Does the cold weather affect the use of nitrogen?

Nitrogen is one of the most valuable resources utilised in modern industrial manufacturing. A number of industrial processes use nitrogen throughout the year， which raises the question of the impact of cold weather on the use of the gas. This article will discuss the performance of nitrogen in cold weather and effective strategies for maintaining gas generating equipment at low ambient temperatures.

Can you use nitrogen in winter?

The simple answer to this question is yes. Nitrogen can be used effectively for a variety of purposes， even in winter. The freezing point of nitrogen at atmospheric pressure is -346° F. This is much lower than the typical industrial temperature obtained in winter. Therefore，nitrogen for industrial use will retain its unique physical and chemical properties to drive industrial production even under extreme winter conditions.

In addition， molecular nitrogen liquefies at -320.4° F to produce liquid nitrogen or LN2. This liquefied state of nitrogen has countless commercial and industrial applications.

In short， nitrogen can be used all year round， even at sub-zero temperatures to drive small and large process/manufacturing applications.

Nitrogen performance in cold weather

Like all other chemical elements， compounds and mixtures， gaseous nitrogen undergoes pressure changes in response to changes in temperature. As the temperature drops， the pressure of gaseous nitrogen also drops according to the laws of physics.

However， high purity nitrogen produced by a gas generator contains less moisture and impurities than air， making it more stable and unstable in terms of pressure changes as the temperature drops. Nitrogen can therefore be used effectively in cold thermal conditions and with less adjustment of operating pressure.

Winter maintenance of nitrogen generators (PSA nitrogen generators， nitrogen plants)

Maintenance of nitrogen generators (PSA nitrogen generators， nitrogen equipment) during the winter months is very similar to that recommended for other seasons. The key consideration should be the elimination of contaminants that could damage sensitive equipment components.

The following outlines the basic steps to ensure that your nitrogen generator remains in optimum operating condition even during the winter months.

Clean your equipment regularly

Regular cleaning of your nitrogen generator is recommended to prolong its life and maintain efficiency. All parts of the nitrogen generator (PSA nitrogen machine， nitrogen equipment) should be carefully cleaned to remove moisture and particulate contaminant build-up， as well as to avoid the electrical components of the unit.

Pay close attention to gauges and indicators

Standard nitrogen generators (PSA nitrogen generators， nitrogen equipment) have a control panel built into their surface with various gauges and indicators that alert their operators to the need to take action. Careful monitoring and timely response to indicator warnings， such as leaks and valve failures， will extend the life of the equipment for extreme weather conditions， including winter.

Regular filter changes

Most nitrogen generators have integrated carbon and coalescing filter units. Regular replacement of these filters in accordance with the generator manufacturer's recommendations will ensure that the nitrogen production process remains optimised.

Valve and sensor replacement

Standard nitrogen generators have oxygen sensors which need to be replaced every few years. In addition， the unit valves will wear out over time and should be replaced if necessary.

Correct start-up and shutdown procedures

Nitrogen generators that are not in active use should be switched on and off in accordance with the manufacturer's recommendations. Depending on the specifications of the equipment， most manufacturers provide start-up and shut-down instruction manuals which should be followed by the equipment operator. It is not recommended to bypass the start-up procedure or to leave the generator running idle if you want to prolong the life of the equipment.