



Pneumatics Withstands Even the Harshest of Saw Mill Environments

Finnish woodworking specialists depend on reliable pneumatics

Expert Interview

Dr. Jürgen Jasperneite, expert for intelligent automation, on the IoT

Everything at Hand

Compact valve for dental instruments

Pneumatics
It's that easy

AVENTICS^A

Hygienic Design for
PNEUMATICS
IT'S THAT EASY



CL03

The food industry requires automation solutions that are particularly safe, immaculately hygienic, and efficient. AVENTICS products have the required characteristics and ensure food safety in the production process. The design of our individual components and their chemical stability make them perfectly suited for use in especially sensitive areas. One example: The CL03 valve system offers a hygiene-compliant bus connection, the particularly high IP69K protection class, and EHEDG classification.

www.aventics.com/hygienic-design



Fast response times are an AVENTICS hallmark. By expanding our capacities in China and the U.S.A., we will become even quicker.

Paul Cleaver
CEO AVENTICS



Dear Readers,

we at AVENTICS are a global player in industrial automation. With our international alignment, an efficiently organized global sales network is key to remaining agile on the market and ensuring fast response times, making customers' lives easier. It's not just about how many sales employees we have, but about tapping new sales channels so we always provide just the right services for your needs.

AVENTICS has its own sales locations in 21 countries. Our sales engineers are skilled pneumatics experts with direct access to all the knowledge within our organization. But above all, they are familiar with the local market conditions and customer requirements. This allows us to offer you engineering support and intensive consultation on applications locally, helping you as machine manufacturers and end users to realize optimized solutions wherever you need them.

In addition, we build on our sales partner network. Companies like Landefeld and Interglobe are located close to their customers and offer a wide range of products with extremely fast delivery times. Pneumatics are important to our partners, who are often focused on specific industries.

Our eBusiness offers make day-to-day business with repeat orders even more straightforward. Simply click to choose, configure, and order the right products and have them delivered to your doorstep in no time at all: Our new pneumatics shop, which we're rolling out in more and more regions and countries, is setting benchmarks in user comfort and engineering support.

Fast response times are an AVENTICS hallmark. By expanding our capacities in China and the U.S.A., we will become even quicker. We are increasing our local added value, enabling us to meet your requirements even faster. In the era of networking and the Internet of Things, speed is becoming more and more crucial. Here, we focus on intensive exchange with the scientific community and industrial partners. One result: the Smart Pneumatics Monitor, which enables condition monitoring with little to no effort, while increasing machine and system availability.

You will find these and many other topics in this issue of A Mag. Have fun reading!

Yours,

A handwritten signature in dark ink, appearing to read 'P. Cleaver'. The signature is fluid and cursive, written on a light background.

Paul Cleaver
CEO AVENTICS

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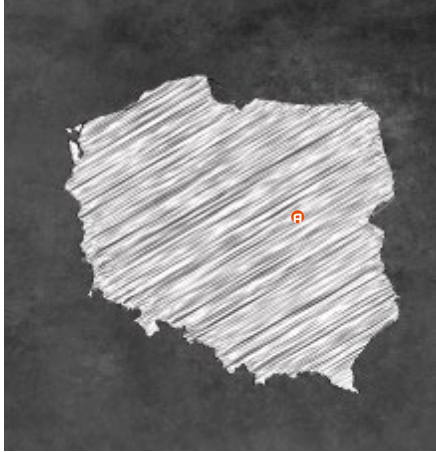
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KALEIDOSCOPE



EXCEEDING CUSTOMER EXPECTATIONS


With decades of experience with tier-1 and tier-2 suppliers for commercial vehicle power trains, Jon Bigley, new Global Sector Head Commercial Vehicles at AVENTICS, has devoted his entire professional life to this industry. In his previous job, he was responsible for developing components for exhaust gas treatment.

More and more OEMs are integrating AVENTICS solutions into their designs. "I focus on

exceeding customer expectations and offering products that set benchmarks in terms of a compact, lightweight, and powerful design – and costs," emphasizes Jon. Though his desk is officially located in the U.S., he spends a great amount of time in Europe advertising tailored solutions to customers. 

HAPPY BIRTHDAY, EGER




The AVENTICS plant in Eger is celebrating a milestone birthday. The city located in the north of Hungary has now been producing AVENTICS components for 50 years. Some of the products from the early years are still in demand today – for example, 343 and 463 series valves, and 1300 series cylinders. To date, the Eger location has manufactured over 100,000 different products. 

EVERYTHING THAT BELONGS TOGETHER COMES TOGETHER HERE




Engineers can easily integrate the new ES05 valve system for standard applications into their automation architectures with the established Advanced Electronic System (AES) from the AV family. AES supports all standard fieldbus protocols in industrial automation in a single hardware: PROFIBUS and PROFINET, EtherNet/IP, EtherCAT, Powerlink, CANopen, and DeviceNet. In addition, sensors and single valves can be linked decentrally to the expandable I/O modules of the AES. This reduces the wiring effort and simplifies pre-fitting of complete assemblies.

The ES05 consists of just a few unique components. This makes incorrect installation virtually impossible and only one tool is required for the job. All fittings are of the same type and tightened with the same torque. Compact, robust housings made of high-performance polymers enable stable application even in harsh environments. 

1,000,000TH CLUTCH VALVE UNIT ROLLS OFF THE LINE


The AVENTICS plant in Eger has been producing clutch valve units for over seven years. The 1,000,000th unit has now rolled off the line. Since the beginning, the valve

generations have changed and the production lines have been modified but the demand for the valve remains high in truck production. 



E-BUSINESS IN THE SPOTLIGHT


eBusiness is the fastest growing sales channel at AVENTICS. Andreas Hart is working hard to increase this speed yet again. As Director eBusiness, he has been responsible for digitizing sales

processes at AVENTICS since the end of 2016. In this role, he will also lead the launch of the new online shop. In his previous jobs, Andreas Hart focused on product information management and service digitalization. 



PNEUMATICS MEETS ART: THE TUBE LAMP CLOCK



Dutch artist Lambert Kamps has developed a clock driven by pneumatics. At the heart of his masterpiece are 30 fluorescent tubes that move in and out of black pipes with the help of compressed air. The result: numbers appear that together show the current time. 

► YouTube: https://www.youtube.com/watch?v=5_kkYBljg9A

► You'd like to design your own pneumatic clock?

Our Engineering Tools will assist you:

www.aventics.com/de/engineering-tools/

You can find the right products in our online shop:

www.aventics.com/pneumatics-catalog

INTERNET OF THINGS: “CONSTANTLY CHECKING WHAT COULD DESTROY MY BUSINESS MODEL”

Interview with Dr. Jürgen Jasperneite

No time for the Internet of Things in everyday business? Dr. Jürgen Jasperneite of the OWL University of Applied Sciences and Fraunhofer Application Center in Lemgo, Germany, knows what is required of management in small to medium-sized enterprises. The expert for intelligent automation makes a case for small steps instead of deadlocks. Talking with A Mag, he reveals whether it is worth it to wait for standards.



NOT EVERYTHING THAT
IS TECHNICALLY FEASIBLE
IS AN ADDED BENEFIT
CUSTOMERS ARE WILLING
TO PAY FOR.

