

Obstacle-free data transport

Simple integration of Foundation Fieldbus H1 devices in Modbus/TCP systems

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In addition to pure process plants such as refineries, there are many chemical/pharmaceutical production plants which represent hybrids of manufacturing and process technology. It is usually not worth using expensive process control systems to realize simple control applications in such plants. The flexibility of the FG-100 FF/M gateway makes it an economical alternative for small to medium-sized plants.

Process plants usually operate over the course of several decades. The very high investment costs for such plants are generally not amortized for many years. It is often not worth using expensive process control systems in hybrid plants which mix manufacturing and process technology. Furthermore, when moving gradually from 4-20 mA point-to-point wiring to a fieldbus, it is reasonable to gain experience with smaller units first. This can take place using inexpensive controllers from the field of manufacturing technology. Even when new plants are planned with process control technology and the corresponding bus systems in mind, it makes sense to move into the world of PLCs so that third-party components for visualization, servicing, etc. can be connected. Ongoing engineering costs are another factor to take into consideration. Unlike the one-off costs for procurement, these ongoing costs are often difficult to estimate.

Foundation Fieldbus H1

Foundation Fieldbus H1 (FF) is one of the solutions used in the field of process technology, particularly in the petrochemical industry. It offers extensive device parameterization and diagnostic capabilities. It thereby eliminates not only the need for a special parameterization interface at the sensor, but also the arduous - and possibly time-consuming - way to the sensor, depending on where the sensor is installed. Process peripherals are typically connected to what are known as H1 segments, which can also

be intrinsically safe. Many manufacturers offer a wide range of sensors and actuators for FF. As of yet, however, relatively few control technology manufacturers have adapted their systems to FF. For this reason, FF is usually integrated in a proprietary way, which has made it nearly impossible to use control technology components from different manufacturers. In light of this, users are generally tied to the first provider they choose.

In order to make it easier for users to implement FF and achieve investment security, manufacturers must improve the compatibility and interoperability of their components – particularly for control technology – and create transitions to established control architectures. One example of this is Softing's FG-100 FF/M gateway from FF to Modbus/TCP (Image 1).

Modbus/TCP

Alongside solutions like Profinet, Modbus/TCP has developed into a standard for communication via Ethernet-TCP/IP in automation technology. This is the result of a stable specification, widely available technology and a variety of industrial serial devices, like controllers, in nearly every performance class. Unlike Profinet, which is a distributed automation solution, fieldbus-on-Ethernet solutions like Modbus/TCP are characterized by the fact that Ethernet-TCP/IP is used as a new transmission technology while the respective fieldbus protocol remains largely unchanged. The

major advantages of these systems are that their specifications have been stable for several years and no fundamental rethinking is required on the part of users. These systems are not intended for distributed automation, but rather for the fast, reliable transmission of data over Ethernet.



Image 1: The FG-100 FF/M is well-equipped for the future since it also makes process data available via Web services in accordance with the OPC XML DA specification. This open standard is increasingly found in commercially available SCADA systems.

