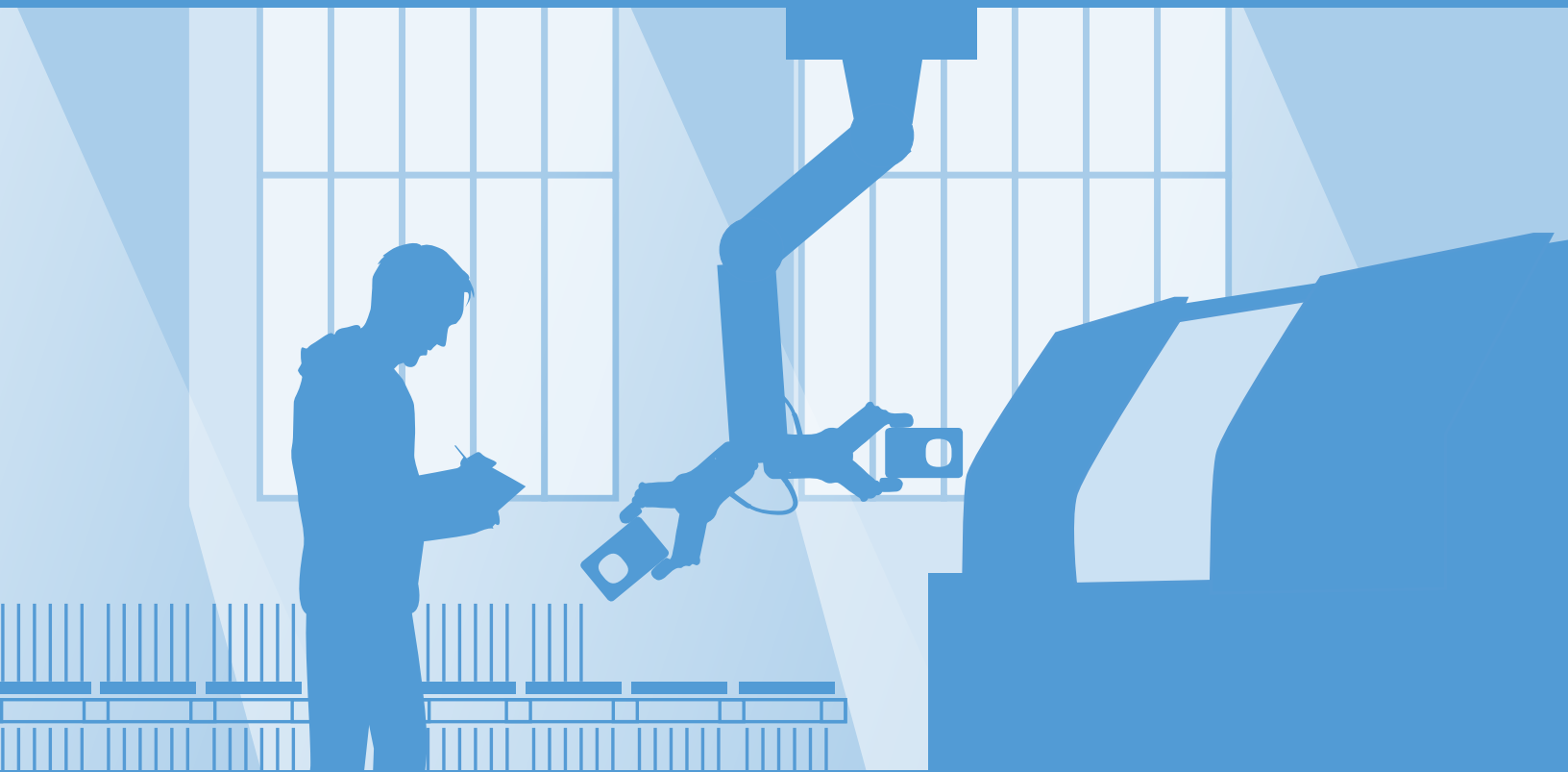


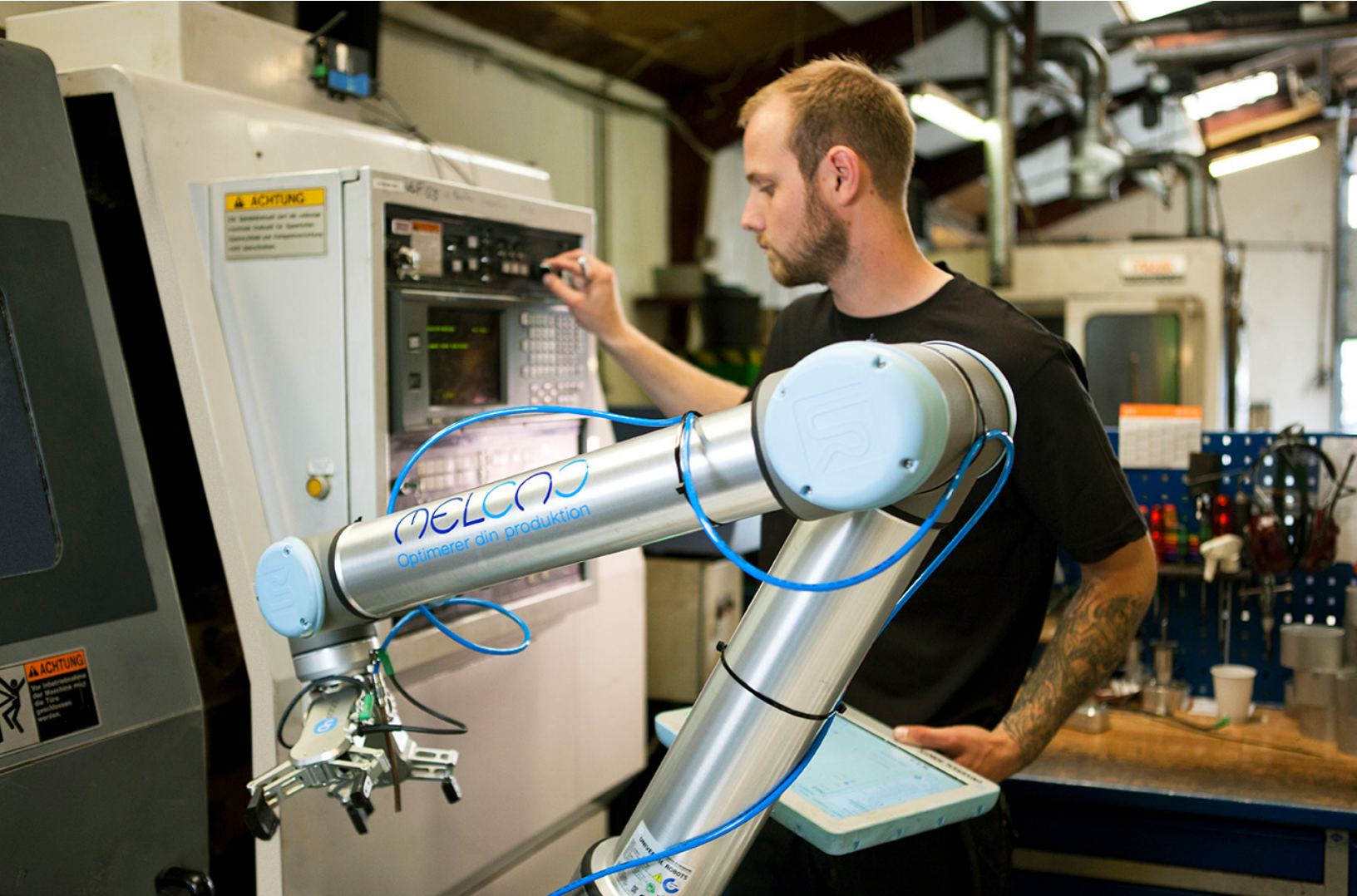
How to Select the Right  
End-of-Arm Tool for Collaborative

# MACHINE TENDING APPLICATIONS



## **ROBOT OPTIMIZATION GUIDE**

Optimize flexibility, output, and quality for any application



# IS COLLABORATIVE MACHINE TENDING RIGHT FOR YOU?

Automated machine tending applications use a robotic arm to accurately handle repetitive, low-value tasks that aren't ideal for human workers.

## **Robots can:**

- Insert and remove metal parts from milling and lathing machines
- Remove plastic parts from injection molding machines
- Handle the stamping, bending, and assembly of almost any kind of part

Fortunately, today's cost-effective light industrial and collaborative robots ("cobots") have made machine tending automation a viable option even for small and mid-sized manufacturers. But the robot can't do it alone.

