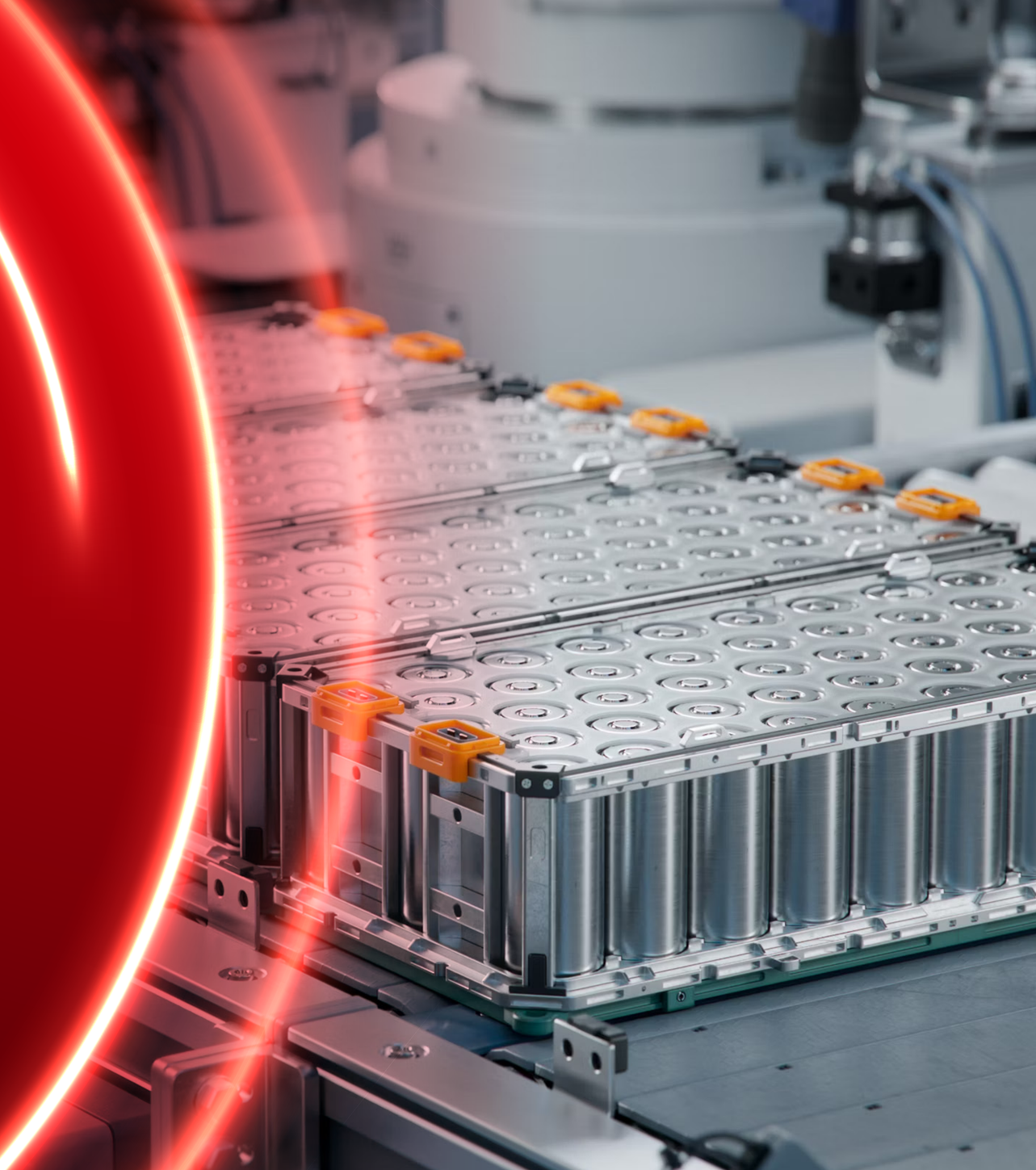
ENGINEERED
TO OUTRUN

UNLOCK AUTOMOTIVE EFFICIENCY

Introducing ABB Robotics'
battery tray manufacturing solution

LET'S GET TO IT



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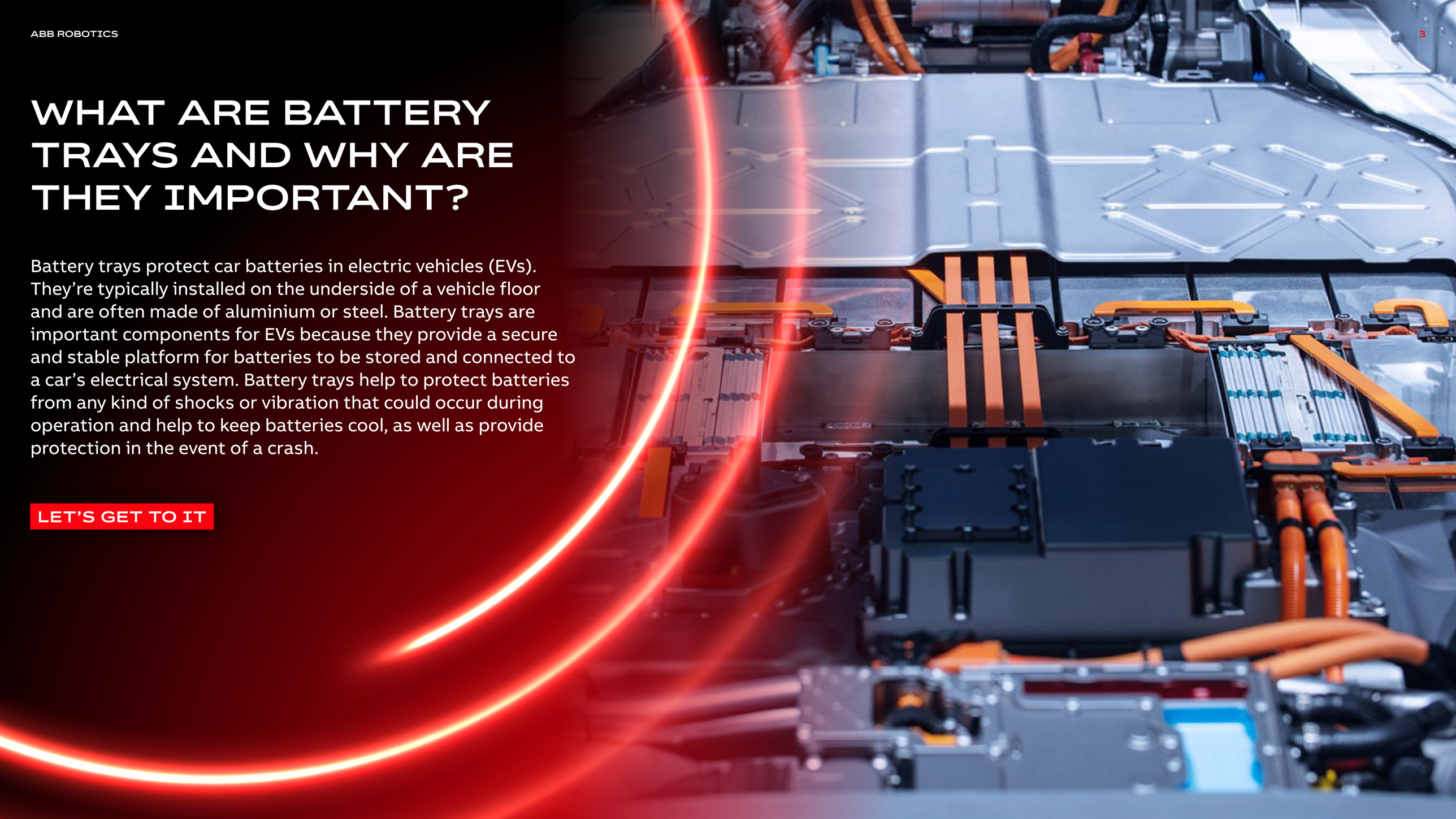
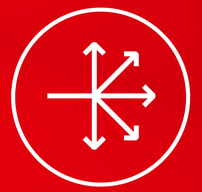
WHAT ARE BATTERY TRAYS AND WHY ARE THEY IMPORTANT?

