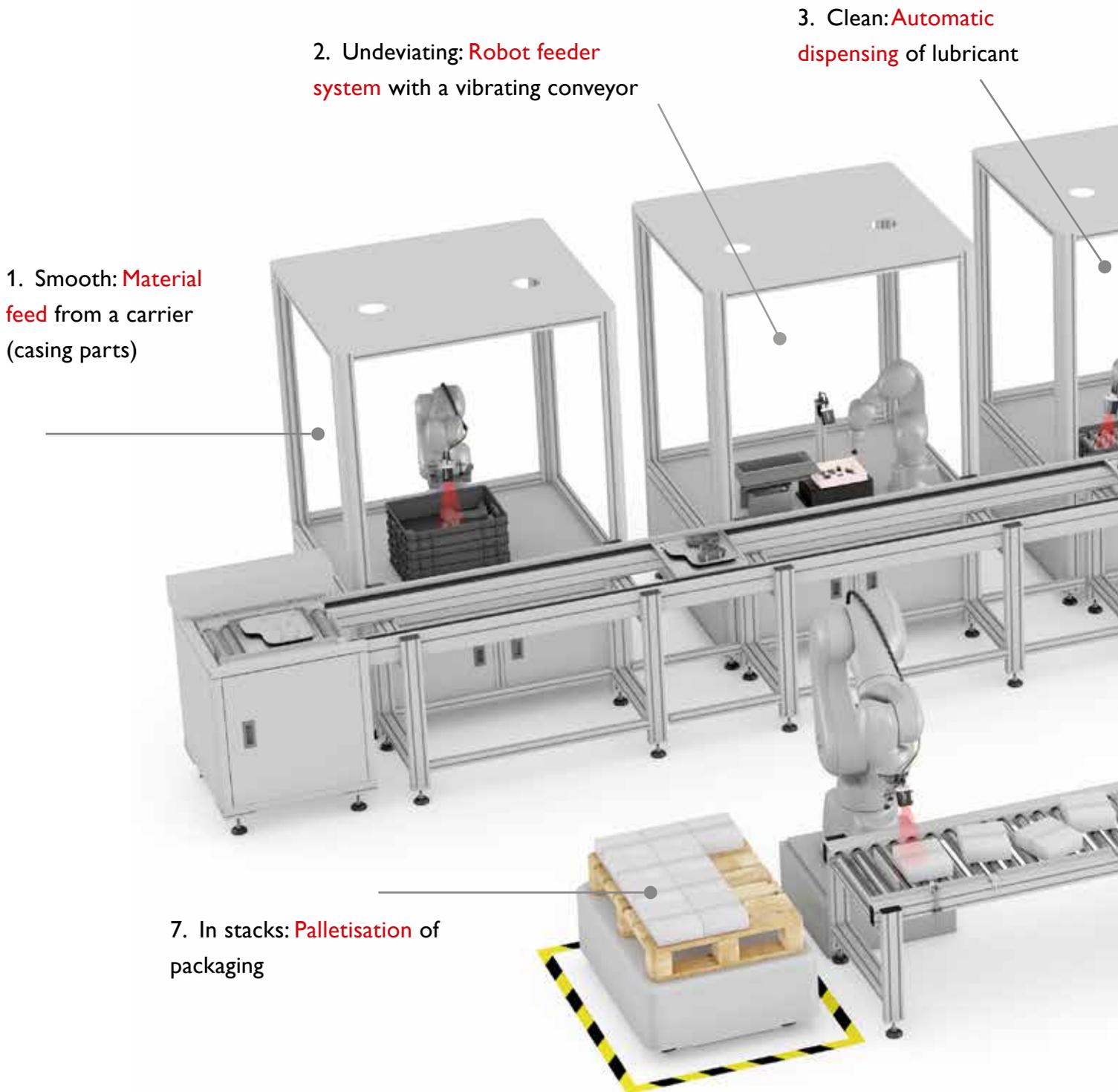
Step by step to the finished product

Collaborative robots are frequently deployed in production lines for consumer goods — as in our example with power tools. High quality and efficient processes are essential through every stage.
Optical and vision sensors from SensoPart are applied for their specific features and ease of use at every stage of your process.