Why is the Internet of Things important?

Dr. Jürgen Jasperneite: *The Internet of Things describes the digitalization of production. But it's much more than just production-specific technical questions. Currently, digitalization is reaching many spheres of life, and this is something that can't be undone. For example, solutions used for autonomous driving employ the same technologies as automation. Of course, there are some that close their eyes and wait for it all to pass by. Others seem a bit hyperactive in addressing the topic. We need a happy medium.*

What role does the Internet of Things play for small and medium-sized companies?

Dr. Jürgen Jasperneite: *There is a general consensus that the Internet of Things cannot be successful without small and medium-sized companies. The management level in these companies must focus on what the Internet of Things means for them. This is their only chance to help pave the way in this journey. In small companies, the boss will have to do it, and in larger enterprises it would make sense to organize teams. I keep hearing that everyday business doesn't leave any time for it, but this may just be an excuse to simply put it off. As a manager, I am constantly checking what could destroy my business model. Management must constantly question current business processes and assess what possibilities digitalization opens up for them – and reflect on it with others. This is half the battle.*

Who is in the driver's seat – the machine manufacturers, or IT?

Dr. Jürgen Jasperneite: *Neither. It's the users of machines and IT that exploit opportunities they consider most beneficial to them. The next innovative push will probably come from the areas of IT and telecommunications. Machines will mostly retain their outer appearance, with new features more and more often hidden in*



their software. But one thing is clear: Not everything that is technically feasible is an added benefit customers are willing to pay for.

Do machine users know what they need?

Dr. Jürgen Jasperneite: *Nobody was ordering smartphones ten years ago because no one knew what they were. It was an offer made by a manufacturer that created a totally new market, changing how technology is operated completely. To exaggerate a bit, today's generation of students considers some areas of automation to be cryptic and archaic. Here, there is a major need for action with regard to operation and applied practices in particular.*

How compatible are mechanical engineering and IT?

Dr. Jürgen Jasperneite: *Mechanical engineering and IT have taken totally different paths over many years. Like totally separate silos, they have defined their own terms and methods. Ask both an engineer and a computer scientist what they consider services to be. They will give extremely different responses. In the end, it's also about how digitalization is interpreted. For engineers, it's the mechanics that counts, while IT is something that controls processes in the background. For computer scientists, a machine is comparable to an office computer, meaning it can be replaced. This is why it is so important for industry associations involved with the Internet of Things to communicate and define common standards.*

Isn't this a purely German point of view?

Dr. Jürgen Jasperneite: *The 'Industrie 4.0' platform, a main proponent of the Internet of Things, is now working with the American Industrial Internet Consortium. This is a good thing. The U.S. is strong in IT and Europeans are strong engineers. It's about combining the two in a way that makes sense.*

How far along are the announced disruptive developments?

Dr. Jürgen Jasperneite: *Right from the start, the discussion has been about the hope or fear that new business models could disrupt and change markets. What surprises me is that very few creative approaches can be identified to date, apart from in condition monitoring. Of course, everyone has the idea floating around in their heads that someone coming from an industry other than mechanical engineering is butting in between OEMs and customers with some algorithms and a platform. But this fear is also good – because it is management's task to observe these types of risks at all times.*

WE NEED STANDARDS,
BUT IF WE FIRST WANT
TO STANDARDIZE THE
ENTIRE WORLD, WE'LL HAVE
TO WAIT TWENTY YEARS
BEFORE ANYTHING
HAPPENS AT ALL.



What role will component manufacturers play in the future?

Dr. Jürgen Jasperneite: *I've got good news: Cyber-physical systems always have physical, concrete components. We will continue to need sensors and actuators in the future. They just have to be able to communicate and be capable of being integrated into IT systems. We're not just talking about Ethernet or OPC UA, but about a higher, abstract form of communication. Components must be able to notify "who and where am I, what I am capable of, what and how am I doing". IT on the other hand has to take this information and create a meaningful package out of it, not just within but also outside of process control.*

Every component must be able to be uniquely identified electronically and will communicate over its entire life cycle. With the Smart Pneumatics Monitor, AVENTICS is heading in the right direction. Currently, committees are working to develop architectural models that are also relevant for components and ensure interoperability between products of different makes.

Does that mean users should wait for binding standards?

Dr. Jürgen Jasperneite: *We need standards, but if we first want to standardize the entire world, we'll have to wait twenty years before anything happens at all. It would make much more sense to combine existing standards in a way that leaves little uncovered area. As I always say, "Don't wait, start now." Just start out taking small, reasonable steps.*

What do small, reasonable steps look like?

Dr. Jürgen Jasperneite: *Currently, for example, manufacturing companies have a high demand for solutions for assisted assembly. Users want to minimize fault rates as well as reduce training required for varying assembly. To date, usually paper instructions are still used. Digitalization isn't about simply converting this information from paper to digital media, but creating added value with intelligent assistance systems.*

Users can experiment with the Internet of Things – testing digital assistance systems, either parallel to existing stations, or integrated, and can measure the advantages. They can involve their employees and only have to implement solutions that benefit them.

*“Don’t wait, start now.
Just start out taking small,
reasonable steps.”*

DIGITALIZATION ISN'T ABOUT
SIMPLY CONVERTING
INFORMATION FROM PAPER
TO DIGITAL MEDIA, BUT
CREATING ADDED VALUE
WITH INTELLIGENT
ASSISTANCE SYSTEMS.



What role does the SmartFactoryOWL in Lemgo play?

Dr. Jürgen Jasperneite: *We consider ourselves the connecting link between research and education on the one hand, and company environments on the other. With our SmartFactoryOWL “Centrum Industrial IT” research and development center, we fulfil four tasks as a neutral third party: We provide information on the Internet of Things. In our SmartFactory, we demonstrate the opportunities and potentials presented by digitalization based on concrete automation solutions. For companies, we qualify employees at different levels and support them in planning and implementing digital production processes. The Internet of Things begins with small, reasonable steps. *

Dr. Jürgen Jasperneite is the head of the research institute for industrial information technology (inlT) at the OWL University of Applied Sciences in Lemgo, Germany, where he is responsible for computer networks in the electrical engineering and computer engineering department. He is also head of the Fraunhofer Application Center for Industrial Automation (IOSB-INA) in Lemgo. Prof. Jasperneite is one of the initiators of the Centrum Industrial IT (CIIT), the first science-to-business center in the area of industrial automation in Germany. He also initiated and conceptualized the setup of a research and demonstration factory for IoT technology on the Innovation Campus Lemgo with the SmartFactoryOWL.



How can users generate added value with information while efficiently keeping high volumes of data under control? When will open standards for future-proof automation solutions finally arrive? Currently, these are the most frequently discussed questions related to the Internet of Things.

Many overlook the fact that sensor data can already be recorded and evaluated with minimal effort today: "AVENTICS is on the right path with intelligent products," states Dr. Volker Lohweg, Chairman of the Institute of Industrial Information Technology at the OWL University of Applied Sciences. He's referring to the Smart Pneumatics Monitor from AVENTICS, SPM for short.

