TAKEBISHI CASE STUDY

Suntory Products Limited

Data

SUNTORY

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Address
Tamachi Station Tower N, 3 1 1 Shibaura, Minato ku, Tokyo 108-8503, Japan

URL (Japanese)
https://www.suntory.co.jp/company/group/products/

Overview
Suntory Products Limited is a part of the manufacturing division of the Suntory Group, whose 10 production sites produce top-level refreshing beverages for the Japanese market, such as mineral water, coffee, tea, and sparkling water.

Supporting Production at the Cutting-Edge Kita Alps Shinano-no-Mori Water Plant! ～Providing No-Code linkage between production facilities and AI fault detection system～

Summary

The next-generation factory model for Suntory Products began operations in 2021 at the Kita Alps Shinano-no-Mori Water Plant. In this facility, the AI Fault Detection System Impulse* was implemented, real-time operating data from the various machinery within the production line was collected, and abnormal trends and motions were systematically monitored. The equipment operating within the plant includes about 80 PLCs from various makers and countries of origin. The data from these various vendors and series of PLC are collected and sent to the AI fault detection system by using Takebishi's OPC UA* supported communication software DeviceXPlorer OPC Server OPC UA, as well as the no-code data linkage tool OPC Spider.

*Impulse is a fault detection solution provided by Brains Technology, Inc.
*OPC UA is a standard communication protocol in the manufacturing field.

Keywords

- ☑ Improved production efficiency
- ☑ Data analysis

Products Used

No-Code Data Linkage tool
OPC Spider

OPC UA Supported Communication Software
DxpSERVER

Problems before Implementation

⚠ Preventative maintenance work which could not be addressed automatically with threshold monitoring was handled manually, which led to undiscovered faults due to human error and specialization.

Purpose of Implementation

- ☑ Eliminate manual predictive fault detection tasks, promote faster fault detection, and aim to improve the operation rate of the facility.
- ☑ Allow for data collection settings and other system changes to be implemented by the on-site manager.

System

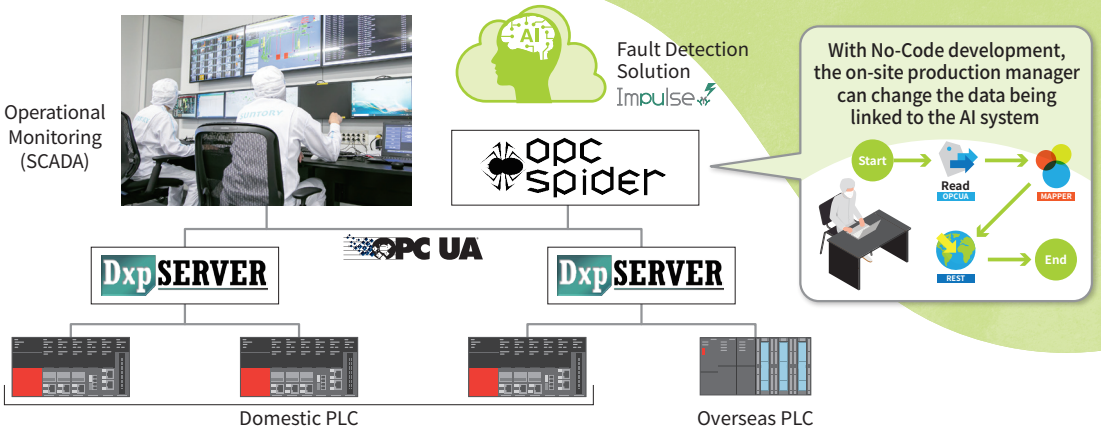

Figure: An overview of the AI fault detection system

Interview

Linking operating data from the production line and the AI platform to raise productivity

As the Kita Alps Shinano-no-Mori Water Plant aggressively pursues advanced IT utilization, data from the equipment operating on the production line is collected and used by AI to detect fault signals that connect to accidents and other problems. Identifying these fault signals increases the operation efficiency of equipment, and by extension aims to improve the productivity of the facility as a whole.

The plant had previously utilized automated threshold monitoring to handle predictive fault detection, but since the detection work which could not be handled with threshold monitoring was handled manually, the problem of undiscovered equipment faults due to human error and specialization still persisted. To increase the precision and speed of fault detection in the plant, and to increase the operation efficiency of equipment, the AI fault detection system was deployed for constant monitoring of the production line.

However, designing a suitable AI model takes time, as well as a large financial commitment. This meant that the system needed to by simple enough that the on-site manager could enact system changes by themselves. Implementing Takebishi's DxpSERVER and OPC Spider addressed all these concerns.

DxpSERVER uses OPC UA communication to relay the vendor-specific communications of the PLCs which control each piece of equipment within the manufacturing line. OPC Spider then obtains the OPC UA equipment data and changes it into a format which is compatible the AI fault detection system, before finally sending it to the cloud-based application where the AI system operates.

DxpSERVER is has a long track record of usage across the globe, becoming a leading OPC server within a wide range of manufacturing settings. In terms of OPC Spider, Mr. Okubo said that "we wanted to realize this construction so that the on-site managers could initiate AI utilization by themselves, in order to speed up the rate of improvement on a daily basis. From that standpoint, we chose OPC Spider for its simple GUI linkage process, where the data from all the equipment within the plant can be collected and transmitted to the AI fault detection system."

This AI fault detection system was implemented as the Shinano-no-Mori Water Plant began its operation. According to Mr. Okubo, "using the No-Code data linkage merits of DxpSERVER and OPC Spider, the precision of fault detection can be raised through continuous testing of data which could be useful to the AI model in the future. As we continue to run tests, we will incrementally expand the range of equipment monitored. With more equipment monitored by the system, the on-site managers will have more time to spend on valuable improvements to our operations."

Suntory Products Limited
Kita Alps Shinano-no-Mori
Water Plant
Engineering Department
Hidetaka Okubo

TAKEBISHI
29 Mamedacho, Nishikyogoku, Ukyo-ku, Kyoto, Japan 615-8501
TEL: +81-75-325-2261 HP: https://www.faweb.net/en