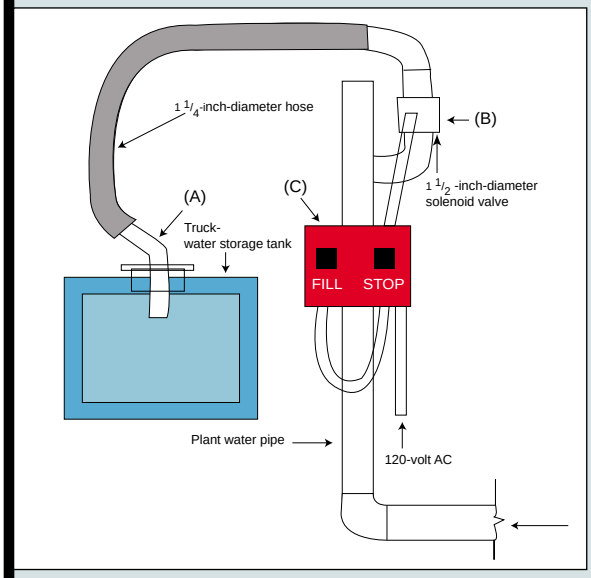
Automatic water-shutoff system reduces waste, process-water volume

I once heard a variation of an old Ben Franklin saying that has always stuck with me: "A penny saved is a penny earned, tax free." It makes all kinds of sense, or cents, depending on your point of view, assuming the tax is already paid on your capital. In that case, a penny saved is worth about a cent and one fourth to a cent and a half. Oddly, however, many people don't realize that it's easier to save money than to make money.

At World of Concrete in Orlando, Fla., last February, I met with inventor Matt "Milt" Westrich, president of BR Industries in South Orange, N.J. Westrich told me about a saddle-tank filling system he invented that can save producers energy, water, and, of course, money.

Westrich's invention is an automatic-shutoff system that producers can install on the saddle-tank fill hose. It consists of (A) a filling nozzle with a built-in sensor, (B) an electrically operated solenoid valve, and (C) a control box as shown in the drawing.



Schematic of the saddle-tank filling system. The "fill" button on the control panel opens the solenoid valve and starts water flow to the tank through the hose. When the water level reaches the top of the tank, it contacts the sensor on the fill nozzle, sending a signal to the solenoid, which closes the valve automatically.

Consider what happens every day in the field. Westrich shared with me a number of examples, the most striking one being, "I once actually saw a driver insert the hose in the tank, turn on the water, and sit down on the steps to smoke a cigarette. When the tank got full, the water just kept running over onto the ground until he got done smoking."

While most operations operate under a little tighter managerial control than that, the bottom line is that drivers often fail to stop the water once the tank is full. Westrich's system eliminates overflow of water, not an expensive commodity, but also one that isn't free.

In northern climates, producers frequently heat water, a process that does increase costs significantly. Besides the fact that hot water thaws the ground, spills increase the amount of process water that requires handling. Hot-water waste may cause a shortage and cause shipping delays on cold days. Even if the producer doesn't operate in a northern climate, excessive energy costs result from water waste, since running a pump requires energy.

While the science behind the system would probably interest only us "tech geeks," its operating principle is simple. The driver places the nozzle in the truck's water tank and presses the "fill" button on the control panel. This opens the solenoid valve and starts water flow to the tank. When the water level reaches the top of the tank, it contacts the sensor on the fill nozzle, which in turn sends a signal to the solenoid, which closes the valve automatically. Another button, labeled "stop," is a fail-safe component and is generally not needed.

Aside from the valve, there are no moving parts, and the components are very rugged largely because of their simplicity of design. Westrich offers a system option that turns off the water pump while closing the solenoid valve as an added cost saver.

The payback period for the system, which costs less than $1,000, varies depending on an operation's setup. A few extra cents for one truckload of concrete may seem like no big deal. But multiply a few cents by each truckload of concrete shipped in a day, and you have a reasonable estimate between a few weeks to something shy of a year.

Another benefit is that the system reduces the producer's environmental risk. Water discharged from overfilled saddle tanks is classified as process water. By limiting this potential source of process water, producers may reduce treatment costs and keep their water-containment volumes low. The possibility of eliminating any EPA-generated questions would allow producers to easily justify the investment.

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