Five Pump Controller Advancements to Change the Industry

Cattron™ products and services are designed to connect, control and protect. And as technologies evolve and end-user needs change with those technologies, advancements are required to both improve user interactions and to expand possibilities for what equipment can do.

In a time where people can carry a phone that can do almost anything a personal computer can, advancements in pump controllers can now do more than once thought possible.

Are these advancements necessary? Absolutely!

As pump control panels advance in capabilities for both hardware and software, Cattron wanted to take a moment to highlight some of the more impactful innovations available to the industry.

Here are five advancements for pump controllers that can connect more efficiently, control more flexibly and protect more proficiently.

User-Interface Advancements

Interfaces go beyond just color displays. Monochrome displays are starting to be replaced by not only color displays, but color displays with high resolutions. Why? Color allows the contrast to reveal more information, and a higher resolution can also improve the user interface by showing the information in a better format. Higher-resolution displays can also enable content well beyond even what the display can present with the displaying of QR codes, which the user can scan with their phone to share even more details, videos and how-to information to empower the user.

Another thing to consider in terms of the user interface is wider displays. A wide display allows for more information to be shown, like status windows, and the ability to share application-specific dashboards.

Machine Control Advancements

The rabbit/turtle controls are evolving. Nowadays, rabbit/turtle buttons don't have to control just the rpm. They can be configured to control the output of the machines as well, such as discharge pressure, flow, tank level, etc. In fact, the rabbit button can have a pause feature that allows the user to get to a target rpm simply by holding down the button, thus eliminating missing the target by holding the button too long or releasing too soon. Haven't we all done that many times at the gas pump trying to round out to the whole dollar amount ($32.98, $32.99, $33.01?)

Dynamic Throttling
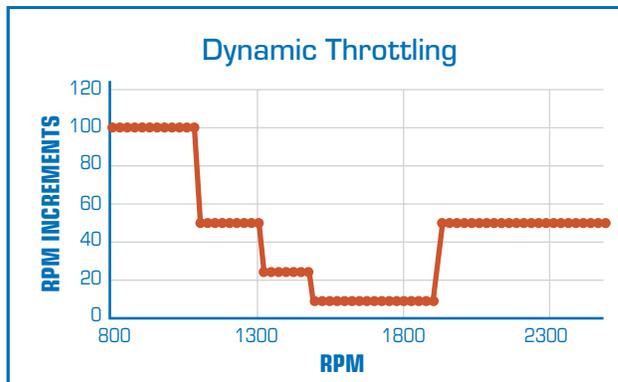
Another advancement is that each press doesn't always have to be a set amount. For example, instead of every press resulting in an rpm change of 10, the amount of change can now be dependent of the current rpm range.
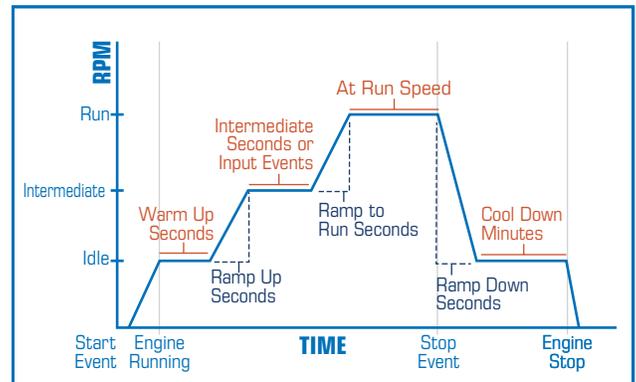
Plus, when using a Smart Ramp Profile, input events, rather than time, can determine when to go to the next rpm stage. For example, the pump stays at the "Intermediate RPM" until the pipes are filled and the discharge pressure reaches an intermediate level.

Bluetooth® Advancements

When added to panels, Bluetooth can help eliminate extensive amounts of wires and cables connecting to sensors (similar to that wire between the device and your headset). Bluetooth Low Energy (BLE) has energy requirements that can enable the construction of battery-driven sensors to last a long time—typically years.

With Bluetooth, the number of sensors is not bound by the hardware capability of the panel. More virtual channels can be added to allow more Bluetooth sensors to be connected. A good analogy is a meeting in a conference room where the number of attendees is limited by the number of chairs, but if the meeting has a conference call link, the number of attendees can dramatically increase.

Probably the most compelling advantage is that Bluetooth connectivity enables the use of a phone or tablet app to allow monitoring and controlling of the pump without having to stand in front of it to physically interact with the panel.

Industrial Internet of Things (IoT) Telemetry Advancements

With advancing technologies comes easier-to-manage telemetry. Web portals now allow the customer to manage their own IoT devices. From changing data plans to subscription setup, it can all be managed through these web portals.

Devices can even be provisioned onto the cellular network automatically from the production floor to be ready to be claimed by a customer.

Beyond cellular as the means to connect to remote devices, satellite-link hardware and data prices have gotten to the point where this path is affordable for areas where there are limited or unreliable cellular services.

Along with flexibility comes safety. Cybersecurity is now an integral part of the product. This is achieved by loading the cybersecurity credentials at the time of production so that the devices are "born" with security. Another important step is remote devices are "hard-coded" to only communicate with one dedicated middleware server, which helps protect against a hacker redirecting the communications. These communications are encrypted, which helps with a hacker listening or sending false commands. Once the information is at the middleware server, the server is responsible to forward that information to the proper server or servers for user interaction or databases. These cloud-based databases allow for analytics and predictive maintenance so that everything runs functionally and efficiently.

Next-Generation Advancements

Embedded computing processing and power management are increasing, which enables the panels to replace the limited-capability microcontrollers (uC) with microprocessors (uP) with GHz speeds and performance. Like your smartphone's increased speed and performance have enabled voice and facial recognition, the panels now have the opportunity to advance their capability.

What does that mean to you? It means uP-enabled edge computing, allowing the pump to monitor and detect events like cavitation, vibration irregularities and other trends for predictive maintenance.

Again, like your smartphone, electronics advancements will allow the ability to natively embed wireless communications in the panel, resulting in the lowering of the total solution cost for telemetry and other advancements.

In closing, be sure to consider implementing these advancements because:

- Pump control panels have greatly advanced in hardware and software

- User-interface improvements make pump control more intuitive

- Bluetooth eliminates wired devices and allows wireless monitoring

- Native cellular panels will become the standard

- Edge computing will be in demand

Contact a Cattron representative or learn more at cattron.com.

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