

# ECSI

## International

**WISE®**  
water infrastructure bio-chem sensing



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Specifications subject to change

## About Us

One of the world's well-known providers of turnkey security solutions

- Established in 1976 as a physical security systems engineering and manufacturing company.
- Focused on delivering high quality, cost effective entry control and perimeter security solutions.
- High-Profile, High-Threat environment protection.
- ECSI is a registered and verified vendor of the US Federal Contractor Registration Program.
- Competitive Small Business Entity
- ISO 9001 Certified



## **THE** problem

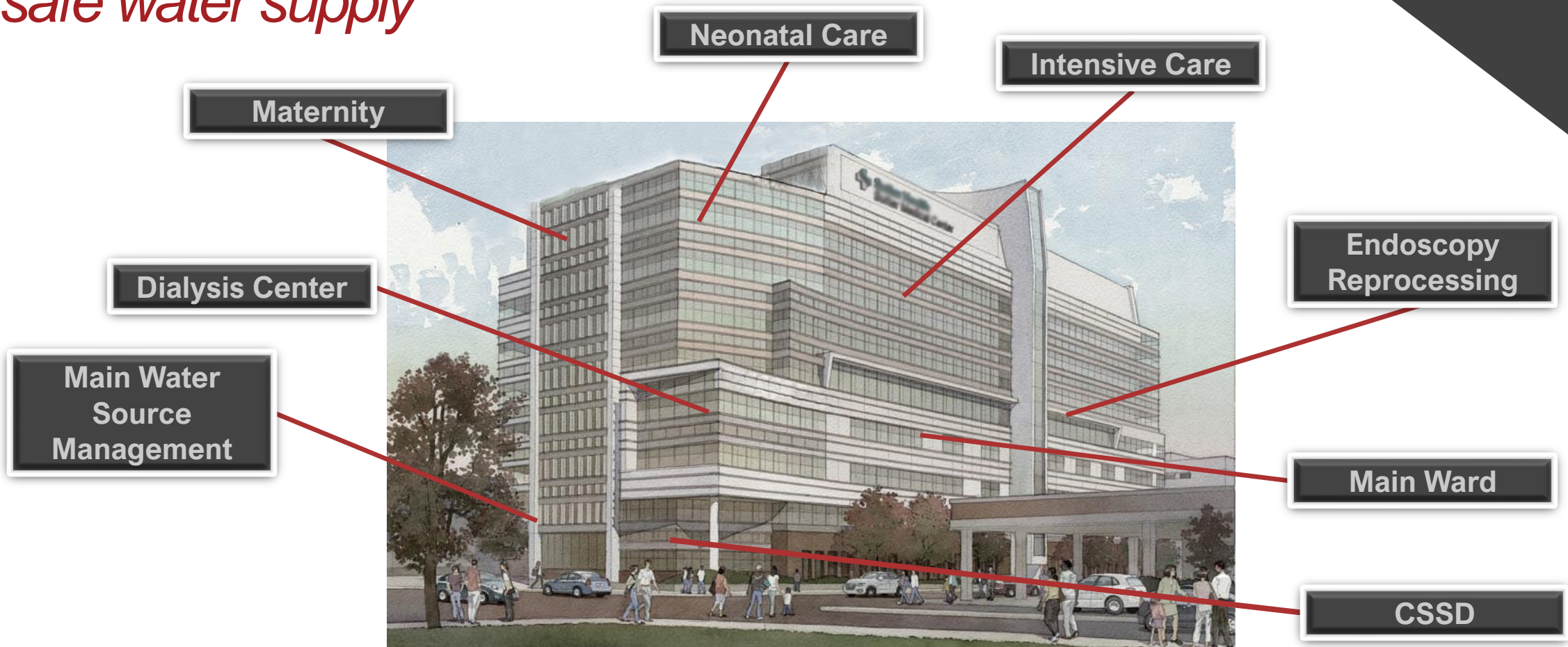
**Drinking water systems are vulnerable to:**

