



COLLABORATIVE ROBOTS

How Robots Work alongside Humans

WHAT ARE COBOTS?

Cobots or collaborative industrial robots are robots designed to perform tasks in collaboration with workers in industrial sectors.

KEY FEATURES:

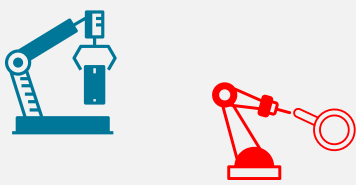
- Power and force-limiting functions
- Operate without safety fences
- Flexible and easy to program

BENEFITS OF COBOTS

<p>01</p> <p>Quick entry into automation</p>	<p>02</p> <p>No additional safety infrastructure needed</p>
<p>03</p> <p>Ideal for small production batches and high-mix/low-volume industries</p>	<p>04</p> <p>Enhance human productivity in repetitive and unergonomic tasks</p>

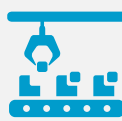
KEY APPLICATIONS TODAY

PICK-AND-PLACE OPERATIONS



QUALITY INSPECTION

ASSEMBLY

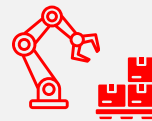


MACHINE TENDING

WELDING



PACKAGING AND PALLETIZING



PAINTING



SAFETY

COBOTS BY DESIGN

Robots designed for collaborative use that comply with ISO 10218-1. Inherent safe design

COLLABORATIVE APPLICATIONS

Compliance with ISO 10218-2 for collaborative applications is required. Risk assessment of the intended application is obligatory.

ALTERNATIVES

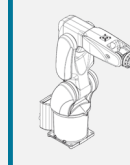
Traditional industrial robots equipped with external safety devices (sensors, force feedback control, laser/radar scanners)

ISO STANDARDS

Safety requirements are described in ISO 10218-1 and ISO 10218-2. Additional guidance for collaborative robot applications is provided in ISO TS 15066.

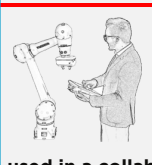
INDUSTRIAL ROBOTS

TRADITIONAL INDUSTRIAL ROBOTS

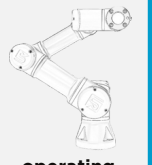


fenced

ROBOTS DESIGNED FOR COLLAB. APPLICATION



used in a collab. application

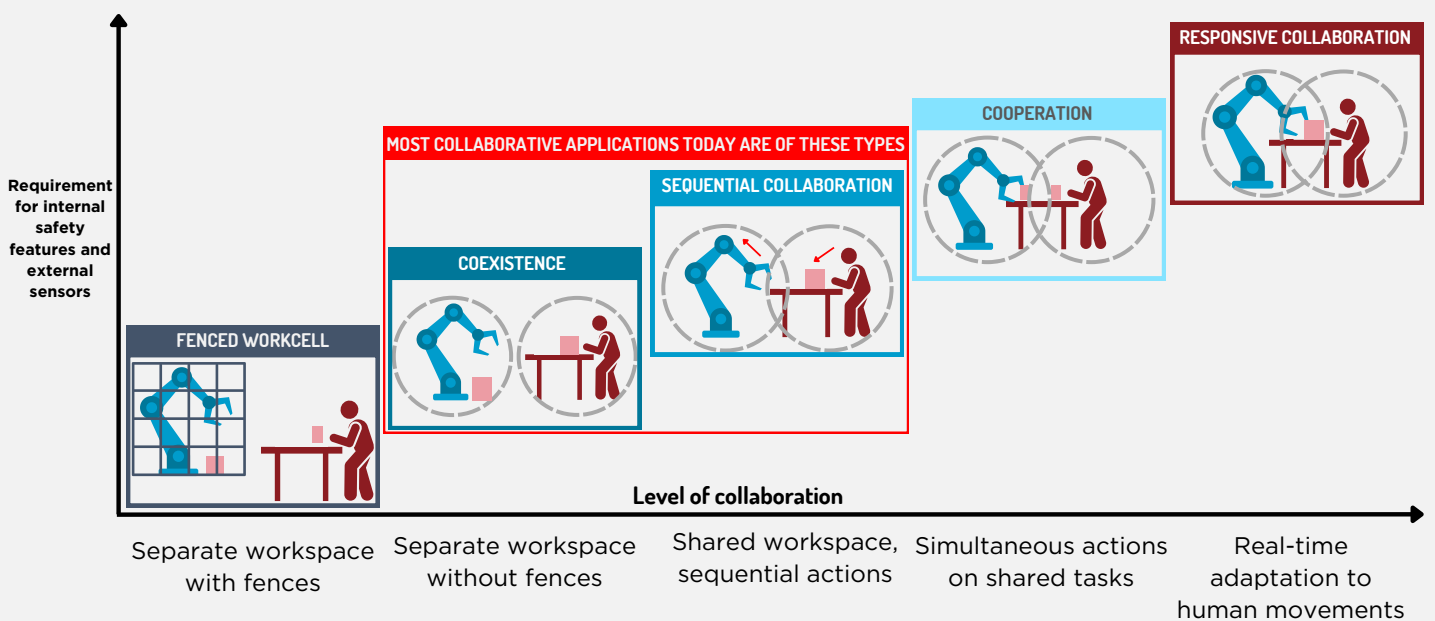


operating behind fences

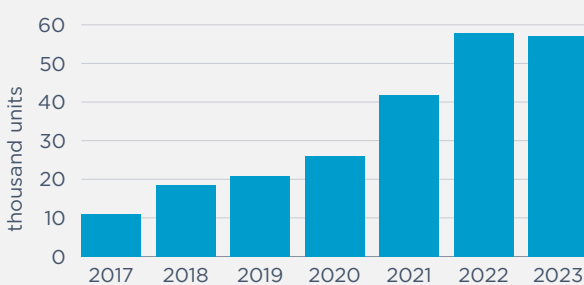
WORKING IN A COLLABORATIVE MODE

Both robots designed for collaborative use and traditional industrial robots equipped with external safety features can be employed in collaborative applications.

LEVELS OF COLLABORATION WITH INDUSTRIAL ROBOTS



GLOBAL COBOT MARKET



Cobots represent 10.5% of the industrial robot market with 57,040 new units deployed in 2023.

TRENDS

- Growth is driven by skilled labor shortages and demand for flexible automation.
- AI and Machine Learning: Intuitive programming & predictive maintenance.
- Advanced Sensors: 3D vision, lidar for safer interactions.
- Mobile Manipulators: Combining mobility with dexterity

CASE STUDIES & SUCCESS STORIES



FULL POSITION PAPER