4. Unerring: Placement of electronic components in casing

5. Precise: Screw assembly of components
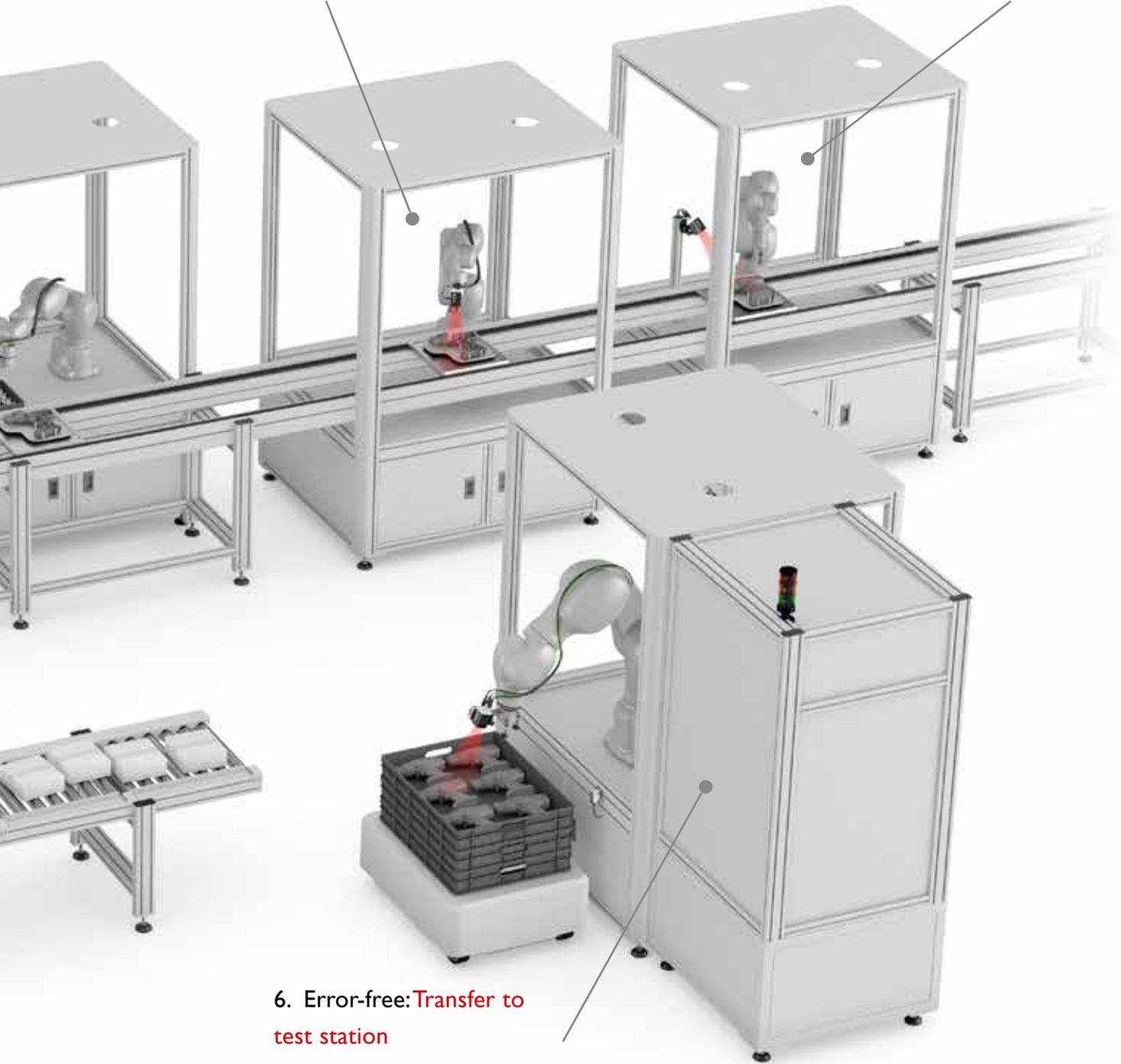
6. Error-free: Transfer to test station

1. Smooth: Material feed from a carrier (casing parts)
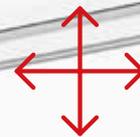
Positioning   Detection & inspection

The challenge:

In the first stages of assembly, individual components such as the casing of a cordless screwdriver, are fed into the production process. This can be challenging when you have differing orientations and several variations of each part, some of which could have delicate surfaces that must not be damaged by grippers so accurate location is a must.