- **chemical spills**
- **pollution**
- **natural degradation of water systems**
- **natural and man-made disasters**





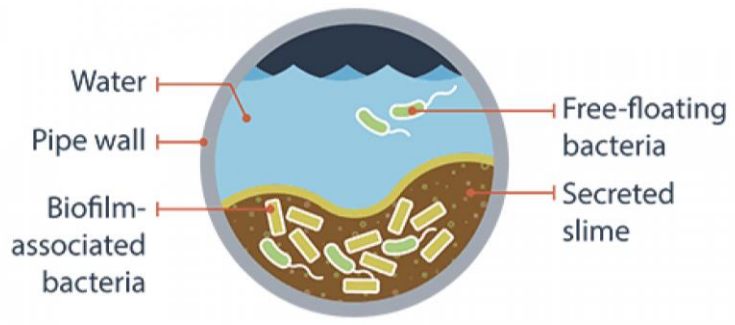
# Critical hospital departments *need to ensure a safe water supply*



Over time, facility water systems develop biofilm, and face additional degradation as seals deteriorate, chlorine corrodes metal pipes and fittings, building and maintenance work adversely affect plumbing systems, and pipes made of varying materials release particulate such as organic matter, rubber compounds and microplastics into the water.



**Pipe corrosion**



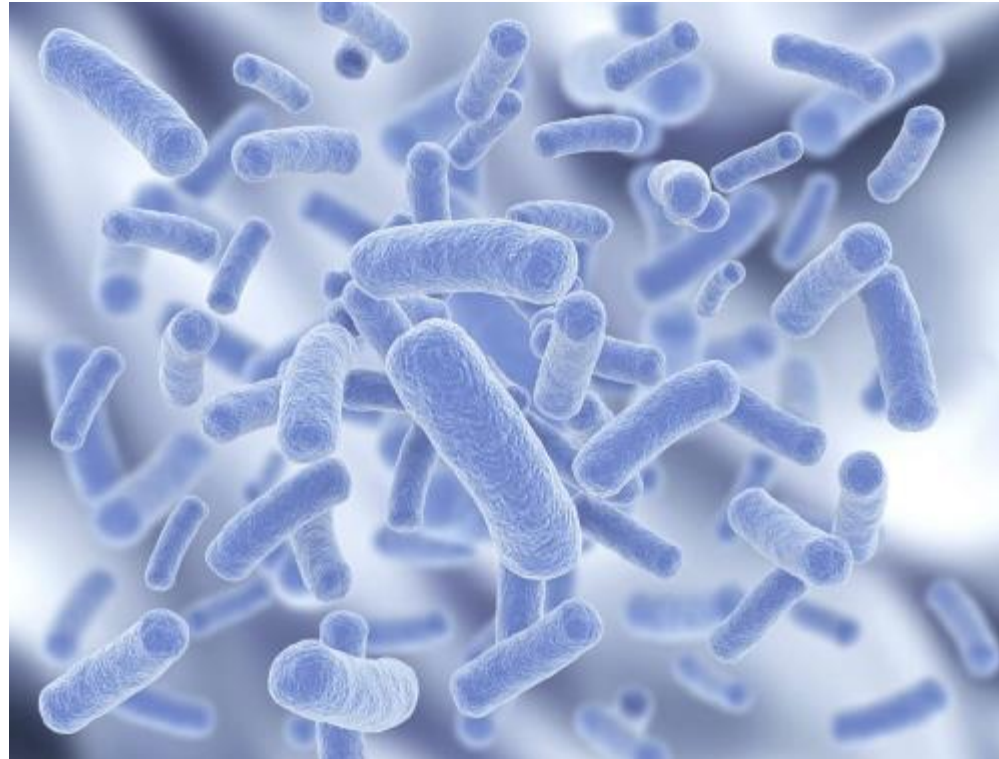
**Cross section of pipe**



**Biofilm in pipe**

## A broad variety of microorganisms can develop in your water systems:

- Pseudomonas (.5-3  $\mu\text{m}$ )
- Legionella (2-20  $\mu\text{m}$ )
- Cryptosporidium (3-6  $\mu\text{m}$ )
- E-Coli (1-2  $\mu\text{m}$ )
- Aspergillus (2-10  $\mu\text{m}$ )
- Acinetobacter (.9-2.5  $\mu\text{m}$ )



## THE solution

**WISE®** is the first integrated system capable of detecting and reporting biological and chemical contamination events...

