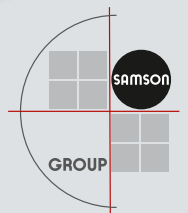


# Expertise in Device Integration



# SMVIC

SMART VALVE  
INTEGRATION CENTER





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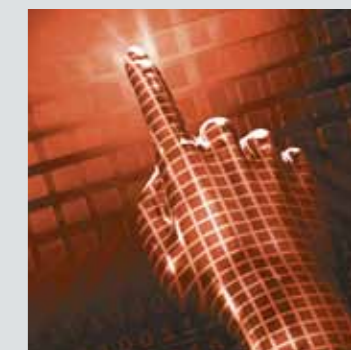
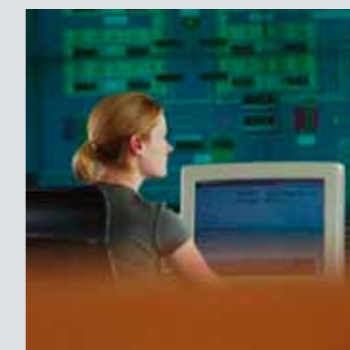
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**Control valves for any application** – Control valves have been SAMSON’s main area of expertise for over 100 years. From rugged self-operated regulators to highly specialized control valves for industrial processes, our broad product range includes valves to meet all requirements. We manufacture valves in all common sizes, in standard materials and exotic alloys, equipped with special linings and different actuators. In addition, the associated companies of the SAMSON GROUP provide tailored solutions for special demands. They develop and produce control valves and valve accessories for special control tasks and niche markets. As a main valve vendor, SAMSON masters all areas of valve technology.

**Control valves and beyond** – Of course, SAMSON also masters valve accessories: Our positioners set standards in this segment with their reliability, accuracy and versatility. They communicate in the field using standardized bus systems and can easily be integrated into all common process control systems.

The worldwide SAMSON sales and service network ensures that help is close at hand for our customers who plan new installations or overhaul and expand existing plants. Relying on our vast valve expertise, we can assist customers in selecting and configuring the right equipment to suit their control task. Small orders as well as large-scale projects are handled within the given deadlines to ensure on-time delivery of customized orders. If desired, our engineering staff supports our customers in lifecycle management all across the world, from installation and commissioning to maintenance and servicing. At SAMSON, we provide our customers with the entire valve technology and after-sales service from one single source.







# 1

## From Classic Valves to Smart Valve Assemblies

### In Focus

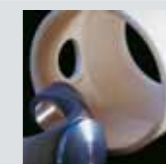
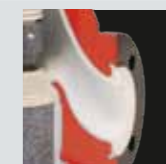
The consolidation of process-relevant maintenance data has top priority for plant operators. A synergy between fieldbus and mechanical valve components evolves by purposefully compiling data and providing diagnostic information.

**Pure mechatronics** – Modern control valves are prime examples of mechatronic assemblies. These field devices are able to control the flow of process media in automated plants on receiving output variables from the process control system.

Similar to sensors, control valves – as final control elements – are installed in the pipeline, integrating them into the process and partly exposing them to considerable mechanical loads, e.g. cavitation, corrosion, erosion etc. Additional factors to be taken into account are the movability of the mechanical throttling element (valve plug) and the springs in the actuator.

Much the same as sensors, control valves also include electronics to perform control functions as well as diagnostic and asset management functions. In this way, valve, actuator and positioner are combined to form an integrated unit of mechanics and electronics.

SAMSON regards itself as a main valve vendor, who masters all these major components making up a control valve assembly and can combine them in the best possible way. As a result, SAMSON is able to guarantee a high degree of performance and provide end users with the best overall control technology.





## 2

### Far-sighted Monitoring Solutions

#### Valve Diagnostics

Nowadays, predictive maintenance is in the spotlight. Smart field devices can provide the required data and diagnostic information, which are passed on to modern plant asset management or process control systems.

**Analysis of diagnostic data** – Asset management functions in digital positioners present end users as well as SAMSON's after-sales service with unprecedented opportunities which were unachievable using analog technology. For example, statistical data provide information on shifts in the working range of the valve, and the cycle counter shows the load condition of the valve.

SAMSON's digital positioners are increasingly used with on/off valves as they provide new opportunities in combination with these valves as well, such as monitoring the opening and closing times, the end positions and the availability of the valve by performing partial or full stroke tests.

