

Start Your IIoT Journey



AVENTICS™ Smart Pneumatics Analyzer
Enhance preventative maintenance and energy optimization by
analyzing and visualizing pneumatic systems



AVENTICS™ Smart Pneumatics Analyzer analyzes and visualizes pneumatic installations and systems

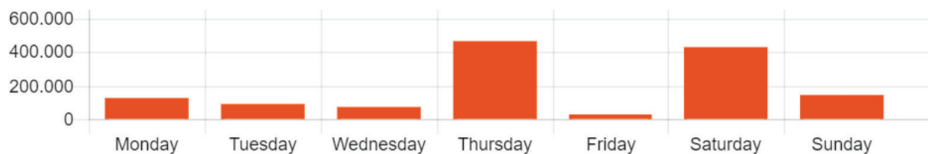
Emerson's AVENTICS Smart Pneumatics Analyzer (SPA) provides analysis of pneumatic systems and installation at a glance. The integrated IIoT Edge Gateway Smart Pneumatics Monitor (SPM) continually records the respective operating states. All of the sensor data from the pneumatic maintenance unit is digitized and turned into information using mathematical algorithms. These algorithms have been developed based on decades of expertise in product engineering and application. The obtained information is then recorded and shown live in a dashboard. The SPA thus gives you more insight into the overall pneumatic system and opens up the world of IIoT-relevant applications, such as preventive maintenance and energy optimization.

- Visualization of live and historical data
- Demo mode with random data for demonstrations without air
- CSV Excel export of all sensor data
- Leakage detection by pressure drop test
- Electrically operated valve controllable via dashboard
- Time synchronization
- Visual comparison of consumption data from various measurement intervals

Air consumption last day [Nm³/h]



Air consumption last week [Nm³/d]

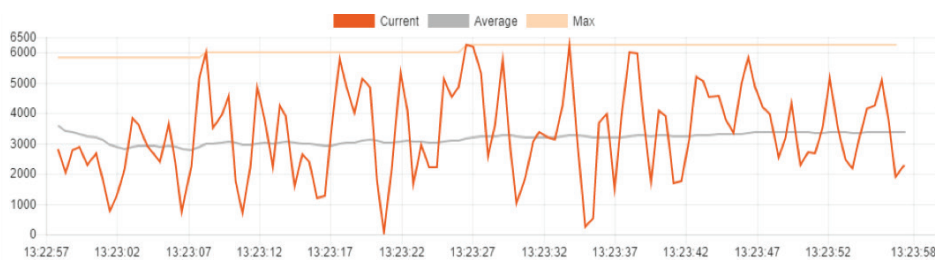


Display of air consumption in Nm³ per hour for the last day (top). Display of air consumption in Nm³ per day for the last week (bottom).



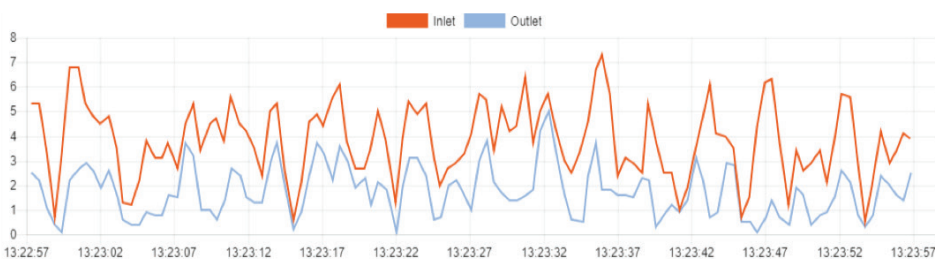
“The AVENTICS Smart Pneumatics Analyzer provides a simple way of gaining insight into the performance and health of a pneumatic system, which supports improved maintenance and energy optimization strategies.”
 – Nils Beckmann, Product Marketing Manager IIoT Integration at Emerson

Air Flow [NI/min]



Integrated flow sensors show air consumption in NI/min. The displayed live value is supplemented by an average value and a maximum value. This lets you quickly detect trends and leakages.

Pressure [bar]



Visualization of live data from the pressure sensors in bar. The orange line indicates the input pressure that is, for example, fed into the machine via the air supply. The blue line is the output pressure that is absorbed by the maintenance unit at the end.

