



End-of-arm Tooling and Accessories for All Collaborative Applications



Choosing the right robot accessories

Light industrial robots will become a commodity, and focus will shift towards end-of-arm tools such as grippers and sensors



The right robot accessories simplify changeovers and give you flexibility in your production



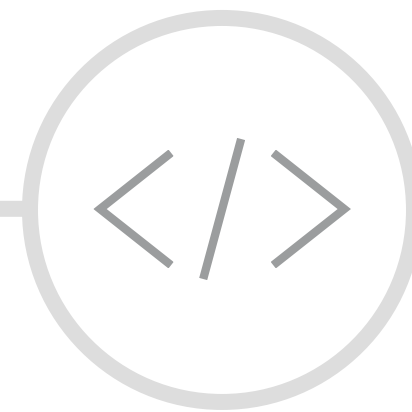
Purchase

The right tools for the intended materials and tasks



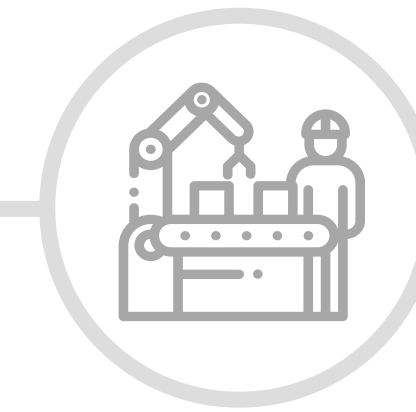
Installation

User-friendly installation minimizes disruption to ongoing production



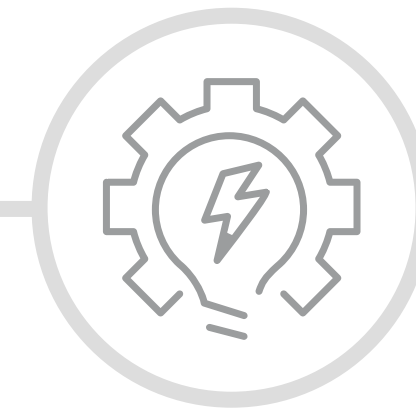
Programming

Intuitive programming gets the robots up and running quickly



Operations

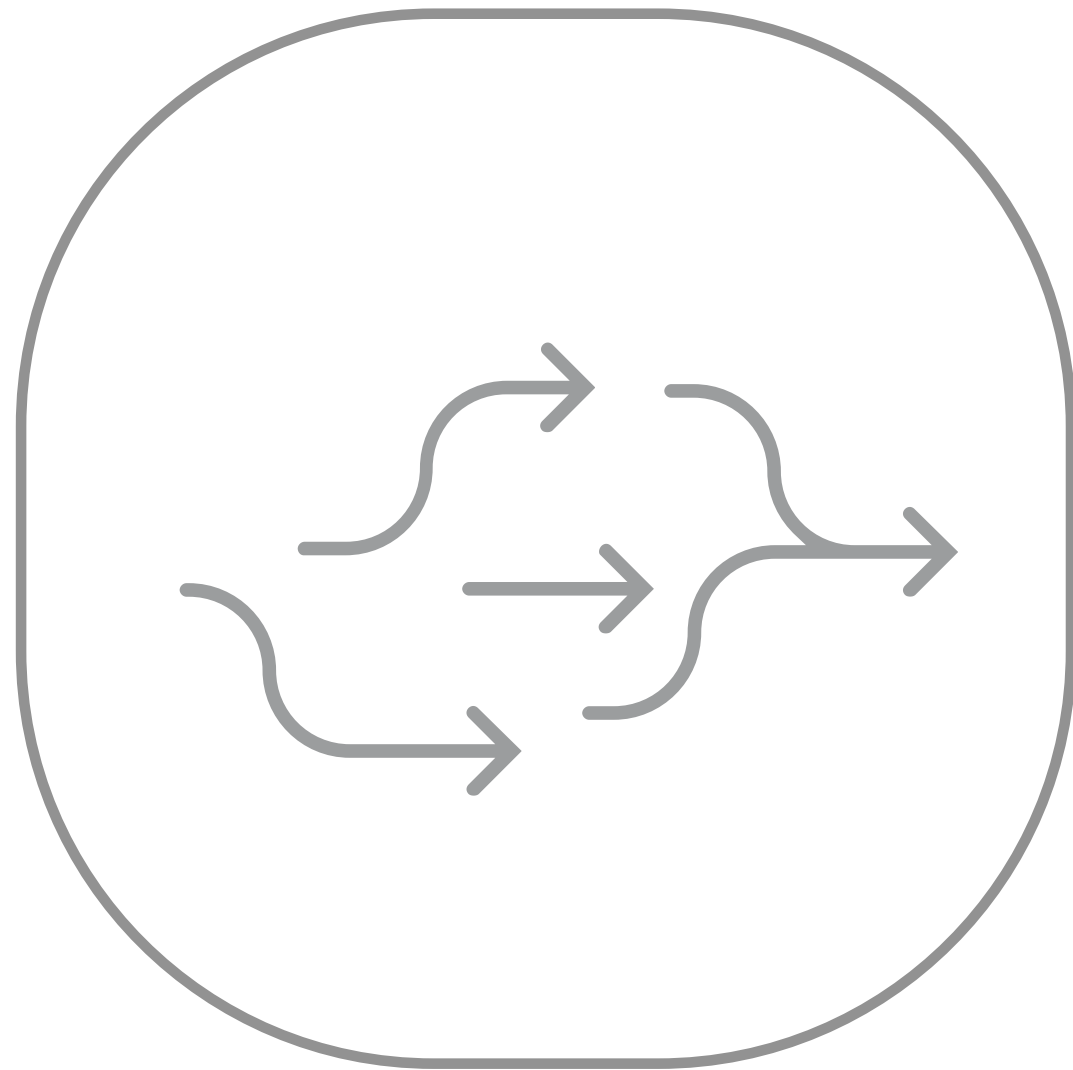
Human operators and robots work safely side-by-side



Redevelopment

Flexible and seamless switching across multiple tasks as needed

The right robot accessories revolutionize automation



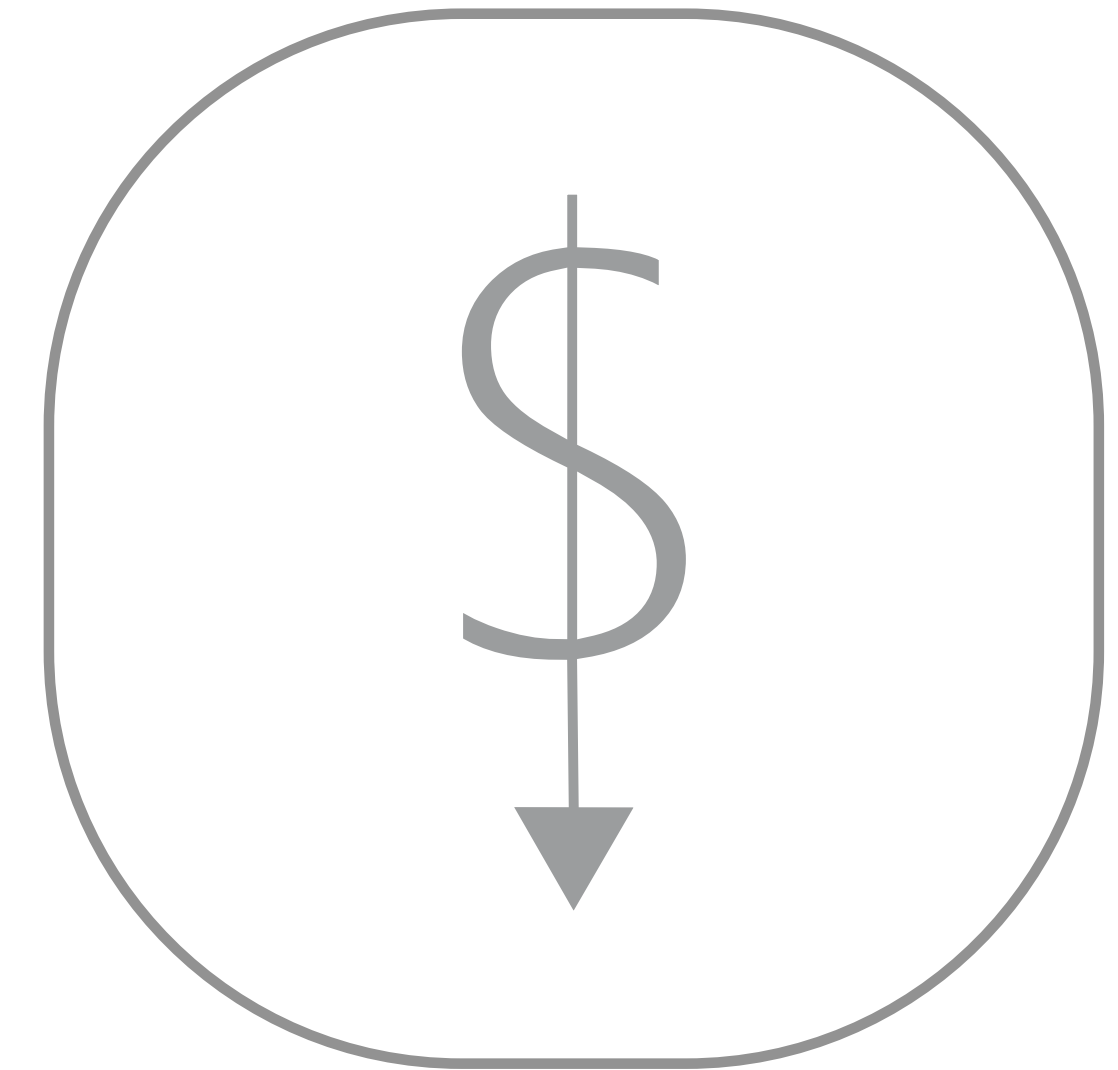
Flexible and Easy to Deploy

One tool can switch between multiple tasks with minimal need for additional programming or tool swapping



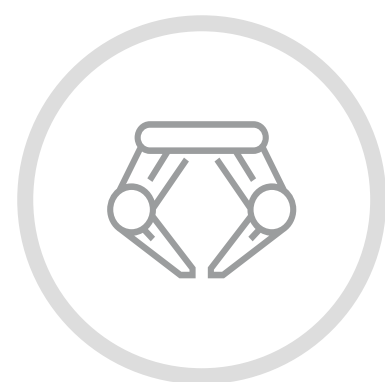
Increase Production

Robotic tools work around the clock completing tasks with greater precision and reliability than human operators

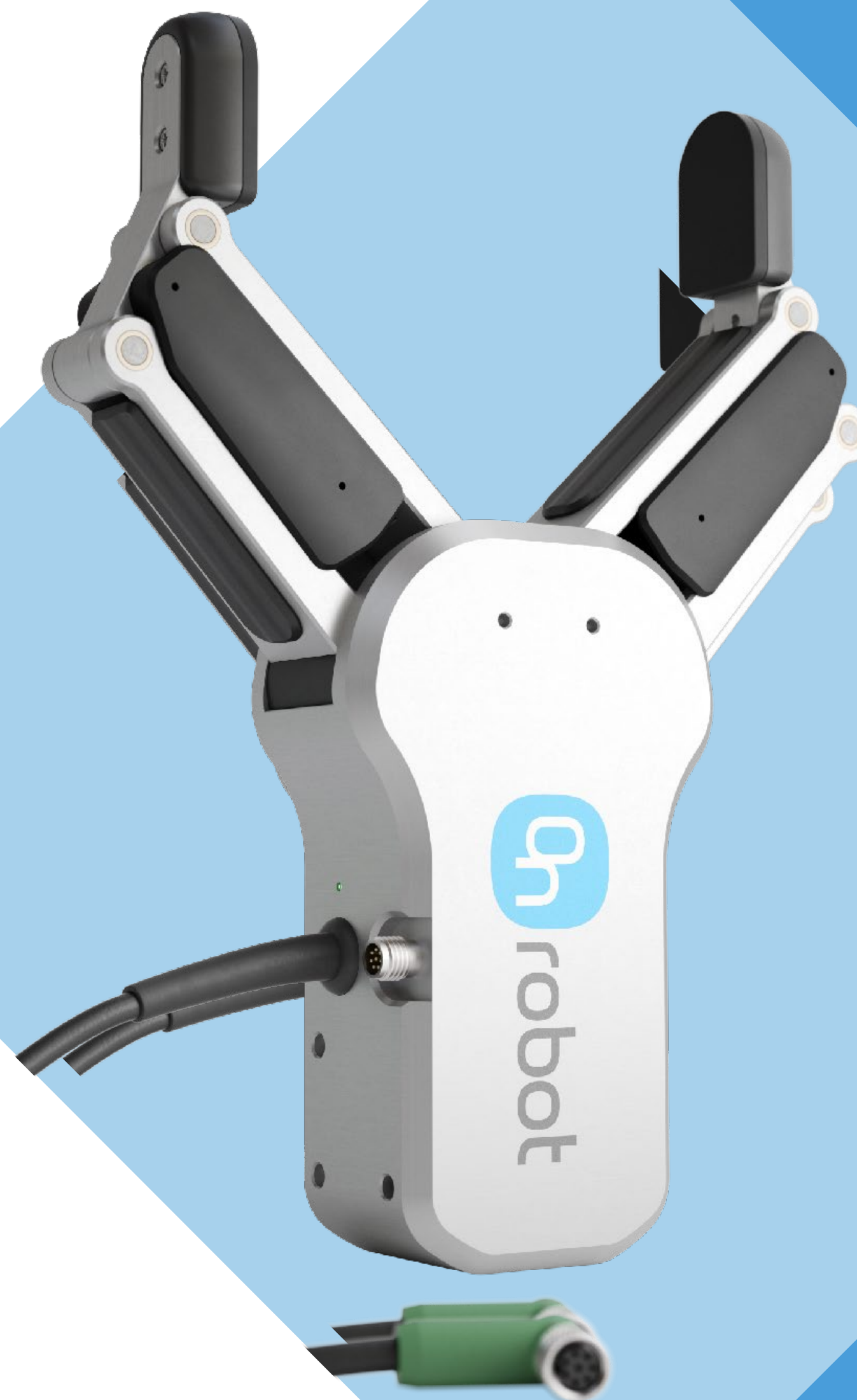


Lower Automation Costs

Safe, collaborative and intelligent tools work in close proximity to human operators without additional safety fencing, programming or installation costs



