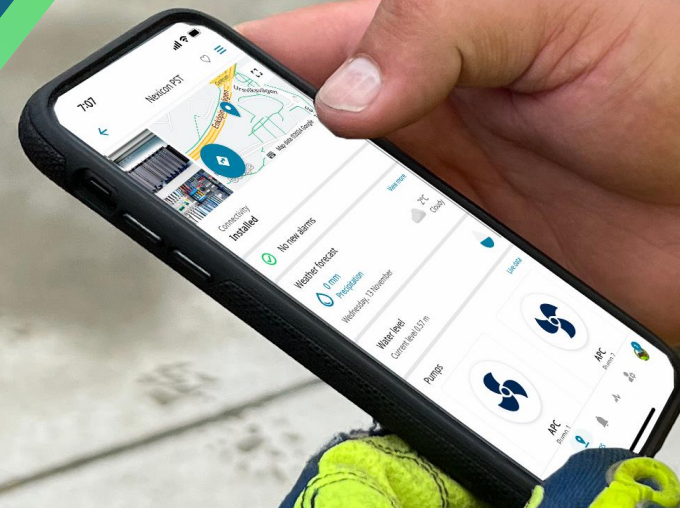


Future Methods of Online Monitoring

Ahmed Abdalla

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Introduction

- Why its important: safety & compliance.
- Traditional monitoring focused on free chlorine, ORP and pH.
- Newer focus includes TDS, turbidity, alkalinity, hardness, and water balance
- What's pool water status right now ? live data is now as essential as the water clarity itself.
- No wasted service trips ! with cloud, send your engineer to the right pool at the right time.



Free Chlorine Sensor Landscape – Today’s Pros & Cons

Aspect	2-Electrode Sensors	Membrane Sensors	Colorimetric	3-Electrode Sensors
Response Time	Fast (T90 <60S)	Moderate (T90<90s)	N/A	Very Fast (<20S)
Stability	Moderate	High	High	High
Maintenance	Low–Moderate	Moderate (membrane + electrolyte)	Low	Moderate
Calibration Needs	Frequent	1-point Frequent	Minimal	Weekly–Monthly
pH Influence	Higher	Medium (5%/pH shift)	None	Medium
Temperature Comp.	External	Internal or external	Automatic	Internal/External
Connectivity	Analog	Analog/digital	Digital	Analog
Cost	Low–Mid	High (with consumables)	Highest	Mid–High
Used In	Leisure market	Leisure, industrial and municipal markets	Leisure and municipal markets	Leisure, industrial and municipal markets



Rivo™ III Aquatics
with 2x Depolox-Pool
Pool market, including CL2, pH,
Total Chlorine, Redox

Emerging Parameters – The Next Frontier

Alkalinity:

- Controls pH stability and chlorine effectiveness
- Target: 80–200 mg/l (as CaCO₃)
- Measured weekly

Hardness (Calcium):

- Prevents aggressive water and scaling
- Target: 80-200 mg/l (as CaCO₃)
- Measured weekly

TDS (Dissolved Solids):

- Indicates water ageing, impacts clarity and chemical efficiency
- Measured weekly by conductivity (TDS) meter
- Target: <1000 mg/l above mains water, dilution required if high

Water Balance:

- Calculated using pH, temp, alkalinity, hardness, and TDS
- Indicates corrosive or scale-forming tendency

Turbidity:

- Key safety and clarity indicator
- Target: ≤ 0.5 NTU
- Measured with online turbidity meters like VisoTurb IQ



