



SAFETY TRAINING EQUIPMENT IN INDUSTRIAL AUTOMATION



DL XM-DSSA-01

OBJECTIVE

To implement a comprehensive Industrial Automation Safety laboratory that allows the development of practical skills in the design, integration, programming and validation of functional safety systems used in industry, through the use of cutting-edge technologies and industrial automation platforms.

The solution will provide a learning environment based on real-world operating situations, where participants can experiment with safety devices, analyze risk scenarios, implement machinery protection strategies, and understand the importance of functional safety as a key element for protecting people, equipment, and the continuity of production processes.



DESCRIPTION

The **DL XM-DSSA-01** safety system is an essential component of any modern industrial machine. Its function is to protect the operator, preserve the integrity of the equipment, and comply with international functional safety standards used in the manufacturing industry.

It allows you to study, configure and validate the main protection technologies used in industrial machinery, integrating electronic, electromechanical and optoelectronic safety devices into a single training platform.

During the practical sessions, students can understand the operation of safety switches for guards, key-operated locking systems, solenoid-operated locking devices, light curtains, emergency stop buttons, manual validation devices, and programmable safety modules. They also perform hands-on exercises in wiring, parameterization, diagnostics, validation, and fault analysis, replicating real-world applications used in automated production lines.

This laboratory incorporates devices used daily in industrial machinery around the world, allowing the student to gain practical experience with the same technologies used in automated production lines.

It integrates safety technologies, industrial automation systems, and a didactic methodology based on experimental practices that allow the analysis of different operating scenarios, the implementation of protection strategies, the validation of safe sequences, and the understanding of the operation of safety devices such as interlock switches, coded key systems, emergency stops, enabling devices, and access locking systems.

Beyond learning about individual devices, the laboratory seeks to develop in participants a comprehensive understanding of functional safety, strengthening their skills to design, implement, diagnose and maintain industrial protection systems in accordance with best engineering practices and applicable international standards.

INCLUDES

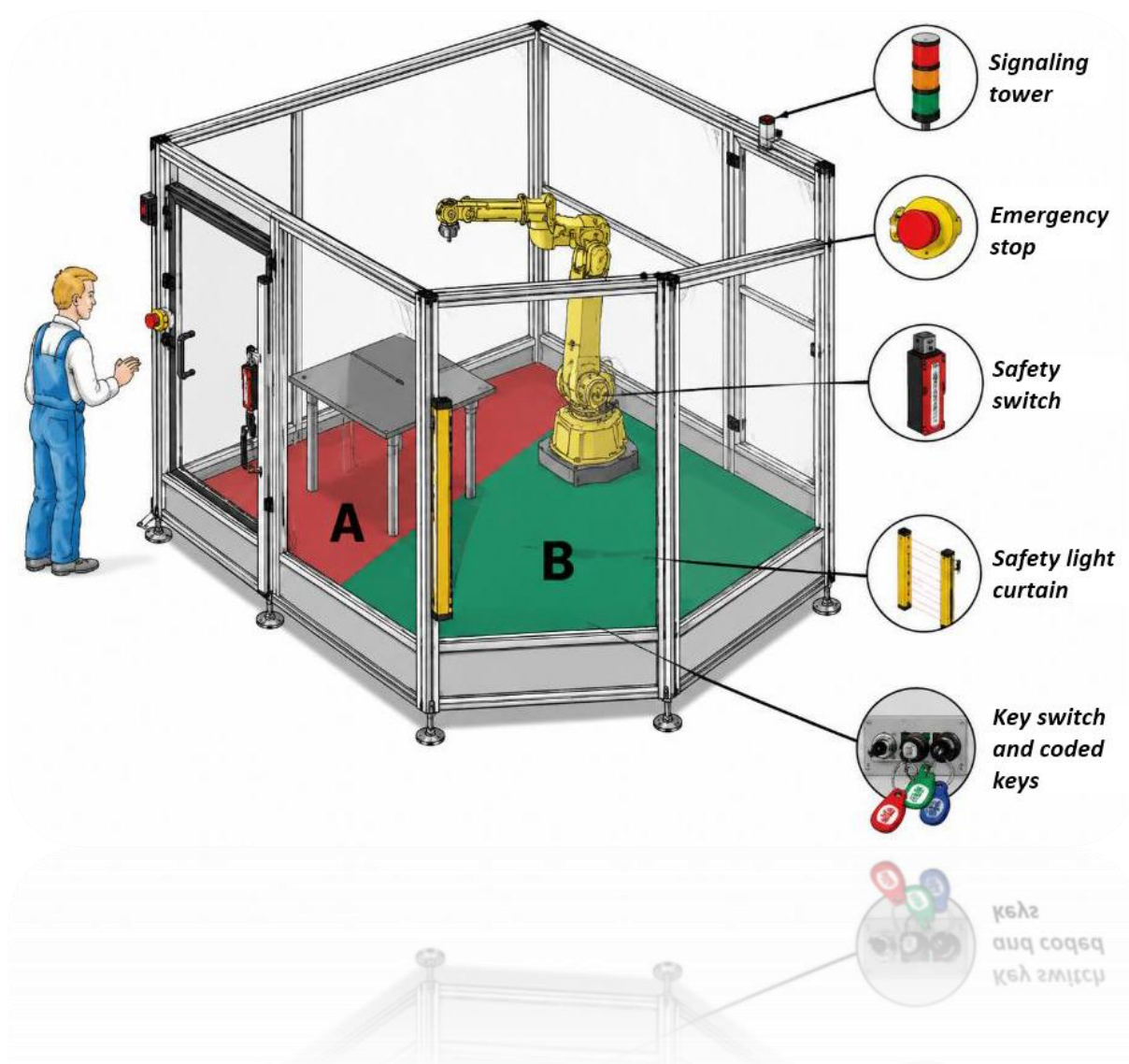
- 8 industrial technologies.
- More than 12 real devices such as **Security Switches/Rfid** (Radio Frequency Identification), **LCA** (Light Curtains and Grids), **MSC** (Modular Safety System), **EKS** (Electronic-Key-System) among others.
- More than 20 exercises.
- Functional safety.
- Compatible with industrial PLCs.





