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CENTERPIECE

Making waves with new water innovations

Convenient, cattle-friendly solutions

Anna Miller, WLJ managing editor
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The Tank Toad is ideal for pastures far from home. Courtesy of Tank Toad.

Water is one of the most essential resources for life; as such, livestock water quality and availability are of the utmost concern to ranchers. Although checking water tank levels and ensuring animals have access to fresh water are necessary tasks, they can often be a

burden on busy ranchers. Thankfully, there are innovations on the market made with the producer in mind to help alleviate some of the time and costs involved with monitoring water levels and quality.

Remote monitoring water levels

One of the newer products on the market is Meadowlark Solutions' Tank Toad, which monitors the water level of a water tank and sends a text message with an update to the user's cellphone. No more driving miles away just to check the levels of your water tank! The product is made up of a solar panel, pressure sensor and electronic box. A Tank Toad can be installed with a sonar sensor, submersible pressure sensor or NPT pressure sensor, making it compatible with both open-top tanks and storage tanks.

Users can opt in to receiving a daily text from the Tank Toad with a real-time reading of the water level in the water source. Users also have the option to set thresholds and have the Tank Toad alert the user if water levels get too high or low. The product even has well control functionality, which allows users with pipelines to set up a remote control to turn the well on and off. The well control function is still fairly new and is custom developed to a producer's needs.

A close-up look at the solar panels of Tank Toad. Photo courtesy of Tank Toad

Damon Printz, co-founder of Meadowlark Solutions, had the idea for the product after he spent a summer working on his family's diversified century farm in Wyoming while he was in high school. A consistent issue on the farm was making time to drive to different locations to check on water tank levels. His family challenged him to engineer a solution to cut down on the time and distance it took to check all of the farm's water sources scattered around the area, and Printz accepted the challenge.

Cattle gather around a water tank with a mounted Tank Toad. Courtesy of Tank Toad.

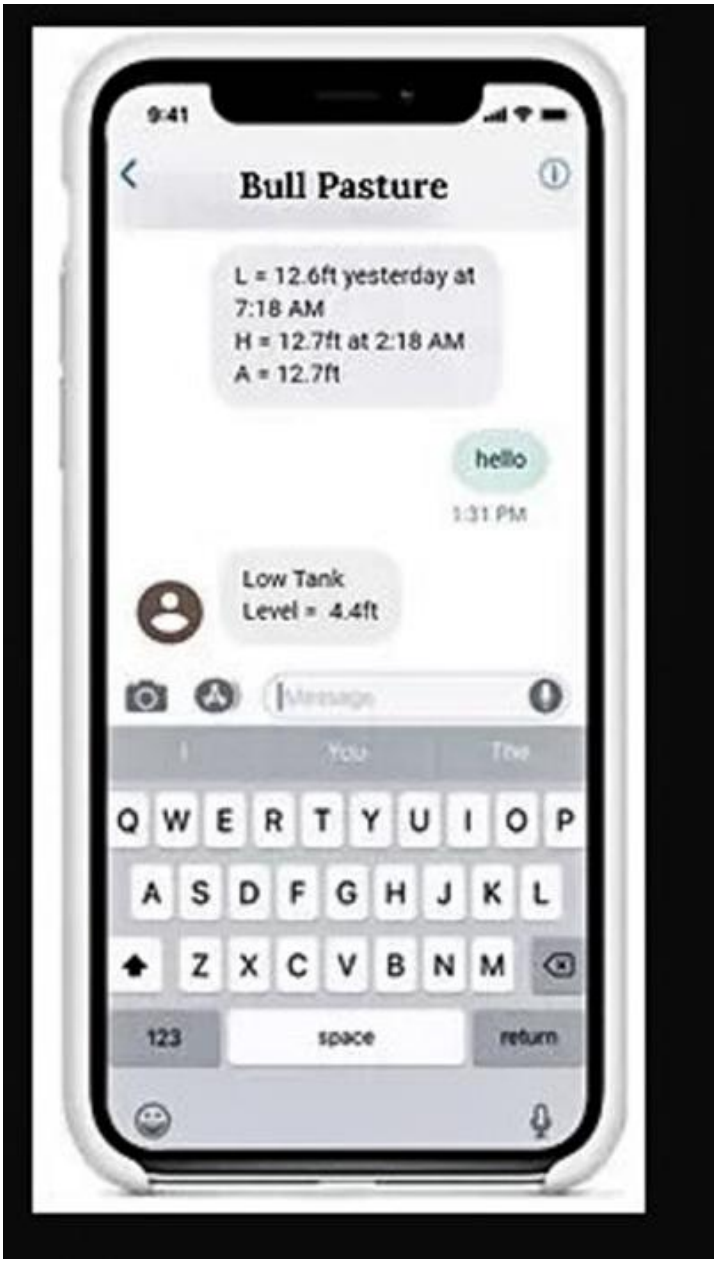
"We learned that Wyoming—and a lot of the Western states in rural areas—have a lot of challenges with the environment itself. Tank Toad isn't something you plug into the wall in the city where you have good service and you always have power and everything just works," Printz explained to WLJ. "It's a totally different game when you're trying to make an electronic product survive out in the wilderness."