**Integration of valve functions into process control and asset management systems** – End users value optimal valve performance to reduce life cycle costs as well as the fact that the complete range of field device functions can be fully integrated into the control system. This is accomplished by using standardized digital interfaces and protocols, such as HART®, PROFIBUS® PA and FOUNDATION fieldbus™ as well as device integration methods like FDT/DTM (Field Device Tool) and EDDL (Enhanced Device Description Language) or, in the future, FDI (Field Device Integration).

When all specifications as well as requirements defined in NAMUR Recommendation NE 105 are adhered to, all asset management and diagnostic functions of field devices, including alarms specified in NAMUR Recommendation NE 107, can be put to full use.

The image displays a SAMSON software interface for valve diagnostics. The interface includes a tree view on the left, a central data table, and a 'Partial Stroke Test' graph at the bottom. The graph plots valve position (0-100%) against time (0-50s), showing a typical stroke profile with a dwell period. To the right of the interface is a vertical column of five diagnostic status icons: a green checkmark (OK), a blue diamond with a wrench (Maintenance), a yellow triangle with a question mark (Warning), an orange triangle with a wrench (Error), and a red circle with an X (Critical Error). Below the interface is a photograph of the physical digital valve positioner device, which is a ruggedized metal enclosure with a terminal block and a small display screen.



## Expertise in Device Integration

### From One Single Source

The control valve assembly with the best overall performance arises from the optimal tuning of all components from one single source. Open, standardized electronic interfaces allow these control valves to be used in the best possible way in all major process control, engineering and asset management systems.

**Control valve expertise + seamless integration = benefit for end users** – The expertise of a main valve vendor like SAMSON, on the one hand, requires a wide product portfolio that includes various valve types as well as the knowledge on how to select the valve best-suited for the field of application. On the other hand, the main valve vendor must be able to handle and provide valve diagnostics. Such data can only be optimally used when control valves are properly integrated into process control and asset management systems. The objective of a seamless integration is to support end users in the best possible way.

This is made possible by device integration methods, such as EDDL and FDT/DTM. Apart from mastering these technologies, essential factors for providing the best possible support include comprehensive training covering the opportunities and special features of commonly available systems as well as interoperability tests performed on in-house test facilities.

**The Smart Valve Integration Center (SVIC)** – The Center works in close cooperation with R&D and the test facilities department to provide all the prerequisites for optimal integration of smart SAMSON devices into process control, engineering and asset management systems. Remote access to the systems as well as video and audio systems make the Center accessible from all over the globe for training and support purposes.





# 4

## The Three Roles of the Center



### The Benefits

The use of smart control valve assemblies provides a multitude of benefits. To use these benefits to the full extent, standards must be met, and extensive training and optimization are indispensable.

**R&D support** – One of the main tasks of the Center is to support the R&D departments during implementation, system integration tests and interoperability verification. Further assignments include optimization of commissioning and initialization functions, device replacement, diagnostic functions, alarm management and handling, monitoring, long-term tests as well as preparing certification tests.

**Technology transfer** – At the SVIC Academy, practice-oriented training is offered, e.g. advanced positioner training. This training focuses on parameterization and configuration, diagnostic and status data logging as well as servicing, replacing and commissioning SAMSON's smart field devices. Additional courses offered include basic training for HART®, PROFIBUS® PA and FOUNDATION fieldbus™ networks. The use of remote access technologies as well as video and audio broadcasting over the Internet also allows the training facilities to be used worldwide.

**Application-related optimization** – An additional task covered by the Center involves the implementation of process or plant specific setups in laboratory conditions to optimize SAMSON's device technology or to reproduce unique plant conditions at the end user's. This includes developing application-specific solutions and field device improvements, performing system tests, conducting tailored training courses as well as implementing and evaluating vendor-independent setups.