Turbidity Meter



Regenerative media filter



Multi-grade sand filter

Pool Management System

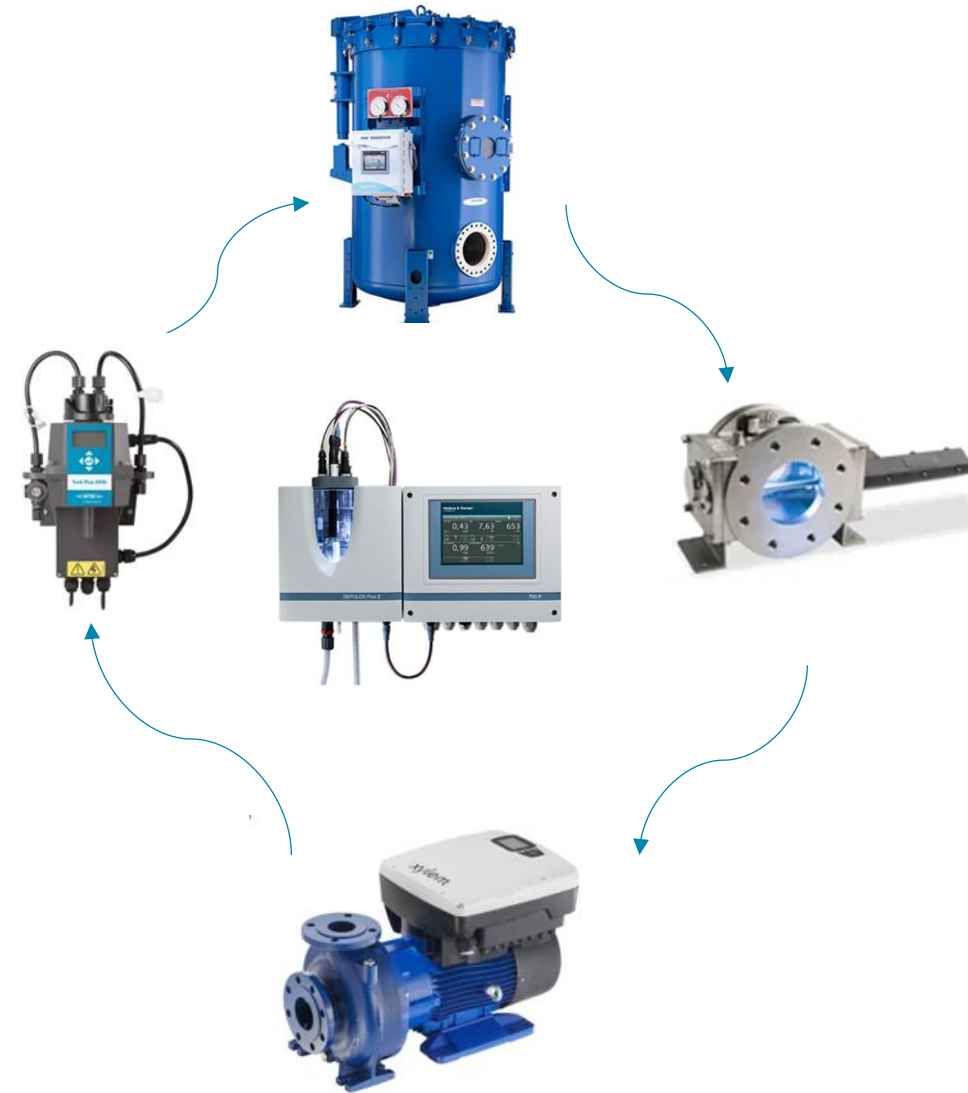
Why important ?

Save Energy:

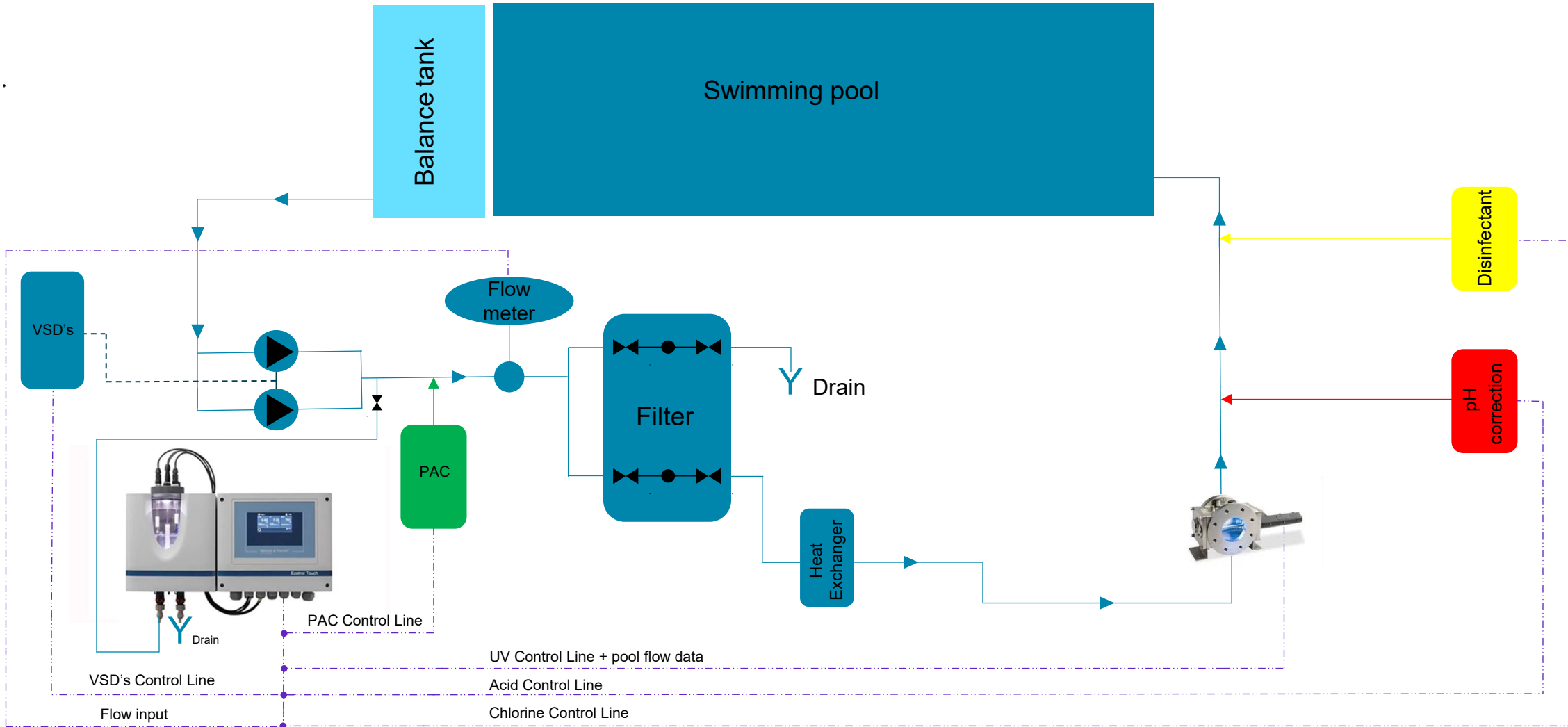
- UV system automatically reduces lamp output when flow rate decreases.
- Pump slows down when measured parameters are stable and bather rate low.

Save Chemicals:

- Dosing of chlorine, acid and flocculant is automatically adjusted based on live parameter reading
- **Safety**
- No dosing of chemicals when flow stops.



