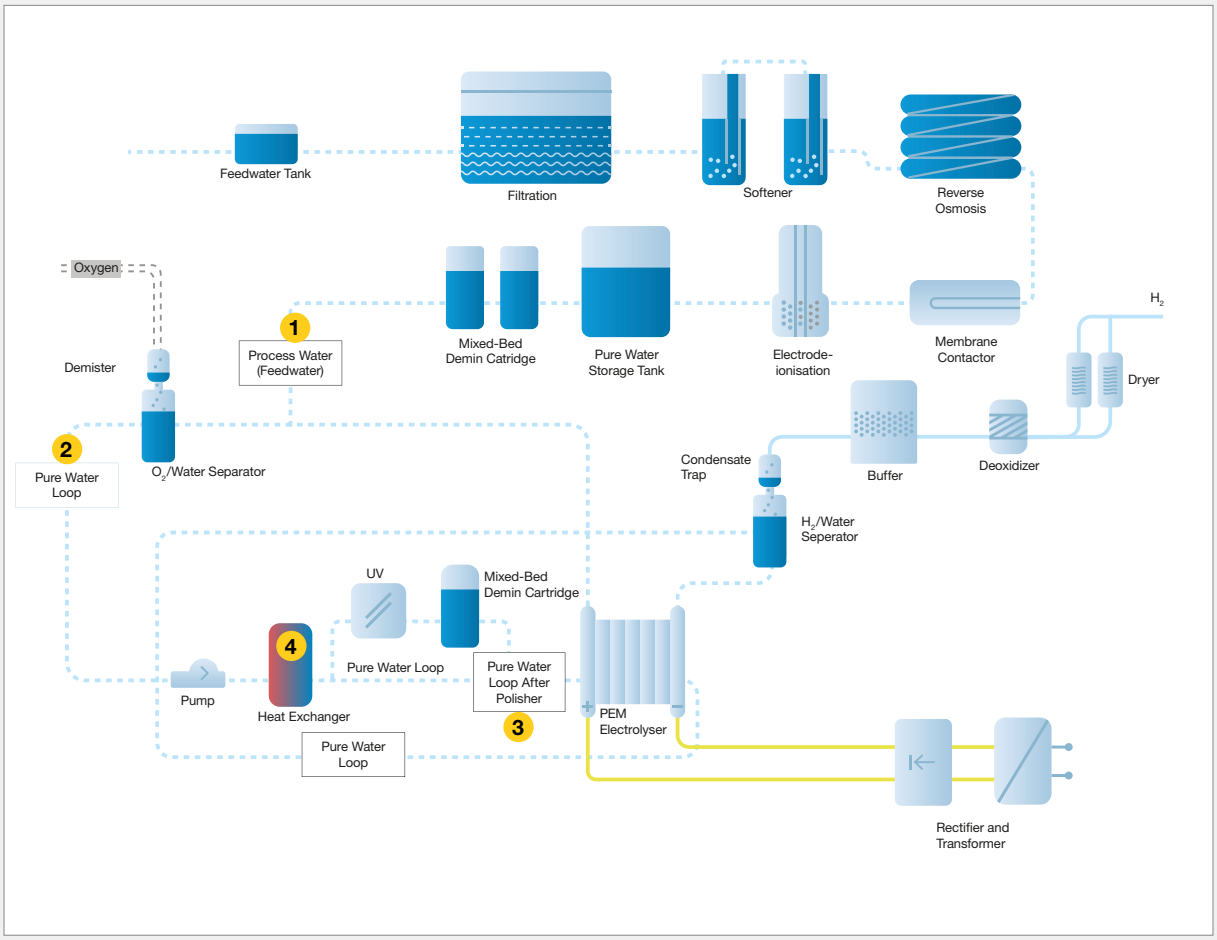
swan
ANALYTICAL INSTRUMENTS



Reliable Online Monitoring for Water in the Hydrogen Production

Application Areas in the Hydrogen Production

PEM-Electrolyzer



Typical monitoring application areas throughout the process include:

Process water (Feedwater)
Demineralized water is used as the feedwater for various types of electrolyzers. Therefore, the quality of the water must be monitored continuously to ensure the longevity and protect the electrolyzer from damage.

