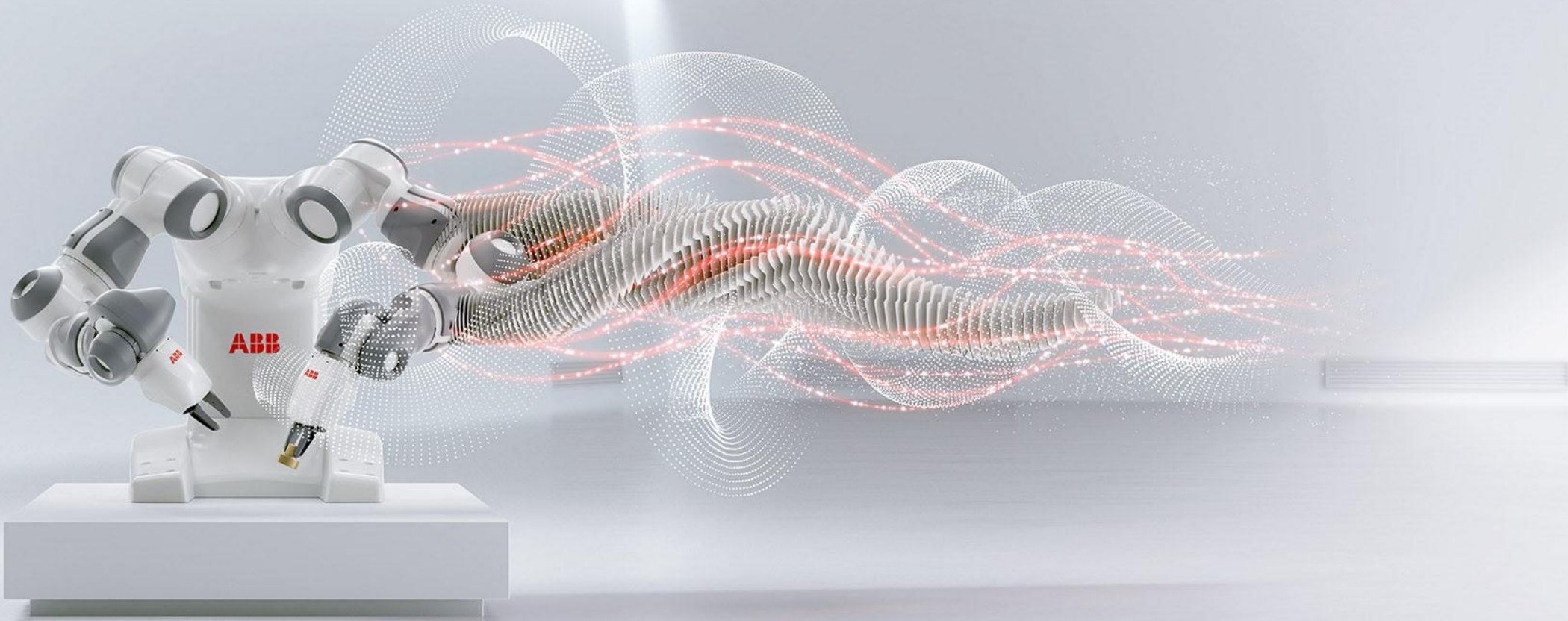




2021

Robotics & Discrete Automation

Business Overview

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Agenda

- Introduction to ABB Robotics & Discrete Automation
- Reasons to invest in Robotics solutions
- ABB Product Portfolio
- Robotics Applications
- Q&A

Robotics & Discrete Automation in ABB's portfolio

Robotics & Discrete Automation



Employees

~11 k

Electrification



~53 k

Industrial Automation



~22 k

Motion



~20 k

Unique insights and solutions to help our customers

Robotics & Discrete Automation

Ready to support you

At home in over 100 locations and 53 countries, over 500,000 robots delivered

A strong engineering & sales presence, supported by **25 global application centers**

Unique Authorized Value Provider network

11,000+ professionals, including the industry's broadest service network

A technology and service pioneer and early mover in digital



All backed-up by the Industry's most comprehensive Service Network and Offering

Innovation strength

Portfolio and segment milestones

Phase 1: the start

Automotive



IRB6



Articulated

Phase 2: expansion

Gen. Ind., Consumer, Electronics



Delta



Engineering tools

Phase 3: B&R acquisition

Machine Automation



PLC, Servo motion

Phase 4: new growth areas

Healthcare, Retail, Logistics



Collaborative robots



Machine-centric robotics

1970

2020+

Robotics offering portfolio overview

“Robotics +” customer value stack

Service business

Application services

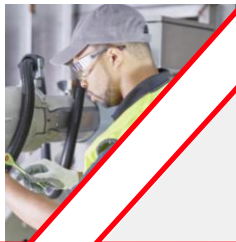
- OEE improvements
- Upgrades
- Lifetime extensions