While Printz had some background in electronics, the concept was still fairly new to him, and he experimented with several different prototypes before he landed on a prototype that worked. By that time, he had graduated from Texas A&M University with a degree in aerospace and a minor in electrical systems. Upon graduation, he jumped into the challenge of creating and deploying Tank Toad full time. Now, he works alongside family members Monte and Ron Lerwick in running Meadowlark Solutions. The team also enlists the help of a Ukrainian programmer, Viktor Zhukovskyy.

Printz soon realized there were other challenges in dealing with local phone carriers and receiving a cheap price for data. The company also expanded into using satellite systems to reach rural areas, but the satellite systems were unable to send text messages. The company had to build back-end infrastructure to make the information appear as a regular text message. After finding the right combination of either cellular or satellite networks, the company was able to figure out the most affordable method for producers.

"We reiterated, we changed, we adapted to those challenges, and now we feel like we have it figured out to where we can go pretty much anywhere in rural USA and have signal," Printz said.

Cellular is the more cost-effective option, but it will not work for locations with limited or no cell service. Satellite is more ideal for locations with poor cell service.



An example of text communication between a user and a Tank Toad.

Getting started on your farm

The cost to implement a Tank Toad on your operation is dependent on two factors: a hardware lease and a connection fee. Tank Toads are sold on a leasing schedule, with a hardware lease cost of $400 per year or season. The connection fee will vary depending on whether a cellular or satellite system is needed. Cellular costs about $100 a year, and satellite costs $30 a month, but prepaid and unused connection credits for satellite can roll over to the next year.

"We want to make it as cheap as possible to operate with satellite because the people who are using the satellite really need it, generally," Printz said. "They're driving a long way."

Producers will also need to build a mount for their tank to protect the Tank Toad from livestock; it can be fenced off or mounted high up on a structure. The Tank Toad can be left out year-round, but if a tank has a submersible water sensor, it has to be pulled up during freezing temperatures, or the water can't be allowed to freeze because the frozen water can tear off the sensor line. Tank Toads are also mobile and are able to be moved with the herd from pasture to pasture.

"There's zero maintenance," Printz said. "You don't have to do anything—it's set and forget."

Tank Toad in action

Royce McConnell of McConnell Angus in Dix, NE, has been using a Tank Toad for several years now. He appreciates the ability to move the product to follow the herd from pasture to pasture or tank to tank, and using a Tank Toad has also saved him a lot of money on fuel and other expenses, he told WLJ. The Tank Toad is currently set up at a pasture he rents, which is the farthest pasture from his home.

"It works really well. After I'm done renting the pasture, I just take it with me and put it on another tank. Landlords don't have to purchase anything," he said.

McConnell recalled an instance where a bird died in one of the water tanks in a system of multiple tanks, plugging the spout for water to flow into a second tank. Tank Toad alerted him with an updated water level, but after receiving several messages with the same level each time, McConnell knew something was wrong with his water tanks.

"When I went to check, all I had was this little tank that was completely full of water, but it wasn't going to last even the day because of the cows coming up to drink," McConnell said. "So, that scenario is kind of a minor one, but it alerts you of a problem before it gets to be a big problem." McConnell said being able to fix an issue before it becomes a larger one is one of the best advantages of using a Tank Toad.

Self-service water pumping

In addition to spending time and fuel to check on distant water tanks, trudging out to break up ice in water tanks and having to haul or pump water pose an additional inconvenience for many ranchers. The Frostfree Nosepump tackles this issue by placing the task of pumping water on the animal itself, taking the burden off of the rancher.

A group of cows quench their thirst by pumping their own water. Courtesy of Jim Anderson.