Tools for all collaborative
and light industrial
robotic automation systems



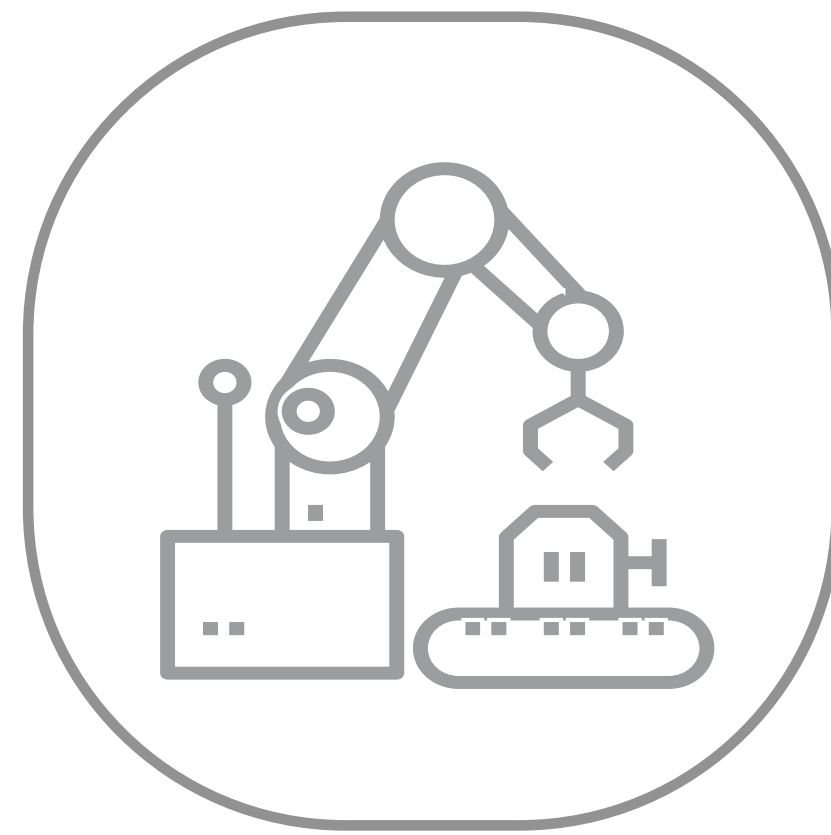
Our Vision

Building a one stop shop for enabling collaborative applications

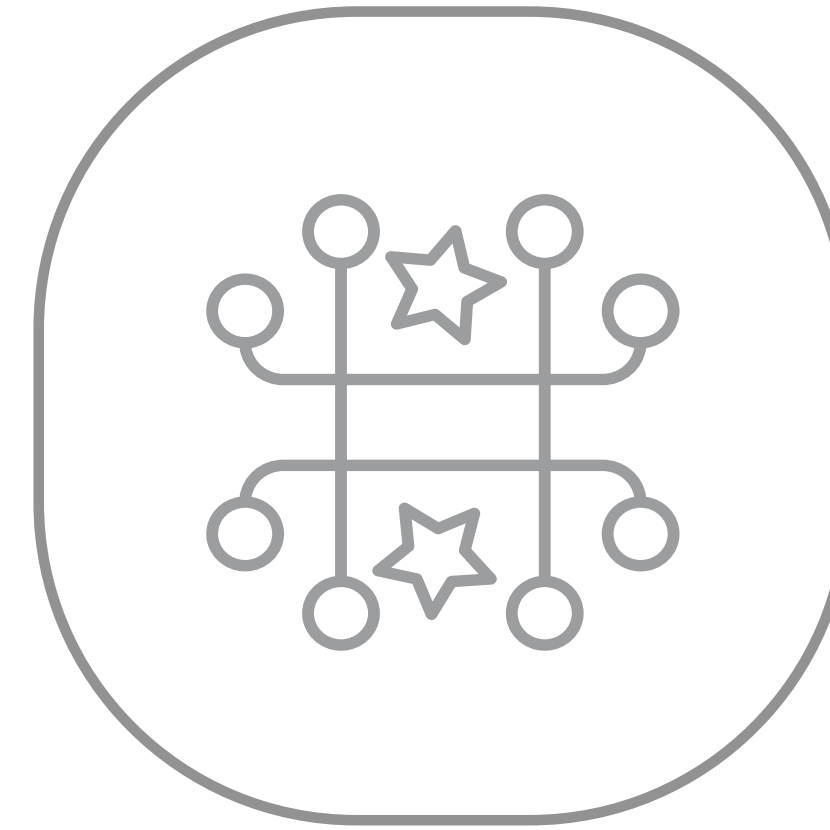
An extensive range of products that cover:



All Robots



All Applications



All Accessory Types



All Industries

OnRobot enables customers to design easily deployable and highly versatile custom robotic solutions using OnRobot accessories

A Growing Suite of Solutions

OnRobot brings together technical expertise and key innovations from technological leaders in the robotics industry



Founded in **2015**

Plug-and-produce electric grippers



Founded in **2012**

Multi-axis force torque sensors



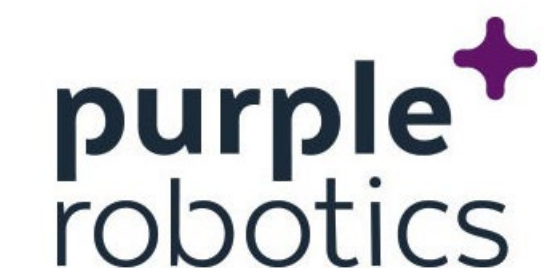
Formed via merger in
June **2018**

Growing suite of robot accessories
and solutions



Founded in **2012**

Grippers equipped with tactile sensor
technology inspired by nature.



Founded in **2017**

Electric vacuum grippers and
manual tool changers

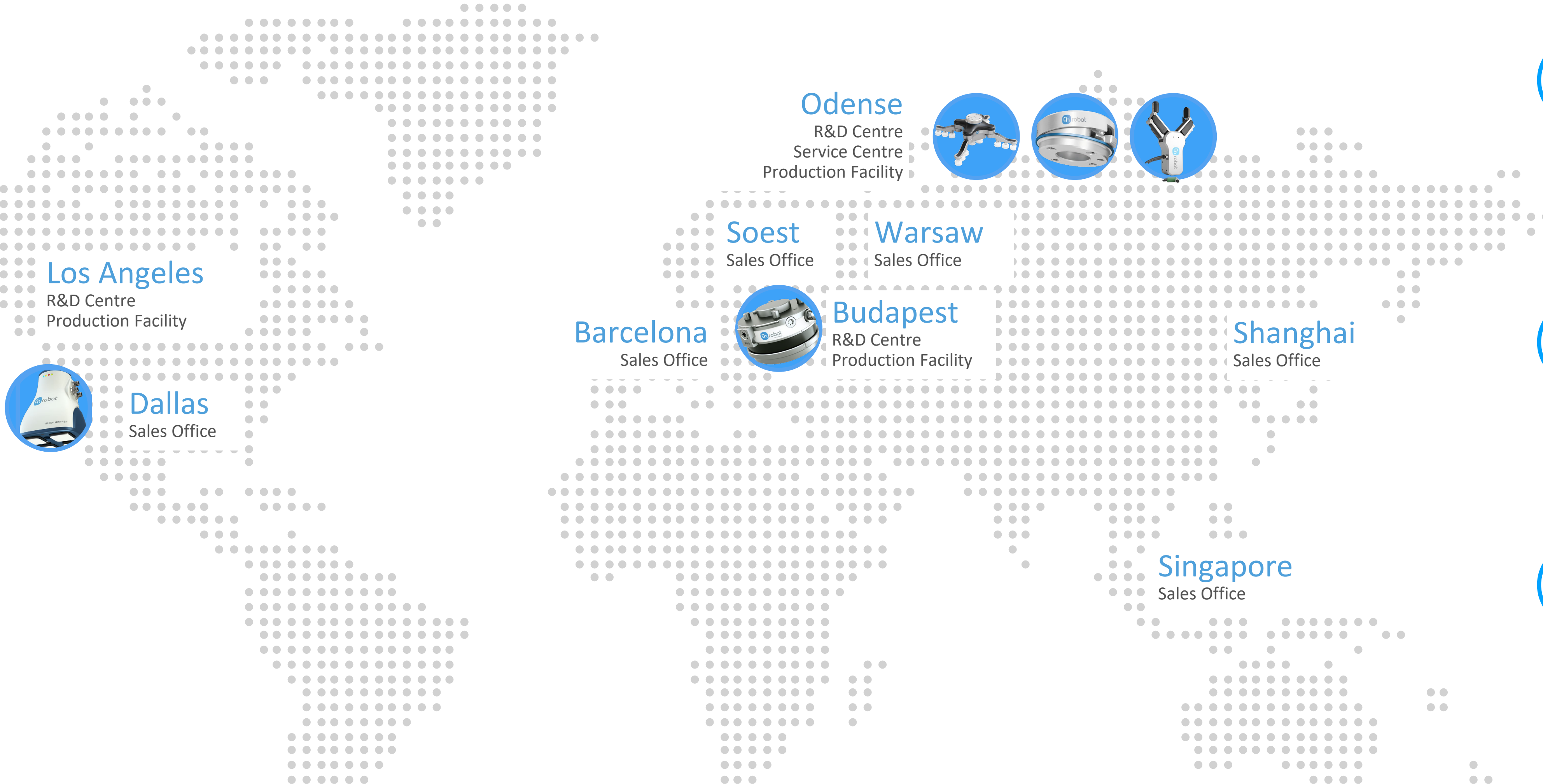
Growing With OnRobot

OnRobot will continue to expand its capabilities further through research and development, and mergers with industry-leading companies



Building a Trusted Global Brand

Cutting-edge robotic solutions across the globe

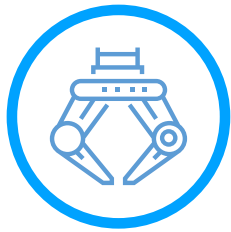


165

employees globally



Extensive R&D capabilities in
mechanical research and
product development



50

products by 2020

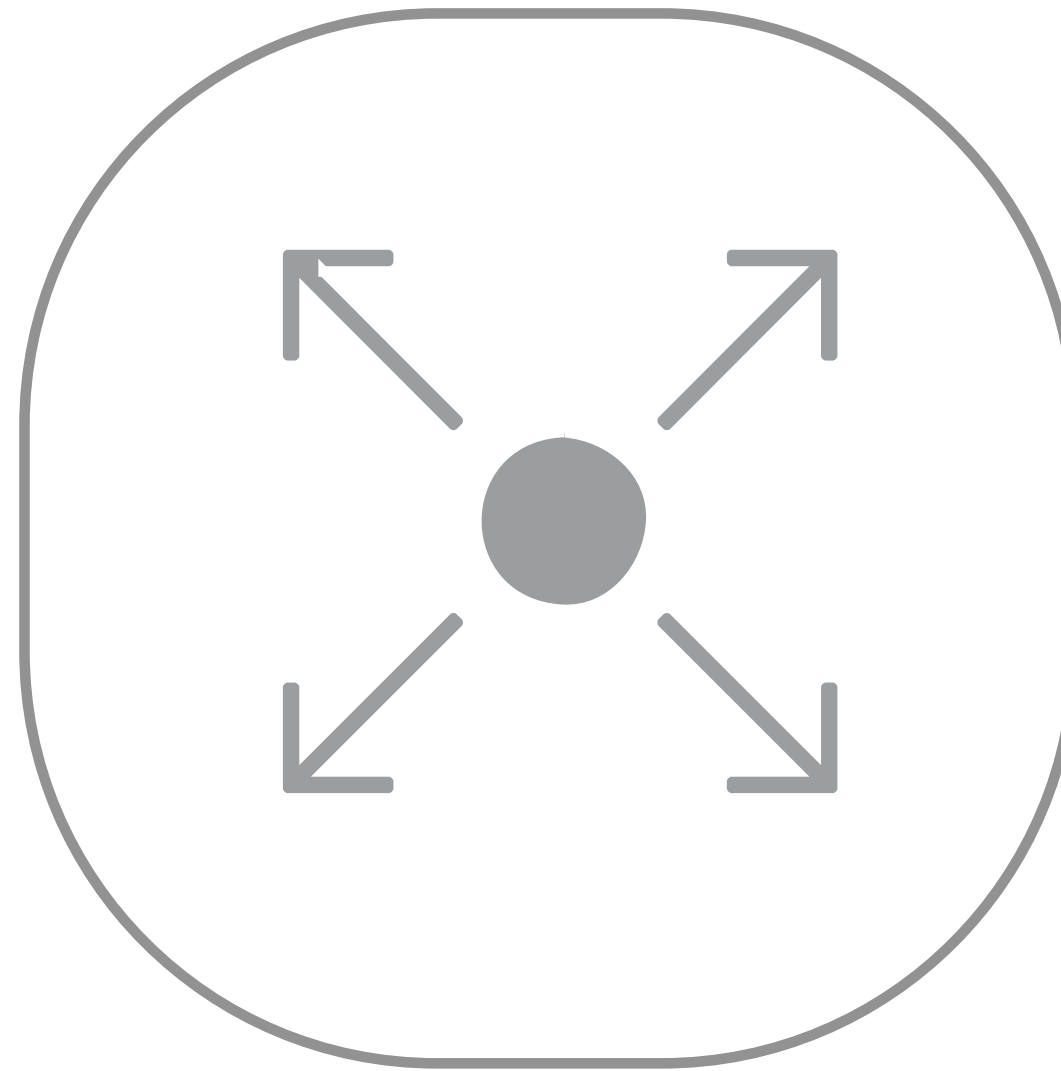
Making Automation Accessible

OnRobot's suite of intelligent accessories lowers the barrier to automation for businesses of every size and industry



One-Stop Shop For All Tools

Customers can purchase an extensive range of robot accessories and software in one place



Easy Deployment

OnRobot's robot accessories are designed to work with an extensive and ever-expanding range of robot brands with minimal compatibility issues and need for complicated engineering



Intelligent Operations

Easy programming and intelligent tool technologies enable greater precision, reliability and productivity growth



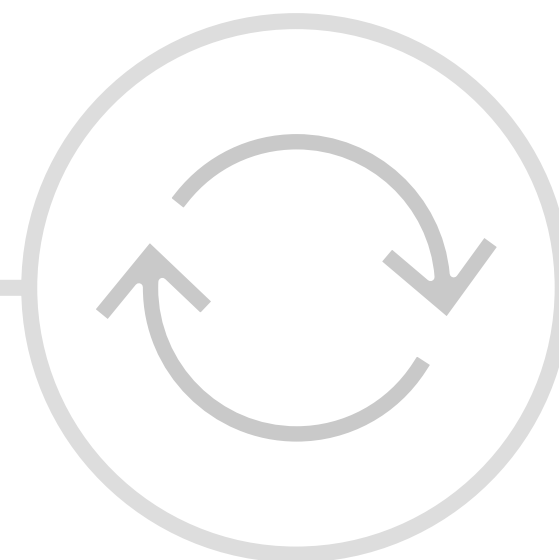
One-Stop Shop For All Tools:

Meet all your collaborative automation needs with OnRobot



Comprehensive Range of Tools

OnRobot offers a range of tools across functions and types to meet different production needs



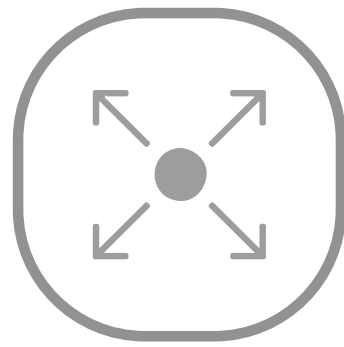
Compatibility

OnRobot tools can be integrated with several existing robot systems



Training Support For Partners

OnRobot empowers partners with sales and product knowledge for greater customer engagement through partner training sessions



Easy Deployment:

Get collaborative solutions up and running easily with OnRobot



Plug and Produce

Ready to operate immediately upon unboxing and easily integrated into existing systems

Easy Redeployment

Switch between tasks and accessories seamlessly with the Tool Changer or with our flexible grippers