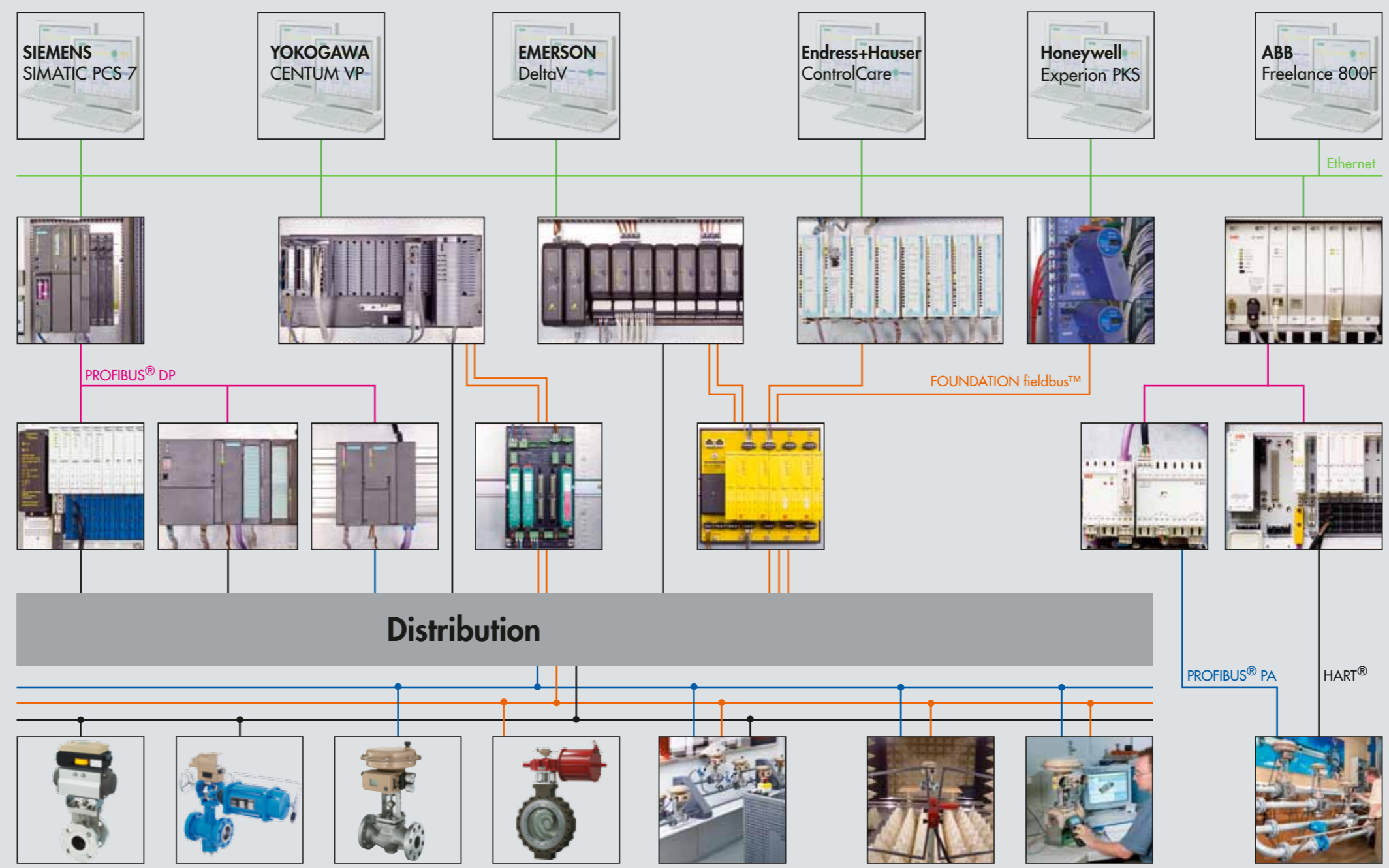


5

## Focusing on Interoperability

### Certificates

Certificates are indispensable for interoperability.



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6

## Future Developments

### Cost of Ownership

Previously, the main reason for installing fieldbus networks was to cut installation costs. This has changed considerably in recent times: Continuous plant optimization and shorter plant downtimes are now considered major factors in favor of fieldbus networks.

**New technologies** – Like the R&D test facilities, the Center is at the heart of SAMSON's research and development activities.

One of the main fields of activity entails research into new technologies, such as wireless data transmission for diagnostics. The data allow plant-wide access to information on field device conditions and worldwide support by SAMSON's specialized staff.

Additionally, studies of new technologies and methods for devices and diagnostics are performed to provide end users with even more detailed condition monitoring of our control valves and to continuously reduce life cycle costs in the future.





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