constellation technologies CT

Yahong Bridge & Hejian Water Authorities

Case Study

Centralised plant control and 3D Digital Twin Visualisations

中清环境
BHZQ · Environment

Centralised Plant Control and 3D Digital Twin Visualisations

Yahong Bridge and Hejian Water Authorities are local authorities that own and operate a number of waste water treatment plants.

The Brief

The Existing operational systems resided on local servers distributed across our client's water treatment plants. Their management approach was highly dependent on the local operation of the plants, which resulted in inefficient management of assets.
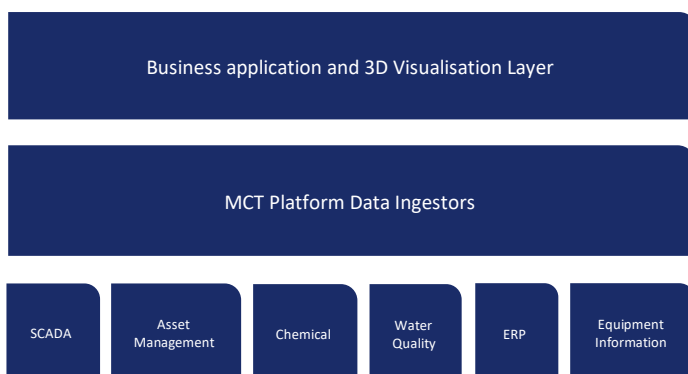
The decentralisation of data systems meant that large amounts of operational data could not be fully utilised to improve process and provide operational insights.

The clients wanted to centralise, digitise and automate their operations to improve safety, resources and increase asset efficiencies across operating plants in addition to existing SCADA systems.

Our Strategy

CT started the project by upgrading the client's legacy plant PLC's to Siemens Simatic S7's and KingSCADA, bringing them up to the latest and supported versions.

The project then moved on to centralising all related plant operational system data into the MeridianCT IoT Platform, which included, SCADA, Asset Management data, Chemical and Water Quality Systems data.

Business application and 3D Visualisation Layer

MCT Platform Data Ingestors

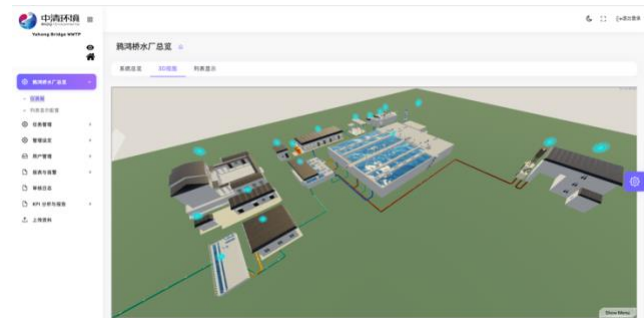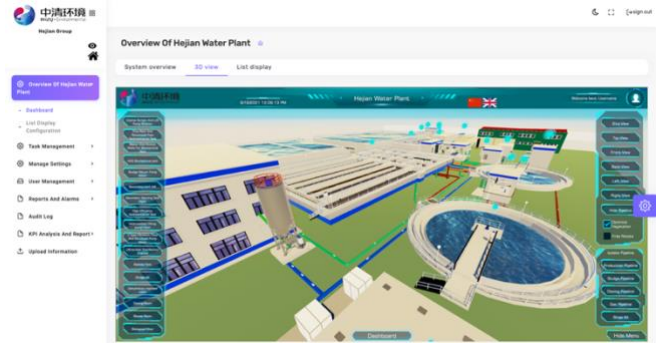SCADA | Asset Management | Chemical | Water Quality | ERP | Equipment Information
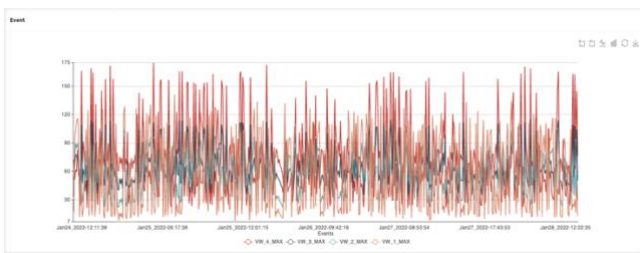
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3D Digital Twin Visualisation Layer

The MeridianCT platform supplemented the SCADA systems through ingesting and integrating the existing plant operation systems. The advanced 3D Digital Twin visualisation layer, provides the most intuitive and comprehensive view of all integrated plant operations, allowing for remote inspections, 'fly-arounds' and 'look-throughs' and the ability to visualise operating equipment status, water quality, sub-terranean pipe work and hydraulic flows.

Process Driven

To optimise business workflow, CT utilised the integrated plant operations systems data within MeridianCT Platform to provide users with the ability to select and control equipment from within the 3D Digital Twin visualisation, retrieve maintenance history, specification sheets, O&M manuals, check on critical spare holdings, raise purchase orders and work orders, all without leaving the platform.

Every aspect of the working plant is covered, including the ability to instantly display historical trend data of each part of the entire

Machine Learning

Striving for continuous business improvement, CT developed customised machine learning algorithms utilising the aggregated and contextualised datasets to derive plant optimisation opportunities, reduce equipment downtime, improve energy usage and process outcomes.

Transformation

The highly functional MeridianCT platform with interactive advanced 3D visualisation layer and centralised plant control has improved safety and responsiveness across operations, streamlined communication and information sharing between control rooms and plant operations staff. It optimises plant, process and resource use, including maintenance and staff management workflows.

CT1 has deployed this solution across five Water Treatment plants to date.

constellation technologies

Level 7, 420 Collins Street Melbourne
Victoria 3000 Australia

Tel   1800 100 227
Email   sales@ct1limited.com

constellationtechnologies.com.au