The nose pump is a livestock-operated water device that requires no purchased energy, is winter tolerant and is a virtually free system once installed. Although the system is frequently used in cooler climates, the pump is not limited for use only in the winter.

Canada-based Jim Anderson, creator of the Frostfree Nosepump, said his philosophy and idea behind the nose pump is that the best way to make money with livestock is to have them do the work for you. “We’re so ingrained to think we need this equipment, we need this machinery and we need fuel to own and care for cattle,” Anderson said. “And our attitude here is that we need a little bit of machinery, but most of the time, the animals are gonna do the work.”

The nose pump relies on natural, renewable resources: geothermal heat and livestock power. As long as there is heat in the ground and thirsty livestock, the Frostfree Nospeump is able to provide drinking water. Wells must be at least 18 feet deep in the ground and a minimum of 24 inches in diameter in order to draw enough geothermal heat from the Earth.

Cattle pump their own water in the winter, alleviating the need for the rancher to break up ice or haul water. Courtesy of Jim Anderson.

Anderson originally began working on the idea for the nose pump in 1999 when the ranch had a section of land that was unable to sustain cattle due to lack of water access. The land had a high water table, so drilling into the ground did allow for groundwater to come up.

The nose pump can draw water from a high water table, pond, conventional well or even from the pressure system. The pump is designed after an old-style hand pump and has a cylinder with a piston that pumps water once an animal pushes the nose plate. The pump has no electronic dependency, and because of that, it is a reliable device, Anderson said.

Anderson said there is a bit of an adjustment for cattle to learn how to use the pump, but once one animal gets the hang of it, the others will follow their example. He recommends minimizing water access for a couple of days so animals are thirsty and motivated to work for water. Then, the producer should manually pump the water by hand and put some water in the trough and allow the animals to figure it out from there.

"Sometimes it takes a bit of time, and some producers get kind of anxious about that, but you have to be hard-nosed to force them to learn it, and they will," Anderson said. "Of course the objective is to get them to use it, learn it, and then they can water themselves whenever they want to, rather than having to depend on some kind of a power source to do that for them."

A bison uses the Frostfree Nosepump, which isn't limited for use in cattle and can be used for other livestock. Courtesy of Jim Anderson.

Built for convenience

The pump requires little to no maintenance and does not have to be removed in the wintertime, as the temperature of the insulated culvert will be above freezing. Multiple nose pumps can be attached to one water source, giving more water access to additional livestock without having to install more wells. As many as four pumps can be attached to a 24-inch diameter cribbing.

Thirsty cattle gather to pump fresh water during a winter day. Courtesy of Jim Anderson.

Anderson said one challenge he ran into was a nose pump station with a low water level, which made it difficult for calves to pump with enough strength to lift water from lower depths. To solve this issue, they designed an add-on to the nose pump, which consisted of a creep fence with an open tank of water that is diverted from the nose pump for calves. However, the creep addition is not winter tolerant because the water storage area is exposed to the elements. Anderson noted it is still a useful design, as many producers are watering their calves in the summer.

Horses trained to pump water from the Frostfree Nosepump. Courtesy of Jim Anderson.

The price of installing the nose pump depends on the parts needed for installation. The nose pump itself costs $1,699 Canadian dollars (approximately $1,303 U.S. dollars) and includes a cylinder, foot valve, fittings and instructional DVD. Additional parts for installation can be purchased directly from the company or from independent retailers, or they can be fabricated by the producer.

Preventing disease transmission

Cody Ober, based in Coaldale, Alberta, has been using the Frostfree Nosepump for the past seven years. He utilizes one pump site with three nose pumps that pump water from a pond in a pasture. The nose pump appealed to Ober because Johne's disease was prevalent in his herd. Because the disease spreads through feces, he fenced off the pond to reduce disease transmission from feces in the water. Since installing the nose pump site, he hasn't had an issue with Johne's disease.

Ober uses the pumps primarily in the summer but hasn't run into any issues when leaving the pumps out in the wintertime, when temperatures have reached 30 below zero. One of the largest benefits of the nose pump is not having to use electricity at any of his watering sites, as he has no access to electricity where he uses the pumps.

"I have solar waterers too, but they're no good past a certain point in the year, so I have to pull them out in October usually," Ober told WLJ.

Ober said the nose pump is one of the best purchases he has made for his cattle, and he would tell a fellow producer "to go right ahead and get one."

Cattle on Cody Ober's farm in Coaldale, Alberta, drink out of a Frostfree Nosepump. Courtesy of Cody Ober.

Tags

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