Department of Mechanical Engineering Makerspace Safe Operating Procedure

WARD WaterJet

CAUTION: DO NOT use this machine unless a supervisor has instructed you in its safe use and operation and has given permission. Safety glasses must always be worn in work areas. Long and loose hair must be contained or restrained. A mask must be worn when excessive airborne dust or toxic vapors are created. Appropriate footwear with substantial uppers must be worn. Rings and jewelry must not be worn near moving machinery components. Close fitting, protective clothing or a workshop apron is encouraged.

OPERATIONAL SAFETY

Always wear safety glasses and non-slip footwear during setup, operation, and maintenance of WARD. This includes non-operators within a 10-foot vicinity of WARD. Hearing protection is required when operating WARD for long periods of time. Wear gloves when handling material. Materials may have sharp edges immediately after cutting. Make sure the floor surface around the WARD location is water resistant and slip resistant. WARD operates with abrasive and water. While it is an enclosed system, water is likely to spill during routine use, setup, or maintenance. Ideally, a floor drain should be located near your WARD. WARD operators should ensure anyone within 10 feet of the WARD follows the proper safety precautions. WARD should be installed in an area that allows the machine to be monitored while cutting. Never operate WARD with components out of place or missing. This includes and is not limited to the Cut Bed, Nozzle Cover, Nozzle, and Door. Never override any safety sensors or systems in WARD.

DO NOT use this machine unless you have been trained in its safe use and operation.

Potential Hazards

- Impact, pinch, and crush points
- Dusts and fumes
- Electrical components
- Entanglement and entrapment
- Eye injury
- Manual handling

Operating waterjet machinery can be hazardous, and it's important to take proper safety precautions to prevent accidents and injuries. Waterjet hazards can include high-pressure water, abrasive materials, and the machinery itself. Here are some key precautions and measures to ward against waterjet hazards:

1. Protective Gear: Always wear appropriate personal protective equipment (PPE), including safety glasses, hearing protection, gloves, and a full-face shield. Consider using a helmet with a visor to protect against water splashes and abrasive particles.

2. Machine Maintenance: Regularly inspect and maintain the waterjet cutting machine. Ensure that all components, such as high-pressure hoses and nozzles, are in good working condition.

3. Training: Only trained and qualified operators should be allowed to operate waterjet equipment. Training should include safe operation, machine maintenance, and emergency procedures.

4. Safe Operation: Adhere to safe operating procedures for the specific waterjet system you are using. This includes proper setup, adjusting pressure settings, and controlling cutting speeds.

5. Pressure Relief: Ensure there is a pressure-relief system in place to prevent the buildup of excessive pressure, which can lead to catastrophic failures.

6. Emergency Shutdown: Make sure all operators know the location and operation of the emergency stop button, which should immediately shut off the machine in case of an emergency.

7. Area Safety: Create a safe work environment by marking and cordoning off the waterjet machine area to prevent unauthorized access. Ensure the floor is clear of obstacles that may cause trips or falls.

8. Material Handling: Handle abrasive materials with care. Wear appropriate PPE when handling abrasive substances and use designated containers for storage to prevent dust exposure.

9. Ventilation: If cutting materials that produce dust or fumes, ensure the work area is well-ventilated, and consider using dust collection systems to minimize respiratory hazards.

10. Water Splash Protection: Protect against water splashes by using barriers or shields around the waterjet area and wearing suitable PPE.

11. Maintenance Procedures: Follow the manufacturer's recommended maintenance schedule and procedures. This includes regular checks for leaks, damaged hoses, or worn seals.

12. Inspection: Before each use, inspect the machine for signs of damage, wear, or deterioration. If you notice any issues, report them immediately and do not operate the machine until they are resolved.

13. Operator Distance: Maintain a safe distance from the cutting head while the machine is in operation. Follow guidelines on how close you should be to the cutting zone.

14. First Aid and Emergency Response: Ensure that a first aid kit is readily available, and operators know how to respond to injuries. Establish an emergency response plan for severe accidents.

15. Follow the Manual: Read and understand the manufacturer's manual for the specific waterjet machine you are using. It contains important safety information and instructions for operation.

Remember that waterjet technology can be extremely efficient and accurate but also has the potential for hazards. By following safety guidelines and using proper protective gear, you can help ward against accidents and injuries while operating waterjet machinery.

By signing this document, I, _____, agree to abide by I agree to use makerspace responsibly in accordance with the rules, policies, and guidelines in this document.

MEDDL User	Date
MEDDL Makerspace	Date