SPM sends information without detouring to the controller

The new module can be seamlessly integrated into AVENTICS AES valve electronics and records data from serially controlled valve systems and sensors connected via I/O modules. "The SPM processes the data at a decentralized location, using the result to generate status information without straining the control," states Wolf Gerecke, Director Strategic Product Management at AVENTICS, describing one crucial advantage. As a result, machine manufacturers and other users do not have to put forth any additional effort to program the PLC.

The SPM exchanges information directly with other systems via the integrated OPC UA server. Via drag & drop on a graphical interface, users define the components of the pneumatics system they want to evaluate. Once set limits are reached, the electronics automatically send messages to ERP and MES

systems, as well as maintenance technicians or other staff. This increases system availability while reducing costs for maintenance.

Using available standards

"Don't wait – start now," says Dr. Jürgen Jasperneite, head of the research institute for industrial information technology (inIT) at the OWL University of Applied Sciences, the Fraunhofer Application Center Industrial Automation (IOSB-INA), and the Chairman of the Board of the Centrum Industrial IT (CIIT). "Industrial companies and machine manufacturers have to organize their journey themselves and look to see what levers help them," states the prominent expert for the Internet of Things. Dr. Volker Lohweg also cautions against hesitating. "Don't wait for all the standards to be set before focusing on the Internet of Things," he emphasizes.

"Don't wait for all the standards to be set."

Dr. Volker Lohweg, Institute for Industrial IT at the OWL University of Applied Sciences in Lemgo, Germany

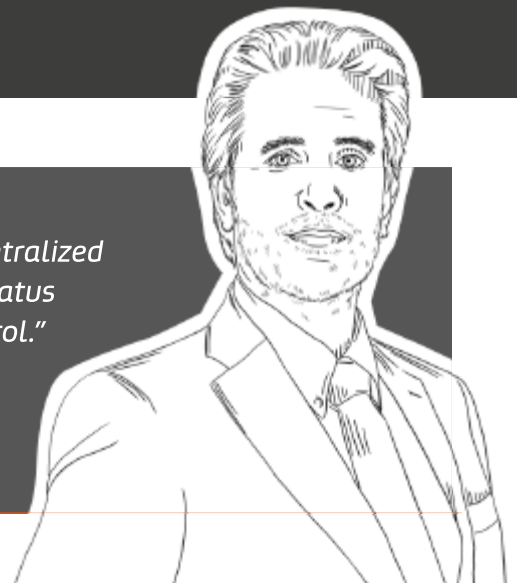


INTERNET OF THINGS: THE JOURNEY IS THE DESTINATION

Pneumatics generates added value
with decentralized status information


"The SPM processes the data at a decentralized location, using the result to generate status information without straining the control."

Wolf Gerecke,
Director Strategic Product Management
at AVENTICS



Developed on initiative of the Fraunhofer society and the OWL university in Lemgo, the SmartFactoryOWL is an exemplary model demonstrating how this works in practice. In this factory of the future, scientists are working with strategic partners such as AVENTICS to develop solutions for intelligent automation and the IoT. From the beginning, AV series pneumatic valves controlled with AES valve electronics have stood the test in concepts developed for broad-ranging production and assembly applications. As one of the first users, the SmartFactoryOWL also harnesses the potential of the Smart Pneumatics Monitor for recording operating statuses for preventive maintenance.

For Klaus-Dieter Walter, Business Development Manager at SSV Software Systems GmbH, it's about more than just data formats. "Added value should be kept in mechanical engineering, and not drift to IT," he says, describing a major challenge for the engineering industry. For him, networking is more than just

a technical question: "The Internet of Things is also about people from different companies and industries talking and defining interfaces together." 



EVERYTHING AT HAND

Compact valve keeps dental instruments ready



Photo: iStock

"Positioning isn't only a topic for mechanical engineering. Medical engineering also values pneumatics solutions from AVENTICS."

Ernst-Georg Tesch,
Sales Engineer at AVENTICS Germany




Hygienic materials that can be adjusted freely in height and position, equipped with a wide range of tools: Modern dentist's chairs are more than just chairs – they are high-tech units featuring compact pneumatics.

One manufacturer of these treatment units is DKL CHAIRS from Rosdorf, Germany. The company designs and produces state-of-the-art solutions, relying on compact pneumatics. After the patient is in position for treatment, the dentist reaches for the moveable treatment table. It holds all the necessary instruments and tools. To ensure open access to the patient, the table is attached to a swivel arm. For the dentist, it is important to be able to freely position the table ergonomically using just one hand and as little force as possible. The table also has to be held in place securely during treatment.

DKL CHAIRS equips the swivel arm with a pneumatically clamped gas-pressurized spring. The dentist grasps the treatment table and presses a button with his or her thumb. Inside the swivel arm, a pneumatic valve switches an MNI series mini cylinder that releases the arm for movement. As soon as the dentist releases the button, the valve switches back and the pneumatic cylinder clamps the gas-pressurized spring. DKL CHAIRS opted for an LS04-XS valve to control the cylinder,

a series completely overhauled by AVENTICS in 2016. With a flow range up to 200 l/min, it is by far the most compact solution on the market. The valve is also robust and long-lasting – important features for use in dental chairs.

Pneumatics and medical technology are a good fit, not just at DKL CHAIRS. In the USA, AVENTICS has long provided the equipment for stationary oxygen concentrators. And many liquid applications, such as dialysis or blood testing, use pneumatics for flow control, pressure control, or pressure monitoring. 



Pneumatic components in the swivel arm keep the table in position.



The LS04-XS is a perfect fit for the compact, high-tech table.

STRONGER TOGETHER: PNEUMATICS + DATA = HIGHER AVAILABILITY

Smart Pneumatics Monitor: joint development between data specialist SSV Software Systems and AVENTICS



"Everyone can calculate the value of the SPM themselves by comparing the costs for the SPM with one day of system failure."

Klaus-Dieter Walter,
Managing Director of SSV Software
Systems GmbH



"The question is easy: how expensive is machine downtime? And how important is it to me to significantly reduce the probability of such an event?" asks Klaus-Dieter Walter, Managing Director of SSV Software Systems GmbH. The company worked with AVENTICS to develop the "Smart Pneumatics Monitor," SPM for short, which detects wear on pneumatic systems before it results in system failure. The highlight: The SPM uses already available data and processes it at a decentralized location. "We don't put any load on the machine controller, and we don't need large bandwidths to send huge volumes of data to a server," states Dieter Michalkowski, Global Account Manager and IoT expert at AVENTICS, emphasizing a major advantage.

"We're not end users but we know that we generate useful information from data," explains Klaus-Dieter Walter. For over 35 years, SSV has developed, produced, and marketed embedded systems that are used in combination with special software in the area of industrial and process automation. From the start, the objective of the project was to make machines and processes even smarter. "Condition monitoring and improved energy efficiency are the first applications for the Internet

of Things – we were quick to agree on that with SSV," Dieter Michalkowski remembers. To efficiently tap these use cases, the two companies arranged a development cooperation.


