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COVID 19 READINESS: BULK OXYGEN SUPPLY GUIDANCE

Many hospitals are experiencing a drop in oxygen line pressure, a loss of the liquid and cylinder oxygen, etc.

Matheson sent out a Memo on 7/17/2020 addressing some concerns with the oxygen liquid supply freezing of the vaporizers. Please read Matheson guideline and immediately implement their recommendations.

In addition, I recommend the following:

1. Place large Industrial Fan(s) inside your Bulk storage area to blow air across the vaporizers, piping, regulators, concrete floor. Air movement will help De-Ice the equipment and floor.
2. Make sure you're also De-Icing the Pressure Build-Up circuit, typically located under the 02 Bulk Vessel.
3. Check your 02 Bulk supply and equipment every few hours to make sure the line pressure to staying between 50 – 60 psig at the Source.
4. Don't rely on the Suppliers Telemetry system to automatically notify them when the 02 liquid level or tank pressure drops. If you see the 02 liquid level gauge needle hit the Re-Order level, you should call your supplier immediately to notify them that you need your vessel to be filled.
5. Verify that the 02 Bulk alarms are functioning at your Master Alarm Panels. The alarms are:

   For Liquid Primary & Liquid Reserve: 02 Primary Liquid Level Low, 02 Reserve Liquid Level Low, 02 Reserve Vessel Pressure Low, 02 Reserve in Use.

   For Liquid Primary and Cylinder Reserve: 02 Primary Liquid Level Low, 02 Emergency Reserve Cylinders in Use, 02 Emergency Reserve Cylinders Low Pressure (1500 psig alarm set-point)

6. 02-line pressure is typically 50-55 psig inside the building. The 02-line high/low pressure switch is typically located downstream of the Main

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Building Shutoff Valve. If you have an EOSC (Emergency Oxygen Supply Connection) Fill-Box, there is a Main Line Check Valve – Ball Check Spring Loaded. You may hear banging, hammering in the piping at this check valve. This is due to higher than normal flowrate because of all the oxygen consumption. Your line pressure may drop below 50 psig due to the check valve causing a -restriction- in the piping.

7. I recommend you have the proper fittings/connections/ regulators/hoses, etc. to connect 02 "H" tanks to your EOSC if necessary.

8. Order extra 02 "H" tanks and "E" cylinders to have on standby.

9. Wear PPE gear when you go outside to check on the 02 vessel. Wear safety goggles, face shield, leather gloves, Ice Grippers on your shoes, etc. Lots of Ice on the ground may cause you to slip and fall. If the 350 psig safety valve(s) or 75 psig relief valve freezes over, they may immediately discharge 02 gas at (-) 0°F which could cause frostbite, etc.

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7/17/2020

COVID-19 Readiness: Bulk Hospital Vaporizer Guidance

Purpose:

Due to COVID-19, many hospitals are seeing increased numbers of patients requiring oxygen, or have switched from ventilators to high flow oxygen treatments. This document provides guidance to Matheson's medical bulk oxygen customers to assist in mitigating the risk associated with their vaporizers being overdrawn due to this increased demand.

Description:

Medical bulk oxygen supply systems consist of liquid oxygen tanks, ambient vaporizers, and a reserve oxygen supply (the reserve can be liquid or gas, depending on the size of the main tank). The vaporizers are sized based on the original design criteria and are used to convert the liquid oxygen into gaseous oxygen. If the usage requirement of gaseous oxygen exceeds the original design requirements, the system may be overdrawn and will cause an excess buildup of frost/ice. An excessive ice buildup will reduce the capacity of the vaporizers. Icing of the vaporizers needs to be addressed in order to prevent a potential harm to patients, and hazards to others working around the systems related to falling ice.

Equipment Evaluation and Monitoring:

Hospitals should visually inspect their bulk oxygen system daily for the buildup of frost/ice. MATHESON should be contacted immediately if the accumulation covers 50% or more of the surface area of the vaporizer or if frost is visible on piping entering the building.

It is also recommended that hospitals notify MATHESON of any recent or upcoming changes that could impact the operation of their bulk oxygen system – significant increase in the quantity of oxygen being used, changes in the type of oxygen treatments administered, opening of additional wings of the hospital, etc. may all have an impact on the vaporizers ability to meet the supply demands of a hospital.

