

LAPT

LONDON ACADEMY OF PROFESSIONAL TRAINING

CERTIFICATE

ISO 13849 — Safety of Machinery Safety-Related Parts

ISO Certification Programme



LAPT — London Academy of Professional Training

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Reference SSR-RSK-13849 • ISO Security Safety & Risk

UKPRN 10067351 • Registered in England and Wales, company 4984798

AT A GLANCE

REFERENCE	SSR-RSK-13849
AWARD	Certificate
ASSESSMENT	430 marks — 258 to pass (60%)
PREREQUISITES	None
VALIDITY	Lifetime
AWARDING BODY	LAPT — London Academy of Professional Training

CURRICULUM

1

Compliance and Regulatory Framework

5 chapters · 30 classes65 marks

• 1 Understanding ISO 13849: Safety-Related Parts of Machinery — 6 classes

› 1.1 Identify the Key Objectives of ISO 13849

› 1.2 Analyze the Structure of Safety-Related Parts in Machinery

› 1.3 Explain the Risk Assessment Process Under ISO 13849

› 1.4 Evaluate Safety Functions and Performance Levels

› 1.5 Implement Compliance Strategies for Safety-Related Parts

› 1.6 Review Case Studies: Successful ISO 13849 Applications

• 2 Risk Assessment Methodologies in ISO 13849 — 6 classes

› 2.1 Define key concepts of risk assessment in ISO 13849

› 2.2 Identify different types of risks associated with machinery

› 2.3 Explain the role of risk assessment methodologies in compliance

› 2.4 Apply qualitative risk assessment techniques in real-world scenarios

› 2.5 Use quantitative risk assessment tools to evaluate machinery safety

› 2.6 Develop an action plan based on risk assessment findings

• 3 Design Principles for Safety-Related Control Systems — 6 classes

› 3.1 Define Key Concepts in Safety-Related Control Systems

› 3.2 Analyze the Role of Risk Assessment in Design Principles

› 3.3 Examine Safety Functions and Performance Levels

› 3.4 Identify Components of a Safety-Related Control System

› 3.5 Develop Strategies for Implementing Safety Measures

› 3.6 Evaluate Compliance with ISO 13849 Standards

• 4 Verification and Validation Processes for Compliance — 6 classes

› 4.1 Define Verification and Validation in the Context of ISO 13849

› 4.2 Identify Key Regulatory Requirements for Safety-Related Parts

› 4.3 Describe the Role of Risk Assessment in Verification Processes

› 4.4 Explore Methods and Tools for Effective Validation Testing

› 4.5 Analyze Case Studies of Compliance Success and Failures

› 4.6 Implement a Verification and Validation Plan for Machinery Safety

• 5 Implementing ISO 13849 in Organizational Practices — 6 classes

› 5.1 Understand ISO 13849: Key Concepts and Terminology

› 5.2 Assess Current Practices: Evaluating Compliance Gaps

› 5.3 Develop a Compliance Plan: Strategic Steps for Implementation

› 5.4 Integrate Safety-Related Parts: Practical Application Techniques

› 5.5 Train the Workforce: Building Knowledge and Skills for Compliance

› 5.6 Monitor and Audit: Establishing Continuous Improvement Processes

• 1 Understanding ISO 13849 Fundamentals — 6 classes

- › 1.1 Define Key Concepts of ISO 13849
- › 1.2 Identify Safety-Related Parts in Machinery
- › 1.3 Assess Risk Evaluation Process in Machinery Safety
- › 1.4 Analyze Performance Levels and Safety Categories
- › 1.5 Implement Design Principles for Safety-Related Parts
- › 1.6 Develop a Continuous Improvement Plan for ISO 13849 Compliance

• 2 Risk Assessment Methodologies in Machinery Safety — 6 classes

- › 2.1 Define Key Concepts in Risk Assessment for Machinery Safety
- › 2.2 Identify Hazards Associated with Machinery Operations
- › 2.3 Evaluate Risks Using Standard Risk Assessment Methodologies
- › 2.4 Apply the Hierarchy of Control Measures in Risk Management
- › 2.5 Develop a Risk Assessment Report Based on Case Studies
- › 2.6 Implement Continuous Improvement Strategies Post Risk Assessment