"If a user had tasked us with detecting wear in a pneumatic system, we probably would have added sensors first," says Klaus-Dieter Walter. This is where AVENTICS' pneumatic expertise came into play: the existing sensors provided unused data that the SPM software analyzes to reliably determine the state of wear. Taking an end switch as an example: Based on changes in the cycle time for a cylinder's stroke in the millisecond range, the system can detect whether the efficiency of the shock absorbers will be reduced over their service life. Due to high loads, they are one of the most frequent causes of downtime.

In a sample system with air preparation, valves, and a pneumatic cylinder, AVENTICS and SSV also evaluate the flow and pressure sensors, as well as the number of switching cycles for the valves. As a result, large volumes of data are available for comprehensive condition and energy efficiency monitoring.



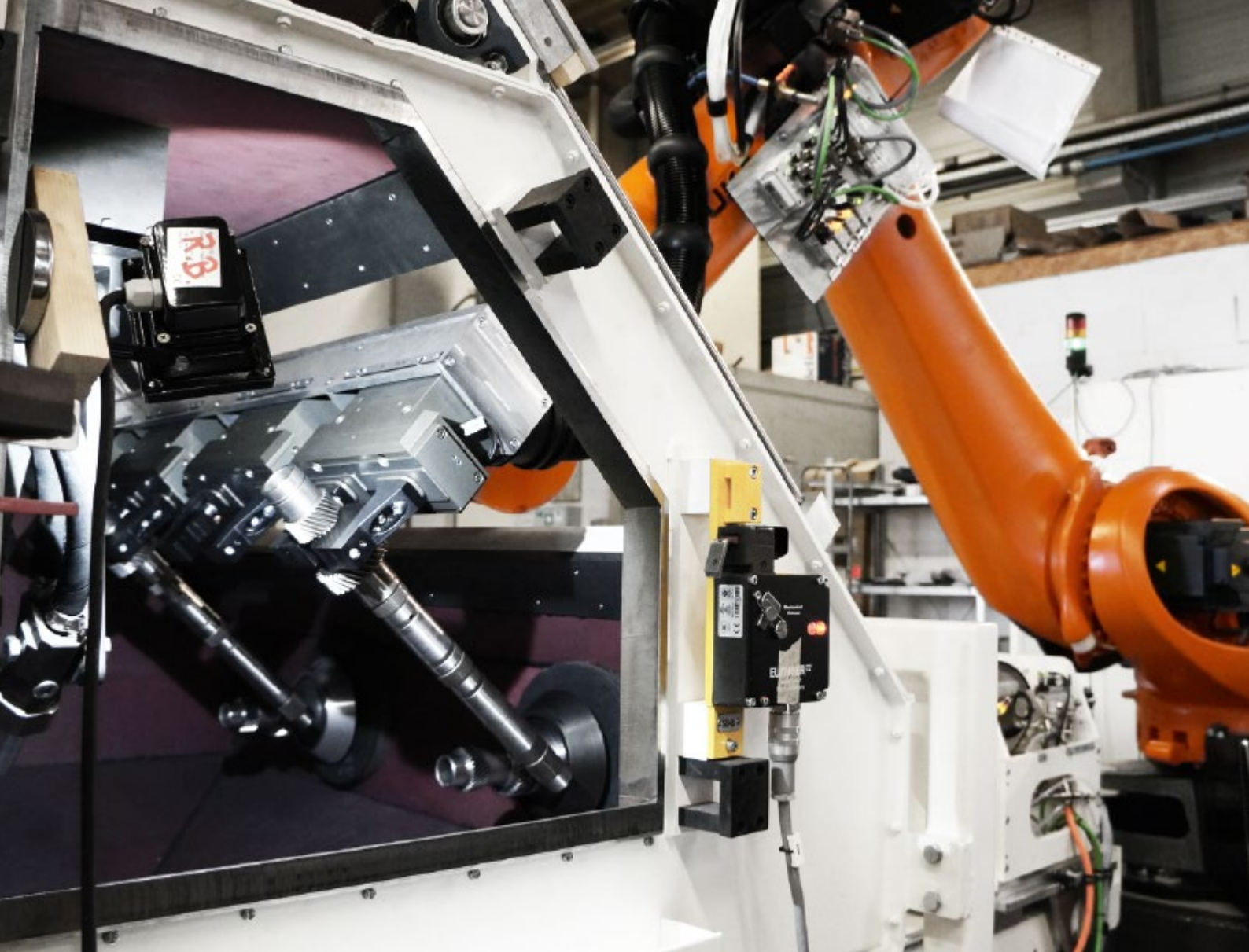
While other solutions collect all available data and forward it unfiltered, the SPM evaluates it within the AVENTICS valve electronics at a decentralized location. The SPM is an extension module for AES valve electronics for AV and ES series valves. "The embedded system is the point closest to the data source," emphasizes Klaus-Dieter Walter. The SPM analyzes the data in real-time and forwards the results to superior systems, such as an MES or ERP, in a compressed format.

"Standards create markets," according to Klaus-Dieter Walter. This is why SSV consistently focuses on open standards such as Linux and Node-RED. Thanks to the integrated OPC UA server for machine-to-machine communication, users do not have to perform any PLC programming whatsoever. The system is commissioned using a web server interface with an internal dashboard. Via drag & drop on the graphical interface, users define the components of the pneumatics system they want to evaluate. Once set limits are reached, the electronics automatically send messages to ERP and MES systems, as well as maintenance technicians or other staff.

In installed pneumatics systems, the Smart Pneumatics Monitor takes over condition monitoring since the existing sensor technology often suffices. "Everyone can calculate the value of the SPM themselves by comparing the costs for the SPM with one day of system failure," summarizes Klaus-Dieter Walter. From numerous talks, he knows that this equation virtually always clearly favors the SPM. 



With the new Smart Pneumatics Monitor module from AVENTICS, end users are provided with reliable information on the state of wear as well as valuable information on energy efficiency.



AIR + BALLS FOR HARD SURFACES

V+M Systems manufactures shot blasting systems for the automotive industry

Shot blasting better protects powertrain components from damage while increasing their cyclic loading capacity. V+M Systems, a leading provider for this innovative technology, relies on the AV05 valve system from AVENTICS.

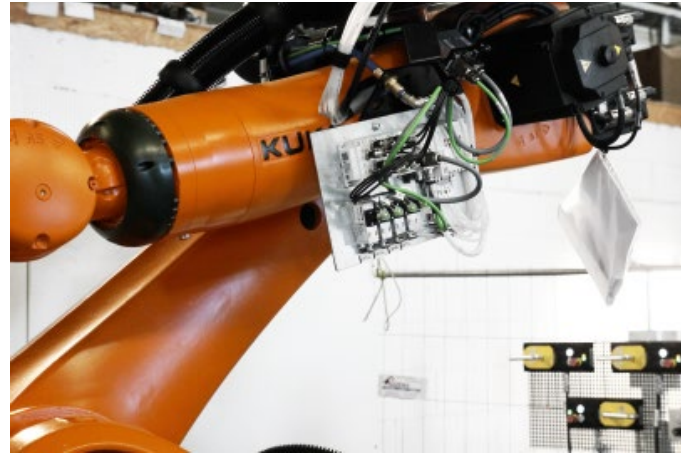
During the shot blasting process, for example of shafts and pinions, small abrasive blasting objects are projected against the surface to be treated at high speeds using compressed air. This generates a residual compressive stress, increasing the permanent strength of the material by up to 60 percent. At the same time, the treatment enhances the material's bending strength and corrosion resistance and expands its surface, which is important primarily for bonding components. Automobile manufacturers use shot blasting for

metallic components, such as engine, chassis, and transmission parts that are subjected to high levels of stress in later use.