Battery trays protect car batteries in electric vehicles (EVs). They're typically installed on the underside of a vehicle floor and are often made of aluminium or steel. Battery trays are important components for EVs because they provide a secure and stable platform for batteries to be stored and connected to a car's electrical system. Battery trays help to protect batteries from any kind of shocks or vibration that could occur during operation and help to keep batteries cool, as well as provide protection in the event of a crash.

LET'S GET TO IT



THREE TRENDS SHAPING AUTOMOTIVE BATTERY TRAY MANUFACTURING



TREND 01

THE AUTOMOTIVE INDUSTRY IS RAPIDLY EVOLVING

- The automotive industry is evolving rapidly due to the introduction of new technologies such as hybrid, electric and autonomous vehicles.
- In Europe, the proportion of manufactured vehicles that must be electric is expected to reach almost 100% by 2040.
- Investments in new models require new technologies: new car body, EV driveline, battery trays, mega casting, electronics, etc.
- This is leading to an increase in demand for innovative battery tray solutions that offer the highest levels of safety, cost efficiency, and reliability.

TREND 02

AN EVOLVING EV BATTERY TRAY MANUFACTURING MARKET

- As consumer demands for electric vehicles rise, so does the battery manufacturing market. This in turn will fuel the need for robust and reliable battery tray manufacturing solutions.
- Manufacturers are making cars lighter and using more aluminum and high-strength steel in battery tray manufacturing, as well as new joining methods to join dissimilar materials, such as plastic and metal combinations.
- Battery trays must deliver high performance, while also being able to withstand harsh conditions and long-term use.

TREND 03

ROBOTICS IS REVOLUTIONIZING THE AUTOMOTIVE INDUSTRY

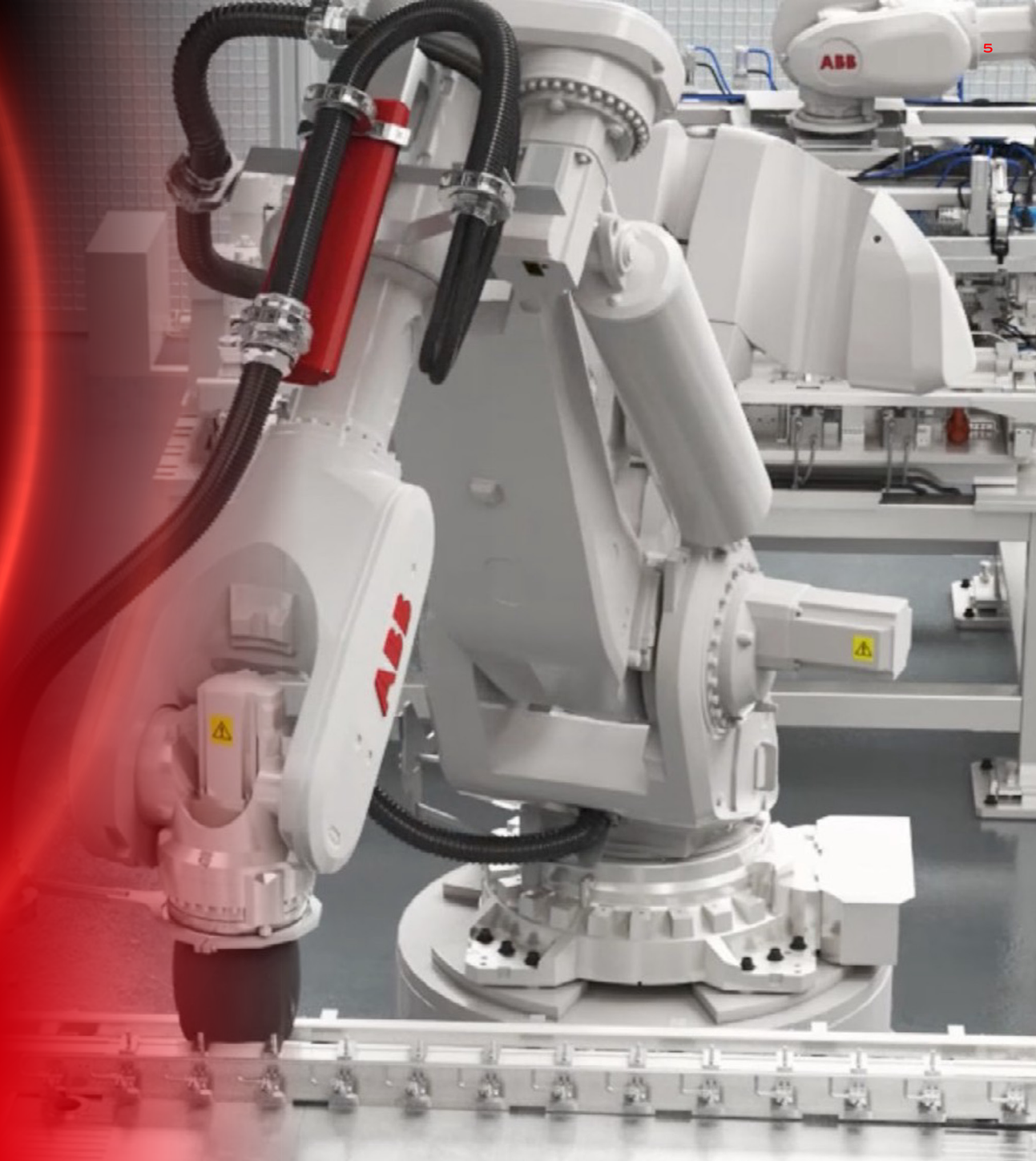
- As the automotive industry is increasingly developing toward sustainable manufacturing, the industry relies on robotics and automation to provide technological solutions that can increase production rates and reduce costs.
- Automation has always been an increasingly important factor in the production of automotive vehicles, and it is critical to ensure that the right solutions are in place to meet the demands of the industry.

