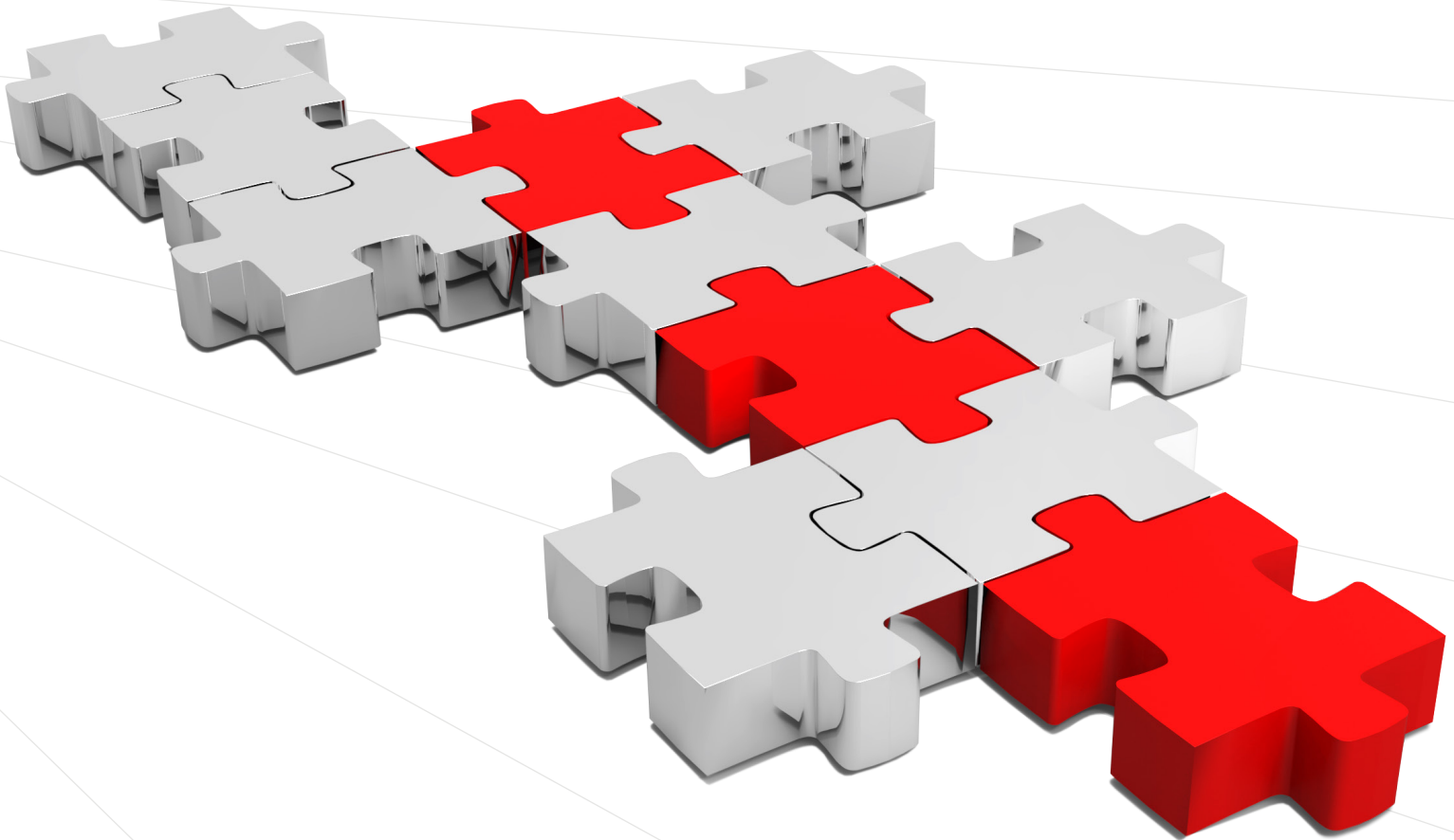
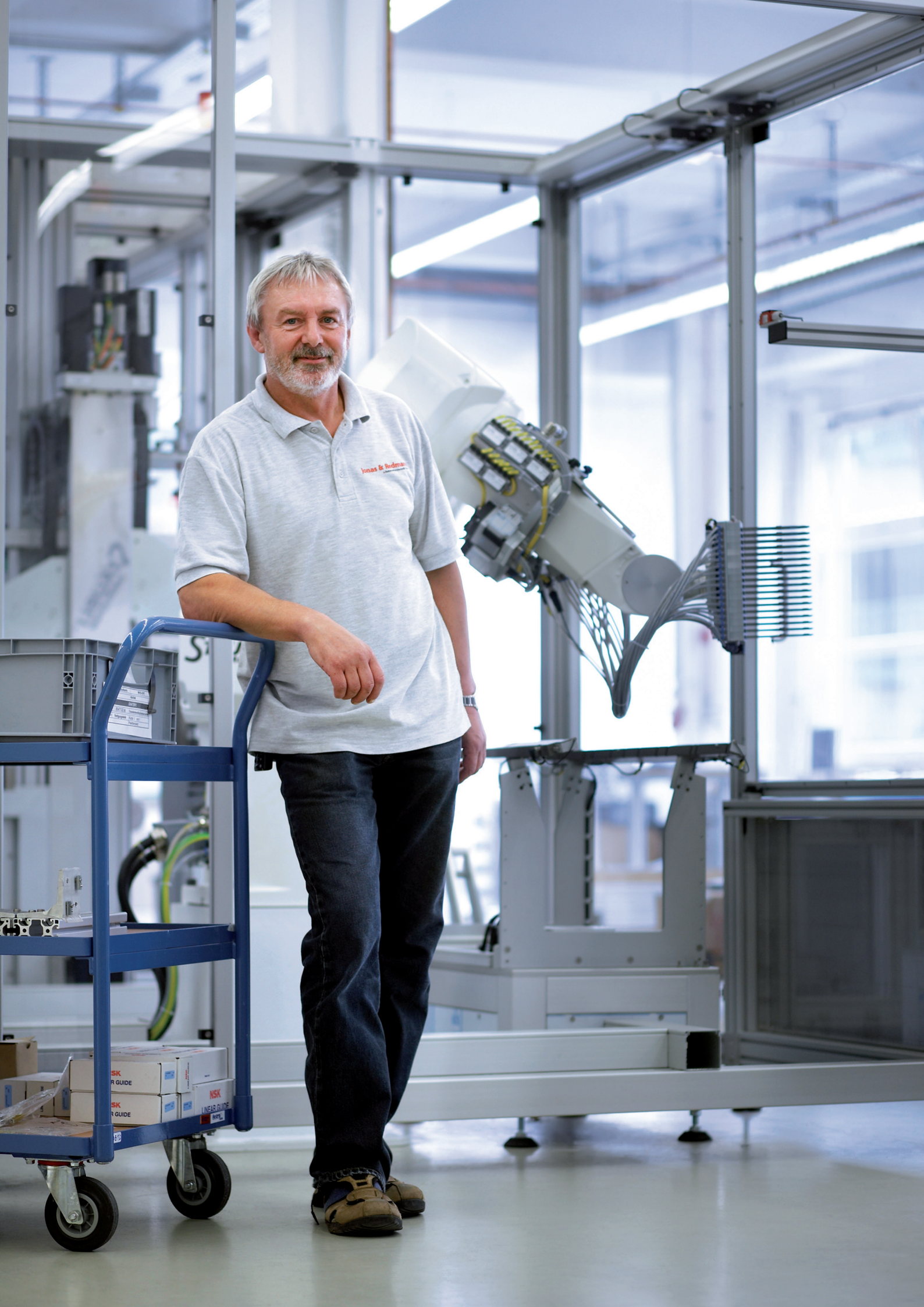
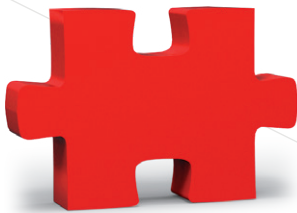