Field service

- Data driven services
- Virtual support
- Predictive Maintenance

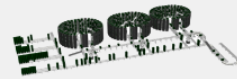
Spare parts

- Flat-fee agreements
- Peace of mind



Products & solutions

Smart systems



Application cells



Functional modules



Peripherals



Robots



Product software



Software & digital ecosystem

Common operations apps e.g. OEE



Partner apps



Robot Studio Digital twin



Business apps e.g. quality control



Partner apps



Common platform

- Data collection
- User developer tools



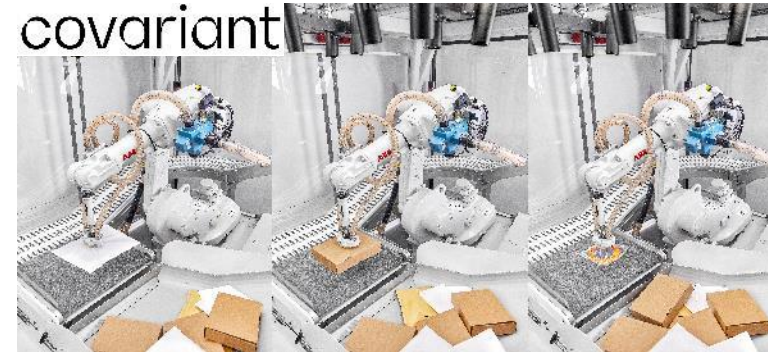
Innovating in new areas

Building on new technologies

Collaborative robotics



Software: AI and connected services

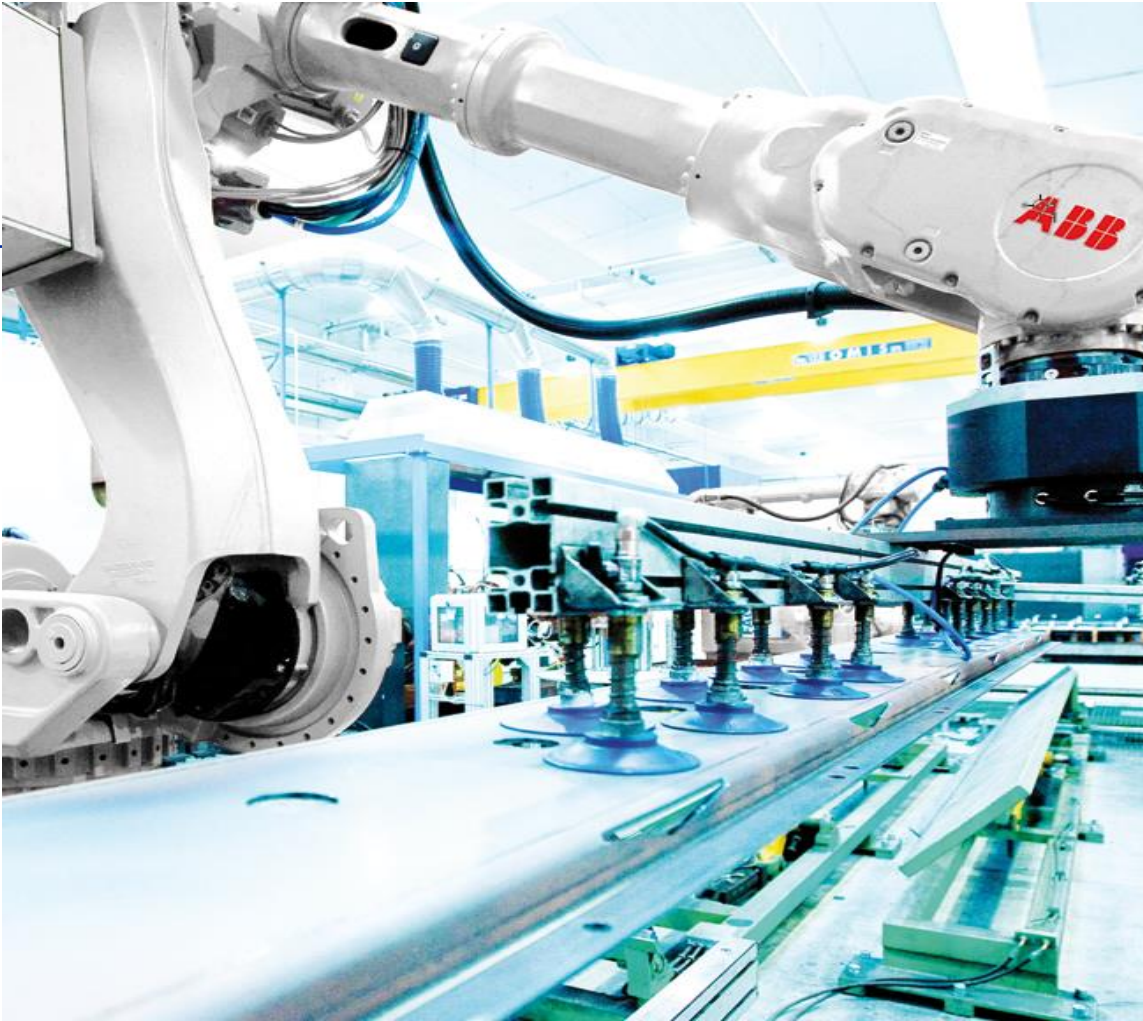


Mobile robots



Robotics

The Top 10 Reasons for Robot Investment



10 Reasons for Robot Investment

- Increase production output rates
- Reduce operating costs
- Improve process quality
- Improve workplace health & safety
- Increase product manufacturing flexibility
- Reduce material waste and increase yield
- Reduce labour turnover and difficulty of recruiting workers
- Save space in high value manufacturing areas
- Reduce capital costs (inventory, waste)
- Improve quality of work for employees

What makes ABB Robotics different?

Technology leadership

- 1 A pioneer in industrial robots, collaborative robots and first mover in digitalization

Global/local footprint

- 2 Strong local sales and engineering coupled with deep, global domain expertise and supported by the industry's broadest service offering and network

Unique offering

- 3 An integrated one-stop-shop from components to complete solutions from a trusted brand

Strong solutions focus

- 4 Working closely with our customers to develop tailored, purposeful solutions for specific industries and applications based on simplification, collaboration and digitalization

ABB is much more than a robot company

What makes ABB Robotics different?

Technology leadership

A 40 history of innovation

A robot pioneer with a long list of 'world's first'

An early mover in digitalization and service innovation

YuMi, the world's first truly collaborative robot

A trusted partner who continues to
redefine robotics automation



What makes ABB Robotics different?

Our global and local footprint 1/2

At home where our customers are home

A strong sales and engineering presence,
supported by 25 global application centers
Unique Authorized Value Provider network

Unique insights and solutions
to help our customers.



What makes ABB Robotics different?

Our global and local footprint 2/2

Unrivalled service support

An early mover in digital with over 6,000 connected robots in 750 factories

Value-based services focused on productivity and reliability

Tailored and standard service agreements for every level of 'worry free'

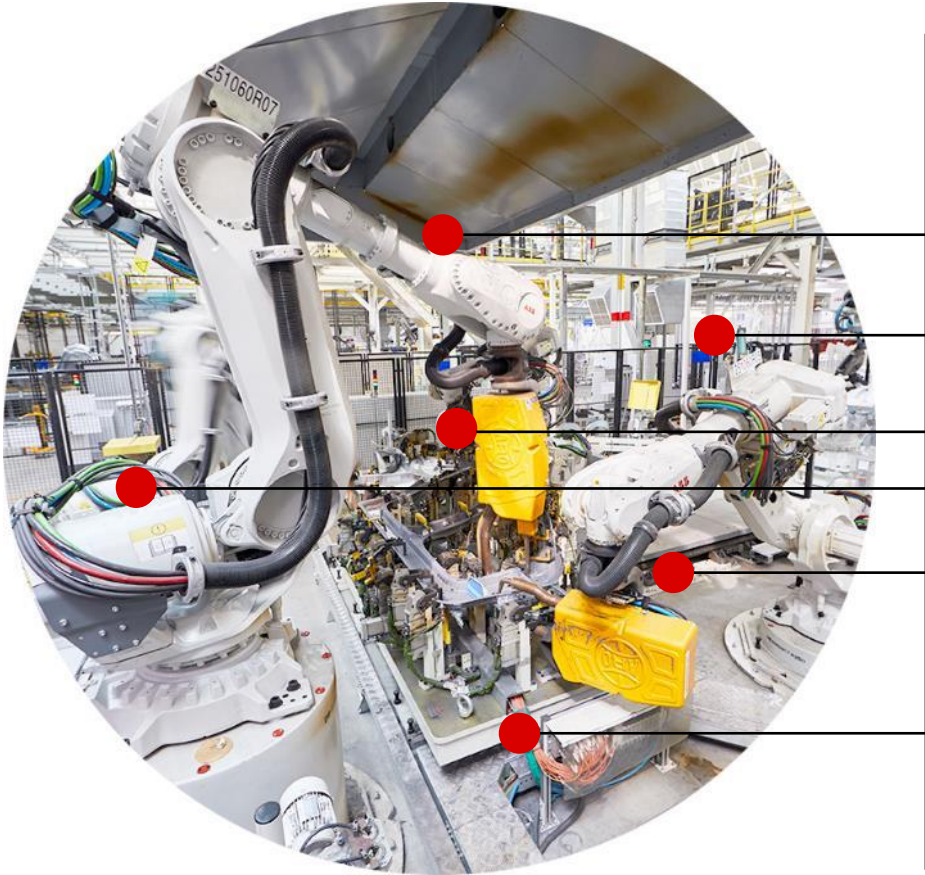
We sell systems and applications so we offer system and application service solutions

The industry's broadest and most comprehensive service support.



What makes ABB Robotics different?

Our unique offering



Software



Robots



Complete systems



Equipment



Comprehensive services



Cells, function packages

An enormous range of complete solutions from one trusted brand.

What makes ABB Robotics different?

Strong solutions focus

ABB's collaborative approach

Our heritage comes from thousands of turnkey systems installed in hundreds of factories in 53 countries

Co-development of unique, tailored solutions

Unique differentiators of collaboration, simplification and digitalization

We know how customers use robots and can help them run better.



Factory of the future



—

Q&A

Robotics

Products & Systems: Overview

Robots



Comprehensive range with capacity from 500 g to 800 kg

Application Equipment & Accessories



Fully integrated for Welding, Handling, Gluing, Sealing, Painting

Software



To support robots and systems throughout their entire life-cycle

Manufacturing Cells & Function Packages



Modular cells based on globally proven solutions

Automotive Systems



Fully engineered for B-i-W, Paint, Powertrain and Press Automation

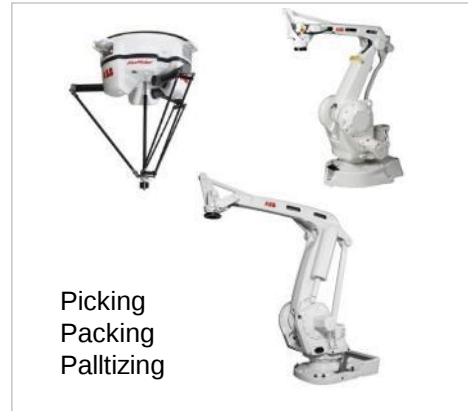
Robotics

Portfolio

6 Axis Robots



Dedicated 4 Axis Robots



Paint Robots



- Comprehensive range from 500 g to 800 kg payload capacity
- Robust, rigid, reliable, easy to use
- Customization through modular design concept
- Protection with IP67, Clean Room, Foundry Plus, Foundry Prime, Wash Down

