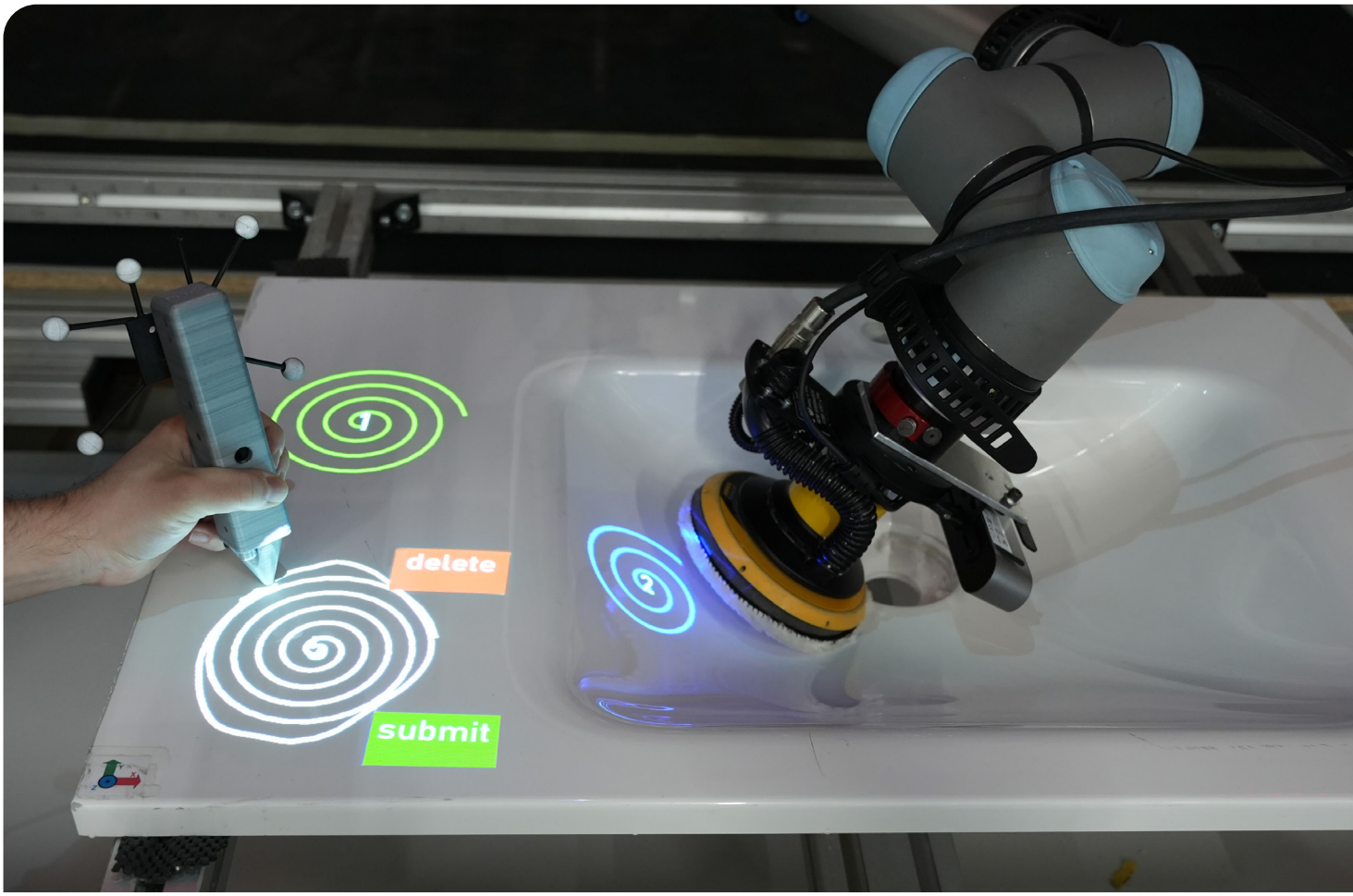
PROFACTOR®
FROM RESEARCH TO PRODUCTION

Robotic and Digital Assistance

How digital technologies can relieve your employees while increasing the output



Robotic and Digital Assistance Systems

Future-proof your work processes

Your employees and specialists are always at the center of our considerations.