Efficient Production Technology and Process Automation







Since 1989, the **Jonas & Redmann** Group has been developing and producing intelligent automation solutions for handling, transport, and assembly. Our systems deliver on our customers' demands for the highest levels of performance for high product quality for the lowest operating cost. The technologies employed in our systems cover critical parts of the value chain in various pioneering sectors such as medical technology, the solar cell industry, and the production of lithium based batteries. We have set the global standard for automating such industrial processes with over 1,700 machines and systems installed.

Jonas & Redmann

- is leading in the automation of complex production processes
- provides high performance production solutions by transforming manufacturing processes into innovative system technology
- provides individual and system solutions from a single source, particularly for the production and handling of sophisticated materials or products
- possesses a worldwide service network

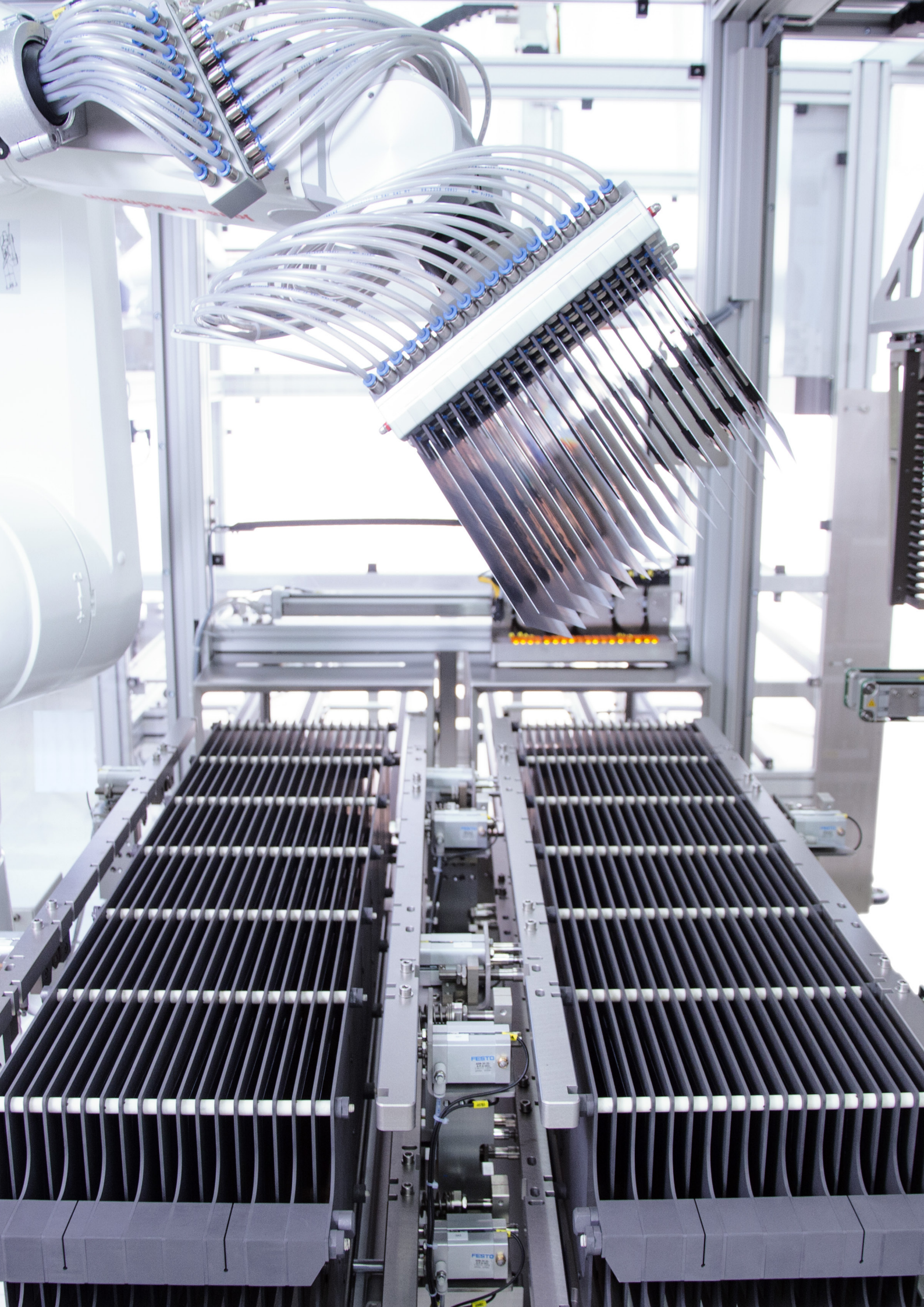


Management
System
ISO 9001:2015
ISO 14001:2015
ISO 50001:2018

www.tuv.com
ID 9105065508

TÜV certified:

- quality Management
- environment Management



Core competencies

Engineering

- Highly skilled automation engineers providing assistance in all project phases
- Automation solutions for production processes that were previously considered impossible to automate
- Development capabilities from individual, custom-made machines to entire production lines
- Modular system approach offering maximum flexibility

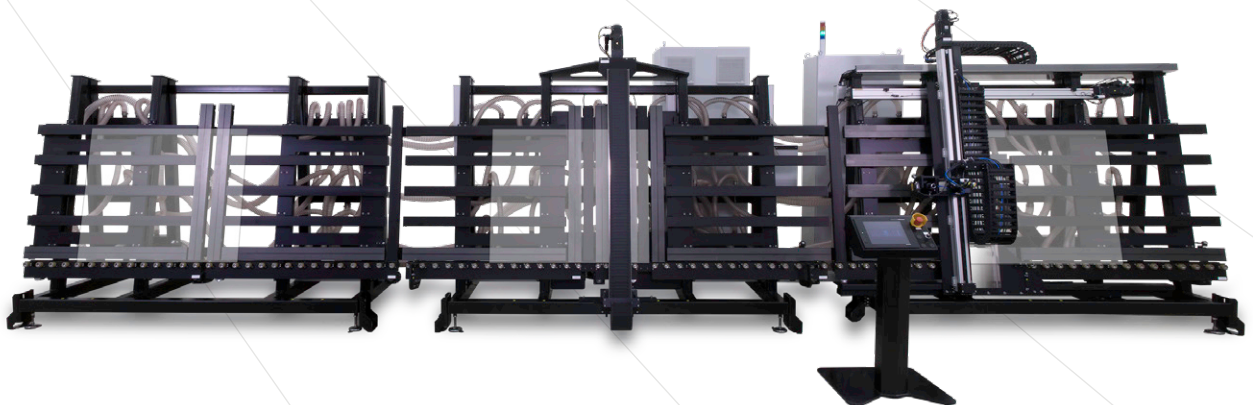
Handling

- Very gentle handling of highly sensitive materials and small parts with guaranteed high throughput rates
- Very precise pick and place
- Proven, patented handling solutions for various industries
- Years of experience in handling foils (e.g. rolling, unrolling, forming)

Integration

- Intelligent integration of automation technology into process technology for increased efficiency
- Integration of individual systems to create complex, fully automated production systems
- Vast experience integrating a large variety of measuring systems for inline quality control.

Jonas & Redmann is your single-source provider from the initial concept through to warranty support for the finished system, almost anywhere in the world! Regardless of whether you require a single automated machine or a complete solution, we deliver production and process technology that is customized to your requirements. Our employees support our systems throughout their production life.





Jonas & Redmann

solar cell has

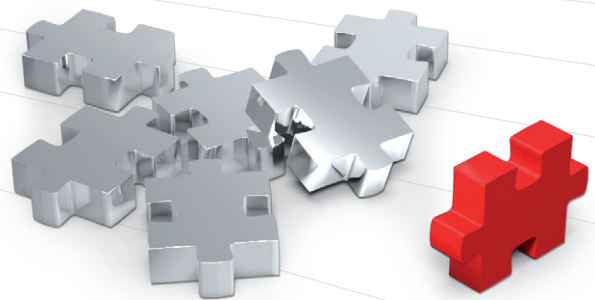
Service and customer benefits

Integrated Order Processing, Production and Parts Manufacturing

- Technical advice on production automation starting with the product to be manufactured and going right through to the entire production line
- Planning and conceptual design of automation of production lines
- Project management
- Mechanical engineering with a high level of production capability - from mechanical production of components right through to fully installed systems that are ready to begin production
- Software development – in-house standard libraries and applications
- In-house CNC manufacturing/ Production of mechanical components
- On-site installation, commissioning, and ramp-up support

Customer Service

Thanks to our efficient service customers get competent help within no time. Jonas & Redmann makes sure that our machines do exactly what they were purchased for: efficient operation.