ABB ROBOTICS' OFFERING
SOLUTIONS FOR BATTERY TRAY MANUFACTURING

ABB Robotics is at the forefront of robotic solutions for the automotive industry, with a wide range of products and services designed to help manufacturers and suppliers produce EV battery trays more efficiently, accurately, and safely. Our solutions enable faster, more precise, and more cost-effective production of battery trays, as well as better quality control and improved safety for workers.

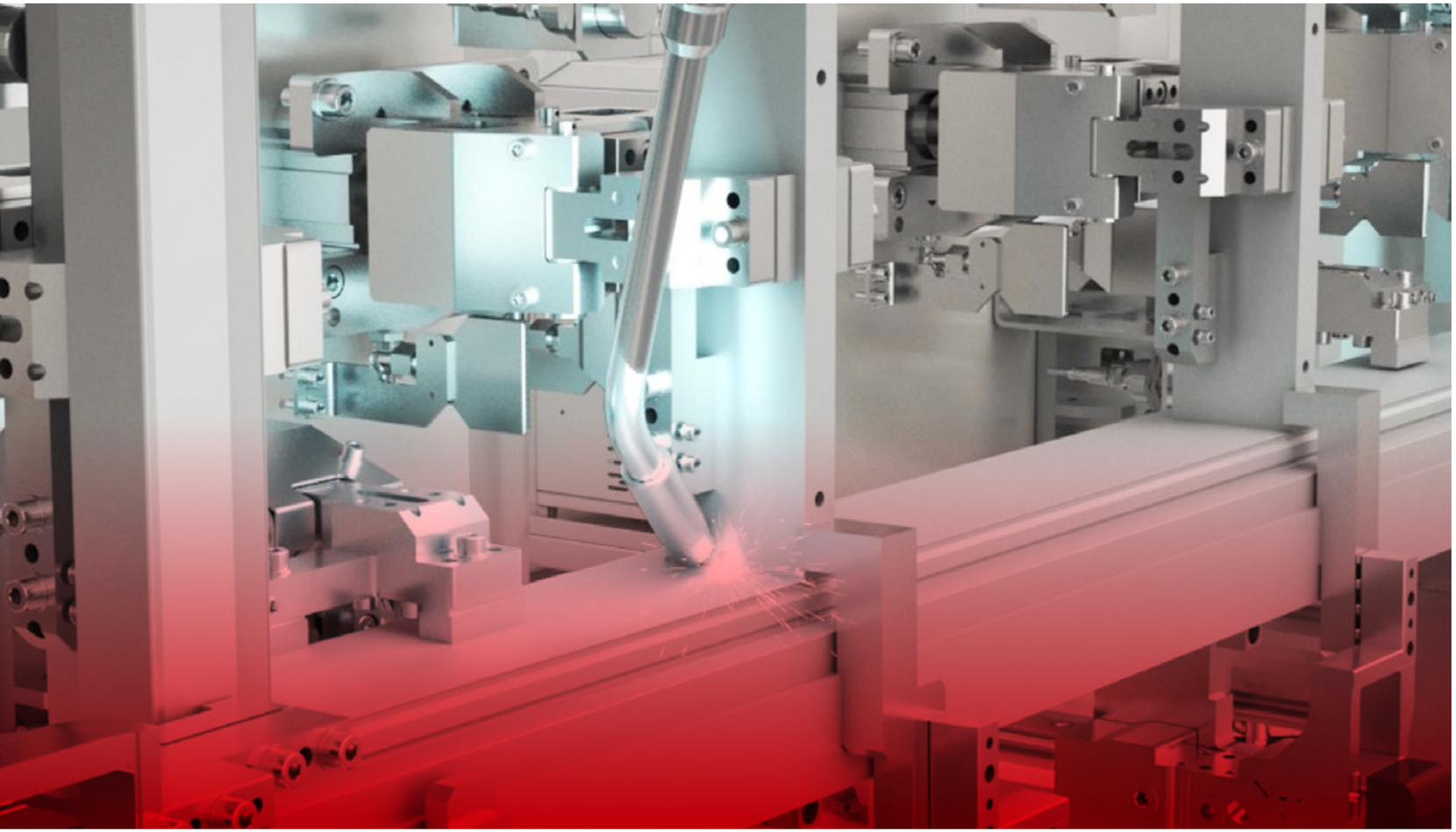
OUR OFFERING INCLUDES SOLUTIONS FOR:

- Arc Welding
- Laser Welding
- Spot Welding
- Friction Stir Welding
- Gluing and Sealing
- Paint Coating
- Automated Logistics by AMRs / AGVs



ARC WELDING

A VERSATILE SOLUTION FOR A BROAD RANGE OF PART DESIGNS



Arc welding offers multiple advantages, including the ability to create strong, durable welds that can withstand the stresses and vibrations of automotive applications. This method is versatile, as it can be used to weld a range of metals, such as aluminum and steel, making it suitable for various battery tray designs. Additionally, arc welding can be used for repairs and maintenance, allowing for the extension of the lifespan of EV battery systems.