Pure Water Loop
In the pure water loop, it is crucial to measure any changes in the quality of the UPW and to optimize the water by using suitable systems such as EDI/blending beds and UV systems. Additionally, monitoring the electrolyzer for any emitted substances, alongside the overall quality of the loop water treatment, is essential.

Cooling Water Monitoring (Industrial Cooling Water)
In cooling water applications, monitoring needs focuses on disinfectant levels and the prevention of scaling and biofouling. Our instruments are designed to handle heavily loaded materials, providing precise dosing control and effective monitoring.

Monitoring Points and Key Parameters

1 Process Water (Feedwater)

Parameter	Instrument
Conductivity	AMI-II Powercon
TOC	AMI-II LineTOC
Silica	AMI Silitrace

2 Pure Water Loop

Parameter	Instrument
Conductivity	AMI Powercon
pH	AMI-II pH

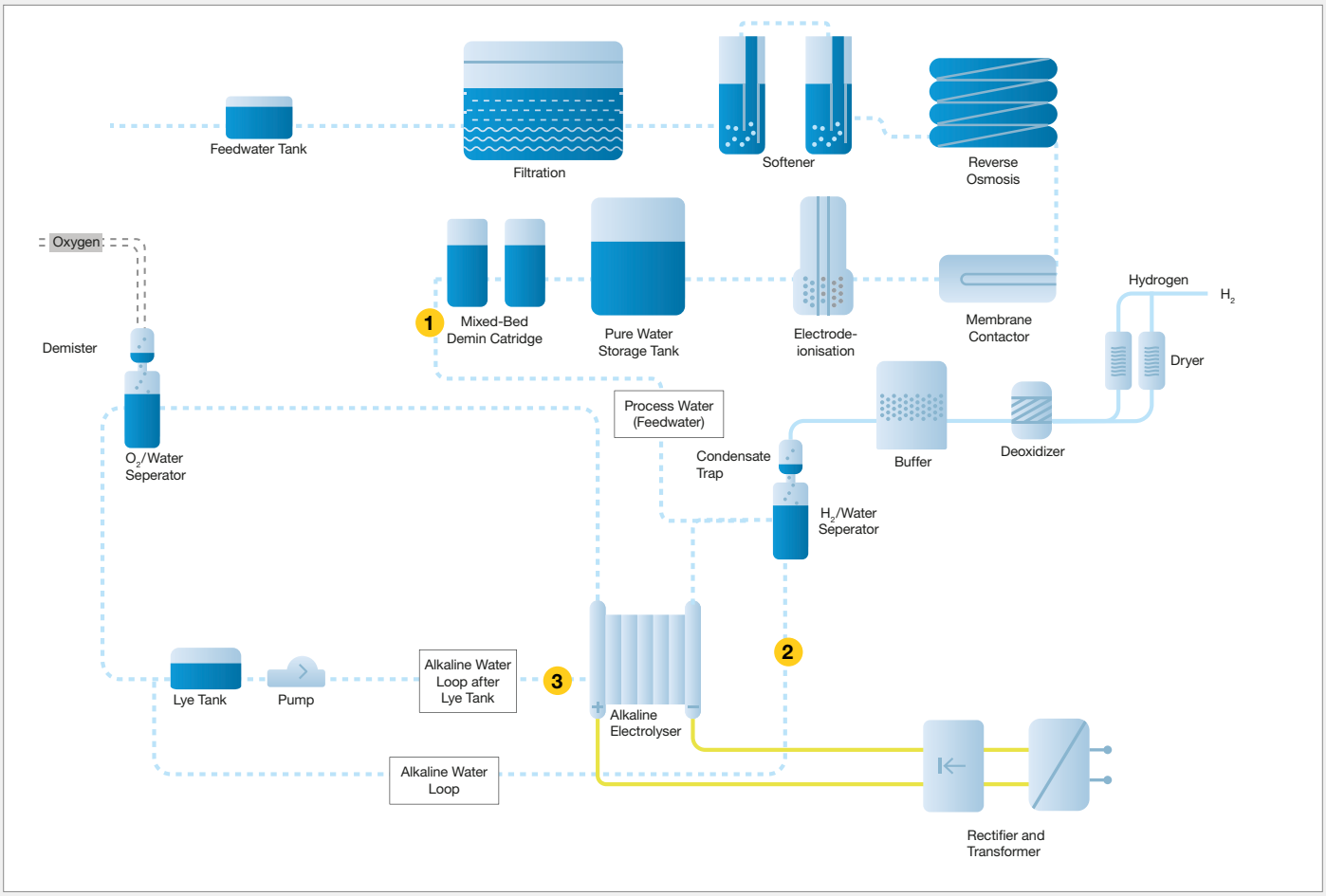
3 Pure Water Loop After Polisher

Parameter	Instrument
Conductivity	AMI Powercon
TOC	AMI-II LineTOC

4 Cooling Water

Parameter	Instrument
Conductivity	AMI Solicon4
pH/Redox	AMI-II pH/Redox
Disinfection	AMI Codes II

Alkaline Electrolyzers



Typical monitoring application areas throughout the process include:

Process water (Feedwater)

Demineralized water is used as the feedwater for various types of electrolyzers. Therefore, the quality of the water must be monitored continuously to ensure the longevity and protect the electrolyzer from damage.

Alkaline Water Loop

In the alkaline water loop, it is crucial to continuously monitor changes in water quality, including the concentration of potassium hydroxide and pH levels, which need to be monitored permanently.

Alkaline Water After Lye Tank

After the adjustment of the Potassium hydroxide concentration, it is crucial to quantify it accurately. An overdosing has a direct impact on the operation cost and the lifetime of the electrolyzer.

