

The 2015 Revised UST Regulation is Changing the Way Overfill Protection is Achieved

Overfill Overhaul

Overview

On July 15, 2015, the US EPA finalized changes to the 1988 Underground Storage Tank regulation in 40 CFR part 280 and 281. Included in these changes are modifications to permitted overfill protection devices which will impact new and repaired equipment installations as soon as October 13, 2015. Additionally, the EPA has added periodic operation and maintenance requirements for overfill prevention equipment to help ensure the equipment is operating properly and will activate before a UST is overfilled.

A Veeder-Root TLS Overfill Alarm in conjunction with a Veeder-Root Automatic Tank Gauge (ATG) is a popular solution for overfill protection that will continue to be the standard for EPA compliance with these revised regulations. Benefits of the Overfill Alarm include:

- Economic solution that allows alerting of multiple tanks
- Periodic testing is easy and does not require spare parts
- Not susceptible to failures from tank tightness or pressure

This paper will review the regulatory background on overfill protection and considerations for selecting the ideal overfill protection in light of the new regulations.

Background

Since Dec 22, 1998, all Underground Storage Tanks (USTs) receiving deliveries over 25 gallons must have at least one overfill protection device installed, which may have been:

- An automatic shutoff device or
- An overfill alarm or
- A ball float valve.

Despite these requirements, reports show that tank overfills are responsible for 15% of releases from UST systems. Around half of these releases were reported as undetected by the current equipment, and this has partly been attributed to improper operation and maintenance of overfill protection devices. In an effort to reduce the frequency of these releases, the EPA has announced revisions to overfill equipment and maintenance procedures.

As of October 13th, 2015, a vent pipe ball float valve will no longer be an acceptable form of overfill protection for new installations or once the ball float valve requires repair for existing installations. There were several reasons leading to this decision, including:

Ball float valves do not alert the operator when an overfill condition is reached.

Because there is some compression of ullage space after valve closure, the delivery hose does not “jump” from hydraulic shock when closed.

Ball float valves are fault-prone.

Every opening along the tank top must be tight for the ball-float vent valve to work properly. An open cap (ATG probe riser, gauging riser, spare riser stub out, etc.) allows vapors to escape at ground level and prevents pressure from building in the tank.

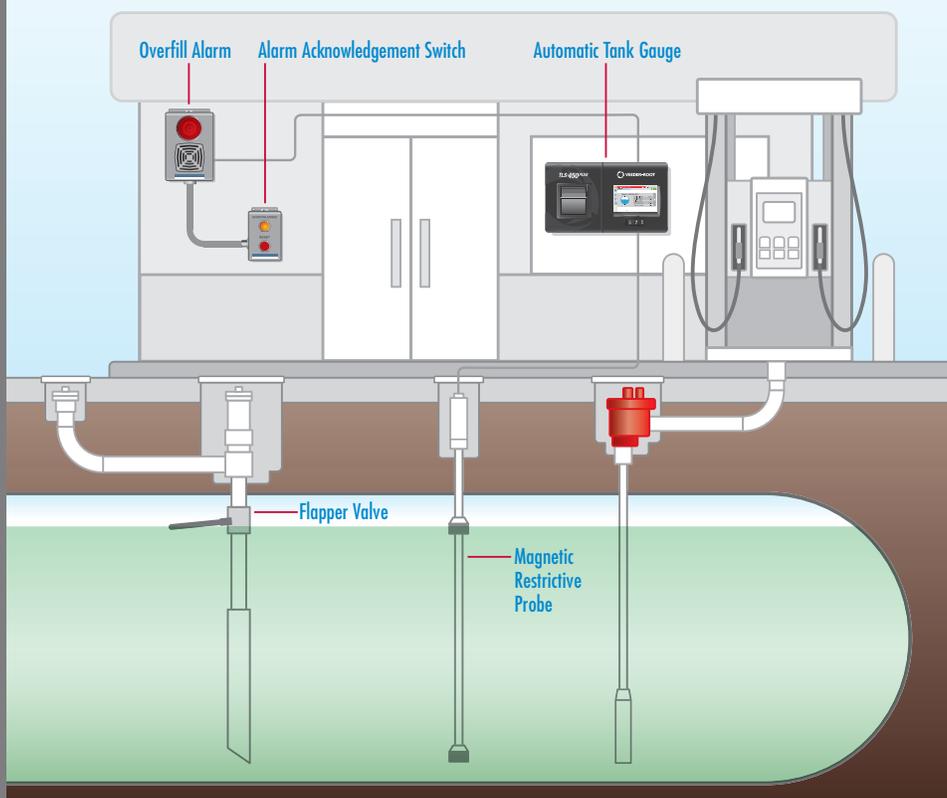
Ball float valves cause undue wear on USTs.

The operational principle of a ball float valve requires the vent line to be blocked, and thus the tank to be pressurized at overfill levels. This pressure weakens the tank and could cause seepage through fittings.

Consequently, the EPA regulations were modified as follows:

“Owners and operators may continue to use flow restrictors not in vent lines (such as flow restrictors in fill pipes), automatic shutoff devices, and high level alarms to meet the overfill prevention requirement for their UST systems.”

In addition to changes to the permitted equipment types, the EPA is administering requirements for regular inspections and periodic testing of the functionality of the overfill prevention equipment. If an automatic shutoff device is used, each must be inspected every 30 days to ensure it has not been damaged or defeated. Owners and operators must inspect every three years to ensure equipment is set to activate at the appropriate level in the tank and will activate when regulated substances reach that height.