It is not about replacing them, but making the best possible use of your employees' knowledge and skills and to relieve them of secondary activities and monotonous tasks.

The aim is to support your employees **with assistance systems** so that they are able to **carry out their work quickly and ergonomically.**

Another benefit is obvious. This innovative technology also leads to **better production quality,** which is the single best prerequisite for making your company more competitive.

Collaborative assembly

Robotic Assistance

» SOLUTIONS PAGES 3-5

Here, a robot takes over tasks from employees. However, it is not the familiar industrial robots behind a safety fence that are used, but so-called **collaborative robots,** which are suitable for safe cooperation **with people** at the workplace.

These flexible, semi-automatic solutions enable **simple conversion and adaptation to new tasks.** In addition, installation effort and costs are lower compared to fully automated solutions.

Robot assistance systems therefore act as an **extension of workers.** They take on both primary and secondary tasks. This allows your employees to focus on the important tasks while **ensuring consistent quality.**

Digital/Visual Assistance

» SOLUTIONS PAGES 6-7

The aim of digital assistance is to **support manual activities with visual stimuli.**

Employees are shown relevant information at the right time and in the right place directly at their workstation using projectors. In addition, an AI-based camera system recognizes potential errors and actively points them out to the employee if necessary. This support means that the employee has to remember less, which **significantly simplifies their work.**

Especially in situations with a high number of variants, tasks can be completed **more quickly and more ergonomically.** In many cases, the use of a digital assistance system is also more economical than completely replacing manual activities with complex automation solutions.

Material Application with Robotic Assistance

Automation in wood, metal & plastics processing with a high number of variants

In the production of small and medium quantities, employees must repeatedly perform strenuous and monotonous tasks that could not previously be automated due to the high investment costs for traditional robot solutions. This is where **robotic assistance systems** are setting new standards in wood, metal and plastics processing.

Small, flexible robots in combination with camera-based recognition systems represent an efficient and economical alternative, even in changing manufacturing situations and production with many variants.

As a result, employees can be relieved of monotonous tasks and can devote themselves to more important tasks. At the same time, manufacturing quality can be improved, regardless of whether painting, oiling, gluing or coating is involved.

Your Benefits

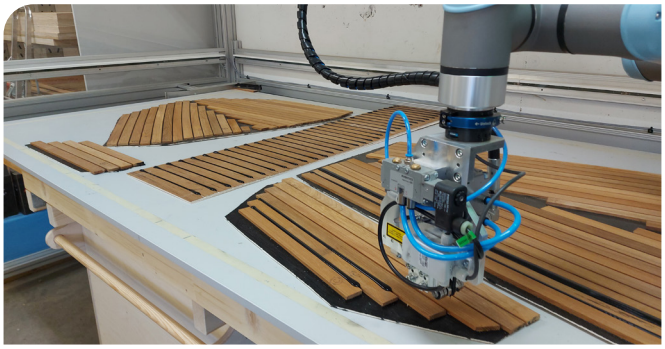
- **Very short set-up times** thanks to the automatic recording of the workpieces to be processed.
- **Flexible and economical even with small batch sizes** thanks to intuitive operation and fast order entry.
- **Fast commissioning of processes** thanks to the use of tried-and-tested hand tools on the robot. This also enables flexible switching between automated and manual production.
- **Avoidance of running costs** thanks to lower material consumption and reduced cleaning effort.