Our solution:

The position of the components can be safely & reliably determined with the VISOR® Robotic vision sensor mounted directly on the robotic arm. This transmits the result simply and effortlessly directly to the robot controller.
The FT 10 BlueLight sensor, installed on the gripper, checks that a component is present. Therefore the entire process is constantly monitored preventing errors.

Your benefits:

- Considerable cost advantages due to the ability to use universal packaging / trays for all product versions compared to custom-made trays
- Flexibility and future proofing as no mechanical elements for immobilising and aligning the parts are necessary
- High precision feeding to the onwards processes
- Reduction in transport costs through higher density packing of the parts
- Easy expansion of production process
- Additional safety during gripping process as subminiature sensors require minimum space

Recommended products for this application:

VISOR® Robotic:

- Compact and lightweight housing for either robot mounted or fixed camera mounting
- Multiple easy to deploy calibration methods all tailored to your application
- 2D or 3D position data, all directly available in the robots coordinate system
- Simplified installation through 3D grip point transformation

F 10 BlueLight

- Our smallest housing background suppressed proximity sensor for use in tight spaces
- BlueLight technology for reliable detection of all surfaces and products, even at difficult angles

2. Undeviating: Robot feeder system with a vibrating conveyor

The challenge:

In addition to materials being fed in universal load carriers, high flexibility can be achieved by using a bulk storage bin with a vibrating feeder arrangement. This is particularly suited to transporting small parts, such as mechanical components either plastic or metal. In this case a large volume of individual parts is supplied as bulk material, and can be of varying shape, dimensions and batch sizes. Particularly high throughputs are essential.

Our solution:

The use of a bulk storage bin achieves the necessary flexibility in this process step. Our VISOR® Robotic vision sensor reliably identifies the components supplied and simultaneously uses the integrated gripper clearance check to ensure that the robot can seize the part safely and securely.

Your benefits:

- The simultaneous detection of multiple components in a single image enables a high throughput with maximum ease
- High feeding precision
- Easy expansion of production process
- Thanks to the integrated interfaces, data is not just determined for robot control, but also for the feeder, e.g. information on fill levels or the formation of unpickable components
- Ultra high resolution for a reliable location and differentiation of components based on the smallest characteristics

Positioning

✔ ok   ✔ ok

✔ ok   ✘ not ok

Recommended products for this application:

VISOR® Robotic:

- Wide variety of powerful but easy to use software detectors for monitoring presence, checking completeness, identifying positions, as well as for simple measurement tasks
- Precise determination of position: x/y position and orientation
- Simple calibration for measurement tasks. Conversion into mm as well as correction of lens and perspective distortion.

3. Clean: Automatic dispensing of lubricant

Positioning

Detection & inspection

The challenge:

This process requires millimetre precision so that no spreading or smearing occurs when dispensing lubricants. Lubricant must be accurately applied in sufficient quantity to guarantee proper functioning. If too much lubricant is dispensed, malfunctions will occur. If carried out manually, errors can also result from the monotony of the task, caused by changing levels in the worker's concentration.

Our solution:

Manual workstations can be easily semi-automated by using a VISOR® Robotic in combination with a cobot or industrial robot and an automated dispensing unit. The additional use of a BlueLight sensor enhances automation further, as it simply and reliably detects the presence of the load carrier. In this step, the VISOR® Robotic accurately locates components, and also allows inline inspection to check that the lubricant was successfully applied. With Industry 4.0 technology built in, it allows the saving of images and process data directly to a central location.

Your benefits:

- No smearing thanks to high repeatability, thereby guaranteeing high product quality
- Employees can be used for more value-adding work
- Fast implementation, as no special mechanical modifications are necessary

Recommended products for this application:

VISOR® Robotic:

- Compact and lightweight housing for mobile or stationary use
- Calibration methods tailored to all applications
- 2D or 3D alignment directly in robot coordinates
- Simplified installation through 3D grip point transformation

F 25 BlueLight:

- Photoelectric proximity sensor in miniature format for use in multiple applications
- BlueLight technology for reliable detection of very dark objects

