

Company Name: _____

Health & Safety Forms & Logs

Date: _____

Log ID: _____

Version: 1.0

Industrial Robot Risk Assessment Template (ISO 10218)

1.0 Form Objective & Regulatory Context

This Industrial Robot Risk Assessment Template is designed to systematically identify, evaluate, and control hazards associated with industrial robot systems, including robots, end-effectors, and peripheral equipment. It satisfies the requirements of ISO 10218-1 (Robots for industrial environments – Safety requirements – Part 1: Robots) and ISO 10218-2 (Part 2: Robot systems and integration), as well as CSA Z434 (Industrial robots and robot systems – General safety requirements) and WorkSafeBC Part 12 (Tools, Machinery and Equipment). This form documents the risk assessment process, including hazard identification, risk estimation, risk evaluation, and the selection of protective measures.

The template follows the iterative risk reduction process outlined in ISO 12100 (Safety of machinery – General principles for design – Risk assessment and risk reduction). It is intended for use by safety professionals, engineers, and robot integrators during the design, installation, commissioning, and modification phases of robotic work cells.

2.0 Administrative Details

Date of Assessment: _____

Assessment Number: _____

Robot System Identifier (e.g., Cell Name/Number): _____

Robot Manufacturer & Model: _____

Robot Serial Number: _____

End-Effector Type (e.g., gripper, welder, dispenser): _____

Application Description (e.g., material handling, welding, assembly): _____

Assessor Name(s) & Credentials: _____

Location / Facility: _____

Assessment Phase (Design / Installation / Commissioning / Modification / Periodic Review): _____

3.0 Audit / Inspection Items

☐ Pass ☐ Fail - Identify all robot system operating modes (automatic, manual, teach, maintenance, etc.) and document associated tasks.

☐ Pass ☐ Fail - List all potential hazards: mechanical (crushing, shearing, entanglement, impact, ejection), electrical, thermal, radiation, noise, ergonomic, and environmental.

☐ Pass ☐ Fail - Evaluate hazard exposure for each task: personnel involved (operator, maintenance, programmer, passerby), frequency, duration, and proximity to robot envelope.

- ☐ Pass ☐ Fail - Estimate risk level for each hazard using a risk matrix (severity x probability) and document the risk category (e.g., negligible, low, medium, high, unacceptable).
- ☐ Pass ☐ Fail - Verify that safeguarding measures are implemented per ISO 10218-2: fixed guards, interlocked guards, presence-sensing devices (light curtains, laser scanners), pressure-sensitive mats, two-hand controls, and enabling devices.
- ☐ Pass ☐ Fail - Confirm that robot workspace limits (mechanical stops, software axis limits, non-intrusive sensing) are properly set and documented.
- ☐ Pass ☐ Fail - Inspect emergency stop (E-stop) system: accessibility, function, and compliance with ISO 13850 (red mushroom head on yellow background).
- ☐ Pass ☐ Fail - Review control system reliability: safety-rated PLC, safety relays, and wiring integrity per ISO 13849-1 (PLr determination).
- ☐ Pass ☐ Fail - Assess collaborative robot (cobot) applications for compliance with ISO/TS 15066: force/pressure limits, speed monitoring, and separation distance.
- ☐ Pass ☐ Fail - Document residual risks after protective measures are applied and verify that they are acceptable per company risk acceptance criteria.

4.0 Corrective Actions & Deficiencies

Hazard ID / Reference Number: _____

Hazard Description: _____

Initial Risk Level (Severity / Probability / Risk Category): _____

Proposed Protective Measure(s): _____

Residual Risk Level (Severity / Probability / Risk Category): _____

Action Assigned To: _____

Target Completion Date: _____

Status (Open / In Progress / Closed / Verified): _____

Verification Method (e.g., inspection, test, review): _____

Verification Date & Verifier Name: _____

5.0 Sign-off & Authorization

Assessor Signature: _____ Date: _____

Safety Manager / Engineer Signature: _____ Date: _____

Robot Integrator / Lead Technician Signature: _____ Date: _____

Facility Manager / Operations Manager Signature: _____ Date: _____

Date of Authorization: _____ Date: _____

Regulatory Disclaimer: This audit log is a generic safety template. The end-user assumes all liability for validating all inspection parameters against WorkSafeBC, OH&S, and specific equipment manuals before active shop floor deployment.