"Perfect movement and positioning are the most important requirements for industrial robots used for shot blasting," emphasizes Martin Stolte, CTO at V+M Systems GmbH. The medium-sized enterprise is specialized in shot blasting systems. Pneumatics plays a major role in the process. "We wanted to mount



V+M Systems is a specialist in the production of shot blasting systems.
The pneumatic control is an AVENTICS original.



Lightweight with compact dimensions:
AV05 valves right on the robot arm

the valve directly on the robot arm to optimize both the performance and the energy efficiency of our new systems," states Martin Stolle, summarizing the company's objective. When an automotive manufacturer added the AV05 series to its list of approved components, V+M Systems immediately settled on AVENTICS.


Short lines save energy

For V+M Systems, modularity and the system's light weight were the most important criteria. This allowed the engineers to integrate pneumatic control of the robot arm directly at the load. Martin Stolle: "We have achieved improved system performance that also saves energy thanks to much shorter lines."

Unlike standard valves with a rectangular base plate and mounted valve, in the AVENTICS AV family, the spool is arranged diagonally in the valve housing. This reduces the volume of the valve on the base plate by around 45%. "Beside the compact design, weight also played an essential role. The AV system is so lightweight that we can mount it directly on the moving robot arm," underscores Martin Stolle. It has no effect on the robot dimensioning at all. Thanks to high-performance polymers and a specially developed injection molding method, the valves in the Advanced Valve series are nearly 40% lighter.

Automotive industry relies on efficient systems

The light, compact design allows it to be positioned near the load, shortening the paths between the load and the valve. Martin Stolle: "We save assembly time and costs when piping, and users record a lower compressed air consumption thanks to a reduction in dead volumes. This matches the philosophy of our customers in the automotive industry – to significantly increase the energy efficiency of this type of system."

The integrated fieldbus connection and the input and output modules from the Advanced Electronic System (AES) also play a role here. They process analog and digital signals, allowing for both fast assembly and flexible application. As a result, V+M Systems can incorporate machine diagnostics via the valve system by reading in pressure switches via the integrated digital input module and transferring the machine status to the controller via the fieldbus. 

"We have achieved improved system performance that also saves energy thanks to much shorter lines."

Martin Stolle,
CTO at V+M Systems GmbH



AVENTICS^A

PNEUMATICS IT'S THAT EASY

The best for your business: Choose AVENTICS for fast, easy, reliable results.

Thanks to our expertise and service, we can continually provide you with tailored solutions and products for industrial pneumatics – just in time.

Benefit from our extensive know-how in special applications and our industry expertise.



CLEAN-CUT SOLUTIONS

CCL SERIES

With two new cylinder series meeting ISO standards, AVENTICS has extended its offer of actuators for applications with special hygienic requirements, such as in the food & beverage industry or pharmaceuticals.

Both the CCL-IS standard cylinder to ISO 15552 and the CCL-IC compact cylinder to ISO 21287 correspond to the principles of hygienic design. The cylinders comply with all relevant European standards for applications in food splash zones. The cylinder body consists of anodized aluminum, while the screws and piston rod are made of stainless steel. The scraper material and the lubricants are also FDA-approved.

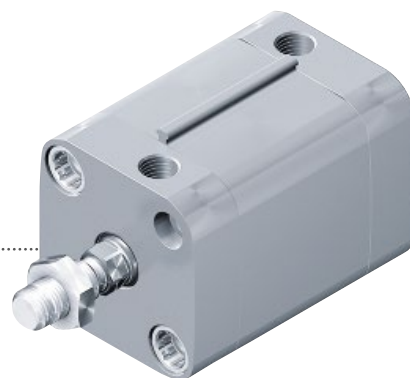
MAXIMUM STROKE

2,750 mm

The CCL-IS standard cylinder is available in eight sizes covering diameters from 25 to 125 mm. The maximum stroke is 2,750 mm. Depending on their requirements, users can choose between elastic and pneumatic cushioning. Series ST6 proximity sensors can be installed in just a few steps, without the need for any special tools. The ST6 sensor series includes a wide range of versions with different line lengths and connections.

A special feature of the new cylinder series is the option to configure the air connections either on the cover and base, as standard, or on just the cover or just the base. Supply air and exhaust on one side increase flexibility for engineers, especially since the connections can be changed later on. The unused air connections are sealed off with blanking screws.

The CCL-IC compact cylinder is available in nine sizes, covering diameters ranging from 16 to 100 mm. This makes it the largest range on the market and gives engineers a maximum degree of freedom, since they can exert both lower and higher forces. The maximum stroke of the compact cylinder is 500 mm, and is measured by a proximity sensor from the ST6 family tailored to the application. The CCL-IC can be mounted directly, without any additional fastening elements. With the AVENTICS Engineering Tools, users can configure the Clean Line cylinders online. [A](#)



LONDON CALLING: INTERGLOBE INCREASES MARKET SHARE IN THE MIDDLE EAST



For centuries, Great Britain has been a trading nation with close connections to the Middle and Far East. London-based company Interglobe Imports & Exports continues in this tradition. The international dealer offers a wide range of technical products and solutions. "Since 2016, Interglobe has also marketed our pneumatic components in Saudi Arabia," states Robin Thomas, Senior Area Sales Manager at AVENTICS Great Britain.

Interglobe Imports & Exports was established in 2004 by Sudheer Bodla. It quickly established itself as a partner to companies in crude oil and natural gas production in Saudi Arabia and now has its sights on other industries. "We are more and more frequently working with customers from the food production, plastics, glass, and construction sectors," emphasizes Sudheer Bodla, CEO of Interglobe. The engineer began his career in the textile industry, later switching to IT, and finally landing in import/export business with Interglobe. "Our sales team has comprehensive experience in pneumatic applications, and we offer our customers extensive technical support down to repairs in own workshops," states the CEO describing the company's service portfolio. In Saudi Arabia, three of the six sales representatives are engineers.

"Since the company is run from London, we at AVENTICS Great Britain support Interglobe and are currently planning a pneumatics training session," states Robin Thomas, pointing out the opportunities brought about by collaboration. For Sudheer Bodla, collaborating with AVENTICS presents a win-win situation. "AVENTICS will help us to significantly increase our market share in the Gulf region." 



Win-win situation: Interglobe CEO Sudheer Bodla (right) with Robin Thomas, AVENTICS Great Britain

ORDERS SHIPPED WITHIN 30 MINUTES

German wholesaler Landefeld has more than 20,000
AVENTICS products in stock




Just after five in the afternoon in the European plant of a top tier automotive supplier: a warning lamp lights up in maintenance. At the spare parts warehouse, the stock of AVENTICS valves is depleted and has to be refilled as quickly as possible. The employee immediately logs onto the Landefeld online shop and orders the relevant components. At the Landefeld central warehouse, the order is processed within 30 minutes, with the package ready for delivery at outgoing goods.

