

Renovation Automation System IIoT

Subjects: Automation & Control Systems

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Industrial Internet of Things (IIoT) is of great significance to improve industrial efficiency and quality, to reduce industrial costs and resources.

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1. Introduction

There are few openly-reported practical project applications based on IIoT up to now. Especially for legacy automation devices in traditional industry, it is a challenging how to realize the upgrading of industrial automation adopting IIoT technology with less investment. Based on the practical engineering experience, this entry introduces the automation renovation of a sewage treatment plant. The legacy automation devices are upgraded by the central controller of STM32 processor, and WeChat Applet is used as the extended host computer. A set of remote monitoring and control system of sewage treatment based on the IIoT is built to realize the wide-area monitoring and control of sewage treatment. The paper describes the field hardware system, wide-area monitoring and control application program, and management cloud platform and security technologies in detail. The actual operation results show that the monitoring system has the requirements of high accuracy, good real-time performance, reliable operation and low cost.

At present, the monitoring of sewage treatment plant is mostly based on local monitoring, and the whole monitoring system is composed of host computer and PLC. Operators need to conduct data monitoring and operation locally, and cannot remotely monitor the operation of the system. The traditional monitoring system of sewage treatment plant based on local data supported the automation development of early sewage treatment plant. However, with the development of information technology, especially the development of IIoT technology, the traditional monitoring system of sewage treatment plant shows limitations in terms of labor cost and data availability, which cannot give full play to the advantages of multi-terminal sharing and full utilization of data.

In view of the limitations of traditional sewage treatment plant monitoring, this entry takes an actual sewage treatment plant as an example to illustrate how to realize the upgrading of industrial automation with the help of IIoT technology economically. The original automation system of the sewage treatment plant has been effectively upgraded with wide-area monitoring and control functions. This article will describe the transformation and upgrade process in detail.

2. Discussion

With the development of urbanization in various countries, the pollution of water resources is becoming more and more serious. The water pollution usually refers to industrial waste-water pollution, rural aquaculture waste-water pollution and domestic sewage pollution. Industrial waste water is produced in the process of industrial production, such as paper mill waste water, dyeing and weaving plant waste water, mining and processing waste water, which has the most serious pollution to the water quality. The pollution of rural breeding sewage refers to pig farm and cattle farm. The sewage produced by them is very big to the rural environment. The domestic sewage refers to the sewage produced in the process of people's life. Although the impact of domestic sewage is small, if it is directly discharged into the river, it will cause pollution to the living environment and drinking water of the city. The treatment of water pollution has become an important issue in the current urban recycling development, and has been paid attention to by various regions. In recent years, more efforts have been made to control water resources, a large number of new sewage treatment plants have been built to improve water quality.

Improving water quality in sewage treatment plant is a systematic project, including chemical pollution treatment technology, sludge microorganism treatment technology, automatic control technology and monitoring system technology. The monitoring system is an important part of the sewage treatment plant, and the efficient monitoring system is the key to ensure the automatic operation of the plant equipment.

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