

HIRAC Report

Risk, Health and Safety

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1. Hazard Management Details – General

This form relates to OHS Procedure – [Hazard Identification, Risk Assessment and Control \(HIRAC\)](#)

Plant/Equipment Item: CNC MILLING MACHINE	Make/Model No.: Roland MDX-50	Serial No.:
School / Work Location: Ballarat Tech School (Fed College)	Region:	
Name of Person(s) Conducting Activity: Liam Mudge		Date Conducted: 07/01/2022

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	<p>Description of Use:</p> <p>A computer numerical control (CNC) milling machine is a specialised piece of plant used to machine metal by removing material from a rotating work piece via the movement of various cutting pieces (e.g. tool bits, drill bits).</p> <p>The CNC machine is fully computer controlled and programmable with user interaction only required when setting up cutting piece and installing work piece.</p> <p>Most CNC machines work behind a guard or even a closed, transparent safety door when in operation.</p> <p>The Ballarat Tech School delivers a range of STEM curriculum projects. Some of these may be hazardous to user's health if safety procedures and lab etiquette are not followed.</p>	<p>Summary of Key Risks: (refer to appropriate subsections)</p> <ul style="list-style-type: none"> • Entanglement • Impact and cutting • Electricity • Slips/trips/falls • Temperature • Other (dust)
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2. Documentation		
Relevant Legislation/Standards	Y / N	Comments
Is plant required to be registered?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	
Is a user license required?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	
Key reference material:		AS 4024.3101 Safety of machinery - Materials cutting - Milling machines (including boring machines) - Safety requirements AS/NZS 3760 In service safety inspection and testing of electrical equipment AS 4024.1 Safety of machinery
Plant Documentation	Y / N	Comments
Are operator's manuals accessible?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
Is this a restricted use item?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
Does this item require safe use documents/test?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	

3. Hazard Identification			
Hazards Inspected	Risk Assessment	Description of Risk	Control Measures

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		Initial	Residual		
ENTANGLEMENT Can anyone's hair, clothing, gloves, cleaning brushes, tools, rags or other materials become entangled with moving parts of the plant or materials?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Medium	Low	Long hair, loose clothing, rags, cleaning brushes and jewellery could become entangled in the moving parts of the equipment.	<ul style="list-style-type: none"> • Ensure hair, loose clothing, rags and jewellery is kept clear of moving parts when in use. • Aprons can be used to restrict loose clothing. • Hair ties/hair nets can be used to secure long hair. • Ensure inappropriate jewellery and accessories (e.g. bracelets) are not worn when operating equipment.

IMPACT AND CUTTING INJURIES					
Can anyone be crushed/cut/struck etc. due to				<ul style="list-style-type: none"> • A missing or faulty interlock guard switch can expose 'flying' pieces of sharp/hot material and present a risk to an operator's hands and body parts. • Work piece may become 	<ul style="list-style-type: none"> • Ensure operator's hands and body parts are kept clear of moving parts during use and maintenance. • Ensure work pieces are appropriately secured prior to operation. • Ensure the guard or transparent safety door on the CNC machine is closed before operation and interlock switch is working.
• Material falling off the plant?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>				
• Uncontrolled/unexpected movement of plant/load?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>				
• Lack of capacity to slow, stop or immobilise plant?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
• The plant tipping or rolling over?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				

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<ul style="list-style-type: none"> Parts of the plant disintegrating or collapsing? 	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Medium	Low	dislodged/ejected during machining.	<ul style="list-style-type: none"> Ensure appropriate PPE is worn whilst operating the equipment (e.g. eye protection). Ensure operators receive appropriate instruction before attempting to use any CNC equipment. Ensure work piece is properly restrained before beginning machining process.
<ul style="list-style-type: none"> Contact with moving parts during testing, inspection, operation, maintenance, cleaning or repair? 	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Medium	Low	<ul style="list-style-type: none"> Access to moving parts during maintenance and routine inspections. Inappropriate work piece materials may cause damage to machine resulting in hazard. 	<ul style="list-style-type: none"> Use of exclusion zones and interlocking guards to restrict access to moving parts while operational. Consult user manual, standard operating procedures and relevant MSDS forms and use only as directed.
<ul style="list-style-type: none"> Being thrown off or under the plant? 	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
<ul style="list-style-type: none"> Contact with sharp or flying objects? (e.g. work pieces being ejected) 	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Medium	Low		
<ul style="list-style-type: none"> The mobility of the plant? 	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
<ul style="list-style-type: none"> Inappropriate parts and accessories being used? 	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Medium	Low		
<ul style="list-style-type: none"> Other 	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				

Hazards Inspected	Risk Assessment	Description of Risk	Control Measures
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		Initial	Residual		
SHEARING Can anyone's body parts be sheared between two parts of plant, or between a part of the plant and a work piece or structure?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	High	Low	<u>Access to tool piece before coming to complete stop may cause serious injury.</u>	<ul style="list-style-type: none"> <u>Adequate training and induction before use.</u> <u>Use of exclusion zone when necessary.</u> <u>Compliance with SOP</u>
PRESSURISED CONTENT Can anyone come into contact with fluids or gases under high pressure, due to plant failure or misuse of the plant?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
ELECTRICITY Can anyone be injured or burnt due to:				<ul style="list-style-type: none"> Damaged or frayed electrical cables pose an electrical hazard. Liquids may cause damage or electrical short if contact made with power supplies.- 	<ul style="list-style-type: none"> Operator to check for damaged electrical cables prior to use. Ensure equipment is regularly serviced, tested and tagged (if not hardwired) and appropriate isolation procedures (e.g. lock out tags) are in place. No food or drink at work-station.
<ul style="list-style-type: none"> Live electrical conductors? (e.g. exposed wires) 	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
<ul style="list-style-type: none"> Working in close proximity to electrical conductors? Access to electricity? 	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				