"We always ship orders received by 6 p.m. on the same day," emphasizes Lars Landefeld, one of the two managing directors of the German family-owned company that operates across Europe. In the online shop, customers can order pneumatic and hydraulic components, as well as industrial supplies, in German, English, French, Dutch, Polish, Slovenian, and Czech.

Now, Landefeld has stepped up its cooperation with AVENTICS, with over 20,000 pneumatic components in stock at the warehouse. This includes not only cylinders, valves, and other standard components, but also specialized solutions that can be delivered in a short matter of time. "We cooperate with powerful partners to become even more successful," summarizes Lars Landefeld. He relies on not only optimized handling processes, but also customer consultation. "Here, AVENTICS impresses us with extensive pneumatics expertise that we can pass on to our customers," Lars Landefeld continues.

Landefeld was founded in 1979 and today, the company is a leading wholesaler active across Europe in supplying the industrial sector and regional dealers. The company keeps over 120,000 articles in stock at its central warehouse in Kassel.

Orders received by 6 p.m. are shipped the same day at no additional charge. Between 6 p.m. and 9 p.m., customers can choose whether to have their packages shipped on that day for a surcharge, or to wait until the next workday. Around 130 employees at Landefeld ship over 2,000 orders each day, including many AVENTICS components. 



The Landefeld team: fast delivery guaranteed
(Photos: Landefeld)



Photo: iStock

THE RIGHT SUPPORT – ALWAYS


Three AVENTICS sales channels for different customer requirements

“It’s not the size of the customer that determines the relevant sales channel, but their current requirements, and how much technical support they are looking for,” explains Rudi Coetzee, President Americas at AVENTICS. Three channels cover the different levels of technological expertise: direct support by pneumatics experts from AVENTICS, dealers, which are frequently also system integrators, and the AVENTICS SmartShop for fast transactions.

Pneumatics specialists: unrestricted access to application experience

Combined, the AVENTICS sales team in the USA has hundreds of years of pneumatics expertise and application experience. “We focus our pneumatics expertise on key industries,” emphasizes Rudi Coetzee. Just as open source software publishes its source code for everyone, AVENTICS shares knowledge without holding

back. The industry specialists for food & beverage, industrial automation, energy, and transportation assist machine manufacturers along the entire added value chain in engineering and help end users to specify pneumatic components. Industry management for life sciences offers OEMs comprehensive support in meeting strict FDA guidelines. Another very strictly regulated application – exhaust gas treatment for commercial



"It's not the size of the customer that determines the relevant sales channel, but their current requirements, and how much technical support they are looking for."

Rudi Coetzee,
President Americas at AVENTICS

vehicles, an area where AVENTICS has proven expertise. In maritime applications, service engineers are responsible for commissioning and maintaining tailored solutions.


Dealers: pneumatics must be important

From a historical point of view, regional aspects were the focus in selecting trading partners in order to cover the entire U.S. In recent years, other qualitative factors have gained in importance. Rudi Coetzee: "Pneumatics must be important to our partners, and we are more and more often concentrating on companies that are focused on specific industries." AVENTICS partners are generally much more than just dealers. Often, they are system integrators providing design services, assembling entire modules, and supplying turnkey solutions.

"We work in close collaboration with them on technical questions and projects," explains Rudi Coetzee. "This also includes a comprehensive training offering for their employees. Close cooperation is a crucial success factor for this ever-growing area of our business."

E-Business: the industry's best software tools

The third sales channel is the AVENTICS SmartShop, which was redesigned at the end of 2016. "Right from the start, it was met with widespread acceptance, and our sales are seeing major growth here." The SmartShop is much more user friendly than the previous online shop. "Our customers have confirmed that we offer the best software tools in the industry for finding the right products and quickly and easily configure them with just a few clicks – literally." Another major advantage: Fast delivery times are a key selection criterion in virtually every industry. The AVENTICS solution for this is a 'Quick Ship program.' Most products in this range are shipped within one business day.


Customers can choose between the three sales channels depending on their current needs. When developing new machine concepts, they require intensive consultation with AVENTICS engineers. They then perform minor tweaks with their trade partners and handle repeat business on the SmartShop. "For me, it is important for customers to be able to choose what channel best meets their requirements. This makes working with AVENTICS easy," underscores Rudi Coetzee. 

"CUSTOMERS HAVE TO ENJOY WORKING WITH AVENTICS"

Hannover Messe partner country Poland: AVENTICS sees
successes in industrial automation, marine, and heavy industry



Supporting customers with passion and
experience: the team at AVENTICS Poland



"Our focus is on applications in industrial automation, marine, and the heavy industry."

Ireneusz Jakubowski,
General Manager Sales at AVENTICS Poland

"AVENTICS Poland stands for quickly clearing up and responding to technical questions, keeping our partners up-to-date, and above all, delivering on time," states Ireneusz Jakubowski, General Manager Sales at AVENTICS Poland, describing his own aspirations. The pneumatics specialists have long been represented in Poland. With a good 40 million inhabitants and an industrial share of over 34% of the gross value added, the country is an attractive market. In terms of its gross domestic product, Poland takes 25th place worldwide, ahead of countries such as Belgium, Denmark, or Ireland. What's more, Poland's economy has seen consistent growth in recent years and remains the country of choice for many foreign investments into new production capacities. The longstanding regional boss is certain that this situation is unlikely to change: "In Poland, we have a large number of highly qualified employees for industrial companies, and this advantage unlocks significant potential in our economy."


Polish industry is currently experiencing a push in modernization, making it more competitive on the international front. "Our focus is on applications in industrial automation, marine, and the heavy industry," emphasizes Ireneusz Jakubowski. Beside pneumatic components and modules, the control components from the Marex family are more frequently being used in marine applications. They cover the entire range of recreational navigation and commercial shipping.

AV series valve systems and ED03 and ED05 proportional valves have developed into bestsellers in industrial automation. "They set standards with their compact, lightweight design, and offer flexible electrical connection options," states Ireneusz Jakubowski. And the new ES05 series, easy-to-implement valves for applications with standard requirements, also saw a good start the year they were launched on the market.

Simplified order processing

With years of application expertise in the area of pneumatics, four experienced Polish engineers provide customers with personal support. In addition, ten sales partners ensure nationwide supply of AVENTICS components. "We join our dealers in visiting customers, and also support our partners with our know-how when they have technical questions," says Ireneusz Jakubowski, describing typical collaboration with AVENTICS Poland. In addition, AVENTICS organizes training courses for new products in Poland and invites its dealers to an annual conference.

The dealers are already using the AVENTICS eShop to ensure the fastest possible delivery times. "But the eShop is also available to other customers, and has seen a very positive response because it simplifies the entire ordering process," emphasizes the general manager. Ireneusz Jakubowski also considers direct contact with customers important. "We regularly present our product range to numerous companies on-site with our AVENTICS Truck, which paves the way for technical meetings." AVENTICS also works in close collaboration with universities. The focus is on research and training engineers, but that's not all that comes out of this cooperation. "Our Pneumobile competition is very popular among students and has been for more than ten years," says Ireneusz Jakubowski.