• 3 Designing Safe Systems Based on ISO 13849 — 6 classes

- › 3.1 Identify Key Concepts of ISO 13849 for Safe System Design
- › 3.2 Analyze the Role of Safety-Related Parts in Machinery
- › 3.3 Evaluate Risk Assessment Techniques in Compliance with ISO 13849
- › 3.4 Apply the Principles of Performance Levels to Safety Functions
- › 3.5 Develop a Continuous Improvement Plan for Safety Systems
- › 3.6 Create an Implementation Strategy for ISO 13849 Compliance

• 4 Monitoring and Measuring Safety System Performance — 6 classes

- › 4.1 Identify Key Performance Indicators for Safety Systems
- › 4.2 Develop a Monitoring Plan for Safety-Related Parts
- › 4.3 Implement Data Collection Techniques for Safety Performance
- › 4.4 Analyze Collected Data to Assess Safety System Effectiveness
- › 4.5 Implement Continuous Improvement Strategies for Safety Systems
- › 4.6 Review and Revise Monitoring Processes for Enhanced Safety

• 5 Implementing a Continuous Improvement Framework — 6 classes

- › 5.1 Define Continuous Improvement within ISO 13849 Standards
- › 5.2 Identify Key Components of a Continuous Improvement Framework
- › 5.3 Analyze Existing Safety Processes for Improvement Opportunities
- › 5.4 Develop Metrics for Measuring Continuous Improvement Success
- › 5.5 Implement Effective Feedback Mechanisms for Stakeholder Engagement
- › 5.6 Create an Action Plan for Sustaining Continuous Improvement Initiatives

• 1 Fundamentals of Machinery Safety and Risk Management — 6 classes

- › 1.1 Define Key Concepts in Machinery Safety
- › 1.2 Identify Components of Risk Management in Machinery
- › 1.3 Explore the Principles of Safety-Related Parts
- › 1.4 Analyze the Role of ISO 13849 in Safety Standards
- › 1.5 Apply Risk Assessment Techniques to Machinery Safety
- › 1.6 Develop Implementation Strategies for ISO 13849 Compliance

• 2 Overview of ISO 13849: Structure and Scope — 6 classes

- › 2.1 Define ISO 13849 and Its Importance in Machinery Safety
- › 2.2 Identify the Structure of ISO 13849 and Its Key Components
- › 2.3 Explain the Scope of ISO 13849 in Relation to Safety-Related Parts
- › 2.4 Discuss the Relationship Between ISO 13849 and Other Safety Standards
- › 2.5 Explore the Implications of ISO 13849 for Machinery Design
- › 2.6 Apply ISO 13849 Guidelines in a Case Study Scenario

• 3 Safety-Related Parts of Control Systems — 6 classes

- › 3.1 Define Safety-Related Parts in Control Systems
- › 3.2 Identify Key Components of ISO 13849 Standards
- › 3.3 Explain the Role of Risk Assessment in Safety-Related Parts
- › 3.4 Analyze Functional Safety Requirements in Machinery
- › 3.5 Evaluate Performance Levels of Safety-Related Control Systems
- › 3.6 Apply ISO 13849 Guidelines to Real-World Scenarios

• 4 Performance Levels and Safety Integrity Levels — 6 classes

- › 4.1 Define Performance Levels in ISO 13849
- › 4.2 Identify Safety Integrity Levels and Their Importance
- › 4.3 Distinguish Between Performance Levels and Safety Integrity Levels
- › 4.4 Analyze the Relationship Between Performance Levels and Safety Risks
- › 4.5 Evaluate Examples of Performance and Safety Integrity Levels in Machinery
- › 4.6 Apply Performance and Safety Integrity Levels to Real-World Scenarios

