STI® Tank Talk

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Repurposing underground fuel tanks for aboveground use: A dangerous game

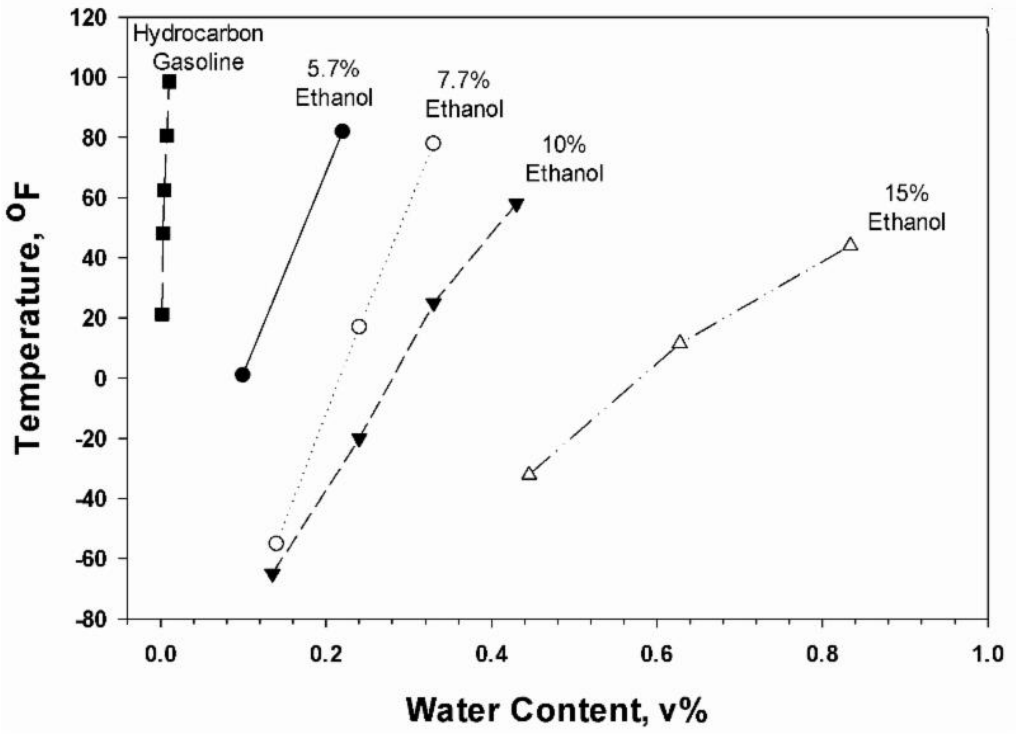
On December 11, 2013, one person died and two were injured in Merced County, California, when a farm tank exploded during welding operations.

The tank was approximately 500 gallons capacity, had two 1.5" diameter vents, capped with a tee fitting and elbows that pointed vent discharge downward toward the tank shell. A dedicated emergency vent was not provided. The vent pipes that were present were not equipped with flame arrestors or pressure vacuum vents, although this does not appear to have been a factor in the incident that occurred. The tank had reportedly previously contained a Class 2 liquid, such as diesel fuel, and was not compliant with UL 142.

Some farm tanks have been found to be underground storage tanks that were removed and unlawfully reused as aboveground flammable and combustible liquid storage tanks...

What caused this tank explosion? Read more...

Be prepared for ethanol's water tolerance



Graphic courtesy Renewable Fuels Association

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Did you know?

...That if two pieces of metal touch in space, they become permanently stuck together? This may sound unbelievable, but it's true.Two pieces of metal without any coating on them will form into one piece in the vacuum of space.This doesn't happen on Earth because the atmosphere puts a layer of oxidized material between the surfaces.
--American Welding Society

Quick Links

Shop Fabricated Tank resources

As higher ethanol blends gain acceptance with retailers,storage challenges increase as well, due to ethanol's affinity for water. Vigilance inmonitoring for the presence of water in storage tanks and equipment is a necessity.

According to the Renewable Fuels Association's (RFA) E15 Retailer's Handbook ,ethanol's tendency to absorb water causes few problems at low percentages. Butthe amount of water depends on storage temperature: the higher the temperature,the more water is absorbed (see graph).

Eventually, if enough water is absorbed by the ethanol, the fuel "phase separates,"physically separating the gasoline and the ethanol/water mixture. Not only is the fuel now unsuitable for vehicle engines, but also the storage tank's bottom layer of ethanol and water can corrode tank components.

This is why it's important that storage tanks and equipment be properly prepared toreceive higher ethanol blends. For more information, see the Renewable Fuels Association's website.

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CSB: fatal pressure vessel explosion

In November 2013, the Chemical Safety Board (CSB) released this safety video on the 2009 explosion at NDK Crystal in Belvidere, Illinois, which fatally injured a truck driver at a nearby gas station.

