MatrikonOPC

Case Study:

Shanghai Petrochemical Simplifies Data Acquisition Using MatrikonOPC Servers

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"Few products could meet the needs of our project, but the MatrikonOPC solutions have served us extremely well. They have helped us lower costs, increase efficiency and simplify communications."

— Zhongxiong Qin, Plant Manager, Shanghai Petrochemical

Challenge

Shanghai Petrochemical's Manufacturing Execution System (MES) needed to acquire data from the PLC systems of all of its main devices. Data had to be shared between a total of 51 PLC and DCS systems that came from different vendors and included various models. A proprietary data access solution was not feasible due to the complexity of the system; instead, the company needed an open, standard-based OPC connectivity protocol.

Solution

The company deployed 26 MatrikonOPC servers that enabled the MES to communicate directly with each of the company's various controllers. In addition, the company integrated several MatrikonOPC Buffers to support data collection and buffering.

RESULTS

- Reduced costs
- Eliminated challenges of non-unified data acquisition interfaces
- Unified software for easy after-sales service and support
- Simplified training and configuration
- Overcame compatibility issues with standard-based architecture

Company struggles with data acquisition

Shanghai Petrochemical (Sinopec Shanghai Petrochemical Company Limited) is located in Jinshanwei, Jinshan District, Shanghai. The company, which is one of China's largest modern petrochemical enterprises, integrates petroleum refining and chemical engineering to produce petroleum products, intermediate petrochemical products, synthetic resins and fibers.

In August 2010, the company implemented a Manufacturing Execution System (MES). This large, multi-tier production management system covers all departments related to production management, as well as other areas such as production material management, statistical equilibrium and energy management. MES technology can integrate real-time production data from all sensor and control devices to provide enterprise production management with a consistent, shared data source. It also provides enterprise resource planning with material data and utility data.

Construction of the MES system required data to be acquired from all the PLC systems connected to the company's main devices. The data needed to be uploaded to a PHD real-time database. For the MES project, data from 51 PLC and DCS systems needed to be collected. This involved more than 10 different controller models from vendors such as Siemens, Omron, Schneider and AB.

With so many models and vendors, the project team realized that the cost and complexity of implementing a proprietary communications architecture was not feasible. "It would be extremely difficult to manage and maintain in the future, and the cost of site services, if required, would be too high as well," said Plant Manager Zhongxiong Qin.

Instead, for data acquisition and transfer, the project team decided to move to an open, standard-based OPC connectivity protocol as the data acquisition interface.

