

White Paper

Collaborative Robot Safety

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Strategies for ensuring safety when humans and machines work together

Do collaborative robots need risk assessments?



Manufacturers invest in collaborative robots to reap the benefits of integrated safety features that allow them to work alongside humans and enhance productivity. Despite the robots' safety-focused design, appropriate safety measures based on comprehensive risk assessments are crucial for ensuring an application's success.

Have you taken the necessary measures to verify that your



collaborative robot
application is safe?
Download our white

paper to read up on industry standards, risk assessment best practices and strategies for maximizing the value of your application.

What are collaborative robots, and what safety standards apply?

Collaborative robots are designed to work with human operators thanks to technologies like force feedback, low-inertia servo motors, elastic actuators and collision detection technology that limit their power and force capabilities to levels suitable for contact. More compact than conventional robots, cobots generally have lightweight frames with soft, rounded edges.

The safety standard ISO 10218 and technical specification RIA TS 15066 define the robot's safety functions and performance. Under TS 15066, force and speed monitoring is set based application data, human contact area, and workspace hazards. Application data, possible human contact and workspace hazards all factor into the standard's calculated safety settings.

What are the safety considerations for hand-guided teaching?

ISO 10218 and ISO/TS 15066 provide standards and guidance for collaborative robot teaching functionality. Many collaborative robots, such as Omron's TM Series robot, employ intuitive hand guiding mechanisms for teaching new tasks without the need to explicitly program the movements of the robotic arm. Hand guiding mode monitors force and speed to ensure that the teaching process complies with safety standards.

What are the safety considerations for the collaborative workspace?

Collaborative robots perform automated tasks around other equipment that could potentially cause harm. The area in which a collaborative robot operates, including any tooling or additional equipment, is known as the collaborative workspace.

It is important to list and map out all additional equipment in the complete collaborative automation project. Manufacturers should be sure to evaluate each device for potential hazards and safety sensors to use prevent human and equipment damage. In addition, the collaborative workspace must be clearly marked.

Also of Interest

[A quick guide to collaborative robot safety](#)

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