But the robot can't do it alone. End-of-arm tooling (EoAT) such as grippers, sensors, and other automation peripherals are what transform your robot into a powerful, business-optimizing machine.

# WHY IS END-OF-ARM TOOLING SO IMPORTANT?

EoAT is the key to gaining greater flexibility, higher output, and improved quality from your application. With the right EoAT, you can automate almost any machine tending task that can benefit from the repeatability, accuracy, and productivity of a robot along with the delicacy and precision of human fingers.

## THE IMPACT OF EOAT ON TRADITIONAL VS COLLABORATIVE MACHINE TENDING APPLICATIONS

Traditional Applications	Collaborative Applications	EoAT Need
<b>Big batches, little variability</b> Ideal for large companies that manufacture high volumes of the same products for long periods	<b>Low-volume, high-mix</b> Designed for low-volume, high-mix production, where the robot is often redeployed for new processes	Flexible, quick-change tooling to eliminate downtime between various processes
<b>Consistent parts</b> Part size, shape, weight, and material stay the same over time	<b>Variable parts</b> Product shape, size, weight and material can change as often as needed	Tools that easily adapt to varying sizes, shapes, and conditions of parts
<b>Predictable environment</b> Parts are always in same place and the same orientation	<b>Uncertain or changing environment</b> Position and orientation of parts may vary	Force settings that allow tool to adapt to part position
<b>Complex deployment</b> Requires extensive programming skills and takes days or weeks to set up	<b>Fast and easy deployment</b> Easy to deploy in minutes, even for inexperienced users	Tooling that is designed for fast and easy programming and deployment
<b>Consistent force and stroke</b> Grip force and stroke are not easily adjusted for different material or parts	<b>Adaptable force and stroke</b> Can apply adjustable force and stroke size for different materials and parts	Flexible tooling that can be used for multiple processes

# HOW TO SELECT THE RIGHT TOOL FOR MACHINE TENDING

Machine tending requires repetitive motion and a high level of consistency, even after hours of work. Collaborative automation improves worker safety and frees them for higher-level tasks. It can also increase productivity and quality, and allow production to continue after normal work hours for greater output and business flexibility.

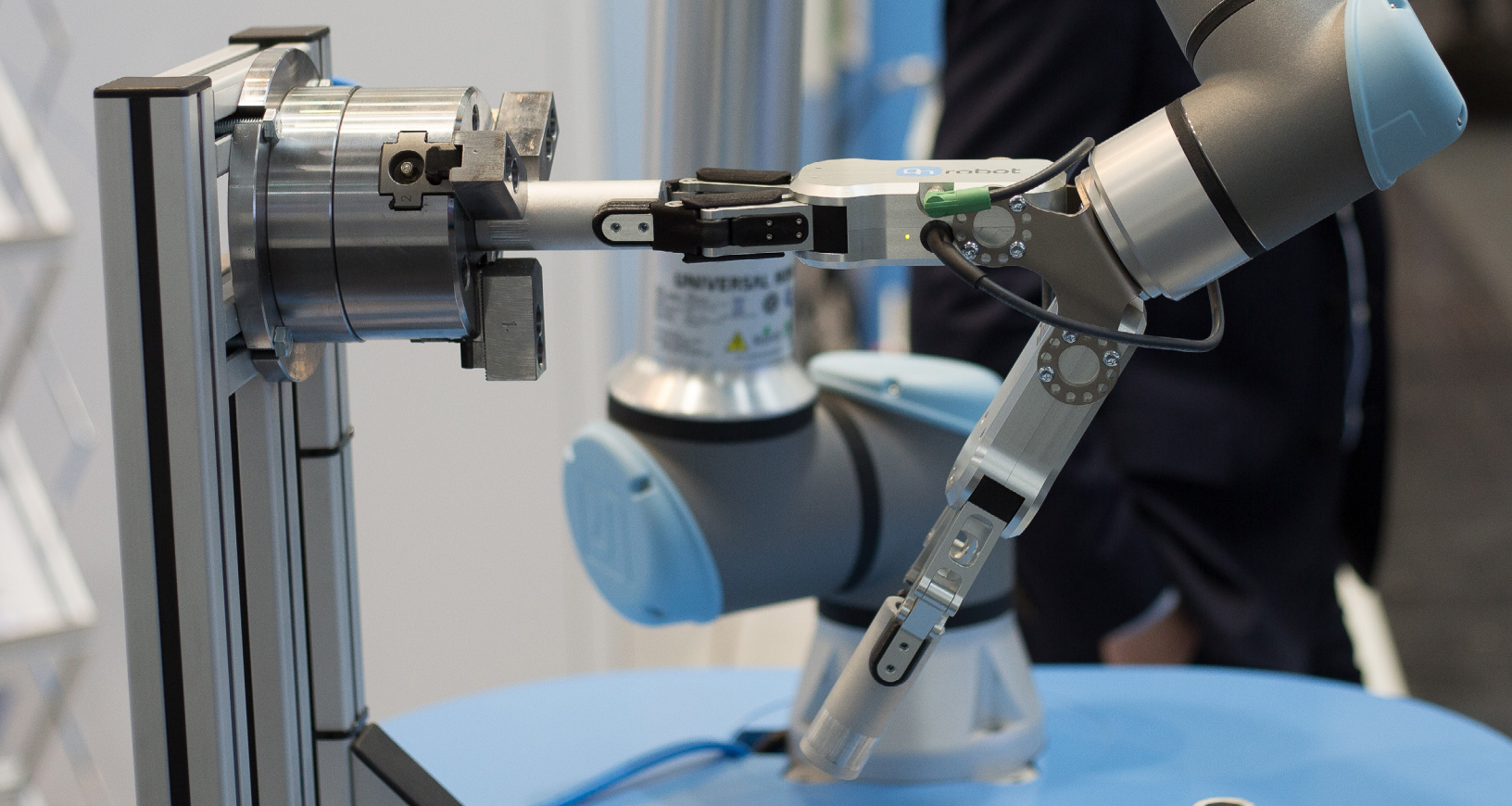
To accomplish this, selecting the right tool for current and future needs will have a significant impact on your success.