- Cost-effective joining method
- Versatility for various materials
- Ease of use using ABB‘s robotized welding cells

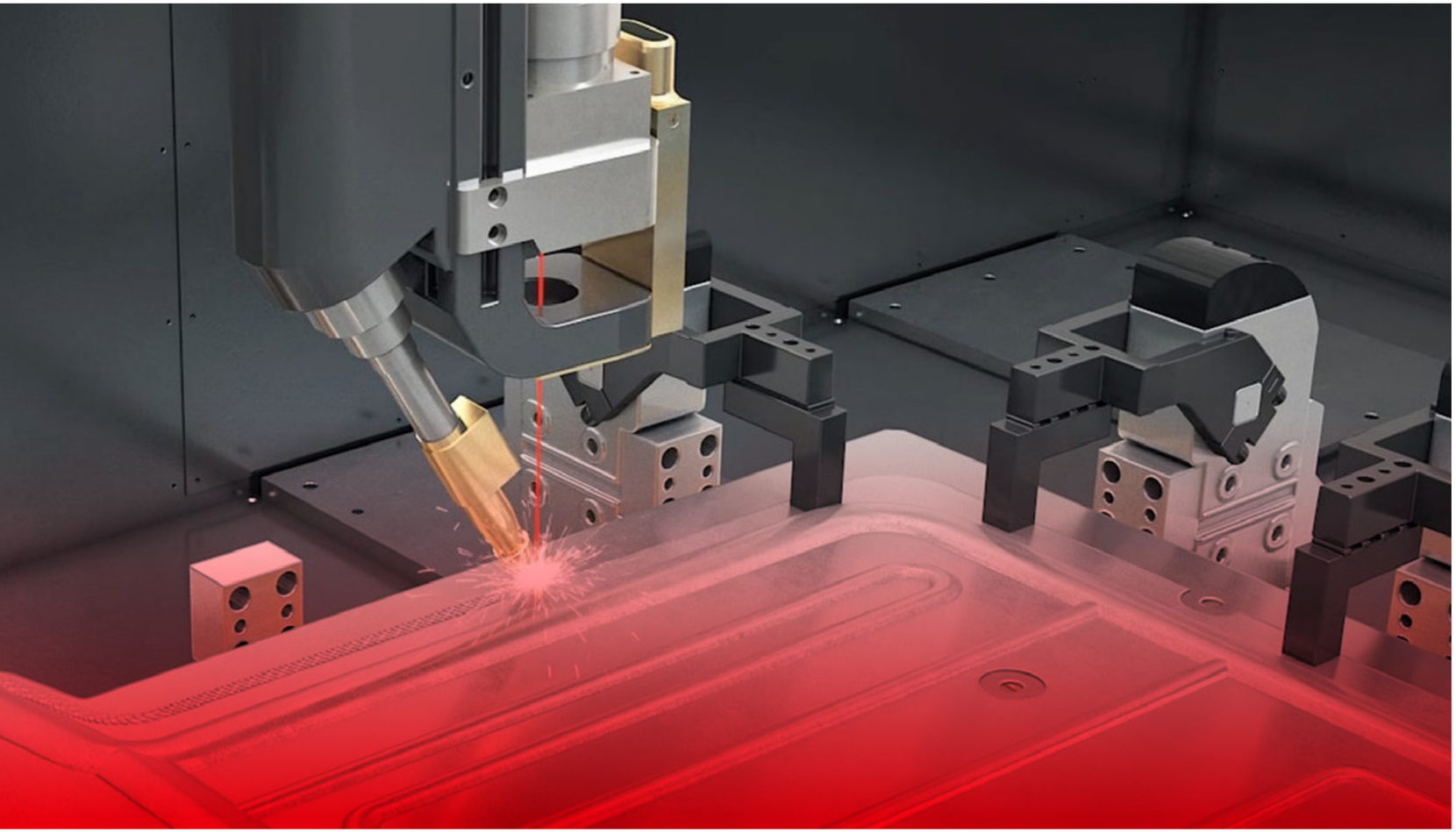
THE BENEFITS OF ABB ROBOTICS’ FLEXARC® WELDING CELLS

ABB Robotics’ FlexArc cell offers a reliable, standardized solution perfect for the production of different types of automotive components.

- Designed to deliver precision and speed for high-quality welding results
- Customizable and adaptable to meet changing production needs
- Easy programming and operation for quick integration into existing production lines
- Improved quality and consistency with minimal material waste

LASER WELDING

ULTIMATE PRECISION AND SPEED



Laser welding provides a high-precision, high-speed solution for welding battery trays. This is essential for the automotive industry, which needs welds that are tough enough to withstand harsh operating conditions and have a narrow heat-affected zone.

Not only the laser welding enables to weld multiple materials quickly and accurately, but also results in improved aesthetic appearance.

- High precision and accuracy for complex geometries
- High-speed welding for increased productivity and throughput
- Improved quality with reduced distortion and heat affected zones, with or without added material (welding wire)

THE BENEFITS OF ABB ROBOTICS' LASER WELDING CELLS

Flexible and versatile tailor-made solutions for a wide range of materials and applications.

- Consistent and repeatable high-quality laser welds with reduced scrap and rework
- Increased productivity with high welding speeds, shorter cycle times and improved accuracy
- The system can be equipped by a range of advanced features, such as seam tracking sensors, vision systems, and automated workpiece handling, for a flexible and reliable welding process

SPOT WELDING

A RELIABLE SOLUTION WITHOUT ADDED MATERIALS

Resistance spot welding is an efficient process for manufacturing EV battery trays. Its advantages, including high-quality welds, speed, consistency, and cost-effectiveness, make it an attractive option for automotive manufacturers.

- Fast process ideal for high-volume manufacturing
- Requires minimal consumables, such as welding wire or gas, making it a cost-effective joining method
- Provides consistent and repeatable welds, which helps ensure the quality of the final product
- Thanks to heating only a small area of the part, it can produce strong, reliable welds without distorting the surrounding material