Modern Pool Controller

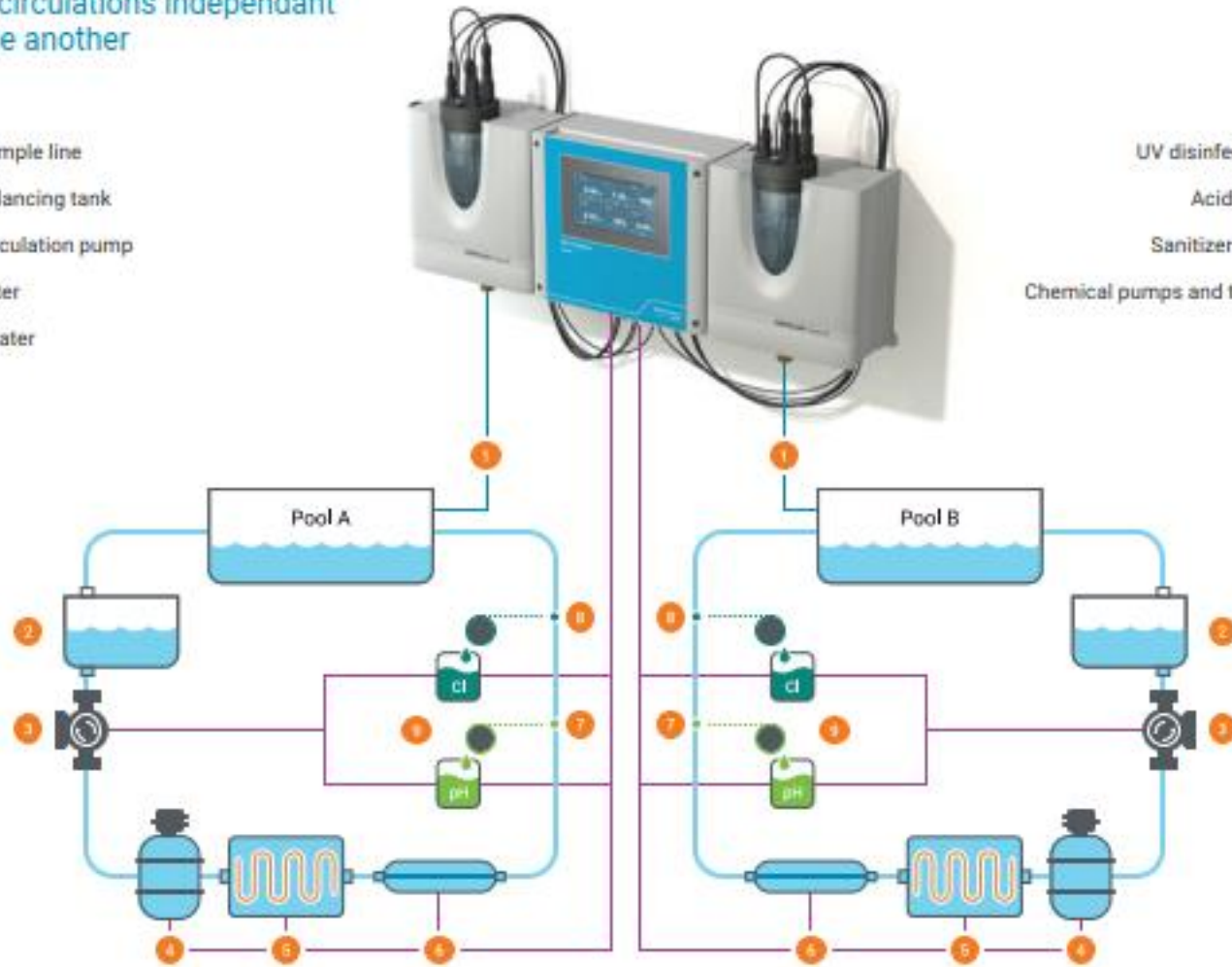


The Next Level Controller

With Rivo™ III, control up to two pool circulations independent of one another

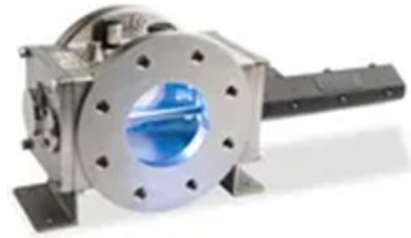
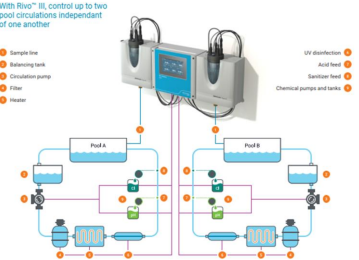
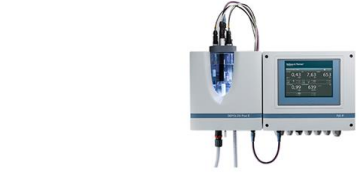
- 1 Sample line
- 2 Balancing tank
- 3 Circulation pump
- 4 Filter
- 5 Heater

- 6 UV disinfection
- 7 Acid feed
- 8 Sanitizer feed
- 9 Chemical pumps and tanks



Rivo I-III

Assets Visibility via Cloud



Avensor Asset Visibility

A snapshot of the features



User-friendly Analytics

Visualize, compare, and analyze operational data. Suitable for non-expert users too



Station Overview

Quickly assess the status of your connected station; add notes.



24/7 System Monitoring & Support

Monitoring ensures system availability. Get access to remote and local support.