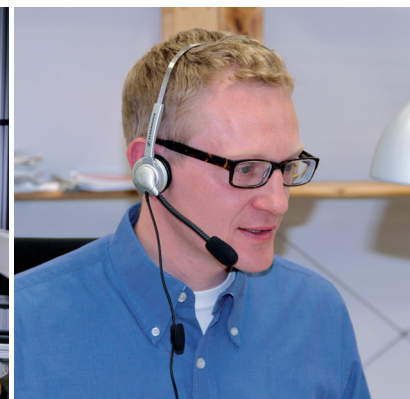


Standard service solutions

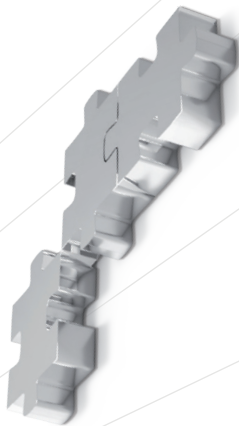
- Spare parts management
- Repair and Calibration
- Production support
- Remote service
- Retrofit
- Training

System conversion/modernization

- Capacity adjustment
- Upgrades
- Relocations
- Process optimization/Efficiency engineering







Quality & Service

- DIN/ISO 9001
- System integration of all processes required for assembly machinery production
- Quantity-oriented expansion of assembly machinery
- Short delivery times
- Flexibility in terms of the degree of automation
- Mixed variant production

Assembly Automation

Jonas & Redmann develops and manufactures assembly machinery and entire assembly systems. Matching the desired degree of automation, we offer a wide range of standardized production technology - from automated manual workstations to high-speed, indexing-system solutions. Standardized module cells are designed quickly in different construction sizes with the Jonas & Redmann modular kit. Combined with a large number of standardized automation components, customer-specific processing and assembly tasks can be converted into game-changing systems technology within a very short period of time. Jonas & Redmann is also a specialist when it comes to challenging special solutions. We create and produce industrial machinery for the processing of very sensitive or flexible materials, offer proven solutions for laser welding, and manufacture robot cells used for assembly based on optically mapped component structures.

Technologies

Flexible Cell Concept

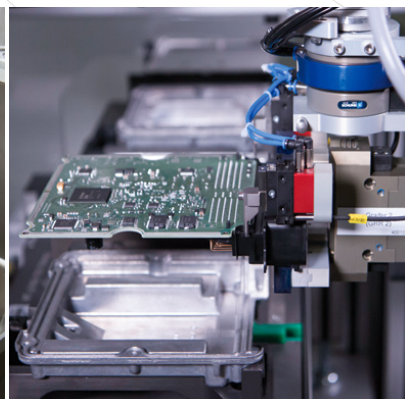
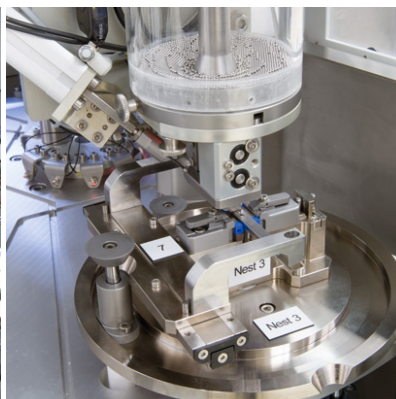
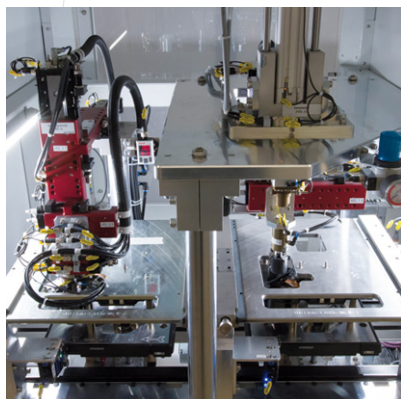
- Jonas & Redmann Module-Cell

