Functional machine safety competency training
Principles, standards and implementation
MAXIMISE
Your Job and Asset Compliance

Do productivity and performance have to suffer as a result of your safety requirement?

Rockwell Automation takes a holistic approach to safety, providing innovative safety solutions to improve the functional operation of a machine - while simultaneously helping to increase safety, efficiency and productivity while reducing waste. Our safety training can help you build solutions that meet your needs so you can better address key market challenges:

- Productivity
- Compliance
- Sustainability
- Cost

Training can encompass a wide variety of elements which include: Current and emerging industry standards and guidelines, application examples when applying safety components covering electrical design and more.

Our instructor led safety training includes GuardLogix, PUWER, CE Marking, SISTEMA and TUV Certification Training and can be customised to develop staff competency.

Most courses can be delivered by our senior lecturers at your site.

Course Purpose
The objective of this course is to equip users of machinery with the knowledge to use, and maintain their machinery reliably and safely in accordance with their obligations under the Provision and Use of Work Equipment Regulations 1998. The course will also make delegates aware of the manufacturers obligations under EU Directives, in particular, the processes involved in CE Marking when purchasing new and second-hand equipment. The course will include the New Machinery Directives that will apply from December 2011.

Course Objectives
After completing this course, students will be able to perform the following tasks:

- Understand the essential requirements of Directives and the manufacturers responsibilities for CE Marking
- Understand the workings of the Provision and Use of Work Equipment Regulations 1998 in the United Kingdom
- Understand/be familiar with Harmonised Standards and their relationship with the Essential Requirements of Directives
- Become familiar with protective techniques and understand how they must be integrated into Safety related control systems
- Recognise other workplace and work task hazards, and the risks associated with using machinery
- Understand the process of risk assessment, risk evaluation and risk reduction

Course code: GBR8602
Duration: 2 Days

Course Purpose
The objective of this course is to give Machine Designers the knowledge and tools to design safe machinery in accordance with European Union Machinery and associated Directives, and to declare compliance by CE Marking.

Course Objectives
After completing this course, students will be able to perform the following tasks:

- Understand how the Machinery Directive is enacted in the United Kingdom
- Understand the range of hazards posed by machinery and the related risks
- Understand the process of risk assessment, evaluation and risk reduction
- Design suitable guarding
- Legally apply the EU CE Mark
- Design appropriate safety related parts of control systems
- Design a suitable machine control panel based on EN 60204-1
- Verify that the machine meets with the Essential Health and Safety Requirements of the Directive(s)
- Compile a Technical Construction File
- Draw up a Declaration of Conformity/Incorporation

Course code: GBR8601
Duration: 2 Days
### Course Code: GBR8611
#### Integrated Manufacturing Systems

**Course Purpose**

Systems that incorporate two or more interconnected machines for specific applications such as component manufacturing, assembly, packaging, palletising, are known as Integrated Manufacturing Systems (IMS). The Machinery Directive places obligations on the ‘integrators’ of assemblies of machinery, comprising an IMS, and the manufacturers of ‘partly completed machinery’, to be integrated with other machinery to comply with the essential health and safety requirements and to ensure that final complete system is safe. The objective of this course is to give the ‘integrators’ of these complete systems, and the designers of ‘partly completed machinery’, the knowledge and skills to integrate the machines and provide the necessary additional guarding and protective systems required to complete the IMS, to compile the information for safe use, and to declare compliance for the Integrated Manufacturing System as a whole by CE Marking.

**Course Objectives**

After completing this course, students will be able to perform the following tasks:

- Demonstrate understanding of the Essential Health and Safety requirements EHSR’s
- Demonstrate understanding of the definitions of Machinery and partly completed machinery
- Demonstrate understanding of the requirements for the design of safety related control systems and apply CE marking to a compliant IMS
- Demonstrate understanding of the obligations of the Machinery Directive and Provision and Use of Work Equipment Regulations

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### Course Code: GBR8608
#### Introduction to Functional Safety

**Course Purpose**

This course is designed for both suppliers and users of machinery, including designers, engineers and managers, in order that they fully understand the legal and technical requirements defined by the European Union Machinery, and associated Directives together with UK Regulations including CE Marking and Use of Work Equipment Directive (in the UK the Provision and Use of Work Equipment Regulations 1998 - PUWER98). The objective of this comprehensive course is to give designers of machinery the knowledge and tools to design safe machinery in accordance with European Union Machinery and associated Directives, and to declare compliance by CE Marking and to give owners, users and maintainers of machinery the knowledge and skills to acquire, place into service, assess, and maintain machinery in accordance with the Use of Work Equipment Directive (PUWER98 in the UK).

**Course Objectives**

After completing this course, students will be able to perform the following tasks:

- Develop an understanding of European Regulations and Standards in machinery safety
- Understand how these may be applied to the design, build, maintenance and operation of machinery
- Understanding the obligations to be met when specifying, designing, constructing and using a machine
- Increase competency and understanding of designing safety systems to relevant standards

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### Course Code: GBR8612
#### SISTEMA

**Course Purpose**

The SISTEMA software utility provides developers and testers of safety-related machine controls with comprehensive support in the evaluation of safety in the context of ISO 13849-1. The tool enables you to model the structure of the safety-related control components based upon the designated architectures, thereby permitting automated calculation of the reliability values with various levels of detail, including that of the attained Performance Level (PL). The SISTEMA program is now available with selection of English language. SISTEMA may be downloaded and distributed to third parties free of charge. Relevant parameters such as the risk parameters for determining the required performance level (PL), the category of the SRF/CS, measures against common-cause failures (CCF) on multi-channel systems, the average component quality (MTTFd) and the average test quality (DCavg) of components and blocks, are entered step by step in input dialogs. Each parameter change is reflected immediately on the user interface with its impact upon the entire system. Users are spared time-consuming consultation of tables and calculation of formulae, since these tasks are performed by the software. The final results can be printed out in a summary document.