Industrial Applications

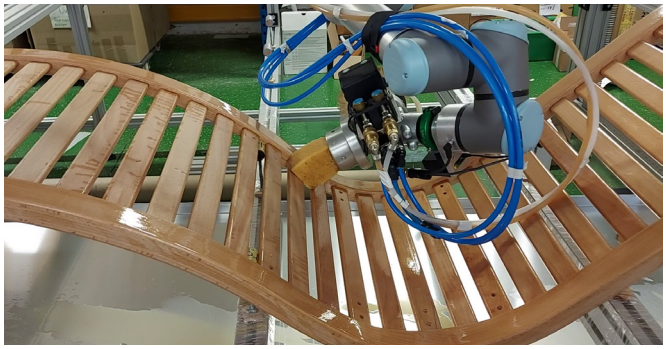
One good example of the use of robotic assistance is the **LIDAUER joinery.**

LIDAUER has been successful in the shopfitting, boatbuilding and bespoke furniture sectors for years and uses a collaborative production system from PROFACTOR for **the automated jointing of boat decks** for high-end yachts.

Further application examples include the oiling of wooden furniture or the application of adhesive to wooden fronts.



Grouting of boat decks (LIDAUER Joinery)



Oiling wooden furniture

Learn more about robotic assistance

Material Removal with Robotic Assistance

Automation in wood, metal & plastics processing with a high number of variants

When removing material manually, such as polishing, grinding or brushing, employees are often exposed to monotonous and tiring activities.

Robots can relieve employees of these tasks and, at the same time, **improve quality and efficiency.** One example is the spot processing of washbasins by a robot.

Processing orders can be created quickly and easily thanks to **intuitive operation and 2D/3D recording of components.** This is the only way to enable individual robotic processing of small quantities or even individual pieces.

The use of robot assistance systems in material removal processes can **increase productivity and quality** while improving workplace ergonomics at the same time.

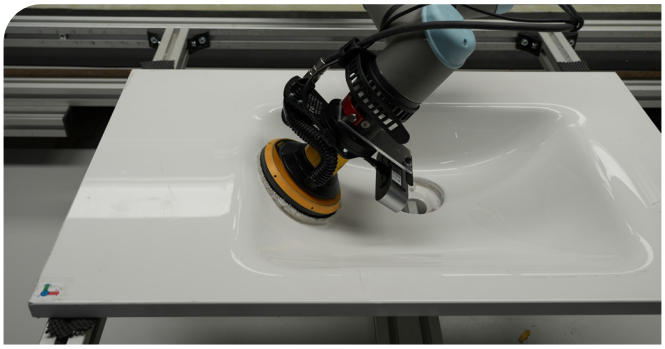
Your Benefits

- **Very short set-up times** thanks to the automatic recording of the workpieces to be processed.
- **Flexible and economical even with small batch sizes** thanks to intuitive operation and fast order entry.
- **Fast commissioning of processes** thanks to the use of tried and tested hand tools. This also enables flexible switching between robotic and manual production.
- **Avoidance of running costs** through lower tool wear and reduced cleaning effort.

Industrial Applications

A typical example is the polishing of washbasins. Here, a collaborative robot can carry out both general polishing tasks as well as work specifically on individual component regions (spot processing).

Other industrial applications include processes such as brushing, deburring and grinding.



Polishing washbasins (helopal)

Sanding wooden panels

Learn more about robotic assistance

Assembly & Handling with Robotic Assistance

Automation in assembly and logistics with a high number of variants

Many companies are faced with the challenge of having to make assembly and handling processes more efficient and flexible while relieving their employees of monotonous tasks. Traditional automation solutions are not very flexible as they require rigid processes and high quantities.

