Risk Assessment

Product	Fiber laser welding machines - HN-1000H , HN-1500H , HN-2000H	**Brand**	Hongniu
Description	Usage of fiber laser welding equipments. Hot work fusion of materials.		
Manufacturer Address	Shandong Hongniu Laser Equipment Co.,Ltd. Room 201, Unit 1, Building 23, Zone B Huashanlongcheng, Licheng	**Specification** Voltage:380V/50Hz Protection class : 1 IP : IP22 wave length: 1080Nm	

Hazard Identification

Hazard	Likelihood	Severity	Risk
Fire	L **M** H	L M **H**	L M **H**
Laser beam	L **M** H	L **M** H	L **M** H
UV radiation	L **M** H	L **M** H	L **M** H
Fumes and gases	L **M** H	L **M** H	L **M** H
Explosion	L **M** H	L M **H**	L M **H**
Burning	L **M** H	L **M** H	L M **H**
Electrical equipment	L **M** H	**L** M H	L **M** H
Gas equipment	L **M** H	L **M** H	L **M** H
Storage of gases	**L** M H	L **M** H	L **M** H
Equipment failure	**L** M H	L **M** H	L **M** H
	L M H	L M H	L M H
	L M H	L M H	L M H
	L M H	L M H	L M H

People at Risk

- [x] Workers
- [x] Adjacent Workers
- [x] Site Wide Workers
- [ ] Occupants
- [ ] Visitors
- [ ] Members of Public

Controls

Risk	Control Measures
Fire Increased risk of fire	Hot works permit to be used for all welding operations. All flammable materials to be removed from the work area prior to task commencing. Keep the quantity of combustibles on site to a minimum. Keep a dry powder fire extinguisher close to hand. Ensure that laser welding is carried out away from sources of open explosive/flammable substances. Ensure that all tanks and vessels containing flammable materials are thoroughly purged before welding takes place. Regular fire checks up to 1 hour after completion of activity.
Arc Eye damage and irritation from the effects of laser beam welding	Ensure that only trained and authorised operatives carry out laser welding activities. Ensure the correct PPE including welding masks and/or eye protection is worn throughout. Ensure the use of adequate health screening for those employees exposed.
UV radiation Overheating and skin burns from ultra-violet radiation exposure	Ensure adequate protection by using adequate PPE. Face, hand and arm protection - gloves, full length sleeves and collar in addition to facial protection required.
Fumes and gases Exposure to fumes and gases, throat irritation, metal fume fever etc	Ensure there is adequate ventilation in the work area. Ensure that workplace exposure limits (WELs) are not exceeded. (Calculations show that current WELs will not be exceeded for this activity).

Risk	Control Measures
Explosion Risk of death or serious injury from explosion	Ensure that laser welding is carried out away from sources of open explosive/flammable substances. Ensure that all tanks and vessels containing flammable materials are thoroughly purged before welding takes place.
Burning Injury to user through burning of clothing by laser beam	Ensure that overalls and other protective clothing is kept free of oil and grease or other flammable materials. No loose clothing to be worn and long hair tied back.
Electrical equipment Electric shock or burns from equipment	Appropriate selection, care and maintenance of equipment. Suitable electrical protection (e.g. insulation and earthing) to be ensured. Efficient and convenient means of switching off the power supply. Observance of safe working practices. Inspection and maintenance of all equipment by a competent person, with particular attention being paid to electrode holders, cables, plugs, sockets, clamps and earthing. Touching “live” electrical equipment or components, including the electrode, can result in serious burn injury or electric shock. Electrical hazards are frequently not obvious and caution is essential when working with electric welding processes, equipment and machinery. Ensure that only trained and authorised operatives carry out welding activities. Use 110V transformers, centre tapped to earth and only use 110V power tools on site. PAT test electric welding equipment at least every 6 months, more often if in heavy use. Visually inspect cables and equipment before use. Faulty or damaged equipment to be reported and taken out of use for repair or replacement.

