



Albert Ziegler GmbH Airport crash tenders in action

Interview Jozef Tkáčik, AVENTICS sales partner

AVENTICS France Location with special expertise

IMPRINT

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*"We make your
job easier."*

Paul Cleaver
CEO AVENTICS



Dear Readers,

We know that you are all pressed for time. Countless e-mails, meetings with colleagues, customer deadlines. You need to deliver results, products, and solutions. Day in and day out. At AVENTICS we want you to enjoy having us at your side as a reliable partner. And we want to save you time. We want to make things easier for you whenever we can. Picture this: You're face to face with production equipment, an AVENTICS component or system and you need information? All you need to do is pull out your smartphone, scan the QR code, and everything is there on the display: the product designation, documentation, operating instructions, and even easy ordering in just three steps.

Planning and configuring customized solutions is simple with our online configurators. We are always happy to compile your solutions as a pneumatics material kit. We combine all the components under a single order number, which makes life easier, both for your purchasing and logistics.

We are not sharing this information as an announcement, but as practical examples that our customers already use. You gain time and resources to concentrate on innovation.

In this issue of **A Mag**, read about the many different ways our customers use pneumatics: in giant airport fire-fighting vehicles, in a unique rapid-fire production method for laminated safety glass, or for winders in continuous film production.

Based on these examples, we can see pneumatic components used more and more in combination with electronics. This distributed intelligence already makes pneumatics a good fit for the new concepts of the Internet of Things. Here, too, we make your work easier: with preprogrammed functions you can improve your diagnostics, implement condition monitoring, and enhance the availability of your machine or system.

Have fun reading this issue of **A Mag** and please don't hesitate to get in touch. Pick up the phone or write us an e-mail!

Sincerely,
Paul Cleaver
CEO AVENTICS

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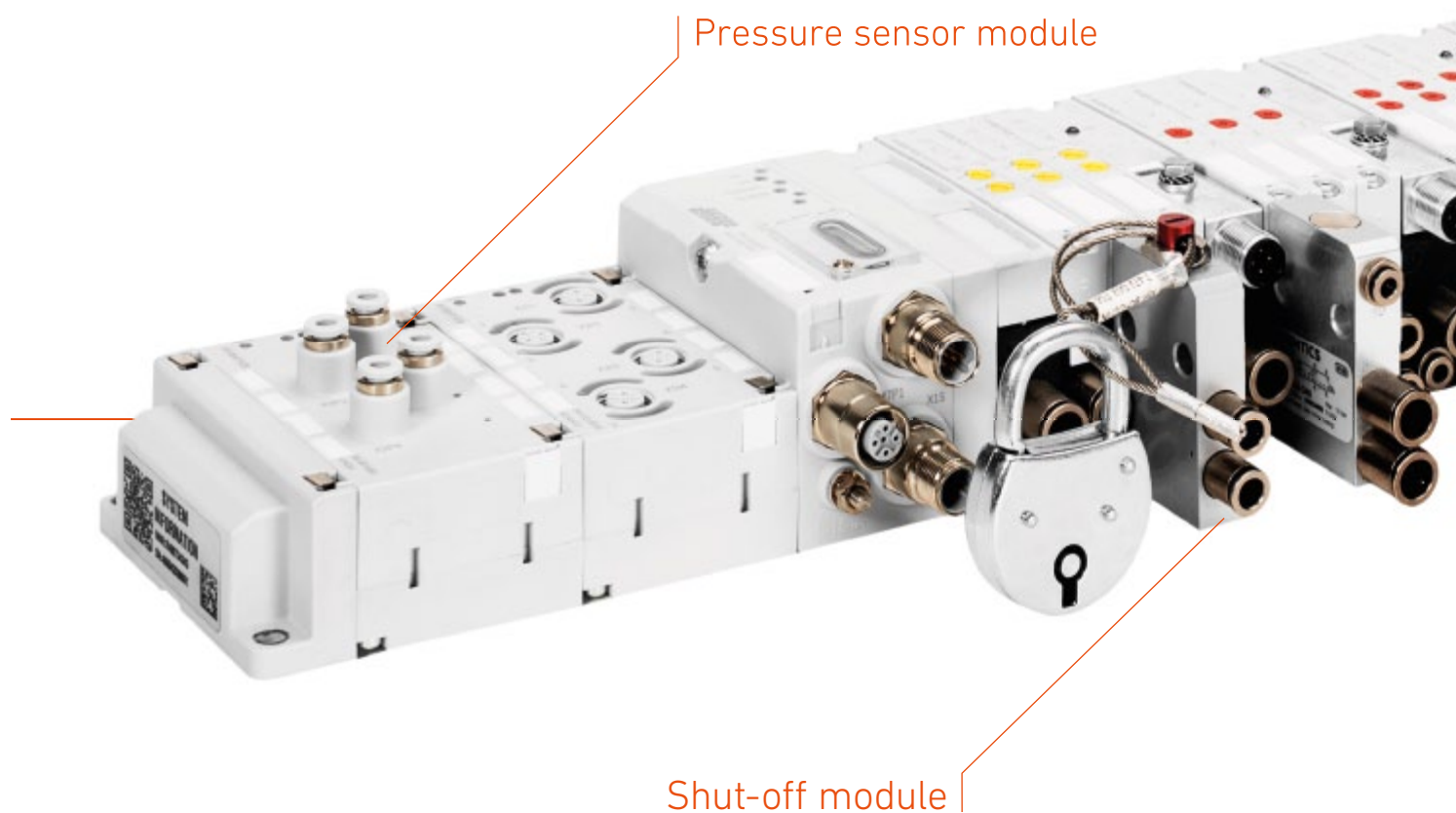