The use of robotic assistance systems can significantly improve flexibility regarding high variant diversity and small batch sizes. This creates working environments that i**ncrease productivity as well as safety and ergonomics.** Intuitive operation and the ability of collaborative robots to adapt quickly to new tasks significantly **reduce the time and effort required for changeover.**

Robotic Assembly

Robot-assisted assembly is a key aspect of modern manufacturing. Hybrid workstations with collaborative robot arms, intuitive operation and integrated sensors for part detection enable **greater efficiency and safety in the workplace.**

These systems are used in a wide range of joining operations such as the screwing and assembly of components such as cylinder head covers, gearboxes and engine covers or electronic assemblies. They enable **a fast assembly process** and integrate collaborative tools for safer operation.

Robotic Handling

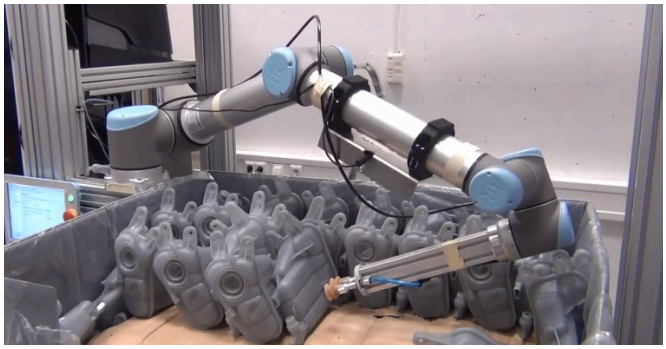
In the area of handling, robotic assistance is revolutionizing **the removal, transport and picking** of disordered bulk goods and orderly finished goods, relieving employees of strenuous tasks.

By using AI-supported 2D/3D detection of situations, robots can automatically generate **optimal paths for handling the components.**

The use of adaptable gripping techniques also enables **flexible handling of a wide variety of component shapes** in bin-picking and bin-packing processes. This means that the handling of a wide range of materials and components such as stamped parts, injection-molded parts, tubes, shafts or rings can be automated.

Industrial Applications

Robotic assembly of electrical assemblies



Robotic handling of water containers

Learn more about robotic assistance

The Q-Station

Quality control and assistance for conveyor belt scenarios

At highly flexible manufacturing and assembly lines, especially those with manual work steps, **effective quality control** is crucial. The challenges of such environments lie in checking very different product variants, which requires full concentration and comprehensive knowledge on the part of employees.

The Q-Station is an **innovative digital assistance system** that has been specially developed for dynamic assembly line situations. Through the use of adaptive image processing technologies and in-situ projections, the Q-Station enables **complete digitalization of product quality** and offers **intuitive support for employees** at the line.

Your Benefits

- **Product recognition:** The Q-Station recognizes every product on the conveyor belt and automatically compares its status with the production planning.
- **Precise location information:** Item-related information and instructions are projected directly onto the moving products.
- **Active error messages:** In the event of deviations, the Q-Station projects specific instructions onto the products to alert employees immediately.
- **Significant improvement:** This solution significantly increases efficiency and quality, even with a high number of product variants.

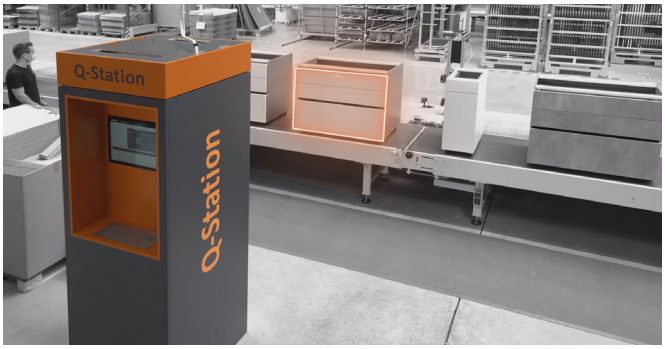
Industrial Applications

This solution **offers exceptional flexibility** and can be easily adapted to new production conditions. Fields of application include **dynamic production environments with high product diversity** (for example in the furniture industry, in manufacturing and assembly of household appliances or industrial components) as well as automated **quality control at the end of production lines.**

The Q-Station has already proven its worth in the kitchen furniture industry, where it is deployed successfully on more than 10 production lines at Häcker Küchen.