Risk	Control Measures
Gas equipment Fire, exposure or explosion	Provision of appropriate equipment and installations. Materials to be compatible with the gases used (construction, lubricants etc). Oxygen service equipment in particular to be free of any solid or liquid inorganic or organic contamination. Use of appropriate pressure regulators, capable of safely handling the maximum supply pressure. Use of suitable pressure gauges. Use of suitable rubber hose and connections. Use of suitable blowpipes, suitable for the gases and process involved, producing a stable, adjustable flame and resistant to backfire. Use of appropriate safety devices including: • None-return valves • Flame arresters • Outlet connections • Pressure relief valves etc
Storage of gases Increased risk of fire or explosion	Storage in clear open air in secure area. Free or well separated from toxic/corrosive/combustible materials. Protection from heat and weather. Ensure adequate separation distance or fire wall. Cylinders for use to be stored and secured in upright position in a well-ventilated designated area.
Equipment failure Injury due to use of damaged or faulty equipment	All equipment to be maintained and inspected in accordance with manufacturers recommendations. Pre-use visual checks to be made on all welding equipment by competent person. In addition, it is recommended that the following are included in a formal system of regular examination and recorded: • Leaks at connections • Damage to hoses • Correct operation of non-return valves, pressure regulators and pressure gauges • Check for build - up of deposits of combustion products in flame arrestors (resulting in low gas flow rates) • Damage or malfunction of any other component

Risk Level

<L	L	M	H	!
Very Low safe to proceed work under standard control measures	**Low** safe to proceed work under additional control measures	**Medium** proceed with caution under additional controls measures	**High** proceed with caution under further controls with supervision	**Very High** unsafe DO NOT proceed - essential further action needed

Further Action

Action Required	Timeframe	By	Date
Ensure adequate supervision is provided and that control measures remain valid for the duration of the works.	Ongoing		
Safe systems of work are provided and issued to all staff and training provided in their use.	1 week Refresh at inductions		
All staff to be trained in the importance and use of correct Personal Protective Equipment and wearing of the correct PPE made a condition of employment.	1 week Refresh at inductions		
Provision of task specific training for operatives and supervisors / managers.	Ongoing		
Work to proceed only under hot works permit due to high risk.	Before work starts		

Appendix
Photo documentation

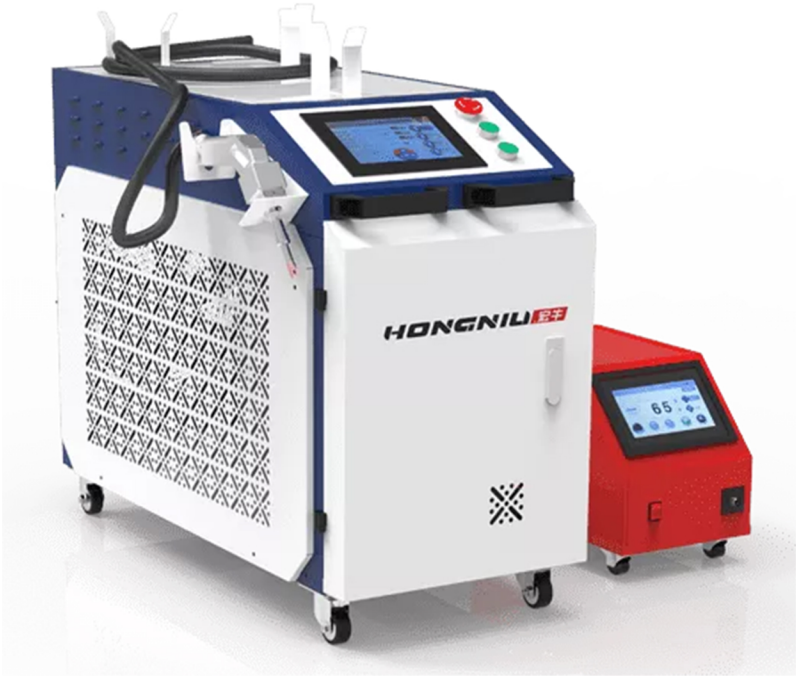
Photo 1 View: [√] front [ ] rear [ ] right side [ ] left side [ ] top [ ] bottom [ ] internal	

Photo 2 View: [ ] front [ ] rear [ ] right side [√] left side [ ] top [ ] bottom [ ] internal