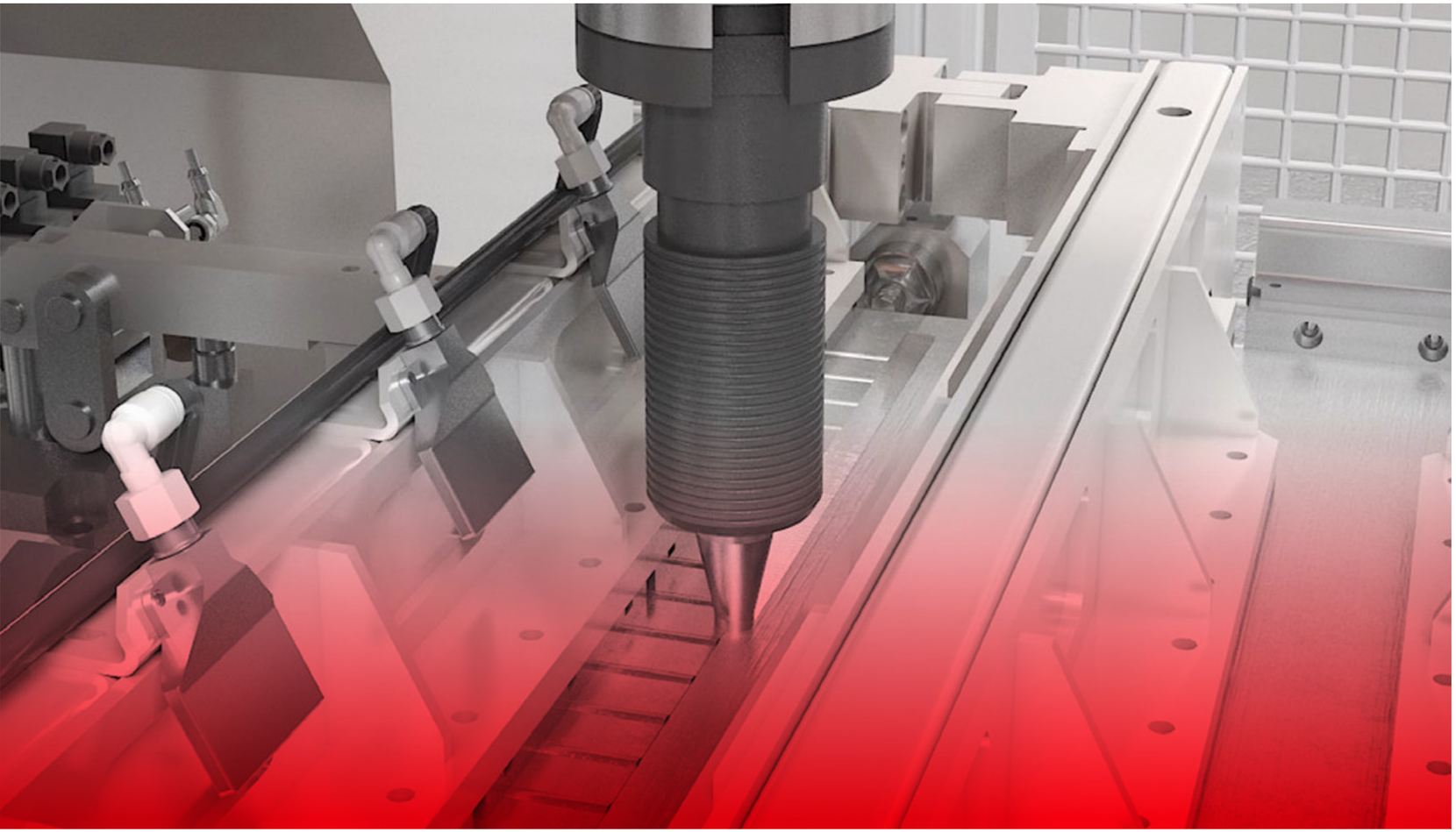
THE BENEFITS OF ABB ROBOTICS' SPOT WELDING FUNCTIONAL MODULE

A fully configured ready-to-use robotic solution for spot welding that offers high quality and high performance.

- A fully configured ready-to-use spot welding system
- Robot-held or stationary weld gun
- High-quality and high-performance spot welding
- A modular and flexible solution adaptable to your needs

FRICTION STIR WELDING (FSW)