**ONLINE and in REAL-TIME!**



By  
**ECSI** International



## What must I protect against?

- WISE® will detect contamination in water:
  - Any Rod-shaped bacteria (e.g., *Legionella*)
  - Most Cocci-shaped bacteria
  - Endospores
  - Cysts (*Anthrax*, *Crypto*, *Giardia*, etc.)

The WISE® system will respond to any microorganism or particulate of 0.5 µm or larger\*

*\*Supporting documentation available upon request*





## Applications:

- Hospitals
- Universities
- Office and Apartment Complexes
- Pharmaceutical & Health-care
- Incoming water monitoring
- Water after filtration
- Water monitoring after in-house treatment system
- Municipal Drinking Water
- Reclaimed Water
- Food, beverage & bottled water production
- Desalination monitoring
- High-profile facilities



## WISE® Water Infrastructure Sensing Equipment

- Continuously monitoring water for chemical and biological anomalies,  
**online and in real-time!**
- Immediately reports out-of-parameter conditions (via email or SCADA) to any number of recipients
- **Chemical Detection** using combination of industry standard sensors to detect and report out-of-parameter conditions which could indicate a contamination event:
  - Temperature
  - pH
  - Conductivity
  - ORP/Redox



## WISE® Water Infrastructure Sensing Equipment

- Continuously monitoring water for chemical and biological anomalies,  
**online and in real-time!**
- Immediately reports out-of-parameter conditions (via email or SCADA) to any number of recipients
- **Biological Detection:** Analyzes Multi-Angle Laser Light Scattering Signals (MALS) to monitor and detect waterborne micro-organisms or other particles
- Alerts to presence of contamination
- Increased efficiency through process control optimization
- **US DoD/EPA tested**
- **Five (5) year warranty**



## WISE® Realtime-Online Contamination Monitoring

### BENEFITS:

- **‘DETECT and WARN’** system detects early signs of water quality deterioration allowing for quick remedial action.
- When microbiological contamination is detected the system automatically:
  - **Plots alert data on display screen**
  - **Alerts are transmitted via email or directly to central monitoring system**
  - **Further actions by the customer and their central control system may be:**
    - **Extracts of water samples for further analysis**
    - **Shutting down or bypassing the source of contaminated water.**