**Course Objectives**

After completing this course, students will be able to perform the following tasks:

- Evaluation of safety in the context of ISO 13849-1
- Model the structure of the safety-related control components
- Automated calculation of reliability values
- Produce a final summary document
- Linkage to Rockwell Automation’s Product Selection toolkits

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### Course Code: GBR8609
#### Functional Safety Program TÜV Rheinland

**Course Purpose**

The training “Functional Safety of Machinery” provides an overview of the application of Functional Safety principles and requirements in the area of machinery. It explains basic concepts of the Machinery Directive, along with the execution of a risk assessment as a starting point for the selection of protective devices, and safety related parts of machine control systems. An overview of the protective devices available in order to achieve the required risk reduction for a machine are given, and examples of safety functions are discussed. The main requirements of EN ISO 13849 and EN 62061 for the design of safety related parts of machine control systems are presented along with examples for the quantitative assessment of safety functions according to EN ISO 13849 and EN 62061.

The Value of the TÜV Functional Safety Program

This training provides classroom style instructions mainly intended for application engineers and system integrators with some knowledge of Functional Safety. The training “Functional Safety of Machinery” is part of the TÜV Rheinland Functional Safety Program, which provides a formal certification for experienced engineers in the area of Functional Safety as TÜV Functional Safety Engineers. Participants of the training with a minimum of 3 years relevant experience in the area of Functional Safety are invited to sit the optional exam. A passing grade in the exam is a pre-requisite for the award of the globally recognised Functional Safety Engineer.

**Course Objectives**

After completing this course, students will be able to perform the following tasks:

- Systematic overview of the application of Functional Safety in the area of machinery
- Understanding of protective devices and safety related parts of machine control systems
- Introduction to the quantitative assessment according to EN ISO 13849 and EN 62061
- Formal recognition as TÜV Functional Safety Engineer (for experienced engineers passing the final exam)
GuardLogix Application Development

Course Purpose
This course is a skill-building opportunity for students who want to develop knowledge of GuardLogix systems. Students will be introduced to GuardLogix system hardware and software components, functionality, terminology, and safety standards. Students will also gain experience interpreting safety instructions using RSLogix 5000 software. In addition, students will have hands-on opportunities to troubleshoot GuardLogix system components and safety CompactBlock™ I/O modules.

Course Objectives
After completing this course, students will be able to perform the following tasks:

- Identify GuardLogix system hardware components
- Create a new GuardLogix project using RSLogix 5000 software
- Configure CompactBlock I/O safety modules for a GuardLogix project using RSLogix 5000 software
- Get CompactBlock Guard I/O point status information via explicit messaging using RSLogix 5000 software
- Program RSLogix 5000 ladder logic within a GuardLogix safety task
- Configure a GuardLogix controller to produce and consume safety data over EtherNet/IP
- Configure GuardLogix controller safety option

Prerequisites
- Experience operating a computer within a Microsoft Windows environment
- Completion of the RSLogix 5000 Level 3: Project Development course (ICP143) or equivalent experience with RSLogix 5000 software
- General experience with industrial controls

Course code: SAF-LOG101
Duration: 2 Days
Difficulty: Advanced

GuardLogix Maintenance and Troubleshooting

Course Purpose
This course provides students with the necessary resources and hands-on practice to efficiently troubleshoot a previously operational GuardLogix system. Students will be introduced to GuardLogix system hardware and software components, functionality, terminology, and safety standards. Students will also gain experience interpreting safety instructions using RSLogix 5000 software. In addition, students will have hands-on opportunities to troubleshoot GuardLogix system components and safety CompactBlock™ I/O modules.

Course Objectives
After completing this course, students will be able to perform the following tasks:

- Identify GuardLogix project components
- Identify GuardLogix safety signatures and safety lock/unlock states
- Identify I/O tags in a GuardLogix system
- Monitor GuardLogix tag values
- Search and print GuardLogix project components
- Troubleshoot and replace GuardLogix system components
- Troubleshoot and replace safety CompactBlock I/O modules
- Interpret safety instructions in a GuardLogix project

Prerequisites
- General experience with industrial controls
- Completion of the RSLogix 5000 Level 3: Project Development course (ICP143) or equivalent experience with RSLogix 5000 software
- Experience operating a computer within a Microsoft Windows environment
- Completion of the RSLogix 5000 Level 1: ControlLogix Systems Fundamentals course (C2P146) or equivalent experience with RSLogix 5000 software
- General experience with industrial controls

Course code: SAF-LOG102
Duration: 1 Day
Difficulty: Intermediate

Safety

Contact Us Or Make A Booking

MILTON KEYNES
For further information or to make a booking, please contact:
Rockwell Automation
Denbigh Road
Bletchley
MK1 1EP
Tel: 01908 627 110
Email: traininguk@ra.rockwell.com
Fax: 01908 627 111
Web: www.rockwellautomation.co.uk

DUBLIN
Rockwell Training Centre
Bracetown Business Park
Bracetown
Clonee
Dublin 15
Ireland
Tel: +353 86 2424594
Email: traininguk@ra.rockwell.com
Fax: +353 1 8014100
Web: www.rockwellautomation.ie

Rockwell Automation Services & Support

Global Support. Local Address. Peace of Mind.
Providing the resources you need, when and where you need them, Rockwell Automation has an integrated, global network of ISO-certified repair centers, exchange hubs, field service professionals, IACET-recognized training centers, certified technical phone support centers and online tools.

Meeting your everyday technical needs

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Maximize your automation investment

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<tr>
<td>• Owned and managed spare parts inventory</td>
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www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kluitlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1346

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