Selecting the Ideal Overfill Protection Solution

When selecting an overfill protection device, a site designer must consider the pros and cons of each equipment type available. An automatic shutoff device (i.e. a fill tube flapper valve) alone installed in the drop tube of each tank is often not sufficient protection for the prevention of overfill. Things to consider:

- Flapper valves can be easily obstructed with a stick. If this occurs, the transfer operator has no means of knowing when the tank is over its limits.
- Flapper valves are mechanical devices and as such are inherently prone to wearing over time or getting damaged through misuse. When they eventually fail, there is no means of alerting that a failure has occurred.
- Flapper valves are expensive to install and maintain. On older valves, if a drop tube is damaged, the whole valve assembly may need to be replaced. Even with the modern valves, technicians will need to replace the top fittings to replace a damaged upper drop tube. Replacing a worn flapper valve itself can be costly when factoring in parts and labor.
- Flapper valves are prone to installation error at fill height. There is no adjustment short of re-cutting drop tubes, and any error directly effects absolute fill level at every fill.
- Older style flapper valves require removal to test. This is not an easy process and there are issues with damage during reinstallation. At a minimum, a service technician can expect to replace gaskets and seals as part of the inspection process.

Of the three available overfill prevention technologies, electronic alarms are the most versatile.”

— North Dakota UST Operator Training

An ATG overfill alarm with an electronic external alarm set to alert the transfer operator when the tank is no more than 90% full can be used to meet the overfill prevention equipment requirement. Paired with any Veeder-Root Automatic Tank Gauge (ATG), the Veeder-Root TLS Overfill Alarm is easily programmed to sound an audible (horn) and visible (red light) alarm when the tank receiving a delivery reaches 90% capacity. It utilizes the real-time inventory level of the tank probe to issue an instant alarm when capacity is reached.

There are several advantages to consider in using a TLS Overfill Alarm:

- A TLS Overfill Alarm may be used as a stand-alone solution or in conjunction with flapper valves installed in the drop tube of each tank. It can serve as a reliable backup protection in case a flapper valve is damaged, worn or defeated.
- Because a TLS Overfill Alarm relies only on the inventory level of the fluid to work, it is not susceptible to failures from tank tightness or pressure. The TLS Overfill Alarm may be used with tanks that receive pumped or gravity deliveries and with tight-fill or loose-fill connections.
- One TLS Overfill Alarm can alert for all tanks on site, making this the most economical solution to meet the regulations.
- Demonstration of functionality for periodic testing is easy, requiring only the removal of the inventory probe and sliding the float to the level where an overfill is expected. As probes are serviceable parts, their removal for overfill testing requires no replacement parts.

Overfill prevention is required for every UST filled with more than 25 gallons of product at one time. Including a TLS Overfill Alarm as part of your site architecture is an essential element for both new and existing installations as part of a cohesive overfill mitigation plan. Either used alone or paired with an automatic shutoff device, the audible and visual alert the overfill alarm is an essential tool for the prevention of tank overfills.

Related Products



TLS-450PLUS Automatic Tank Gauge

The TLS-450PLUS Automatic Tank Gauge provides the most comprehensive fuel site data for advanced fuel asset management. Combining industry leading algorithms with enhanced security, real-time notification, and anywhere, anytime access, the TLS-450PLUS keeps your site running profitably.



TLS Overfill Alarm Unit and Alarm Acknowledgement Switch

When there's a potential for overfill, Veeder-Root's ATG activates the overfill warning horn and light on the TLS Overfill Alarm Unit. The TLS Overfill Alarm Unit is typically mounted outside near the fuel tanks and can be wired to an alarm relay in a TLS-450PLUS, TLS-450, TLS4C/I, TLS-350R, TLS-350, TLS-350J, TLS-300, TLS-300C, TLS-300i, TLS-300, ILS-350, and TLS-250 or TLS-250i system. The remote Alarm Acknowledgement Switch can be co-located with the alarm to acknowledge and silence the audible alarm.

About Veeder-Root

Veeder-Root is the number-one supplier of automated tank gauges in the world, backed by an unmatched service network. When you entrust your fuel management needs to Veeder-Root, you're assured of hassle-free compliance, reliable systems, advanced engineering and responsive service.

For more information on Veeder-Root or our products, please visit www.veeder.com or call 888.561.7942 (US and Canada) +1.860.651.2700 (outside the US and Canada).



^{i,ii} Environmental Protection Agency, Federal Register, Vol. 80, No.135, Part II, 40 CFR Parts 280 and 281, "Revising Underground Storage Tank Regulations— Revisions to Existing Requirements and New Requirements for Secondary Containment and Operator Training; Final Rule", July 15, 2015.

ⁱⁱⁱ Fiberglass Tank and Pipe Institute, "Overfill prevention of Petroleum Underground Storage Tanks and Adverse Unintended Consequences", <http://www.fiberglassstankandpipe.com>, April 15, 2013.

^{iv} Environmental Protection Agency, Federal Register, Vol. 80, No.135, Part II, 40 CFR Parts 280 and 281, "Revising Underground Storage Tank Regulations — Revisions to Existing Requirements and New Requirements for Secondary Containment and Operator Training; Final Rule" Section IV.D. 1. Changes to Overfill Prevention Equipment Requirements, July 15, 2015, pp. 41600.