

**Assessment Report**  
**Risk Assessment & Risk Reduction Methods for**  
**Identified Hazards**

**Assessment:** RA 0001

**Version:** 1

**Date Printed:** 3/5/2007 3:07:30 PM

**Assessment Information**

**Assessment Name:** RA 0001

**Version:** 1

**Assessment Created:** 01/13/2007

**Date of Version:** 01/13/2007

**Version Close Date:** 01/13/2007

**Provided By:** Industrial Safety Integration

**Performed By:** CIRSAM Administrator, Bill Smith, John Doe

**Approved By:** Plant Manager

**Assessment Notes:** Sample Assessment 1

**ALL RISK ASSESSMENTS  
MUST BE PERFORMED AND  
APPROVED BY QUALIFIED  
PERSONNEL.**

\_\_\_\_\_  
**Performed By Signature(s)**

\_\_\_\_\_  
**Approved By Signature**

I, \_\_\_\_\_ as an authorized representative of the company listed below, by signing this document acknowledge that this document has been received and reviewed by the appropriate responsible parties.

\_\_\_\_\_  
**Authorized Representative Signature**

**Resource Administrator:** ABC Company

**System ID:** Robot 1

**Version Reason:** Sample Assessment This assessment is not to be used as an official evaluation for a robot cell. It has been created as a sample and is not to be used as an estimation of risk for an actual industrial installation.

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**Assessment Information Continued..**

**Resource Administration**

**Name:** ABC Company  
**Street:** 123 ABC St  
**City:** King City  
**State\Prov:** Any state  
**Country:** USA  
**ZIP\Postal Code:** 12345  
**Contact:** John Smith  
**Phone:** 111-222-3333  
**Fax:** 111-222-4444  
**E-mail:** johnsmith@anywhere.com

**System Resource**

**System ID:** Robot 1  
**Date Purchased:** 3/18/2005  
**Manufacturer of System:** Robot Manufacturer  
**Function of System:** Part handling  
**Picture:**



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**Executive Summary of Hazard Zones**

1

**Hazard Zone:** 1.1 Robot cell clean up

**Activity:** Remove scrap material

**Residual risk OEM / Integrator:**

**Additional protective measures may be disproportionate to the benefit gained.**

**Residual risk assumed by facility:**

**Very Low risk / Minimal - Injury is a remote possibility**

**Additional protective measures may be disproportionate to the benefit gained.**

2

**Hazard Zone:** 1.0 Robot cell setup

**Activity:** Robot setup

**Residual risk OEM / Integrator:**

**Additional protective measures may be disproportionate to the benefit gained.**

**Residual risk assumed by facility:**

**Very Low risk / Minimal - Injury is a remote possibility**

**Additional protective measures may be disproportionate to the benefit gained.**

3

**Hazard Zone:** 1.2 Isles around robot cell

**Activity:** Casual exposure to personnel walking past the hazard zone

**Residual risk OEM / Integrator:**

**Not Evaluated**

**Residual risk assumed by facility:**

**Low risk / Minimal - injury is highly unlikely**

**Additional protective measures may be disproportionate to the benefit gained.**

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**Hazard Zone Details**

**1**

**Hazard Zone:** **1.1 Robot cell clean up**

**Hazard Zone Details**

**Activity:** Remove scrap material

**Hazardous Event:** Impact due to robot motion

**Hazardous Situation(s):** Product that has not been properly formed is regularly dropped by the robot and must be cleared. Personnel could be struck by the robot while in the robot cell.

**Notes:** Provisions have been made to provide clearance between all obstacles in the cell and the robot, including the finished part by using mechanical hard stops on the first and second axis, (See layout drawing 111.222.333C) Sample for demonstration. This assessment is not to be used as an official evaluation for a robot cell. It has been created as a sample and is not to be used as an estimation of risk for an actual industrial installation.

**Hazard Zone Picture:**



**Risk Estimation**

**Severity of potential injury caused by hazard:**

Major - Normally irreversible injury

**Frequency of exposure to the hazard:**

Occasional - Daily

**Possibility of hazard avoidance:**

Impossible - injury is unavoidable

**Probability of the occurrence to the hazard event:**

**Assessed risk if safety elements are not employed:**

**High risk / Inevitable - injury will occur**

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**Hazard Zone Details Continued..**

1

**Hazard Zone: 1.1 Robot cell clean up**

**Risk Reduction Method**

**Control Circuit Performance based on:**

ISO 13849-1:1999

**Primary safety device used to reduce risk of injury (Mechanical):**

Moveable Guards w/guard locking (Dual channel interlock / cross monitoring Category 3)

**Primary safety device used to reduce risk of injury (Presence sensing):**

None

**Traditional guarding methods are not feasible at this point of operation:**

**Hold to Run Control(s):**

None

**Additional safety element**

**Safeguard bypass with administrative control**

**Residual Risk:**

**Very Low risk / Minimal - Risk of injury has been reduced as far as practical  
 Additional protective measures may be disproportionate to the benefit gained.**

**Characteristics of Facility**

**Nature of person exposed to hazardous area:**

Third party casual exposure

**Qualification / Education level of the person exposed to hazardous area:**

Previous formal training provided by professional trainer

**Personal Protective Equipment (Based on task hazard assessment(s)):**

Task Hazard Document	Activity
Plant 001 Sample	Entry into all production areas Sample
Plant 002 Sample	Entry into stamping press department Sample
Plant 003	Work in stamping press department Sample

**Work place safety policies, procedures, and instructions:**

Corporate / Company Guidelines for all activities / written instruction / incremental penalties for