STRONG, HIGH-QUALITY JOINTS FOR TOUGH ENVIRONMENTS

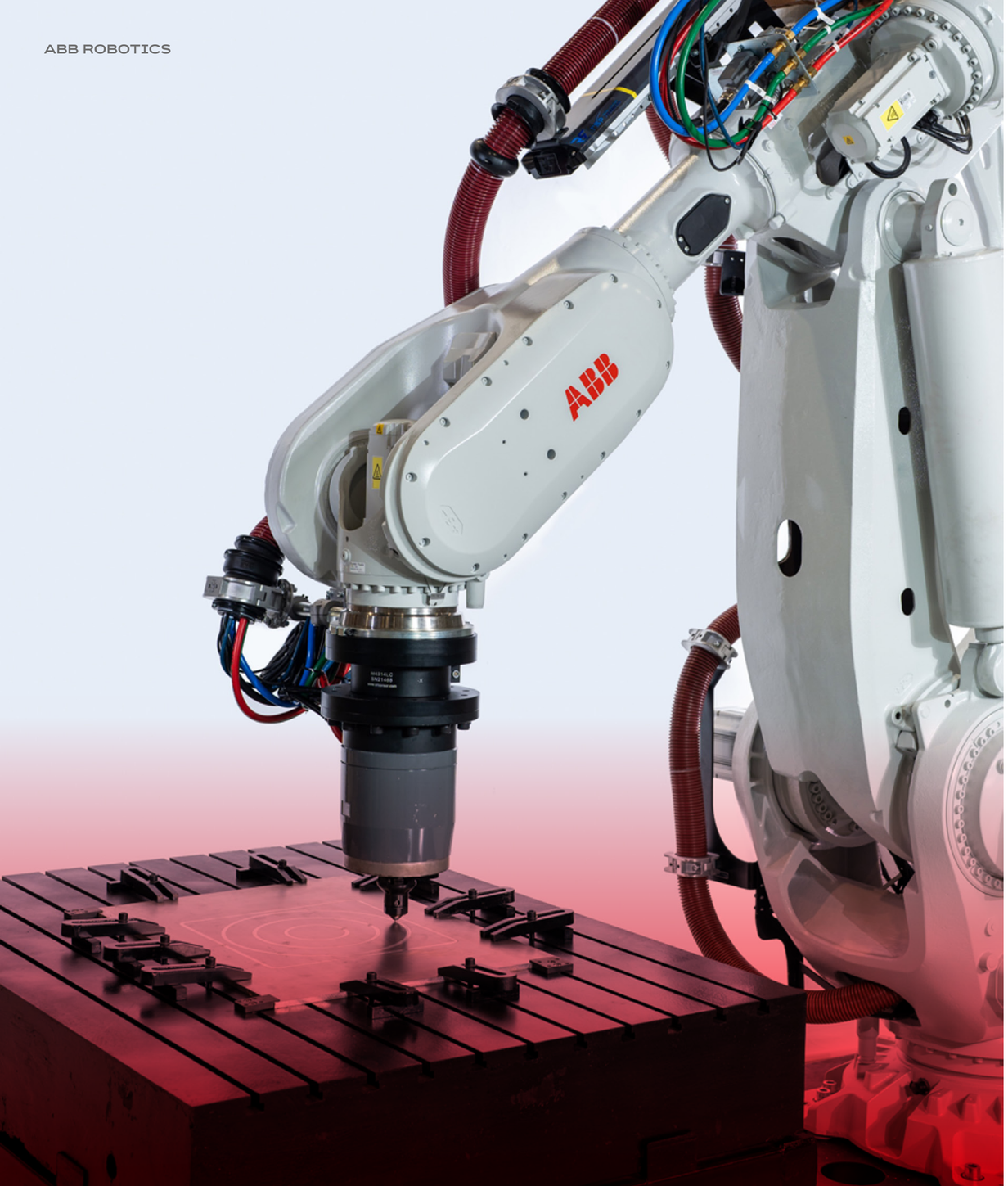


Friction stir welding (FSW) is a solid-state welding process that uses a non-consumable tool to join two materials by mechanical mixing without melting them, creating strong and reliable joints that can stand up to even the toughest operating conditions. This makes it an ideal process for battery trays.

- High-strength and fatigue-resistant joints for demanding applications
- Reduced distortion and residual stress for improved part integrity
- Increased welding speed and improved welding quality compared to traditional welding methods
- Reduced environmental impact with no hazardous fumes or emissions

THE BENEFITS OF ABB ROBOTICS' FRICTION STIR WELDING

- FSW processing head seamlessly integrated to ABB robots.
- Enables higher flexibility compared to computer numerical control (CNC) machines
- Allows for the joining of 3D contours
- High-quality and consistent joints for improved part performance and reliability
- Improved efficiency and productivity with reduced cycle time and increased uptime



FOCUS ON

FSW FUNCTIONAL MODULE

All-in-one FSW Functional Module for joining of light alloys, mainly in battery trays

- ABB robot IRB 7720-620/2.9
- Force-controlled path compensation
- Friction stir welding head, chiller and controller
- Application software

Consistent weld quality

- Strong joints without cracks and porosity
- Low heat input—less distortion and residual stress

Flexibility in small footprint

- 50-70% space saving compared to CNC
- Able to weld 3D shapes and use positioners

Cost-effective

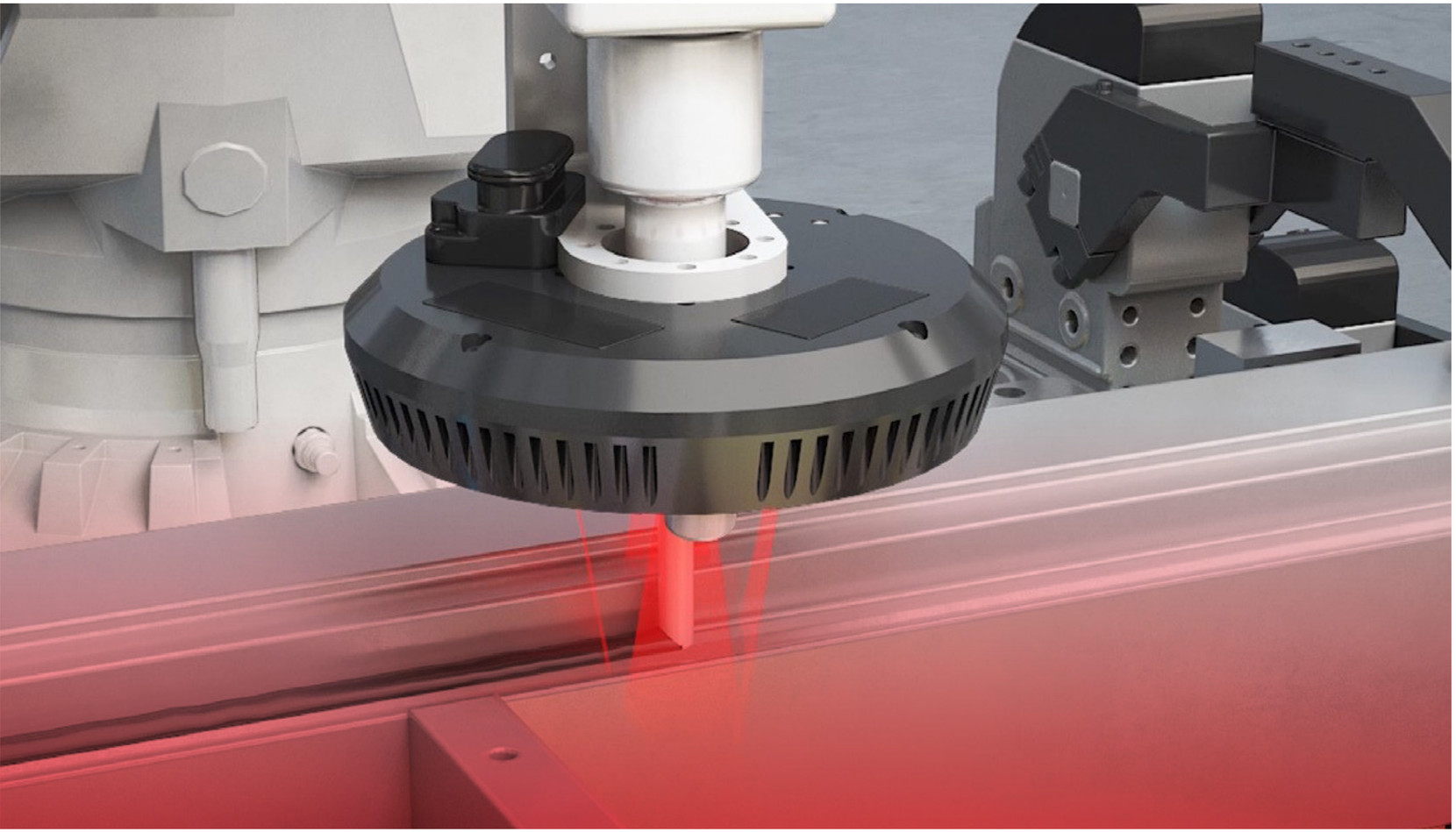
- 50-70% cheaper than CNC
- Robot supplier common equipment

Seamless integration

- Pre-engineered function module
- Pre-defined programming
- Force-controlled path compensation

GLUING AND SEALING

HIGH-QUALITY AND COST-EFFECTIVE



Gluing and sealing involves the application of glue and sealants to components, ensuring that they are securely held together.

This is useful for manufacturing battery trays because the seals and glue help ensure that the cells are securely held in place, preventing them from rattling around and potentially damaging the tray or the cells.