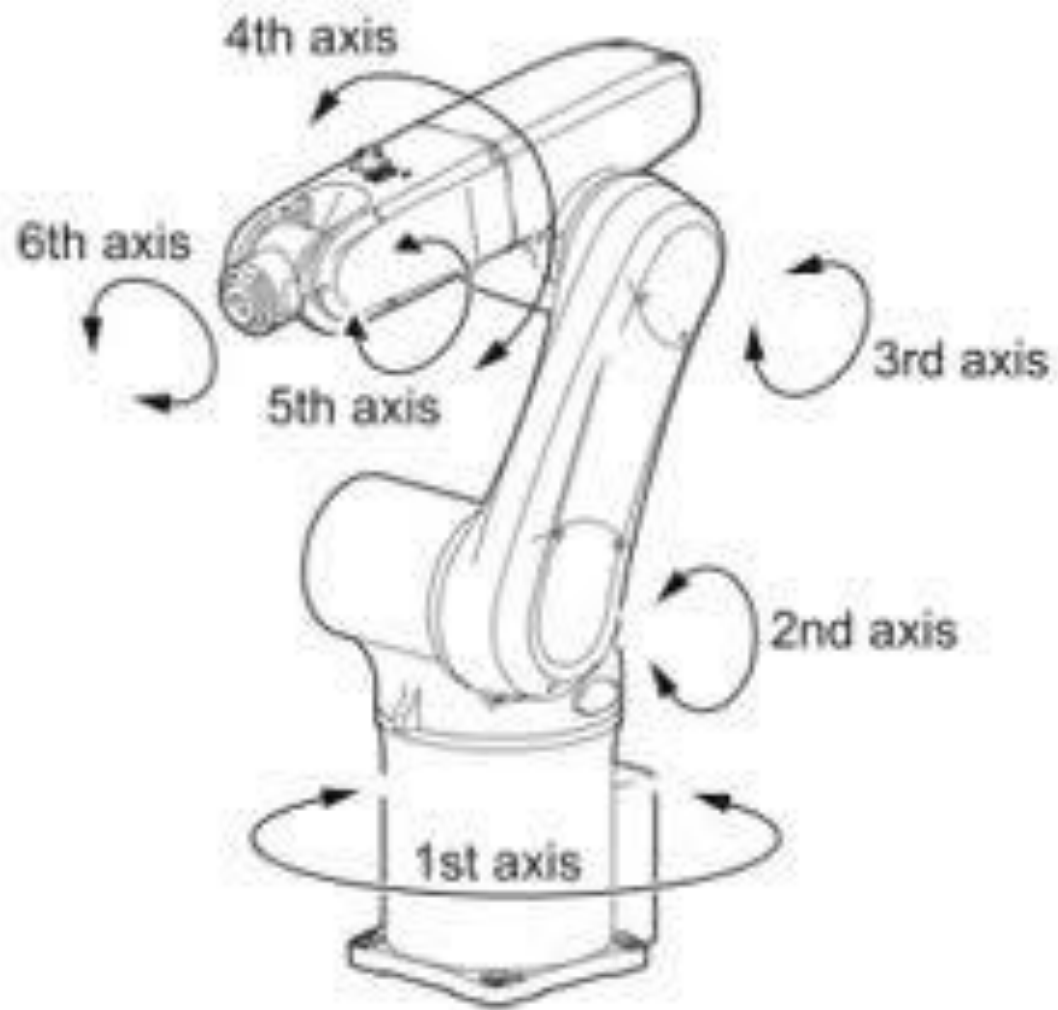




ABB to acquire ASTI Mobile Robotics Group

Robotics

Robot-based Manufacturing Cells

Working Range	Payload	Speed	Application	Environment / Protection						
 0.5 m – 4.2 m	 Comprehensive range with capacity from 500 g to 800 kg	 Medium speed robot High speed robot	 Welding/cutting Material handling Palletizing De-palletizing Packing Gluing Assembly Etc.	 IP Protection Cleanroom Wash down Foundry Installation area Floor, Invert, Tile or wall mounted						
Robot in Industries	Automotive 	Foundry & Forging 	Metal Fabrication 	Machine Tools 	Plastics & Rubber 	Food & Beverage 	Pharmaceuticals 	Transportation 	Electrical & Electronics 	Renewable Energy 



Robotics

The ABB Robot Family

Range suitable for a wide range of applications



IRB 330 FlexPacker™
For ultra-fast high payload
picking and packing



Workpiece Positioners

A comprehensive range of Workpiece Positioners

ABB Workpiece Positioners

- ABB offers a comprehensive range of Workpiece Positioners which enable the fully coordinated movement of the robot while programing; and during operations.
- The positioners are easy to use with clear, simple instructions for programing. They employ the same drive systems and software as ABB robots.
- The dynamic High Performance Positioner (HPP) software automatically compensates for the effects of gravity, inertia and friction to provide fast movements and accurate path following. The built-in robot software, Load Identification (LoadID), is used for calculating the dynamic performance of the positioners complete with parts and tooling. The positioners are ideal for manipulating workpieces during applications such as Arc Welding and Cutting.

Offering: **IRBP A, B, C, D, L, K, R**



IRBP A



IRBP B



IRBP C



IRBP D



IRBP K



IRBP L



IRBP R

Track Motions

Modularized to be able to support different market needs

Offering

ABB Track Motion systems are designed to ensure reliable and effective utilization of a robot's capacity, to maximize the value of your automation investment.

Track Motion greatly extends the robot's working area, enabling the same robot to serve many machines, and so minimizes the number of robots required.

- IRBT 2005 - Medium Track Motion Platform
- IRBT 4004
- IRBT 6004
- IRBT 7004
- IRT 501 FlexTrack



IRBT 2005 for IRB 1520,
1600, 2600, 4600



IRBT 4004 for IRB 4400



IRBT 6004 for IRB 6600



IRBT 7004 for IRB 7600



IRT 501 FlexTrack

OmniCore™ Controllers

Introducing a new era of flexible, digital robot control

The best made even better

- The first offering from ABB's new era of flexible, intelligent and tailored solutions
- A impressive range of controllers to deliver the ideal solution for every need.
- Designed for the rigorous performance and reliability needed to support 24/7 production of high-mix, low-volume products in shorter product cycles
- Significant size reduction for installation space savings.
- With the same superior precision, cycle times and speed that ABB is renowned for the new controllers can tackle the toughest challenges.



Fast time to market



Smaller



High throughput

The controller family



IRC5
ABB's fifth generation controller with groundbreaking customer benefits

IRC5C
IRC5 controller in a compact format, space saving benefits and easy commissioning through one phase power input

IRC5P Paint
The ultimate paint robot controller

IRC5 PMC
The PMC from ABB is available without a cabinet and can be integrated into any enclosure

OmniCore
A new era of flexible and digital robot control

Controller Software IRC5
RobotWare controller software

OmniCore™ Controllers

The compact line

OmniCore™ C line

- Compact robot controllers.
- Optimized to save space in small robot installations.
- C30 is Offering 50% reduction in size without any compromise on performance
- C90XT is offering 80% reduction in size



OmniCore™ C90XT

OmniCore™ C30

The new FlexPendant

- Modern, intuitive and powerful
- Large capacitive multi-touch display with standard gestures such as pinch, swipe and tap as on a smartphone
- Hot swappable - unplug during operation and share among several robots
- Extensive customization possibilities



ABB's New Collaborative Robotics Portfolio

The most diverse product range in the market for all collaboration needs, simplifying...everything

YuMi IRB 14000/14050



Inherently safe, truly collaborative

GoFa™ CRB 15000



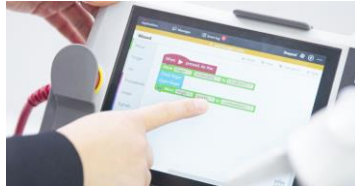
High payload close collaboration

SWIFTI™ CRB 1100



High performance intermittent collaboration

Wizard



Wizard
Easy programming
+ Skill Creator

**Ease-
of-Use**



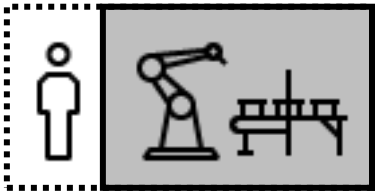
Tutorials,
AR, Skills..

Collaboration comes at many different levels

Low volume, high mix manufacturing means people and robots working closer, more often

