



AST's Need More Piping Protection

Some people tend to view ASTs as the clear solution for easy tank management and compliance with EPA and fire safety regulations.

Visual inspection is not enough



Some people tend to view ASTs as the clear solution for easy tank management and compliance with EPA and fire safety regulations. One thing that I feel perpetuates this myth has to do with the most obvious feature of ASTs. With ASTs, people can visually inspect the tank for leaks.

Undetected leakage

It is reasonable to assume that if one installs the tank aboveground, undetected environmental damage is eliminated. In reality, however, the risk is the same for any tank system; it is just easier to see what has happened with an AST.

An aboveground tank is easier to inspect than an installed underground tank. A person can easily verify any alarm indication with a simple visual inspection of the tank system. As long as the tanks are placed on an impervious foundation or have containment, leaks can be visually confirmed and repaired before a catastrophe occurs.

Although ASTs have many benefits, they also have the potential for undetected leaks from associated piping systems. The piping associated with ASTs—that is, the aboveground portions—are easy to visually inspect and detect leaks. However, underground piping poses greater complications with ASTs.

As a general statement, I believe that any piping associated with aboveground storage tanks installed underground does not have adequate leak detection, unless the tank is installed in secondary containment. Additionally, unless the interstitial space is monitored continuously with leak-detection equipment or frequent visual inspections, a release will go undetected.

Suction systems are not immune to this as well. In fact, they are every bit as vulnerable to undetected releases as pressurized underground piping since the piping is under pressure in an AST system.

I see many ASTs with leak-detection equipment designed for USTs. And most of the equipment is disabled because of operational problems with false alarms. I have seen only one proven method

used to provide leak detection for underground buried piping associated with ASTs: a combination of secondary containment and interstitial monitoring. With the piping underground contained and monitored, along with regular visual inspection of all the aboveground components, an operator can detect a release and correct the problem.

In watching new products being offered for the AST market, I have come across many new or improved devices. Items such as anti-siphon, zero-pressure solenoid and pressure-regulating valves are being designed for AST piping systems, all providing help in limiting the size of a release from AST piping. (A zero-pressure solenoid valve requires no backpressure to close.) However, none of these devices provide the function of leak detection. There seems to be a huge void of technological developments for leak-detection systems that have been specifically designed for use with ASTs and its associated piping.

Leak detection for USTs

For USTs, on the other hand, there are a variety of options for piping leak detection. And many have the potential for AST applications. However, most manufacturers of these devices with a proven record with USTs express caution.

They tell me that their equipment should work for AST applications, but they have not conducted any testing and so they do not recommend them.

There are situations in which ASTs offer clear advantages over other systems to store and dispense motor fuels. However, because of the law of gravity, any components below the liquid level, including buried piping, are extremely vulnerable to releases that can go undetected. This fact tends to diminish any advantage that ASTs offer.

I like to remind people that regardless of the type of tank system used, the majority of the releases occur in the associated piping systems. Unitized ASTs—with the pump, dispenser, and piping as an integral part of the tank have the fewest leak-detection requirements. However, ASTs with components installed any distance away from the storage tank, and especially if installed below grade, require special considerations.

I feel the industry has done a good job in advancing the technology of the storage tanks used aboveground today, but there is ample room for developing technology for release detection on the piping associated with ASTs.

When designing, installing or operating any AST, it is important to consider the potential impact of situations in which the liquid level is above any outlet of the system. Leak detection for the piping of ASTs requires careful consideration. Without it, gravity will drain the tank.

Jim O'Day is President of O'Day Equipment, Inc., Fargo, ND.