

Rethinking above-ground storage

DuoVault challenges traditional double-wall tanks

A new spin on an old technology is creating the potential for a shift in above-ground tank designs and regulations as we know it.

DuoVault, created by Calgary-based Enviro Vault Canada Ltd., is a patented tank-in-tank design that uses the concept of double-wall tanks, and improves on it by creating internal secondary containment, unique internal valve and pipe designs and easy portability.

Double-wall tanks have been in existence since the mid-1990s. Yet, as Enviro Vault general manager Mike Nielsen explains it, the design of these tanks has never truly lived up to their name.

"Even though someone would build a double-wall tank, they would often still put a nozzle or connection through both walls into the primary fluid inside, which essentially negated the true double-wall tank – it became a hybrid of a single-wall tank," he says.

How it works

All valves and related piping in a DuoVault are contained in freeze- and spill-protected areas, thus offering 110 per cent secondary containment – the inner vault offers 100 per cent containment, while the outer tank adds 10 per cent.

In addition, all the piping goes up and over, "which eliminates the possibility of that fluid just dripping out on its own," explains Nielsen. "The fluid needs to be actually sucked out of that tank."

Because the connections are housed within the outer tank, DuoVault is also easier to transport.

And, the tank eliminates the need for berm/dyke system, which keeps operators and truckers out of confined space berm area. It eliminates berm installation and removal cost each time the tank is moved.

The cost savings of DuoVault are two-fold, says Nielsen. The first comes from the tank's portability.

"If a tank is sitting in the ground for its entire life, then it's best to be a single-wall version with secondary containment," he says.

"But in a lot of cases – for example, a well's



Top: The DuoVault contains all the valves and connections within the outer tank, creating a true double-wall design, say company officials.

Right: Because the equipment is located within the recessed chamber, DuoVault offers the added value of being easier to transport. Photos courtesy Enviro Vault



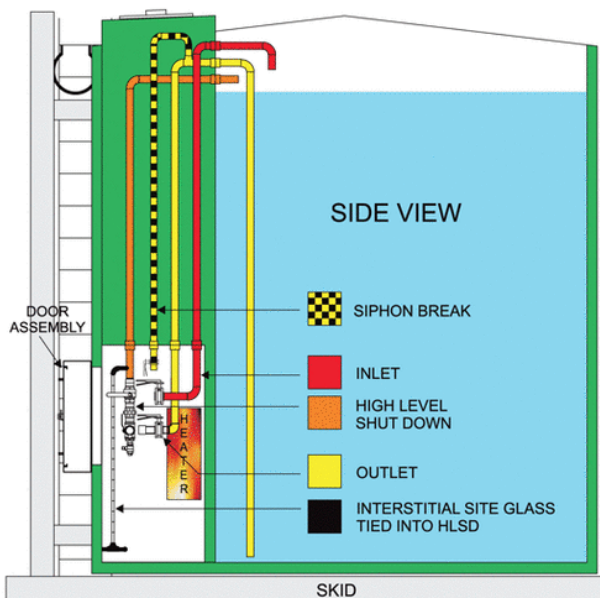
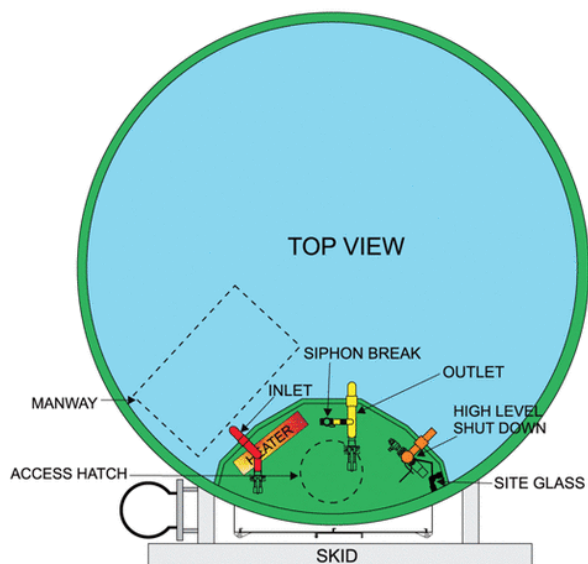
started to water out, or the flow changes – a tank needs to change from that site. And as soon as you start to move the tank, you have to consider that you'll also have to disassemble all that secondary containment, clean up the ground and reclaim the soil.