In any case, the human factor is at the very top of Ireneusz Jakubowski's list: "Customers have to enjoy working with AVENTICS – and we are managing just that more and more often." 

MEXICO: MORE THAN JUST THE AUTOMOTIVE INDUSTRY

New country unit in Mexico carries
on longstanding customer business



Photo: iStock




Managing Director Jesús Cardoso (left) and his employees Nelly Jimenez and Hugo Ernesto Lopez at AVENTICS Mexico

"There is major potential for AVENTICS to grow in Mexico," states Jesús Cardoso, Managing Director of AVENTICS Mexico, confidently. The country with an "upper average income" for the over 110 million residents takes 15th place in the list of the world's largest economies. From an export perspective, the country is number 12 in the world, and even takes fourth place in the automotive sector. "In the past two decades, American and European automotive companies have invested a great amount into new plants and we are now seeing increasing efforts to automate these industries," states Jesús Cardoso, summarizing the prospects.

Together with his two colleagues Nelly Jimenez and Hugo Ernesto Lopez, he concentrates above all on end customers and the dealer sales network. "As a lean team, we concentrate on end users like tier-1 and tier-2 automotive suppliers and companies in metal production," underscores the managing director. "Of course we also place a strong focus on the food and beverage industry. Did you know that Mexicans consume more carbonated beverages than any other nation, and we also have a huge soft drink industry that requires hygienic pneumatics?"

Jesús Cardoso and his team are currently working on more closely linking the AVENTICS Mexico sales network. "We already cooperate with five sales partners, but are looking to gain three more to be able to be close to our customers across the entire country." Even though the country unit was officially founded only last year, AVENTICS has a long tradition there. With over 25 years' experience in pneumatics, Jesús Cardoso was head of the department at Bosch Rexroth in Mexico.

This is why a whole range of Mexican system integrators already use AVENTICS cylinders, electropneumatic valves, and complete control cabinets. "We are currently seeing strong growth in our new AV valve family including AES electronics," Jesús Cardoso reports. "And we can deliver all the components quickly in every corner of Mexico – which is very important to our sales partners and end customers." 


PNEUMATICS WITHSTANDS EVEN THE HARSHTEST OF SAW MILL ENVIRONMENTS

Veisto has been relying on dependable pneumatics from AVENTICS for decades



"AVENTICS products meet the strict standards for sustainability and performance that we have set for our own saw lines."

Raimo Karjalainen,
Technical Director at Veisto Oy



"Veisto and AVENTICS have been working together for years, with our partnership being based on openness and expertise."

Jouni Lehtoranta,
Sales Manager at AVENTICS Finland


Tree trunks enter the HewSaw saw line at up to 200 meters per minute. Fully automatic, the saw aligns the trunks in a single pass, debarks them, then cuts them into boards. On request, circular saw units developed by Veisto Oy featuring sophisticated software optimize the yield of curved logs, increasing resource efficiency and reducing wood waste.

The operating conditions for components in this type of saw lines are extremely harsh, with sawdust flying around and making its way into every crevice. Debarking and sawing result in permanent vibrations and major shocks are not uncommon. Pneumatic actuators absorb these vibrations with virtually no wear. Another challenge: ambient conditions. Whether a tropical rainforest or subarctic regions, saw lines are frequently only covered by a roof, meaning they are barely protected from the elements. AVENTICS components and systems have proven their value in this difficult environment for decades.

Veisto is a leading global manufacturer of saw lines. Veisto and the HewSaw brand belong to the family-run Finnish Veisto group. Established over 50 years ago, for generations, the now around 200 specialists at Veisto have been gaining experience in woodworking across the globe and have optimized their saw lines to work productively with minimum resource waste. Two system families process log

diameters ranging from 350 to 550 mm. The systems have a modular design for flexible expansion and Veisto has already installed hundreds of them. Four-fifths of the company's sales are made outside of Finland, primarily in North America, Australia, Germany, Russia, Sweden, and the Baltic States.

The Finnish woodworking specialists and AVENTICS have been working together for many years. Numerous cylinders, valves, and maintenance units form robust pneumatic systems that take on a wide variety of handling and positioning tasks within the turnkey systems. The engineers work closely with their contacts at AVENTICS in Finland to continually optimize their solutions already at the engineering stage.

When it comes to selecting components, robustness and availability are crucial for preventing or minimizing system downtime as far as possible. To make matters worse, saw mills are often set up in remote regions. It may take hours or even days for technical support to arrive on scene. These are just a few of the reasons why Veisto relies on heavy-duty technologies such as AVENTICS pneumatics. For decades, the ISO cylinders and valves have proven reliable in the saw lines and have extremely low failure rates despite harsh conditions. But if a component has to be replaced after all, the spare parts are available quickly across the globe, and in most cases, users can exchange the part themselves. 



IN THE REGION FOR THE REGION

Fast delivery and quick response thanks
to global AVENTICS manufacturing network

Whether in Europe, the U.S., or China: In five plants across three continents, AVENTICS produces its globally available product families and regionally tailored solutions. "This allows us to ensure the same quality worldwide while keeping delivery fast," emphasizes Dr. Thomas Brückner, Chief Operating Officer of AVENTICS.

The products made at these different locations are fully interchangeable. "For many customers, local production is a deciding factor when it comes to suppliers," states Dr. Thomas Brückner. "Having a local plant is a very strong sign for stability and indicates there are intentions to establish long-term customer relationships."

Just take a glance back at the company's history to see how stable it is: In Germany, a predecessor of AVENTICS began producing pneumatic components in Hanover in 1884. This history is directly

connected to today's modern plant in Laatzen. AVENTICS has been present in French Bonneville, in Hungarian Eger, and in American Lexington for over 50 years. The newest member to the manufacturing network is the plant in Changzhou, China, where AVENTICS took up production in 2011.

Despite this tradition, AVENTICS applies state-of-the-art production methods. The company has gained unsurpassed expertise in processing high-performance plastics and integrating electronics with pneumatics. Its production plants are already using the latest IoT approaches and networked production in their everyday work.

In addition to the global product families, such as cylinder series and valve systems, AVENTICS also manufactures products and systems developed for the regional market in these plants. In the U.S., this also includes the production of components in inches. "For example, we also produce special systems we developed for our life sciences cus-

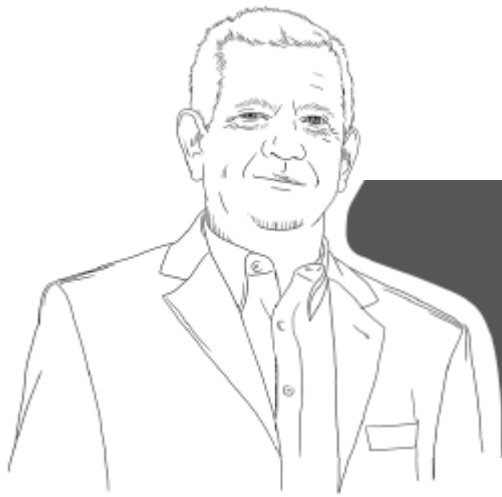


tomers here," explains the COO. "Our Changzhou plant on the other side of the Pacific is also certified to ISO 16949, meeting high requirements for quality management in the automotive industry." Local AVENTICS engineers develop applications for both Chinese truck and train manufacturers. A tailored combination of RTC series valves and cylinders are already in use in series production. In Europe, the plants in Laatzen and Eger supply the automotive industry, among others, and Bonneville places a strong focus on 40 bar pneumatics. Europe also concentrates on developing and assembling complete systems.

