ClearView

Real-time water monitoring for chemical-free systems

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One of the major benefits of chemical-free water treatment (CFWT) strategies is their inherent transparency.

Targets, like those set within VDI 2035, are explicit and easily understood by all stakeholders: property owners, building managers, maintenance teams and water treatment professionals.

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With this in mind IWTM has developed the ClearView system.

ClearView is the first real-time water monitoring system built specifically to work with chemical-free methodologies, helping to monitor and ensure compliance with the principal chemical-free water treatment standards, VDI 2035, SWKI BT 102–01 and Ö-NORM H 5195–1.

ClearView continually monitors water characteristics to detect adverse conditions that could lead to corrosion damage, issuing alerts if intervention is required. Accessible from any internet-enabled device, all captured information is stored on the IWTM CRM database allowing customers to easily access information about their system wherever they are.

Parameters we monitor include:

- Dissolved oxygen
- pH
- Conductivity
- Galvanic current from the anode output
- System temperature
- System pressure & pressure differential

Any event, whether planned or unplanned (such as maintenance processes or loss of pressure), can be flagged on the inbuilt charts, allowing maintenance teams to keep electronic records in one place.

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Chemical-Free Water Treatment (CFWT) Technology

Chemical-free water treatment offers an alternative approach for those seeking effective, preventative water treatment without the use of chemical inhibitors. This method aligns with Europe's most rigorous guidelines, including CIBSE CP1, VDI 2035, VDI 6044, SWKI, O-NORM, and the Danish District Heating Association, as well as warranty requirements from leading HVAC manufacturers.

It is a proactive approach that controls the underlying causes of corrosion, rather than constantly treating the symptoms and aligns with modern environmental sustainability, water neutrality, and health and safety standards

Control of the key underlying causes of water-side corrosion in closed-loop hydronic systems: **dissolved oxygen (DO), conductivity and pH**, the primary elements on which ***ClearView*** reports, is typically achieved by way of two separate steps:

1. ***Water conditioning and optimising***: Treating the filling and makeup water using ion exchange resin within a demineralisation unit. These devices filter salts, lime and aggressive substances such as sulphate, nitrate and chloride and remove carbon dioxide to achieve the desired pH and low conductivity levels.

2. ***Electrochemical reaction***: Using electrochemical reaction tanks with sacrificial anodes to protect system components, continually remove dissolved oxygen in the system water and raise the pH to within recommended levels.

When these parameters are effectively controlled corrosion potential is reduced to neglible levels.

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Clear Oversight

Be in control of your water quality,
wherever you are

Latte art from Senzo, Epsom

ClearView

Transparency | Assurance | Control

SENZO
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ClearView and IWTM – Prevention Above Cure

IWTM water treatment strategies focus on prevention, seeking to suppress the potential for corrosion within closed-circuit systems rather than treating the results of a problem that has already happened.

Our approach to effective water treatment is summarised thus:

Clean, Prevent, Protect

The ClearView system fits perfectly with this approach. The early detection of potentially adverse conditions means that control remains in the hands of system operators, maintaining system health, preventing repairs and breakdown, and allowing maintenance activities to be scheduled before any significant damage occurs to the system.

Benefits: the value of real-time corrosion monitoring summarised

- *Continual protection* throughout the lifecycle of a system, from pre-commission cleaning onwards
- *Immediacy* - Real-time monitoring allows for shortened incident response times, minimising any potential impact on both equipment and service delivery
- *Operator Confidence* – retain control wherever you are; users can monitor from, and receive alerts to, any internet-enabled device
- *Environmental impact* – building on existing environmental benefits provided by IWTM, retaining control means maintaining system efficiency, translating to less energy waste, optimum system performance and maximised equipment lifespans
- *Remote operation* - Easy access to constantly updated, relevant data removes the need for unnecessary interaction: less site visits, less travel time and a reduced carbon footprint
- *Accuracy* - Any external testing introduces potential/likelihood of contamination/sample degradation giving inaccurate results. ClearView data is live at the point of capture
- *Comprehensive record-keeping* proving compliance

