

Robotics

## FlexMT™

Standardized, flexible solution that increases machine tool utilization while reducing operational costs.

# Robotic Automation:

## Increased productivity and optimized operational costs

There are three main benefits to using robots on the machine tool floor. These reasons include maximization of manufacturing productivity, reduction of operational and capital costs, and improved health and safety.

### Maximization of manufacturing productivity

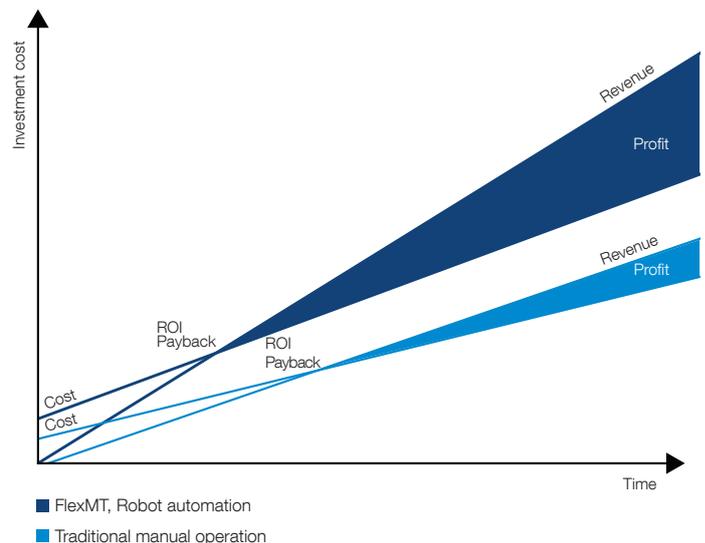
When compared with manual labor, robotic automation increases machine tool utilization up to 60 percent. The nearly immediate payback – in some cases less than 12 months – is significant and tangible. The FlexMT from ABB provides reliable and predictable output from robot and machine tool. It facilitates higher machine tool utilization, up to a phenomenal 90 percent compared with traditional manual machine tools, which are in the range of 50 percent. This results in a much faster return on investment and gives a sustainable competitive advantage.

### Reduction of operational and capital costs

The FlexMT is a standardized yet flexible solution that reduces operational and capital expenditures allowing a single person to operate several machine tools simultaneously. With the improved utilization and more efficient use of existing resources, the need for additional capital investment in new production equipment and peripherals declines.

### Improved Health & Safety

The self-contained nature of the FlexMT improves working conditions by drastically reducing workplace injury related to heavy lifting, exposure to hazardous conditions including the presence of coolants, sharp edges, burrs, tooling and other dangers.



# FlexMT: Setting new standards in flexible machine tool tending

A leader in the development of automation solutions, ABB's FlexMT sets the standard in flexible machine tool tending. This robotic solution increases machine utilization by as much as 60%. Available in two variants, the FlexMT 20 (20kg/1.65m reach) and the FlexMT 60 (60kg/2.05m reach), the FlexMT comes complete with a robot controller inside its fully integrated control cabinet. The FlexMT is a pre-engineered, well-tested and reliable automation solution.

Designed to load and unload machine tools using vision-guided robotics, the integrated solution is capable of handling a variety of additional manufacturing operations like marking, deburring and cleaning with air. The FlexMT can run free from operator supervision for up to eight hours, depending on part size and cycle time, thanks to an internal buffering system.

