

## PRESSURE VESSEL DRYING PROCEDURE

This drying procedure should be used for vessels that will be used for oxygen service or any service that requires internal surfaces to be oil free and dry.

- 1) All standing water must first be removed from unit by removing all test flanges and plugs and tilting the unit to drain all water. Vacuuming is recommended if at all possible.
- 2) WARNING Shop air must not be used to blow out unit as it will contain oil.
- 3) After all standing water is removed, the unit must be heated to steam out any remaining water or moisture. This can be accomplished by isolating the unit from shop air. Units should be covered with plywood, tarps or anything that will withstand high temperatures and heaters placed under the units.
- 4) Units should be heated for a minimum of one hour with all vents and drains unplugged. At this time an internal visual inspection can be made to determine if the procedure is working well. If internal surfaces appear to be dry, proceed to Step 5. If it is not yet dry, continue to heat unit until inside is visibly dry.
- 5) At this time the unit should be uncovered and the heat removed. A dew point measurement should be taken to determine the amount of remaining moisture. A reading of 0 - +10 C at this point would be considered normal.
- 6) The unit should now be purged using dry nitrogen gas, at a pressure of roughly 20 - 40 psig, alternately plugging and opening vents and drains to remove any remaining steam. Internal temperatures of 200° F or higher at this time are normal.
- 7) Once a flow of nitrogen is introduced, shop air should not be permitted to re-enter unit. Therefore, the nitrogen should not be stopped until the procedure is complete and the unit is pressurized for shipment.
- 8) Dew point measurements should be taken at all openings at five minute intervals. There should be a noticeable decrease in dew point with each measurement. Readings at this time of 0 - -5 C should be considered normal.
- 9) Drain plugs and lower nozzle flanges should now be installed along with inlet nitrogen valve for shipment. Be sure to keep a constant flow of nitrogen through the unit at all times.

- 10) Dew point measurements should be continued to be taken in upper openings and these openings plugged until only one opening remains, the furthest from the nitrogen inlet, which will be plugged with a pressure gauge for shipment.
- 11) When the desired dew point is reached, the pressure gauge should be installed and the unit pressurized to 25 psi.
- 12) All plugs, flanges and fittings should now be checked for leaks using Snoop liquid leak detector or equivalent. Tighten where necessary.
- 13) A drop in pressure can be expected as the unit cools. A pressure drop of 5 psi can be considered normal as long as pressure stabilizes when temperature of the unit reaches 70° F or ambient shop temperature.
- 14) Once a leak free seal is assured, the pressure can be dropped for shipping. A shipping pressure of 10 psig is recommended.