• 5 Implementing ISO 13849 in Machinery Design — 6 classes

- › 5.1 Understand the Fundamentals of ISO 13849
- › 5.2 Identify Safety-Related Parts in Machinery Design
- › 5.3 Assess Risk Factors Using ISO 13849 Guidelines
- › 5.4 Define Performance Levels for Safety-Related Controls
- › 5.5 Develop an Implementation Plan for ISO 13849 Compliance
- › 5.6 Evaluate Machinery Designs for ISO 13849 Conformance

• 1 Understanding ISO 13849: Safety Standards and Frameworks — 6 classes

- › 1.1 Explore the Principles of ISO 13849 Safety Standards
- › 1.2 Identify Key Components of Safety-Related Parts
- › 1.3 Analyze Risk Assessment Techniques in Machinery Safety
- › 1.4 Evaluate the Importance of Performance Levels in ISO 13849
- › 1.5 Implement Risk Management Strategies in Machinery Design
- › 1.6 Assess Compliance and Best Practices for ISO 13849

• 2 Identifying Risks: Techniques and Tools for Hazard Analysis — 6 classes

- › 2.1 Define Risks: Understanding Types and Sources of Hazards
- › 2.2 Explore Techniques: Utilizing Checklists for Hazard Identification
- › 2.3 Apply Tools: Conducting Brainstorming Sessions for Risk Analysis
- › 2.4 Analyze Scenarios: Implementing What-If Analysis for Risk Evaluation
- › 2.5 Assess Likelihood: Utilizing Risk Matrices for Prioritization
- › 2.6 Create Action Plans: Developing Mitigation Strategies for Identified Risks

• 3 Risk Evaluation: Assessing Safety-Related Parts of Control Systems — 6 classes

- › 3.1 Identify Key Components of Safety-Related Parts in Control Systems
- › 3.2 Analyze Potential Risks Associated with Control System Failures
- › 3.3 Evaluate Safety Performance Levels Required for Machinery
- › 3.4 Assess the Impact of Human Factors on Control System Safety
- › 3.5 Develop Methods for Testing and Verifying Safety-Related Parts
- › 3.6 Implement Continuous Improvement Strategies for Risk Management

• 4 Implementing Risk Reduction Strategies: Best Practices — 6 classes

- › 4.1 Identify and Assess Potential Risks in Machinery
- › 4.2 Analyze Risk Levels Using ISO 13849 Guidelines
- › 4.3 Develop Risk Reduction Strategies for Safety-Related Parts
- › 4.4 Evaluate Effectiveness of Risk Reduction Measures
- › 4.5 Implement Action Plans for Continual Risk Management
- › 4.6 Review and Update Risk Assessment Practices Regularly

• 5 Monitoring and Reviewing: Continuous Improvement in Safety Management — 6 classes

- › 5.1 Identify Key Metrics for Safety Performance Monitoring
- › 5.2 Conduct Thorough Reviews of Safety Management Systems
- › 5.3 Analyze Data Trends to Enhance Safety Protocols
- › 5.4 Implement Corrective Actions for Identified Risks
- › 5.5 Engage Stakeholders in Safety Review Processes
- › 5.6 Cultivate a Culture of Continuous Improvement in Safety

• 1 Understanding the Fundamentals of ISO 13849 — 6 classes

- › 1.1 Define Key Terms in ISO 13849
- › 1.2 Explain the Structure of ISO 13849 Standard
- › 1.3 Identify Safety-Related Parts and Their Functions
- › 1.4 Analyze Risk Assessment Methods in Machinery Safety
- › 1.5 Discuss Performance Levels and Safety Requirements
- › 1.6 Apply ISO 13849 Principles to Real-World Scenarios

• 2 Risk Assessment in Safety-Related Systems — 6 classes

- › 2.1 Identify Key Components of Risk Assessment in Safety-Related Systems
- › 2.2 Analyze Types of Hazards in Machinery Safety
- › 2.3 Evaluate Risk Levels Using ISO 13849 Criteria
- › 2.4 Develop a Risk Assessment Matrix for Safety-Related Parts
- › 2.5 Implement Control Measures for Risk Mitigation in Machinery
- › 2.6 Review and Update Risk Assessments for Continuous Improvement

