Pre-Installation Guidelines & Checklist

Reformer

R500H | R1000H

Contents


Cold Jet
the force of nature

Introduction

Before any reformer unit can be installed, the owner/operator must prepare the site for installation and operation. It is the owner's responsibility to verify all the necessary preparations have been made to the installation site and meet the specifications and guidelines detailed in this publication. This may include but is not limited to:

- Providing an indoor space with standard industrial flooring.
- Installing a power supply that is sufficient and up to code.
- Installing proper high-pressure system.
- Providing proper room ventilation and other CO_2 safety measures.

The owner is responsible for transmitting the specifications in this publication to other third-party contractors involved in the pre-installation preparations of the site. Failure to properly prepare the site may delay the installation and/or optimal performance of the reformer unit.

The graphics used in this manual may show reformer unit details and installation components that may be different than what is used. Components may have been removed for illustrative purposes or continuing improvement of the design may cause changes that are not included in this publication.

Unpacking & Inspecting

This machine has been assembled and tested at Cold Jet's test center before being crated and shipped as one unit (excluding hydraulic oil). Follow the steps below to unpack and inspect the machine from the shipping container.

1. Examine the shipping container for any damage that may have occurred during transport.

2. Remove the machine, box(es) that contain accessories, and discard packing material, braces, and ties.

3. Examine the machine for any external damage that may have occurred during transport.

4. Open the cabinet doors of the machine and examine the machine for any internal damage that may have occurred during transport.

5. Open the front cabinet door and locate the box on the machine floor containing user documentation, discharge chute(s), optional spare parts kit(s), and other accessories.

Refer to the packing slip for a list of the components shipped with the machine. Contact Cold Jet if any damage has occurred to the shipping container or the machine.

Transporting & Lifting

Always transport the machine in the upright position using a forklift. Pick up the machine from the side with the forks fully engaged and adjusted to the maximum width.

Forklift Requirements	**R500H**	**R1000H**
Load Capacity	2300 kg (5071 lb.)	2300 kg (5071 lb.)
Fork Length (Minimum)	1.7 m (67 in)	1.7 m (67 in)

Always use lifting eyes to lift the machine. The weights and dimensions of the machine are described in the following table:

Weights and Dimensions	**R500H**	**R1000H**
Shipping Weight Transport		2300kg (5071 lb.)
Shipping Crate Dimensions (LxWxH)	1616x2105x2350 mm (64x83x92.5 in)	1616x2105x2350 mm (64x83x92.5 in)
Machine Weight (Incudes Hydraulic oil)		2545 kg (5610 lb.)
Machine Dimensions (LXWXH) Without outfeed conveyor	1956x1500x2032 mm (77 x 59 x 80 in)	1956x1500x2032 mm (77 x 59 x 80 in)

Pre-Installation by the Customer

Pre-Installation of the machine at the site must be carried out by the owner/operator. After that, a Cold Jet technician will arrive on-site for the final commissioning, start-up, and training. Machine owner/operators are responsible for the physical installation, utility connections, and Power supply required to put a new machine into service.
For an overview of a typical dry ice production system, referred to a "Dry Ice Production System" please contact Cold Jet.

Production Space Requirements

- Adequate ventilation, natural or forced, must be provided to prevent the build-up of CO_2 during production.
- A system to monitor CO_2 levels that will alert personnel when CO_2 levels become too high and pose a danger.
- The machine shall be sheltered from the wind and weather and operate in an environment with an ambient temperature between 5°C and 43°C (41°F and 109°F).
- The machine must be placed on a horizontal, concrete floor with adequate load carrying capacity.
- The minimum clearance of 1100 mm (43.3 in.) must be observed so that the cabinet doors can be opened and the machine can be serviced. The height of this machine from the floor to the top of the shutter is for the R1000H 2030 mm (80 in.) must also be considered. Allow for a minimum clearance of 500 mm (19.7 in) above the machine for any overhead piping and cabling.