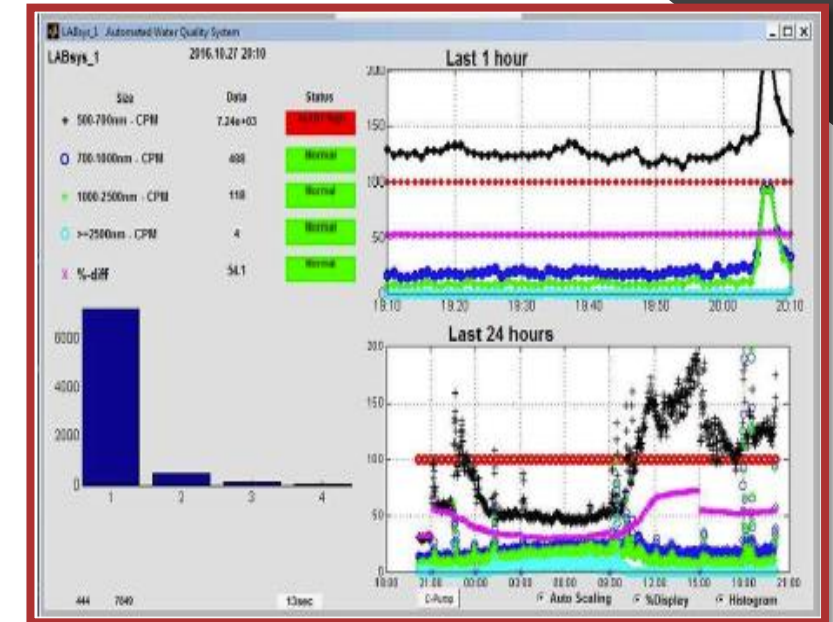


## WISE® Realtime-Online Contamination Monitoring

### FEATURES:

- 30 to 100 mL/min flow with 5 to 10 mL/min directed through the measurement 'flow-cell'<sup>1</sup>
- Four size bin thresholds, from 0.5 to > 2.5 microns
- **Sensitivity** – 10 per mL in ultra-clean water, 250 per mL in clean 0.2 µm filtered water, 100s per mL typical, in relatively clean tap water.
- Typical pure water can have 200 to 25,000 contaminants per mL and still test under 0.1 NTU but can be easily measured by the WISE® system.
- Water for dialysis requires microbial counts < 100 cfu/mL; WISE® can provide continuous monitoring to ensure compliance.
- Fully automated flow-cell cleaning using PAA.
- Daily Reports generated automatically.
- Alerts and Warning automatic emails provided.
- Fully Remote Operation, S/W support, and diagnostics provided through “Remote Utilities”
- Almost zero operating costs < 65 watts of power and < \$10 USD per month for PAA cleaning chemical

<sup>1</sup>Flow rate depends on building plumbing and piping configurations and water pressure.



# WISE® Realtime-Online Contamination Monitoring

(Data available on Specification Sheet)

## ▪ Specifications:

- Fluid Flow 30 to 100 mL/min adjustable
- Flow through Flow-cell 5-10 mL/min
- Peristaltic Pump for fuel cell flow
- Needle valve for bypass flow
- Water Inlet Max Pressure 70 PSI (4.83 Bar) to debubbler only
- System operates at 0.5 to 1.5 psi
- Cleaning Solution 1.5% Peracetic Acid
- Size Detection Range 500 nm to 3,000 nm+
- Detection – all micro-biologicals in size range
- Nominal size channels
  - 0.5 – 0.7, 0.7 – 1.0, 1.0 – 2.5, >2.5 Microns
- Alerts + Warnings Email and Visible Display
- Daily Report Email and on System Storage
- Minute by Minute Results Text file for each day
- Results also to Network Storage or Memory Stick
- Automatic Cleaning – one to 4 times a day or every 2 hrs. as required depending on quality of water being tested

## ▪ Specifications:

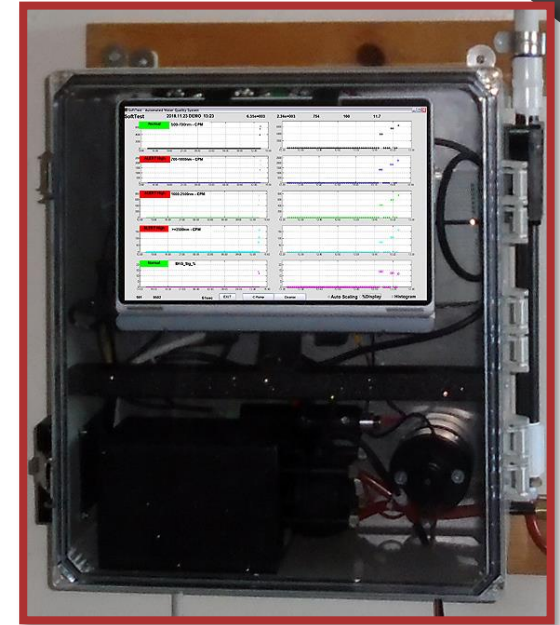
- Bio only: 15"x17"x9" (381x432x229 mm) WHD
- Bio-chem: 33.1"x23"x35" (841x584x889 mm) WHD
- Weight:
  - Bio only: 30 lbs. (13.6 Kg)
  - Bio-chem: 155 lbs. (70.31 Kg)
- Unit Power 24VDC at 4 Amps
- External Power Adapter - 115 VAC / 220 VAC 60/50 Hz 60 Watts
- Operating Temperature Range:
  - 36° ~ 90°F (2° ~32°C)
- Processor Intel Processor: Win10 Pro, 128GB SSD, 4GB RAM
- Communications:
  - Wireless LAN 802.11
  - Gigabit Ethernet
  - USB Type-C