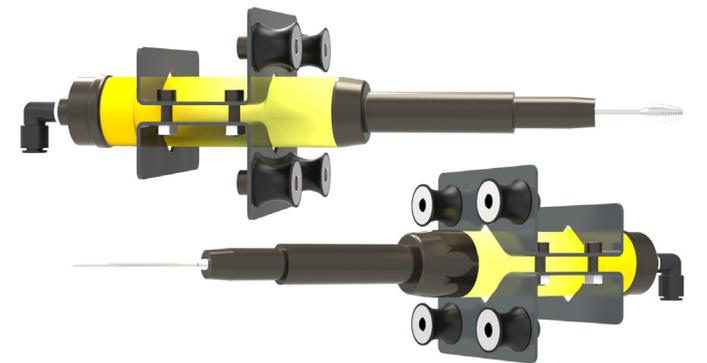
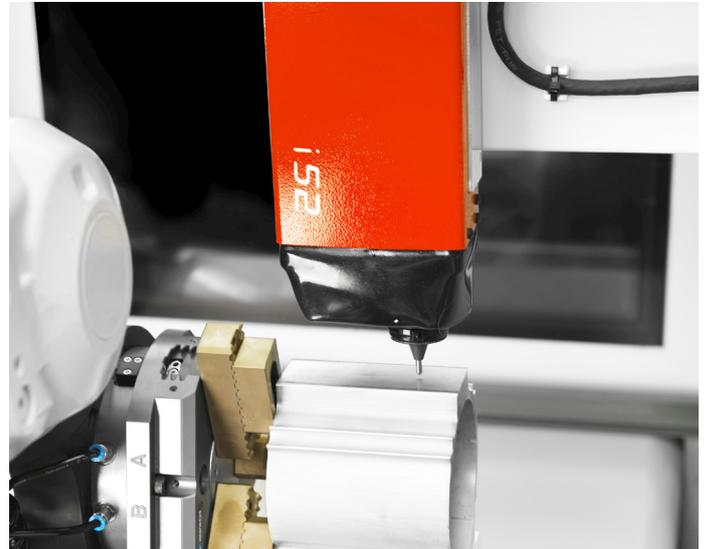
The FlexMT is compatible with a wide range of machine tools, for example, horizontal and vertical lathes, machining centers and five (5) axis machines and grinders. Its numerous interfaces can be hardwired with 24V I/Os for easy communication with a machine tool.

Capable of handling both small batch and volume production, the FlexMT comes equipped with a choice between a two- or three-finger gripper and six standard plug-and-play options, including: two separate deburring tools, a re-grip table, marking unit, turn station, air cleaning box and a corridor/passage.

## Vision-guided robotics

The FlexMT's built-in vision system is specifically designed for robot guidance. Control and communications with the robot are tightly integrated into the software, a complete teach-in is very simple and intuitive from beginning to end. With one of the easiest to use operator interfaces on the market, teaching of a new part is possible in less than 10 minutes.

With the aid of vision-guided robotics, the FlexMT becomes even more flexible; able to recognize variations in part size and varying geometrical shapes. Additionally, parts need not to be fixed in a particular position to be identified and picked and placed by the robot, which reduces cost and complexity.





# Customer Benefits:

The FlexMT is a standardized solution designed to be robust, simple and flexible

## Flexible

- Fits small batches as well as large volume production
  - From series of 10s to series of 1000s depending on application
  - Part independent automation
- No need for fixtures
- Almost any size and type of part
- Teach-in new parts in just minutes
  - SVIA PickMT vision system
  - Designed to be programmed by our customers
  - Very flexible and easy to use
- Easy access to machining area for tool exchange, maintenance, manual operation and robot teaching
  - Sliding door to access machine
  - Open the large curved door
  - Tilted robot position



## Simple to use

- Plug and play functionality
  - Place and bolt it in front of the machine tool
  - Connect power and compressed air
  - Connect signal and safety interface to machine tool
  - Adjust the flexible gripper solution
  - Calibrate vision system, teach-in the first part and adjust robot program
- Intuitive part programming
  - Teach-in new parts in just minutes



## Standardized

- Based on standard components
  - Industry products and standards
- Standardized set of variants and options
  - Adaptations possible
- Efficient to commission, operate, maintain, and service
- Spare parts

## Robust and reliable

- Based on years of experience delivering turnkey automation projects
- Well proven components
- Pre-built and well tested
- Options and features are assembled and tested prior to delivery
- Support and spare parts



# Components and features





1 In-conveyor and Out-conveyor. Internal buffering system supports production of substantial number of parts without manual loading

2 PickMT smart camera system and associated illumination. Easy-to-use system for increased flexibility. Contains: SmartCamera, Lens, Cables, Calibration kit, Software,

3 6-axis industrial robot. IRB 2600 or IRB 4600; compact design with payload capacity 20 kg respective 60 kg.

