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MiPro™ UV AOP Demonstration Skid

WEDECO®

GOULDS WATER TECHNOLOGY

YSI®

MiPro™ UV AOP Demonstration Skid



1. Endress Hauser flowmeter
2. Goulds UV feed pump
3. Wedeco Spektron validated UV system
4. Dual-channel UviTec M4250 UVT monitor
5. YSI chlorine and pH analyzers with IQ SensorNet controllers
6. Static mixer post oxidant injection
7. Spektron reactor control panel
8. Chemical storage tanks with containment
9. Chemical dosing pumps
10. Master AOP control panel

UV-AOP demo unit features

- **Fully validated** UV systems for scalable results
- **Multiple skid designs** with flow rates from 3–300 gpm
- **Full-scale process control** with chemical AOP modeling and CFD-assisted UV dose (RED) calculation
- **Integrated monitoring**, sampling, and CCP analysis
- **Xylem expert support** for pilot and demonstration facility planning

Flexible approach to piloting and demonstration

Equipped with Xylem's Wedeco® Spektron® UV system, this skidded system can be tailored to any target flow rate for AOP demonstration. It enables testing with different oxidants including both UV/hydrogen peroxide (H_2O_2) and UV/free chlorine (HOCl).

Scalable results through UV system validation

Because Spektron UV systems are equipped with Wedeco low pressure high output EcoRay® UV lamps and validated to 6 log removal, reduction equivalent doses (RED) are scalable from pilot testing to full-scale design and operation.

Fully integrated AOP control system

Simplified HMI display for pilot operations. The MiPro UV AOP Demonstration Skid programmable logic controller (PLC) offers capabilities for remote monitoring of system operations and data collection.

Automatic monitoring and critical control point assessment

The demonstration skid is equipped with all relevant online monitors and allows continuous evaluation of critical control setpoints for UV/HOCl and UV/H_2O_2 operation. Additional monitors are available to improve process understanding.

Full-scale operation and maintenance experience

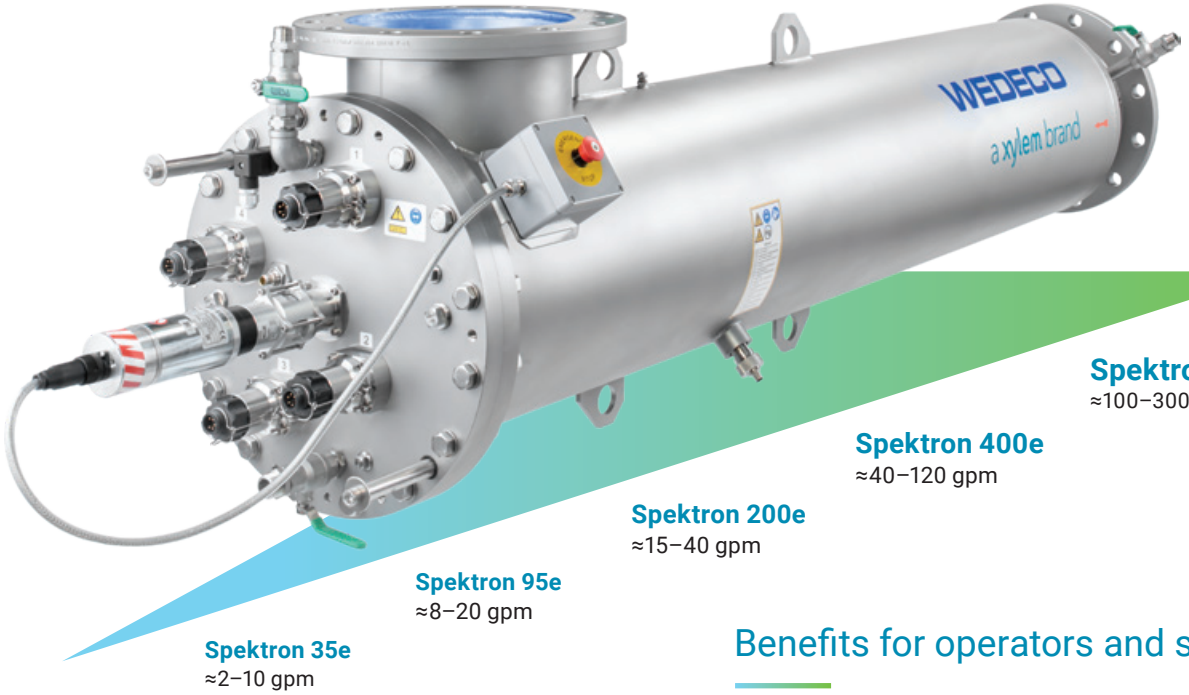
Operators can experience full-scale process control using state-of-the-art CFD-assisted UV dose (RED) calculations including UVT increase considerations throughout the reactor. Critical control setpoints for chemical control are defined using advanced chemical reaction modeling and verified via performance testing.