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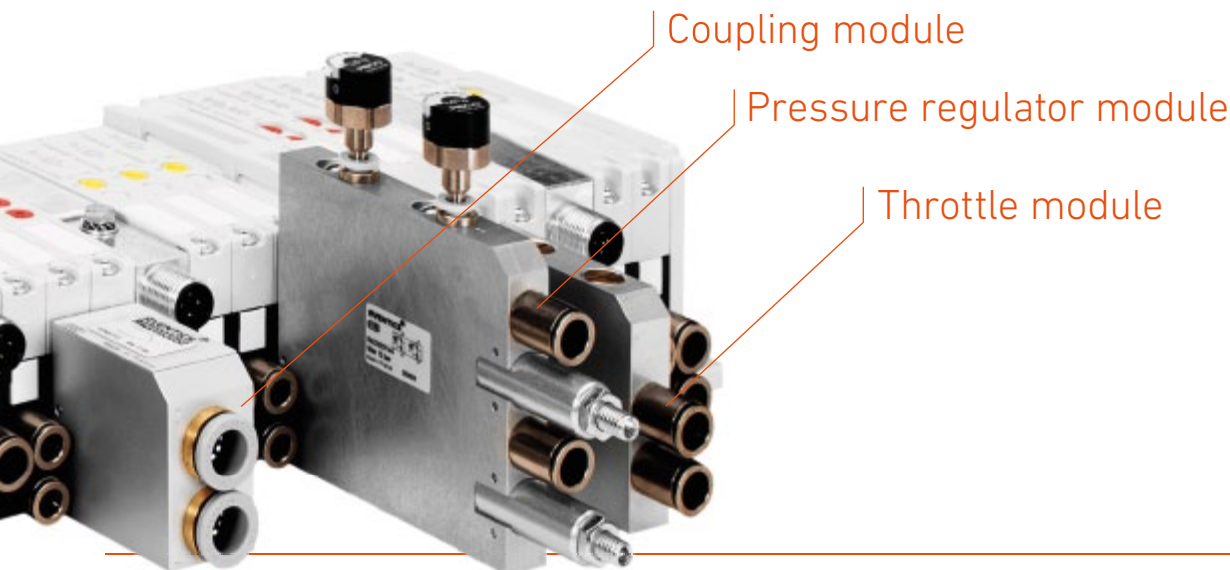


Fleet-footed dancers
Winders with pneumatics



AV SERIES WELCOMES NEW MEMBERS

New function modules
for tailor-made solutions



The new AV valve system generation now welcomes talented newcomers. Five new function modules are poised to enter series production and join their predecessors: the AV03, AV05, and the AES valve electronics. The extremely lightweight, compact AV family now offers even more possibilities to benefit from the full advantages of pneumatics while enjoying first-class energy efficiency.

Pressure regulator module: Featuring the exact same width as an AV valve, it makes for a seamless fit with the system geometry. Users can simply insert the function module onto the corresponding base plate in place of a push-in fitting, connect a pressure gauge, and set the desired pressure using the adjustment screw. Connections 2 and 4 can be set to independent absolute pressure values. Pressure regulators know to ease up when handling sensitive components and they increase energy efficiency. The new component only passes along the energy that is actually needed. This also allows different pressures to be assigned to the two motion phases.