<u>IDEAL FOR</u>	<u>TECHNOLOGIES THAT ARE LEARNED</u>
• Universities. • Technological Institutes. • Training Centers. • Automation Laboratories. • Technical Training. • Industry 4.0. • Mechatronics. • Robotics. • Industrial Engineering.	• Protective switches. • Coded switches. • Locking switches. • Emergency release switches. • Key management. • Manual validation. • Emergency stop. • Safety controller. • Perimeter protection.

INDUSTRIAL PROCESS THAT SIMULATES





FUNCTIONAL SCOPE

The main functionalities of the laboratory are the following:

- **Security device configuration**
The laboratory will allow the installation, connection and configuration of different industrial safety devices used for the protection of people and machinery, facilitating the understanding of their operation and application within automated systems.
- **Implementation of safe sequences**
Participants will be able to design, program and validate operating sequences that consider safe conditions for starting, operating, stopping and recovery, understanding the logic necessary for the protection of industrial processes.
- **Simulation of risk conditions**
The platform will allow the generation of controlled scenarios that represent failures, openings of safeguards, activation of emergency devices and other critical conditions, analyzing the expected behavior of the security system.
- **Integration with automation systems**
The laboratory will facilitate the integration of safety devices with industrial controllers, allowing the development of automation applications where functional safety is part of the process control logic.
- **Fault diagnosis and location**
Users will be able to identify operating states, interpret diagnostic signals, and analyze different failure conditions, strengthening the skills needed for maintenance and troubleshooting in industrial safety systems.
- **Development of experimental practices**
The laboratory will allow for a wide variety of practical exercises focused on learning concepts related to:
 - ◆ Safety in industrial machinery.
 - ◆ Functional safety.
 - ◆ Machinery guarding.
 - ◆ Safety categories
 - ◆ Risk assessment.
 - ◆ Interlocking devices.
 - ◆ Safety switches.
 - ◆ Door locking systems.
 - ◆ Key locking.
 - ◆ Emergency stops.
 - ◆ Manual validation of hazardous areas.
 - ◆ Safety light curtains.
 - ◆ Diagnostics of safety devices.
 - ◆ Safety industrial wiring.
 - ◆ Redundant architectures.
 - ◆ Integration with safety PLCs.
 - ◆ Commissioning of safe systems.
 - ◆ Fault location and analysis.
- **Development of technical skills**
The solution will contribute to the development of skills related to:
 - ◆ Design of secure systems.
 - ◆ Integration of security devices.
 - ◆ Programming of protection sequences.
 - ◆ Fault diagnosis.
 - ◆ Functional validation.
 - ◆ Maintenance of security systems.