4. Unerring: Placement of electronic components in casing

Positioning
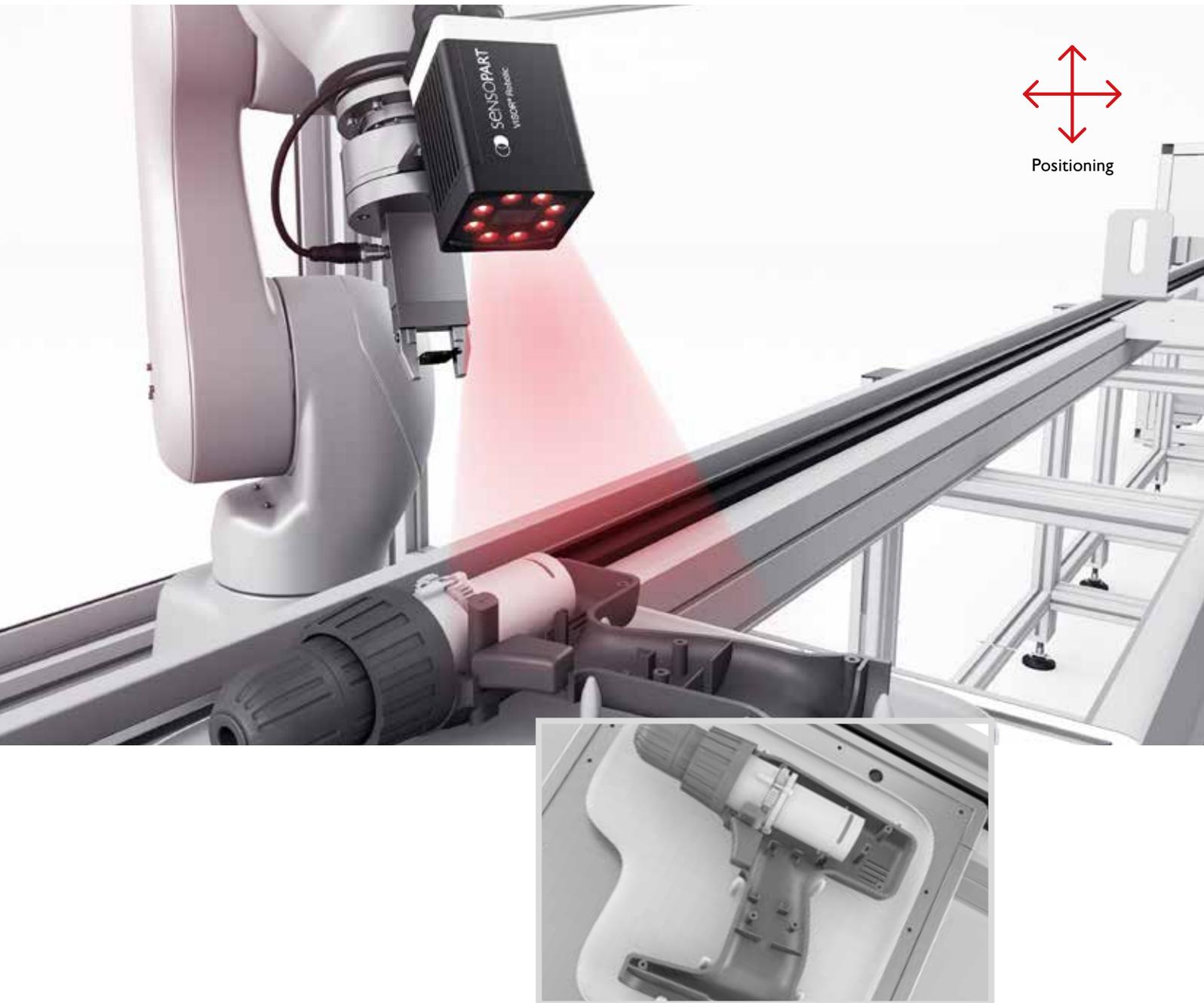
The challenge:

In electronics manufacturing, processes often require the handling of very delicate or particularly small components. When placing a control chip, as in this example, no gripper errors may occur, as damage must be avoided under all circumstances. Furthermore, the increasing volume of parts to be processed is accompanied by ever smaller batch sizes today due to the rising number of variants.