Simplify implementation of an Industrial Internet of Things solution with the AVENTICS Smart Pneumatics Analyzer

The Industrial Internet of Things (IIoT) can create added value and you therefore want to implement a solution immediately. However, implementation of an IIoT solution can be challenging and you may not know the best way to proceed. With the AVENTICS Smart Pneumatics Analyzer, Emerson offers a mobile easy-to-integrate solution that can help you get started and enable you to make those gains quickly. By digitalizing the pneumatic environment, the SPA provides you with options to directly experience the benefits and potential of IIoT applications on your own machine. You can simply connect the SPA to an existing machine via the compressed air supply and have an instant analysis option for key machine characteristics, such as compressed air consumption and possible leakages.



The bright red case contains a Smart Pneumatics Monitor with connected IO module (DI, DO and AI), SIM slot for mobile data, Wi-Fi router, AS series maintenance unit with integrated pressure sensors, and a tablet to visualize data. There is a case for two application environments with AS2 (flow 7...1583 NL/min) and AS3 (flow 10...2500 NL/min) series maintenance units.





“The SPA lets you easily and directly start with IIoT. We thus assist our customers with their digitalization needs.”
– Dr. Michael Britzger, Senior Manager Digital Transformation at Emerson



Local preparation of data (edge computing)



Local visualization of sensor data



No additional software required (web browser)



Measurement without overriding the PLC-controlled process

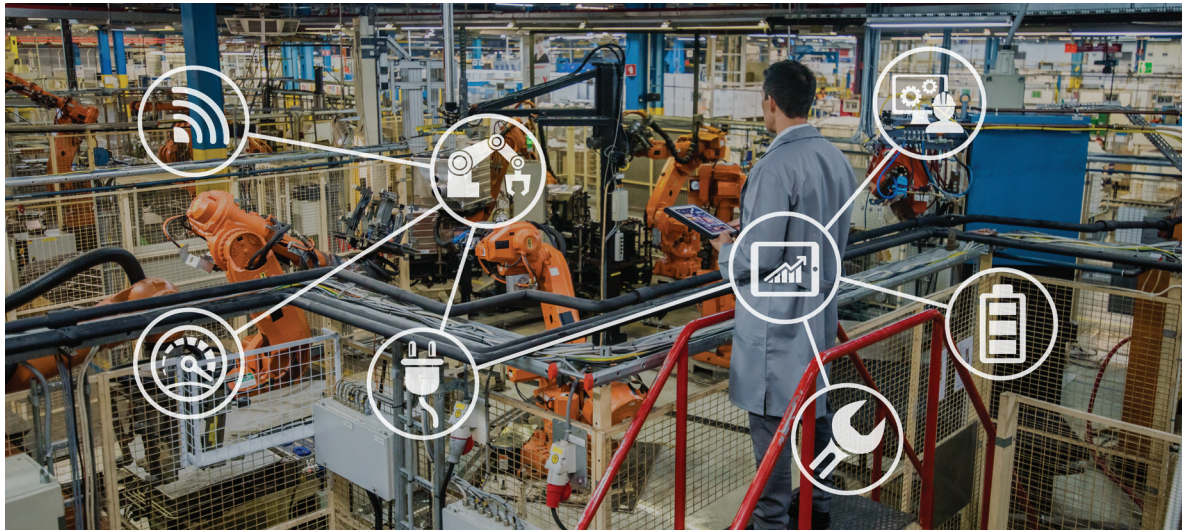


Portable, can be used on different machines



Includes all functions to start with IIoT

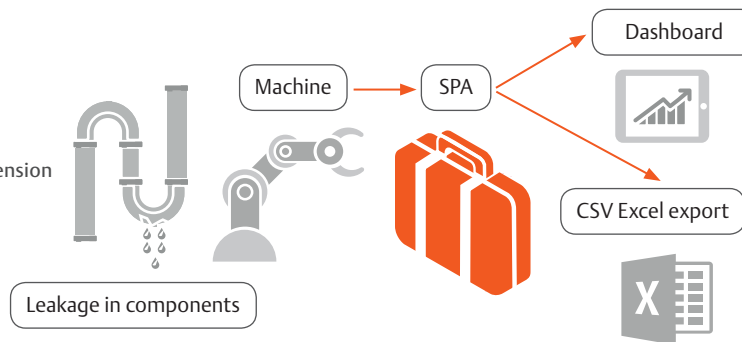
Industrial Internet of Things for a broad range of applications



Emerson offers complete IIoT solutions for pneumatics systems or can support your own development. This provides many benefits, such as enhanced predictive maintenance via integrated diagnostics, increased energy efficiency thanks to improved use of compressed air, or maximized operating performance due to a simplified configuration.