4 Integrated control cabinet with robot controller and electrical equipment. Pre-built and wired.

5 Drawer for statistical sampling allow for integrated quality control and part analysis

6 Operating panel and robot programming unit

7 Retractable sliding door for easy access to machining area for tool exchange, robot teaching, and maintenance

8 Swing door for easy access to machining area for maintenance, installation and manual operation

# Options



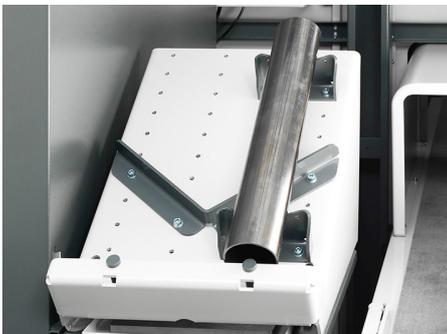
## Flexible gripper solution

- Flexible gripper solution supporting a wide range of different parts
- Different sizes for different FlexMT variants
- Adjustable gripper fingers
- Combine two or three gripper fingers as needed
- Components
  - Grip holder
  - Gripper fingers – two or three finger grippers
  - Air cleaning nozzle



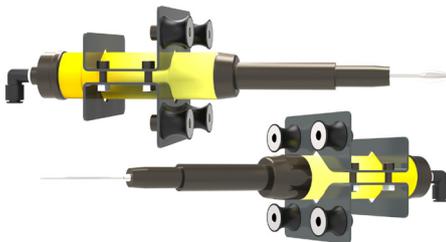
## Air cleaning box

- Efficient cleaning of machined parts
- 6 pneumatic nozzles
- Mounted on a flexible hose that can be adjusted to optimize cleaning of the parts
- Chip collecting box for easy removal of burrs



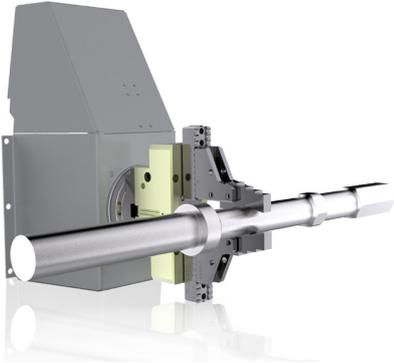
## Re-grip table

- Calibration of grip position before loading the machine tool.
- Length calibration of axles
- Calibration of billets



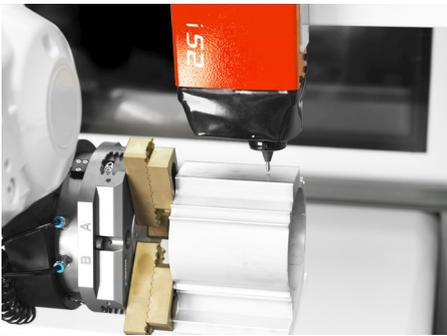
## Deburring tools

- Additional manufacturing operations integrated in FlexMT
- Two different pneumatic deburring tools
  - High speed rotating tool
  - Oscillating file tool
- Assembled into the air cleaning box



#### Turn station

- Simple turning and re-gripping of axles and billets
- Useful when tending lathes with one chuck spindle
- Allow 180 degree rotation