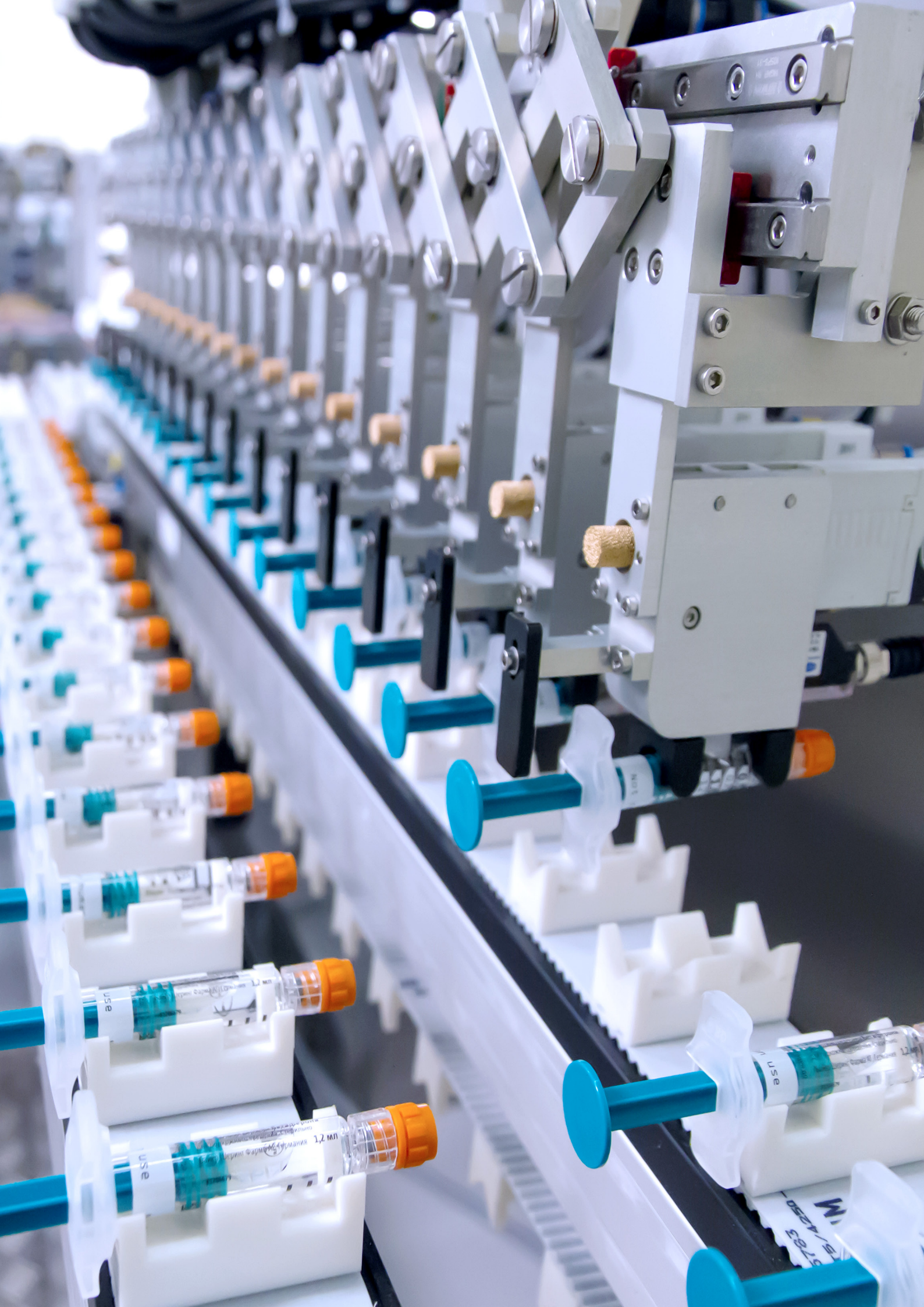
Transfer systems

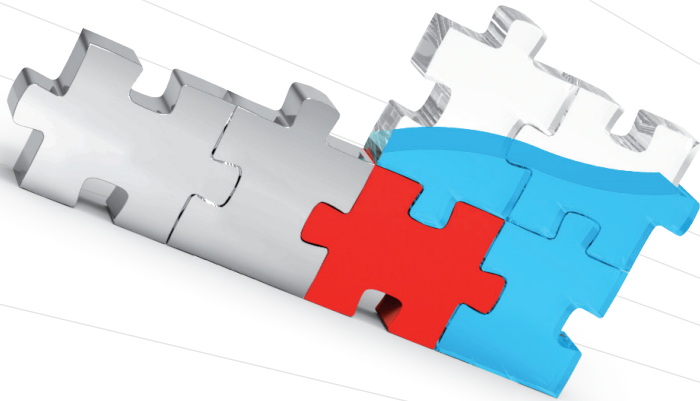
- Workpiece carrier (WT)-systems
- GL 01 - linear assembly platform
virtual cam disc or electro-mechanical
- GR 01 - rotary assembly platform
virtual cam disc or electro-mechanical

Cells for special technological applications

- CNC Cells (2D-path)
- Laser Cells
- Robot Cells







Medical Engineering

Jonas & Redmann is the development and automation partner for worldwide leaders in the medical device industry. In this field we are working on high performance production systems for medical-technology components. We have extensive experience in manufacturing automated handling, assembly, and feeding systems with integrated test technology for sophisticated medical products.

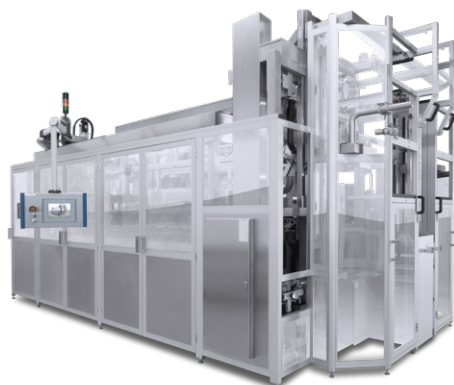
Jonas & Redmann offers all levels of automation from semi-automatic assembly through to complex, fully automatic production systems. The demanding quality requirements of the medical device industry are our benchmark for developing and producing customized, cost-efficient solutions.

Quality standards

- DIN/ISO 9001
- GXP (FDA) compliance
- GAMP 5 qualification
- EN and VL norms

Technology

