



Leak Detection for Your Customer's Home

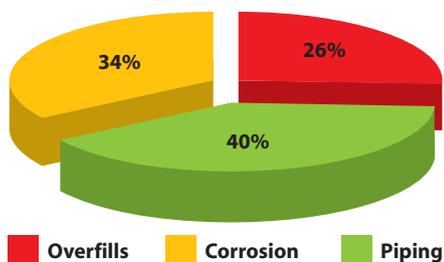
By Mike Freill

AS THE OILHEAT INDUSTRY LOOKS to improve the environmental performance of residential Above Ground Storage Tanks (ASTs), leak detection is an important piece of the puzzle.

Leak detection is an inexpensive and valuable concept, but due to its relatively recent introduction (the past five years), little is known or understood about it. This article is intended to help educate fuel and heating contractors on the need for complete leak detection systems, as well as the design and installation requirements.

Before looking at how leak detection works, it is important to understand why the concept is important. Recent statistics on oil system failure indicate that the tank is not the only area that needs attention. For example, statistics for indoor ASTs indicate that the problems facing the industry are more than the corrosion of old steel tanks. Sixty percent of the leaks from inside ASTs relate to overfill and piping issues. Leaks from piping can originate in the filters, fittings, burner and connections. For an effective prevention system all of these areas must be protected.

Inside Above Ground Storage Tanks: Sources of Leaks



This overview is focused primarily on inside storage, but outside storage can suffer from piping and corrosion factors as well. In fact the data confirms that there are more serious leaks associated with outside and underground storage, so dealers should do everything possible to convince the homeowner to keep the tank inside. The primary focus here is on the most common installation, that being the inside UL 80 AST.

The "No Drips On The Floor" Approach

If adopted by the Oilheat industry, the "no drips on the floor" approach would result in the elimination of the majority of environmental issues we have today relating to oil storage. What is the "no drips on the floor" concept? Essentially every point in the oil storage system would have a backup system, in the event the primary system fails.

Essentially to be effective, a "no drips on the floor" concept requires a release prevention barrier (RPB) for the entire oil storage system, not just the tank. An RPB is defined as a liquid containment boundary/liner that is impermeable and composed of material compatible with the product stored in the AST. The barrier meets proper engineering strength and elasticity standards. The RPB must be installed under the bottom of the AST with good engineering practices to contain and channel leaked product in a manner that provides for early release detection through the required owner's periodic inspections.

Most fuel lines today are manufactured with a plastic RPB. Combining plastic-coated fuel lines with containment boundary/liners under the tanks and burner area enables the complete storage system to be protected.

The RPB is the foundation of the leak detection concept. Add to the system a simple leak alarm placed where it can provide early release detection and you have complete protection for the home. Statistically, if the industry adopted leak detection as a standard, 98 percent of all the environmental incidents with home oil storage would be eliminated.

Even the basic step of installing a containment tray under a tank will eliminate more than 75 percent of the known incidents. NORA has recognized this fact and recommends a tray or containment device be installed with every new tank. An installation video can be purchased from NORA, which shows a complete installation of a UL80 tank on containment RPB. The RPB also allows you the opportunity to inspect the tank ultrasonically and visually if required, as the tank bottom is exposed.

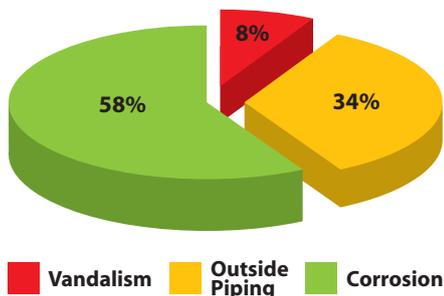
When using a tray under the tank, be sure to install the filter in the tray area, giving the fuel system complete protection in the event any part of the fuel system should leak. Annual maintenance is always performed over the tray area, thus eliminating any chance that a drop of oil will touch the floor. Keep in mind heating oil is dyed, so if the oil hits the floor, the stain from the dye is very hard to remove. This gives oil a dirty reputation.