Our solution:

Specially adapted grippers are now available for picking and placing delicate components, and collaborative robots guarantee the necessary flexibility. However, it is our high-resolution vision sensor VISOR® Robotic that supplies the decisive precision guidance every time.

Your benefits

- Considerable increase in quality due to high precision in the handling of components
- Stable process despite varying positions of parts being fed
- High availability and simple maintenance through automated calibration

Recommended products for this application:

VISOR® Robotic:

- High resolution of up to 5 megapixels
- Integrated gripper clearance check for secure grasping of components
- Calibration methods that are simple to deploy and maintain

5. Precise: Screw assembly of components
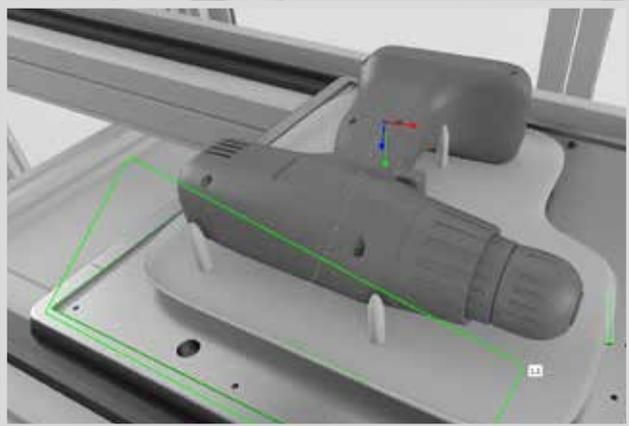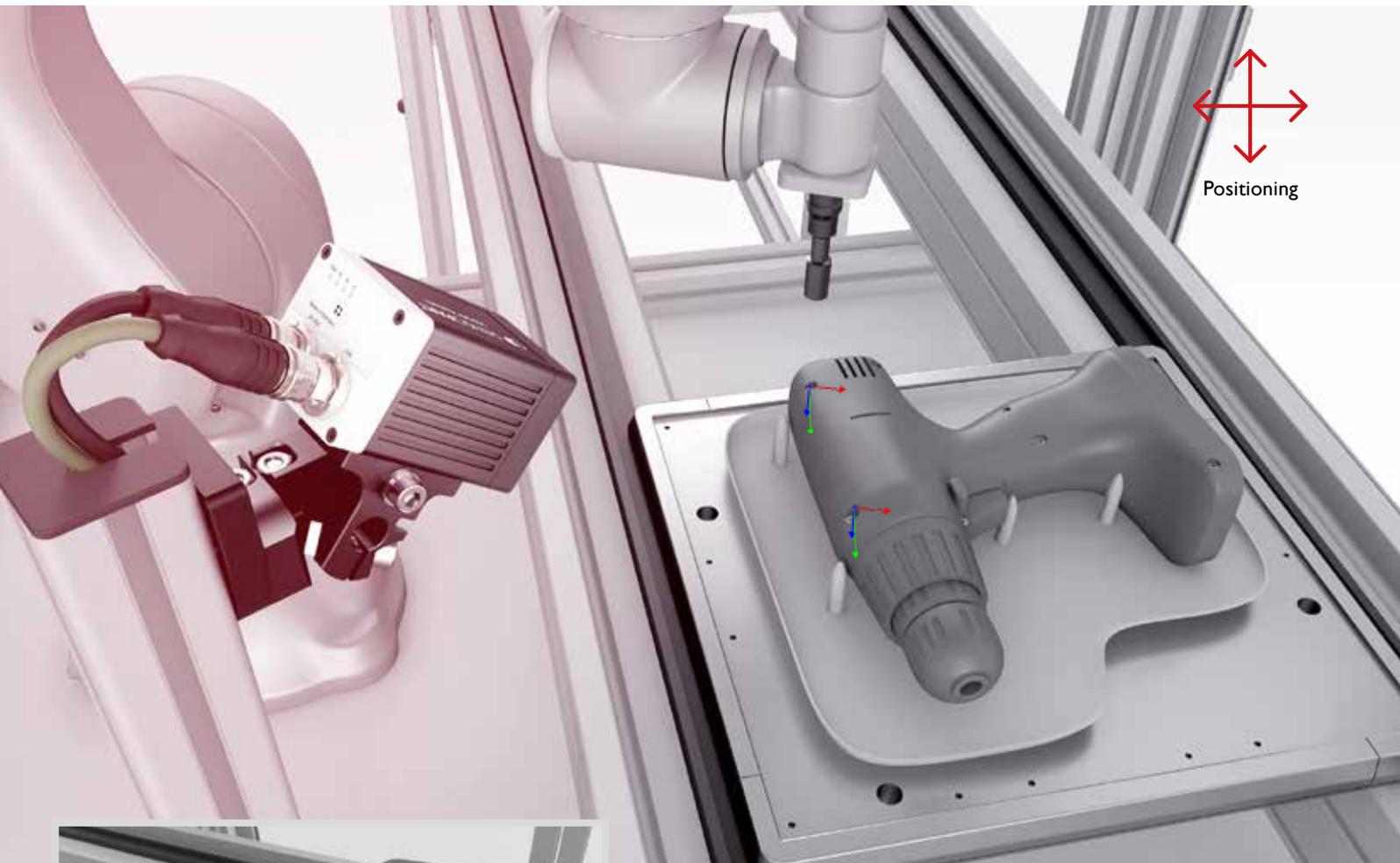
Positioning

