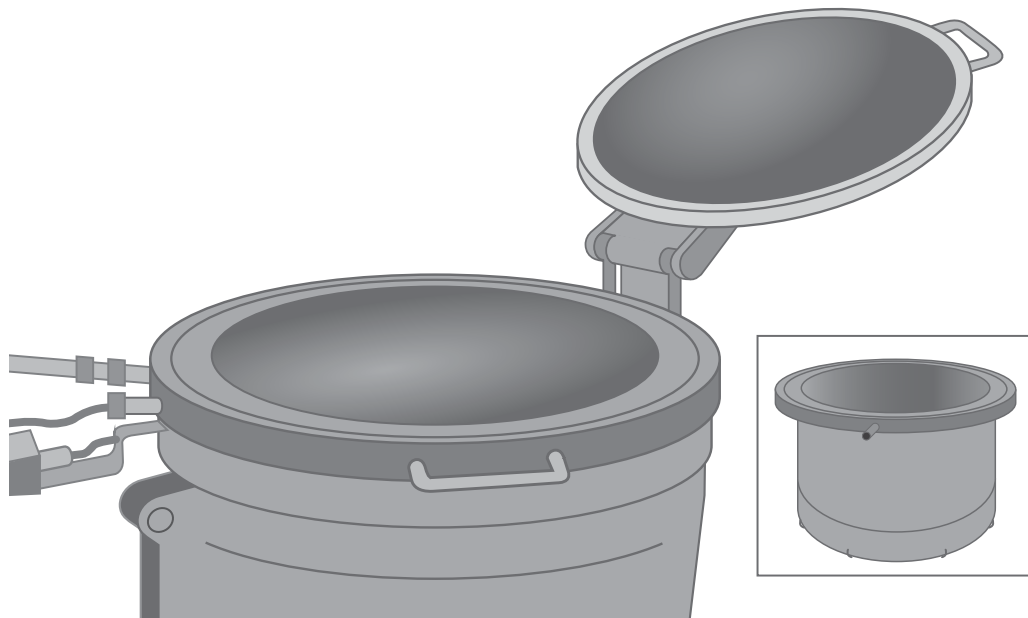


Nitrogen Sluice for Maximum Safety.



Nitrogen sluice system integrated in the charging hole of a mixer with a capacity of 4,500 pounds

Situation

When industrial producers charge mixers, reactors or other processing equipment with bulk solids, air enters the equipment along with the charge. Producers must minimize the amount of oxygen entrained into the equipment to ensure the highest degree of safety. This is particularly true in manual charging operations.

Description

The Messer nitrogen sluice reduces the quantity of atmospheric oxygen drawn into vessels when operators open and manually charge them. The sluice, or inerting lock, specifically designed by Messer, purges the charging opening with inert gas while using only small amounts of nitrogen. Each sluice can be installed permanently or mounted temporarily before charging begins.

Messer offers the nitrogen sluice in a range of sizes, so the system can be customized to vessel openings of any diameter. The sluice includes a nitrogen control and supply system and, if appropriate, an oxygen analysis system.

Applications

The nitrogen sluice system is an excellent option wherever reactor vessels or mixers are charged manually and an inert atmosphere is necessary to ensure safe operation and maintain production quality. It has delivered excellent results across numerous industries, including pharmaceutical, chemical and food processing.

Features

- Multiple sluice designs, a solution tailored to every application
- Minimal admission of oxygen into the vessel during opening and charging
- Low nitrogen use
- Easy installation in charging openings
- Easy day-to-day operation

Adding value

Increasing Safety.

The nitrogen sluice increases the safety of plant operations by significantly reducing risks associated with handling flammable materials.

Ensuring Product Quality.

Both oxygen and moisture can react with certain chemicals and adversely affect process quality and yield. The nitrogen sluice ensures the proper atmosphere, greatly improving product quality, purity and yield.

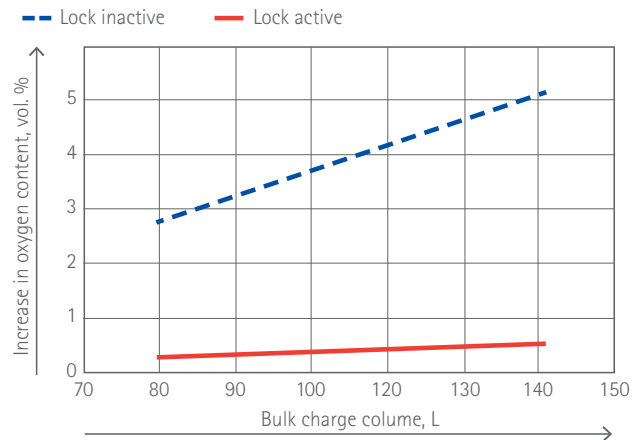
Reducing Production Costs.

Increased product purity and yield may decrease product cost and enable operators to streamline the separation process.

The nitrogen sluice in action

The diagram presents results from practical charging of a vessel. The vessel volume is approx. 2.3 m³, or 80 ft³; the charging hole diameter is approx. 500 mm; the O₂ content before charging is approx. 2 vol. %. The rise in O₂ level varies linearly with the charge volume. The increase in oxygen concentration can be greatly reduced by activating the nitrogen-purged lock (approx. 5 to 20 Nm³/h, or 140-700 scf/hr, depending on model). In other words, the inert gas lock is an effective way to cut down the admission of air or oxygen entrained with the charge material.

Change in O₂ concentration in vessel versus bulk charge volume with and without active lock.



Inert gas supply

Messer delivers liquid nitrogen in vacuum-insulated tanks combined with evaporators. Standard tanks have liquid capacities from 3,000 L to 80,000 L, and the selected tank size suits the application.

Services and support

Messer supports the nitrogen sluice system with these additional services.

- Experimental testing
- Safety analyses
- Software-assisted, customized problem solving and determination of optimal nitrogen supply mode
- Delivery of the nitrogen sluice plus the requisite instrumentation and control
- Installation and commissioning



Messer Americas

200 Somerset Corporate Blvd
Suite 7000
Bridgewater, NJ 08807
Phone: 1-800-755-9277
sales@messer-us.com
www.messer-us.com



Part of the Messer World

Copyright 2019 Messer North America, Inc. All rights reserved.