

MIDSTREAM

Knowing When To Stop

A simple ball provides well-rounded solution for oil tank drainage shutoff



“EUREKA!” SCREAMED a naked Archimedes, running through the streets of ancient Syracuse, overcome with excitement upon realizing, while taking a bath, the upward buoyant force exerted on a body immersed in fluid is equal to the weight of the fluid the body displaces.

Flash forward some 2,200 years, approximately, and entrepreneurs Dean Schlekewy and Wade Tokarek had their own eureka moment, resulting in that same Archimedes principle, creating the Truck Stop Valve (TSV), which keeps more oil in storage tanks when hauling water out, potentially saving producers a lot of money.

“I think you have to have an inventive mind,” says Tokarek, co-founder of Reconeco

Inc., based in Lloydminster on the Alberta/Saskatchewan border, about developing the oilfield device. “It comes down to a problem, and the mind starts working on solutions.”

The problem: When hauling water out of a well tank, trucks can often suck out portions of crude oil along with it.

Tokarek says the issue became quite evident to him when a truck hauled approximately \$5,000 worth of oil away from one of his well tanks near Wainwright, Alta., to a water-disposal well.

“These trucks nowadays, they pull four [cubic] metres a minute, so by the time the guy gets out of his truck and shuts the valve, he can take on four [cubic] metres of your oil,” says Tokarek. “But this one, he took on far more than that.”

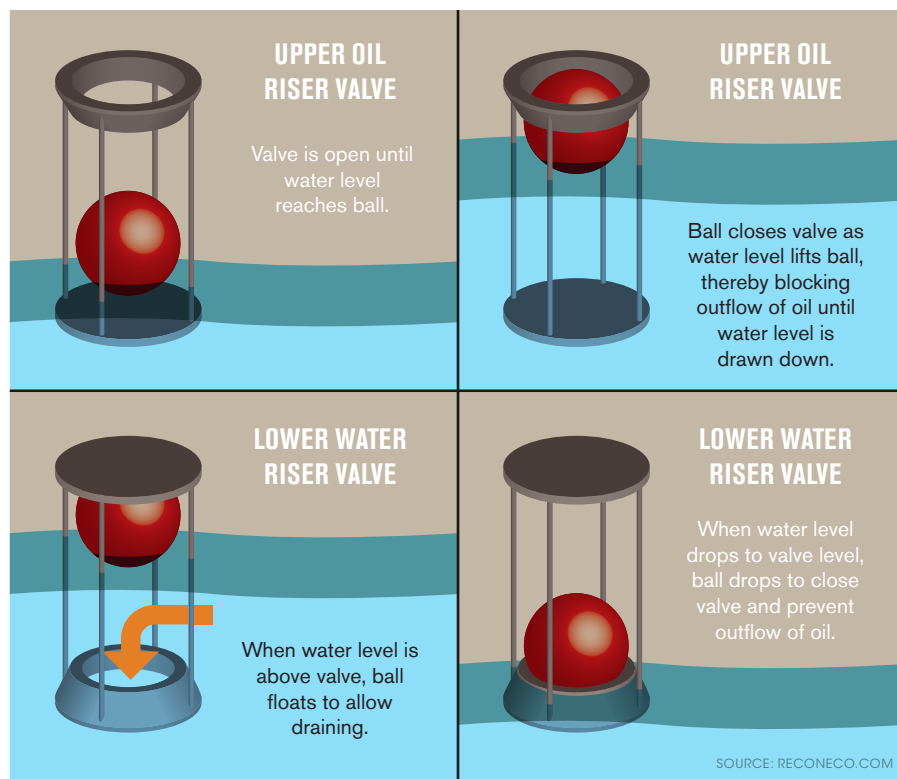
DECEPTIVELY SIMPLE

Reconeco’s Truck Stop Valve uses the buoyancy of a space-age plastic to automatically determine the dividing line between flow of water and flow of oil out of a well tank.

