wick ag
A MEMBER OF THE JAG GROUP

Robotic Automation Solutions

A Robot Cell for High Precision Finishing and Deburring

A fully automated solution utilising the Magnetfinishing Process

Reference: Wick AG

The Project in brief:

Task: Integration of the deburring technology into a robot cell.
Goal: A comprehensive automation solution.
Solution: A combination of testing, deburring, demagnetizing, cleaning, drying and quality control in a single robot cell including data acquisition in the ERP.

The robot cell integrates the following components:

- **3 six-axis robots; type STÄUBLI TX60**
- **2 Magneticfinish Dual Head Modules**
- **1 ultrasonic cleaning bath with a blow-off unit**
- **4 Barcode Reader Systems**
- **1 camera for quality control**
- **2 drawers for SPC and NOK parts**
- **2 pallet drawers**
- **1 de-magnetising module**
- **1 blow-off nozzle**

Robotics and Micro-geometry
A challenging task

An increasing number of micro-sized workpieces are needed for applications in medical technology, mobile communications, and the automotive industry. Tiny pins for fuel injector systems in car engines are a typical example.

Micro-geometry

However, it is not so easy to machine these tiny parts that are needed to create new products. The challenges lie in micro-geometry. Every grinding process of this magnitude is associated with a fraying or notching of the surfaces of the workpieces with these production-related tiny surface defects often called "burrs".

Deburring Technology

Burrs reduce the quality of micro workpieces and can lead to premature wear and part failure during use. To prevent this, Magnetfinish GmbH, based in Stans, Switzerland, has developed a special deburring process that can handle small metal workpieces with a diameter of 1mm and above. Working in the single-digit micron range, the removal of burrs brings measurable success, both in terms of the performance of the small parts and their service life.

The Robot Cell

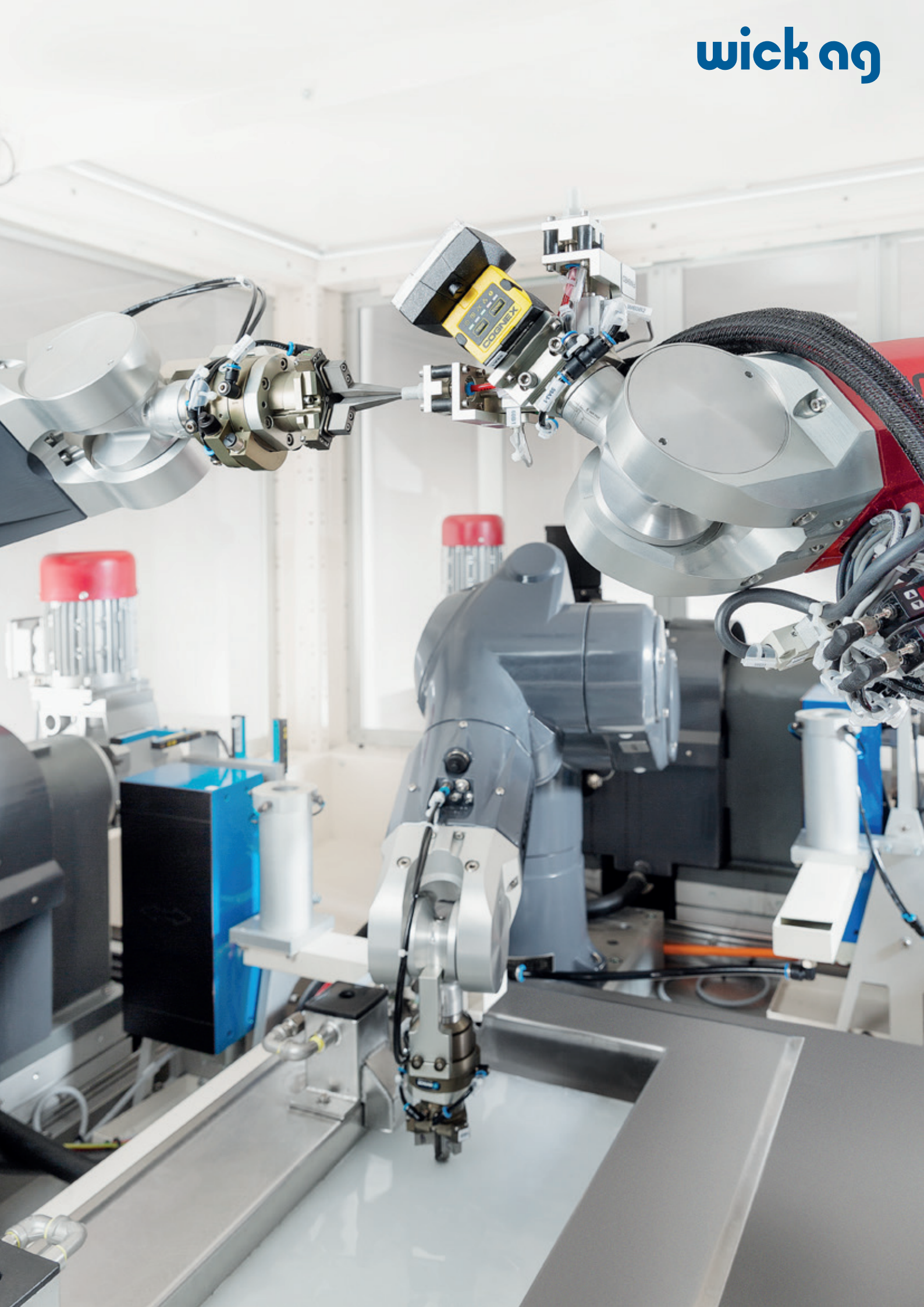
WICK AG's task was to integrate Magnetfinish's deburring technology into a compact robot cell. We have planned, designed and manufactured two identical cells, one of which is now working in England and the other in Romania, and it fills us with a certain pride that both robot cells are crucial links in an international production chain aimed at perfecting high-performance car engines in the long term.