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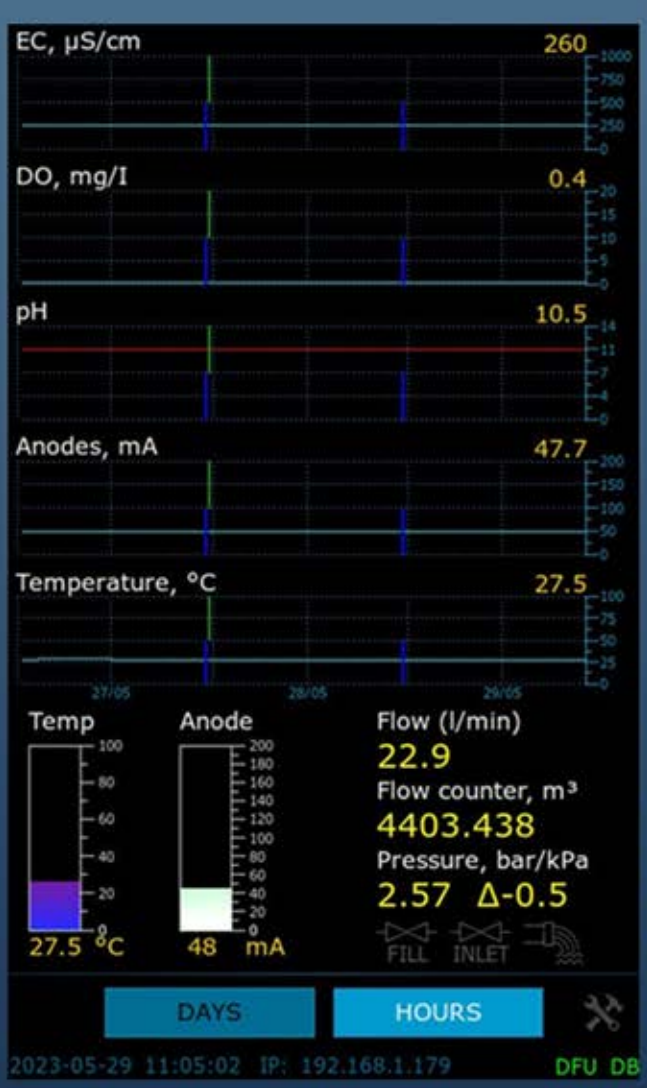
On Screen Data and Controls

1 **Instant value**
Instant sensor value, updated every 1 second.
2 **Trend**
Shows how the value changes with time.
Updated every 10 minutes.
3 **Water flow**
4 **Flowcounter**
5 **Pressure**
Pressure in the system and pressure difference between Protector inlet and outlet. High differential indicates the need for drain.
6 **Valve indicators**
7 **Tools button**
8 **Cloud connection status**
HT: connected by https,
MT: connected by MQTT
9 **DFU is connected**
10 **Network status/IP address**
11 **Time**
12 **Date**
13 **Trend scale** (days/hours)
HOURS: 1 point/10min
DAYS: 1 point/day.
14 **Temperature gauge**
15 **Anode gauge**
16 **Drain (blue line)**
17 **Fill (green line)**



1. **Charts** Tap and drag to scroll the graphs.
2. **Scale buttons** *HOURS* shows 1 point per 10 minutes. *DAYS* - 1 point per day.
3. **Tools button** Opens tools menu.
4. **Valve indicators** Show when FILL, INLET and DRAIN valves are active