Detect leakages and optimize consumption

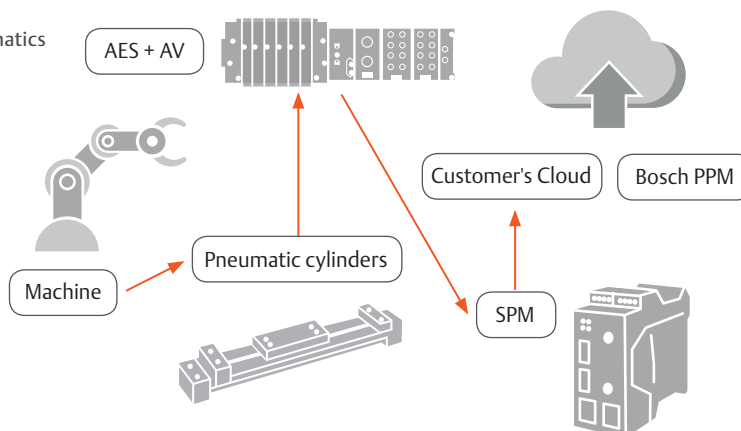
- Data recording
- Visualization of air
- Evaluation of data (IIoT)
- Retrofit
- Plug-in and measure
- System analysis/comprehension
- Process optimization
- Efficiency improvement
- Energy efficiency



Data analysis permits direct conclusions related to leakages and long-term flow behavior. Extended data analysis based on the system's characteristic graphs also provides information on the overall state of the machine. The foundation for further process optimization is laid using models and trend analyses.

Find problems during the welding process and integrate file

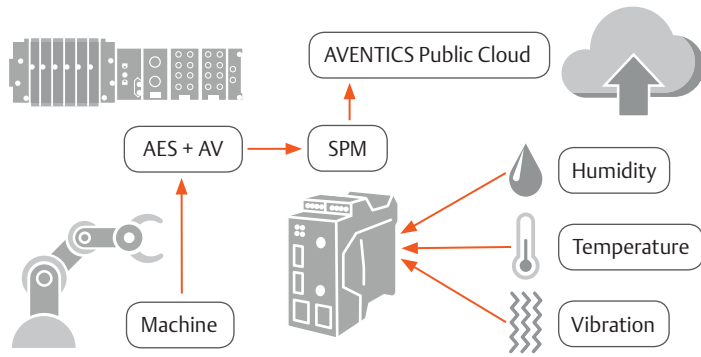
- Sensor data and pneumatics
- Fieldbus system
- Edge computing
- Private Cloud
- Quality optimization



The position of a welding nozzle is monitored via distance measuring sensors on pneumatic cylinders. This allows you to determine the maximum possible welding quality. The required sensor data is read out via the AVENTICS fieldbus system (AES) and evaluated by the AVENTICS Edge Computing Gateway SPM. Then, the information is sent to the customer's Cloud via an individual interface (here: Bosch PPM).

Detection of increased wear and predictive maintenance

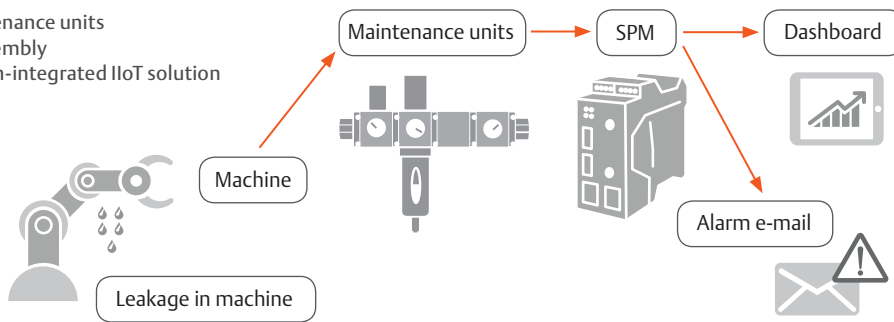
- Material damage
- Wear
- Public Cloud
- Ambient data
- Predictive maintenance
- Sensor systems
- Target/actual comparison



The **pneumatic system data** is supplemented by case-specific sensor and ambient data, such as room temperature, humidity, and vibration. It is possible to use an expandable data model for process optimization within the AVENTICS Cloud. Monitoring of ambient conditions also allows you to trace the causes of wear.