"The integration of AI in times of a shortage of skilled workers and increasing quality requirements makes us future-proof and offers enormous competitive advantages."

Dirk Krupka, Head of Technology at Häcker Küchen



Q-station in kitchen furniture manufacturing (Häcker Kitchens)

Learn more about digital assistance

The Digital Order Picking Assistant

More efficiency in production with real-time visual support

Highly flexible production systems, such as laser cutting machines, require manual activities for unloading or picking parts if expensive automated unloading systems are avoided.

A high utilization of such machines (orders and variants to be processed flexibly and in parallel) usually also means high demands on the manual work steps and employees, which often negatively impacts quality and productivity.

A multi-projector system, mounted above the system or workstation, **projects practice-oriented information** (e.g. order numbers) directly onto the individual components in real-time.

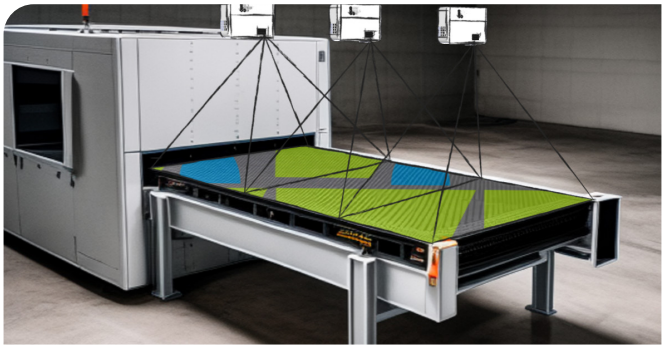
Through this visual guidance, the employee can unload **more efficiently and start the picking process in parallel,** with less stress and reduced error potential. This also benefits overall production through **shorter throughput times, higher quality,** and ultimately improved competitiveness.

This technology can be easily and quickly integrated into any manufacturing process - whether unloading laser cutting machines, cutting wood panels, or picking items.

Your Benefits

- **Faster unloading** and error-free allocation through real-time visual guidance.
- **Cost-effective acquisition** by using standard components (e.g. projectors)
- **Easy integration** by using the same data packets (dxf) as the laser cutting machine.
- **Intuitive operation** through additional touchscreen interaction
- **Improvement of working conditions** by relieving manual and repetitive tasks.

Industrial Applications



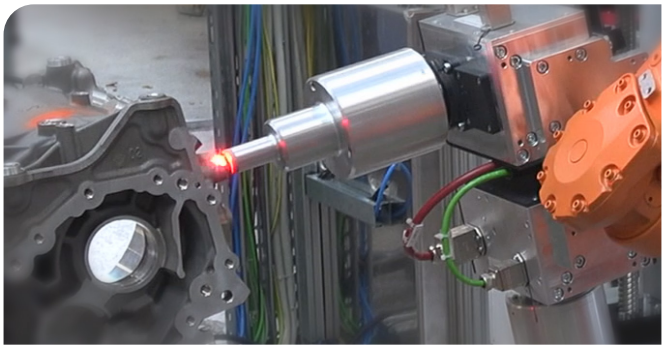
The picking assistant projects relevant information directly onto the components or work surface.

Picking assistant for a laser cutting machine for more efficient sheet metal processing.

