

# CRYOGENIC PRESERVATION

## CHALLENGE

- Low pressure liquid delivery
- On-demand, consistent cooling

## SOLUTION

The delivery of low pressure liquid nitrogen is critical for the cryogenic preservation of blood, reproductive cells, vaccines, and other biological tissues and materials in storage freezers. Freeze dryers, or lyophilizers, are used for the reliable preservation of a wide variety of heat sensitive products and demands the highest standards of reliability and control, as does SEM NMR, mass spectrometer, and other laboratory equipment. A Semiflex®/Triax piping system transfers LN<sub>2</sub> from a high pressure bulk source to each use point without the inconvenience of swapping out Dewar tanks.

## HOW LIQUID NITROGEN TRANSFER WORKS

- LN<sub>2</sub> is plumbed from a high pressure bulk tank through a Semiflex® piping system
- The liquid enters a liquid/vapor phase separator and drops the pressure to atmospheric
- Triax piping gravity feeds the low pressure, subcooled liquid to the use point(s)
- Gas generated in the piping system is vented to atmosphere through the phase separator vent

## ADVANTAGES OF USING LIQUID NITROGEN

- Nitrogen is inert, abundant, and relatively low cost
- Lower freezing temperature means faster cooling
- Versatile - can be used as the primary or secondary means of cooling
- Less maintenance than mechanical freezing systems