

Case Study

u-remote Delivers Automation Solution to Keep Life-Sustaining Water Flowing

FAST
DELIVERY,
ELEGANT
DESIGN

Customer challenge

A single contaminant in water can be life-threatening or even fatal for someone undergoing hemodialysis.

Behind the patient treatment areas in the nation's roughly 7,500 dialysis centers from coast to coast are complex water-purification systems that feed medical-grade water into therapy protocols. Specialty Water Technologies (SWT) is one of the nation's leading OEM manufacturers of multi-tank, integrated systems, which, due to their critical role in healthcare, increasingly use automation to meet tight Federal Drug Administration standards for clean water.

Automated water-quality monitoring systems must account for multiple factors – including chlorine intensity, pressures and pH levels, to name just a few. Reliable, accurate monitoring is essential for producing and ensuring medical-grade water.

While federal standards for drinking water set allowable limits for common chemicals and contaminants, the standards for dialysis water are understandably more stringent. During a single dialysis session, which lasts up to four hours, a patient can be exposed to up to 200 liters of water, according to the Center for Disease Control and Prevention.

Solution

Understanding that it needed a ready supply of remote I/O products, SWT approached Weidmuller USA about its u-remote solution for monitoring water quality.

u-remote - Weidmuller's configurable, simplified I/O solution - can be used across multiple platforms, including interfacing with virtually any PLC system. Customers can tap into more than 80 I/O cards to tailor its functionality; in this case, u-remote could monitor time-sensitive sensors in SWT's water-purification process. Another requirement was size, and u-remote is slim and compact, avoiding any disruption in the cabinet.

Weidmuller stepped up when SWT asked for 18 of its UL-listed systems – with delivery required within a week. Weidmuller exceeded the demand by shipping 25 almost immediately. "This component was an exact match and fit like a glove," SWT President Vince Barker said. Even more important, SWT never had to shut down production at any dialysis site.



The Pre-Treatment Monitor (PTM) is the brain of the water treatment system. Sensor data from across the system flows into the u-remote located in the PTM control box.

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Benefits

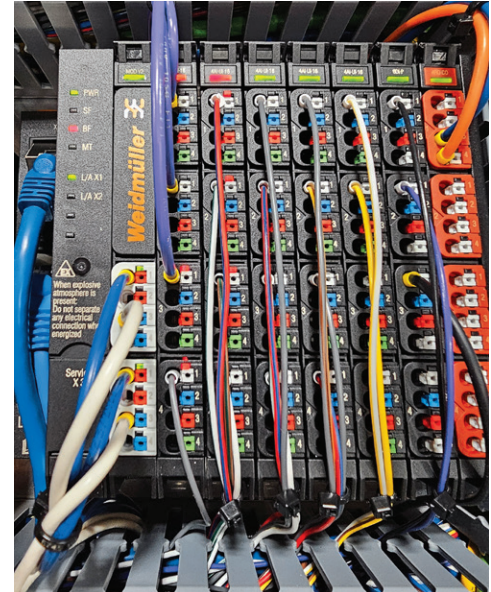
From its home in the control cabinet, u-remote receives data from analytical sensors found across the system. After it is deciphered and calculated, that data drives operational decisions. u-remote then outputs data to adjust values or downstream processes to ensure the outflow water meets medical grade requirements. The automation includes soft limit alerts, which advise on-site technicians to issues they often can address. More significant hard-limit alarms prompt a system shutdown, which automatically diverts water flow from any patient.

Because purification systems already take up dedicated space at a treatment site, efficiency in the supporting technology that fits in the existing space is important. Between FDA and UL requirements, making changes often takes significant review and approval time, but the Weidmuller approach was designed to be easily switched out for the existing I/O solution. The upgrade can be executed and validated in a day, keeping centers open for patients.

In addition to delivering the necessary functionality, the component's elegant design complements the look of the control box and simplifies the wiring. LED lights at each connection point tell users when something isn't running for easier troubleshooting. In the field, modules are automatically integrated and snapped in, without a need for more hardware or specialized tools. u-remote also opens greater expansion options than SWT found in its previous supplier's product.

Preparing for future-ready automation solutions

SWT now is exploring how to siphon data from the PLC and bundle it into a cloud-based dashboard for users. Leveraging Weidmuller's Automated Solutions Network (ASN) and its Applied Solutions Engineers, SWT and other OEMs can avail themselves of a complementary service to survey a company's machine/cabinet design and offer options mapped to IIoT, business and customer needs.



The u-remote's elegant design complements the look of SWT's control box and simplifies the wiring.

Project Overview

Project	Monitoring water quality for dialysis centers
Customer	Specialty Water Technologies
Solution	u-remote I/O from Weidmuller
Scope	Monitor and decipher data to adjust values or downstream processes to ensure the outflow water meets medical grade requirements.

Project Teams

Specialty Water Technologies (SWT)
Weidmuller Automation Team
Weidmuller Southeast Business Team

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