• 3 Performance Levels and Safety Requirements — 6 classes

- › 3.1 Understand Performance Levels in Safety Systems
- › 3.2 Identify Safety Requirements for Machinery Components
- › 3.3 Analyze Different Performance Levels and Their Applications
- › 3.4 Evaluate the Impact of Safety-Related Parts on System Performance
- › 3.5 Assess Compliance with ISO 13849 Safety Standards
- › 3.6 Implement Strategies for Achieving Required Performance Levels

• 4 Design and Implementation of Safety-Related Parts — 6 classes

- › 4.1 Identify Key Safety-Related Parts in Machinery
- › 4.2 Assess Risks Associated with Safety-Related Systems
- › 4.3 Integrate Safety Principles into Design Processes
- › 4.4 Specify Requirements for Safety-Related Parts
- › 4.5 Implement Testing Protocols for Safety Systems
- › 4.6 Evaluate Performance of Safety-Related Parts in Operation

• 5 Verification and Validation of Safety Systems — 6 classes

- › 5.1 Understand the Importance of Verification in Safety Systems
- › 5.2 Define Key Terms in Verification and Validation Processes
- › 5.3 Identify Methods for Evaluating Safety-Related Parts
- › 5.4 Analyze Case Studies of Verification Failures
- › 5.5 Implement Validation Techniques for Safety Systems
- › 5.6 Assess Real-world Applications of ISO 13849 in Safety Verification

• 1 Understanding ISO 13849: Framework and Terminology — 6 classes

- › 1.1 Define ISO 13849 and Its Importance in Machinery Safety
- › 1.2 Identify Key Terminology in ISO 13849 Framework
- › 1.3 Explain the Structure of Safety-Related Parts
- › 1.4 Discuss the Role of Leadership in Implementing ISO 13849
- › 1.5 Analyze Case Studies Illustrating ISO 13849 Applications
- › 1.6 Develop a Basic Implementation Plan for ISO 13849 Compliance

• 2 Risk Assessment and Management Principles in Safety Systems — 6 classes

- › 2.1 Identify and Define Risk Factors in Machinery Safety
- › 2.2 Analyze the Impact of Risks on Safety Systems
- › 2.3 Evaluate Risk Assessment Methodologies for Machinery
- › 2.4 Implement Control Measures to Mitigate Identified Risks
- › 2.5 Monitor and Review Risk Management Strategies in Practice
- › 2.6 Communicate Risk Analysis Results to Team Leaders

• 3 Leadership Roles in Safety Management: Responsibilities and Practices — 6 classes

- › 3.1 Define Leadership Roles in Safety Management
- › 3.2 Identify Key Responsibilities of Team Leaders in Safety
- › 3.3 Establish Safety Management Practices for Effective Leadership
- › 3.4 Analyze Case Studies of Effective Safety Leadership
- › 3.5 Develop a Personal Action Plan for Safety Leadership
- › 3.6 Evaluate Team Dynamics and Their Impact on Safety Culture

• 4 Effective Communication and Training for Safety Leadership — 6 classes

- › 4.1 Identify Key Communication Barriers in Safety Management
- › 4.2 Develop Active Listening Skills for Safety Leadership
- › 4.3 Implement Effective Feedback Mechanisms in Safety Training
- › 4.4 Design Engaging Safety Training Materials for Teams
- › 4.5 Facilitate Safety Workshops to Enhance Team Awareness
- › 4.6 Evaluate Communication Effectiveness in Safety Leadership

• 5 Continuous Improvement and Audits in Safety Management Systems — 6 classes

- › 5.1 Identify Key Components of Continuous Improvement in Safety Management
- › 5.2 Analyze the Role of Audits in Enhancing Safety Standards
- › 5.3 Evaluate Current Safety Management Practices Against ISO 13849 Standards
- › 5.4 Develop a Continuous Improvement Plan for Safety Management Systems
- › 5.5 Implement Effective Audit Strategies for Safety-Related Parts
- › 5.6 Measure the Impact of Continuous Improvement on Safety Outcomes