Monitoring Points and Key Parameters

1 Process Water (Feedwater)

Parameter	Instrument
Conductivity	AMI-II Powercon
TOC	AMI-II LineTOC
Silica	AMI Silitrace

2 Alkaline Water Loop

Parameter	Instrument
Conductivity	AMI Toricon
pH	AMI-II pH

3 Alkaline Water Loop After Lye Tank

Parameter	Instrument
Concentration	AMI Toricon

Feedwater

Conductivity (Specific)



AMI Powercon S

Specific (total) conductivity for high purity water

- Selectable temperature compensations for different sample qualities
- Automatic zero verification with integrated high precision resistor
- Two-electrode titanium conductivity sensor with high precision cell constant, integrated Pt1000 temperature probe
- Patented slot lock sensor design for easy installation and release

Specific Conductivtiy
0.055 µS/cm-30 mS/cm

Total Organic Carbon



AMI-II LineTOC

Online monitoring for Total Organic Carbon (TOC) in high purity water

- Reagent-free monitoring system using conductivity differential prior to and after UV-oxidation
- Reaction time below 2 minutes, for fast trend identification without costly lab analysis
- Automatic function test to verify the proper operation of the instrument
- Easy to use, integrated grab sample function
- Optional onboard sample cooler suitable up to 95 °C

Total Organic Carbon (TOC)
0-1000 ppb

Silica



AMI Silitrace

Determination of trace concentrations of silica

- Detection limit of 0.5 ppb
- Automatic sample heating and regulated reaction time features for highest precision
- Automatic zero verification (daily)
- Programmable, automatic calibration
- Easy to use, integrated grab sample capability
- Optional 2nd sample channel, or automatic sample sequencer up to 6 sample streams

Silica
0-1000 ppb

Further Analyzers



AMI Sodium A
Dissolved sodium in tracelevel for samples with pH > 7.5

AMI Oxytrace
Amperometric measurement of trace dissolved oxygen concentrations to monitor the degasser.