**Specifications are subject to change**

## WISE® Realtime-Online Contamination Monitoring

### Self-Maintenance [Daily]

- WISE® preforms a Self-Maintenance Cleaning Cycle periodically throughout the day
- The maintenance cycles are determined during initial installation by monitoring the background signal levels and is then configured for two or more cleaning cycles per day
- No human intervention required

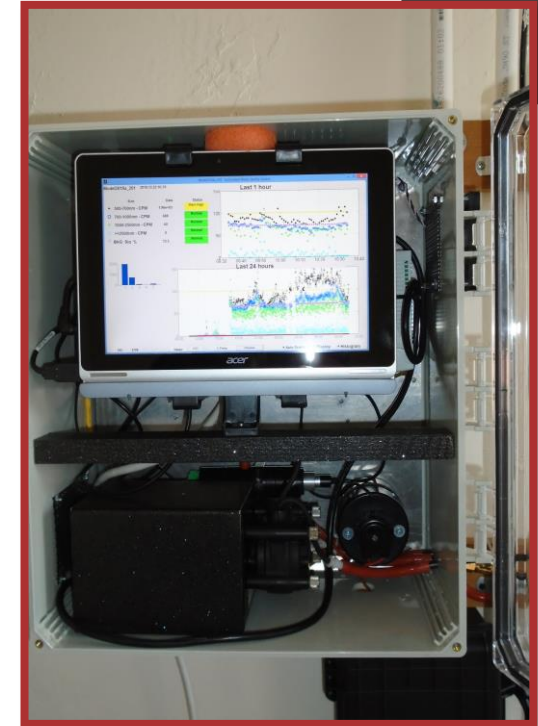


## WISE® Realtime-Online Contamination Monitoring

### Periodic Preventative Maintenance [monthly]

- Replenish the Peracetic acid (also known as peroxyacetic acid, or PAA) for the self-cleaning cycles
- Inspection for leaks within the unit
- Manual cleaning if required

**Estimate: 15 minutes by trained technician**

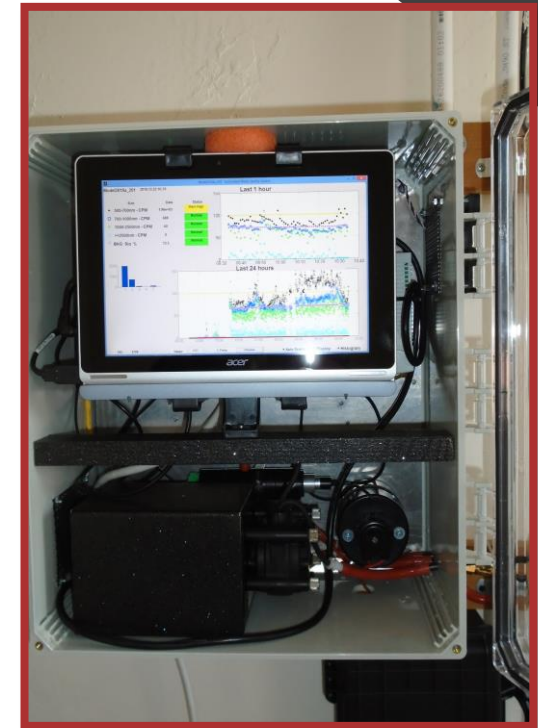




## WISE® Realtime-Online Contamination Monitoring

### Semi-Annual Maintenance [every six (6) months]

- Replenish the Peracetic acid (also known as peroxyacetic acid, or PAA) for the self-cleaning cycles
- Replace all tubing of the self-cleaning module to prevent leaks
- Inspect Flow Tube lens for pitting and replace if necessary
- Manually clean the system

