UReason
INTELLIGENCE TO ACT

Business case: **FOCUS-ON**

The Situation

FOCUS-ON is built on the experience of the SAMSON and KROHNE companies. SAMSON, founded in 1907 in Mannheim, Germany, is a specialist in control valves for the process industry. Also originating in flow technology, KROHNE was founded in 1921 in Duisburg, Germany and specializes in process instrumentation.

The Challenge

KROHNE and SAMSON are the frontrunners in their industry. They combined forces to create a product that is both unique and provides the opportunity to add new business models. The requirements included an easy to use product and allowing domain engineers to add diagnostic and operating knowledge to the internal data generated by the FOCUS-1 device.

The Solution

UReason provided their diagnostic, predictive, control and alarming models running embedded on the FOCUS-ON electronics. Based on available data and Fault Management models, FOCUS-ON was able to set-up various bowtie analysis models that diagnose upcoming problems. Building these models into the software, UReason's APM Studio is capable of real-time monitoring the possible non-conformities and failure events and predict the future conditions and critical levels where additional assistance is needed.

Digital Twin

The advanced algorithms embedded are powered by a 4-core processor enabling modeling of measured data and ensuring process can continue in case of sensor malfunction. Internal communication between components (valve control, flow, pressure, temperature) allow for novel control functions that reduce the need for complex DCS systems.

MAYA (Most Advanced Yet Acceptable)

FOCUS-ON created a new packaging of robust, known components (sensors, valve, actuators, positioners, etc.) in a harmonious form that is industry-ready and easy to use using most handheld devices.

Communication & Control

4-20mA HART input

Depending on configuration, FOCUS-1 can be used for :

- ✔ Setting a valve position
- ✔ Controlling the flow
- ✔ Upstream / downstream Pressure control
- ✔ Delta Pressure control

4-20mA HART output

Functionality configurable:

- ✔ Valve position
- ✔ Volume flow measurement
- ✔ Upstream, downstream or pressure difference
- ✔ Temperature measurement
- ✔ NE 43 alarm

FOCUS-1 alarms

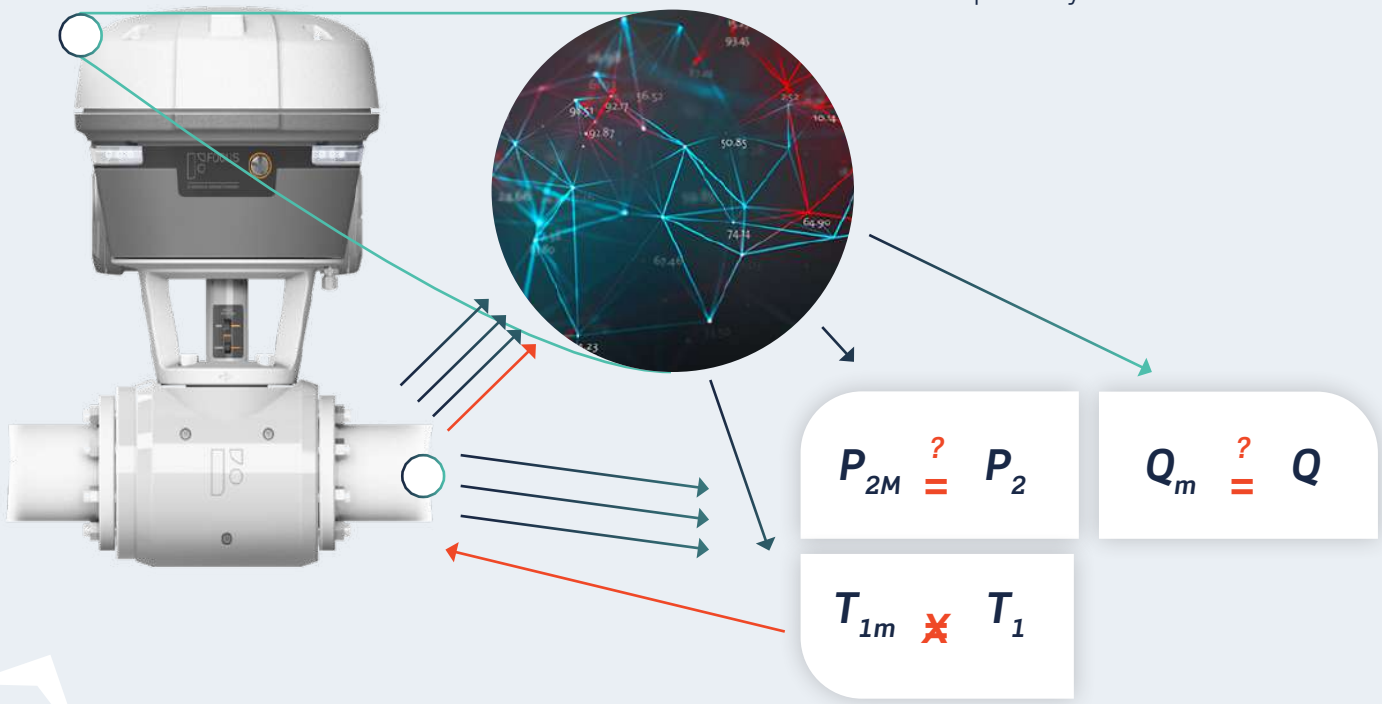
	Device	Process
Only Critical	1	2
Indicative	3	4

Mandatory	Optional	Optional	Optional
1 - Critical Device Alarms	2 - Critical Process Alarms	3 - Indicative Device Alarms	4 - Indicative Process Alarms
Severe valve leakage	Severe setpoint deviation	Light Wear and tear	Fouling of tube
Actuator broken	Severe fouling of pipe	Light valve leakage	Cavitation
Air pressure failing	Empty pipe	P&T Sensor failing	
	Severe cavitation	Transducer path failing	

Digital Twin for more reliable performance and improved diagnostics

2. The data are integrated into a digital twin, an integrated digital model in APM Studio of the FOCUS device

3. The calculated values of the model are compared with the measured values. Wrong or missing measured values are replaced by the modelled values



1. The integrated sensors continuously measure the process and device data

4. FOCUS continues operation and an alarm is communicated

"With FOCUS-ON, we are taking a decisive step towards the autonomous factory that can produce autonomous while also autonomously optimizing."

The Benefits

- Acceleration of the development process building a unique product with an integration of diagnostic functions and artificial intelligence.
- Collection of diagnostic data of product usage which is used for optimizing the production.
- Adding new services and business models for their current customers.


CHANGING THE FLOW
FOREVER
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