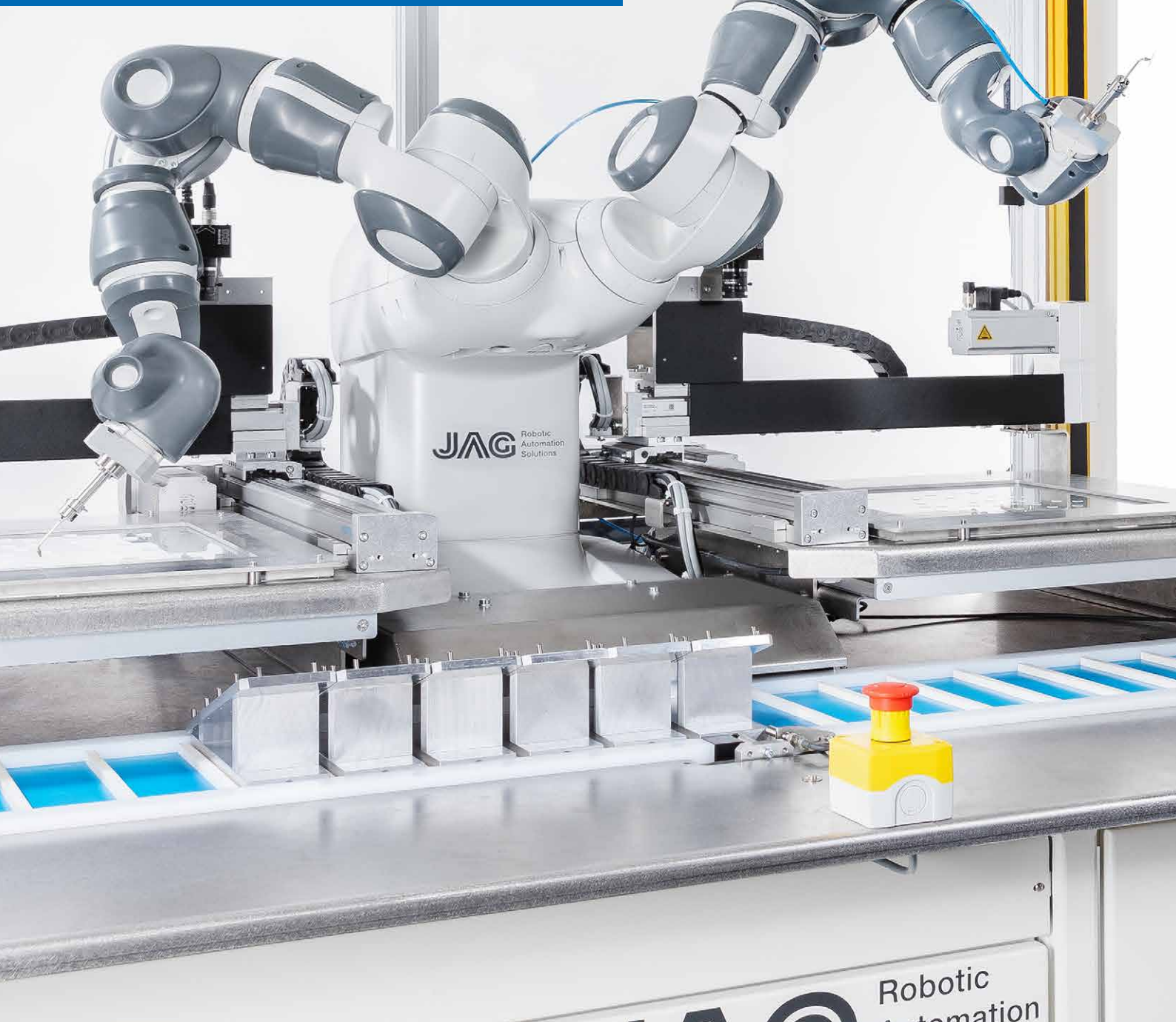


Robotic Automation Solutions

Sapphire lenses in focus for robots.
Robotics for the demands of medical
technology.

A JAG reference.



A close-up photograph of a robotic arm in a factory setting. The arm is positioned over a tray containing numerous small, circular sapphire lenses. The background shows industrial machinery and a clean, well-lit environment.

The project in keywords

Task

Modernising sapphire lens processing.

Goals

- » A flexible automation solution
- » Increased quality and output
- » Reduced staff burden

Customer benefits

- » Everything from a single source: automation, robotics and cell construction
- » Ambitious production targets reached
- » Staff released from activities that greatly fatigue eyes and hands

Sapphire lenses for endoscopy.

Peak performance for modern medical technology.

Blösch AG is an innovative Swiss technology company. Its core competencies include its wide range of high-quality coating solutions for watches, tools, aircraft construction and laser optics, and medical devices for analysis and diagnosis such as dental scanners, endoscopes and much more.

Starting situation

Endoscopes have premium, built-in sapphire lenses. Handling these minuscule parts is an extremely monotonous, repetitive task that demands exceptional levels of concentration from staff, leaving them tired

and in need of long breaks. Blösch AG therefore commissioned us to automate the most time-consuming work steps.

A momentous task

In modern medicine, endoscopy sales are booming. The growing production needs could only be met by developing a high-performing, scalable automation solution. This task demanded all of JAG's expertise, from software development to cell construction. The specification was for up to 1,000 lenses and even beyond.



Alignment for edge metallisation

The sapphire lenses are scanned using laser optics and positioned with a high degree of precision, ready for the subsequent process of edge metallisation (accurate to 5/100 mm).

Precision picking in robot cells

The sapphire lenses lie loose on flat surfaces. These tiniest of parts are identified by cameras and picked up by micro-grabbers.



Two cells that make all the difference.

Reliability, speed and precision.

The team at JAG developed a solution with two cells that both deliver high-precision peak performance. Both cells work independently of each other to enable maximum flexibility.

Cell 1

The robot cell (see image above) picks up and positions the sapphire lenses that have been fed in. Our team also worked closely with the customer to develop an internal software solution, providing the robot arms with highly precise micro-grabbers. These enable precision picking, our term for com-

bined pick-and-place and bin-picking. An integrated laminar flow simultaneously prevents the parts from becoming contaminated with dust.

Cell 2

The second cell (see image on the left) prepares the sapphire lenses for edge metallisation. This process requires the parts to be positioned to an accuracy of 5/100 mm. An extremely fine blade is used to align them. Metallising the edges of the lenses enables them to be soldered onto the endoscopes later.

The strengths and benefits of a complete solution.

Automation, Robotics and cell construction.

This project was a huge development challenge for our team. It involved software and selecting and integrating the robot model (ABB YuMi), the laser scanner, high-precision cameras and linear axes to mount the cameras. The innovative robot solution has enabled Blösch AG to greatly increase the number of sapphire lenses it processes in Switzerland. The higher output comes with further advantages, which add up to significant added value:

More flexible	The system can process around 50 different lens models. This great flexibility is based on central management of the operating parameters, another aspect developed by JAG.
Adaptable	The system is intuitive to use, can be progressively automated and is scalable to suit new machines in the future.
Increased speed	The initial achievement – a cycle time of 10 seconds – was cut by a further 2 seconds. A cycle for an entire batch now takes just 8 seconds.
Exceptional quality	The high level of automation with minimal manual work steps guarantees high-level process reproducibility, regardless of staff performance on the day.
Reduced staff burden	Our solution relieves staff of tiring hand movements and achieves results that would be unattainable in a manual process, with reliability, speed and precision. Staff can focus on the crucial control functions.

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