**Lockout, Tagout, Test procedures apply to this activity.**

**Safeguard bypass with administrative control:**

**None**

**Residual Risk Assumed by Facility**

**Very Low risk / Minimal - Injury is a remote possibility  
 Additional protective measures may be disproportionate to the benefit gained.**

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**Hazard Zone Details**

2

**Hazard Zone:** 1.0 Robot cell setup

**Hazard Zone Details**

**Activity:** Robot setup

**Hazardous Event:** Impact due to robot motion

**Hazardous Situation(s):** Personnel could be struck by the robot while in the robot cell

**Notes:** Robot is equipped with a hand held pendant for the purpose of robot setup. The pendant includes an enabling device in order to permit motion. Provisions have been made to provide clearance between all obstacles in the cell and the robot, including the finished part by using mechanical hard stops on the first and second axis, (See layout drawing 111.222.333C) Sample for demonstration. This assessment is not to be used as an official evaluation for a robot cell. It has been created as a sample and is not to be used as an assessment of risk for an actual industrial installation.

**Hazard Zone Picture:**



**Risk Estimation**

**Severity of potential injury caused by hazard:**

Major - Normally irreversible injury

**Frequency of exposure to the hazard:**

Infrequent - Weekly or less

**Possibility of hazard avoidance:**

Impossible - injury is unavoidable

**Probability of the occurrence to the hazard event:**

**Assessed risk if safety elements are not employed:**

**High risk / Inevitable - injury will occur**

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**Hazard Zone Details Continued..**

2

**Hazard Zone: 1.0 Robot cell setup**

**Risk Reduction Method**

**Control Circuit Performance based on:**

ISO 13849-1:1999

**Primary safety device used to reduce risk of injury (Mechanical):**

Moveable Guards w/guard locking (Dual channel interlock / cross monitoring Category 3)

**Primary safety device used to reduce risk of injury (Presence sensing):**

None

**Traditional guarding methods are not feasible at this point of operation:**

**Hold to Run Control(s):**

None

**Additional safety element**

**Safeguard bypass with administrative control**

**Residual Risk:**

**Very Low risk / Minimal - Risk of injury has been reduced as far as practical  
Additional protective measures may be disproportionate to the benefit gained.**

**Characteristics of Facility**

**Nature of person exposed to hazardous area:**

Local maintenance / set-up

**Qualification / Education level of the person exposed to hazardous area:**

Previous exposure in similar environment (formal employee training)

**Personal Protective Equipment (Based on task hazard assessment(s)):**

Task Hazard Document	Activity
Plant 001 Sample	Entry into all production areas Sample
Plant 002 Sample	Entry into stamping press department Sample

**Work place safety policies, procedures, and instructions:**

Corporate / Company Guidelines for all activities / written instruction

**Lockout, Tagout, Test procedures apply to this activity.**

**Safeguard bypass with administrative control:**

**None**

**Residual Risk Assumed by Facility**

**Very Low risk / Minimal - Injury is a remote possibility  
Additional protective measures may be disproportionate to the benefit gained.**

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**Hazard Zone Details**

3

**Hazard Zone: 1.2 Isles around robot cell**

**Hazard Zone Details**

**Activity:** Casual exposure to personnel walking past the hazard zone

**Hazardous Event:** Struck by part released by robot.

**Hazardous Situation(s):** Personnel could be struck by product released by the robot due to a failure of the end of arm tooling.

**Notes:** Because this robot has a tendency to drop parts that have not been correctly formed, the possibility of parts being thrown out of the robot cell had to be considered. After completing the engineering calculations, fault tree analysis, and failure mode effects analysis, it was determined that a parts that could not be held by the robot due to improper shape, would be dropped before the robot began any upward motion. Therefore the probability of a part being thrown out of the cell was believed to be negligible.

**Hazard Zone Picture:**



**Risk Estimation**

**Severity of potential injury caused by hazard:**

Major - Normally irreversible injury

**Frequency of exposure to the hazard:**

Occasional - Daily

**Possibility of hazard avoidance:**

Unlikely - Unable to avoid

**Probability of the occurrence to the hazard event:**

Negligible possibility

**Supporting Documents:**

Engineered calculation(s)

Failure mode effects analysis

**Assessed risk if safety elements are not employed:**

**Medium risk / Possible - injury is unlikely**

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**Hazard Zone Details Continued..**

3

**Hazard Zone: 1.2 Isles around robot cell**

**Risk Reduction Method**

**Control Circuit Performance based on:**

ISO 13849-1:1999

**Primary safety device used to reduce risk of injury (Mechanical):**

None

**Primary safety device used to reduce risk of injury (Presence sensing):**

None

**Traditional guarding methods are not feasible at this point of operation:**

**Hold to Run Control(s):**

None

**Additional safety element**

**Safeguard bypass with administrative control**

**Residual Risk:**

**Not Evaluated**

**Not Evaluated**

**Characteristics of Facility**

**Nature of person exposed to hazardous area:**

Third party casual exposure

**Qualification / Education level of the person exposed to hazardous area:**

Previous exposure in similar environment (formal employee training)

**Personal Protective Equipment (Based on task hazard assessment(s)):**

Task Hazard Document	Activity
Plant 001 Sample	Entry into all production areas Sample
Plant 002 Sample	Entry into stamping press department Sample

**Work place safety policies, procedures, and instructions:**

Corporate / Company Guidelines for all activities / written instruction / incremental penalties for

**Lockout, Tagout, Test procedures apply to this activity.**

**Safeguard bypass with administrative control:**

**None**

**Residual Risk Assumed by Facility**

**Low risk / Minimal - injury is highly unlikely**

**Additional protective measures may be disproportionate to the benefit gained.**