

Simatic PCS 7

Simatic PCS 7 is a process control system from Siemens based on modular, functionally compatible Simatic hardware and software components from the system spectrum of Totally Integrated Automation (TIA). It is the successor system of Teleperm M. Standard components include PC, controller, communication and distributed peripherals. It is used in process industries such as chemical industry, pharmaceutical industry and food industry for the management of the main production process, but also for side, upstream or downstream processes such as B. wastewater treatment and energy distribution. It also delivers data to higher-level ERP systems.

Product features

As a homogeneous and integrated overall system (Distributed Control System, DCS) with central engineering and a common database, Simatic PCS 7 enables the integrated automation of both production and process engineering processes and is used in the process, manufacturing and hybrid industries. Not only the documentation, but also the quality assurance is intended for the whole system. In contrast, there are SCADA solutions (Supervisory Control and Data Acquisition) based on combined individual components (partly different manufacturers) and their functionalities are not coordinated, resulting in a more comprehensive data storage, more cumbersome functional additions, the use of individual programming tools and means of communication and the separate Quality assurance for each individual component is required. In the integrated DCS approach, all functions are contained in the functional and system-tested individual components with which an overall system can be built.

Basic Functions

The Simatic PCS 7 process control system is operated by means of graphical user interfaces, eg T. with context-dependent, user-specific views. All measured values, messages and alarms that are to be available over a longer period of time are stored and managed in a central archive server.

Due to the modularity of hardware and software components, the process control system can be flexibly used in different plant sizes and adapted to changing requirements. This allows the expansion and expansion of facilities. The capacities range from a small individual system (approx. 160 measuring points) to a multi-user system consisting of multiple operator stations and servers (client-server architecture) of a plant network (more than 100,000 measuring points).

In addition, the system can be combined with components from other manufacturers and integrated into existing infrastructures, as system architecture and communication are open. There are also programming and data exchange interfaces for user programs as well as for the import and export of data, texts and graphics. Process data is accessible on the basis of standardized interfaces and available company-wide. The communication within the system takes place via the industrial standards Ethernet and PROFIBUS, partly at the field level but still via the AS-Interface.

For configuring the plant processes, Simatic PCS 7 has a central engineering system ^[1] equipped with coordinated tools. These are called up via the central project manager (Simatic Manager). It can be used to create the application software as well as to set up and parameterize the hardware components and the communication. It is the basic application for the entire engineering of the process control system in terms of creating, managing, archiving and documenting a project.

The operator system is used for process control. Terminals with a visualized and predefined user interface are available with the operator stations, via which the operating personnel can track and control the process operations. Windows- based PCS 7 Web servers enable remote monitoring and operation as well as remote diagnostics and maintenance of the system via Internet or intranet.

The intelligent field devices (sensors and actuators) are controlled via the Simatic PDM (Process Device Manager) device manager ^[2] . This is used for configuration, parameterization, commissioning, diagnostics and service. The core functions of the device manager include u. a. Setting and changing device parameters, comparing project and device data, and managing networks and PCs. The use of intrinsically safe and fault-tolerant controllers allows safety-related control systems that react to faults and failures of the system and also have a self-monitoring function. In this way they identify errors in the process as well as internal errors of their own and, if necessary, immediately bring the plant into a safe state. These controllers are mainly used in manufacturing technology.

The system has libraries supplied ^[3] with ready-made function blocks for graphic configuration, measurement, control and regulation of continuous automation functions (Continuous Function Chart , CFC), for sequence control (SFC) as well as for operation and visualization (WinCC). In addition, it is possible to create your own function modules.