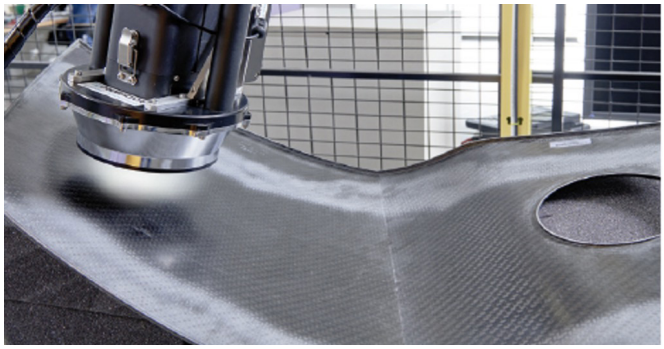
Learn more about digital assistance

PROFACTOR – Your Advanced Technology Partner

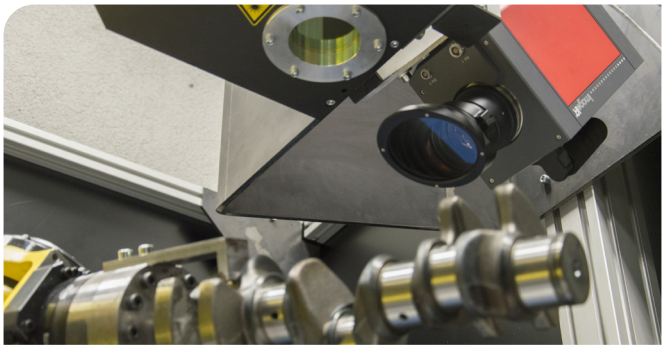
Industrial Inspection – Freeform Inkjet Printing – Printed Electronics – Micro and Nano Manufacturing



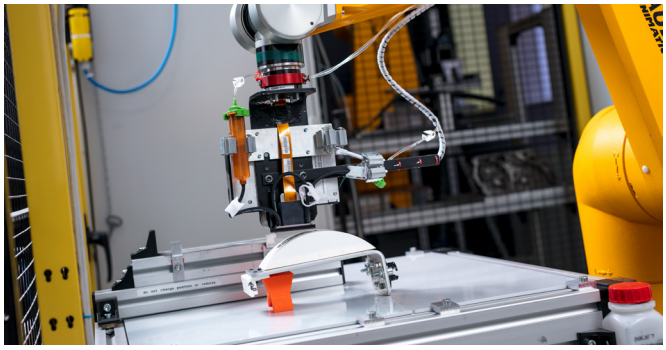
Surface inspection of metal parts with minimal pseudo error rates



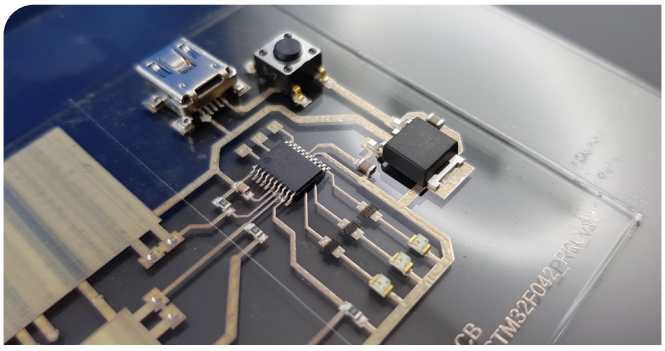
Surface inspection of fiber composite components and materials



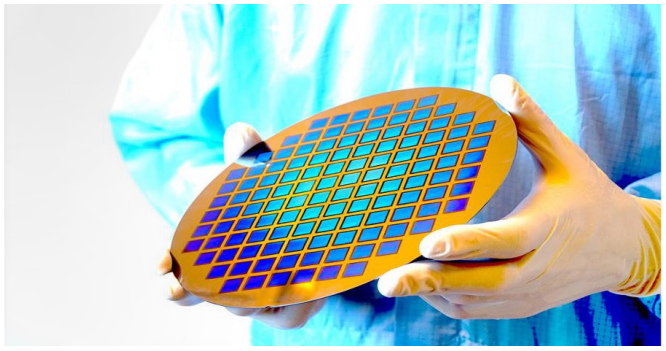
Industrial thermography: automated non-destructive crack detection



Freeform inkjet printing systems



Printed electronics: Process development and prototyping



Nanoimprint lithography (NIL) prototyping and small series manufacturing

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