No collaboration

- No shared space, barriers to keep people and robots apart



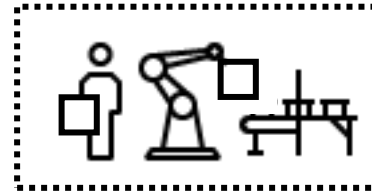
Fenceless operation

- No intention to share space but no barriers to prevent it



Sporadic interaction

- People enter the cell for intermittent tasks



Co-working

- People and robot share the same tasks and workspaces

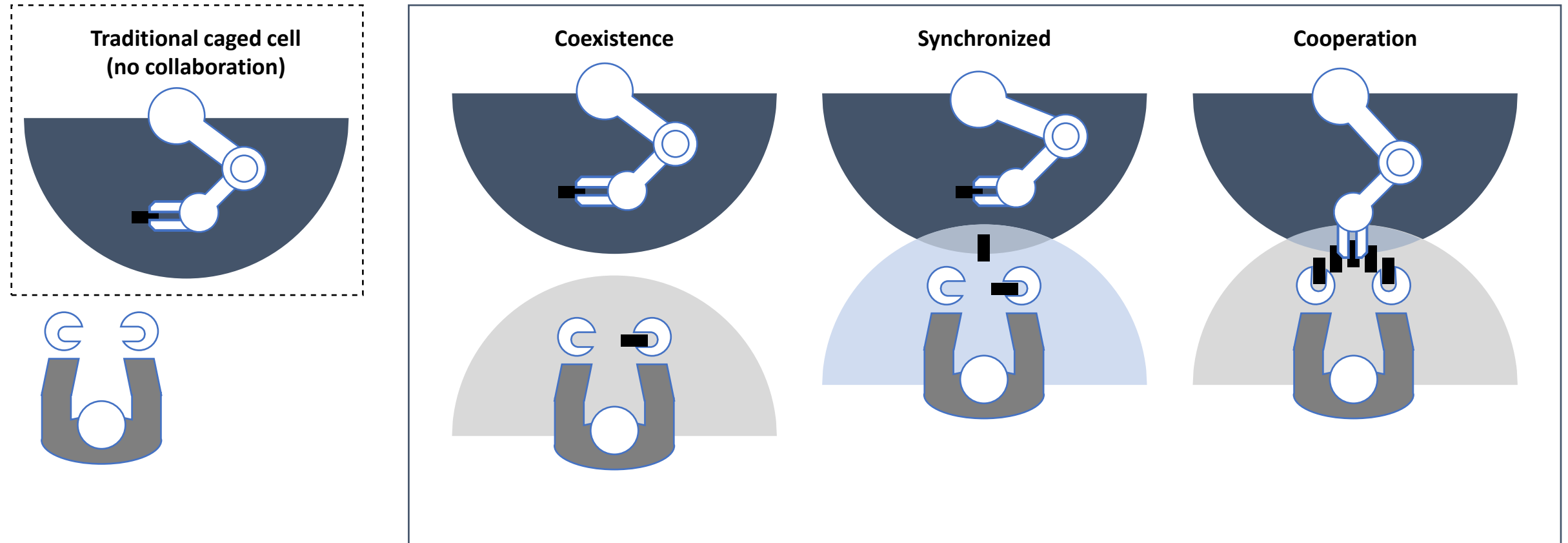


Benefits of collaboration

There are incremental benefits at every level of collaboration

Collaboration comes at many different levels

Low volume, high mix manufacturing means people and robots working closer, more often



The cobot family



GoFa™

CRB 15000

Go far with your new helping hand.

Go faster. Go further than ever. GoFa's class-leading speed, safety, and ease of use will take your business to the next level. Designed for loads up to 5 kg.

Payload
5 kg
Reach
0.95 m



SWIFTI™

CRB 1100

Unleash the speedy cobot.

A lightning-fast cobot that combines industrial-level performance and innovative safety. SWIFTI gets the job done faster and more accurately than you can imagine.

Payload
4 kg
Reach
0.58/0.475 m



YuMi®

IRB 14000 and IRB 14050

Inherently safe, incredibly agile.

Meet your robotic co-worker for small parts assembly. YuMi sets new standards for loads of up to 0.5 kg. Safe, quick, and flexible, it will make your operations more productive.

Payload
0.5 kg/per arm
Reach
0.56 m



Wizard

Wizard easy programming

Makes setting up and operating your cobot easier than you can imagine.

Get started programming robots immediately – no coding skills needed.

Features:

- Payload range up to 5 kg
- Extensive safety features for collaborative operation
- Easy to use
- Fast, repeatable performance for maximum productivity

Why Cobots:

- Enable simplicity
- Enhance flexibility
- Increase productivity
- Optimize performance
- Ensure consistent quality production
- Help employees with their tasks

GoFa™ CRB 15000

Go far. Go faster. Go further than ever. Take your business to the next level with GoFa.

- Superior power and force limiting with integrated sensors including force torque
- Highest TCP speed, 2.2m/s
- 12% Longer reach than comparable 5kg cobots, 950mm
- Smooth and responsive lead through in auto mode, best-in-class
- Enhanced interaction with Arm-side Interface
- Simple yet powerful Wizard easy programming
- IP54
- Full safety certification





SWIFTI™ CRB 1100

A lightning-fast cobot that combines industrial-level performance and innovative safety

- 5x higher max speed than other cobots
- Up to 10x higher repeatability than other cobots
- Clip-on lead through device (manual mode)
- Interaction status light
- SafeMove + SICK laser scanner included
- Simple yet powerful Wizard easy programming
- Integrated compressed air supply (most cobots don't have this)
- Industrial robot quality and reliability
- IP40
- Full safety certification

GoFa™ CRB15000

Lead-through in Auto mode



Software

Overview

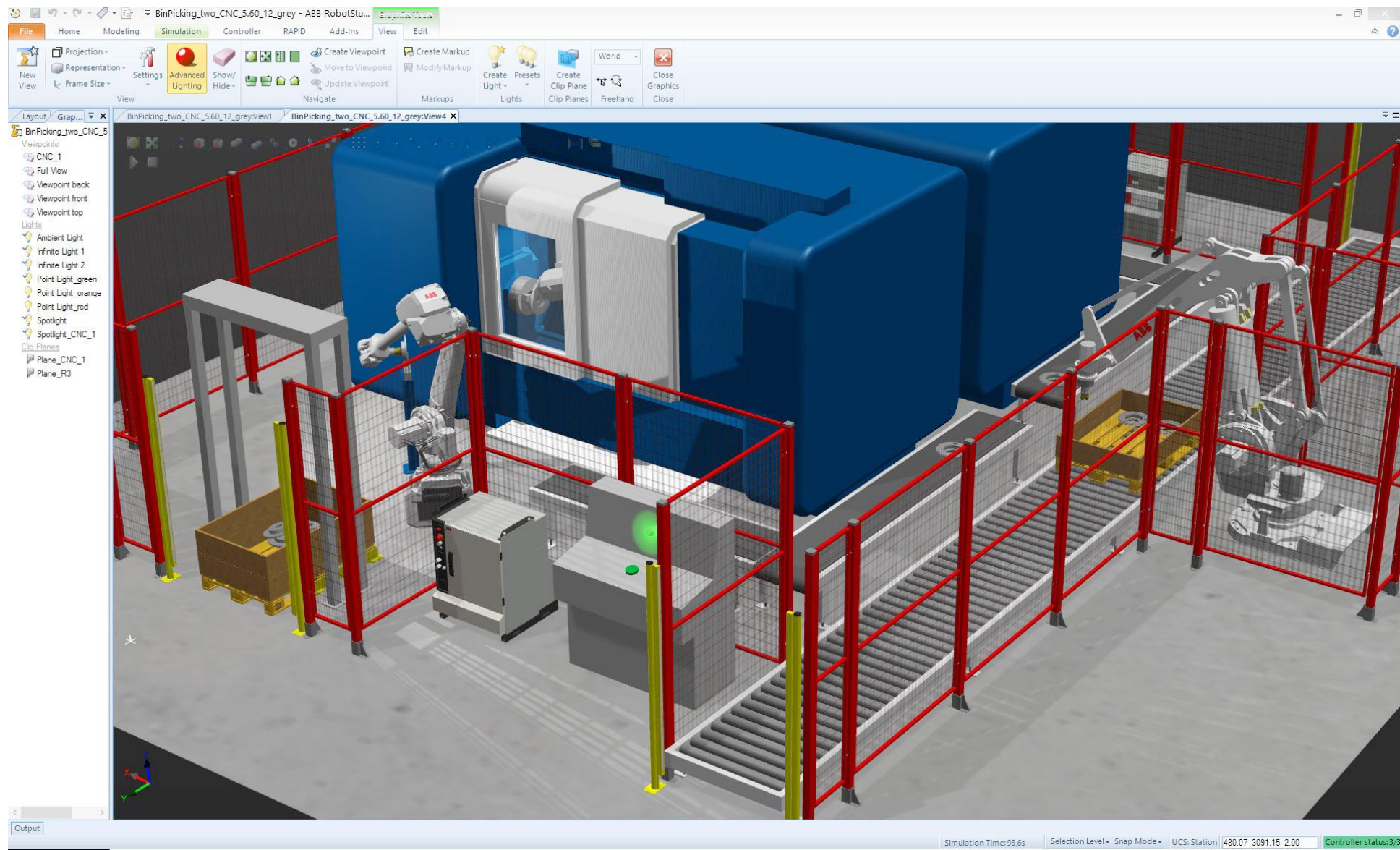
Application software

Regardless of whether you are a robot programmer or an operator ABB offers you a full range of easy-to-use software tools to help you to improve your process, optimize production, increase productivity, reduce risks and maximize the return of investment of your robot systems.

For example for Machine Tending applications ABB offers an integrated set of software tools that uses ABB's extensive experience in robotic machine tending to reduce operational expenditure and increase productivity. The software delivers easy and flexible programming, straightforward configuration and trouble-free operation of ABB robots in machine tending cells.