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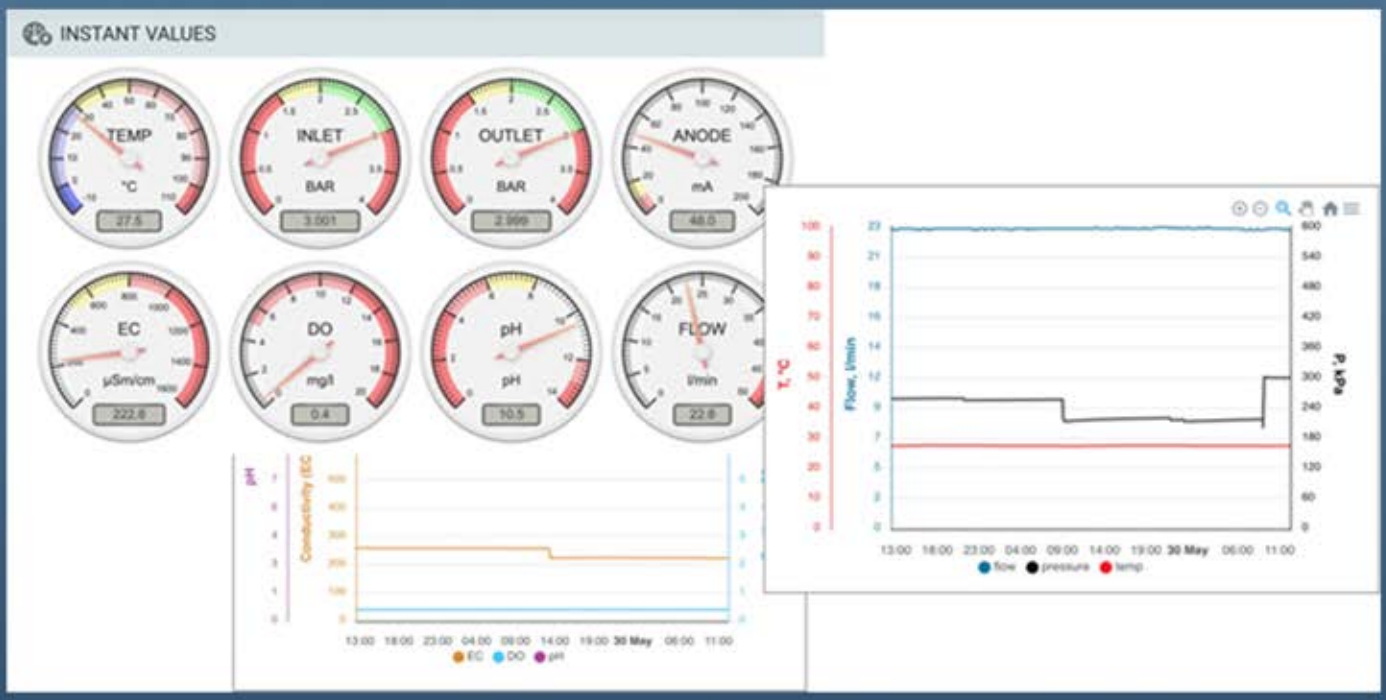
On Screen Data and Controls



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Technical Data

ABS Plastic Cabinet

Malmbergs plain door with mount plate
Dimensions (mm): H500 x W400 x D175
Supplied with lockable handle and wall mounting brackets as standard.

