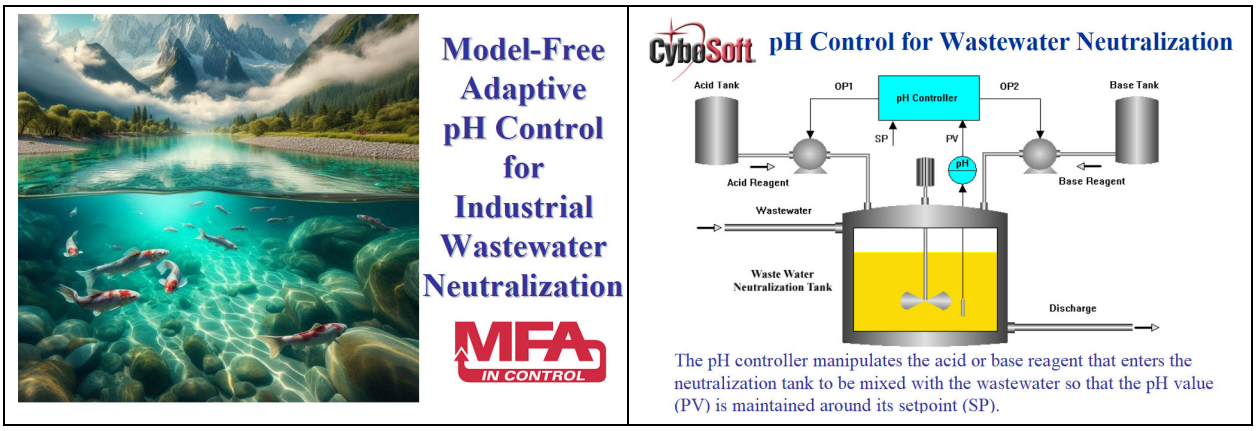
News Release

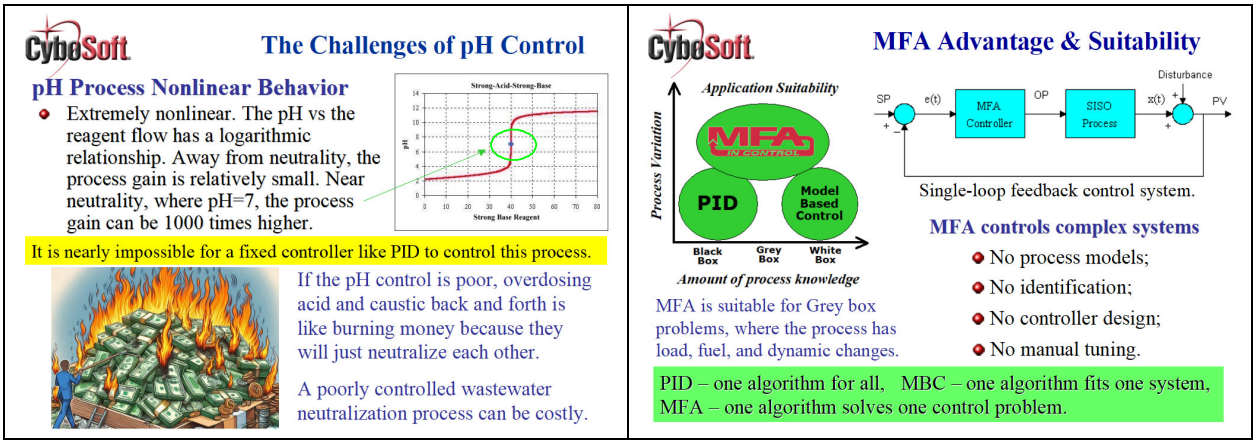
CyboSoft Releases a Video to Demonstrate MFA pH Control Solutions for Industrial Wastewater Neutralization to Meet EPA Regulations

October 1, 2024 – CyboSoft (Rancho Cordova, California), the developer of Model-Free Adaptive (MFA) control technology and products, announced today that it has released a short video to demonstrate MFA control solutions for industrial wastewater neutralization to meet EPA regulations.



