App note

Corrosion-resistent sensors for monitoring saline industrial wastewater in Vietnam

Vietnam is one of Southeast Asia's most dynamic economies and has become manufacturing base for various industries and global manufactures. The need for effective wastewater treatment has become not just an environmental imperative, but a national priority. On February 28, 2025, Vietnam's Ministry of Natural Resources and Environment thus issued a new national technical regulation on industrial wastewater, QCVN 40:2025/BTNMT, including stricter discharge limits and expanded monitoring requirements.

Table 1 shows the permissible limit values for pH and TSS according to the new regulation with column A, column B, column C defining the wastewater discharge zones into higher to less sensitivity, respectively.

To comply with the regulations Xylem equipped a globally operating chemistry manufacturer with measurement equipment, including sensors and controllers, to continuously measure TSS (Total Suspended Solids) and pH, respectively. The site is located in an industrial park in the Hai Phong area in Vietnam. It discharges onsite pretreated wastewater with increased salinity of around 70 g/L into a wastewater treatment plant.

The increased salinity level of the wastewater requires the sensors to be corrosive resistant. Xylem addresses this challenge by producing sensors where all parts in contact with the media are made of corrosion-resistant titanium, sapphire and plastic (POM).


Source: Adobe Stock

Customer
Global chemical manufacturer in the Hai Phong Industrial Park, Vietnam.

Xylem's task
Provision of corrosion-resistant measurement technology for monitoring pH and TSS in highly corrosive industrial wastewater.

Project results
- Successful continuous measurement of pH and TSS despite extreme corrosivity.
- Certification by the Vietnamese ETV Institute.

No.	Pollution parameter	Unit	Discharge flow (F, m^3/day)								
			F ≤ 2 000			2000 < F ≤ 20 000			F < 20 000		
			A	B	C	A	B	C	A	B	C
1	pH	-	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9
4	Total Suspended Solids (TSS)	mg/L	≤ 50	≤ 60	≤ 70	≤ 40	≤ 50	≤ 60	≤ 30	≤ 40	≤ 50

Tabelle 1: pH- und TSS-Grenzwerte gemäß der neuen vietnamesischen nationalen technischen Vorschrift für Industrieabwässer, QCVN 40:2025/BTNMT

“We chose WTW equipment because it is easy to operate, requires low maintenance, reduces labor costs, and comes with a 2-year warranty”

Quote: Plant operator at chemistry manufacturer

These materials are characterized by resistance to extremely harsh conditions. Corrosion resistant sensors, called SW (Saline and corrosive waters) sensors, are recommended for use at chlorine concentrations ≥ 500 mg/L. Figure 2 shows the range of Xylem’s SW sensors. Figure 3 shows a photo of the actual Visolid 700 IQ SW and Sensolyt 700 IQ SW in a bypass installation at the customer. The photo was taken during commissioning and shows the Sensolyt 700 IQ SW with protection cap.

Fig. 2: Xylem’s range of corrosion-resistant sensors.

The installation and commissioning took place in December 2024 and was done by “Viet An Enviro”, a local distributor cooperating with Xylem. The two sensors (Visolid 700 IQ SW and Sensolyt 700 IQ SW) are mounted in a bypass tank and connected to an IQ Sensor Net System 2020 3G that is connected via TCP/IP to a logic controller, data logger and the IQ Web Connect system for efficient and convenient online control. The measurement system has been validated, approved and certified by the ETV (Environment Technology Verification Institute), a Vietnamese institute that provides independent, third-party verification of the performance of innovative environmental technologies.
Figure 4 shows exemplary data from the two sensors for the time-frame April 2nd to 6th 2025 and figure 5 a photo of the installed IQ Sensor Net 2020 3G with ETV certification stamp.

Fig. 3: Photo of the actual bypass installation at the customer.

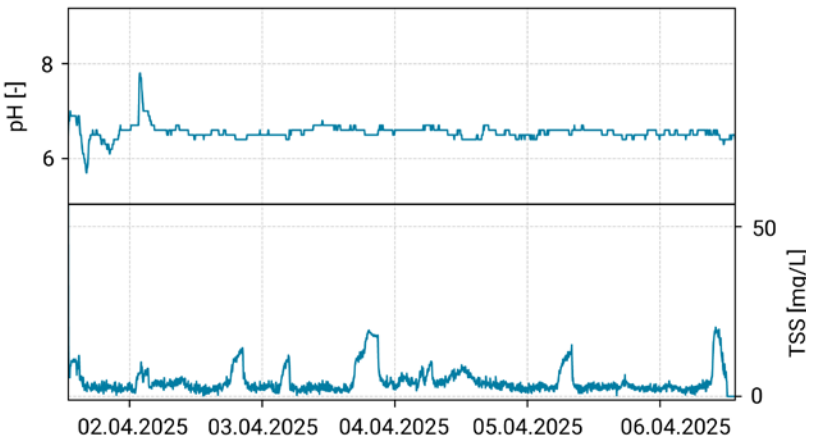

Fig. 4: Actual pH and TSS measurement data.

Fig. 5: Photo of the installed IQ Sensor Net 2020 3G with ETV certification stamp.

“Xylem sensors are extremely robust, and the IQ Web Connect system enables efficient online control”

Quote: Plant operator at chemistry manufacturer

Key Takeaways

- Xylem’s seawater (SW) sensors are corrosion resistant and can be used in applications dealing with corrosive media (e.g. chlorine concentrations ≥ 500 mg/L), like desalination plants, aquaculture, chlorinated wastewater, corrosive industrial wastewater and other.
- Our corrosive resistant sensors enabled continuous measurement of TSS (Total Suspended Solids) and pH in high salinity wastewater from a chemical industry in the Haiphong region, Vietnam (salinity ~70 g/L).
- The measurement complies with expanded monitoring requirements of Vietnam’s Ministry of Natural Resources and Environment.

Products used in this application:

- IQ SENSOR NET MIQ/TC 2020 3G with MIQ/MC3 module for TCP/IP network connection
- Visolid 700 IQ SW corrosion resistant sensor for TSS measurement
- SensoLyt 700 IQ SW corrosion resistant sensor for pH measurement

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