Alarm Management

Set up and route alarms to the right people via app, SMS, or email



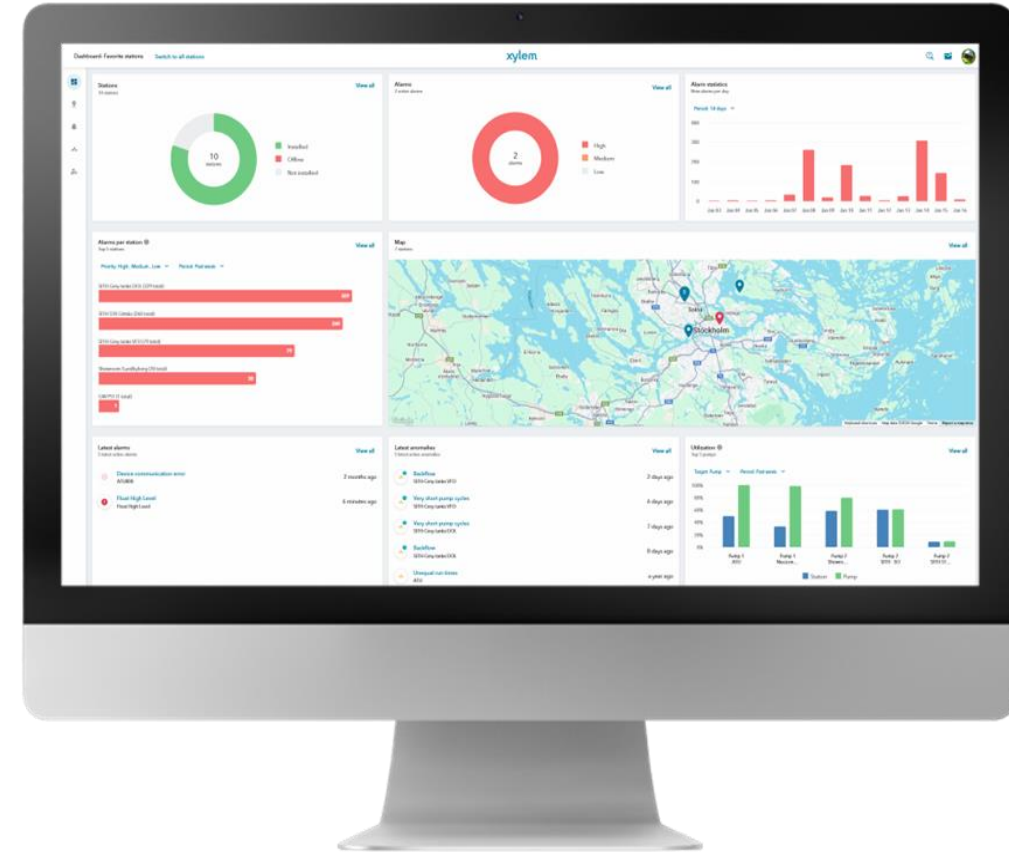
Financial Sense

Avoid just one unnecessary callout and the Avensor system has already paid for itself- it's smart monitoring that makes financial sense.