The challenge:

When screwing the outer casing of the cordless screwdriver together, several parameters must be observed – from the order of the screws to the different tightening torque for the individual screws. The varied positions at which the parts are fed complicates the process step even further.

Our solution:

For a reliable detection of the component position, the VISOR® Robotic vision sensor is mounted on a stationary arm, where it determines the location and orientation of each of the case halves and adjusts the screw insertion points accordingly.

Your benefits:

- Reduced programming due to the automatic calculation by VISOR® Robotic of robot's 3D start position
- Increased throughput, uptime and overall quality
- Reduced mechanical complexity, therefore allowing flexible expansion of installation
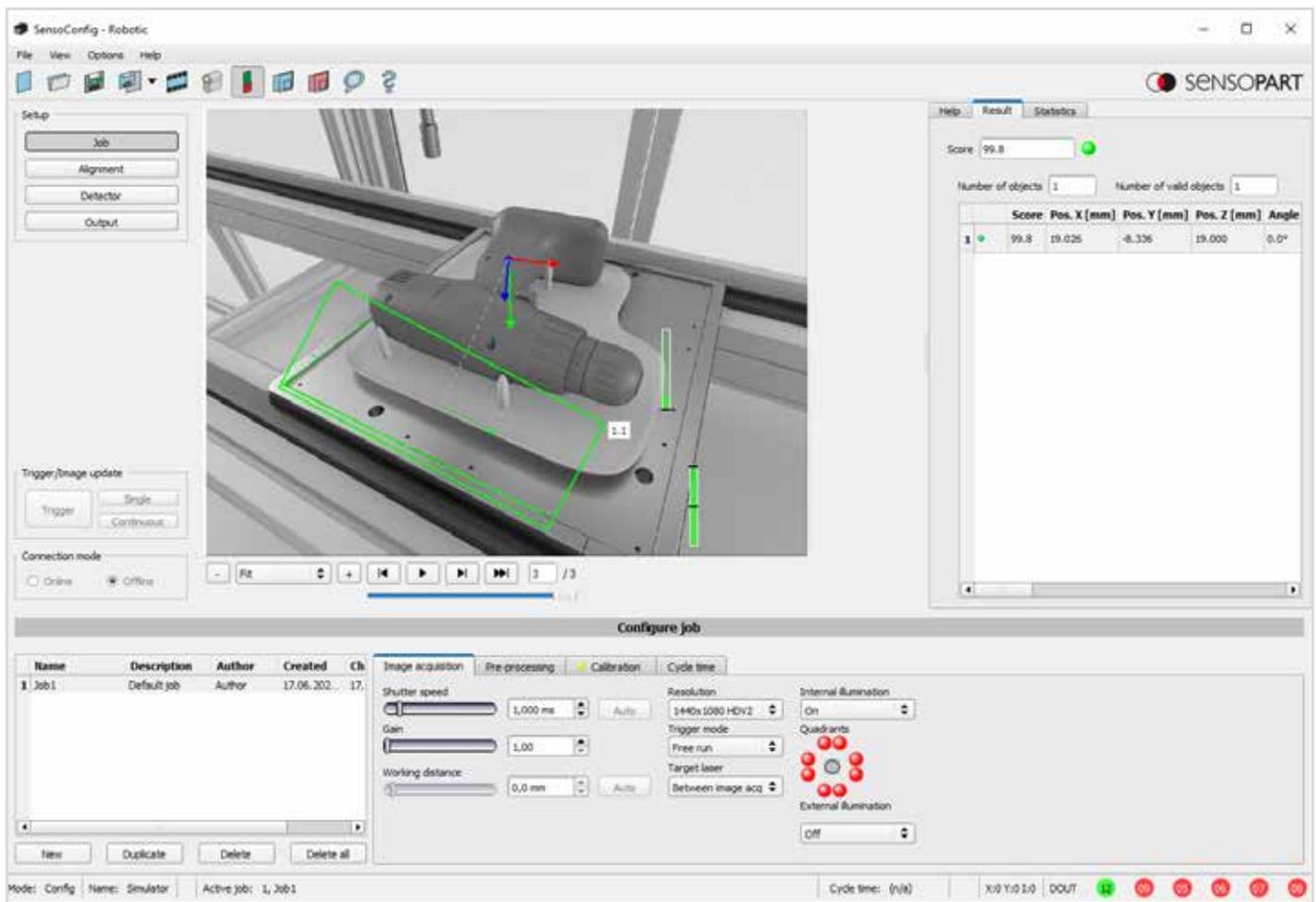
The hardware of our vision sensors is optimally enhanced by the VISOR® software, which allows you to set up applications in a few simple steps and configure process parameters. The software also allows continual monitoring of the process. This same software also configures the whole range of VISOR® Code Reader, VISOR® Object, VISOR® Allround camera models. Reducing your training needs and software holding.