Simplified Programming

Our software tools make it fast to program a difficult application

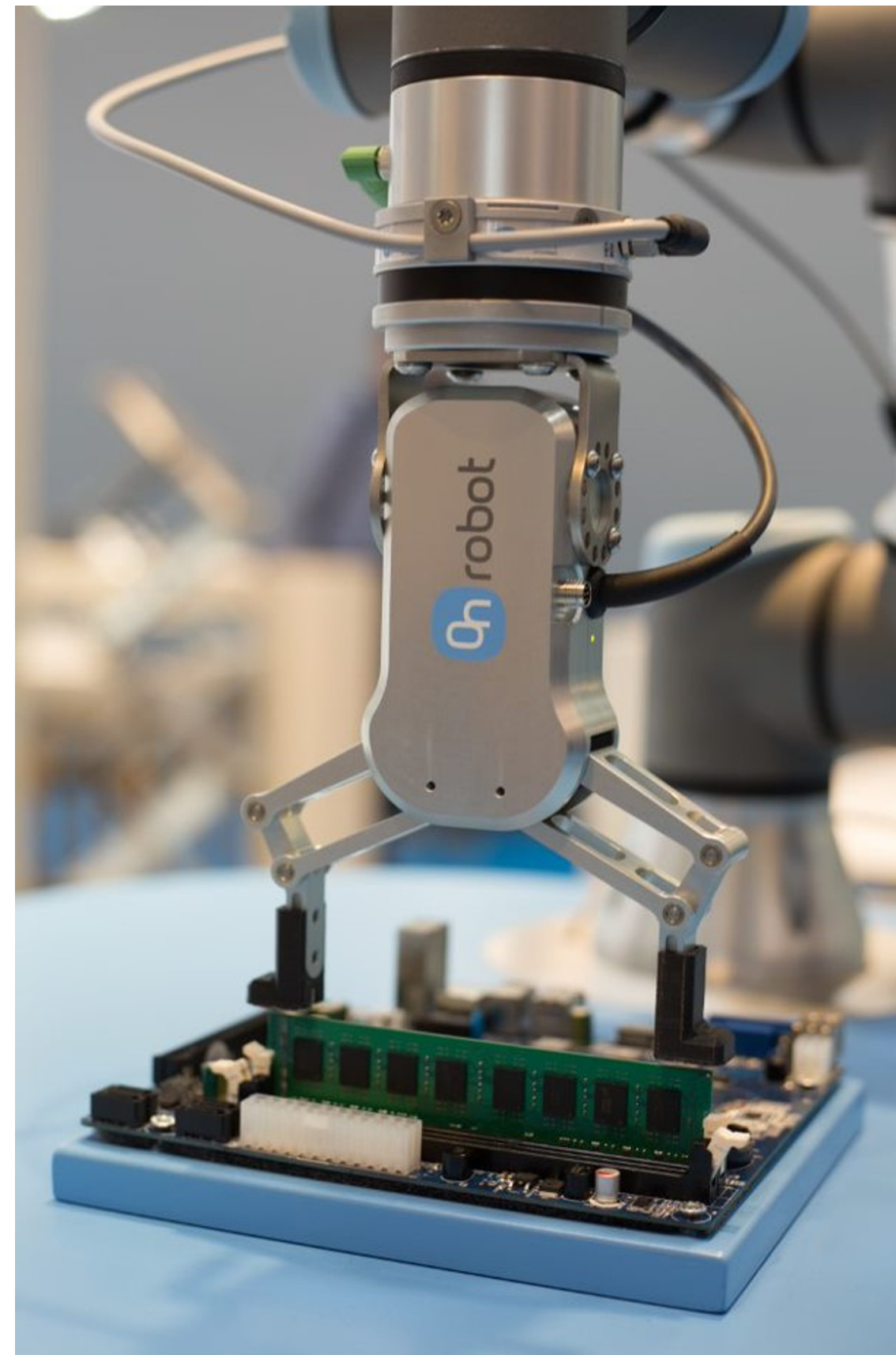
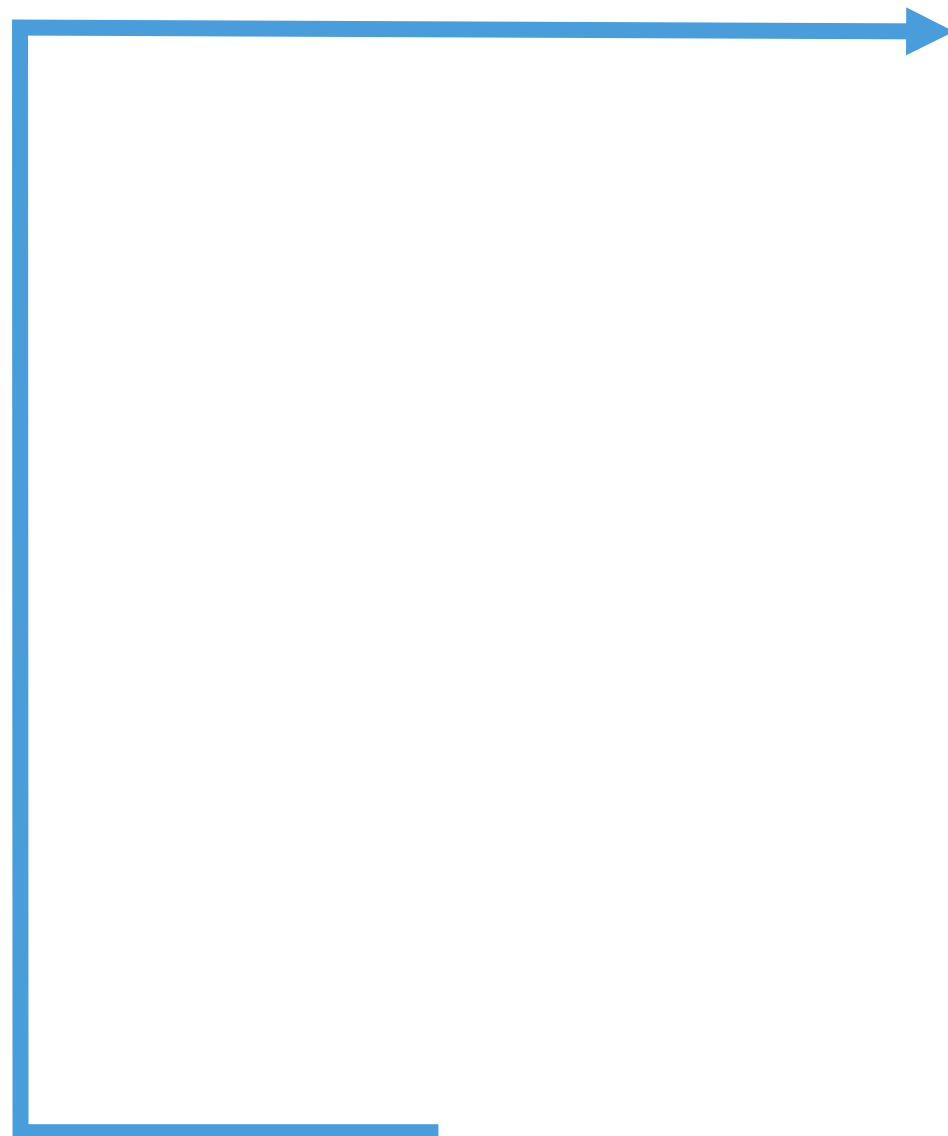


Intelligent Operations:

Power up production with added gripping and sensing capabilities

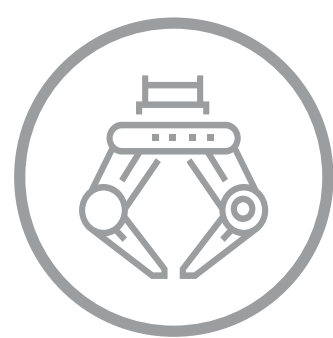
Two-way information exchange between tools and robots enables efficient operations

Instructions are programmed
via robots and directed to
robot tools



Our robot tools collect
and feed data to the robot
in real-time





Our Products

Intelligent tools and robot accessories for every automation need



The OnRobot Product Universe

Everything you need to automate your production

Gripping



RG2 Gripper



RG6 Gripper



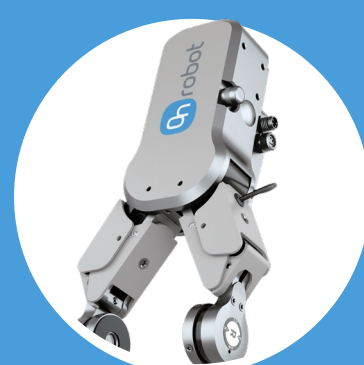
VG 10 Gripper



Gecko Gripper



Dual Gripper



RG2-FT Gripper

Sensing



HEX-E Sensor

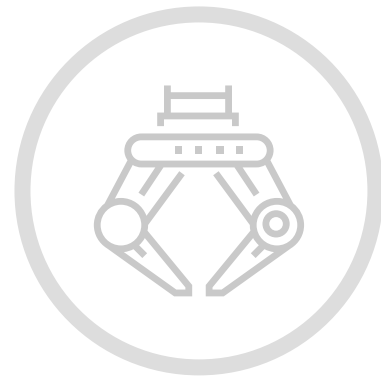


HEX-H Sensor

Tool Changing



Quick Changer



RG2/RG6

Plug & Produce gripper for multiple purposes

Dual gripper option for greater productivity



Features

Plug & Produce ready to go out of the box

Large stroke with force-based gripping

Customizable fingertips



Capabilities

Faster setup, less changeover time

Adaptive gripper with a very large stroke – it can just close until it feels enough force

The fingertips can be replaced fitting the product shape



Benefits

More flexible production with less down-time

Cost effective, can handle large variations in the process, same gripper for multiple purposes

Fast to start producing a new part



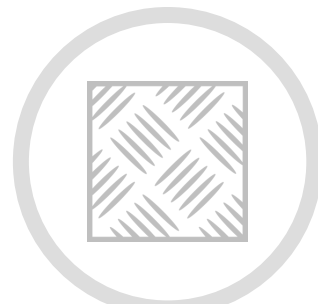
Fast installation and simple programming reduce deployment time by about 30%

RG2/RG6 Applications

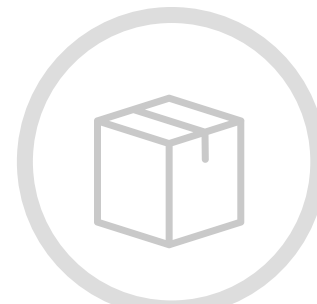
The RG2 can be used with products of various sizes and materials, including:



Plastics



Metal



Packaging



Wood



Fragile objects

Possible Applications Include:



Packaging & Palletizing

Relieve workers of repetitive tasks



Pick and Place

Moving items from and onto conveyor belts



Machine Tending

CNC machine loading and unloading



Assembly

Assembly of smaller parts





HEX F/T Sensor

Giving robots a sense of touch



Features

Force control software included

Easy-to-use advanced functions

Optical principle unique in the industry



Capabilities

Can 'feel' if the object is in position, can correct robot's or part's imperfections

Programming within minutes: Difficult assembly, polishing, sanding, deburring

More robust sensor, IP67 rated



Benefits

Higher productivity, more stable and precise production

New automation possibilities with less cost

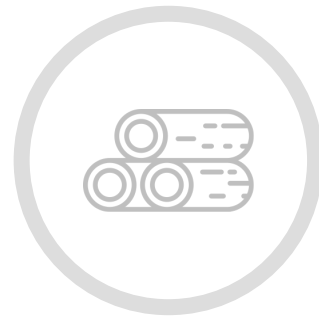
Durability – the sensor can resist sudden shock



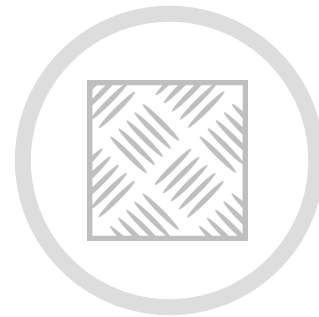
Pre-programmed force sensing applications get you up and running quickly.

HEX F/T Sensor Applications

The HEX F/T Sensor can be used with products of **various sizes** and **materials**, including:



Wood



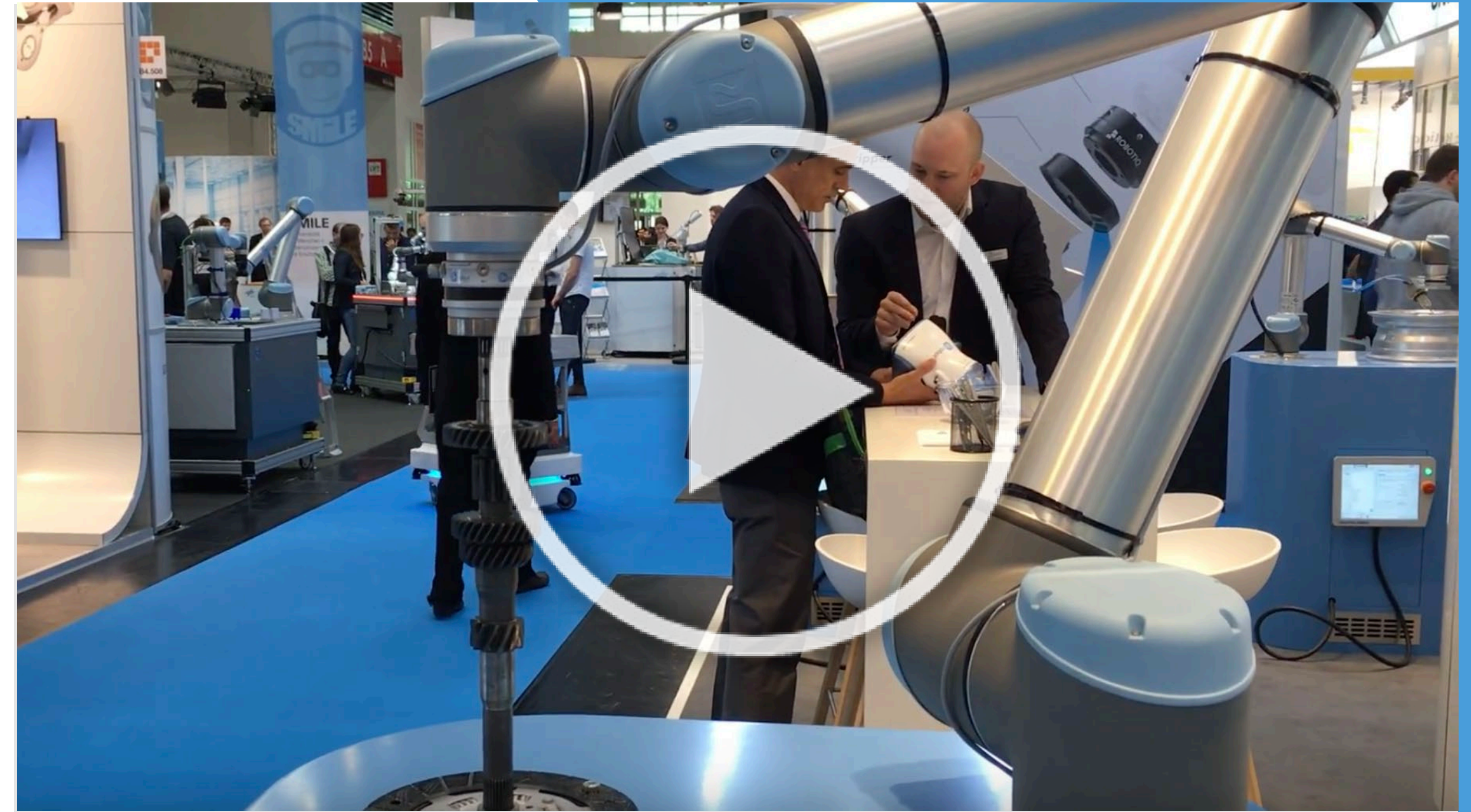
Metals



Plastics



Fragile materials



Possible Applications Include:



Assembly

Electronics, household appliances,
automotive electronics



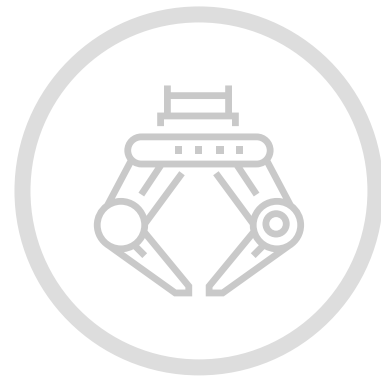
Surface Finishing

Deburring, Grinding,
Polishing



Quality Testing & Inspection

Precision, consistency



RG2-FT Gripper

Intelligent gripper with a sense of sight and touch



Features

6 axis F/T Sensor built into gripper fingertips



Proximity sensor built into fingertips



Integrated force-controlled insertion software



Capabilities

Detects location of the workpiece even if not precisely positioned



Gripper can see if its handed something and knows if you want it to release



Easy set-up and programming even for complicated tasks



Benefits

Increased efficiency and reduced damage risk

A real collaborative partner for your workforce

Greater precision in handling



The RG2 Gripper is the world's first intelligent gripper that can see and feel objects using built-in force/torque sensing

RG2-FT Gripper Applications

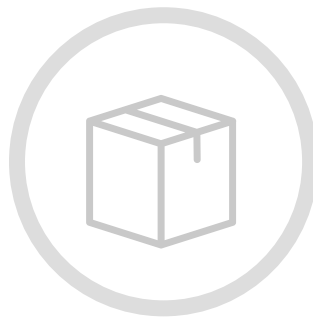
The RG2-FT Gripper can be used with products of various sizes and materials, including:



Plastics



Metal



Packaging



Wood



Fragile objects



Possible Applications Include:



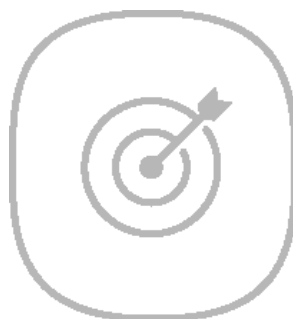
Packaging & Palletizing

Relieve workers of repetitive tasks



Pick and Place

Moving items from and onto conveyor belts



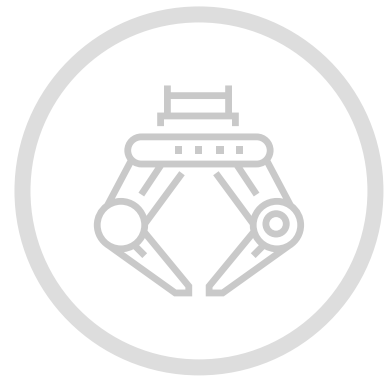
Machine Tending

CNC machine loading and unloading



Assembly

Assembly of smaller parts



GECKO GRIPPER

Gripping inspired by nature



Features

Special adhesive technology



In-built Proximity sensor



Unique technology for pick and place flat and smooth objects



Capabilities

No external air supply needed



Can detect part presence



Porous objects like PCB can be handled easily



Benefits

Faster setup, less running cost, less noise

More precise production

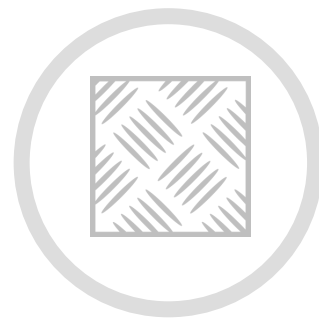
New automation possibilities



Using technology inspired by nature, it's possible to lift flat, smooth and even porous surfaces

Gecko Gripper Applications

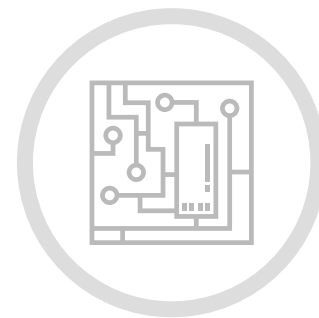
The GECKO GRIPPER can be used with products of **various sizes** and **materials**, including:



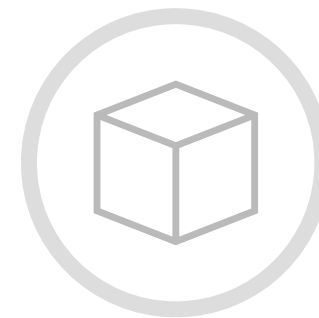
Metal



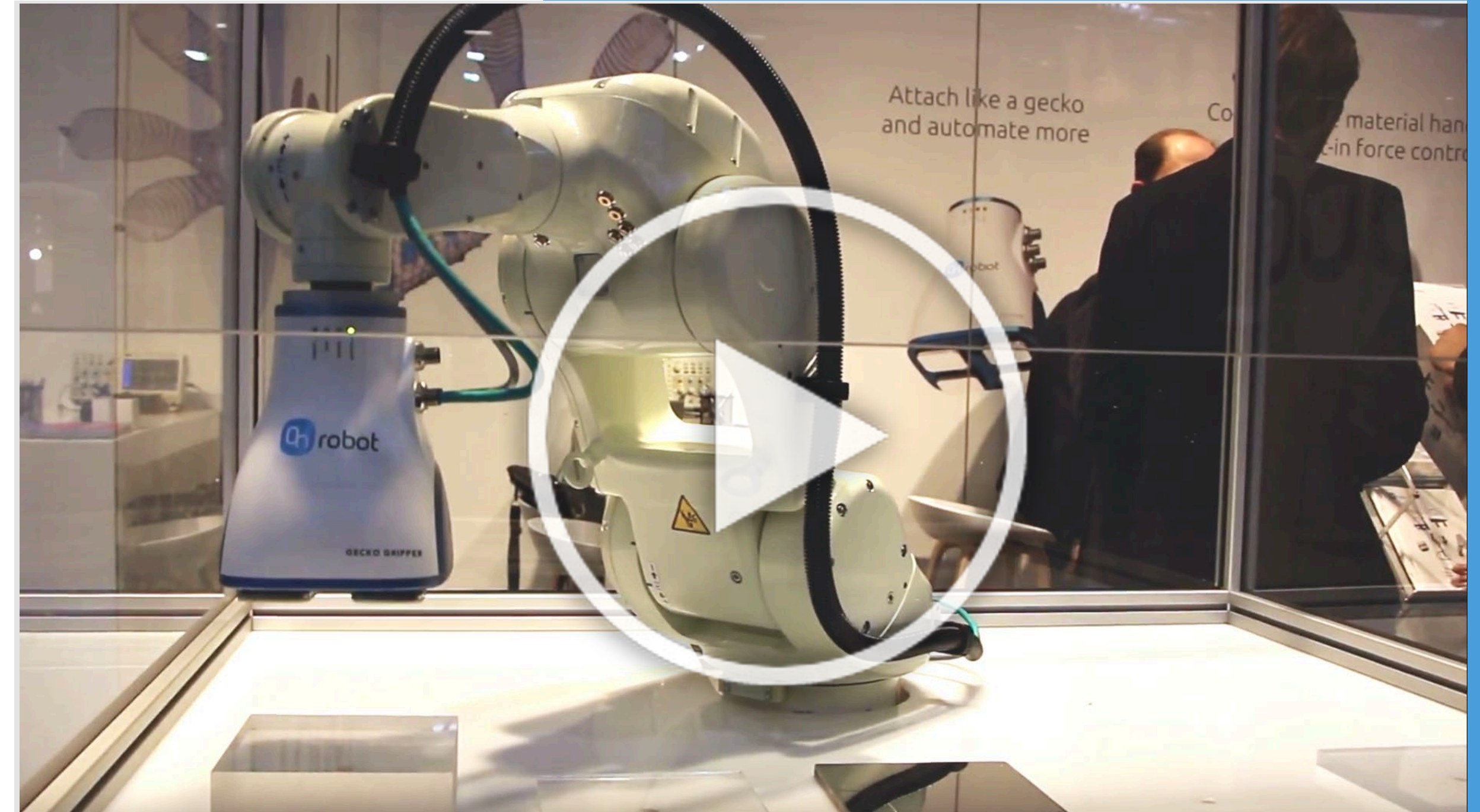
Glass



PCB



Packaging



Possible Applications Include:



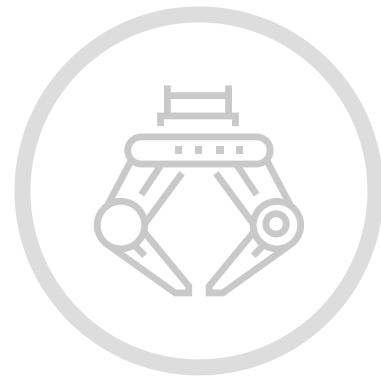
Packaging & Palletizing

Relieve workers of repetitive tasks



Pick and Place

Moving items from and onto conveyor belts



VG10 Vacuum Gripper

Flexible, adjustable electrical vacuum gripper



Features

Built-in electric vacuum



Dual gripping feature, A and B channels can be individually programmed



Variable vacuum gives you control



Capabilities

No external air supply needed

Can handle 2 products simultaneously with the flexible adjustment of suction cup arms

Configurable suction cups



Benefits

Less running cost, less noise, takes up less space

Higher utilization of the robot,
Shorter cycle time, more output

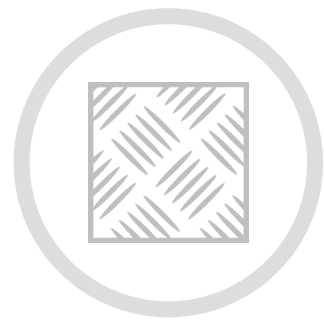
Can accommodate 3rd party suction cups



Designed for collaborative robot applications – works straight out of the box

VG10 Vacuum Gripper Applications

The VG10 VACUUM GRIPPER can be used with products of **various sizes and materials**, including:



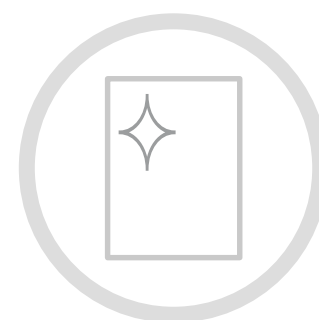
Metal



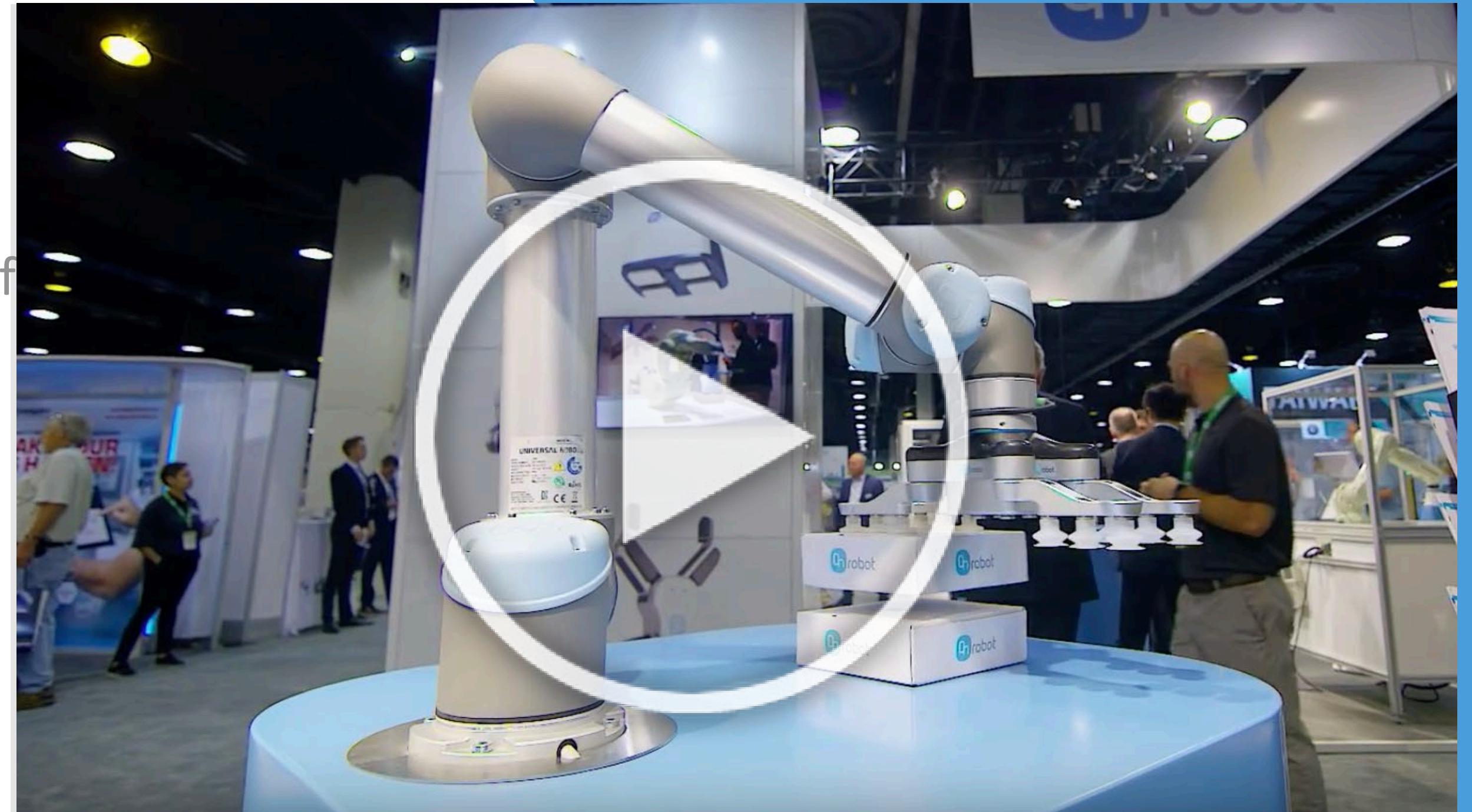
Glass



Plastic



Glossy, Heavy
Paper



Possible Applications Include:



Packaging & Palletizing

Relieve workers of
repetitive tasks



Pick and Place

Moving items from and
onto conveyor belts



Quick Changer

Click-on speed for fast tool changes



Features

Easy to deploy and move around

Smart Design



Capabilities

Short and easy changeover

Can be coupled with a single click



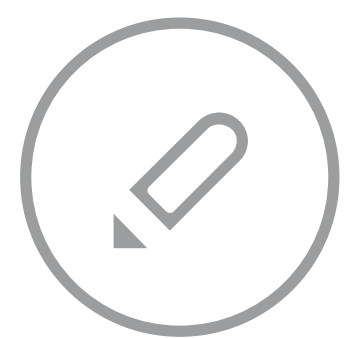
Benefits

More uptime, can quickly produce multiple, smaller orders

Less down-time, easy redeployment



The easiest and fastest tool changer – click on your next tool and get back to production.



Building The Perfect Automation Solution

Customize your robot set-up with our range of accessories that work seamlessly together



Object Handling

OnRobot's products work together to help you precisely handle objects of all shapes and sizes

HEX-E F/T Sensor

Increases accuracy of grippers via force and torque measurements to detect the position of the parts

Quick Changer

Lets you quickly switch between say, RG2 grippers and your vacuum gripper, or vice versa to meet ever-changing production needs

RG2 Gripper

Picks up and inserts parts with high accuracy and precision; can be replaced with other grippers depending on your product type. Fingertips can be customized to suit your needs.



Applications



Pick and Place



Packaging &
Palletization



Assembly

Finding The Right Gripper

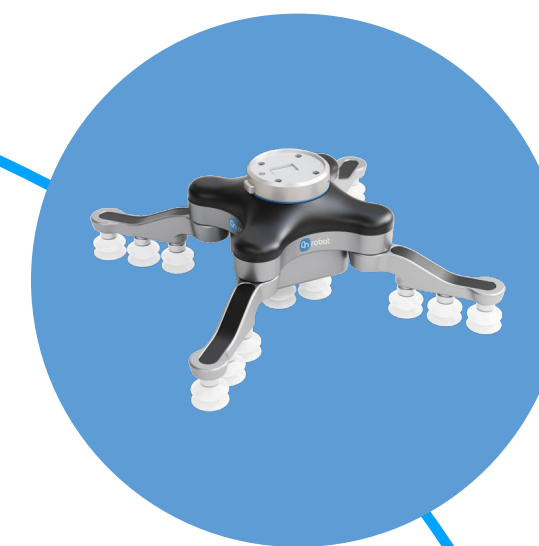
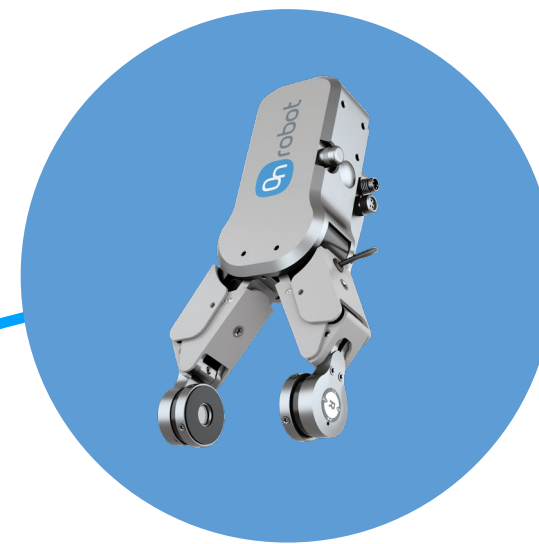
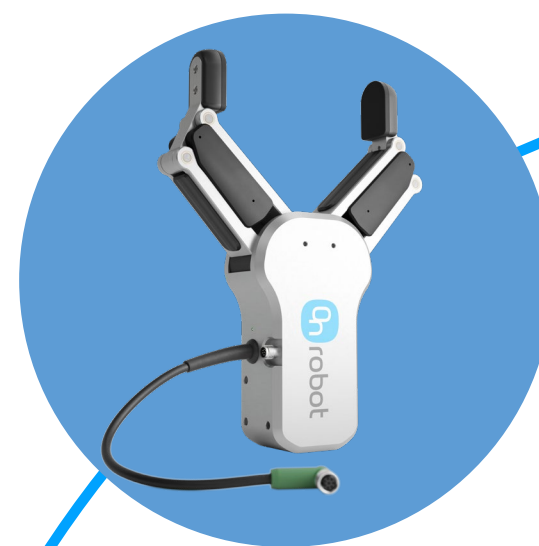
No matter what your product is, there's a gripper to meet your production needs from OnRobot's range of interchangeable grippers