## Checklist for machine tending tooling selection

- How large are the workpieces to be handled?
- Will they always be the same size or will there be a large variation?
- Does the shape of the part influence the best way to grip them, such as a vacuum gripper for flat parts or special fingertips on a parallel gripper for cylindrical parts?
- Can you achieve higher overall output with a dual gripper?
- How often are new parts introduced?
- Will the robot always perform the same task or will it need to be moved or used for different processes?
- How stable is the demand for the produced parts?
- What is the likelihood that the robot will need to be retooled?
- How large is the variation in the process and how does the tooling handle it?
- How easily can the gripper be adapted to new parts?
- Can the operator make changes to the program and tooling if needed?
- Is it necessary that the gripper is safe for operators to work around it?







# MACHINE TENDING WITH DUAL GRIPPER

For these applications, a dual gripper can significantly decrease cycle times as it is able to handle two objects and actions simultaneously. It also supports high variability, by handling materials of different sizes and shapes. Customizable finger tips are key to handling components with diverse geometry and high surface finish requirements.

## RG2/RG6 dual gripper

- Double gripping significantly increases productivity
- Large stroke adapts to highly variable materials
- Force settings allow soft and hard items to be gripped reliably
- Fast reconfiguration enables easy redeployment
- Customizable finger tips handle complex parts





## CASE STUDY

<https://onrobot.com/en/high-mix-low-volume-is-the-perfect-application-for-a-dual-gripper>

