

DIGITAL SERVICES ADDED VALUES AS PART OF THE INDUSTRY 4.0 PLATFORM

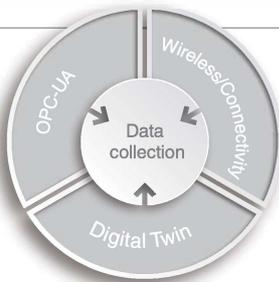
Well-performing and disruption-free production through autonomous procedures is right at the top of the agenda both for users and for GEMÜ. What future options for monitoring process valves are there? This has already been a subject for a long time, to which new developments of different technologies will contribute.

We have an idea of how GEMÜ will go down this path. We are already working on a few trailblazing projects in order to shape a path to local autonomous systems and offer our customers additional added value.

Standards – prerequisite of digitalization

A review:

The successful model of the Industry 4.0 platform for making processes more effective, for example by automating data handling, is now ten years old. Artificial intelligence (AI) and predictive maintenance are often mentioned, and figures such as "around a third of medium-sized enterprises use AI" and "a further 25% are planning its launch" are circulating. According to the Industry 4.0 Maturity Index, most users (approx. 80%) are only at maturity level 2 of "connectivity" here out of a total of six maturity levels. A Bitkom survey, however, did conclude that more and more people are discovering the opportunities of artificial intelligence. In many cases, therefore, data is currently just being collected for findings to be derived. That seems realistic and also logical as a procedure. After all, with OPC-UA, wireless/connectivity and digital twinning, important prerequisites have been created in standardization, so as to be able to profitably collect and evaluate the required data.



OPC Unified Architecture (OPC-UA) is a standard for data exchange in a platform-independent, service-oriented architecture.

Wireless/Connectivity Used here in a general context, wired and radio (wireless) network connection.

Digital Twin: A digital twin is a digital representation of a material or immaterial object or process from the real world in the digital world.

Data – the key to added value and performance

Many of the GEMÜ products for control and regulation have already been working with digital data for a very long time. Digitalization and AI enable expanded solution approaches for monitoring process valves. Nevertheless, it takes more than an AI tool to allow automated monitoring of an operating medium over its service life on-site in a system environment.

For servicing and maintenance, knowledge and experience are a major focus, so as to be able to point to the cause of an effect.

This includes, for example, the following considerations:

- ⇒ Are the parameters of a control module not correctly set?
- ⇒ Is there perhaps a leakage in the pneumatic supply?
- ⇒ Are there interferences due to temperature or humidity?

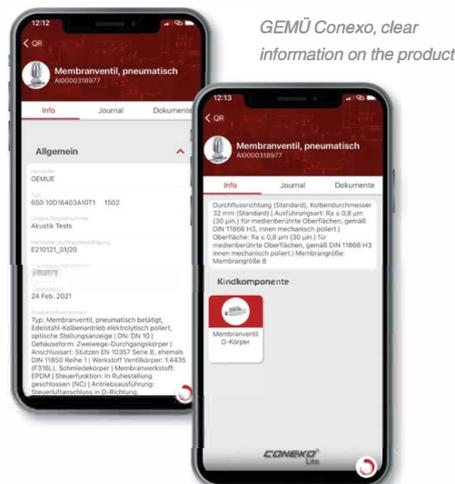
Situation today

The practical and proven GEMÜ solutions provide support for determining appropriate data in order to recognize operating changes and thus be able to define maintenance tasks in a forward-looking way – very much in the spirit of developing into autonomous functions and systems.

Products for connectivity/data interfaces



Likewise, the ability to positively identify operating media is part of successful digitalization. A digital type plate is required for this, which also positively allocates the collected data.



And tomorrow?

Data analysis and data use will be a permanent component of work in the future. In particular, this will facilitate the activities of service employees in servicing and maintenance – both on-site and remotely. A reliable data basis and analysis are decisive factors for quality and effectiveness in order to overcome challenges in the future. The most important bases and their standards, including OPC-UA and Asset Administration Shell, are attractively defined, and the phases of realization and implementation are next. [See picture 2]. **Gaia-X**, the GDPR-compliant cloud for a digital European ecosystem and secure data retention, is an example to this end.



The subject of sustainability, for example for the reduction of water consumption or energy consumption, will also accompany us. Decentralization, for example with the modularization of plants according to the principle of module type packages, is another trend towards reducing complexity and increasing recyclability. The same applies to flexibilization (batch size 1 to x) with the next step in the direction of autonomy.

All these subjects are based on data, the evaluation and analysis of which are supplemented with action recommendations and lead to the rectification of anomalies.

Simple – carrying people along

State-of-the-art computer engineering helps to master the data. After all, data should be as automated as possible and processed in real time, in order to make it simple for the user to flexibly increase performance through digital changes.

It is simplest if the products generate and report the required data themselves, and if the service employee has clear facts on which to base decisions. All in line with **plug and play**.

MATURITY LEVELS:
The Industry 4.0 maturity level can be downloaded from acatech (German National Academy of Science and Engineering).

- The maturity levels are described as:
- ⇒ 6 – adaptability
 - ⇒ 5 – forecasting ability
 - ⇒ 4 – transparency
 - ⇒ 3 – visibility
 - ⇒ 2 – connectivity
 - ⇒ 1 – computerization