RG2-FT Gripper

For high-precision assembly type applications where F/T sensing in fingertips is required*

RG6 Gripper

For movement of larger items, payload up to 6kg, stroke 160 mm*



VG10-Gripper

For large objects or applications where two parts must be moved separately*

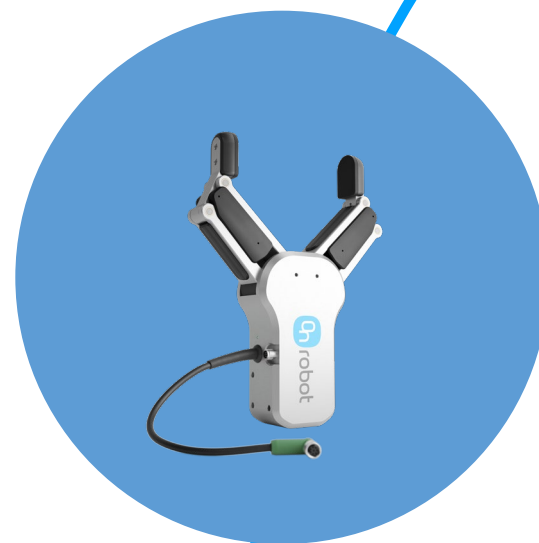


Gecko Gripper

For objects with porous or easily stained (e.g. glass) surfaces, leaves no mark on the surface*

RG2 Gripper

For movement of items, payload up to 2kg, stroke 110 mm*



**OnRobot's grippers are most suitable for, but not limited to these applications*



Solutions for Every Industry's Needs

Customize your robot set-up with our range of accessories



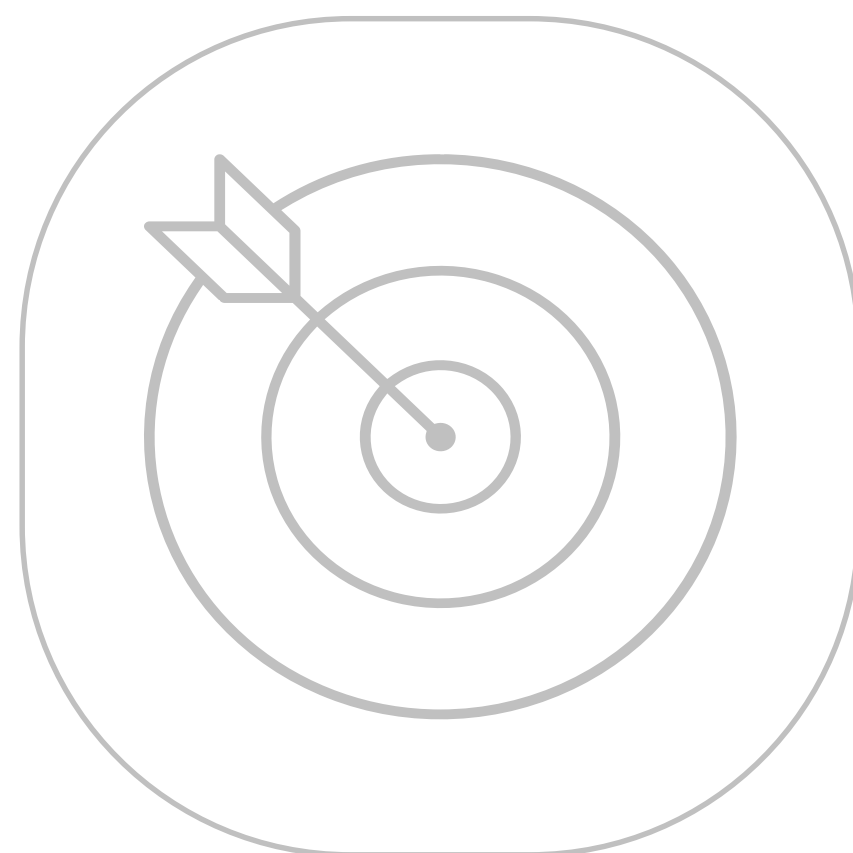
Packaging & Palletizing

Make monotonous packaging and palletizing tasks a breeze with automation



FLEXIBLE

Adjustable force enables handling of fragile parts without risking damage



PRECISION

High repeatability and precision with minimal error and wastage



EFFICIENCY

Increased production in collaborative applications via robots which run autonomously



ADDED VALUE

Employees freed from strenuous and repetitive tasks for other value-added work

Packaging and Palletizing:

Packaging and palletizing of products of every size and shape

Force Torque Sensors

Detecting presence for greater accuracy



HEX Sensor

Grippers

Picking up and moving objects with the right force and high flexibility



RG2/6 Gripper



Dual Gripper



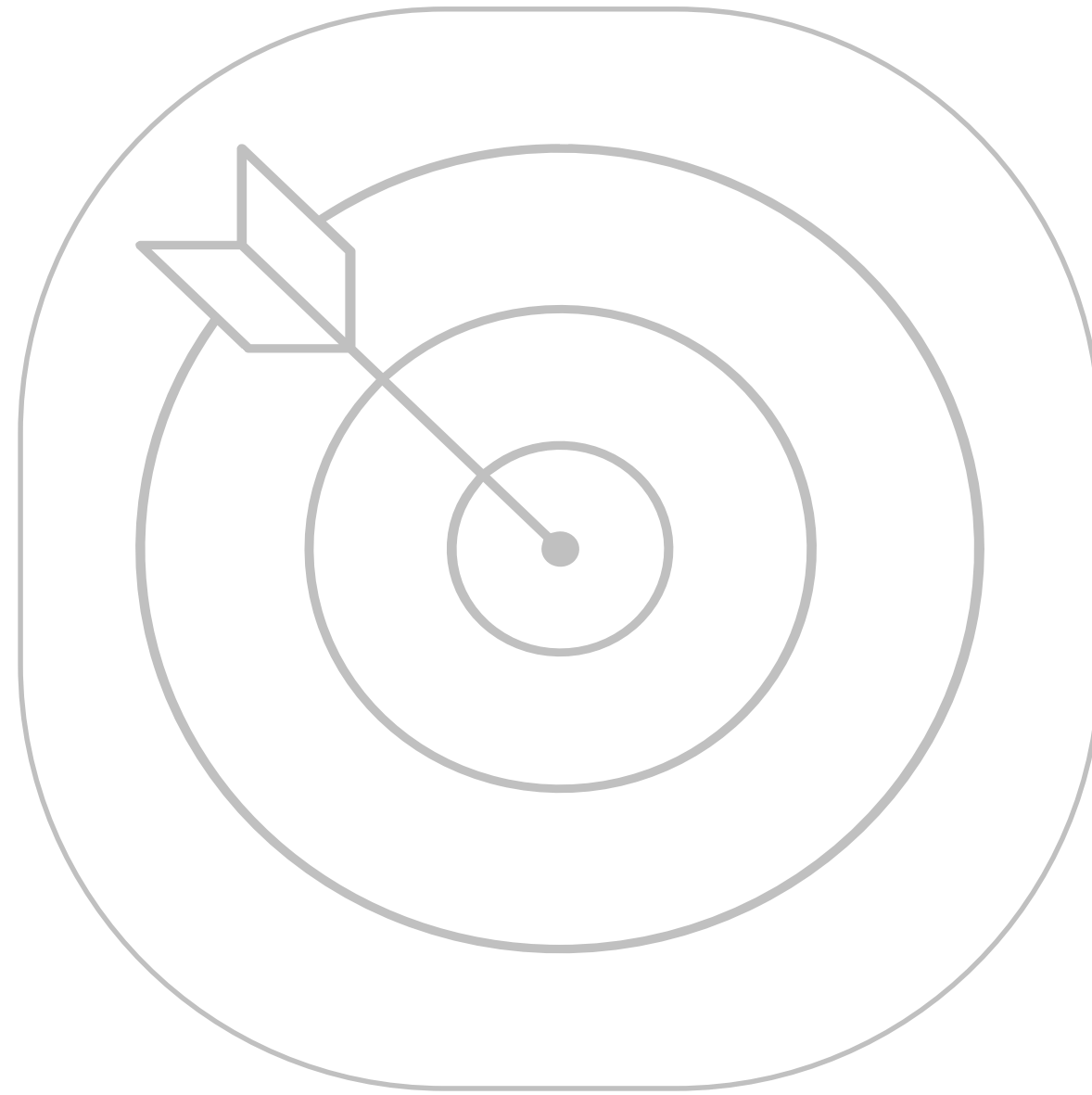
VG 10 Gripper



Gecko Gripper

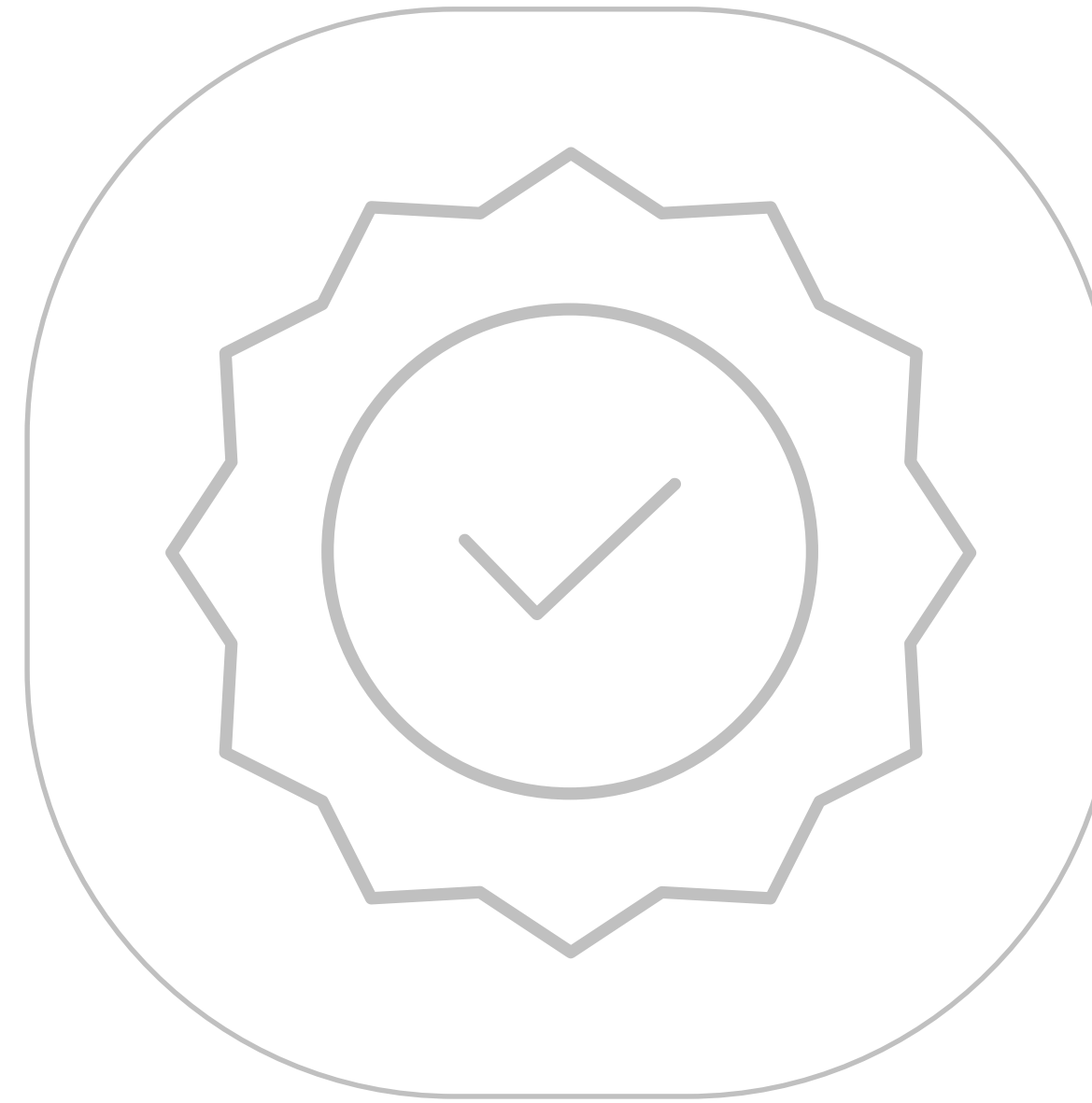
Surface Finishing

Accurate surface finishing with a sense of touch



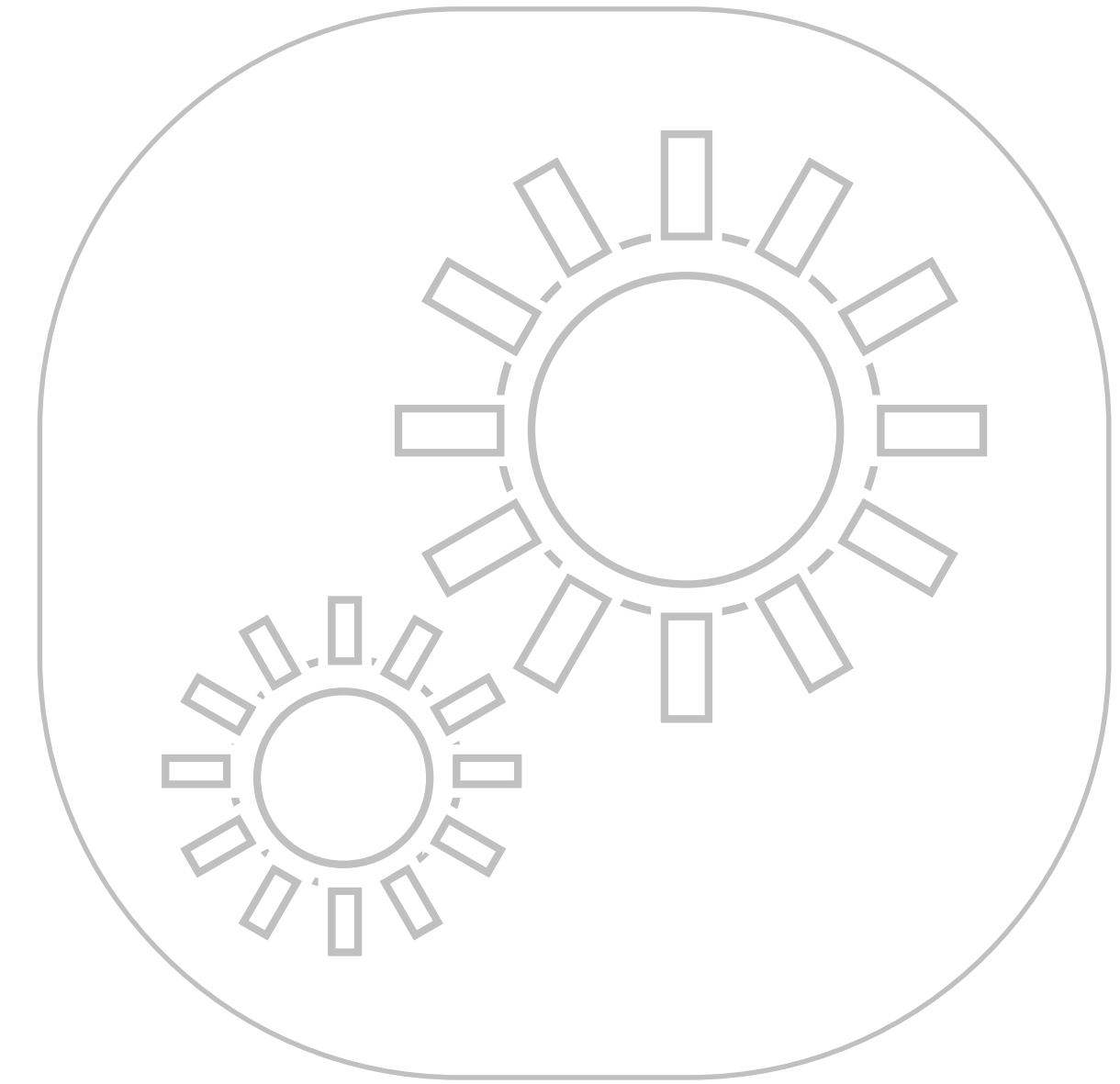
Precision

Keeping predefined force and speed constant achieving accurate surface finishing



Quality

Reliably follows any kind of difficult contour, robot will adapt to this surface



Advanced Functions

Software package allows short integration and easy programming

Surface Finishing

Force Torque Sensors

Controlling robot motion
for the perfect results



HEX Sensor

Machine Tending

Increase productivity with dual grippers



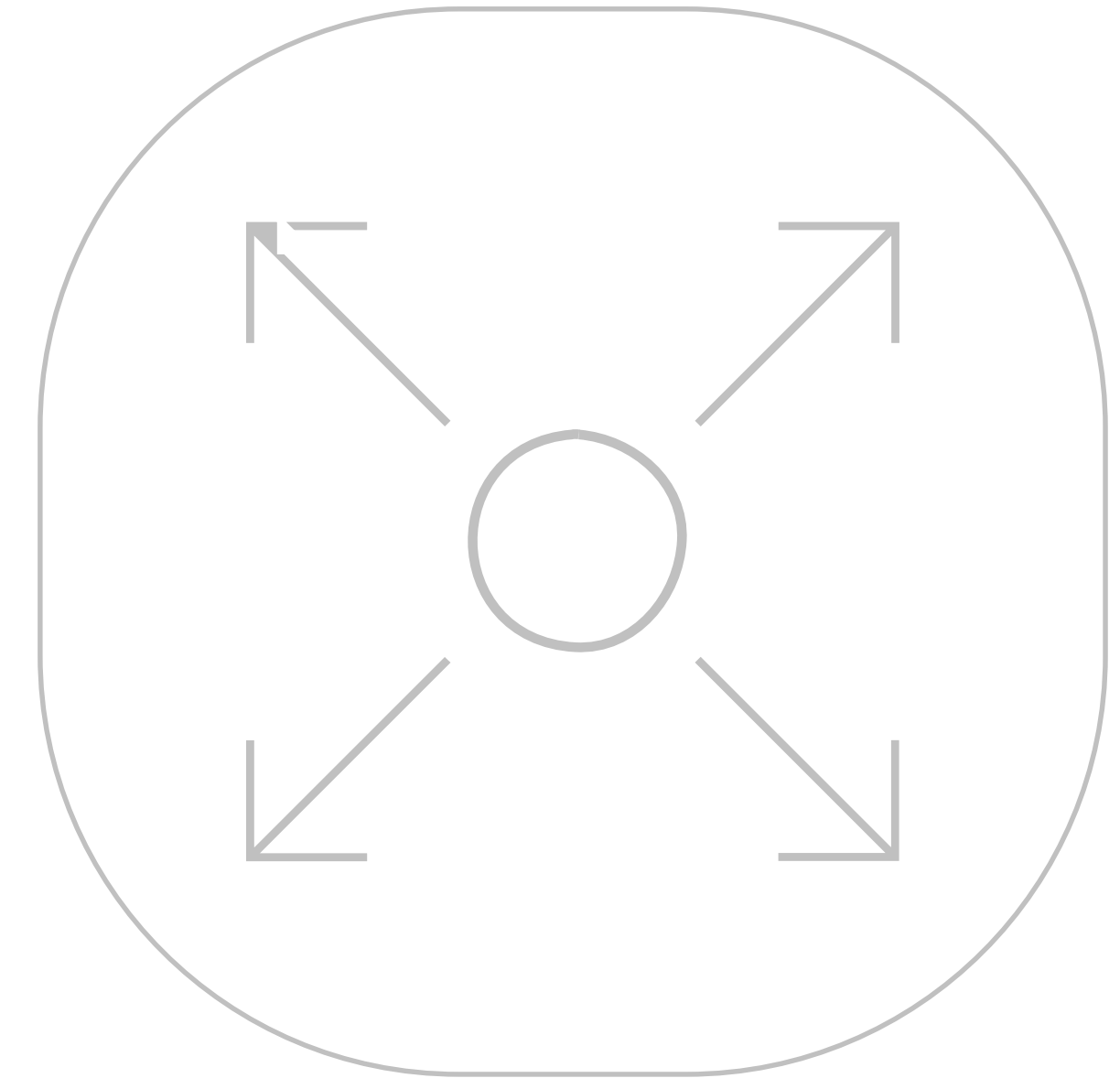
Faster Cycle Time

Higher CNC machine utilization:
at least 50% faster



Flexible Gripping

Same grippers can be used for different
sized of objects



Easy Deployment

Fast conversion from one production
line to another, quick changeover time

Machine Tending

Dual Gripper

Faster cycle time, faster payback



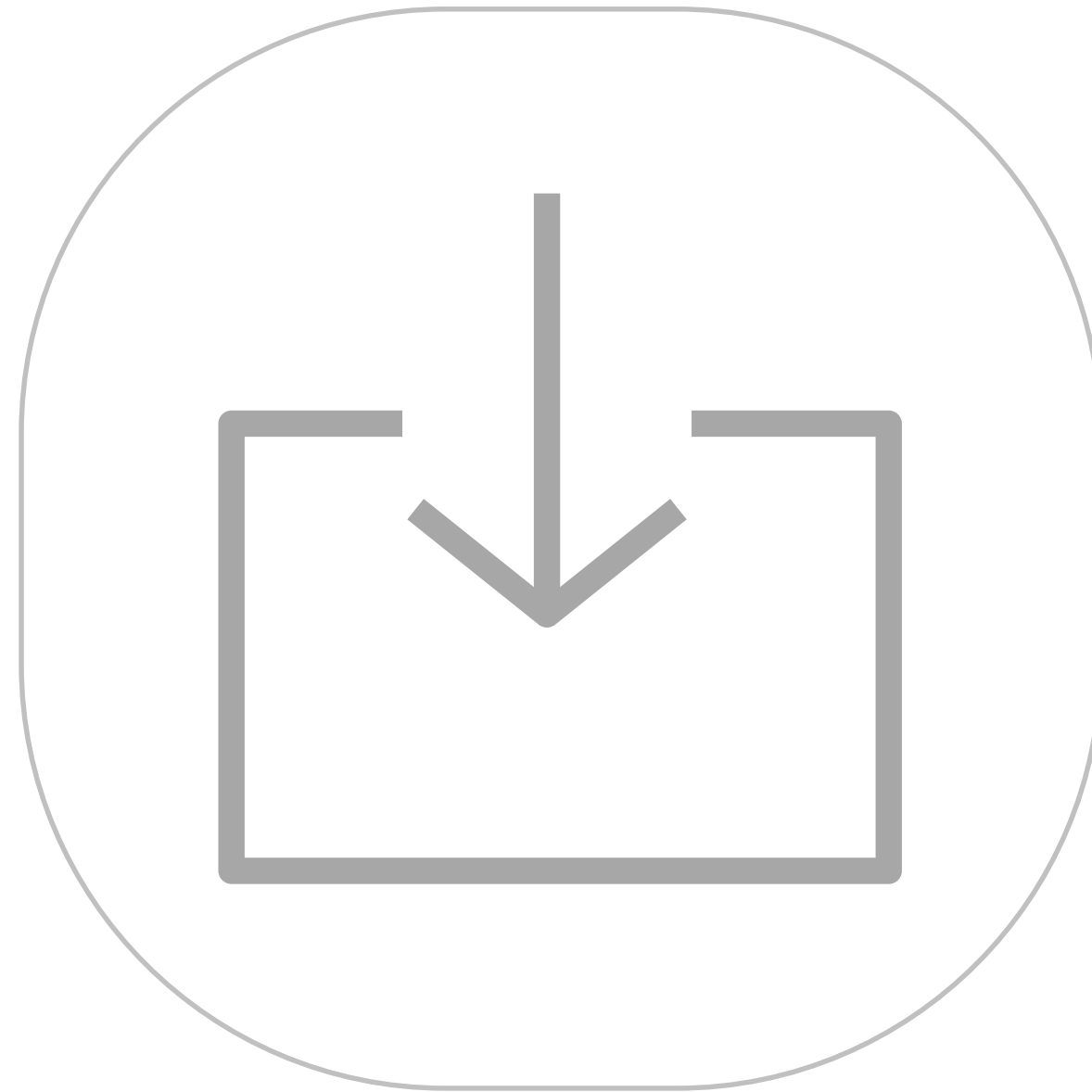
RG2, RG6 Dual Gripper

Case Studies



Assembly

Locate and precisely grip objects of various shapes and sizes



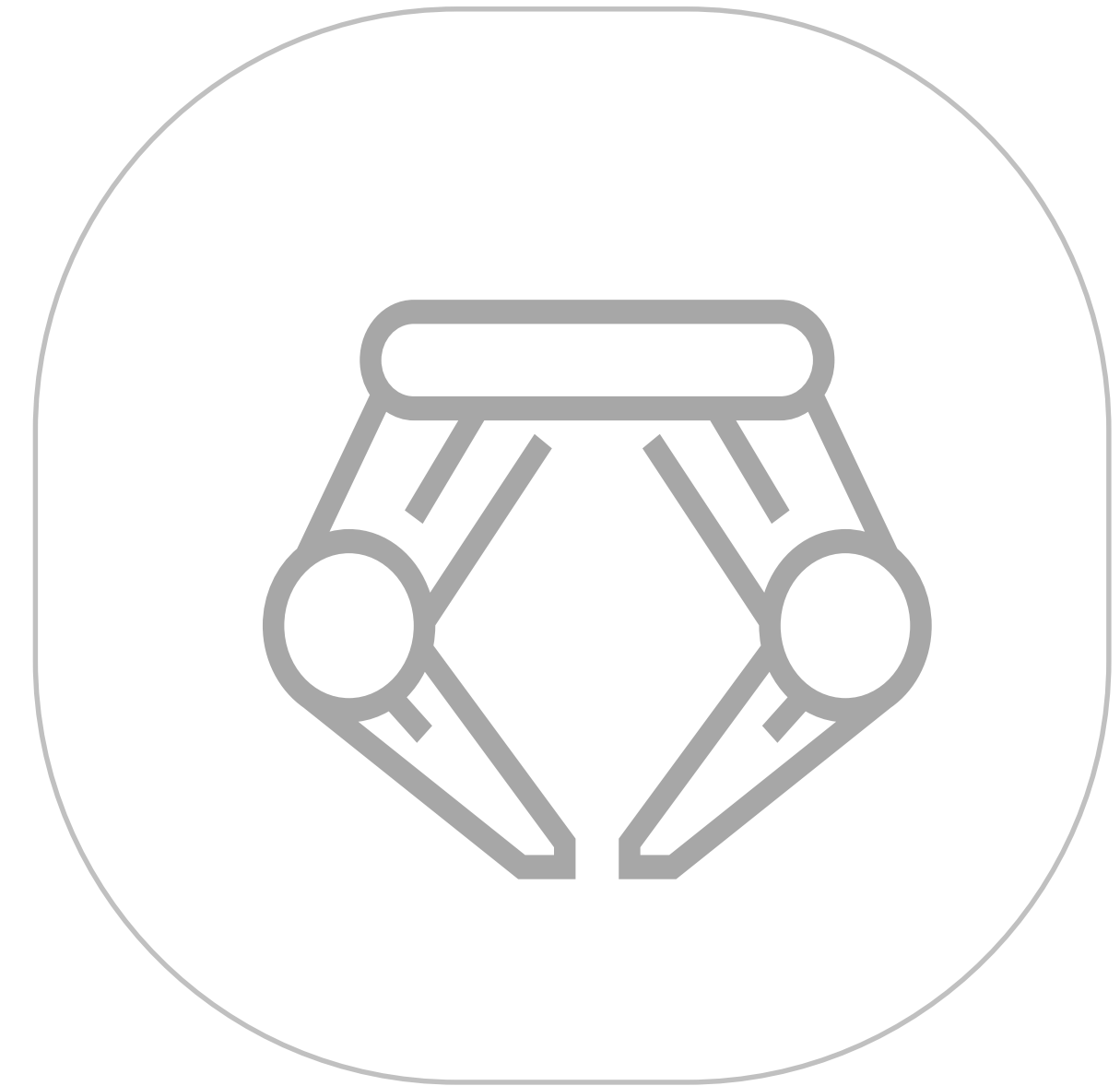
Precise Insertion

Robot can easily find the right orientation with insertion software module



Real Collaboration

Can support workers as co-worker by handing the product to the human operators



Flexible Gripping

Use the same gripper for objects of different sizes, materials and shapes simultaneously