AMI Turbiwell
Contact-free turbidity measurement for water inlet

AMI SAC254
Measurement of UV absorption at 254 nm (SAC254) for organic carbon trending at the inlet of the treatment.

and many more

Pure Water Loop

Specific Conductivity



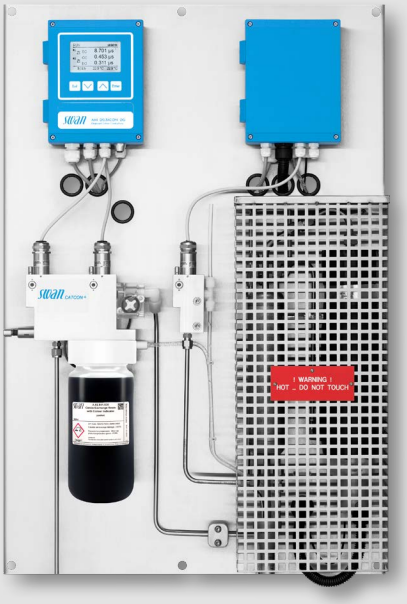




pH



Further Analyzers



AMI / AMU-II Powercon

Specific (total) conductivity for high purity water for inline mounting up to 50 bars and 100 °C

- Selectable temperature compensations for different sample qualities
- Automatic zero verification with integrated high precision resistor
- Two-electrode titanium conductivity sensor with high precision cell constant, integrated Pt1000 temperature probe
- ¾" NPT Threat for inline mounting

Specific Conductivtiy
0.055 µS/cm-30 mS/cm

AMI-II pH-Redox QV-Flow

Potentiometric determination of pH value or redox potential for low conductivity samples

- pH or redox electrode with liquid electrolyte reference sensors, and Pt1000 temperature probe
- Automatic temperature compensation for pH measurement, for high purity water
- Straightforward calibration procedure without sensor disassembling
- Economical operation of the instrument due to refillable liquid electrolyte

pH Range
pH 1-13
Redox Potential (ORP)
-1500 to 1500 mV

Further Analyzers

AMI Deltacon DG
Specific conductivity, CACE and degassed CACE according to ASTM D4519 via sample reboiler to see the possible impact of CO_2 in the conductivity

AMI Hydrogen
Amperometric measurement of trace dissolved hydrogen

AMI Oxytrace
Amperometric measurement of trace dissolved oxygen concentrations to monitor the degasser

and many more

Cooling Water (External Cooling Water Cycle)

Disinfectants



AMI Codes-II

Colorimetric measurement (DPD-method) of free chlorine and other disinfectant concentrations

- No interference with sea water and effluents, or additives like corrosion inhibitors and antiscalants
- High accuracy and reproducibility due to automatic zero-value calibration before each measurement
- Reduced maintenance with optional cleaning module and high tolerance against fouling

Free Chlorine
0-5 ppm
Chlorine Dioxide, Bromine
0-6 ppm
Ozone
0-1 ppm

Conductivity (Specific)



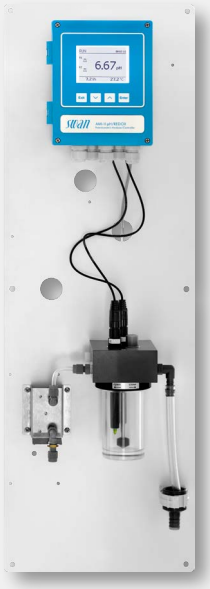
AMI Solicon4

Specific (total) conductivity for surface water, cooling water and effluents

- Selectable temperature compensation with absolute (none), linear coefficient or non-linear function
- Insensitive to fouling due to 4-electrodes principle. No measuring errors due to polarization effects
- Measurement of concentrations (for NaCl, NaOH and acids in %), salinity and TDS possible
- Optional deltaT sensor for flow detection