3D Printing software	Arc Welding software	RobotWare Assembly FC	Cutting software	Machine Tending software
Painting software	Palletizing software	Plastics software	Press automation software	Production screen
Pickmaster software	SpotWelding software	Wizards easy programing software		

Robot Studio



Service and after sales

Portfolio of services

Field Service & training



- At your service 24/7 for the best possible uptime
- For best-in-class competence, reducing your costs while improving operational efficiency

Parts and Logistics



- For a guaranteed 24 hour delivery of spare parts to customer site to avoid production stops

System and Application Services



- Securing your production by upgrading and extending the lifetime of your robots and robot equipment

Robots & Applications

- Business Line Welding & Cutting
- Business Line Handling & Machining
- Business Line Press Automation
- Business Line Assembly & Testing
- Business Line Packaging

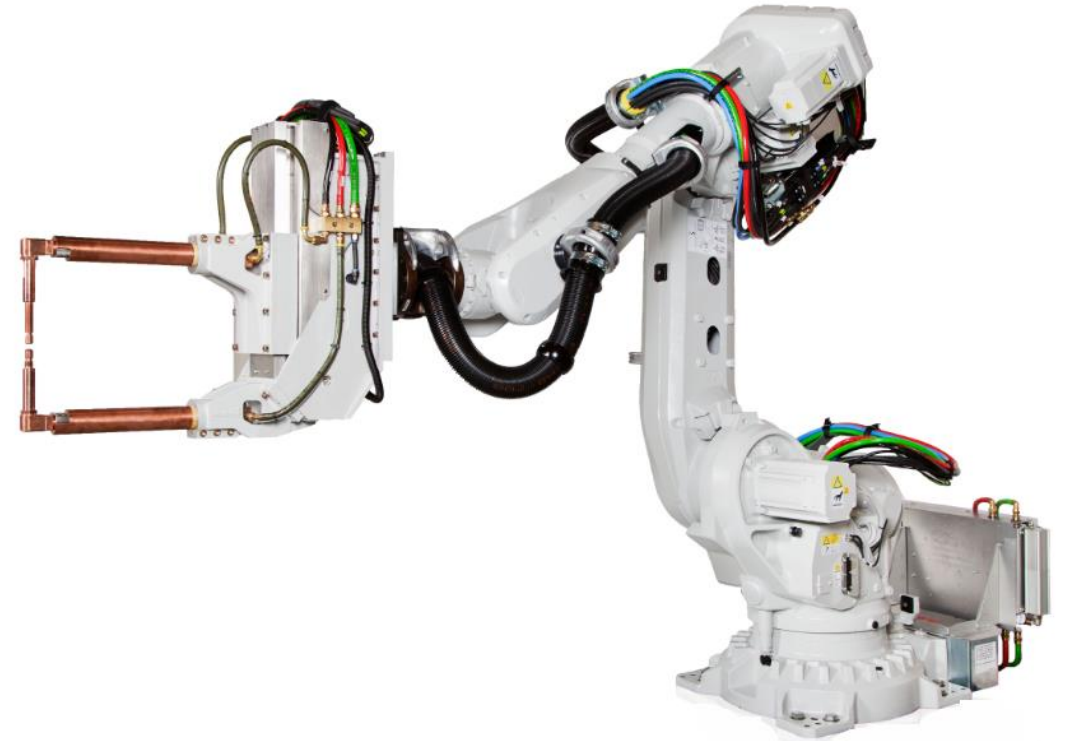
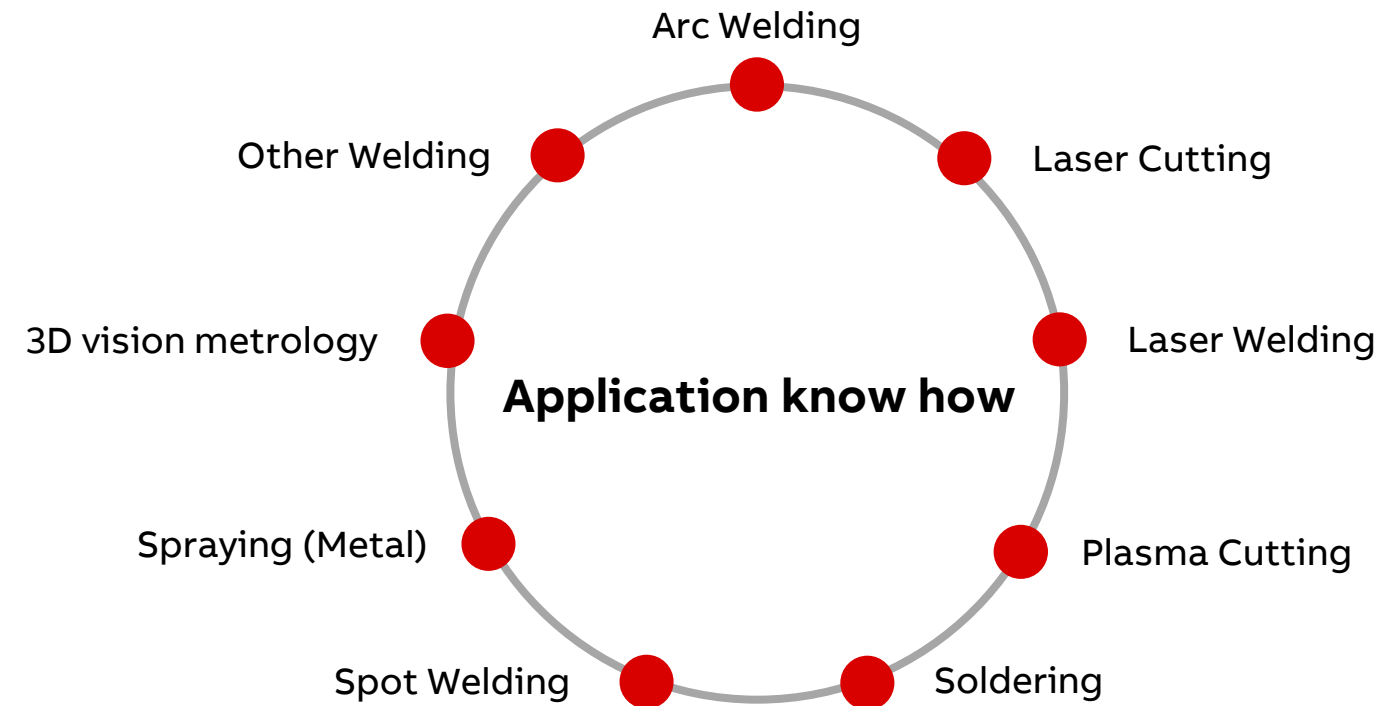


