Blockages and Broken Pipes – Do You Know if Your System is Ineffective Due to Freezing in Pipes?

Maintaining optimal performance for a power generating or chemical processing facility's fire protection system demands a great deal of attention. Plant staff must continuously monitor the Fire Alarm Control Panel, conduct regular testing at prescribed intervals and perform ongoing system maintenance, along with other related tasks. Amongst all of these duties, a critical consideration is sometimes neglected– freezing pipes. Most power generating or chemical processing facilities in the United States are susceptible to freezing temperatures during the winter months. This means that water that is subjected to these cold temperatures will inevitably freeze. If the proper measures are not taken to prevent water from freezing within pipes, the consequences can be disastrous.

Ice within sprinkler pipes can result in costly damage, such as the costs associated with a separated pipe, or it can block water flow, rendering systems ineffective during a fire

Is Your Facility at Risk for Frozen Pipes?

There are several different conditions that can result in frozen pipes and any facility that is located in a cold-weather area is at risk. Perhaps the most common incident that results in freezing pipes is inadequate drainage of the system following activation. Whether the system was tripped because of false detection, a routine inspection or an actual fire, failure to thoroughly drain the residual water will result in freezing if the ambient temperature is sufficiently cold.

Another circumstance that can subsequently cause water to freeze is the installation of a wet pipe system in an area that is not heated. In new construction applications, the heat may not be functional at the time that the fire protection system is installed. The lack of heat allows the potential for pipes that are continuously filled with water to freeze.

Costly Damage and Nonfunctional Sprinkler Systems – The Consequences of Frozen Pipes

The extent of the damage incurred from frozen pipes varies, depending upon the diameter of the pipe, the amount of water present and the temperature of the environment. Typically, the grooved or threaded fittings are the first part of the system to succumb to the stress caused by the expansion of the ice. However, if initial damage goes unnoticed, it is possible that the problem can escalate until a pipe itself bursts, propelling the resulting damages into the tens of thousands of dollars. Impairment to the system's header, switches, air gauges and water gauges are also associated with frozen pipes.

A less obvious impediment to the system occurs when a mass of ice creates a blockage within the pipe, hindering or completely blocking the flow of water. This situation is particularly hazardous because it is not overtly apparent that the system is not capable of functioning at full

F.E. MORAN PLANT SERVICES
2265 Carlson Drive, Northbrook, IL 60062
847-849-8720 · www.femoranshs.com · femoranshsinfo@femoran.com

capacity. It is possible that a plant could be completely oblivious of an ice blockage until a fire occurs and a sprinkler system fails to discharge water.

Simple Solutions to Eliminate Costs and Mitigate Risk

In perspective of the potentially costly damage or consequences of a malfunctioning system, the solutions that a plant can put into place to prevent freezing pipes are relatively simple. In scenarios where a system has tripped and there is lingering water within the pipes, the water must be drained. Before the valve is reset, the main valve, any low areas, or drum drips, should be drained to rid the system of any excess water. This straightforward, yet effectual, practice should be executed every time water enters a dry pipe to prevent freezing water.

Pipes that are continuously filled with water but are exposed to cold environments, such as pipe leading from a valve house outdoors, require a solution that will maintain the temperature in the pipe above freezing. Heat tracing these pipes is an effective method for preventing ice blockages or damage to the system caused by expansion, and involves running heat-emitting wire along the pipe.

Although these solutions are fairly basic, plants too often incur cost and put their facility at unnecessary risk because the issue of freezing pipes was either overlooked or the plant staff was not aware of the gravity of the consequences. After a system has been installed and tested, it is critical that staff members are fully trained about how to prevent freezing pipes and that continual education occurs at the facility to train new employees and remind existing staff of these best practices.

F.E. MORAN PLANT SERVICES
2265 Carlson Drive, Northbrook, IL 60062
847-849-8720 · www.femoranshs.com · femoranshsinfo@femoran.com