Robot Safety and Integration

Advanced

Objective

As they are both affordable and easily teachable, robots are increasingly being integrated with machinery and automated production lines. They are used to achieve repeatability with high productivity. Robots are also used to perform hazardous tasks in many different fields, such as material handling, assembly, welding, machine tool loading and unloading, painting, spraying, etc.

Safety is critical in the integration of robots in manufacturing operations. Studies indicate that many robot accidents occur during non-routine operating conditions, such as programming, maintenance, testing, setup or adjustment. During many of these operations the worker may temporarily be within the robot's working envelope where unintended operations could result in injuries.

The aim of this training is to provide those who integrate robot applications with an understanding of the essential requirements of robot and collaborative application safety. This includes an overview of the scope of the international standards ISO 10218-1 and 2 in relation to robots and robot integration. The training course covers, amongst other things, robot classification, cyber security, risk assessment and risk reduction requirements, safety function Performance Level and validation/verification requirements for robot applications.

We show you the measures for designing risk reduction and the use of integrated control strategies. In addition, it is explained how high availability and productivity can be achieved while taking safety requirements into account.

Contents

- Robot safety
  - Robot class - Robot space
  - Zones and limiting devices
- Applicable legislation and standards relevant to robot safety
  - ANSI standards - ISO standards 10218-1 and 2
  - Correlations between the standards
- Assessment of risk in robot systems
  - Risk assessment requirements from the standards specific to robots and robot integration
  - Design risk reduction requirements
- Safety requirements for collaborative applications
  - Protective measures
  - Control functions and cyber security
  - Functional safety - End effectors
  - Load/unload stations
  - Energy isolation in robot applications
  - Teaching and validation requirements
- A practical example of safe robot integration



Target groups

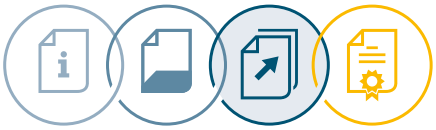
- Technical personnel who are responsible for maintaining the conformity of robot systems, including machine designers
- Robot system integrators
- Project engineers
- Plant engineering and maintenance engineers
- Health and safety engineers

Benefits to you

- Knowledge of the relevant standards and best engineering practise relating to integration of safety in robot applications
- Detailed risk assessment process in relation to robot system integration
- Knowledge of design safety measures to reduce risk
- Understanding requirements for validation and verification of the robot system

Advanced

Your optimum qualification path:



Introduction: Introduction to Machinery Safety

Fundamental: Robot Safety Training

Advanced: Robot Safety and Integration

Expert: CMSE - Certified Machinery Safety Expert

Robotics by Pilz

Note: *Most Pilz UK courses, including this one, can be hosted at external locations. Travel expenses for the trainer would be included in the cost.*

Course Details:

Duration:	**1 day**
	9:00 – 17:00
Fee:	**£500 +VAT per person**[1)]
Number of participants:	Up to 10