Retrofitting An Existing Tank With An RPB

In an existing home that does not require a new tank, it is quite easy to add leak detection. Containment trays are available in standard tank sizes to enable easy retrofitting. The L-shape burner tray and the retrofit tray can be installed in less than 10 minutes.

Once the tray systems are installed the next item to consider is how a leak will be detected. If the tank and burner trays are located in an area constantly being monitored, you may be fine without an audible alarm. Even though we are typically dealing with small leaks (typically one to 10 gallons per hour), quick detection is the key to preventing a major disaster. An alarm is recommended in most cases. If the owner is sleeping they are not going to know about the leak until the morning, and that may be too late.

Outside Above Ground Storage Tanks: Sources of Leaks



It is better to have something watching over your oil system 24 hours a day. Simple float alarms are worth the money. You can't use a conductivity type alarm because heating oil can sometimes be non-conductive.

There are three types of alarms available by various manufacturers:

- A simple 9-volt battery alarm (looks and sounds like a smoke alarm) is the most common and the least expensive.
- An alarm designed to connect up directly to a security system is great if the customer has a monitored system. If this service is available, then the entire oil system can be remotely monitored for leaks 24/7. This is ideal for those locations where the owner is away for a period of time, and they are concerned about a leak.

- The third type of alarm is typically a combination of the first two, mainly for wireless or Scully systems.

All of the alarms work off of a reliable and simple float system. They are easy to adjust, and periodic checking is



a simple task. In a typical alarm, the floats hang off the lever adjusted to various heights. The alarms are either Velcro mounted on a corner bracket or strapped to a tank leg. The alarms are UL/ANSI tested and approved for use in oil service. In testimonials regarding leak detection there have been many reported cases where the alarms have saved the day.

If the owner is planning to use a double-wall fiberglass tank or if the home is equipped with this style of tank, leak detection can be added by installing an L-shape style tray at the burner. Typically the filter and Tiger Loop are installed close to the burner, thus adding leak detection at this point is all that is required. These tanks have a small lip at the top of the tank to handle most accidental overfills. The tanks are manufactured with a secondary liner to handle the inner tank failure. Use a plastic coated line terminating over the tray.

Leak Detection for Outside Tank Installation

The data on outdoor steel tanks indicates that corrosion is the most common cause of failure, and condensation build-up in the tank being the most likely source of the corrosion. For this reason, it is recommended the steel tank be placed in a tank tub or container and use a top outlet with a Tiger Loop.

Some steel tanks offer a special coating, which acts as a secondary wall. However it is recommended that a top outlet be used, with these, as well. Another good choice is a ZCL double-wall fiberglass tank. The fuel line should be plastic-

coated or run in a plastic sleeve. It should terminate over a containment tray. The filter and Tiger Loop should be installed over the tray to insure "no drips hit the floor." An alarm for this tray will give the oil system the leak detection capability. In some cases the owner may want an alarm for the secondary containment tub, however in most cases, this is not required because the tubs have 110 percent containment capability.

Underground storage tanks (USTs) in many areas are not insurable, therefore it is important to stay abreast of the situation with insurance in your area. If the owner must install a UST, it is recommended to make sure both the tank and the lines are protected with leak detection. The tank should be double-walled with a vacuum leak detection system (between the tank walls). The piping should be double-walled and should terminate over a tray to ensure that any leaks in the piping are detected in the tray with a leak detection device. In this case install the filter over the tray.

Change is Inevitable

Like it or not, change is inevitable in life. Some learn to embrace change and ride on the crest of the wave, opting to stay ahead using the wave to propel them along. Many will choose to chase change as it passes them by, opting to follow the wave so they continue to move in the direction the wave has chosen. Others are content to just drift along and resist change, hoping things return to the way they used to be. One thing is certain: The industry is waking up to the need for change regarding the oil storage system. Take the "no drips on the floor" approach with leak detection. It's cost effective, and protects the entire oil storage system. ☑

More information on leak detection, tank trays and tank tubs can be found on the following Web sites:

- www.generalfilters.com
- www.oilyeller.com
- www.oilstorageolutions.com
- www.granbytanks.com