Detect leakages (pressure drop test), e-mail alarm and system integration

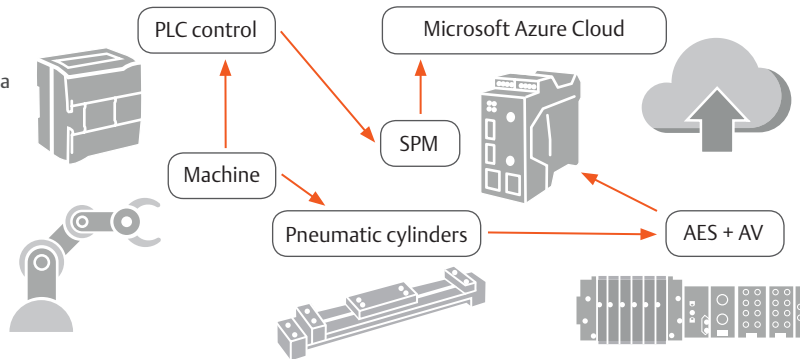
- Maintenance units
- IO assembly
- System-integrated IIoT solution



Permanent monitoring of the pneumatic parameters by industrial systems through the installation of pressure and flow sensors. The sensor values are read out by the SPM via an IO assembly and visualized in a local dashboard, without the need for a server or Cloud. An alarm is thus sent via e-mail if certain measured values are exceeded.

Send data to the Microsoft Azure Cloud and correlation from various sources

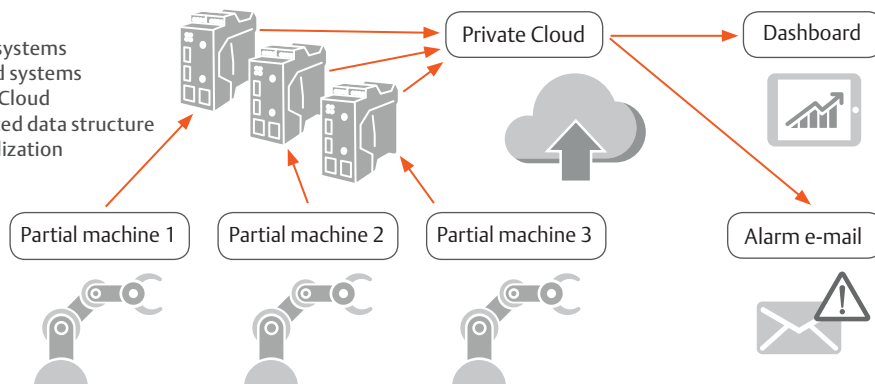
- Microsoft Azure
- Public Cloud API
- Process/system data
- PLC data
- Correlation of data from various sources



The **recorded pneumatic data** is correlated with process-relevant system data from the machine control (PLC). This lets you draw conclusions on the cycle performance of the system and wear of individual components. The information generated from this data is sent to a Microsoft Azure Cloud and visualized there.

Energy monitoring and combined dashboard visualization from several stations in a system

- Extended systems
- Networked systems
- AVENTICS Cloud
- Consolidated data structure
- Data visualization



Consolidation of data from a wide variety of stations in a system within a private Cloud. The Cloud allows you to visualize sensor data within the dashboard and also send alarm e-mails. With this solution, absolutely no data leaves the customer's premises.





Immediately integrate an IIoT Solution with the AVENTICS Smart Pneumatics Analyzer to create added value for your business.



**Emerson Automation Solutions
Germany**
AVENTICS GmbH
Ulmer Straße 4
30880 Laatzen, Germany
Tel.+49 511 2136-522
Fax+49 511 2136-163
www.aventics.de

**Emerson Automation Solutions
USA**
AVENTICS Corporation
PO Box 13597
1953 Mercer Road (40511)
Lexington, KY 40512
Tel. +1 859 254-8031
www.aventics.us

**Emerson Automation Solutions
China**
AVENTICS Group
2002 Unit, Asdendas Plaza, No 333
Tianyaoqiao Road, Xuhui district
Shanghai, China, 200030
Tel. +86 21 2426 9666
www.aventics.cn

-  Emerson.com/Aventics
-  Facebook.com/Aventics
-  LinkedIn.com/company/Aventics
-  Twitter.com/Aventics



The Emerson logo is a trademark and service mark of Emerson Electric Co. AVENTICS is a registered trademark of one of the Emerson family of companies. All other marks are the property of their respective owners. © 2019 Emerson Electric Co. All rights reserved.
R500000086 / Printed in Germany / 02-19



CONSIDER IT SOLVED™