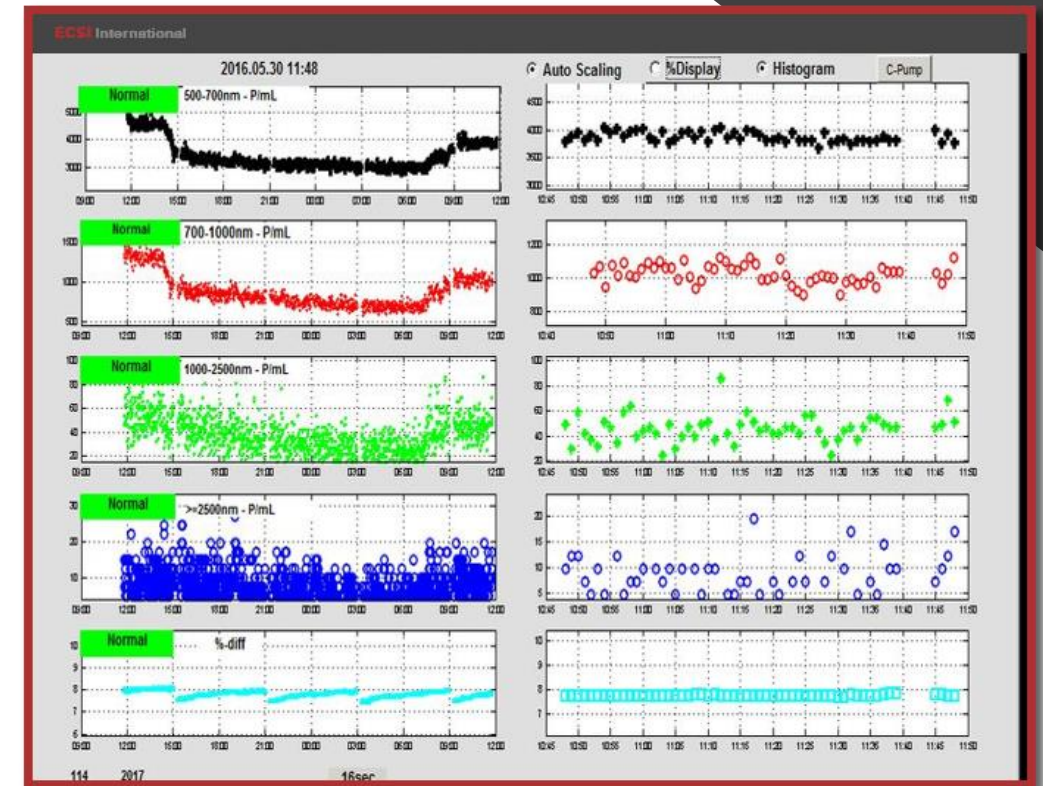


## WISE® Realtime-Online Contamination Monitoring

### Training and Support

- Periodic and Semi-Annual Maintenance
- System Monitoring
- System Installation and Set-up
- Configuration of levels to be monitored
- Setup Alerts

**Distributor / Integrator qualified maintenance personnel will be provided training on the maintaining and cleaning the WISE® system**



## SUMMARY

- A team of professionals with extensive technology experience
- Worldwide business support
- Technologies offer state-of-the-art wired/wireless capabilities and proven cost-effective solutions
- A focus on lasting partnerships
- A team that understands what it takes to solve problems and successfully integrate vital systems

# Thank You.



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