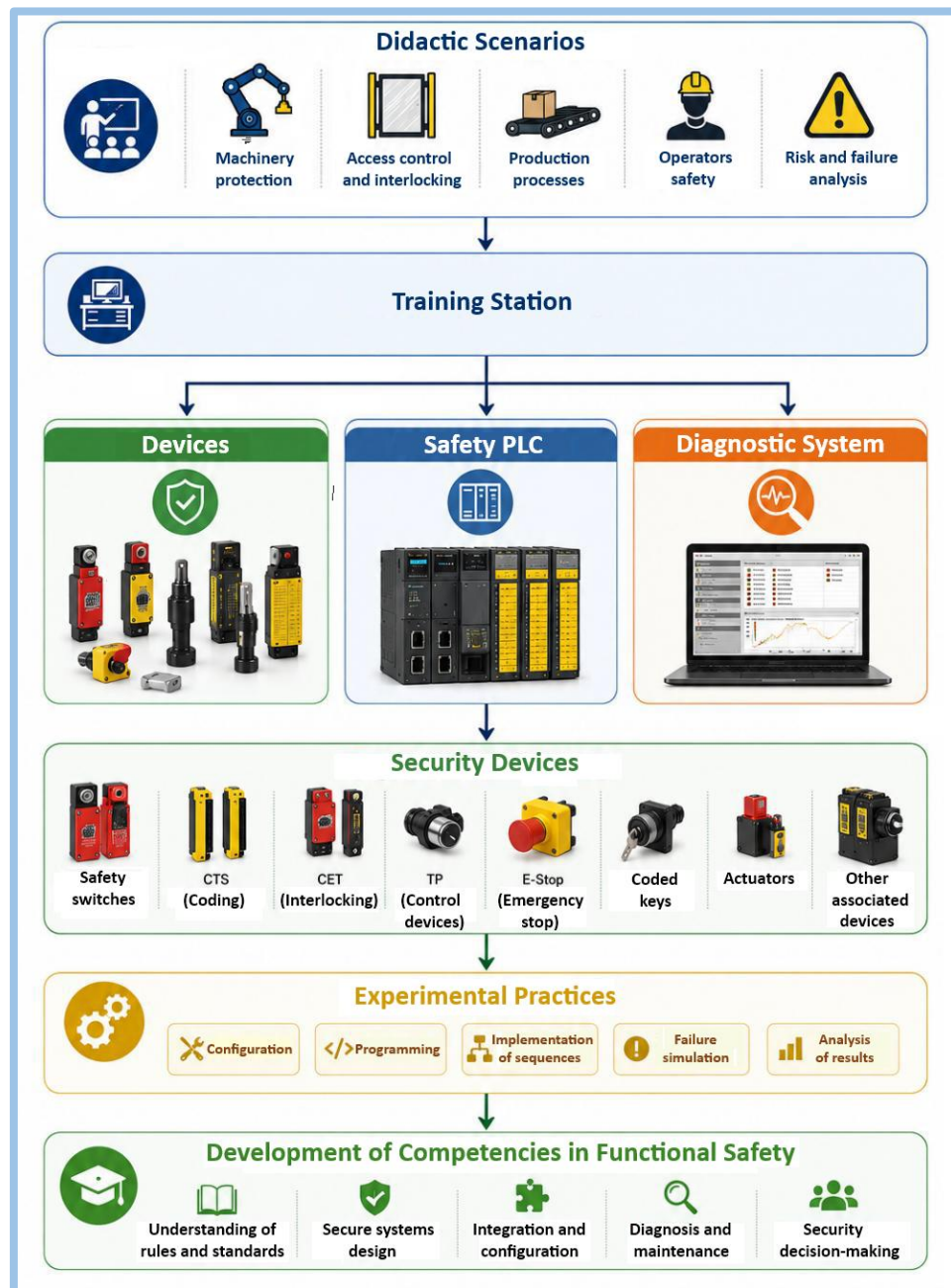


AUTOMATION



- ◆ Application of good engineering practices.
- **Skills developed by the laboratory**
Upon completion of the practical training, the participant will be able to:
 - ◆ Analizar riesgos en sistemas automatizados.
 - ◆ Seleccionar el dispositivo de seguridad adecuado para cada aplicación.
 - ◆ Diseñar e implementar secuencias seguras de operación.
 - ◆ Integrar dispositivos de seguridad con sistemas de control industrial.
 - ◆ Diagnosticar fallas y restablecer condiciones seguras de operación.
 - ◆ Comprender los principios de la seguridad funcional aplicados a maquinaria industrial.

SOLUTION ARCHITECTURE





AUTOMATION



IT IS DELIVERED

- Fully assembled workbench.
- All safety devices installed
- Operating manual
- Practice manual.
- Electrical diagrams.
- Worked exercises.
- Troubleshooting guides.

Requires a table, not included.