AVENTICS offers a pneumatics shop for its products in a growing number of countries. "This online offer only makes sense because we are able to achieve delivery times demanded by the market thanks to our local production capacities," emphasizes Dr. Thomas Brückner. Most of the products are delivered to the customer within one to two business days. Users are guided through selecting and configuring products by intuitive software tools and can place an order at the click of a mouse. As a third channel, e-commerce ensures comprehensive coverage with sales partners in 55 countries and the pneumatic expertise of the sales engineers in the country units. 

PNEUMOBILE: IN THE RACE FOR THE 10TH TIME





"Pneumobile is the only international competition for students organized in Hungary."

Ferenc Bolyki,
Industrial Engineering Leader at AVENTICS Hungary



"Throughout the years, engineering undergraduates managed to double the performance of the vehicles."

Endre Tamás,
Technical Consultant at AVENTICS Hungary

A decade ago, Ferenc Bolyki and Endre Tamás from AVENTICS in Eger, Hungary, came up with a great idea: Why not create a challenging competition for students of technical disciplines? Born was the idea of the Pneumobile competition. Ever since, students have been spending months to design pneumatically driven cars, striving for one common goal: coming out first at the annual racing competition. A Mag talked to Ferenc Bolyki, the "father" of the concept, and project manager Endre Tamás.

How did you come up with the idea of the Pneumobile competition?

E. Tamás: Ten years ago, we were looking to establish closer relationships with higher education institutions. Additionally, we were looking for resources and practical opportunities for students at Hungarian universities that the schools were unable to provide. This was the time when our colleague, Ferenc Bolyki, came up with the idea of a vehicle powered by a pneumatic drive – and the idea of Pneumobile was born.

F. Bolyki: For me the initial objective was brand building, but we soon found out that we could have many other goals linked to the concept of the competition. We immediately established a form of relationship with the universities that gives prospective engineers innovative tasks. By now, Pneumobile has become a trademark for this collaboration.

What were the first steps?

E. Tamás: We prepared a test engine with help from Richárd Fülep, our colleague in charge of customer-specific production. The first results were followed by numerous measurements and calculations to see what such a unit might be capable of. At the same time, we contacted several Hungarian universities. They appreciated our initiative and reactions were surprisingly positive and enthusiastic.

F. Bolyki: The market primarily put our initiative in the category of competitions for vehicles featuring alternative drive systems, which were very popular at the time. By now we have managed to position the contest as a reputable professional competition. The partner companies joined for different reasons, not least because everybody was fascinated by the fun atmosphere and the friendly reception they got.

How many teams participated in the first competition and what engineering solutions did they apply in their vehicles?

E. Tamás: 13 teams from ten Hungarian universities participated in 2008. The first vehicles were characterized by cheap, light-structure solutions. The earliest constructions featured mainly bicycle components focusing on the functionality of the engines.

What areas have seen the biggest improvement?

E. Tamás: The fastest vehicle of the first competition reached a top speed of 25 km/h, with 7,117 meters as the longest distance covered. In 2016, the fastest vehicle broke the finish line at a speed of 51.07 km/h and covered a distance of almost 13,000 meters. Throughout the years, engineering undergraduates managed to double the performance of the vehicles,

NUMBER OF RACING TEAMS

2008
16

2009
31

2010
33

2011
35

2012
41

with the most successful pneumobile so far being built by students from Budapest University of Technology.

When did the Pneumobile competition begin to draw students from other countries?

E. Tamás: The first Pneumobile competition was held within the yard of our plant in Eger. The news of the competition quickly spread beyond the borders of Hungary through the participating universities. The second competition in 2009 already featured four teams from Romania. This year the competition is engaging more than 300 people in almost 60 entrant teams from six countries.

What improvements can be seen in the applied technology?

F. Bolyki: Every type of technology that may be used to drive a vehicle and modeled with the use of pneumatic cylinders has been applied in the vehicles. We have seen radial, in-line and boxer engines applied together with crank mechanisms, and the principle of the compound steam engine was also put to use. There were numerous examples of special design, such as the axial piston motor. However, control has a much stronger influence on performance than design, and it is exciting to see how control developed throughout the years. Today, purely pneumatic solutions are rarely used, and vehicles operating with PLCs or self-made micro controllers aided by telemetry systems and advanced data

collecting solutions dominate. The Internet of Things has been present in these vehicles almost from the beginning.

What do you consider the biggest achievement since 2008?

F. Bolyki: During the past years, many similar initiatives have emerged and disappeared; today Pneumobile is the only international competition for students organized in Hungary. Following an invitation by the mayor of Eger, the competition moved to Érsekkert Park, which is a perfect location.

Please tell us a few words about this year's competition and your plans for the future.

E. Tamás: The tenth competition is going to have the largest number of participants ever. This year, we will have new and exciting program elements, former participants will join in, and there will be a Pneumobile exhibition. Due to the number of teams entering the competition, we will soon introduce national semi-finals and we would also like to add new pneumatic elements to the existing package. We are going to continuously improve the technical and safety standards, as we have done so far. Updated information is always available to students, with the Pneumobile competition playing a major role at industrial trade shows, recruitment events, and university roadshows. 📍

2013
40

2016
47

2014
43

2015
45



PREVIEW OF TRADE SHOWS IN 2017

Presenting AVENTICS

Trade shows: Europe

1) 2017 CFIA, Rennes (France)

March 7-9, 2017

Food technology, packaging technology

3.) Smart, Linz (Austria)

May 16-18, 2017

Automation

4) SPS Italia, Parma (Italy)

May 23-25, 2017

Automation

10.) Europort, Rotterdam (Netherlands)

November 7-10, 2017

Marine technology

13.) METSTRADE, Amsterdam (Netherlands)

November 14-16, 2017

Marine technology

Trade shows: Asia

5.) Automation, Mumbai (India)

August 9-12, 2017

Automation

11.) IAS Industrial Automation Show, Shanghai (China)

November 7-11, 2017

Automation

14.) Rail+Metro, Shanghai (China)

November 21-23, 2017

Railway Technology

Trade shows: USA

7.) PackExpo, Las Vegas (USA)

September 25-27, 2017

Packaging technology

8.) North American Commercial Vehicle, Atlanta (USA)

September 25-28, 2017

Commercial vehicles

15.) International Workboat Show, New Orleans (USA)

November 29-December 1, 2017

Marine technology

Trade shows: Germany

2) Hannover Messe, Hanover (Germany)

April 24-28, 2017

Automation

6.) Drinktec, Munich (Germany)

September 11-15, 2017

Food & Beverage

9) Motek, Stuttgart (Germany)

October 9-12, 2017

Assembly, automation

12) Compamed, Düsseldorf (Germany)

November 13-16, 2017

Medical engineering

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