Falling Through the Cracks

The video contains an animation which depicts the stress corrosion cracking that accumulated over time in the walls of the vessel where synthetic quartz crystals were manufactured under extremely high pressures and temperatures.

CSB Chairperson Rafael Moure-Eraso said, "The video dramatically describes the important findings of the CSB investigation - pressure vessels did not meet code requirements, but were granted an exemption; internal corrosion inspections were recommended but never performed; and finally a specific warning was made to the company by its insurer. But at every level, the risk of catastrophic vessel failure was overlooked and public safety, literally and figuratively, fell through the cracks."

Read more...

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Tank and Petroleum Mishaps

Mississippi, 1/23/14--Video: Biodiesel plant explosion
On January 22, an explosion and fire occurred at a biodiesel plant that converts chicken fat to alternative fuel. Despite the explosion being heard, seen, and felt for miles, nobody was injured. It did knock out power to a town a few miles away. First responders were unable to fight the fire effectively with water due to the presence of reactive chemicals in other tanks, and remaining tanks at the plant e ventually exploded as the fire burned itself out. Some area residents evacuated and a local school was closed the following day.

- About ASTs and USTs
- Codes and regulations
- Steel and alternative fuels
- STI's tank technologies

Industry Calendar of Meetings, Conferences and Events
Click here

STI/SPFA Education and Certification Programs
Click links for information and registration

Cathodic Protection Training & Certification

- March 26-27, Beaumont TX
- April 8-10, Cheyenne WY
- May 20-22, Frankfort KY

SP001 AST Inspection Training & Certification

- July 21-25, Norristown PA

Online Offerings
Tank Integrity Management Certificate

Archived webinars

- Petroleum Storage Tank Maintenance
- Steel Water Pipe Fittings and Design
- Regulation of Tanks Inside Buildings: A Guide for Users and Enforcers
- Tank Venting Essentials: PreVENTing Catastrophe

E-learning modules

- Steel Water Pipe

Explosions, Massive Fire Rock New Albany Biodiesel Plant

Oregon, 1/11/14--Water contaminates Chevron fuel tanks
One local repair shop is finding water in several drivers' gas tanks who fueled up at Chevron's North Bend station in the last week. Bayshore Auto manager Russ Blean said so far two customers have come to the shop with the same problem. Marti Sharp, general counsel and compliance officer for Carson Oil Company, which manages and operates the Chevron station on Virginia Avenue in North Bend, said seven vehicles were impacted and all will be reimbursed by Carson Oil for repairs....Read more here...

Minnesota, 1/11/14--What to do with 4500 gallons of 45-year old fuel?
Polk County Administrator Chuck Whiting and Building and Grounds Director Mark Dietz approached the Polk County Commissioners Board this week to discuss their options with the Government Center fuel tank. The tank, still the original from when the original Polk County Courthouse was built in the 1960s, contains 4500 gallons of fuel that is almost 45 years old. The fuel was purchased in 1969 for a back-up tank and throughout the years, water has collected at the bottom of the tank...Read more here...

Nevada, 1/12/14--Tank conditions blamed for refinery blast
Pressurized and overfilled tanks have been blamed for the explosion at an oil plant near Fallon that left one employee hospitalized in early December. The tops of three tanks at the Bango Oil Recycling Co. blew off, Fred Rogne, chief of the Fallon/Churchill Volunteer Fire Department, said on Dec. 9, the day of the explosion. Both the Churchill Fire Department and the Nevada State Fire Marshal Division were investigating the cause. One of the hot asphalt tanks was overfilled and overpressurized, State Fire Marshal Peter Mulvihill said...Read more here...

New York, 1/18/14--Mistake leads to spill of 200-plus gallons of fuel oil
A contractor's mistake burst a storage tank inside a county building at Northampton Park in late December, spilling more than 200 gallons of fuel oil into the basement, where some of it was pumped out to nearby Salmon Creek. According to the state Department of Environmental Conservation, workers with Samson Fuel overpressurized the storage tank while making a delivery to 304 Salmon Creek Road on Dec. 27, causing about 240 gallons of the red-dyed oil to leak. The oil flowed into the crock for the sump pump, and from there was

Overview
- Steel Water Pipe Coatings and Linings
- Steel Water Tank Standards
- Steel Water Tank Construction
- Steel Water Tank Coatings and Linings

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discharged into a drainage ditch near the seasonal-use building...
Read more here...

Click here for more Tank Mishaps

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2013 Steel Water Pipe Awards winners

Winners of the 2013 Steel Water Pipe awards of the year were announced at the STI/SPFA Steel Water Pipe Section meeting on January 17 in Phoenix.