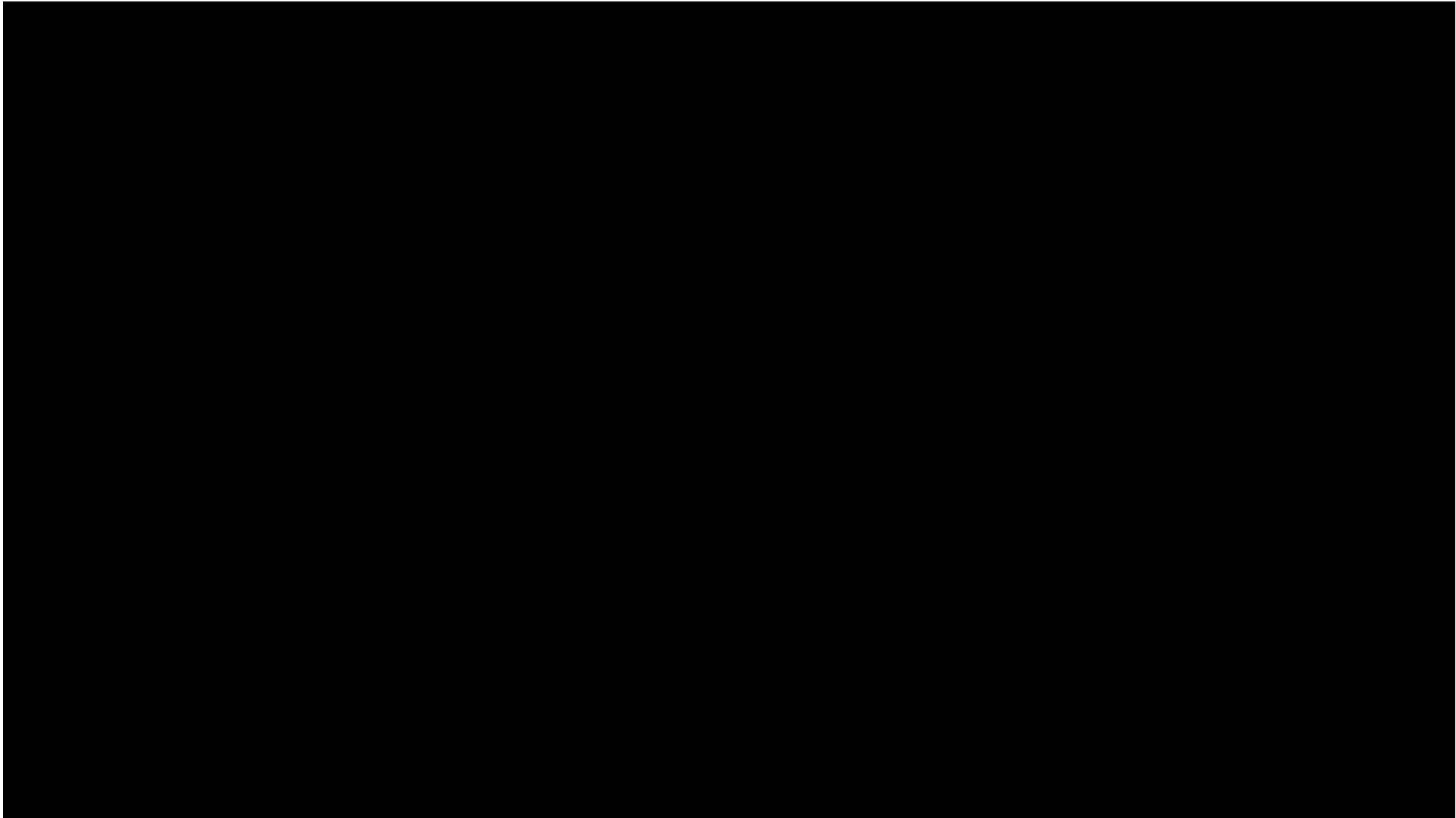
Welding & Cutting

Business Line

Welding & cutting

Business line





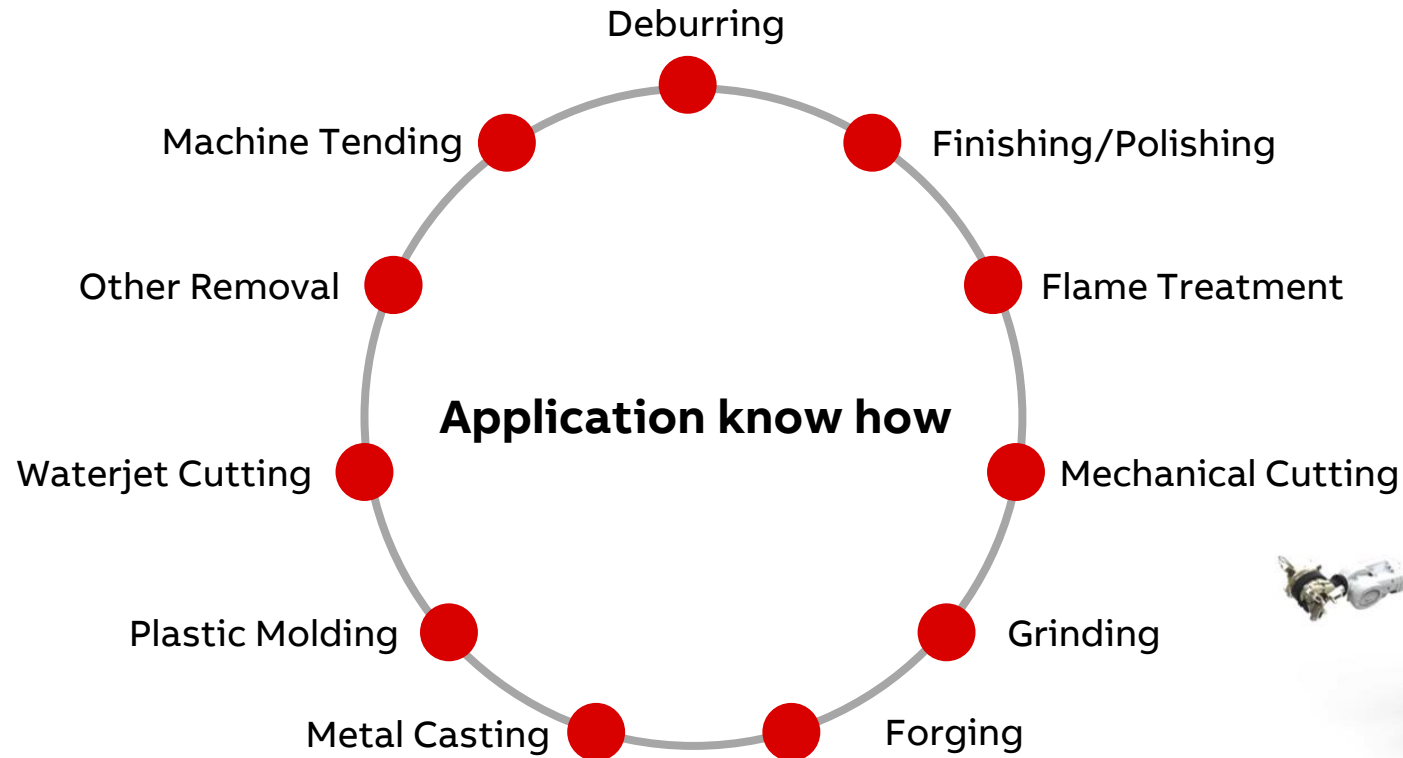


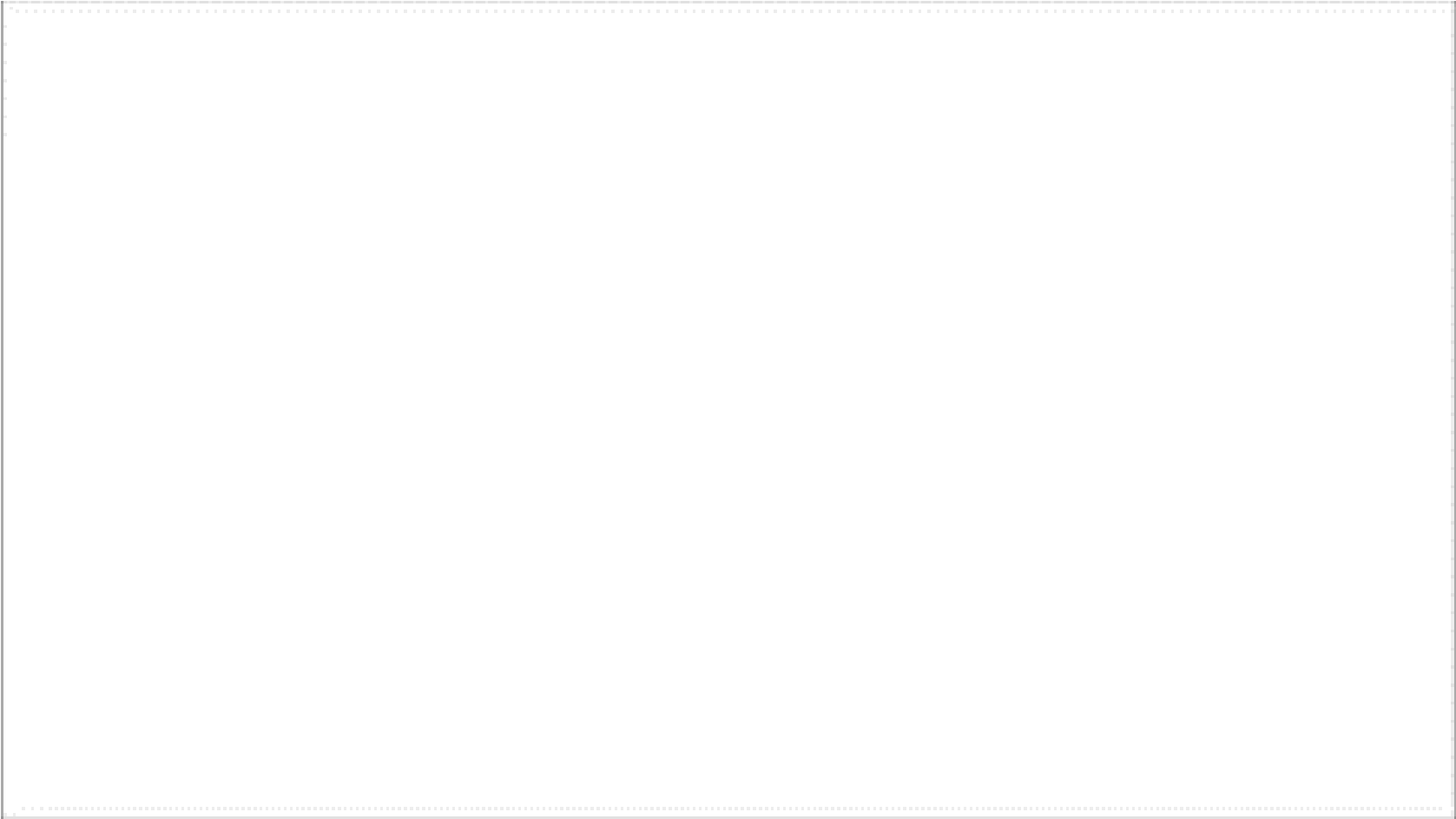
Handling & Machining

Business line

