

# Simplification Innovations: The Metering Pump Reimagined

A metering pump serves a simple but important role in any water treatment system. In theory, these pumps should be relatively simple to set up and run. In reality, they can be quite complicated. Operators must often pore through a 60- to 120-page manual, then navigate awkward interfaces and decipher prompts. It can take hours to get ready, and if there is a mistake during setup, it can cause unnecessary delays.

**New innovations** in pump engineering are changing this. Taking cues from smartphones, new technology is simplifying the setup and operation of metering pumps, making them user-friendly, versatile, and upgradable.

## Simplicity Through Specification

Even before the pump is purchased, it begins consuming manhours. The pump needs to be specified and selected for the application. This means determining at which speed and pressure the pump will run. Cam sizes must be determined. For **peristaltic pumps**, the right hose material should be chosen for the chemical being metered. It also has to be designed with the appropriate communication protocols (e.g., Modbus, Ethernet/IP).

Advanced metering pumps are doing away with this process, offering all-in-one solutions (Figure 1). The pumps can run at various speeds and pressures. In addition, they are engineered with the three most common industrial protocols built in: Modbus, Ethernet/IP, and Profibus. The only thing that needs to be selected is the hose material.

By incorporating as much functionality into the pump as possible, plant personnel spend less time determining specifications and selecting options.

## Simplicity Through Ease Of Use

The beauty of a peristaltic pump is that once it's up and running, it should be able to operate continuously without operator



Photo courtesy of Blue-White Industries

**Figure 1.** Advanced metering pumps are all-in-one systems, able to run at a range of speeds and pressure levels in order to reduce time spent researching and specifying the right product.

intervention. But getting it set up and calibrated can require hours of downtime, especially if the operator isn't familiar with the make or model.

The latest technologies consider the user experience from the very beginning. When turned on for the first time, a welcome screen appears that walks the operator step by step through the setup process. It will ask the operator questions, such as what tube is being used, what chemical is being metered, the time, etc. This allows the pump to be operationally ready in a matter of minutes, without any need to thumb through a manual.

The interface for the pump is modeled after modern smartphones (Figure 2). It utilizes a touchscreen with an app drawer and icons. Dozens of seemingly minor details are included to make the pump easy to use. These include a "Home" button, which can save time and frustration by making it easier to jump between apps and features. There's also a "Name" feature, which allows operators to display a custom ID name (e.g., HYPO1 to show it's one of two pumps running sodium hypochlorite) on the main screen of the pump.

### Simplicity Through Upgradability

As pump technologies become more advanced, they are becoming more dependent on their software to run well. But unlike a smartphone or computer, a metering pump is not always easy to update. If there is a patch or security update that needs to be downloaded, the pump may need to be taken offline and brought to a service center, which creates downtime and costs money.

To avoid this hassle, newer pumps are being designed with built-in USB ports. These allow operators to download

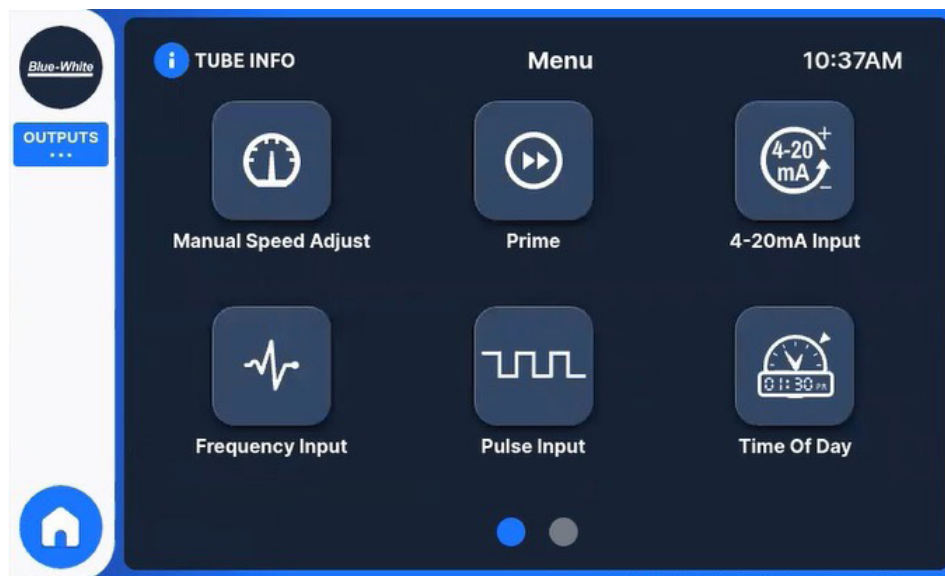


Photo courtesy of Blue-White industries

**Figure 2.** Seemingly simple features, such as a "Home" button and app-based interface, can make metering pumps easier to use.

software updates to an internet-enabled laptop and then upload the new software directly to the pump. This helps water treatment facilities in several ways:

- It slows the rate of obsolescence by keeping the pump continuously up to date with new features, extending the return on investment.
- It avoids downtime from possible software glitches.
- It helps meet cybersecurity goals by maintaining and updating security features.

### Simplicity Through Communication

One of the main values of peristaltic metering pumps is that, for the most part, operators set them up and let them run with minimal maintenance. But nothing runs perfectly forever. The most advanced

metering pumps offer a variety of features that can help avoid problems or warn operators when one occurs.

For example, pumps can be programmed with a tube failure detection (TFD) alert. A TFD alert, which is displayed on the pump and can be sent through a SCADA system, warns of any leakage in the pump hose. The pump can then be shut down either remotely or manually until the hose is replaced.

If operators desire an ounce of prevention, they can utilize a revolution timer. Suppose a hose is estimated to fail after 1 million revolutions (meaning the hose is compressed and decompressed 1 million times); the revolution timer can be set for between 500,000 and 800,000 revolutions. Once the pump has completed the set number of revolutions, an alert is sent, and an operator can change the hose before it fails. ■

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