"Then you'll have to move the secondary containment somewhere else, rebuild it again or buy all new secondary containment."

The second cost-savings advantage to DuoVault is it reduces the footprint of the overall tank. Single-wall tanks, as well as dual-walls in their current incarnation, still require secondary containment. DuoVaults, however, have that secondary containment built within.

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BLUE - Process fluid within primary tank
 GREEN - Interstitial Space / Secondary containment



Picture putting a soup can inside a cookie jar, says Nielsen.

“Think about the soup can and how small its impact will be on the environment versus a large cookie jar to contain that soup can in the event of a failure,” he says.

Directive 55

Guiding changes in above-ground storage tanks is the Energy Resources Conservation Board’s Directive 55, which regulates storage requirements for the upstream petroleum industry.

The ERCB’s directive dictates that all tanks – underground or above ground – must have preventative measures implemented to avoid spills and leaks at fluid transfer points, such as piping, flanges and valves.

While it does not go so far as to define a double-wall tank in regard to how those nozzles or valves are installed, Nielsen says they believe the concept behind DuoVault is the way the industry is trending.

“The demand is coming from the grey area that exists right now, he says. “There are a lot of double-wall tanks still getting built in their current form, which is truly not conforming to the guidelines. But it’s not strictly enforced.

“It’s like speeding down the road: You can do it as much as you want. It doesn’t really matter until you get caught.”

DuoVaults not only meet the requirements set out in Directive 55, but exceed them – the tanks pointedly address spill points through its built-in secondary containment.

Nielsen notes even the best designed storage tank will create spillage, typically through the day-to-day use of fluid transfer points, such as truck-in, truck-out connections.

“What’s going to happen is the nozzles and connections and all of the process part of that tank is going to be what ends up causing a leak or spill on the ground, he says.

“So what we’ve done now is design a tank that not only satisfies the requirements of a true double-wall tank, but also meets its intent and adds a spill-containment portion.”

In the marketplace

DuoVault is still a relatively new product to the North America market, primarily being sold to clients across Alberta. Most of these clients are larger companies that have more of a concern about their corporate image – they want to show customers they’ve done their due diligence in terms of addressing leakage, and not relying on current double-wall tank designs, says Nielsen.

The other driving factor that the company hopes to see is from the regulation side

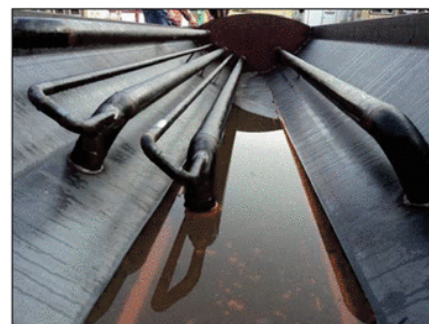
“Right now, the regulations have not driven people to this design yet, but it’s our theory that’s going to happen – that there’s been so much of a grey area that they’re finally going to say you just can’t use double-wall tanks as it is right now. At least that’s our speculation,” says Nielsen.

About the company

Enviro Vault was founded by Russ Hebblethwaite in Elk Point, Alta., in 1996 before moving to Calgary in 2005 and adding a manufacturing shop in Edmonton.

The company was built on its Enviro Vault tank, which features the patented recessed chamber. It remains the company bestseller today, and has spawned a new line of products that include DuoVault, ThermoVault, FloVault and bolt-ins.

The concept behind ThermoVault,



A view of siphon break lines prior to install. Photo and illustration courtesy Enviro Vault

which the company recently finished extensive research and development on, is to use multiple catalytic heaters inside the tanks to offer more than freeze protection.

Instead of using traditional fire tubes or direct fire heaters – which have the potential to set off flashes, especially when the oil becomes light enough that it becomes a combustion issues – the catalytic heaters reside within the tank, offering safer and higher combustion efficiency. They also are able to heat light oil applications when fire tubes are not allowed.

“The thing about a fire tube in a tank right now is, most times, it’s grossly oversized for what’s required,” explains Nielsen. “There’s no smaller fire tubes that exist right now. So we’re looking to bridge that gap by being able to heat the small stuff with these catalytic heaters, and bank some more heaters in there once the tank gets bigger.”

For more information about DuoVault, ThermoVault or other Enviro Vault products, contact the company at 403-263-4433, or visit www.envirovault.com.