Handling & machining

Business line





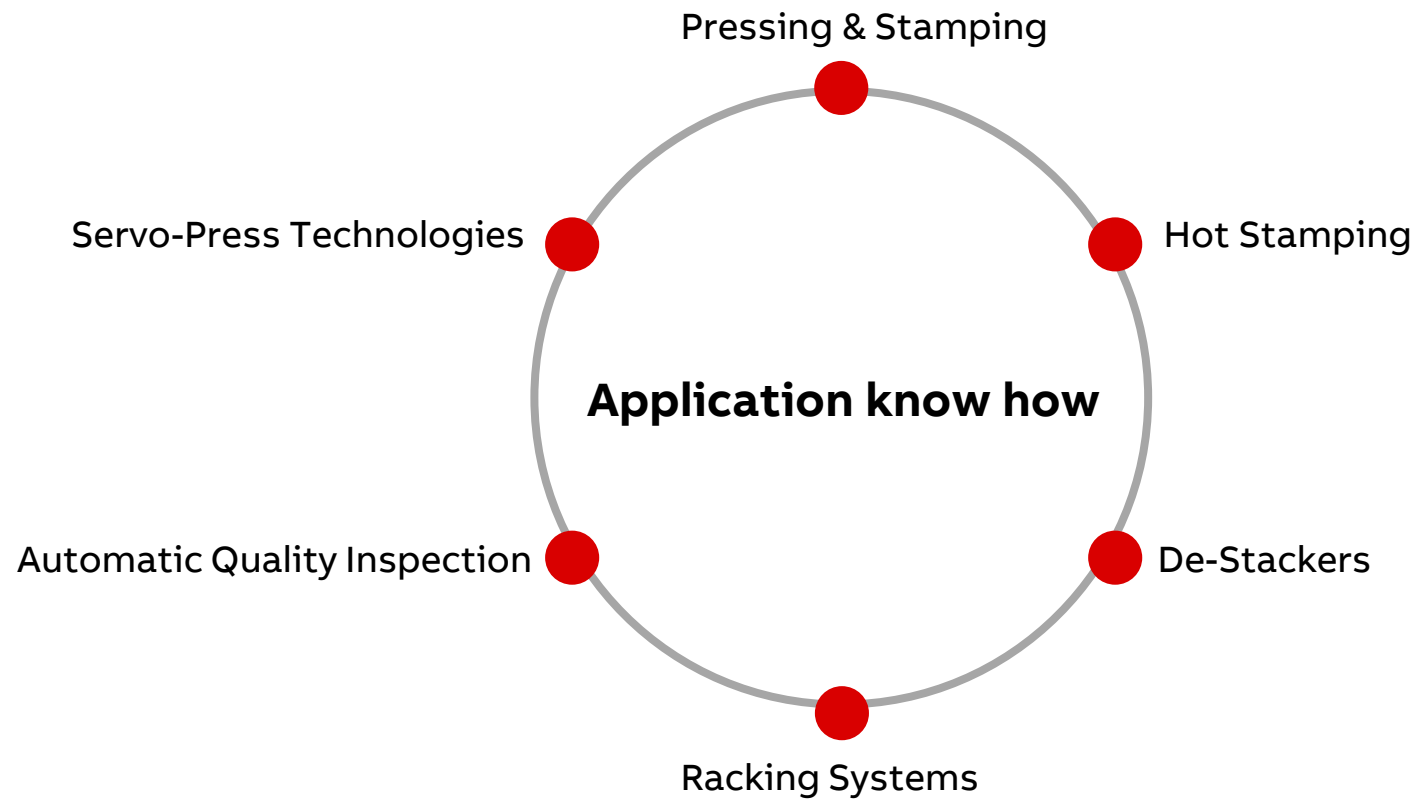


Press Automation

Business line

Press automation

Business line



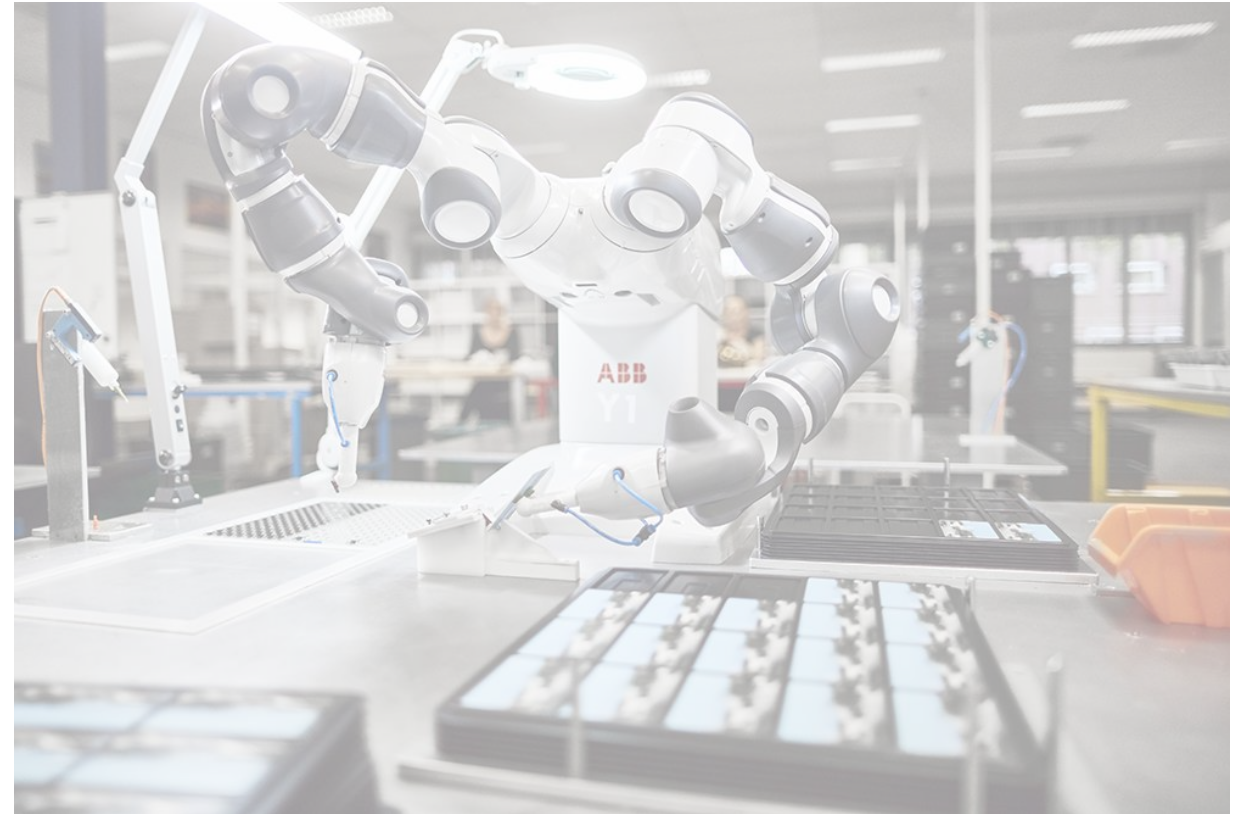
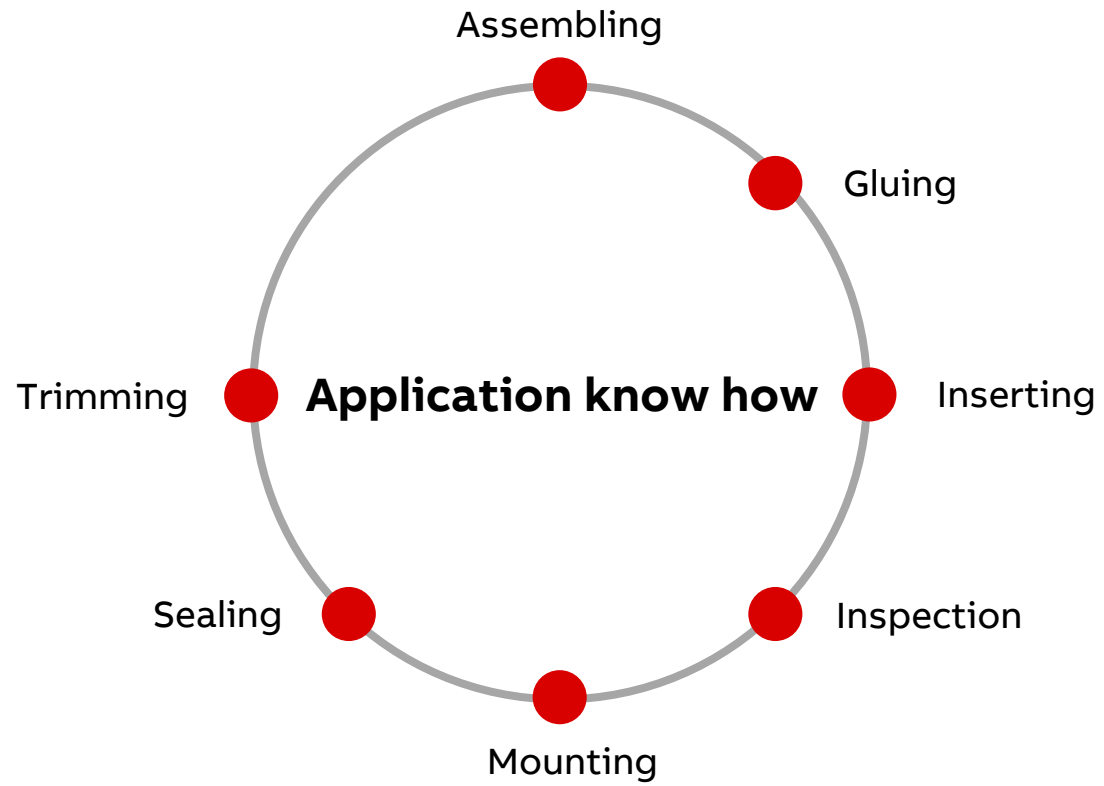


