

Ionix PE Static Eliminator Field Evaluation

Description: To evaluate the effectiveness of the Ionix PE Static Eliminator.

Status: Tests were pursued but static discharge situations at the meter set could not be identified.

BENEFITS

Ionix Static Eliminators were introduced in the 1990s into the gas industry to eliminate static charge that is generated inside the PE pipe to avoid accidental ignitions and/or pinhole leaks. The benefit to gas companies is that it can provide a greater level of safety during PE pipeline repair operations and that the integrity of the PE pipeline will not be compromised. For example, there have been past documented incidents where utility workers were injured during squeeze-off operations. It was later discovered that when the pipe became compromised during the squeeze-off process, there was sufficient internal electric static charge present to potentially cause a gas ignition.

BACKGROUND

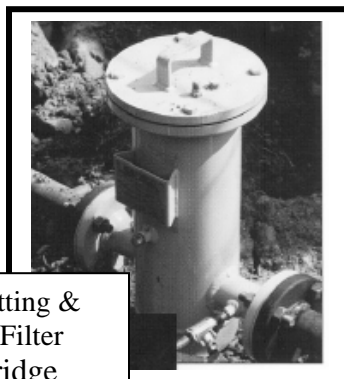
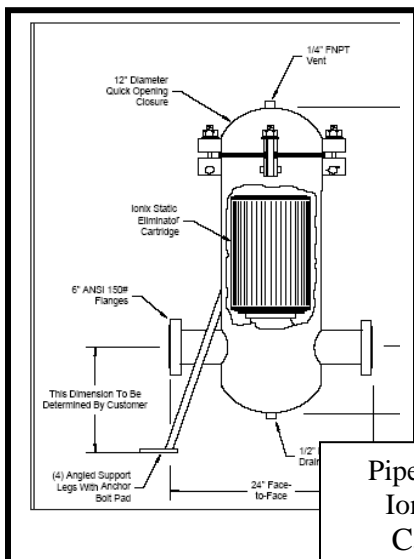
Polyethylene (PE) is the pipe material of choice for the gas industry. However, since its inception, electric static charge has been a concern when working in and around PE facilities. Safety procedures (e.g. pipe-ground and surface wetting technique) were developed to dissipate static charge on the outer surface of the pipe and have been effective in reducing incidents and injury to gas operators. Nevertheless, even with these special precautions in some instances, some level of static charge may in some limited cases remain on the inside surface of the pipe.

Ionix Technologies Inc. was formed in 1994 to manufacture static eliminators for use in a wide range of industries such as: Commercial Printing, Plastic Fabrication and Auto Refinishing.

Ionix developed a special chemical treatment process that claimed to effectively eliminate internal static charge from PE pipe. Gas utility field tests were conducted at PSE&G, NiCor and Memphis Power and Light with successful results in reducing or eliminating static electric accumulation on the inside surface of PE pipe.

TECHNICAL APPROACH

The objective of this project was to evaluate the effectiveness of Ionix applications with respect to eliminating static charge from the inside surface of polyethylene pipe within NYSEARCH member gas systems. To accomplish this, two field sites were selected. One field location required a pipe fitting and Ionix treated cartridge to be installed within a PE gas pipe network. The other site was setup to inject the newly developed Ionix MA (Mercapton Additive) material into the gas system via an odorant injection point. Ionix Technologies supplied all the materials (Cartridge and MA liquid), training and support necessary to accomplish both field tests. Participating member companies provided labor, equipment and materials needed to install, monitor and report on the



Pipe Fitting & Ionix Filter Cartridge

effectiveness of Ionix in their system. A test protocol to measure static charge was recommended by Ionix Technologies. The test protocol required a static voltage instrument to obtain static charge readings at service risers at various residential buildings. Service risers were used in lieu of exposing buried PE pipe to avoid making costly excavations. Each field test had four or more service riser monitoring points positioned downstream of the Ionix application. This approach was intended to provide an adequate level of assurance that if static charge is eliminated at the service risers located at end points of a gas network, then static buildup would also be eliminated in the pipe sections in-between. The first of the two test sites was hosted by Public Service Electric and Gas (PSE&G) in Westampton, NJ and the second was hosted by Con Edison in Somers, NY. The PSE&G test site was chosen to inject Ionix MA into the gas stream by mixing it with Methyl Ethyl Glycol (MEG) at a regulating station. The MEG acts to keep the jute in the cast iron joints

from drying out. The Con Edison test site was selected for the Ionix filter application which required a fitting to be installed into a supply pipeline.

PROJECT STATUS

The static charge voltage instrument that was recommended by Ionix Technologies was unable to detect internal static buildup at standard steel encased PE service risers. Experimental work performed at Con Edison and NiCor established that the metal casing of the service effectively blocked the internal electrostatic field from being detected. A static charge test performed in Benton, KY showed that internal static charge can only be detected on exposed sections of PE pipe. This further validated project findings and the inability to document static discharge at service risers.



Static Voltage Reading on Exposed PE



NYSEARCH officially closed this project based on the fact that Ionix testing performed in the past eliminated internal static charge on exposed PE pipe.

HIGHLIGHTS

- Past field tests indicate that the Ionix application is effective at eliminating internal static charge
- NYSEARCH field tests did not result in detection of internal static charge on encased PE service risers
- Internal static charge can only be detected on exposed PE pipe
- Documented pinhole leaks on PE pipe appear to be extremely isolated

FOR ADDITIONAL INFORMATION

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