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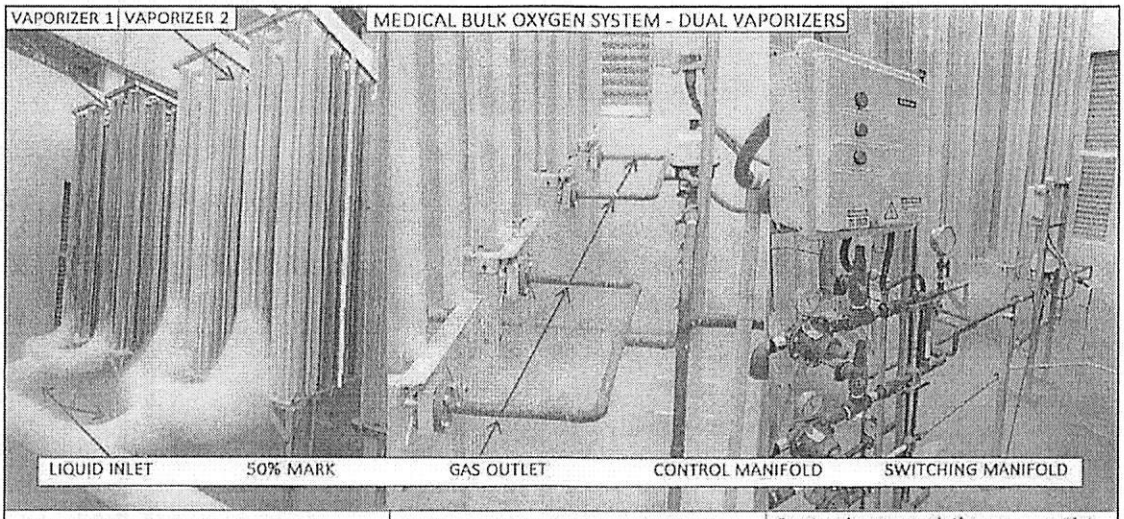
What to Look for on a Standard Medical Bulk Oxygen System:



An ice build-up on the liquid piping is normal. On standard systems with dual vaporizers, the flow is designed to periodically switch between units, which allows for thawing. If ice on the piping touches the ground as shown below, contact MATHESON immediately. 	Vaporizers 1 & 2 reflect normal operation. When frost or ice build-up reaches the 50% mark toward Gas Outlet, the vaporizers are operating at max capacity. Follow the Deicing Procedure and repeat as necessary during peak demand. Installation of shower heads above the vaporizers is highly recommended during the Covid-19 patient influx.	Frost or ice accumulation on gas outlet, switching manifold, or control manifold is indication that vaporization capacity has been compromised. Contact MATHESON immediately (1-800-284-0481) and follow the Deicing Procedure immediately until frost/ice is not seen on the gas outlet side of vaporizers. The vaporizers should be monitored hourly during peak demand. The same process applies to the reserve vaporizer.

Mitigating Actions:

If the build-up of ice exceeds the normal levels describe above:

- Contact MATHESON for support. Be prepared to discuss the following:
  - Estimated % of frost/ice (pictures are very helpful)
  - Current oxygen demand (cubic ft/hr, cubic ft/month)
  - Available equipment to assist with deicing – steam, water, fans with a power supply
  - Availability of high pressure back-up cylinders
  - Accessibility to the emergency oxygen supply connection

CAUTION:

- DO NOT ATTEMPT TO HAMMER ON THE ICE TO REMOVE IT. THAT METHOD COULD POTENTIALLY DAMAGE THE EQUIPMENT OR CAUSE A HAZARD DUE TO FALLING ICE.
- DO NOT USE PORTABLE HEATERS ON ANY PORTION OF THE OXYGEN SYSTEM

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Installation of Shower Heads / Sprinklers:

It is highly recommend to install shower heads / sprinklers over the top of each main vaporizer(s) if your existing vaporization system is approaching 50% ice/frost or if the facility will be administering high flow oxygen treatments. The shower heads should be installed 12" above each main vaporizer(s) and can be secured to the vaporizer frame using clamps only. Drilling is not permitted. Unistrut can also be used as bracing for shower head placement but must be clamped. Our Technicians will assist with guidance for installation upon request but cannot perform such installation. Please see the sample drawing of shower head placement below.