Nitrogen Leak Test Procedure - How to Test Nitrogen

Nitrogen is used in many industries for leak testing. While it is best known for its use in oil industry production for pressure testing of pipelines and sealed vessels， nitrogen is also popular for leak testing in a range of other industries.

There are several advantages to using nitrogen for leak testing. Nitrogen is inert，odorless， and has a low water content， so it does not have many of the problems associated with using air or water for pressure testing.

In addition， nitrogen is ideal for testing in a variety of locations thanks to portable nitrogen generators (PSA nitrogen generators， nitrogen equipment). These units can produce unlimited amounts of nitrogen where it is needed conveniently and economically.

What is a leak test?

A nitrogen leak test procedure is performed to verify the integrity of the pathway through which it flows. This analysis process is performed on pipelines， storage containers and any other pipelines that carry industrial products. Leak testing using nitrogen can be performed prior to the first operational use of the equipment， or at intervals during daily operation.

Leak detection allows industrial equipment operators to safely transport their products while minimizing the risk to personnel from hazardous chemicals transported through production channels. Examples include testing for leaks in piping， refrigeration systems，checking the tightness of food processing facilities， and ensuring the functionality of newly installed fire sprinkler systems.

Why use nitrogen for leak testing?

Nitrogen has many physical properties that make it uniquely suited for leak testing. It is an inert gas that is virtually unresponsive under normal industrial conditions. Gaseous nitrogen also prevents oxidation/corrosion reactions by eliminating water vapor and oxygen from sensitive equipment.

These reasons make leak testing with nitrogen a superior choice over other methods，such as hydrostatic pressure testing.

How to Perform Nitrogen Leak Testing

Nitrogen leak testing follows a sequential set of steps， depending on the nature of the equipment to be inspected. The process typically involves introducing a steady stream of gaseous nitrogen under increasing pressure into a selected pipe， vessel or vat.

Various mechanical and automated methods can then be used to identify defects in the industrial component being analyzed.

What is a pressure test?

Pressure testing is an important aspect of pipeline testing prior to first use， as it determines whether or not it is fully ready for use. During the pressure testing activity，various parameters are analyzed， including the following

Maximum allowable pipeline capacity

Leakage check

Stability of joints

Pressure rating

Reliability of components

After careful consideration of the above parameters， operators will be able to determine whether their newly assembled pipelines will be able to withstand the rigorous requirements of full load operation.

In newly assembled pipeline networks， several pressure tests may be required to detect and correct defects before they can be granted full operational status. Suzhou XITE Gases has a pipe filling calculator that makes it easy to calculate the gas volume during a pressure test.

Why use nitrogen for pressure testing?

The reasons surrounding the use of nitrogen as a driving force for pressure testing are due to its favorable physical and chemical properties. First， nitrogen is an odorless，colorless and chemically inert gas， which means there is no reaction with the equipment components undergoing the pressure test.

Moreover， nitrogen does not expose sensitive equipment to the accumulation of moisture， corrosion and particulate contaminants; instead， gaseous nitrogen used to perform pressure tests has the added benefit of displacing oxygen， moisture and particulate contaminants from the equipment under test.