#### Marking unit

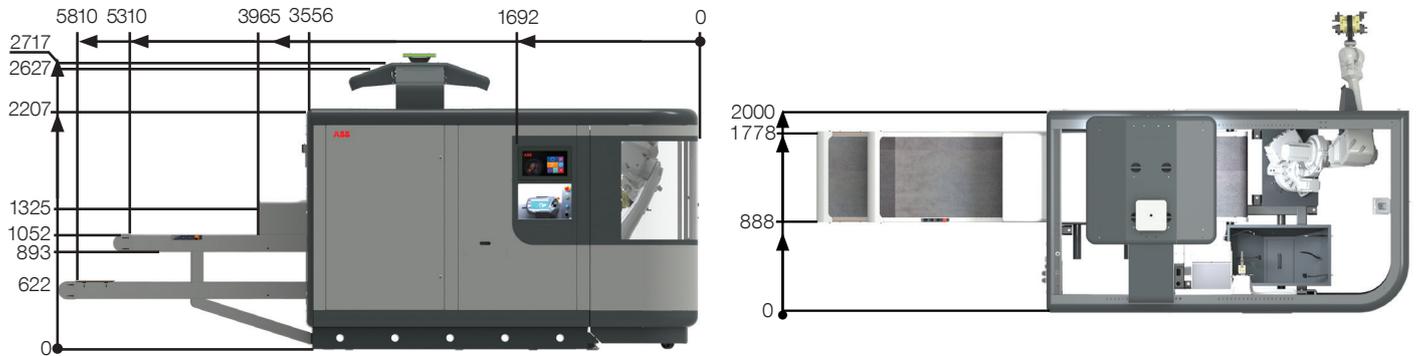
- Additional manufacturing operations integrated in FlexMT
- Integrated part marking unit based on dot pen technology
- Used for part marking of text, digits, logo, data matrix code, etc
- Easily programmed on the FlexMT operator panel



#### Extension panels

- Safely connect the FlexMT with the machine tool and allow space between the machines to;
  - Access machine operator panel
  - Tool changing
  - Maintenance
  - Emptying chip bin
- Flexible to fit almost all type of machine tools
  - Adjustable width
- Adjustable position of extension panels

# Technical data



	FlexMT 20	FlexMT 60
Lenght (mm)	5810 mm	5810 mm
Width (mm) (witohut corridor)	2000 mm	2000 mm
Height (mm)	2717 mm	2717 mm
Height (mm) (without camera and lightning)	2207 mm	2207 mm
FlexMT weight (kg)	2260 kg	2300 kg
Robot model	IRB 2600	IRB 4600
Robot payload (kg)	20 kg	60 kg
Robot reach (mm)	1650 mm	2050 mm
Certificates	UL/CSA	UL/CSA
	Prep. for CE labelling 2B	Prep. for CE labelling 2B
Mains voltage	220V – 600V	220V – 600V
Operating temperature	Max 45 C (std) Max 52 C (option)	Max 45 C (std) Max 52 C (option)
In-conveyor width and length (mm)	795 mm x 3000 mm	795 mm x 3000 mm
Out-conveyor width and length (mm)	795 mm x 4000 mm	795 mm x 4000 mm
Max object/part height (mm)	270 mm	270 mm
Machine tool interface	Safety interface Digital 24V I/O, 16 IN and 16 OUT	Safety interface Digital 24V I/O, 16 IN and 16 OUT

## About ABB

ABB Robotics is a world leading robotics company; supplying industrial robots, modular automation solutions and services. The company has delivered more than 250,000 robots worldwide, of which more than 40,000 are for machine tending applications.

Our robots, solutions and services helps manufacturers improve productivity, product quality and worker safety. Our long experience in machine tending applications allows us to develop robotic solutions, which mean a fast return on investment, greater flexibility and uptime for our customers.

# Contact us

## **ABB Automation GmbH**

Grüner Weg 6

61169 Friedberg, Germany

Phone: +49 6031 85 0

Fax: +49 6031 85 297

E-Mail: [robotics@de.abb.com](mailto:robotics@de.abb.com)

[www.abb.com/robotics](http://www.abb.com/robotics)

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