Electrical Service & Supply

The R500H and R1000H requires a three-phase power supply. The power source must be grounded:

- For machines in the US: use a Solidly Grounded WYE Source.
- For machines outside US: use a TN-S grounding acc. to IEC 60364.
- All phases must be balanced, and voltages must be within ±10%.

The customer is responsible for the electrical installation of the R500H and the R1000H. This includes the power cable and main circuit breaker which meet the specifications below. The main circuit must be suitable for proper lock out / tag out in accordance with international and national standards and requirements.

Before startup, Cold Jet will verify the direction of rotation is the same as indicated on the motor for the hydraulic pump and on the motor for the oil cooler pump, if applicable.

Electrical Service & Supply	**R500H**	**R1000H**
Voltage AC/ Frequency (EU 50Hz)	3 x 400 VAC + N + PE / 50 Hz	
Voltage AC/ Frequency (US 60 Hz)	3 x 480 VAC + N + GND / 60Hz	
Average Power Consumption	66 kW UL: 25kA rms symmetrical	
Rated Current (Imax)	63 A	
Safety Class Category	Pl_r= c Implemented	

Compressed Air Supply

The R1000H requires instrument air/ CO_2 vapor at a minimum pressure of 6 bar (87 psi) as the input to the pressure regulator in the machine. If compressed air is used, the supply must comply with ISO 8573.1 (2001) Compressed Air Quality Standard.
The customer is responsible for the pneumatic installation of the R1000H. A valve must be installed to ensure proper safe lock-out/tag-out of the machine with reference to relevant machine safety stands.

Compressed Air Supply	**R500H**	**R1000H**
Compressed Air Quality	ISO 8573-1, Minimum class 3	
Supply Pressure (MIN-MAX)	6 - 10 bar (87-145 psi)	
Flow minimum	120 L / min *	120 L / min
Air Connection	Ø10 push-in	

*Estimated value

ISO 8573.1 (2001) Compressed Air Quality Standard

Air Quality Classes

CLASS	SOLID PARTICLES, PARTICLE SIZE, d (mm)			HUMIDITY AND LIQUID WATER		OIL	
	0.10<d≤0.5	0.5<d≤1.0	1.0<d≤5.0	PRESSURE DEW POINT		TOTAL CONCENTRATION: AEROSOL, LIQUID AND VAPOR	
	MAXIMUM NUMBER OF PARTICLES PER m^3			°C	°F	mg/m^3	ppm/w/w
0	As Specified			As Specified		As Specified	
1	100	1	0	≤-70	-94	≤0.01	≤0.008
2	100,000	1,000	10	≤-40	-40	≤0.1	≤0.08
3	-	10,000	500	≤-20	-4	≤1	≤0.8
4	-	-	1,000	≤+3	38	≤5	≤4
5	-	-	20,000	≤+7	45		
6				≤+10	50		
				LIQUID WATER CONTENT Cw g/m^3			
7				Cw≤0.5			
8				0.5<Cw≤5			
9				5<Cw≤10			
PER ISO8573-1: 2001(E)							

Hydraulic Oil (Initial Filling)

The machine will be delivered without hydraulic oil in accordance with the ADR Dangerous Goods by Road regulations or similar for sea and air transportation. The owner/operator is responsible for retaining a local supplier and having the oil on-site and fill the hydraulic tanks of the equipment prior to the commissioning of the machine.

Instruction for the initial filling are below. The owner/operator can fill the tank or have the Cold Jet technician fill the tank prior to the commissioning and start-up of the machine. The approximate volume and oil type is listed in the table below:

Hydraulic Oil (Initial Filling)	**R500H (per machine)**	**R1000H (per machine)**
Hydraulic Reservoir Capacity (Max Filling)	Up to 300 L (79 gal)	
Oil Grade/Type - Standard Technical	Mobil DTE 10 Excel 46	
Oil Grade/Type - Food Grade / FDA	Mobil DTE FM 46	

Filling the Oil Tank

1. Remove the air filter by unscrewing it from the hydraulic tank to access the oil filling port.

2. Remove the oil filter by unscrewing it.

3. Fill the tank with the appropriate type of oil until max level is observed on the tank level indicator.

4. Reinstall the oil filter and air filter onto the oil filing port.

Cold Jet CONNECT® Internet Connection

Cold Jet CONNECT® is your access to quick and effective remote technical support. Via the internet, a Cold Jet technician can view the machine data in real time and support the owner/user for continued optimized machine performance or quick diagnostic of other uptime related issues.