STI/SPFA's annual fabricated steel awards recognize steel fabricated products and projects that exemplify the advantages and flexibility of steel construction. The awards honor STI/SPFA member companies instrumental in the design, manufacture, construction, and implementation of these products and projects.

The Affiliate award is new this year. Affiliates are often deeply involved in pipe projects, e.g. welding, coatings and linings. This award recognizes those companies.

2013 Steel Water Pipe Awards winners

Steel Water Pipe Fabrication Award
Mid-America Pipe Fabrication & Supply, Scammon KS
Influent Pump Station at Dallas Central WWTP

Steel Water Pipeline Project Award
Ameron International, Rancho Cucamonga CA
Choloma Hydroelectric Project, Senahu, Guatemala

Affiliate Steel Water Pipe Project Award
National Welding Co., Midvale UT
McCook Main Tunnel Liner, Chicago

Steel Product Awards for Field Erected Tanks, Pressure Vessels, Atmospheric Tanks, Special Fabrications, and Affiliate Product of the Year will be announced at STI/SPFA's 2014 Annual Meeting on March 15 in San Diego, California.

Click here for project details and to see all the 2013 entries...

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Now online! Petroleum Storage Tank Maintenance Webinar

STI's tank maintenance webinar last December was a great success--more than 100 people registered and 100% of satisfaction survey respondents said the presentation was "professional and thorough." One participant commented "Great content and very reputable speakers."

Unfortunately, there was so much interest in the Petroleum Storage Tank Maintenance webinar that STI had to turn many folks away. But if you missed the Petroleum Storage Tank Maintenance Webinar, now you can see and hear it on our website in our Archived Webinars. Cost is only $95 and you have access for seven days to:

- 1.25 hours of the webinar, including all slides and video
- Download of the Q&A session
- Download of STI's R111 Storage Tank Maintenance best practices

Click here for the archived Petroleum Storage Tank Maintenance webinar

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Ask the Expert:
How long should a tank fabrication shop hold vacuum on the interstice for leak testing a secondary containment tank?

Manufacturers are often asked how vacuum is used by the manufacturer to verify double wall tank integrity before shipment to a job site. We asked Bill Herdman, STI's tank fabrication consultant, to respond:

At the fabricator's shop, the testing vacuum in the interstice should be retained for a minimum of 24 hours at -25" Hg. Many tank manufacturers keep the vacuum at this level for 48 hours--my experience says the longer the better.

If the vacuum holds steady for the first hour, odds are the tank is leak-free. But in the next 23 hours, you may find the vacuum trickles down. The first drop is often due to a trapped air pocket. Other drops may occur around pipe connections--they're usually the first place to leak under vacuum. In any case, remember that every time you bring the vacuum back up during the testing process, the 24 hour minimum begins again.

You may decide that you have to add air to the tank and use soap testing. Two-three psi is sufficient air to enter the inner tank to check if that's where the leak is.

If tanks are stored at the factory, vacuum should be retained until shipment. Just before shipping, it can be reduced to -13" Hg minimum.

Bill Herdman, PE, has over 30 years experience in the storage tank fabrication industry.

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East Texas IPL water project largest in US

by Bob Card, PE, Lockwood, Andrews & Newnam, Inc.
In the past three years, Texas has experienced drought that,

if it continues, "could rival the legendary drought of the 1950's," according to a report in the Southwest Farm Press last August.

To address the demand for additional water supplies, Tarrant Regional Water District (TRWD) and Dallas Water Utilities (DWU) have partnered to design, build, and operate a raw water infrastructure to tap into existing sources.

By sharing resources, the Integrated Pipeline Project (IPL) will save an estimated $500 million in capital expenses and potentially $1 billion in energy savings over the life of the project.

Click here to read more...

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EPA Forum on Fuel Corrosiveness at NACE conference

The EPA has requested that NACE include a session on the hot issue of corrosion in fuel storage tanks at the 2014 Corrosion Conference & Expo. The event is March 9-13 in San Antonio.

Recently the EPA has identified corrosion problems with ethanol and low-sulfur diesel (ULSD). The forum planned for Corrosion 2014 will focus on corrosiveness of both biofuels and conventional fuels, and will include presentations by EPA, the Steel Tank Institute (STI), and industry representatives.

Topics include overview of fuel corrosiveness issues; ethanol SCC issues; ULSD corosion issues; and atmospheric storage corrosion issues in ethanol tanks. The Forum includes a discussion session and is chaired by Donald Drake, ExxonMobil.

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Video: 9-volt battery fire hazard in your home?

It's scary to think that keeping one very important fire safety habit helped contribute to the house fire that ravaged this man's home. You have to watch it to see the crucial mistake he made that almost killed his entire family and his pets, too.

Kids and Character Fire Safety Introduction - video 1

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