- Linear and rotary cycle assembly systems
- O-ring mounting modules including feeding
- Pad, laser and inkjet printing
- Integrated laser, ultrasonic, thermal and high-frequency welding modules
- UV adhesive dosing and UV curing
- Dosing and application of paste-like media and fluids
- Forming using laser cutting or punching (filters and membranes)
- Automatic feeding and transport of tubes and foils
- Automatic roll changers for autonomous operation
- Multiple tube-rolling unit
- Processing shaped silicone elements
- Multi-axis servo drive systems with NC control
- Feeding technology
- Servo-controlled and pneumatic joining stations
- Devices for steam sterilization
- Integration of various quality control systems such as seal, flow rate, geometry, identity etc.
- Function test





Battery Technology

For years, Jonas & Redmann has been providing automation for complex and innovative production processes.

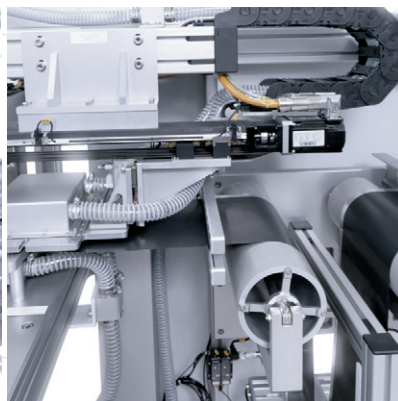
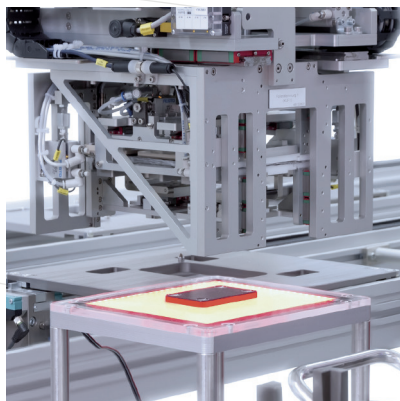
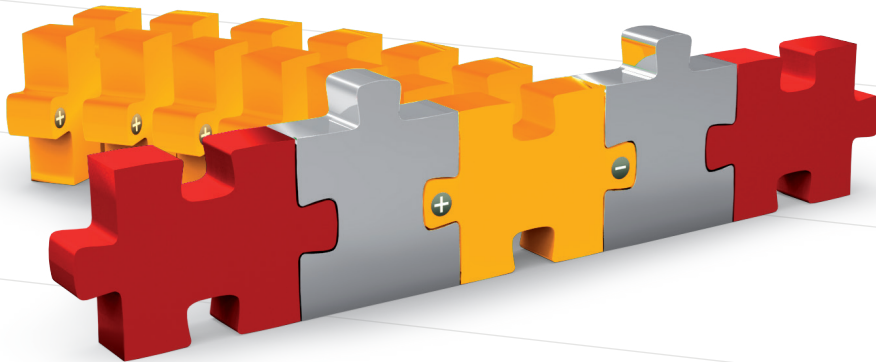
Through our targeted engineering over the last 23 years, we have developed numerous automation solutions for complex manufacturing processes as found in the solar and medical device industries.