Fortunately for Tokarek, once he told Schlekewy about the dilemma, Schlekewy’s response was, “We can fix that,” and together they created the TSV. According to Schlekewy: “It was a group effort between problem and solution.”

The solution: A ball.

Schlekewy’s other company, Direct Data Technologies Inc., provides liquid-sensor probes that fit into tanks, floating on top of the water and below the oil. He borrowed the idea for the TSV system from that technology. >



BALL DROP

The Truck Stop Valve exploits the difference in specific gravity between oil and water to determine when the valve opens and closes in filling and emptying well storage tanks.

Encased in a stopper cage developed by Tokarek, the TSV ball simply floats on the water as trucks suck it out from the bottom of the tank. Crude oil has a lower specific gravity than water, so the ball sinks to the bottom of the oil, hovering in between the two liquids until reaching the mouth of the riser, at which point it plugs the hole and prevents oil from escaping.

While simple in theory, finding the perfect weight and composition for the ball proved a challenge for the inventors. Too light and the ball would float in the oil as well; too heavy, Schlekewy says, and it would sink into the water.

"It took us a long time to find the right material, and it was actually only released to the manufacturers about a year ago," he says. "It has to have a high-temperature and chemical rating, and it has to not expand or contract, because that can change the specific gravity of the unit as well."

According to Schlekewy, where he and Tokarek finally found the perfect ball material

was almost literally out of this world—born from the space program at NASA. It was developed specifically for the needs of the now defunct space shuttle program.

While this non-swelling plastic comes from the engineering minds of NASA, Schlekewy says the TSV balls themselves are produced in Calgary, through an undisclosed third-party company. The casings in which the balls sit are either welded together at the Reconeco shop in Lloydminster or ordered from overseas.

Although the TSV system has only been available for about six months, Schlekewy says Reconeco has retrofitted between 50 and 100 tanks with the device throughout western Canada and into North Dakota. He expects the product's popularity to increase over time.

"It's just starting to go. The main thing, when you have to weld them into the tank, guys aren't going to spend a whole bunch of money just to send them in. It's going to be on a planned-maintenance basis, so when guys pull the doors off to clean the tank, they'll put them in, or put them on new installs."

Tokarek says the TSV can potentially save producers a lot more than the price of

the unit, preventing truckers from accidentally taking away valuable product with the water. "They try not to take oil, but the pumps they build now are so big and they can pull so fast."

Quintin Blanchette, Marquee Energy Ltd. area foreman, installed TSV units into two of his tanks in July, and so far he says the technology is proving very effective in keeping heavy crude out of water being hauled away.

"You see no black," Blanchette says, adding he intends to install more TSV units wherever there is water in the wells, as losing bits of oil to draining off that water is a huge problem for producers.

John Wright, vice-president of producer Melita Resources Ltd. and contractor for Antler River Resources Ltd., both Manitoba-based companies, retrofitted several tanks with TSV devices about six months ago, and already Wright says he has noticed cost savings.

"So we've seen an increase on the production on the well by 10 [cubic metres per month]; we're not losing going from the [oil] battery for disposal," he says. "And that's on a well that makes typically about 250 cubic metres a month, so it saved us a bit of money there."

According to Wright, installing the TSV is fairly simple, although preferably done on a new tank. He says he will continue to use the product and suggests others do so too. "The boys got a good product there. I'd recommend it."

Schlekewy says he and Tokarek would continue to tweak and perfect the TSV ball's composition, further enhancing its ability to hover in that sweet spot where water and oil meet, and improving its ability to plug the riser before even trace amounts of valuable oil escape with water destined for disposal.

While Reconeco is developing other inventions, Schlekewy says the company will focus its current efforts on the TSV, which, using a basic scientific principle developed over two millennia ago, provides ample cost savings to producers.

"It just seemed too quick and simple," he says.

■ **Carter Haydu**

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