The customer is responsible for the internet connection and the machine, Beckhoff PLC, is connected to internet either directly through an Ethernet ISP or by using a mobile 3G/4G connection. The connection is established with a network cable RJ45 plug.

Declaration of Usage

Although this line will have an active connection Cold Jet will only be using this line “as needed” and will not be monitoring your operations outside the scope of the following scenarios.

1. When a representative of your organization is standing by and communicating with a Cold Jet representative while working on an active issue
2. Cold Jet receives permission from a representative of your organization to access without personnel standing by
3. To perform necessary software upgrades after informing the customer of such upgrades and receiving the customer’s consent
4. Occasionally a Cold Jet representative may find it useful to check in briefly to ensure operations have been smooth or review Alarm’s History or machine hours, however Cold Jet promises to not make changes or adjustments to your system without the consent of an authorized representative from your organization.

Data Line Requirements

1. Data line cannot be via DSL or dial up service
2. Data Line should be on demand, not requiring additional set up or connections to access
3. Data Line should be separate from your organization’s network infrastructure, should not allow access to corporate information and must not require any domain clearances or network log-in to access.

If a dedicated LAN line does not comply with your IT Department’s networking and security protocols then Cold Jet recommends you acquire a dedicated modem with LTE SIM for this purpose.

Safety

Carbon Dioxide (CO_2) and Dry Ice Properties

At a temperature of -15°C (5°F) under normal atmospheric pressure, carbon dioxide has a density of 1.87 kg/m^3 (0.12 lb/ft^3) and is 1.5 times heavier than air. It is a colorless and odorless gas with a slightly pungent odor at higher concentrations and spreads along the ground. Carbon dioxide gas will collect in low-lying areas such as pits and cellars.

Dry Ice Production Process

The expansion of liquid carbon dioxide at pressures between 15-18 bar (217.6-261.1 psi) to atmospheric pressure is how Cold Jet Pelletizers produce CO_2-snow at a temperature of -78.5°C (-109.3°F). The CO2-snow is then compressed to form high-density dry ice pellets. These pellets are then used in the reformer to produce high density slices.

Safety Hazards

Dry ice is extremely cold and may cause severe frost bite or tissue damage when in direct contact with exposed skin. Always wear protective gloves and clothing when handling dry ice.

CO_2 is classified as a non-flammable and non-toxic gas. It is normally present in the atmospheric air at a level of approximately 0.04%. It is a normal product of metabolism being held in bodily fluids and tissues where it forms part of the body's normal chemical environment. Higher concentrations can cause suffocation.

Operate the reformer unit in a well-ventilated work area with continuous CO_2-level monitoring. The effects of CO_2 are entirely independent of the effects of oxygen deficiency. Therefore, CO_2 concentrations at 3-5% causes headaches, fast breathing and discomfort while higher concentrations may cause unconsciousness, suffocation or respiratory arrest. The legal exposure limit set by OSHA is a 0.5% average over an 8-hour workday.

Always use a CO_2 monitoring/alarm system when working with machinery that emits CO_2 in a confined room/space.

Operation and maintenance should only be performed by authorized and trained personnel. Below are some basic safety guidelines:

- Follow local governing codes to ensure a minimum standard of safety.
- Wear protective gloves, safety glasses, and ear plugs.
- Operate the unit in a well-ventilated work area with a CO_2 monitoring/alarm system.

Pre-Installation Checklist

The owner should use the checklist below to prepare for the installation. It is the owner's responsibility to verify all the necessary preparations that have been made for the installation site and meet the specifications and guidelines detailed in this publication.