# DUAL GRIPPER OPTIMIZES HIGH-MIX, LOW-VOLUME MILLING MACHINE APPLICATION

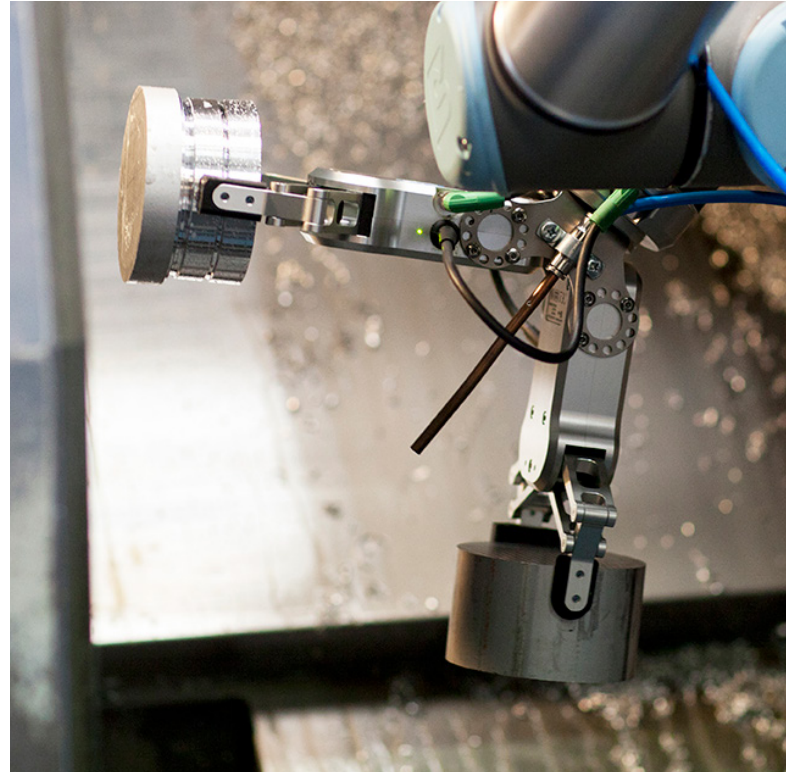
Grenå Spåntagning moved to high-mix, low-volume production to increase market diversity for its metal components. At the same time, the company needed to increase the productivity of its CNC milling machines and save time on each production cycle. A cobot with an OnRobot dual RG2 gripper is moved from machine to machine, easily handling a wide range of part shapes and sizes without making a mark. Results were increased output, easy redeployment, and return on investment in just four months.

**Product:** Pressed metal products

**Process:** Tending machines and positioning sheet metal

### Challenges:

- Monotonous tasks are difficult to staff and can lead to errors
- Idle time for high-cost CNC machines must be minimized
- Need to handle multiple part geometries and processes



### Solution:

- RG2/RG6, RG2 dual gripper

### Results:

- Dual gripping boosts machine utilization
- Gripper's ability to close to force value/search improves productivity
- ROI in 4 months

### Typical customers:

- Machine shops
- Automotive suppliers
- Metal parts suppliers





## CASE STUDY

<https://onrobot.com/en/retrofitting-cnc-machines-with-rg2-dual-gripper>

# DUAL GRIPPER REDUCES CNC CYCLE TIME BY 44%



Gear manufacturer Osvald Jensen uses cobots with OnRobot's dual RG2 grippers to load and unload CNC machines. After using a single gripper and seeing the results, the company found additional productivity improvements with the dual gripper. By handling two parts in the same cycle, the dual gripper reduced cycle time from 27 seconds to 15 seconds—a 44% improvement. The RG2 can continue working without an operator present, increasing productivity even further. The company's first RG2 gripper paid for itself in just three months.

**Product:** Precision gears

**Process:** Tending CNC machines

### Challenges:

- Tight labor market makes staffing difficult and expensive
- Idle time for high-cost CNC machines must be minimized
- Precision products require consistent production conditions

### Solution:

- Dual RG2 gripper

### Results:

- Dual gripping nearly doubles CNC cycle time
- Consistent, repetitive operation improves part quality
- ROI in 3 months

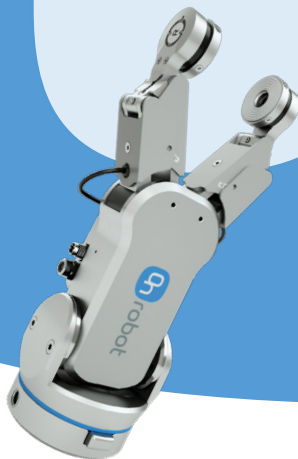
### Typical customers:

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# GET YOUR GAME-CHANGING ADVANTAGE

Innovative end-of-arm tooling changes the game for collaborative automation. Find out how you can gain new advantages for your specific application.

FIND A  
**DISTRIBUTOR**  
IN YOUR AREA



REQUEST A  
**QUOTE**  
FOR ONROBOT  
PRODUCTS



## About OnRobot

OnRobot provides innovative plug & produce end-of-arm tools that help manufacturers take full advantage of collaborative automation: ease of use, cost-effectiveness, and safety alongside human workers. OnRobot tools work with any collaborative or light industrial robot arm and are available through a worldwide network of over **100 distributors** in more than **40 countries**.



**For more information visit:** [www.onrobot.com](http://www.onrobot.com)  
Or contact us: [sales@onrobot.com](mailto:sales@onrobot.com)