6. Error-free: Transfer to test station

Measurement   Positioning

The challenge:

Every manufacturing process ends with quality control. This is increasingly becoming automated as a rule and takes place in a specially developed testing station, into which the finished product – in our example the cordless screwdriver – is inserted. The gripper system must be flexible in order to adapt to the many different versions of this tool.

Our solution:

The finished cordless screwdrivers are inserted into the testing station by a mobile robot, which can flexibly move between different assembly lines. The VISOR® Robotic vision sensor identifies the position of the final products, while one of our high precision FT 55-RLAM distance sensor confirms the stacking height.

Your benefits:

- Increased availability of your testing facility
- One testing station for diverse products and assembly lines, for a more efficient use of resources
- Reliable detection on the basis of different object characteristics, which ensures a high standard of quality

Recommended products for this application:

FT 55-RLAM

- Smart next-generation laser distance sensor
- Stable processes thanks to excellent sensor characteristics across the entire operating range
- Integrated IO-Link interface
- Simple and fast setup via intuitive LCD display

VISOR® Robotic:

- Wide variety of powerful but easy to use software detectors for monitoring presence, checking completeness, determining positions, as well as for simple measurement tasks
- Precise determination of position: x/y position and orientation
- Simple calibration for measurement tasks. Conversion into mm as well as correction of lens and perspective distortion