Check off each item in the checklist as pre-installation preparations are completed. Once the checklist is complete, the owner or responsible party will sign and date the Pre-Installation Confirmation form and return it to Cold Jet.

Completed	Task
☐	The installation is indoors, well-ventilated, with sufficient clearances on all sides (including the top).
☐	The electrical connections are in compliance with the regional specifications described in the "Electrical Service & Supply" section of this document. Power has been connected to the machine
☐	The compressed air supply for the pneumatic system has been installed, connected and meets the specifications described in "Compressed Air Supply" section of this document.
☐	The appropriate type and amount of hydraulic oil is on site and available for use in the hydraulic oil tank of the unit.
☐	Internet connection for Cold Jet CONNECT® remote technical support has been ensured.
☐	Images have been provided to Cold Jet of the above-mentioned points.

Pre-Installation Confirmation Form

I hereby verify the pre-installation preparations listed above have been completed. By completing the checklist and signing this document, I acknowledge that Cold Jet will be onsite for the agreed-upon duration. Any additional time required onsite caused by the items listed on this checklist will be an additional cost, for which I accept and agree to pay. This includes the Cold Jet hourly rate and associated travel costs.

Customer:_____

Order:_____

Owner/Contact:_____

Signature_____

Date:_____

Notes/Remarks to Cold Jet: _____

Email the signed form to the to the Cold Jet project lead named on the front page.

Contact Information

Find the customer support and technical services contact information for your region in the table below.

USA – Cold jet
(World Headquarters)
6283 Tri Ridge Blvd
Loveland, Ohio 45140, USA
Phone (US): +1-866-874-9876
Phone (After hours): +1(513)440-3619
Email: service@coldjet.com

Canada - Cold jet Canada
1727 Industrial Road, Unit 1
Cambridge, Ontario N3H 5G7
Phone: +1-800-337-9423
Phone (After hours): +1(513)440-3619
Email: service@coldjet.com

Latin America, Cold Jet Latinoamérica
Calle Sinaloa, 901-3.
Colonia: Nuevo Repueblo
Monterrey, NL, Mexico
CP: 64700
Phone: +52 (81) 1097-0445
Phone (After hours): +1(513)440-3619
Email: soporte@coldjet.com

Belgium – Cold jet bvba
(European Headquarters)
Zona 1 Researchpark 330
B-1731 Zellik
Phone: +32 (0) 13 53 95 47
Phone (After hours): +1(513)440-3619
Email: service.eu@coldjet.com

Denmark - Cold Jet ApS
Industrivej 68
6740 Bramming
Phone: +45 76 56 15 00
Phone (After hours): +1(513)440-3619
Email: service.eu@coldjet.com

Germany – Cold jet GmbH
Obere Industrie Strasse 1
54595 Weinsheim
Phone: +49 (0) 6551 9606-0
Phone (After hours): +1(513)440-3619
Email: service.eu@coldjet.com

Poland – Cold Jet Sp. Z o.o.
ul. Łukowska 12, Oborniki,
Poland, 64-600
Phone: +48 798 33 88 00
Phone (After hours): +1(513)440-3619
Email: service.eu@coldjet.com

Spain – Cold jet Madrid
C/ Oporto, Portal, 3
Pol.Ind. Europolis
28232 Las Rozas de Madrid, Madrid, Spain
Phone: +34 91 426 79 63
Phone (After hours): +1(513)440-3619
Email: service.eu@coldjet.com

China
Room 111, Building 1, Jindu Road No. 1199,
Minhang District, Shanghai, 201108, China
Phone: +86 21 5296 7161
Phone (After hours): +1(513)440-3619
Email: service.cn@coldjet.com

Japan/APAC
1-20-4 Ishiwara, Sumida
Tokyo 130-0011
Phone: +81 3 6869 2665
Phone (After hours): +1(513)440-3619
Email: service.apac@coldjet.com