

# Robotics Safety

Increasingly, industrial robots, both conventional and collaborative, are being looked to as solutions to help companies keep pace with rapid change, conduct R&D and new product testing, quickly integrate new equipment and processes, and maximize efficiency.

While beneficial in combining the human's reasoning ability and adaptability with the endurance, strength, and precision of robots, collaborative robots – working in direct cooperation with a human within a defined workspace – can present special challenges from a safety perspective.

**BSI delivers a full range of robotics safety services – for both conventional and collaborative robots, and their associated robotic systems** (such as end effectors, automated guided vehicles (AGVs), autonomous mobile robots (AMRs), vision sensing, enclosures, etc.) – including:

- Robotics safety program development
- Regulatory and standards compliance
- Robotics risk assessment
- Robotics safety design, commissioning and start-up review
- Customized robotics awareness training and safety bulletin development
- Robot owner/operator classroom and e-learning training programs

## Robotics risk assessment

Hazard analysis and risk assessment ensures safety while performing tasks (e.g. teaching and calibration, operations, maintenance), as well as identifying specific safeguarding and controls.

BSI's experts have conducted risk assessments in a wide range of industries using a proven, qualitative process that includes:

- Scope determination
- Identification of risk sources
- Estimation of risk
- Evaluation of risk
- Risk reduction considerations
- Risk acceptability



Find out more

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## Robotics safety program development

A customized robotics safety program defines required and recommended controls and practices for the safety of the workers and personnel, and the protection of property for all sites with either conventional or collaborative robots, and their associated automated systems.

Our safety programs also identify the applicable regulatory and industry consensus standards compliance based on product, geography and best practices. The safety programs also describe the requirements and processes for robotic risk assessment, safe design and risk controls, integration and commissioning, safe operation, and personnel training.

A comprehensive robotics safety program can provide improved ergonomics functionality and worker safety, plus overall increased productivity, efficiency and reduced costs.

## Robotics safety design, commissioning and start-up

ANSI/RIA R15.06-2012 states *"the design of the robot system and cell layout is a key process in the elimination of hazards and reduction of risks."*

Our review and recommendations for robots and their associated robotic systems ensures their design integration and implementation, and thus allows for safe access to all areas where intervention may be necessary during teaching and calibration, testing, operations, maintenance and cleaning. Our customized commissioning and start-up activities for industrial robots and associated automated systems includes:

- Conformance to regulatory and industry recognized standards
- Review of the protective measures and risk controls in place identified during the robotics risk assessment process
- Tailored checklist of requirements identified for commissioning and start-up, based on the applicable requirements, industry best practices, risk assessment

EHS Services and Solutions

## Robot awareness e-Learning and classroom training, safety bulletin development

This awareness level training and related safety bulletin development is intended for all personnel working in areas where robots and automated systems are operated and includes:

- Introduction to industrial robots – both conventional and collaborative, and their associated robotic systems
- High level summary of the client's Robotics Safety Program
- Overview of roles covered by the program
- Example robotics and associated hazards and risk controls
- Responsibilities for persons working in areas where robots are used

## Robot owner/operator e-Learning and classroom training

This training is intended for all personnel who procure, teach, program, operate or maintain industrial conventional and/or collaborative robots, and their associated robotic systems:

- Overview of client's safety processes and forms as they apply to robotics
- Example risk controls
- Conducting a risk assessment
- Installation, commissioning and start up

## Why partner with BSI?

- A 350+ person multidisciplinary staff with training and experience in diverse EHS management and technical practice areas
- Strategically-located US offices and Global Partner Network provide EHS management and technical services worldwide
- Fast and consistent response to outsourcing needs
- To better serve you, we gain an understanding of your company's internal processes, product offerings, business values, and environmental initiatives
- Customized EHS solutions that meet established company objectives
- Training programs that improve the EHS literacy of various levels of employees

## About BSI EHS Services and Solutions

BSI (British Standards Institution) is the business standards company that equips businesses with the necessary solutions to turn standards of best practice into habits of excellence. Formed in 1901, BSI is the UK National Standards Body and a founding member of the International Organization for Standardization (ISO).

Our specialist EHS consulting services provide a comprehensive range of strategic, management and technical consulting solutions – assessment, compliance, risk management, reporting, training, communication, and more – partnering with clients to achieve their environmental, health, and safety short-term needs and long-term goals.

With offices across the US, and with over 25 years' experience, our consultants can implement a vast range of programs. We make a positive impact on the world every day. We do this by enabling companies to be socially and globally responsible, protecting employees, preserving the environment, and building long-term sustainable solutions.

To find out more, please visit: [www.bsigroup.com/ehs](http://www.bsigroup.com/ehs)