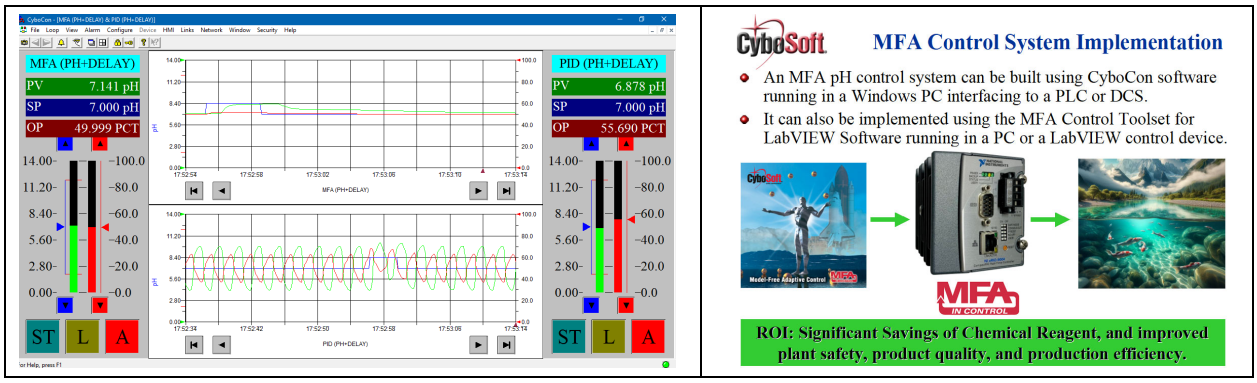
CyboSoft CEO Dr. George Cheng said, "We are entering the era of AI and the 4th Industrial Revolution, where everything is expected to be 'smart'. Ironically, most industrial wastewater pH processes are still controlled by on-off Bang-Bang or PID control, leading to chemical reagent waste, equipment corrosion, and environmental pollution. CyboSoft offers effective MFA pH control solutions, enabling the industry to improve safety, enhance quality, and reduce costs."

The U.S. EPA and local governments require wastewater to be neutralized to a pH level between 6 and 9 before discharge. Violating the regulations can result in fines up to $50,000 per day. A wastewater pH neutralization process includes one or multiple pH controllers that regulate the acid or caustic flow into a neutralization tank. The chemical reagent mixes with the wastewater to maintain the pH around its setpoint.



A pH process is highly nonlinear, with a logarithmic relationship between pH and the reagent flow. Away from neutrality, the process gain is small, but near pH 7, it can increase by up to 1000 times. This makes it almost impossible for a PID to control this process. Poor pH control can lead to overdosing acid and caustic, which is like burning money as they simply neutralize each other. As a result, a poorly controlled wastewater neutralization process can be very costly in terms of chemical consumption, equipment corrosion, and plant safety. Traditional PID control is not sufficient, and model-based control methods are too complicated and costly to implement. CyboSoft's Model-Free Adaptive (MFA) control is well suited for this application. MFA has been widely deployed in industrial process control.

On the video, we compared an Anti-delay MFA pH controller with a PID controller, each controlling a pH process with large time delays. When a pH process is combined with large time delays as well as large in-flow and pH changes, the difficulty of this control loop quadruples. You not only must deal with the large gain changes, but also the varying time delays. This special MFA controller combines the power of being predictive, adaptive, and robust. It adapts to compensate for large gain changes, predicts to handle large time delays, and is robust to deal with in-flow changes, titration curve shifts, and other uncertainties. You can see that the Anti-delay MFA pH controller can effectively control a pH process with large time delays, while the PID controller fails miserably.



An MFA pH control system can be built using CyboCon software running on a Windows PC, interfacing to a PLC or DCS. It can also be implemented with the MFA Control Toolset for LabVIEW software, running on a LabVIEW control device.

About CyboSoft

CyboSoft is the leader in control technology serving the worldwide process control, building control, and equipment control markets. CyboSoft's patented Model-Free Adaptive (MFA) control technology for automatically controlling physical processes is a major breakthrough. No other comparable technology possesses all the attributes of MFA. MFA is the only commercially successful smart controller that does not require mathematical models. For more information, please contact: CyboSoft, e-mail: Josh Bear, JBear@cybosoft.com. Website: www.cybosoft.com.