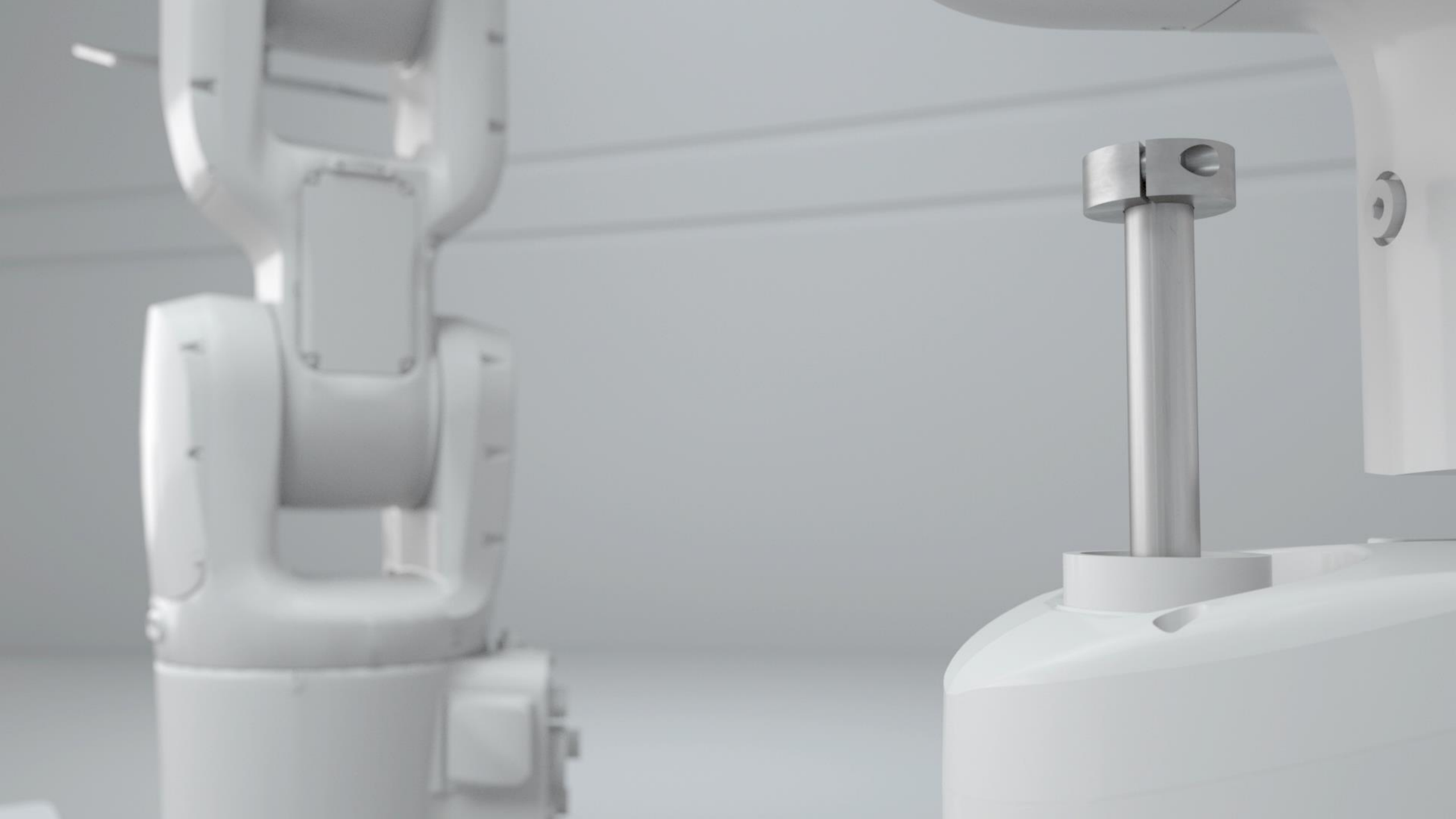
Assembly & Testing

Business line

Assembly & testing

Business line





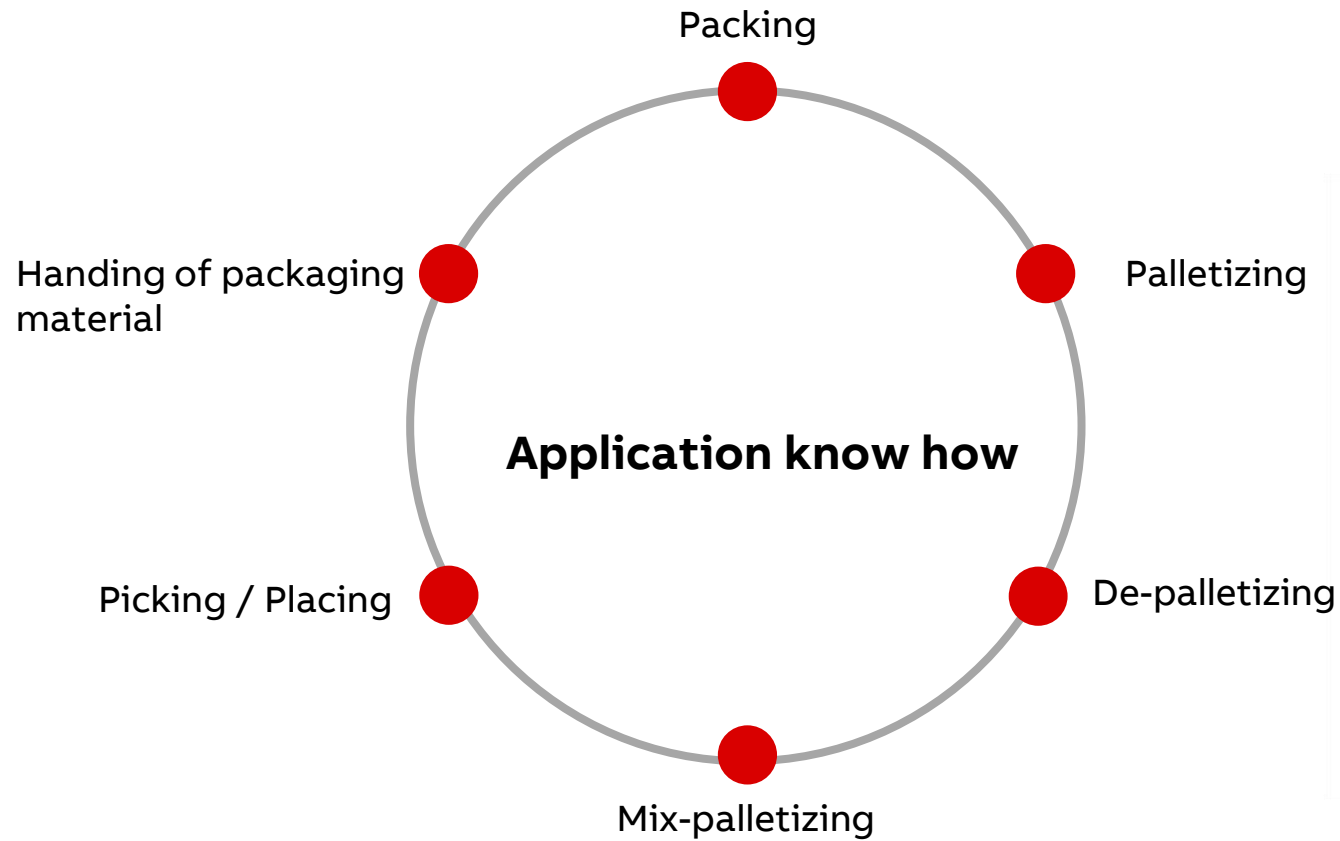


Packaging

Business line

Packaging

Business line



Painting





ABB enables 3D Printing via RobotStudio®
for faster digital manufacturing



Thank you