Glue and sealants also help to protect cells from the elements and provide additional insulation, helping to extend their lifespan.

- Improves durability by providing high-quality bonding and sealing that can withstand harsh conditions
- Increases efficiency by reducing the need for additional fasteners
- Enhances safety by preventing the escape of hazardous materials and reducing the risk of fire or explosion
- Can be used in various stages of the manufacturing process and meet highly specific application requirements

THE BENEFITS OF ABB ROBOTICS' GLUING AND SEALING SYSTEMS

- Improves quality and consistency with high-precision and accurate dispensing.
- Flow of applied material precisely regulated based on robot's speed
- Customizable and adaptable for different materials and applications
- Reduced cycle times, improved efficiency and throughput
- Reduced material waste and costs

PAINT COATING

UNBEATABLE PRODUCT APPEARANCE

ABB Robotics' paint coating automation is revolutionizing the automotive industry. This solution allows automotive suppliers to apply paint quickly and cost-effectively to components such as battery trays, with reliable, high-quality results every time.

With ABB Robotics' paint automation, you can trust that your automotive parts will always look their best.

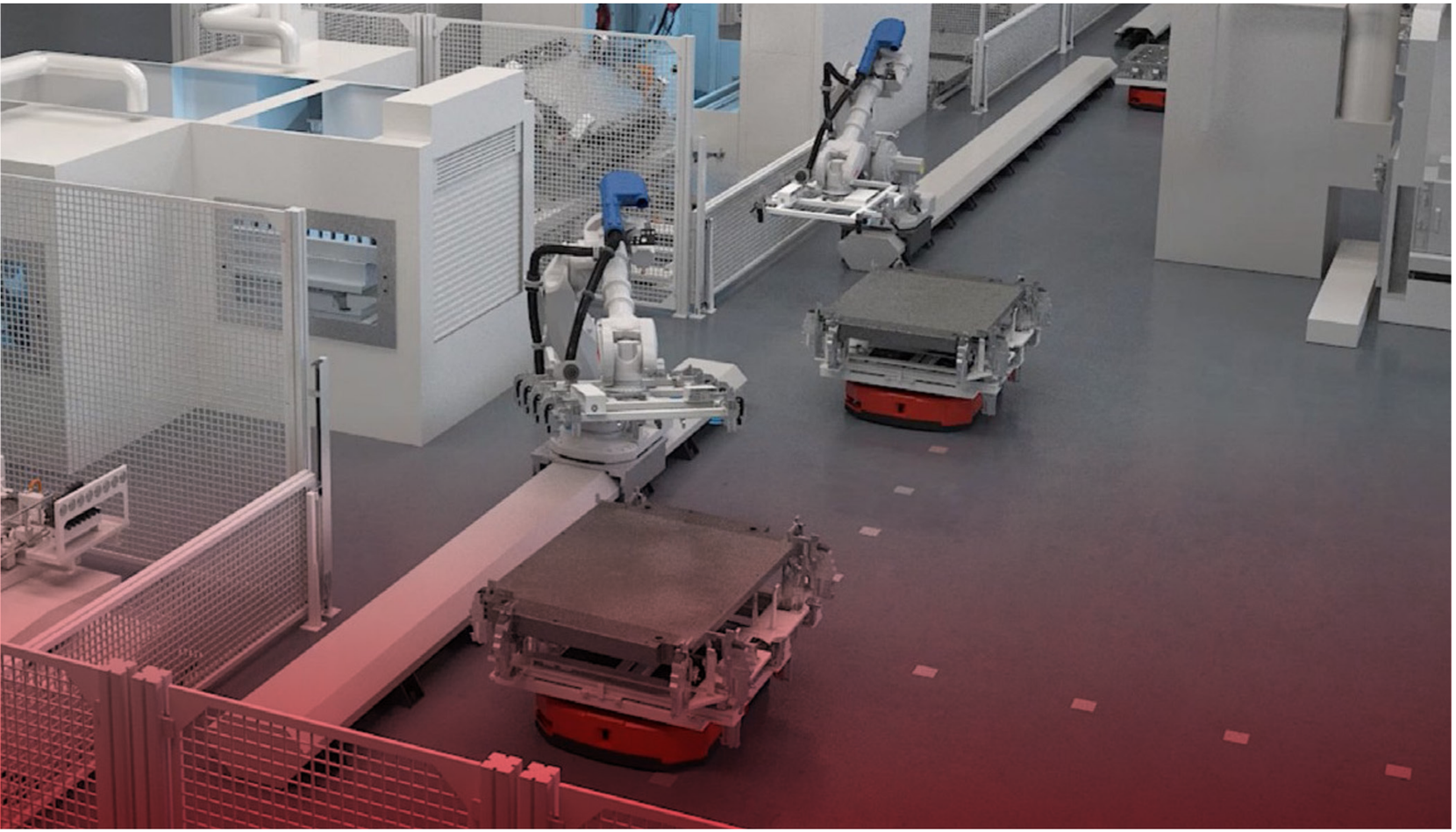
- Precise and consistent coating application for improved product appearance and performance
- Reduced material waste and overspray with optimized spraying parameters and controls
- Faster and more efficient coating process with high-speed multi-axis robots

THE BENEFITS OF ABB ROBOTICS' PAINT COATING AUTOMATION

- A complete robot range for paint applications that meet EX standards for working in explosive areas.
- Excellence in the development of own high-performance spraying equipment
- Improved quality and consistency with high-precision and accurate coating application
- Enhanced efficiency and reduced environmental impact with reduced overspray and waste

AGVs AND AMRs

ADD FLEXIBILITY TO YOUR LOGISTICS OPERATIONS



Autonomous mobile robots and automated guided vehicles are gaining popularity in the automotive industry, as they can automate material handling processes, thereby increasing efficiency, reduce operational costs and improving safety at the same time.

Make your battery tray manufacturing more efficient and safer with ABB Robotics' AMRs and AGVs.

- Automated and flexible material handling for optimized production flow and logistics
- Greater flexibility and scalability of entire logistics process to meet production demands
- Precise navigation and routing for increased efficiency and productivity
- Reduced operational costs

THE BENEFITS OF ABB ROBOTICS' AGVs AND AMRs

- ABB Robotics offers a wide range of AGVs and AMRs that are specifically designed to address the logistics challenges in the automotive industry.
- Optimized material flow and logistics without the need for conveyors and forklifts
- Improved data collection and traceability of parts in the manufacturing line
- Increased efficiency and productivity with automated and flexible material handling
- Easy to scale as production increases or evolves; high process reliability versus rigid conveyors

FOCUS ON

AI-ENABLED TECHNOLOGY FOR AMR SOLUTIONS

THE AI NAVIGATION TECHNOLOGY

Visual SLAM is a navigation technology that combines AI and 3D vision using off-the-shelf cameras. It allows AMRs to make intelligent decisions based on their surroundings and provides higher accuracy and robustness even in challenging environments.

