

# Safety

## Functional Safety for Machinery Introduction



## Course Number

SAF-TUV1

## Course Purpose

The standards regarding functional safety and relevant laws and directives demand that people and organizations performing responsible (accountable) tasks during all relevant life cycle phases of a machine must achieve and prove the required competencies.

This is an introduction to functional safety for machinery standards and is highly recommended to prepare students for the Rockwell Automation®/ TÜV Rheinland engineer certification course.

This course will define the design and proof requirements for functional safety of machines, according to current standards and guidelines. Practical examples will demonstrate possible techniques for machine guarding and protection.

This course will also introduce organizational measures that can be instituted to protect employees and equipment. The organizational measures include quality assurance techniques and documentation for life-cycle design and validation.

After completing this course, you should understand how safety devices and components are assembled and applied to reduce hazards from machinery so the necessary safety for people and the environment is achieved.

## COURSE AGENDA

### DAY 1

- Understanding the Functional Safety for Machinery Certification (TÜV Rheinland)
- Defining European Guidelines and Requirements
- Defining OSHA Guidelines and Requirements
- Defining Risk Analysis and Processes (ISO 12100:2010)
- Defining ISO 13849-1
- Identifying Safety Devices

### DAY 2

- Identifying Safety Functions of Machines
- Identifying Circuits, Schematics, and Examples
- Defining New Standards Regarding Safety of Machinery

### DAY 3

- Defining ISO 13849-1/2
- Defining IEC 62061
- Defining Basic Electrical Safety Principles (IEC 60204-1)
- Performing ISO 13849/IEC 62061 calculations

## WHO SHOULD ATTEND

Application engineers, system integrators, developers, safety specialists and authorized experts in machinery should attend this course.

## PREREQUISITES

To successfully complete this course, it is highly recommended that participants have professional experience in the field of functional safety or have attended another introductory course on functional safety.

## STUDENT MATERIALS

To enhance and facilitate the students' learning experiences, the following materials are provided as part of the course package:

- Student Manual
  - Includes the key concepts, definitions, examples, and activities presented in this course

Standards are not provided by Rockwell Automation. Although not required, students who plan to pursue certification may want to bring copies of the following:

- IEC 60204-1
- IEC 62061
- ISO 12100: 2010
- ISO 13849 part 1 and part 2

Standards can be purchased from the following sites:

- ANSI site: <https://webstore.ansi.org/>
- ISO site: <https://www.iso.org/publication-list.html>
- IEC site: <https://webstore.iec.ch/>
- IHS site: <https://global.ihs.com/>

## NEXT LEARNING LEVEL

Once you have mastered the fundamental skills covered in this course, you should have the knowledge necessary to attend the next level of training, if desired\*:

- *Functional Safety for Machinery Engineer Certification (TÜV Rheinland) (Course No. SAF-TUV2T)*
  - \*Six months from completion of SAF-TUV1

## COURSE LENGTH





This is a three-day course.

### TO REGISTER

To register for this or any other Rockwell Automation training course, contact your local authorized Allen-Bradley® Distributor or your local Sales/Support office for a complete listing of courses, descriptions, prices, and schedules.

You can also access course information via the Web at <http://www.rockwellautomation.com/training>

To be respectful of the environment, Rockwell Automation is transitioning some of its training courses to a paperless format. Students are asked to complete downloads and bring personal devices to these classes. A full list of digital/paperless courses is currently available through your local distributor.

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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 Kleetlaan 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 1846

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