System Studies Incorporated

System Studies Nitrogen Tank Sensor

Offering remote monitoring of temporary nitrogen tank air sources

Nitrogen cylinders are invaluable air sources when used in the proper situation. They give temporary protection to underground and buried cables during splicing activities. They also provide an emergency backup air source for central office air compressors.

When you use a nitrogen cylinder in these applications or to supplement air supply to an individual cable, it is important to know how long the cylinder will last so you can replace it with a full tank if necessary.

One of the ways to determine this is to manually measure the flow rate into the cable(s) being fed. A Flow Finder™ installed in the pressure feed tubing between the high pressure regulator and the cable provides the flow information needed to compute the number of hours the tank can be used before it empties.

An easier, more automated method of determining nitrogen cylinder life is to use System Studies' Nitrogen Tank Sensor (P/N 9800-4430). This transducer, when used in a PressureMAP™ monitored air pressure system, not only indicates a percentage of the remaining tank capacity, but it also alarms when that capacity drops 20% or more, of if the remaining tank volume is less than 20% of total volume.

What this means is that you won't get caught coming up short — either in tank volume or your estimated time frame for replacing a tank.

Here's How it Works

The Nitrogen Tank Sensor is a stainless steel, cylindrical device that threads into the high pressure side (tank side) of the cylinder's pressure regulator. It can also be used to monitor multiple nitrogen cylinders when they are pneumatically plumbed together. The sensor measures tank pressure from 0 to 3,000 Pounds per Square Inch (PSI) and outputs this information as a loop current value in the range of 4 to 20 milliamperes (mA).

The device is powered by voltage — in the range of 10 to 48 volts DC — supplied over a pair of dedicated conductors by a 289H Loop Surveillance System (LSS)™ monitor or uM260 Micro Monitor™. PressureMAP calls the monitor, scans the device reading, and converts the PSI value to a reading which represents the percentage of remaining tank volume. Calls are made on a scheduled basis or at the request of the user.

Physical Description

The System Studies Nitrogen Sensor (P/N 9800-4430) is a self-supporting, cylindrical stainless steel transducer which measures approximately 3-3/4" long x 1" in width. It is supplied with 36" of conductor sheath which contains plastic-insulated, 24-gauge conductor pair.

One end of the sensor (the end opposite the conductor tubing) has a 1/4" NPT male thread, which enables the device to be screwed into a fitting on the regulator device at the nitrogen tank. This arrangement simplifies installation and eliminates the need for an installation kit.

PressureMAP Device Type

PressureMAP's device type "MB" is used to designate the Nitrogen Tank Sensor. A four star alarm is generated for this device when a 20% drop in measured volume occurs within 24 hours. A four alarm is also generated when less than 20% of measured volume remains. Additionally, if a reading problem is detected on the device pair, a verbose alarm is generated for the device.

Sensor Specifications

Electrical The Nitrogen Tank Transducer is designed to operate on a dedicated pair having a maximum of 1500 ohms loop resistance. The electrical conductors (for connecting to the designated monitoring pair) are not polarity sensitive. Measurement pair is 24-gauge copper, PIC-insulated, 36" in length, supplied in a protective sheath.

Excitation 10 to 30 V.C. (supplied from 289H LSS, uM260 Micro Monitor or equivalent)

Output 4 to 20 mA (2-wire)

Construction The transducer's circuit board is housed in a stainless steel cylinder with a 1/4" NPT-M thread on one end and conductor pair assembly on the other.

Physical size The sensor housing measures 3.780" long x 1.058" in width. Its cylindrical diameter (OD) is approximately 0.875".

Weight Approximately 4.5 oz without tubing

Model Designation Part No. 9800-4430

Operating Temp. Range -55 to +195°F

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