Assembly

Force Torque Sensors

Precise insertion with a sense of touch



HEX Sensor

Grippers

Locate and precisely grip various shapes and sizes



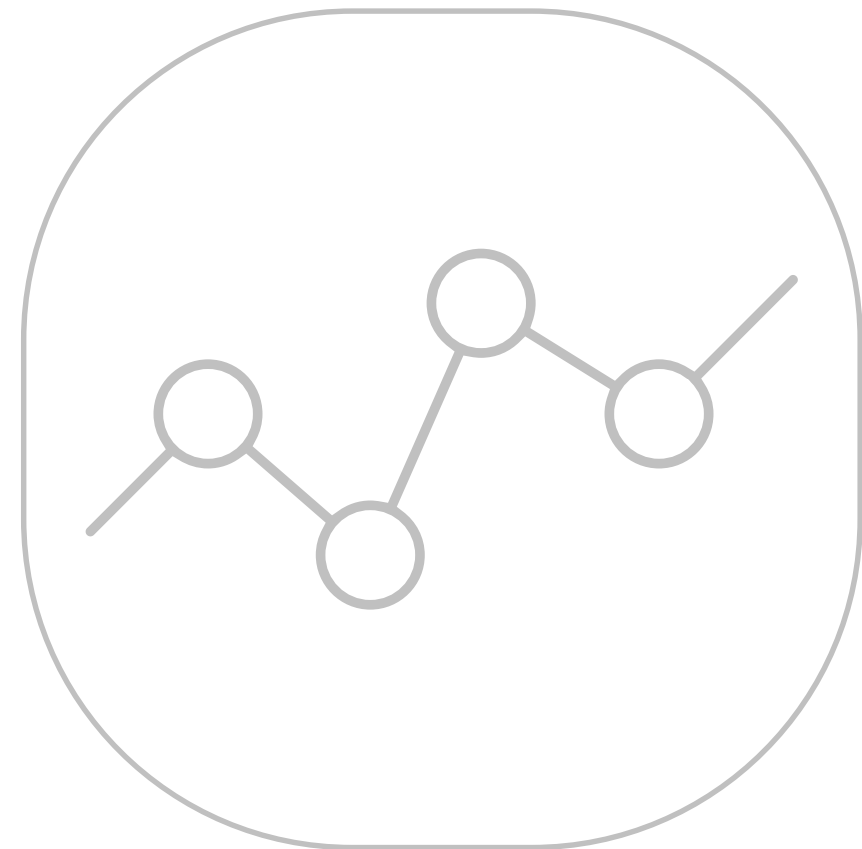
RG2/6 Gripper



RG2-FT Gripper

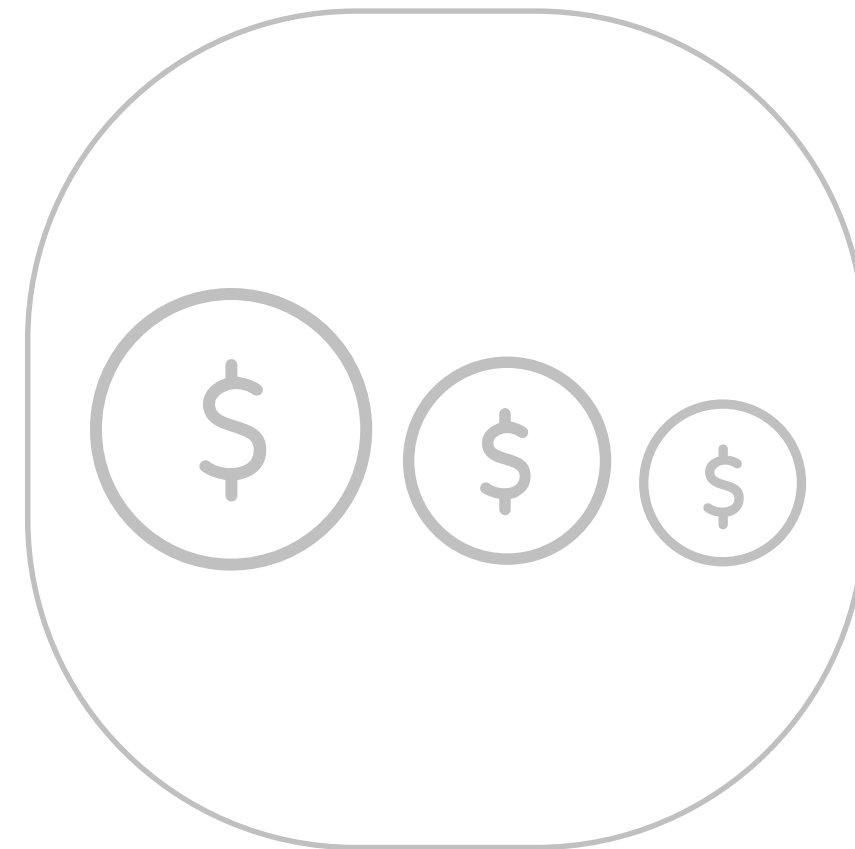
Quality Assurance

Ensure precision and consistency in your operation



Predictable Quality

Ensuring consistent quality during production by keeping consistent force values



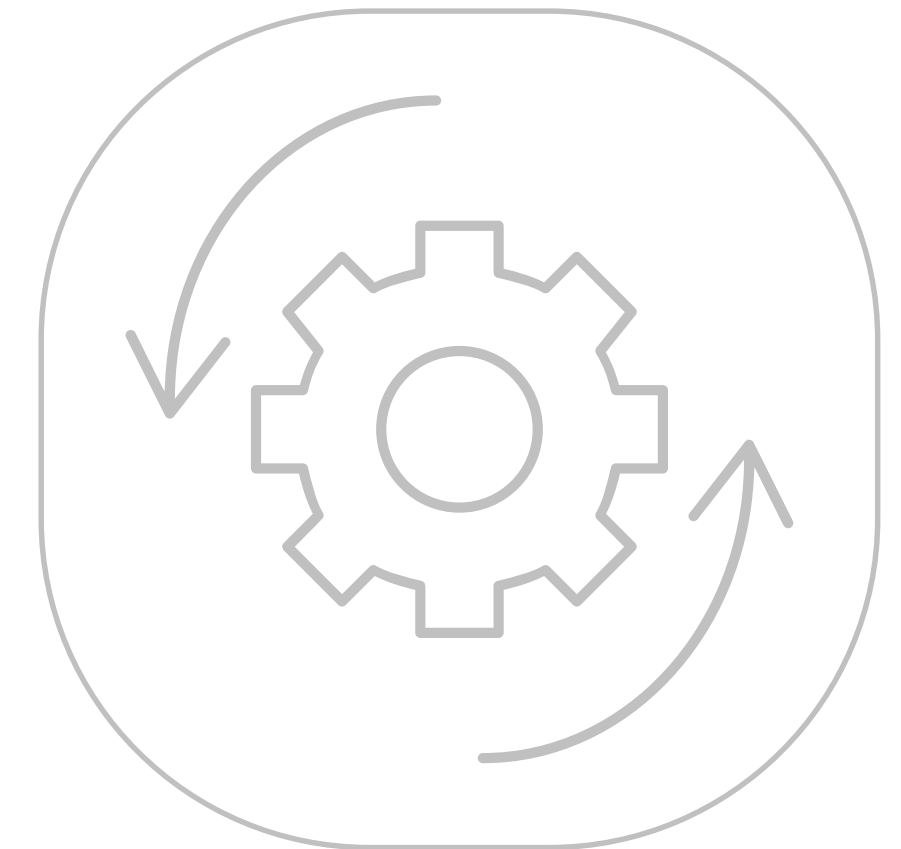
Lower Operational Cost

Automating manual processes



Less Waste

Less raw materials wastage due to precise handling



Efficiency

Employees freed from strenuous or repetitive tasks for other value-added work

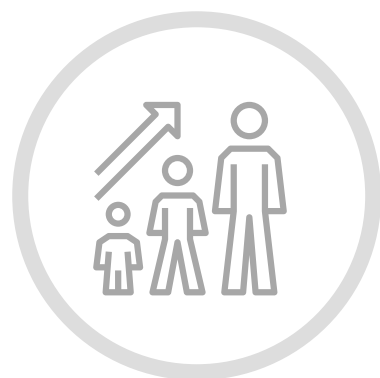
Quality Testing and Inspection

Force Torque Sensors

Automate testing that requires
the sense of touch



HEX Sensor



Customer Success Stories

Cutting-edge robotics solutions for customers across sectors and industries

Automating herb and flower packaging with Rosborg Food Holding

Rosborg Food Holdings is Denmark's largest herb producer. They cultivate an extensive range of herbs, flowers and plants in 120,000m² of greenhouses.

INDUSTRY:



Farming

Rosborg's CHALLENGE:



Large volumes of produce - up to **12 million mini flowers** and **28 million herb plants** need to be packaged annually



Plants are delicate and easily damaged in the packing process

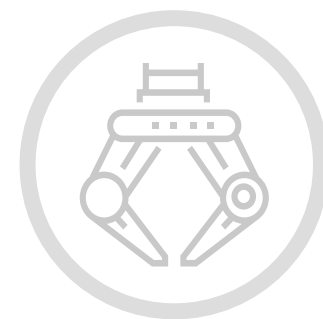


Automating herb and flower packaging with Rosborg Food Holding



Rosborg's SOLUTION

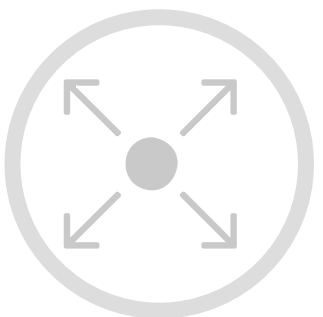
RG6 gripper that packages cut herbs and places them on the conveyor belt for packing



Gentle grip: Delicate plants are handled without being damaged



Highly Precise: Plants are packaged efficiently without waste or damage



Highly flexible: Able to work with packages of different sizes and weights on the same production line

THE RESULTS:



Doubled production during peak sessions without profit loss → no need for extra people hire



Greenhouse workers freed from monotonous packing tasks

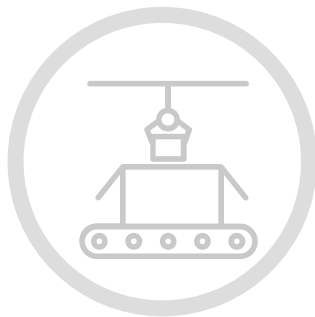
Accelerating Production with Rosborg Food Holdings



Enabling Round the Clock Production with Osvald Jensen

Osvald Jensen A/S is a market leader in developing and producing worm gears, wheels and custom gears at their facility in Denmark.

INDUSTRY:



PACKAGING

Osvald Jensen's CHALLENGE:



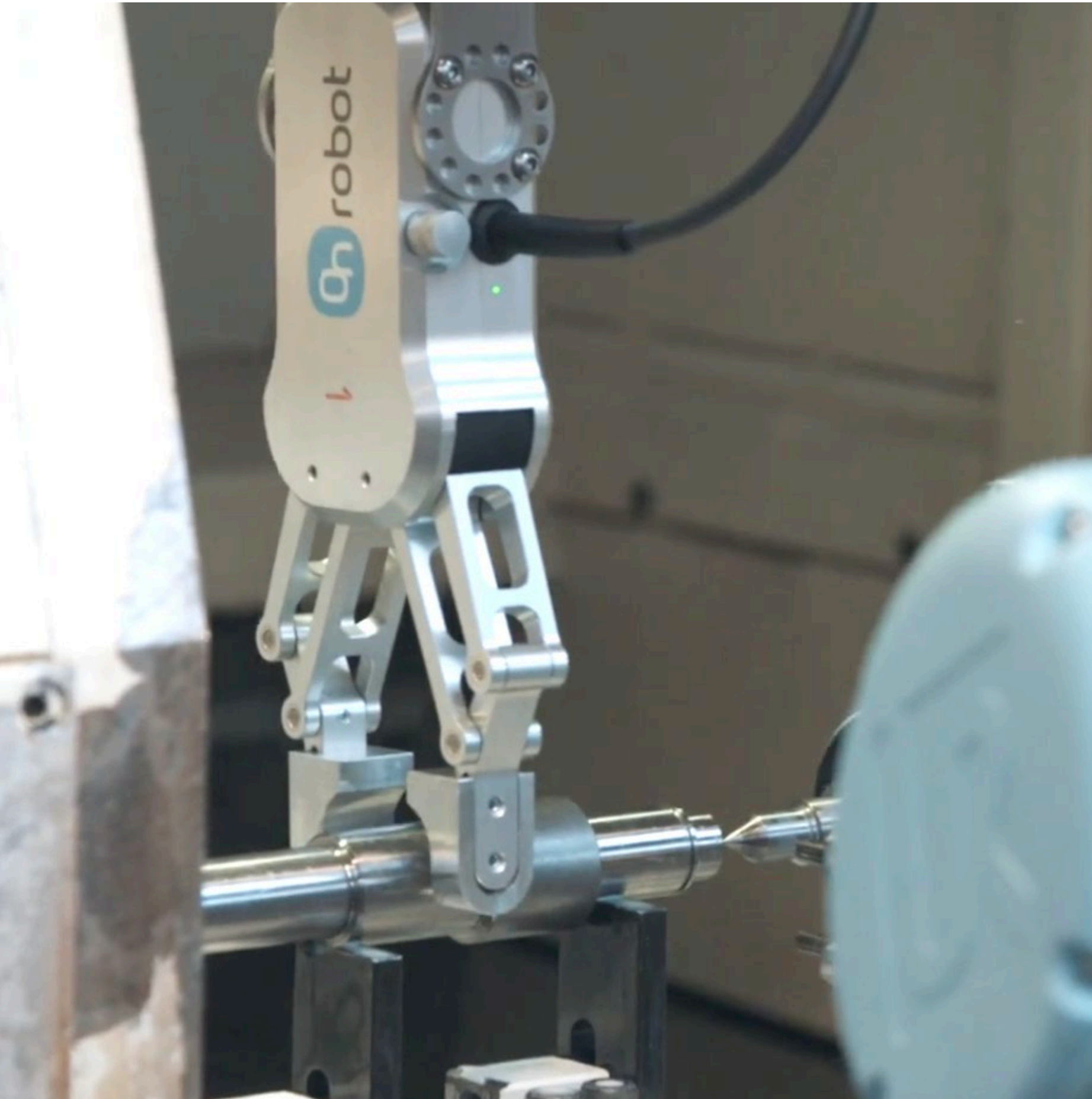
Increasing manpower to meet production needs is limited by the **tight labor market and growing cost of labor**



Loading CNC machines is a **tedious task with a risk of human error** when performed manually by operators

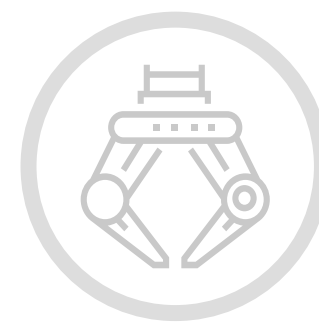


Enabling Round the Clock Production with Osvald Jensen



OSVALD JENSEN'S SOLUTION

RG2 Dual Gripper that loads and unloads CNC machines



Double Gripping: Increases CNC machine productivity by handling two items simultaneously



Autonomous Operations: Grippers work around the clock to increase production volume even when human operators are not present



Reduced faults: Grippers work around the clock to increase production volume even when human operators are not present

THE RESULTS:



Cycle time reduced by 40%, increasing productivity



ROI achieved in less than 3 months after implementation

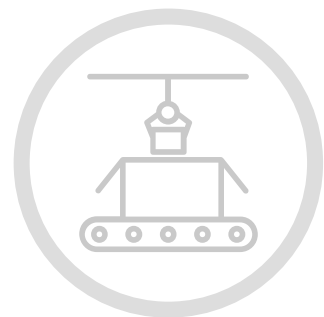
Accelerating Production with Osvald Jensen



Accelerating Production with FT-Produktion

FT-Produktion is a family-owned machine shop supplying metal tools and parts to a diverse range of customers, including those in the automotive, construction and furniture industries. The company has an annual turnover of SEK 19 million and works with global manufacturers like Volvo, Renault and Scania.

INDUSTRY:



MANUFACTURING

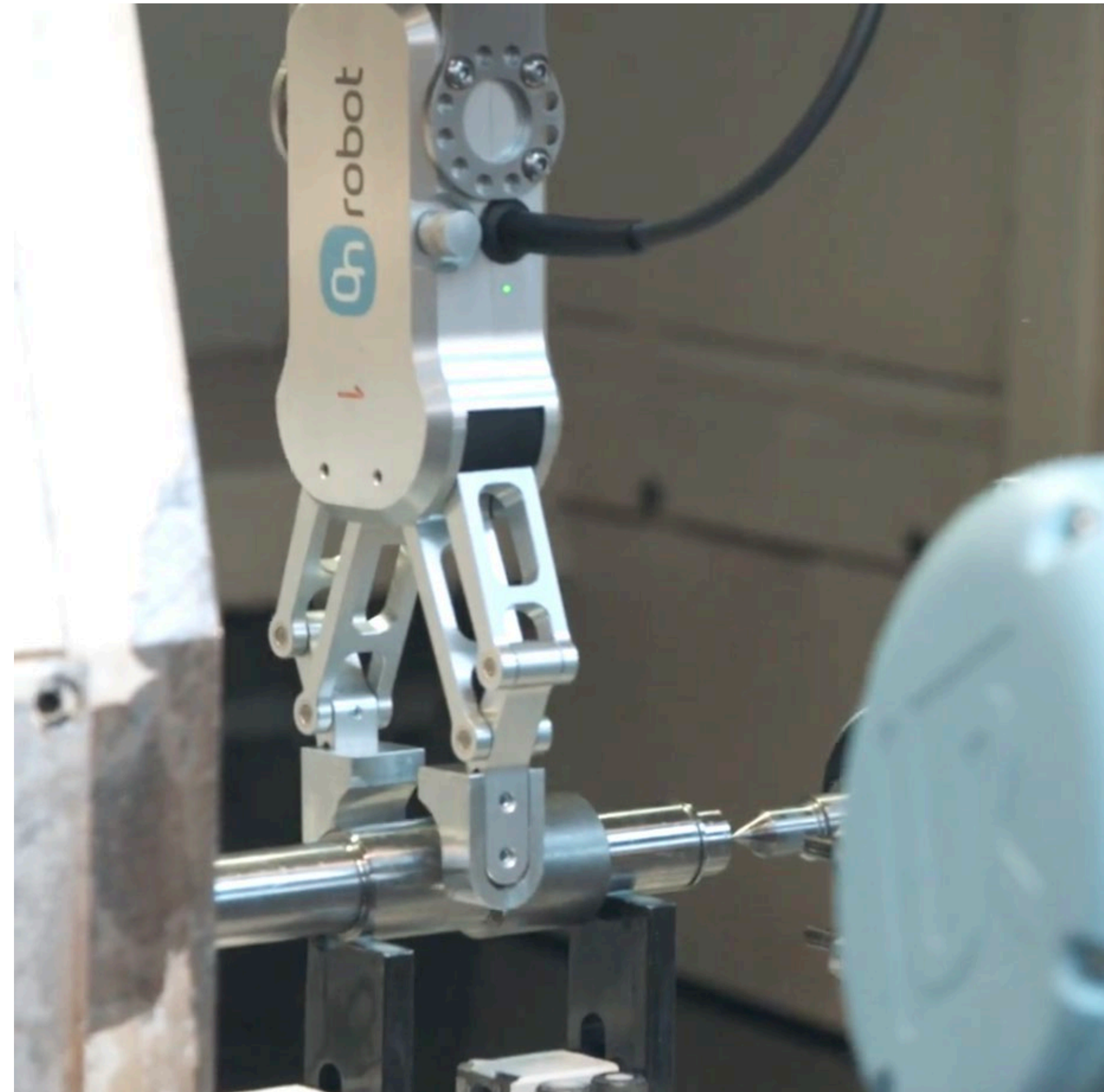
FT-PRODUKTION'S CHALLENGES:



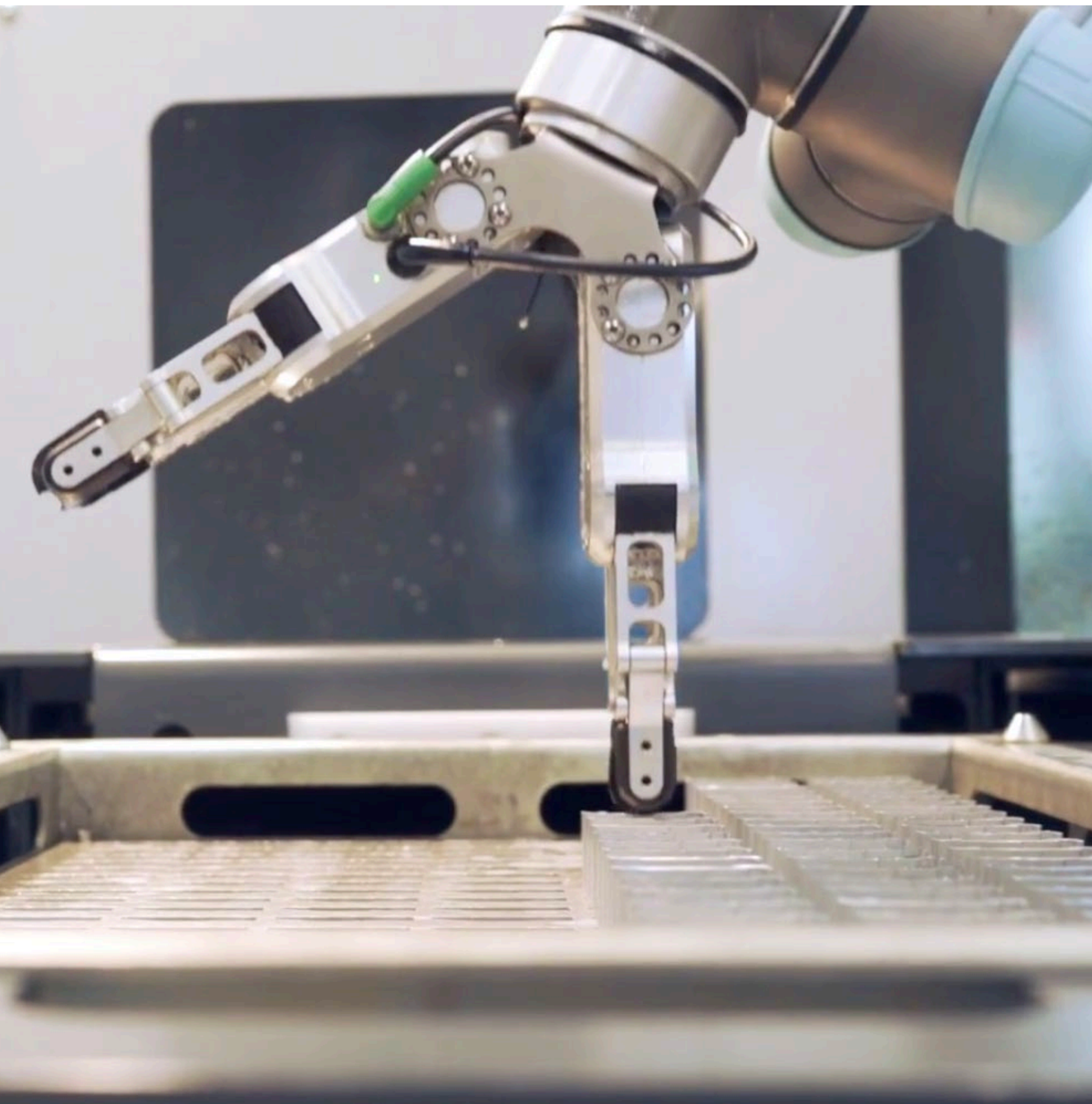
Ability to meet rising production demands is restricted by a **tight labor market and difficulty in recruiting qualified operators**



Production runs range from five to 150,000 units, requiring **frequent reconfiguration of production work flows**

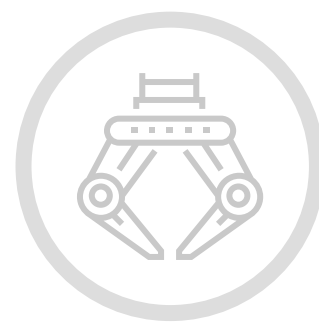


Accelerating Production with FT-Produktion



ONROBOT'S SOLUTION

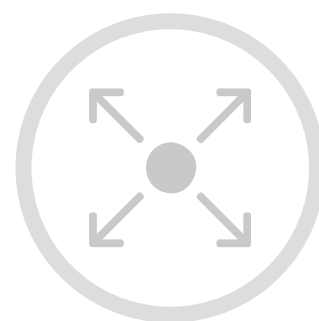
RG2 Dual Gripper that loads and unloads CNC machines



Double Gripping: Each gripper can load and unload a CNC machine simultaneously, cutting production cycle time by 12 seconds per task



Autonomous Operations: Grippers handle production tasks reliably with little error, enabling operators to manage multiple machines and take on a greater variety of tasks



Easy Redeployment: Grippers can be redeployed to work with different materials and tasks with minimal downtime

THE RESULTS:



500 hours saved for the manufacture of every 150,000 parts



Operators freed of strenuous, tedious tasks to do value-added work

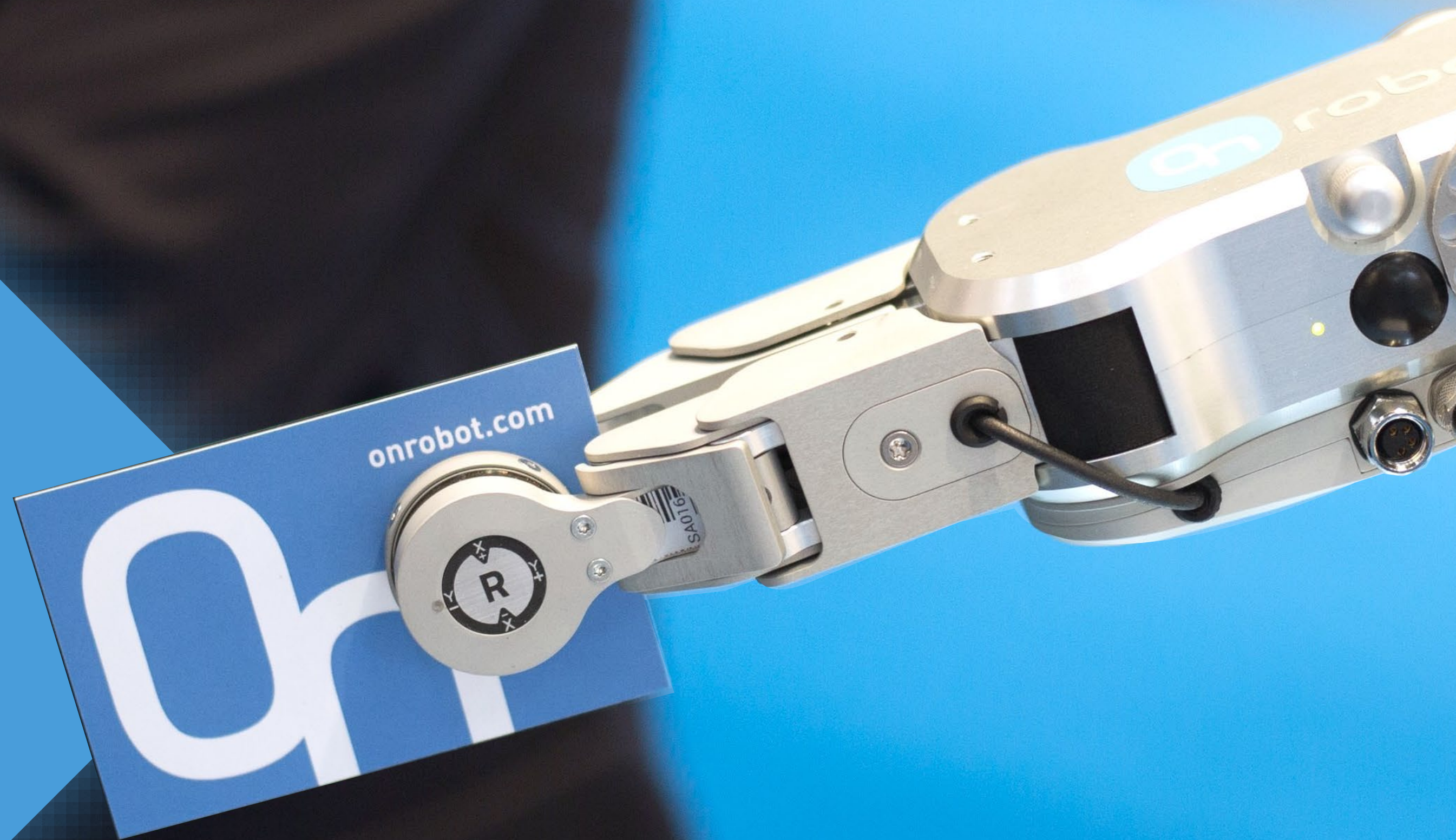
Accelerating Production with FT-Produktion





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Appendix



RG2 Gripper

Technical Specifications

	Minimum	Typical	Maximum	Units
Technical Data				
Total stroke	0	-	110	[mm]
Finger position resolution	-	0,1	-	[mm]
Repetition accuracy	-	0,1	0,2	[mm]
Reversing backlash	0,2	0,4	0,6	[mm]
Gripping force (adjustable)	3	-	40	[N]
Gripping force accuracy	± 0.05	± 1	± 2	[N}
Operating voltage*	10	24	26	[V DC]
Power consumption	1,9	-	14,4	[W]
Maximum current	25	-	600	[mA]
Ambient operating temperature	5	-	50	[°C]
Storage temperature	0	-	60	[°C]
Product weight	-	0,65	-	[kg]

* At 12V, the Gripper runs at approximately half the normal speed

RG6 Gripper

Technical Specifications

	Minimum	Typical	Maximum	Units
Technical Data				
	-	54	-	-
IP Class	0	-	160	[mm]
Total stroke (adjustable)	-	0,15	-	[mm]
Finger position resolution	-	0,15	0,3	[mm]
Repetition accuracy	0,4	0,7	1	[mm]
Reversing backlash				[mm]
	25	-	120	[N]
Gripping force (adjustable)	± 2	± 5	± 10	[N]
Gripping force accuracy				[N]
	10	24	26	[V DC]
Operating voltage*	1,9	-	14,4	[W]
Power consumption	25	-	600	[mA]
Maximum current	5	-	50	[°C]
Ambient operating temperature				
	0	-	60	[°C]
Storage temperature	-	0,1	-	[kg]
Product weight				

* At 12V, the Gripper runs at approximately half the normal speed

RG-FT Gripper

Technical Specifications

	Minimum	Typical	Maximum	
General Properties				
Total stroke	0mm	-	98mm	
Finger position resolution	-	0.1mm	-	
Gripping force (adjustable)	3N	-	40N	
Force Sensor				
Nominal capacity (N.C)	Fxy 20N	Fz 40N	Txy 0.7Nm	Tz 0.5Nm
Noise free resolution	0.1N	0.4N	0.008Nm	0.005Nm
Proximity Sensor				
Resolution	Minimum -	Typical 2mm	Maximum -	

Hex E FT Sensor

Technical Specifications

Target Value

Pad Specifications

Dimensions (Height X Diameter)	37.5 x 70mm			
Weight (with built in adapter plates)	245g			
	Fxy	Fz	Txy	Tz
Nominal Capacity (N.C)	200 N	200 N	10 Nm	6.5 Nm
Single axis deformation at N.C (typical)	±1.7mm	±0.3mm	±2.5º	±5º
Single axis overload	500%	500%	500%	500%
Signal noise ²	0.035N	0.15N	0.002Nm	0.001Nm
Noise-free resolution (typical)	0.2N	0.8N	0.010Nm	0.002Nm
Full scale nonlinearity	<2%	<2%	<2%	<2%
Hysteresis (measured on Fz axis, typical)	<2%	<2%	<2%	<2%
Crosstalk (typical)	<5%	<5%	<5%	<5%
Working temperature range	0 Cº / +55 ºC			
	0.8W			
Power requirement	DC input range 7 -24V			
Mounting screws	5x M4 x 6mm			ISO14581
	1 x M4 x 12mm (for the cable holder)			

Hex H FT Sensor

Technical Specifications

Target Value

Pad Specifications

Dimensions (Height X Diameter)	37.5 x 70mm			
Weight (with built in adapter plates)	245g			
	Fxy	Fz	Txy	Tz
Nominal Capacity (N.C)	200 N	200 N	20 Nm	13 Nm
Single axis deformation at N.C (typical)	± 0.6mm	± 0.25mm	± 2º	± 3.5º
Single axis overload	500%	400%	300%	300%
Signal noise ²	0.1N	0.2N	0.006Nm	0.002Nm
Noise-free resolution (typical)	0.5N	1N	0.036Nm	0.008Nm
Full scale nonlinearity	<2%	<2%	<2%	<2%
Hysteresis (measured on Fz axis, typical)	<2%	<2%	<2%	<2%
Crosstalk (typical)	<5%	<5%	<5%	<5%
Working temperature range	0 Cº / +55 ºC			
Power requirement	DC input range 7 -24V		0.8W	
Mounting screws	5x M4 x 6mm			ISO14581
	1 x M4 x 12mm (for the cable holder)			

Gecko Gripper

Technical Specifications

Value/Comments

Gripper

Workpiece Material
Maximum Payload (x2 safety factor)
With Cleaning System
Pre-load required for max adhesion
Detachment time
Holds part on power loss

Polished Steel	Acrylic	Glass	Sheet Metal
4.1kg	4.1kg	3.3kg	3.1kg
1.6kg	1.6kg	1.3kg	1.3kg
	125 N		
	500 msec		
	Yes		

Pads

Change out interval
Autonomous cleaning system
Minimum run-time for cleaning
Autonomous cleaning interview and % recovery
Robotic cleaning system
Robotic cleaning interval and % recovery

100,000 to 200,000 cycles
Piezoelectric
1 second
15 sec: 3% / 2min: 5% / 15 min: 15% (max)
Silicone roller
Variable / 100%

Sensors

Range
Sensitivity

Pre-load Sensor	Ultrasonic Range Sensor
40 -140 N	0 -260 mm
3 N	300 kHz

VG10 Vacuum Gripper

Technical Specifications

	Minimum	Typical	Maximum	Units
Technical Data				
Vacuum	5%	-	80%	[Vacuum]
	-0.05%	-	-0.810	[Bar]
	1.5	-	24	[inHg]
Air Flow	0	-	12	[NI/min]
Power Supply	20.4	24	28.8	[Volts]
Current consumption*	50	600	1500	[mA]
Operating temperature	0	-	50	[°C]
	32	-	122	[°F]
	32	-	358	[mm]
Reach	1.26	-	14.09	[in]
	0	-	270	[*]
	0	6	0	[Nm]
Holding torque arms	-	-	10	[kg]
Payload	0	-	22	[lb]
	0	-	16	[pcs.]
Vacuum cups	1	0.35	-	[s]
Gripping time	-	0.20	-	[s]
Releasing time	-	1.40	-	[s]
Foot-inch-foot	-			

Quick Changer

Technical Specifications

	Minimum	Typical	Maximum	Units
Technical Data				
Permissible force	-	-	400*	N
Permissible torque	-	-	50*	Nm
Rated payload	-	-	10	Kg
	-	-	22	Lbs
Weight (robot-part)	-	0.062	-	Kg
	-	0.137	-	Lbs
Weight (tool-part)	-	0.140	-	Kg
	-	0.308	-	Lbs
Combined weight	-	0.202	-	Kg
	-	0.445	-	Lbs
Combined height	-	24.10	-	Mm
	-	0.95	-	In
Angle difference	-	22.5	-	Deg.
	-	0.3927	-	Rad.
Repeatability	-	-	±0.02	Mm
Tool Change	-	5.000	-	Cycles
Robot operation	10	-	-	M cycles

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