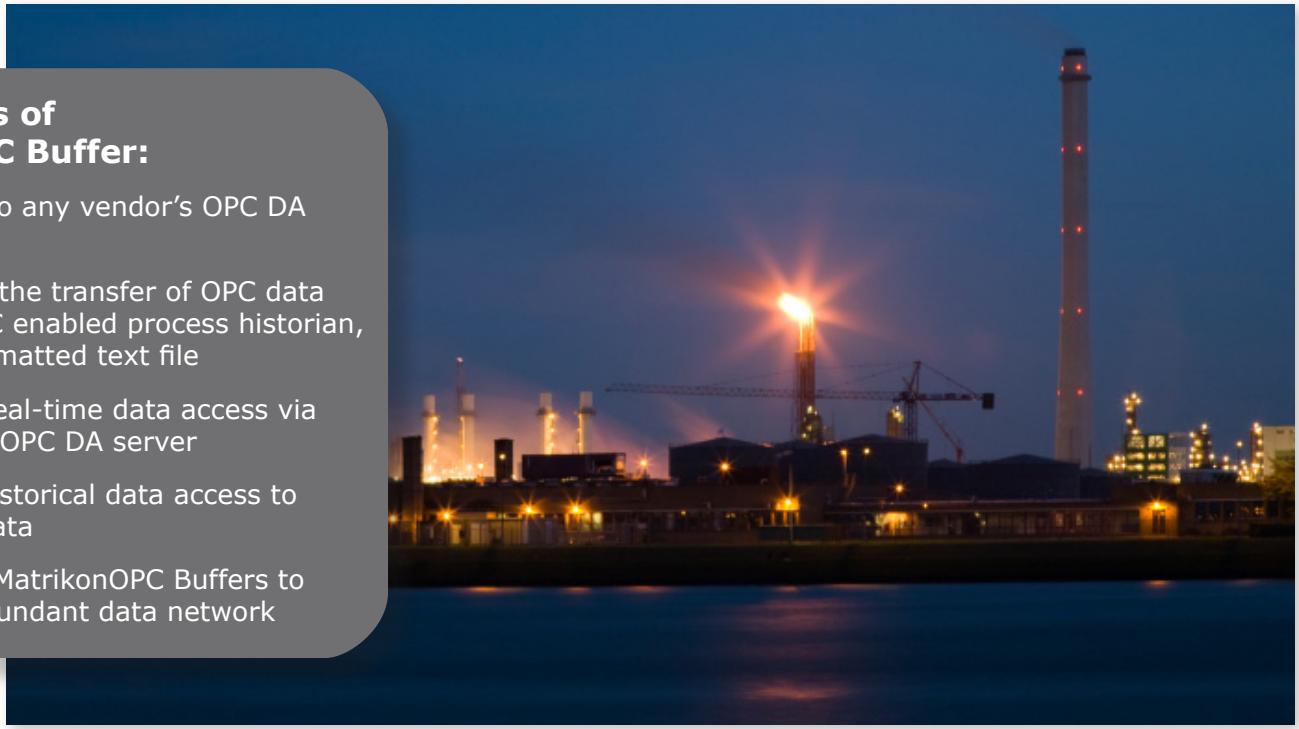
MatrikonOPC solution delivers benefits

After an extensive bidding and screening process, Shanghai Petrochemical implemented several MatrikonOPC Buffers and 26 MatrikonOPC servers. The company chose MatrikonOPC solutions for several reasons.

One key benefit was the wide product line offered by MatrikonOPC. The project involved dozens of system types, and MatrikonOPC offered all of the corresponding OPC servers. The company could therefore avoid having to deal with multiple vendors, which greatly simplified after-sales service and support.

MatrikonOPC software also supports the interfaces for different PLCs. For example, for a Siemens PLC, the MatrikonOPC server supports both the Ethernet interface card and the MPI (PPI) interface, without need for additional software or interface modules. This reduces the cost of ownership, shortens integration time and simplifies the architecture.

All of the MatrikonOPC's software also fully complies with the OPC Foundation's Specifications. This ensures Shanghai Petrochemical will avoid OPC incompatibility issues due to standard implementation errors. MatrikonOPC also provides built-in OPC security functionality. All MatrikonOPC servers implement the OPC Foundation's OPC Security specification, so each server can enforce access control on a per-tag, per-user level. This advanced function enables customers to fully control who can browse, add, read and/or write to each OPC item.



Key features of MatrikonOPC Buffer:

- Connects to any vendor's OPC DA server
- Schedules the transfer of OPC data to any OPC enabled process historian, CSV or formatted text file
- Achieves real-time data access via a supplied OPC DA server
- Provides historical data access to buffered data
- Pairs with MatrikonOPC Buffers to form a redundant data network

"The combined functionality provided by the MatrikonOPC solution gave our engineering team added convenience throughout software installation, operation and maintenance," said Qin.

Easy implementation and operation

Shanghai Petrochemical installed the MatrikonOPC software with ease. The control systems with external interfaces made it possible for the software to be installed and configured without requiring a system shutdown.

MatrikonOPC's consistent software interfaces simplify training and configuration by providing a consistent, integrated user experience. For example, the OPC server for Siemens has a built-in configuration wizard, so the operator can perform the configuration with ease.

For dependable data acquisition, the computer uses a dual-NIC MatrikonOPC Buffer configuration, which ensures the data will be captured even if the network fails. At the same time, the configuration reduces the stress on the workstation and isolates it from the upper network via the dual NIC. This effectively reduces the threat of network-based attacks on the control system.

"We fully integrated the OPC software into our projects, and we are confident it was the right choice. We will continue standardizing on MatrikonOPC solutions," said Qin. "The implementation process went smoothly and operations have been a success."

Here is the solution discussed in the case study:

MatrikonOPC Buffer:

MatrikonOPC Buffer is an off the shelf solution for remote data collection, buffering, and with the optional History-Link module; historical data transfer to a central process historian.

OPC Buffer

MatrikonOPC Universal PLC Server:

MatrikonOPC Universal PLC Server is a single OPC Server that provides connectivity to multiple devices, protocols and APIs. MatrikonOPC Universal PLC Server offers a wide range of plug-ins to support most popular PLC protocols delivering a cutting edge and new horizon of connectivity between vendors.

MatrikonOPC Universal PLC Server

About MatrikonOPC (a division of Matrikon Inc.)

MatrikonOPC provides software to access device data using the OPC standard. Our promise is to help clients unlock the potential of their data and provide them with vendor-neutral training and superior client care. MatrikonOPC builds close relationships with our customers to gain a true understanding of their business and then attain operational efficiency from both a technical and business perspective.

With offices in Canada, the United States, Europe, Asia-Pacific and the Middle East, MatrikonOPC provides local presence on a worldwide scale. For more information about MatrikonOPC Server for BACnet and other products and services, visit us online at www.MatrikonOPC.com.

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