Specific Conductivity
0.1 µS/cm - 100 mS/cm
Salinity (as NaCl)
0-4.6%
TDS (Coefficient)
0.0 mg/l - 20 g/l

pH/Redox Potential



AMI-II pH-Redox M-Flow

Potentiometric measurement of pH value or redox potential for surface water, cooling water and effluents

- pH or redox combined electrode with gel electrolyte, with a Pt1000 temperature probe
- Automatic temperature compensation for pH measurement according to Nernst
- Easy calibration without sensor disassembling
- Minimized maintenance with optional spray nozzle for sensor cleaning

pH Range
pH 1-13
Redox Potential (ORP)
-1500 to 1500 mV

Further Analyzers



AMI Phosphate-II
Colorimetric measurement of orthophosphate with low concentration in potable water, effluents and cooling water

AMI Turbiwell 7027
Contact-free measurement of turbidity in raw water, water treatment plant, cooling water and effluents

Chematest
The reliable, accurate and robust handheld device for photometric measurements with the option to measure pH, redox potential or conductivity via external sensors is the ideal companion to validate your online analysis

and many more

Alkaline Water Loop

Concentration



AMI / AMU Toricon

Concentration measurement for high conductivity for inline mounting up to 13.8 bars at 150°C

- Inductive (toroidal) sensor with built-in PT1000 temperature probe
- With selectable coefficient or nonlinear function for natural waters according to EN 27888/ DIN 38404
- PFA Teflon with 2" sanitary clamp or poly-propylene (PP)
- With ¾" NPT thread connection

Conductivity
0.2 to 2000 mS/cm
Concentration in %

Accessories



Ex-P Enclosure

Stainless steel enclosure suitable for Swan monitor

- Automatic monitored purge unit
- Suitable for inert gas or instrument air
- Stainless-steel cover for extra protection of equipment and easy cleaning. Window to allow easy reading of measurements
- Installed effortlessly and fully functional and ready to use
- Compact design to simplify incorporation into existing systems
- Suitable for potentially explosive areas – ATEX and IECEx



Sample Conditioning

For the local indoor installation of online analytics for a single water sample

- Fulfill worldwide standard requirements for water online sampling
- Small footprint: simple incorporation into exisintg systems
- Suitable for a variety of plants due to standard configuration with predefined options

Swan AMI Monitor Concept



Swan instruments are delivered as fully functional, ready-to-use instruments. This ensures easy system integration as well as user-friendly operation and maintainability.

Highest standards in development and production assure the instrument quality expected by our customers.

MADE IN SWITZERLAND

Full System Integration

- Complete panel-mounted systems with fluidics connections preconfigured for quick start up
- Various communication possibilities with Profibus, Modbus, HART-Protocol, USB-interface and analog output
- Simple process engineering with regulation functions (P, PI, PID or PD), relay or analog output

Easy Maintenance

- Uniform menu navigation for easy operation and maintenance – one platform for all instruments
- Clearly arranged setup of instruments, good accessibility of all components for efficient operation and maintenance
- Self-explanatory maintenance procedures can be easily performed by the operating company

Highest Quality Assurance

- Every analyzer undergoes rigorous quality checks and precise factory calibration prior to delivery
- Automatic instrument alarms and self-diagnostic such as reagent level and sensor functions for validated results
- Integrated sample flow control for measurement check available for all analyzers

Swan Customers Service and Maintenance

Expert Training and Maintenance

- Flexible on-demand or scheduled maintenance services
- Expert re-calibration and re-certification options
- Comprehensive product trainings to boost your team's expertise

After-Sales Support

- Skilled engineers ready to assist with any technical request
- Scheduled maintenance visits to prevent downtime
- Fast, reliable service — on-site or remote

Genuine Parts and Repairs

- On-demand service including delivery of spare parts and consumables
- Authentic Swan sensors, reagents, and components
- Convenient send-in repairs at regional Swan workshops

swan
ANALYTICAL INSTRUMENTS





www.swan.ch

© Swan 2026/Rev7