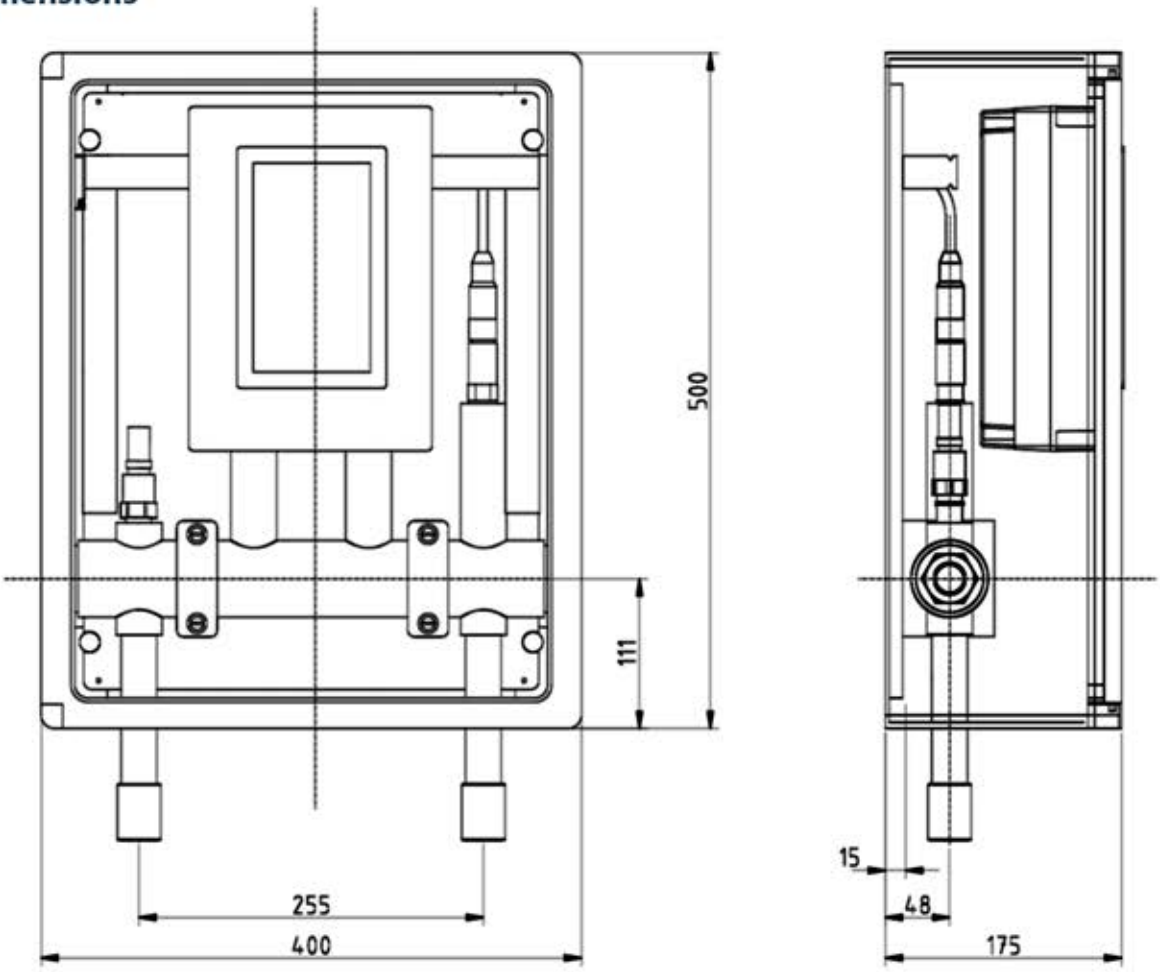
Materials

Cabinet: ABS plastic with glass front
Manifold & galvanic current housing: Stainless steel
Plumb fittings: Stainless steel
Sensors: various with EPDM rubber seals

Operating Conditions

Max operating temperature (water): 80 C
Max hydraulic pressure: 10 bar

Dimensions



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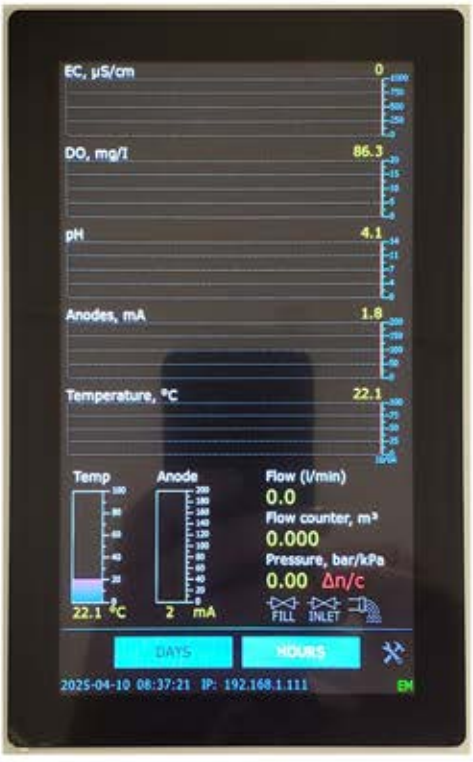
Made in Sweden by IWTM using high quality Swiss sensors



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Data Acquisition System

The ClearView monitoring system comes with a state-of-the-art data acquisition system, containing a touch screen and numerous digital and analogue inputs, as well as a LTE (3G/4G) module. This will be delivered pre-configured for the particular system being monitored.

Ethernet connections are inbuilt as standard. Where mobile phone signals are not available, Wi-Fi modules replace LTE.

Sensor inputs:

3 x Modbus (more can be connected if required)
5 x 4-20mA inputs
1 x Galvanic Current detect, Current from Galvanic source detected across 1 ohm resistor, isolated; this can be disconnected
1 x flowcounter, either volt free or Hall effect type

Sensors (standard configuration):

1 x dissolved oxygen (Modbus output)
1 x conductivity (Modbus output)
1 x temperature (from conductivity sensor)
1 x pH sensor (Modbus output)
1 x pressure sensor (4-20mA)

Outputs : 2 x 4-20mA outputs (conductivity and flow)
4 x digital outputs: 24V, open collector type for relay/solenoid drive (e.g. to control blow down solenoid valve)

Comms: 3G/4G modem
Wi-Fi (replaces LTE if required)
BACnet/IP + BACnet/MSTP + MODBUS/TCP + MODBUS/RS

User interface:

Local touchscreen displaying real-time measurements plus alarms and allowing unit configuration

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