

## Safe Machine Training

### Topics

**'Introduction to Machinery Safety'** is aimed at users, buyers, engineers and anyone that needs an introduction to the legislation affecting them with regard to machinery safety.

**'CE Audit'** allows buyers of machines to understand what to look for at a Factory Acceptance Test, with regards to the compliance of the machinery.

**'Machinery Risk Assessment'** is a skill that all machinery engineers need.

**'Guarding of machinery'** is a key part of machinery safety. This seminar covers the basics of legislation that applies, and standards that should be used.

**'Robot Integration'** Explores CE and UK CA marking and safety requirements of robot cells, in accordance with EN ISO 10218.

**'Machinery Directive 2006/42/EC'** an introduction to the Machinery Directive, which was updated in 2009 with significant changes for manufacturers and importers of machines and especially companies that create complex assemblies of machines. Includes UK CA Marking.

**'PUWER'** (Provision and Use of Work Equipment Regulations) which affects all companies who supply and use machinery.

**'Sistema / SRP/CS introductory course'** shows machine designers how to identify safety functions and how to use SISTEMA software to validate them to EN 13849-2.

### Who Should Attend?

#### Machine End Users

- Production/Industrial engineers
- Engineering managers
- Project managers
- Project engineers
- Maintenance engineers
- H&S professionals

#### Machine Suppliers

- Field/Service/Maintenance engineers
- Sales engineers
- Senior managers
- Machine designers
- Project managers
- Quality Control managers

#### In-Company Courses

The above courses can be presented exclusively for your organisation on an in-company basis, tailored to suit your specific needs.

All courses are one-day, generally starting at 9am and finishing by 4pm, although times are flexible. Up to twelve people can attend. Handouts included.

#### Practical PUWER

A two or three-day practical course aimed at people doing their own PUWER assessments, up to six people can be accommodated.

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## INTRODUCTION TO MACHINERY SAFETY

This course is an introduction to the various legislation that affects machinery users. Topics covered will include an introduction to:

Provision and Use of Work Equipment Regulations

Controls of Substances Hazardous to Health

Personal Protective Equipment

Machinery Directive 2006/42/EC and UK Supply of Machinery (Safety) Regulations;

Risk Assessment

Use of EN Standards

Safety Related Control Systems & Functional Safety - EN 13849-1

The course is aimed at anyone responsible for using, buying, installing and maintaining machinery in the European Economic Area.

## CE or UK CA AUDIT

When purchasing new machinery, it is important to ensure that it meets all the legal requirements, is marked correctly and is safe for use in the EU or UK respectively.

This seminar is aimed at people purchasing machinery, as well as manufacturers, to guide them as to what information is reasonable to share. It will explain what to check in a Technical File, and what documentation is required.

There are example Declarations to be reviewed, some correct, some not, and a CE audit checklist is provided to use in real audits, with an explanation of what to look for. This does not remove the need for a PUWER assessment when the machine is installed, however, it does ensure that 'Regulation 10' of PUWER has been addressed and ensures that, if there are any non-compliances, they are brought to the manufacturer's attention before the machine is shipped, and before the final payments are made.

The machine manufacturers permission should be requested before a CE audit is carried out, as there is no legal right for anyone to see the Technical File, other than the Health and Safety Authorities, however, any manufacturer not willing to demonstrate that the Technical File can be compiled, should be treated with caution as in the event of a problem they may not take any responsibility.

## MACHINERY RISK ASSESSMENT

The ability to carry out risk assessments is now a requirement in many walks of life, however what is "a suitable and sufficient risk assessment' that will satisfy the Health and Safety Executive?"



Companies are expected to carry out machinery risk assessments not only when new equipment is designed, but also for existing plant that is in daily use and particularly before machinery is modified.

Many people are used to task based risk assessments but are unsure how to carry out the kind of detailed risk assessment that is required for machinery, process plant and assemblies of equipment.

This course is intended for both engineers who want to learn how to carry out risk assessment and safety professionals who are familiar with the concepts but need to learn how machinery risk assessment differs from other assessment techniques.

This training day gives delegates practical hands-on experience of machinery risk assessment using structured techniques that are based on European standards.

## **GUARDING OF MACHINERY**

This seminar discusses the Essential Health and Safety Requirements of the Machinery Directive specific to guarding, also the PUWER regulations specific to guarding, as well as looking at the need for risk assessment and how to use the relevant EN Standards.

It is intended to ensure that those assessing machines or specifying guarding know the legislation to be followed and understand the basic principles of the subject.

## **ROBOT INTEGRATION**

Robots are usually supplied as partly completed machinery, requiring the integrator to be responsible for the CE marking of the cell. EN ISO 10218 is available in two parts. This seminar discusses some of the issues regarding CE or UK CA marking of assemblies of machines, and the requirements of the various standards including EN ISO 10218-2. Areas covered include hazard identification and risk reduction, safeguarding and safety requirements.

