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Application Case Study

Sewage Sewer Data Integration Cloud Platform Case

Background

There are over 3.3 million households sewage sewer users in Taiwan currently, the penetration rate has exceeded 37%, and there are 70 public sewage treatment plants. The latest approved sewage sewer plan aims to achieve a penetration rate of 46% in 2026, accumulatively serving over 4.07 million households. The plan will complete the online monitoring system of sewage treatment plants, interface with cloud management, and produce more recycled water for high-tech and general industries use.

Challenge

The Water Resources Recycling Center of the Ministry of the Interior published instrumentation and control system specifications. It required the sewage environmental safety data to be uploaded to the "Building and Construction Department's Sewage Sewer Data Integration Cloud Platform" through OPC UA and conform to the OPC UA protocol established by the Construction and Construction Agency.
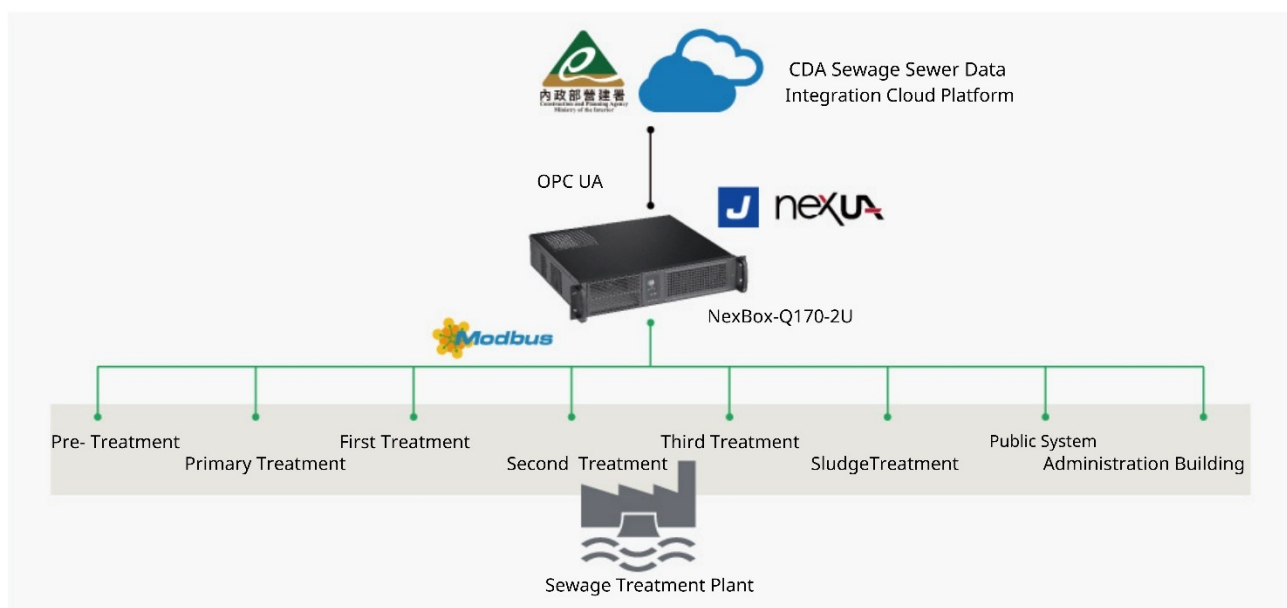
Solution

- Central monitoring system workstation computer: NexBox-Q170-2U
- HMI SCADA and monitoring software: JMobile
- OPC UA Server: NexUA

HMI SCADA and monitoring software, JMobile, supports the standard OPC UA Client communication protocol. Modbus can identify the point value of PLC and HMI to monitor data, such as the operation of major equipment, power information, water quantity and quality monitoring, measurement data, and other related sensing data.

OPC UA Server-NexUA can be customized to conform to the specifications of the Construction and Planning Agency, Ministry of the Interior (CDAMI or CDA), including the data format, retrieval frequency, file naming, archive location, automatic timing output, and storage of transmission files. NexUA installed the automatic transfer program issued by the CDAMI to transmit the data to the "CDA Sewage Sewer Data Integration Cloud Platform" to be received and stored.

The central monitoring system workstation NexBox-Q170-2U has the OPC UA Server function. It can customize the entry data structure monitored by the HMI SCADA and monitoring software providing an internal or external OPC UA Client remote connection and value. The monitored categories include operating major equipment, power information, water quantity and quality monitoring measurement data, and other related sensing data.

Solution System Architecture

Results and Benefits

JMobile is an HMI SCADA and monitoring software that supports the standard OPC UA Client communication protocol. NexUA's OPC UA server complies with the CDA specifications, and its data structure is customizable. NexUA can upload sewage environmental safety data to the "CDA Sewage Sewer Data Integration Cloud Platform" through OPC UA and allows the management to integrate information such as sludge treatment, blower data, biological treatment, and dosing treatment. Ultimately, the data collection, statistics, analysis, and big data intelligent calculations are executed to produce more reclaimed water for high-tech and general industrial use. The benefits include achieving automated warnings and energy savings, Long-life equipment, and other goals.

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