Scientific and technical support throughout piloting and demonstration process

Xylem's AOP process experts and Intuitech's[1] established experience combine to provide in-depth support throughout the entire demonstration process, from commissioning, design, and planning, to evaluation and documentation.

Have confidence in reliable disinfection of drinking water with UVDGM validated ranges

With over 10,000 units installed worldwide, the Wedeco® Spektron® UV series is renowned for its trusted performance for a wide range of applications, from public water supply to industrial use. The latest UVDGM validated addition to the series are designed for municipalities facing increase treatment requirements during process upgrades. The ultracompact Spektron models come with new features that streamline their integration into existing pipe arrangements, providing a reliable, efficient and sustainable choice to ensure safe water supplies.



Flow rates can vary across applications and other factors like water chemical structure.

Benefits for operators and stakeholders

The Xylem Wedeco Spektron UV reactor is a validated UV system available in a large range of sizes (and as a standalone unit) within the same series, directly translating into full-scale systems, minimizing changes for operators, with simplified controls for improved scalability.

System specifications

	MiPro™ Photo 5	MiPro Photo 15	MiPro Photo 25	MiPro Photo 80	MiPro Photo 200
Approx. flow range	2–10 gpm	8–20 gpm	15–40 gpm	40–120 gpm	100–300 gpm
UVT range	80–99%				
Dimensions (W × H × L)	48" × 72" × 108"		Flexible options available, please consult		
Weight	1900 lbs/862 kg dry				
Process connection	2" ANSI flange or DN50 DIN flange				
Pressure rating	60 psi				
Power requirements	120/240 VAC, 1 Phase, 60 Hz, 10A				
Available oxidants	Hydrogen Peroxide (H_2O_2) and Sodium Hypochlorite (NaOCl)[2,3]				
Installation environment	Indoors or outdoors at 32°F to 122°F (No direct sunlight. Air conditioning available for higher ambient temps.)				
PLC and HMI make/model	Schneider M251 and Phoenix Contact BL2 PPC				
Total connected power (kW)	2.5 kW	3 kW	4 kW	Upon request	Upon request
Standard UV reactor specifications[4]					
UV reactor	Spektron 35e	Spektron 95e	Spektron 200e	Spektron 400e	Spektron 680e
Lamp type	Wedeco® EcoRay®—Low pressure high ouput lamp				
No. of lamps	1	2	3	4	8
Power per lamp (W)	350	350	300	600	800
Lamp driver	Wedeco EcoRay electronic ballast. Variable power 50–100%				
Sleeve cleaning	—	Electrically actuated mechanical wiping (optional)			

[2] For UV/HOCl, can also utilize sulfuric acid with the second chemical feed pump for UV/HOCl operations.
[3] Chemicals are not provided with the demo skid.
[4] For more details refer to technical reactor descriptions.

Online instrumentation

Parameter	Product	UV/H_2O_2	UV/HOCl
RO permeate (before oxidant addition)			
Flow rate	Endress Hauser Picomag flowmeter	● standard	● standard
Total chlorine	YSI 3017M	● optional	● optional
UV reactor inlet (after oxidant addition)			
UV transmittance	UviTec M4250	● standard	● standard
Free chlorine	YSI 3017M	● not required	● standard
Total chlorine	YSI 3017M	● not required	● optional
pH	YSI 4140 pH Sensor	● standard	● standard
UV reactor outlet			
UV transmittance	UviTec M4250	● standard	● standard
Free chlorine	YSI 3017M	● not required	● standard
Total chlorine	YSI 3017M	● not required	● optional
pH	YSI SensoLyt 700 IQ	● optional	● optional

[1] **About Intuitech:** combining over 20 years of experience in the water treatment and controls industry, the owners formed Intuitech, Inc. in 1996 to provide water treatment system automation services. As a leading provider of packaged water treatment pilot plants, Intuitech is committed to provide innovative water pilot plant solutions, that feature highly functional control systems, and effectively model full-scale water treatment processes.

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