The seminar is aimed at integrators and end users that are installing robot systems.

## **MACHINERY DIRECTIVE 2006/42/EC & THE SUPPLY OF MACHINERY (SAFETY) REGULATIONS**

The Machinery Directive 2006/42/EC has been in use since December 31<sup>st</sup> 2009, the course explains the Directive and UK Regulations that impact machine manufacturers, companies that create assemblies of machines and machine importers. Manufacturers of partly completed machines must comply with specific requirements as well as issuing a Declaration of Incorporation.

Machine importers will be affected by the requirements for the technical file to be located in Europe and for the Declaration of Conformity to list the name and address of the 'compiler'. Covers UK CA Marking and CE Marking and the differences and requirements of the machine



manufacturer and the contact details of the authorised representative and the person responsible for providing the technical file in the event of an accident.

Responsibilities under this legislation and what it does and does not cover.

The course is for manufacturers, but also those who assemble assemblies of machines (production lines), integrators and those purchasing equipment, to ensure they know where responsibility lies.

## **PUWER - PROVISION AND USE OF WORK EQUIPMENT REGULATIONS**

The Provision and Use of Work Equipment Regulations (PUWER) is the main piece of legislation which affects the provision and use of work equipment in general and machinery in particular.

This course will help anyone who is responsible for the purchase, use, maintenance or modification of work equipment to gain a thorough understanding of their responsibilities under this legislation and what it does and does not cover.

Use of practical examples will illustrate how legislation is interpreted in practice and will also explain how PUWER interfaces with other legislation like the CE Marking Directives and the Health and Safety at Work Act.

The course will give practical advice on how to evaluate the safety of both new equipment and existing machinery and how to design guarding systems that will comply with the legislation.

### **Practical PUWER, CE or UK CA Marking**

A two-day or three-day course with a short presentation at the start covering PUWER or CE/UK CA Marking and risk assessment, then a maximum of six people in two teams of three will assess a machine on the shop floor. Access will be required to electrical enclosures, and the machine must be able to be started and stopped, and guards opened. No dismantling will take place. Photographs will be taken and the PUWER regulations or Essential Requirements of the Machinery Directive or UK Regulations reviewed in detail with regard to the machine, in the classroom. A PUWER report or EHSR report will be produced, plus a risk assessment 'To-Do' report. This may not be complete, depending upon time available and the complexity of the machine assessed. Proprietary COMPLIANCE Risk Software will be used.

### **Sistema / SRP/CS introductory course**

The course is aimed at electrical engineers with some knowledge of panel building and machinery design, preferably with some knowledge of EN 60204-1 and basic principles of machinery safety. The intention is to review drawings and data to identify the safety functions of a machine, with a view to assessing the Performance Level required for each



safety function and validating the safety functions using SISTEMA software<sup>1</sup>. The course is held over three days starting at 9.00 and finishing at 16.00.

## **Machinery Design Process**

- Machine design overview, hazard identification. Use of EN ISO 12100 .
- Guards, Use of EN ISO 14120.
- Safety Device selection. Interlocks. Use of EN ISO 14119.
- Electro Sensitive Protective Equipment. Use of EN ISO 13855.
- E-stops. Use of EN ISO 14118 & EN ISO 13850.
- Electrical. Use of EN 60204-1.
- Hydraulic and Pneumatic safety functions. Use of EN ISO 4413/4414.
- Safety functions, what they are and how to identify them.
- Introduction to EN 13849-1/2. Use of PLr, MTTFd, CCF, DC etc.
- Circuit categories, theoretical and real
- Identifying Safety Related Parts of Control Systems (SRP/CS) & safety functions.
- Where to get the data on these.

## **Sistema**

- Interface
- Libraries
- Creating a safety function
- Populating the safety function
  - Libraries
  - Creating parts
- Other Sistema functions
- Checking that the function is acceptable
- Creating and understanding your report

## **Participants will need**

- A good command of technical English
- Good PC skills including use of MS Office applications, installing software, general PC file management
- A laptop computer with the following specification at least:
  - 50MB of free space; Running Microsoft Windows 7, or 10; Recommended screen resolution: 1024 x 768 or higher; SISTEMA 2.0.8 preloaded.

## **The venue will need:**

- Desks for those attending and the presenter
- Projector and screen
- Power for use at the desks
- Internet access for presenter and delegates
- Usual amenities

All efforts will be made to complete all the validations, but it depends on provision of accurate information.

<sup>1</sup> <https://www.dguv.de/ifa/praxishilfen/practical-solutions-machine-safety/software-sistema/index.jsp>