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• Damaged or poorly maintained electrical leads, cables or switches?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Medium	Low		
• Water near electrical equipment?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>				
• Lack of isolation procedures?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
• Other	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				

Hazards Inspected	Risk Assessment	Description of Risk	Control Measures
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ERGONOMICS Can anyone be injured due to:			<ul style="list-style-type: none"> Inappropriate placement of machinery controls. Design of work-station does not allow observation of machine and control system at the same time. Inadequate lighting may result in incorrect wiring/assembly. Machine cell obstructed by objects/machinery. 	<ul style="list-style-type: none"> Ensure that operators are not operating at a level where their eyes are at the same level as the laser beam. Control station located at or near machine cell. Ensure machine cell has adequate room to perform task unobstructed. Ensure adequate lighting to perform task. Additional lighting may be required if ambient/room lighting is insufficient
• Poorly designed workstation?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Medium		
• Repetitive body movement?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>			
• Constrained body posture or the need for excessive effort?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>			
• Design deficiency causing psychological stress?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>			
• Inadequate or poorly placed lighting?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>			
• Does the plant impact on the surrounding workplace and create potential hazards? (Consider safe access and egress from plant, workflow and design of the workplace)	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>			
• Other	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>			

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RADIATION Can anyone using the plant, or in the vicinity of the Plant suffer injury or illness due to exposure to radiation in the form of any of the following: <ul style="list-style-type: none"> • infra-red radiation • ultra violet light • microwaves 	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
NOISE Can anyone using the plant, or in the vicinity of the plant, suffer injury due to exposure to noise?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
VIBRATION Can anyone be injured or suffer ill-health from exposure to vibration?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
FRICION Can anyone be burnt due to contact with moving parts, materials or surfaces of the plant?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
SUFFOCATION Can anyone be suffocated due to lack of oxygen, or atmospheric contamination?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
CONDITION Is a hazard likely due to the age and condition of the plant? (<i>Consider how hard the machine has been worked, and whether it is used constantly or rarely</i>).	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				

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<ul style="list-style-type: none"> Can anyone be injured as a result of the plant not serviced appropriately and/or maintained in line with manufacturer's recommendations? 	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>		

Hazards Inspected	Risk Assessment		Description of Risk	Control Measures
	Initial	Residual		
SLIPS/TRIPS/FALLS Can anyone using the plant, or in the vicinity of the plant, slip, trip or fall due to:			<ul style="list-style-type: none"> Poor housekeeping practices allowing the build-up of waste materials or failure to immediately clean up spills could result in a slip hazard. Inappropriate placement of objects (e.g. spare materials, bags etc) in the immediate vicinity of the plant equipment may result in a trip hazard. 	<ul style="list-style-type: none"> Ensure appropriate cleaning and housekeeping practices are maintained to minimise the risk of a slip, trip or fall.
<ul style="list-style-type: none"> Uneven, slippery or steep work surfaces? 	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>			
<ul style="list-style-type: none"> Poor housekeeping, e.g. spillage in the vicinity? 	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Minor Low		
<ul style="list-style-type: none"> Obstacles being placed in the vicinity of the plant? 	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Minor Low		
<ul style="list-style-type: none"> Inappropriate or poorly maintained floor or walking surfaces (i.e. lack of a slip-resistant surface, unprotected holes, penetrations or gaps?) 	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>			
If operating or maintaining plant at height can anyone slip, trip or fall due to:				

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• Use of work platforms, stairs or ladders?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
• Lack of guardrails or other suitable edge protection?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
• Other	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				

Hazards Inspected		Risk Assessment		Description of Risk	Control Measures
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FIRE AND EXPLOSION Can anyone be injured by fire?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
• Can anyone be injured by explosion of gases, vapours, liquids, dusts, or other substances?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				

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TEMPERATURE/MOISTURE Can anyone come into contact with objects at high or low temperatures?		Medium	Low	<ul style="list-style-type: none"> Work and cutting pieces may get hot. 	<ul style="list-style-type: none"> Allow work and cutting pieces to cool prior to handling.
• Can anyone suffer ill-health due to exposure to high or low temperatures?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>				
• Can anyone be injured or suffer ill-health due to exposure to moisture?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
OTHER Can anyone be injured or suffer ill-health from exposure to:				<ul style="list-style-type: none"> Dust and vapours generated from the work process may be hazardous to health. 	<ul style="list-style-type: none"> Ensure appropriate control measures are implemented (e.g. local exhaust system, face masks, good housekeeping practices etc).
• Chemicals?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
• Toxic gases or vapours?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				
• Other? (please specify)	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>				

4. Risk Assessment Signoff		
Authorised By:	Signature:	Date:
Albert Ferguson		07/03/2022