

## **Industrial Communication**

### **System-independent and flexible**

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**The implementation of flexible manufacturing systems is causing more attention to be paid to programmable logic controllers and PCs in industrial environments.**

The flexible programmability of PCs enables manufacturing systems to be quickly adapted to the automation task at hand. High-performance communications structures increase the efficiency of modern automation projects and ensure the required flexibility.

### **Connecting OPC servers**

A critical building block of industrial communication is made up by the components and networks collectively known as Simatic NET. This system offers a wide variety of communications processors (CPs) and Windows-based software solutions for connecting programming units (PGs) and PCs to Ethernet and Profibus. With OPC, a standardized, manufacturer-independent software interface for connecting applications (e.g. HMI systems) has been created.

The Simatic NET OPC server supports the PC interface, which can be used for visualizing a wide variety of automation components that are networked via Industrial Ethernet or Profibus. The following communication network access points are available via the OPC server and are part of the Simatic NET communications software for Industrial Ethernet and Profibus.

### **Industrial Ethernet**

- S7 communication
- S5-compatible communication (SEND/RECEIVE)
- TCP/IP native communication

### **Profibus**

- S7 communication
- S5-compatible communication (FDL)
- FMS communication
- DP communication

Communication with component-based Automation (CBA) via the PROFINet standard is managed by the PN OPC server (PROFINet OPC server). This product supports access to PROFINet variables.

With the new OPC XML-DA standard, OPC allows manufacturing and process data to be accessed via the Internet for the first time. For this, the OPC server is set up as a Web service. The Simple Object Access Protocol (SOAP) serves as the interaction protocol, with HTTP as the transport protocol.

The Simatic NET OPC server is capable of distributing jobs to various communications systems. This allows an OPC client to simultaneously use multiple protocols when accessing a single OPC server.

Having an OPC Scout as a client with browser functionality simplifies deploying Simatic NET OPC servers.

## **PLC in the PC**

Simatic WinAC is the integration platform for PC-based automation solutions within the Simatic controller product range. Having the PC serve as the central platform for operation and monitoring, data processing, technology integration and of course plant control with WinAC slot and soft PLCs gives rise to a previously unattainable solution potential. As such, Simatic WinAC integrates in the TIA system network and is processed using the same programming and project planning tools as is customary with the S7 controller family.

Protection of investment with regards to know-how is thereby ensured. This integration potential for various technologies such as communication, measurement techniques and databases requires high-performance programming interfaces such as those provided by Simatic WinAC via the Open Development kit and the technology kit. Standardized, manufacturer-independent interfaces ensure communication and integration capability with existing and future systems. An optimized OPC server is included in the supply scope for this. OPC clients for recording, processing, evaluating, visualizing and archiving enable automation components to be flexibly integrated.

## **Open road for process data**

The WinAC controllers, Simatic NET components and applications mentioned communicate with the OPC server in a standardized, flexible manner via point-to-point channels. If these systems are to communicate with each other, an additional networking step must be taken.

This involves using a special software application called IndustrialDataBridge.

With IndustrialDataBridge, data are exchanged between the Simatic WinAC controllers and also with other automation and data processing systems via a Simatic NET OPC server, for example. As such, it is already possible today to set up a server/server communications system that, in terms of functionality, can be compared to the new OPC DX (Data eXchange) standard and even exceeds it. For example, it is possible to automatically exchange data between multiple WinAC controllers as well as with S7/S5 controls and PLC controls from third party manufacturers.

Additionally, databases and MS Excel documents can be linked directly to process data. This allows WinAC Soft PLC or S5/S7 controls to automatically archive process data in SQL servers or Oracle data. bases, for example.

The following interface modules currently are available for IndustrialDataBridge:

- OPC Data Access V1.0 and V2.0
- Send/Receive (RFC1006, TCP native, UDP)
- OLE DB (MS Access, SQL Server, Oracle)
- Simatic WinAC
- MS Excel

IndustrialDataBridge can be easily configured to exchange data, as no programming knowledge is required. The software is designed with support for plug-ins, which allow new interfaces to be quickly integrated in IndustrialDataBridge.

This ensures that the entire system also will be compatible in the future. In so doing, a platform for exchanging data system-wide (both horizontally and vertically) and independent of manufacturer has been introduced that offers previously unheard of flexibility and user-friendliness.

## **Outlook**

The new OPC DX (OPC Data eXchange) standard sets out to collaborate with existing Ethernet and field bus solutions. OPC DX allows non-time-critical data to be exchanged between individual systems or devices (PLC, DCS, PC) from various manufacturers that use Ethernet as a common communications medium.

Whereas data exchange between various systems previously was time-intensive and costly (as an individual solution was used), OPC DX considerably reduces the amount of effort required, due to the fact that a generally accepted standard is used.

Simatic NET OPC server and IndustrialDataBridge currently are being modified to support this. With IndustrialDataBridge, existing OPC Data Access servers can be integrated in an OPC DX environment as well as the gaps between the OPC technology of today and tomorrow closed.

**Picture: The IndustrialDataBridge software solution allows data to be exchanged between various applications and systems**

**Picture: The OPC servers that ship with the Simatic NET communications software allow a communications solution to be designed that is tailored to automation components and provides application programs with the standardized OPC interface**

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