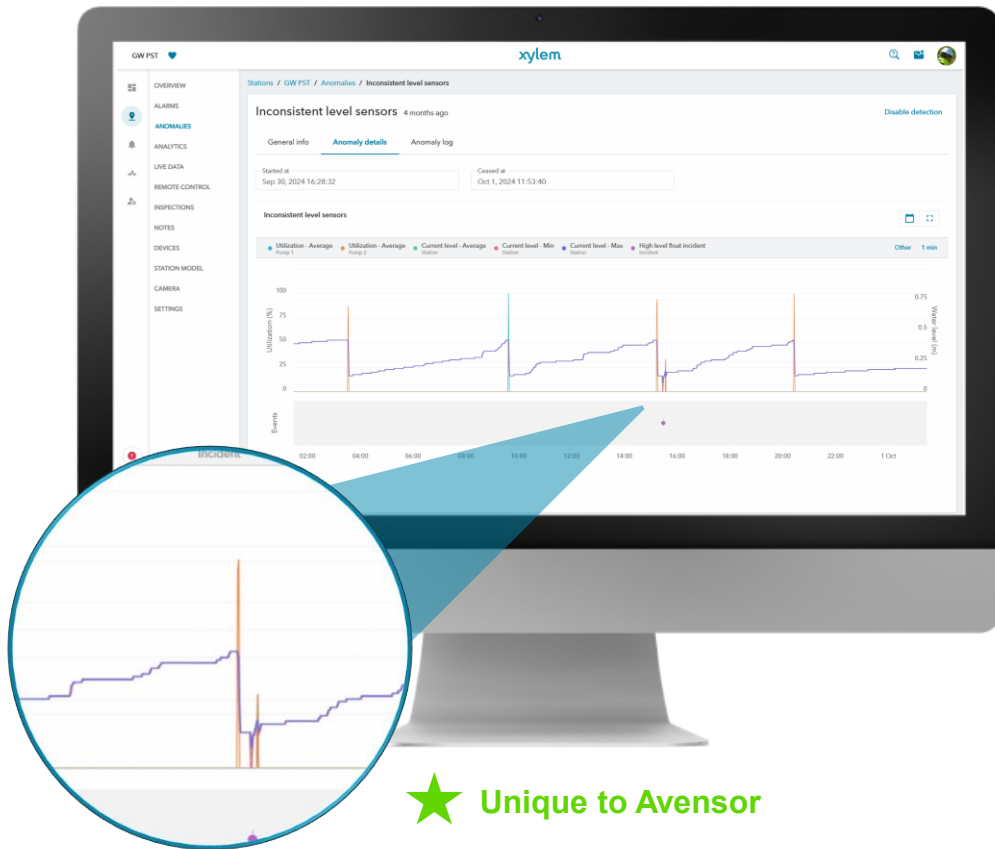
Certified cybersecurity standards

Your data is safe. Avensor is securely hosted and adheres to cybersecurity standards for critical infrastructure



Anomaly Detection !

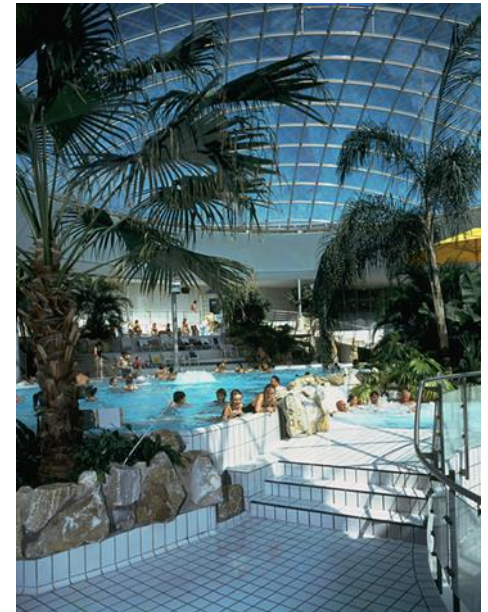
From reactive to proactive



When data deviates from normal operations, Avensor automatically sends notifications about potential issues. This alerts you to emerging problems without the need to analyse different data sets.

Available anomalies:

- Inconsistent level sensors
- Unequal number of starts
- Unequal run times
- Unexpected variations
- Very short pump cycles
- Backflow



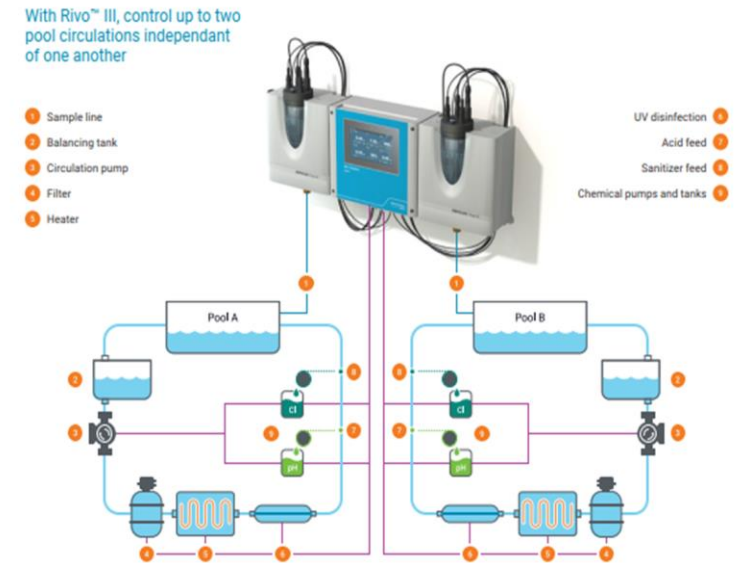
What Technology Bring to the Industry

- End-to-end integration: Complete Pool Management System → Cloud
- Systems tailored to UK pool compliance
- Reduce unplanned downtime, energy (Co2) and chemical waste
- Smart dashboards support better site-level decisions



Summary & Invitation

- Pool Management System controller is now a strategic asset, Power Saving, Chemical usage optimisation
- Future: no wasted service visits, more automation, less guesswork, integrated systems
- Please visit our stand to explore:
 - Defender filter system (efficiency + filtration insights)
 - Wafer UV system (compact dosing)
 - Ezetrol Touch and Rivo III
 - Avensor cloud dashboard
 - VisoTurb® 700 IQ meter



Thank You Very Much