Together with this technology, the new AMR Studio® software enables faster commissioning and ensures superior performance in dynamic and unstructured installations.

THE COMPLETE SOLUTION: MAKE THE MOST OUT OF INTRALOGISTICS

- More flexible and robust solution for logistics automation in production plants
- Up to 20% faster commissioning
- VSLAM makes AMRs 20% faster than 2D SLAM

AUTOMATE SUCCESS WITH ABB ROBOTICS

ABB Robotics is one of the world's leading robotics and machine automation suppliers, the only company with a comprehensive and integrated portfolio covering robots, Autonomous Mobile Robots and machine automation solutions, designed and orchestrated by our value-creating software.

We help companies of all sizes and sectors—from automotive to electronics and logistics—to outperform by becoming more resilient, flexible and efficient. ABB Robotics & Discrete Automation supports customers in the transition towards the connected and collaborative factory of the future, operating leaner and cleaner for a better future.

Reach out to discuss the full Battery Trays solution offering and what it can do for you in greater detail or explore it further here

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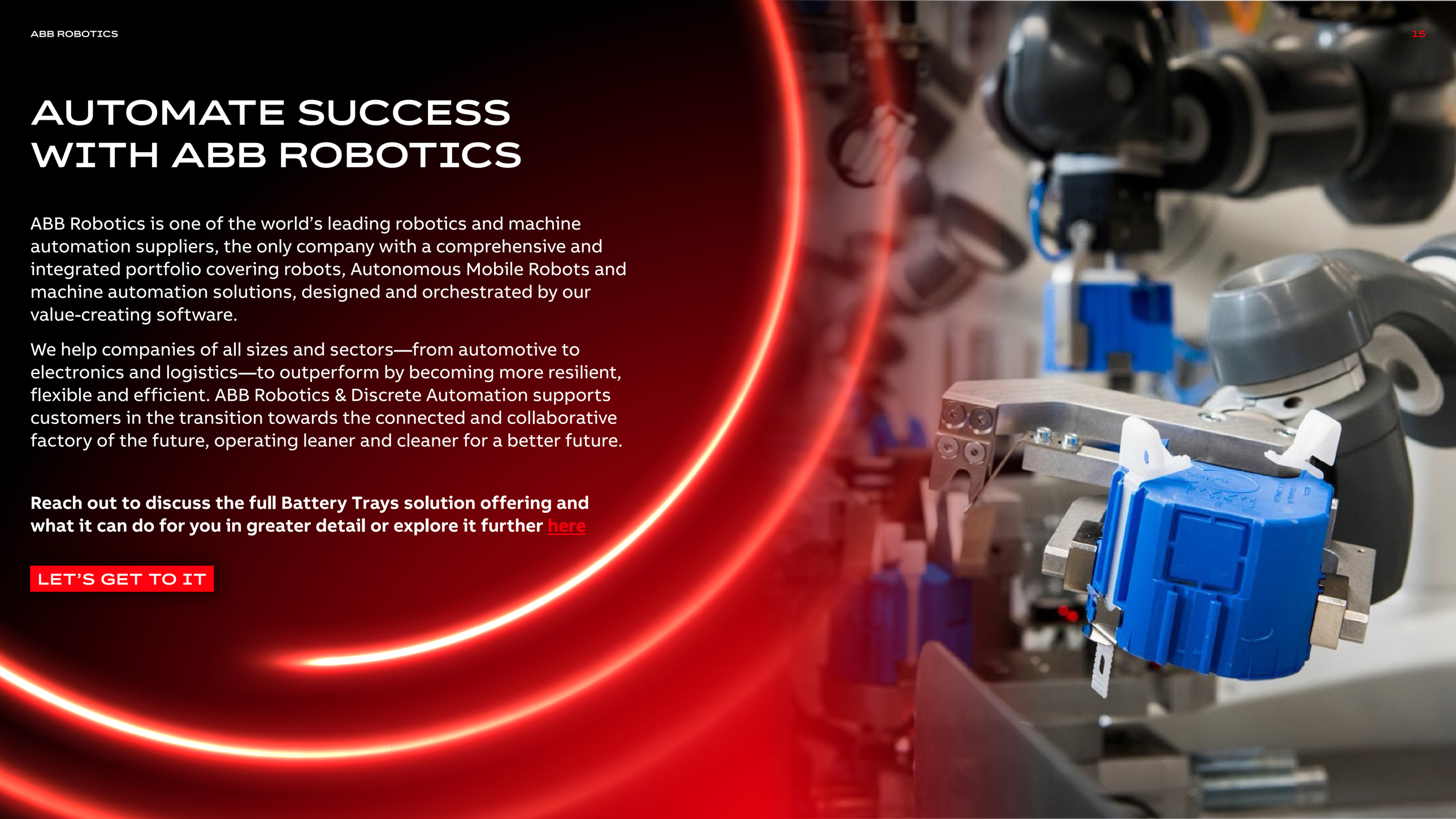

ENGINEERED TO OUTRUN

ABB is a global technology leader in electrification and automation, enabling a more sustainable and resource-efficient future. By connecting its engineering and digitalization expertise, ABB helps industries run at high performance, while becoming more efficient, productive and sustainable so they outperform. At ABB, we call this ‘Engineered to Outrun’. The company has over 140 years of history and around 110,000 employees worldwide. ABB’s shares are listed on the SIX Swiss Exchange (ABBN) and Nasdaq Stockholm (ABB). www.abb.com/automotive

ABB Robotics & Discrete Automation as one of the world’s leading robotics and machine automation suppliers, is the only company with a comprehensive and integrated portfolio covering robots, Autonomous Mobile Robots and machine automation solutions, designed and orchestrated by our value-creating software. We help companies of all sizes and sectors - from automotive to electronics and logistics – to outperform by becoming more resilient, flexible and efficient. ABB Robotics & Discrete Automation supports customers in the transition towards the connected and collaborative factory of the future, operating leaner and cleaner for a better future. The business area employs approximately 11,000 people at over 100 locations in approximately 53 countries. go.abb/robotics