Specific requirements

For this project, the project team of WICK AG dived deep into the world of micro-geometry and mobilized all its knowledge and skills to meet the customer-specific requirements:

- **The robot arms grip small parts of 1 mm in diameter quickly and precisely**
- **The robot cell integrates components from several different suppliers**
- **The automated solution achieves the goal of very high throughput rates**
- **The system ensures the traceability of each pallet and every individual part, as well as complete data recording in the customer's ERP**

wick ag



A unique Robot Cell

The Compact Overall Solution

Our team designed a robotic cell unlike anything we've ever built before. This applies not only to the complexity within the cell, but also to the fully automated processes that take place inside it — including centralized data collection and storage.

All Processes in One Cell

Our solution combines three six-axis robots with the advanced deburring technology from Magnetfinish. This technology utilizes two special components: a rotating magnetic field generator and a special powder that is both magnetic and abrasive. Additional components are included for demagnetization, ultrasonic cleaning of the deburred micro-sized workpieces, quality control, and the traceability of every individual part.

Benefits for the Customer

State-of-the-art technologies and our decades of experience came into play to implement the customer's needs into a full turnkey automation solution:

- **Consolidation of several operations (testing, deburring, demagnetizing, cleaning, quality control) in a single robot cell**
- **Time saving between operations**
- **Reliable testing of the end products**
- **Traceability of pallets and all parts**
- **Automatic data storage in the ERP**
- **Planning, conception, construction and production according to the customers requirements**
- **Perfect integration into the production environment**
- **Support with fast response times**
- **Simple and intuitive user guidance (HMI)**

R. Wick AG
Robotiksysteme
alte Zugerstrasse 10
CH-6403 Küssnacht am Rigi
T +41 41 747 11 11
F +41 41 747 11 22
wick@wick-ag.com
www.wick-ag.com

ADVANCED GRINDING SOLUTIONS

Unit 80 Hotchkiss Way
Binley Industrial Estate
Coventry
CV3 2RL

(t) 0044 2476 22 66 11
www.advancedgrindingsolutions.co.uk