We now bring our expertise in working with highly sensitive materials, such as foils and paper, to the lithium-ion battery industry.

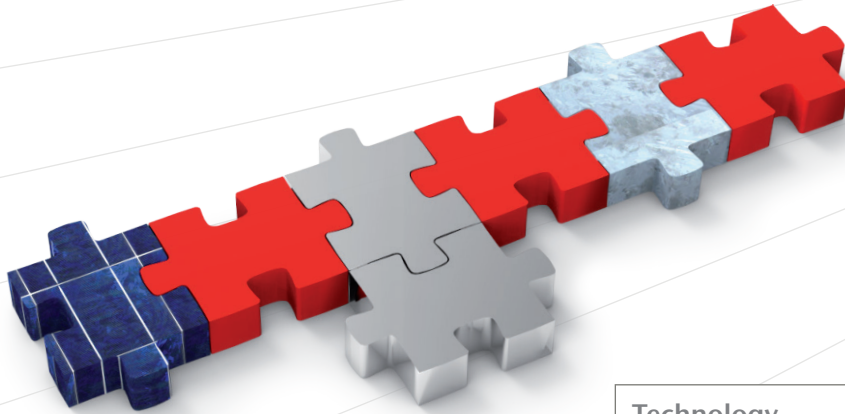
Jonas & Redmann is well positioned to help our customers excel in this rapidly evolving business segment thanks to proven and industry-tested technologies adapted to the specific requirements of our customers in the battery industry.

Technology

- Processing of plastic foils and coated metal foils
- Inline alignment and smoothing of foils
- Inline drying with IR and hot air, integration of vacuum drying
- Welding technologies (laser, thermal & ultrasonic)
- Cell assembly – stacking, z-folding, winding
- Inline quality control (surface detection, flaw detection, particle detection)
- Thermoforming of foils
- Sealing and laminating
- Electrolyte filling
- Vacuum technology
- Electrical forming
- Final quality control and classification







Photovoltaics

Jonas & Redmann is one of the most experienced automation specialists in the photovoltaic sector. In 2000, we revolutionized the production of crystalline silicon solar cells by successfully automating the loading and unloading of the diffusion and anti-reflection coating process steps. Today, we continue to be an innovator in the industry by reducing the production cost per watt. We have systematically improved our technologies and optimized our systems to our clients' production lines.

Our high-precision automation systems transport c-Si wafers and cells with the greatest possible care and exceed the highest demands with regard to breakage rates, throughput and uptime.

Technology

- Automation systems for every process step in c-Si solar cell production (batch and inline)
- Intelligent transport and storage solutions for optimized overall productivity
- Pioneering handling concepts for very thin wafers and new cell technologies
- Components for gentle transport and storage of c-Si wafers (Wafer Magazine, Cell Box, Automation Carrier)
- Quality test, classification and sorting (wafer and cell), non contact measurement
- Inline quality and process control (sheet resistance, color, layer thickness)
- Automatic reject
- Stand alone solutions
- Standard MES interface protocols e.g. SECS/ GEM and XML (according Semi PV02)
- Integration of separate MES terminal
- Material tracking (RFID technology)

Metallization Technology by

JRT Photovoltaics



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