7. In stacks: Palletisation of packaging

Detection & inspection

Identification
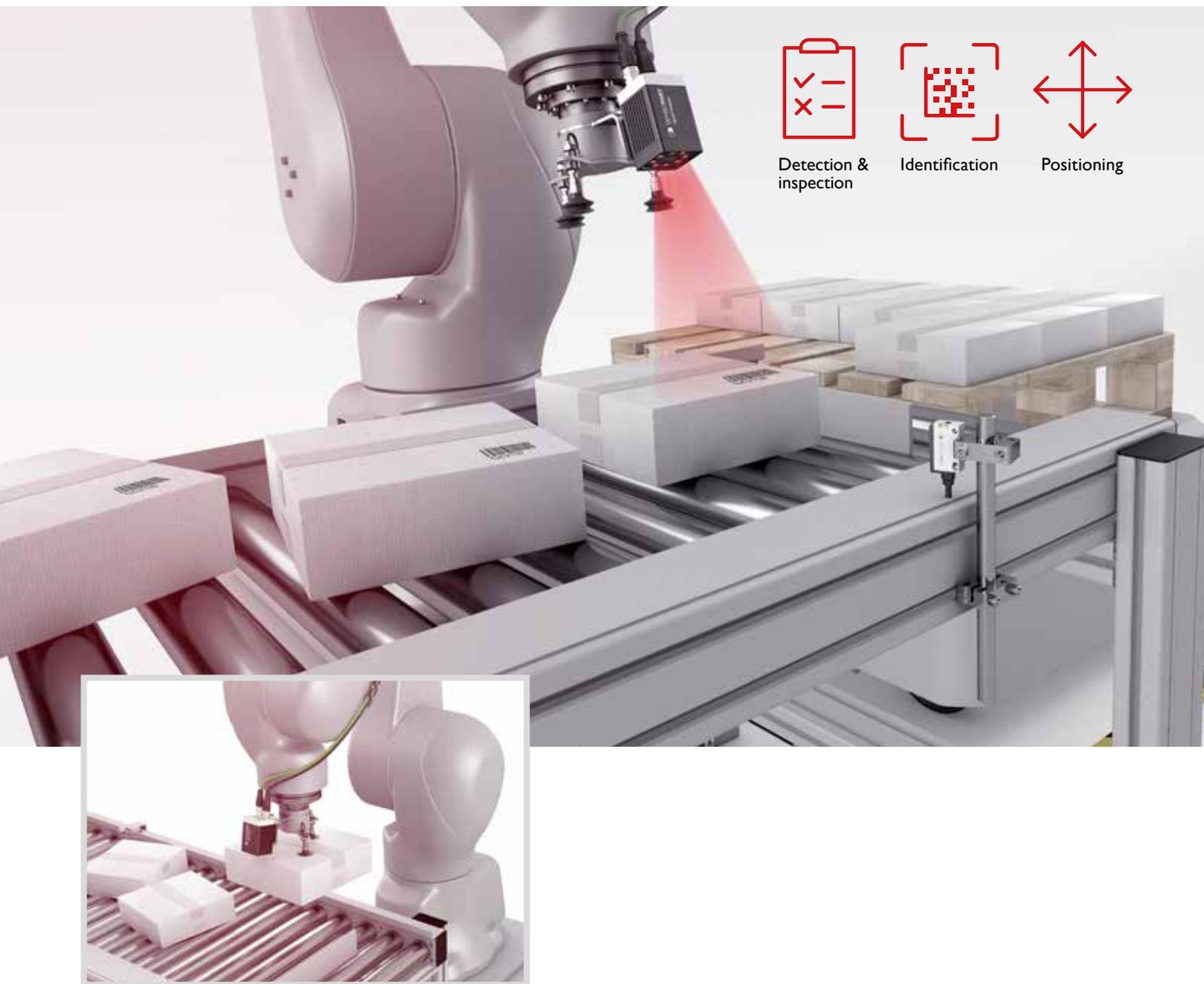
Positioning

The challenge:

Once packed, the end products must be stacked on transport pallets. However, the position of the boxes can fluctuate as they arrive, and their density on the conveyor belt can also change due to different cycle times. And finally, packaging versions may also vary, which further complicates reliable detection.

Our solution:

The packed cordless screwdrivers are fed via a roller table or conveyor belt. The VISOR® reliably locates the different packaging and its position on the belt. It simultaneously identifies codes on the packaging with the aid of integrated detectors. An additional BlueLight proximity sensor monitors the presence of the packaging for increased reliability.

Your benefits:

- Less monotonous tasks
- No lifting of heavy loads thanks to improved ergonomics
- Consistent precision despite high variability of products

Recommended products for this application:

FT 25 BlueLight

- Precise photoelectric proximity sensor in miniature format for monitoring presence
- BlueLight technology for reliable detection of objects with changing surface finishes and angles

VISOR® Robotic:

- Integrated code reading in VISOR® Allround version
- 2D or 3D location in robot coordinates
- Simplified installation through 3D grip point transformation

To product finder and other details:
https://www.sensopart.com/en/products

We are SensoPart

SensoPart is one of the leading manufacturers of photoelectric sensors and image processing vision sensors for factory automation. We also offer inductive and ultrasonic sensors, thereby covering a wide spectrum of industrial automation tasks. Our products are used in countless applications and sectors today – from automotive construction and mechanical engineering to electronics manufacturing and the solar industry, as well as the food sector and pharmaceutical industry.

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