



INSTRUMENTS • VALVES • CONTROLS

PROTECT PEOPLE, PRODUCT, AND ASSETS

TANK BLANKETING AND OXYGEN MEASUREMENT IN SAFETY-CRITICAL AND PROCESS APPLICATIONS

Look to Lesman for help putting proper measurement and control systems in place to manage your tank blanketing applications

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What is tank blanketing and why should you care?

In flammable applications, tank blanketing is used for safety, and in non-flammable applications, it protects raw ingredients or finished product.

Fire needs three elements: fuel, oxygen, and heat, also known as the fire triangle. Often times, the media in the tank is flammable and can serve as the fuel element. Oxygen fills the empty space in the storage tank, and a random spark or static electricity can ignite a fire or an explosion. In many applications the only element in the triangle you can control is oxygen. In non-flammable applications, oxygen can create a chemical change leading to material oxidation and spoilage.

Tank blanketing, or padding, refers to filling the head space of a liquid storage tank with an inert gas. Nitrogen is the most commonly used gas because it is widely available and cheaper than other inert gases. This process removes oxygen from the tank and prevents tank contents coming in contact with oxygen.

Benefits

- Creates a non-flammable environment in storage tanks and vessels to protect personnel and plant assets
- Prevents material oxidation and spoilage
- Protects against contamination, degradation, or chemical changes

Applications

- Storage of hydrocarbon liquids such as Benzene, Hexane, Toluene, Styrene
- Fire suppression of Biomass fuels
- Mixing vessels used to dissolve viscous adhesive gels in Hexane
- Oxidation reaction for Noryl resin suspended in Toluene
- Oxidation reaction between p-Xylene and acetic acid to make PTA (purified terephthalic acid)
- Industrial centrifuge, separation of makeup solids from hydrocarbon liquid
- Glove boxes used in all types of medical, biomedical, and pharmaceutical processes
- Food and beverage raw material, ingredient, or finished product storage



Get full specifications and learn more at bit.ly/mark-608 and bit.ly/mark-508

Pressure Regulators For Tank Blanketing Applications

- Sizes: 1-1/2" and 2"
- Extra-large diaphragm to give set point control as low as 2.0" WC
- ANSI Class VI Shutoff
- 25 psig maximum downstream pressure
- Self-operated — no external power source required

Padding (In-Breathing): Mark 608 Low Pressure Regulator

The Mark 608 is a gas pressure regulator for large tank blanketing applications or other low pressure gas regulation. In a tank blanketing application, the Mark 608 is used to control the flow of the blanketing gas into the tank to maintain the proper positive pressure.

De-Padding (Out-Breathing): Mark 508 Back Pressure Regulator

The Mark 508 gas back pressure regulator is the ideal valve for low-pressure gas regulation. The Mark 508 can be used to vent gas from the tank to prevent the blanketing pressure from rising to a level that could damage the tank. During filling, the Mark 508 opens to allow gas to escape as the vapor space in the tank grows smaller.

Learn more about process regulators for tank blanketing application
Watch Tank Blanketing 101 at bit.ly/tank-blanketing-101





Panametrics **Saves Money, Increases Safety**

To maintain a non-flammable environment in the head space of a vessel, the oxygen level must stay within a certain range or below a specific limit. Ambient air consists of 21% oxygen, so any amount of ambient air getting into the vessel could be potentially dangerous. In non-flammable applications, maintaining low levels of oxygen in the tanks is crucial to prevent material oxidation or spoilage.

Constantly and blindly purging nitrogen into the vessel to maintain the blanket can be costly. When you know the oxygen concentration within the vessel, you can better control the nitrogen blanket supply, and be confident that you are providing a safe working environment without wasting gas.



Panametrics oxy.IQ Loop-Powered Oxygen Transmitter

- Two-wire, loop powered 4–20 mA transmitter
- User selectable ranges from 0–10 ppm to 0–10000 ppm or 0–1% to 0–50% oxygen
- Field-replaceable electrochemical sensor
- Display shows measured value, sensor lifetime indication, NAMUR error indication

The Panametrics oxy.IQ measures oxygen in ten different selectable ppm ranges and seven selectable percentage ranges, using proven sensor technology to accurately measure oxygen in a variety of gases. When used with a zener barrier, the oxy.IQ can be mounted in hazardous locations.

Get full specifications and learn more at bit.ly/oxy-iq

Panametrics XMO2 Thermo Paramagnetic Smart Oxygen Transmitter

- 24 VDC powered 4–20mA transmitter/ analyzer with RS232 interface
- Measures oxygen in ranges from 0 to 1% and 0 to 100% by volume
- Non-depleting thermo paramagnetic sensor
- No moving parts; maintenance-free
- Corrosion-resistant design
- Automatic background-gas compensation

Panametrics' XMO2 is a tough and compact maintenance-free oxygen transmitter. It is weatherproof, explosion-proof, flameproof. Its dual chamber design makes it resistant to contamination and flow variations. Integrated signal processing provides improved accuracy and automatic compensation for background gas variations and atmospheric pressure effects. XMO2 can be remotely programmed through its RS232 interface, or you can connect it to a field-mount display for local measurement indication and configuration.



Add Explosion-Proof Field-Mount Display

Get full specifications and learn more at bit.ly/panametrics-xmo2



Panametrics Sample Systems for Oxygen Analyzers

Sample systems provide sample gas to the analyzer at optimal pressure, temperature, flow rate, and cleanliness. They are used for isolation, filtration, and pressure/temperature/flow control of analyzer systems.

More than 90 pre-engineered sample systems are available and validated for most applications. They are backed by successful experience of thousands of installed systems worldwide.

Benefits of using a sample system

- Higher accuracy and measurement reliability
- Extends analyzer life by preventing contamination
- Reduces analyzer maintenance time and costs
- Facilitates field calibration of analyzer

Learn more at bit.ly/sample-systems

SUCCESS!

An engineer at a specialty chemical plant was having a problem with their existing oxygen headspace system. The liquid medium in the tank wasn't compatible with wetted parts of the transmitter and caused it damage. Plus, the liquid would condense and aerosolize in the headspace, resulting in sample tubes plugging often, and requiring costly continuous maintenance.

By redesigning the sample system, including adding a demister sample probe to reject the aerosols, the customer was able to reduce maintenance on the sample system, and deliver a clean, consistent sample to the chemically compatible oxygen sensor.

This solution dramatically reduced maintenance time and cost, improved measurement reliability, and increased confidence in the system's performance.

Lesman

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Due to manufacturer agreements, some products may not be available in all Lesman markets or geographic areas.

Get help designing an effective tank blanketing system to protect your personnel, plant neighbors, inventory, and process equipment.

Components required for tank blanketing:

1. Nitrogen supply
2. Padding regulator
3. Sample system
4. Oxygen analyzer
5. Control system
6. De-padding regulator