Shut-off module: It is used for switching off outputs manually so the valve system can remain under pressure during service or maintenance operations. All that is required is a screwdriver. Once the shut-off module is activated, a red bolt extends upwards as a clear status

indicator. A lockable safety loop prevents unintentional deactivation.

Throttle module: This component integrates two check-choke valves along a single valve width. This enables a simple, cost-effective cylinder speed adjustment by throttling the cylinder exhaust. Pressurization releases the full air flow for optimal cylinder motion. Valve system integration results in further advantages. Adjustments are also possible on hard-to-reach cylinders and fewer add-on parts are located directly on the cylinder, which means less time spent on assembly.

Coupling module: This module links the connections 2 and 4 on two valves, enabling the supply of higher flows for individual tasks within a system. Valve unit dimensions are often based on the largest flow within an application. Certain high flow functions may result in a valve unit that is too large. Instead of employing single valves with a higher flow, the coupling module creates a simple solution for the performance demands of individual functions.

Pressure sensor module: For process control and diagnostic purposes, as well as compliance with safety requirements, more and more pneumatic applications rely on pressure sensors. The signal wires for these sensors are normally

connected to separate input modules to forward data to the control. AVENTICS has created a single module that combines these tasks. The new pressure sensor module from AVENTICS provides four very compact pressure sensors within the modular AES fieldbus system which forward data directly to the control. Electric wiring and the use of a separate input module are no longer necessary – one component replaces five separate parts.

With the new function modules, the AV series has expanded into one big family with a wide range of talents. They fit on both AV03 and AV05 valves. This simplifies ordering and logistics. The function modules are alternatively available as stand-alone variants, so that their benefits can also be enjoyed on other AVENTICS valve systems.

“Delivery performance is a crucial factor and AVENTICS is very good in that respect.”

Interview with Jozef Tkáčik,
Managing Director of TBH Technik s.r.o. in Slovakia

Why don't you start by telling us something about TBH?

Jozef Tkáčik: Well, we founded the company 24 years ago in Žilina in Slovakia. We started out as an engineering office and even designed our own manipulators and automation technology. It didn't take long for us to concentrate fully on services and today we are an AVENTICS service and sales partner – and we have been for over 20 years now. TBH Technik employs 37 specialists at three locations. We have engineering offices in Košice and Zvolen and our location in Žilina houses a workshop where we assemble pneumatics systems and do repairs.

What is the market like for engineering in Slovakia?

Jozef Tkáčik: Before the transition to democracy in 1989, heavy industry made up the bulk of the Slovakian economy; now we are an automotive nation. Slovakia is home to 5.5 million people. Volkswagen, Peugeot Citroën, and KIA manufacture about one million cars here each year. Slovakia is the biggest car producer per capita in the world. Countless engineering companies are now clustered around the automotive plants and their suppliers. We're often talking about companies with around 30 or even 100 engineers. They convert the production lines for new models, build special machines, and automate assembly systems.

Do all of your customers come to you from the automotive sector?

Jozef Tkáčik: No, not exclusively. We also supply custom cylinders for crust-breaking in the aluminum industry and our components are part of machines and assembly lines that produce electrical equipment. Inverted tooth chains from AVENTICS are a very popular component as well. We have a wide customer base. Engineering had a big growth spurt in Slovakia in 2014 and this trend has continued in 2015.

What do your customers value?

Jozef Tkáčik: Our customers value quality, price, delivery times, and technical consulting. AVENTICS is rightly known for its high quality. Customers are always asking how quickly we can deliver. And we tell them: we can deliver in one to two weeks. Before, a batch shipment was put together every Friday and trucked from Stuttgart to Slovakia. We changed that system and now AVENTICS ships products from Hanover to our location on a daily basis. That saves us almost an entire week. Delivery performance is a crucial factor and AVENTICS is very good in that respect.

Why is delivery performance so important?

Jozef Tkáčik: Machine manufacturers and system integrators are always faced with tight deadlines. But they don't want to keep extensive supplies in stock because it costs money. Ensuring fast availability of spare parts, for example, is incredibly important. TBH Technik is a certified AVENTICS partner for cylinder construction. When an accident occurs, we can assemble and deliver a spare cylinder in a matter of two to three hours.

What is the situation for valves and other components?

Jozef Tkáčik: Hanover responds very quickly, but we want to become even better. We are currently expanding our spare parts warehouse and talking with customers to find out which components they need at a moment's notice.

What part does consulting play?

Jozef Tkáčik: Our customers are usually not pneumatics specialists. That is why they value technical consulting and our engineers provide in-depth support. We call in specialists from Hanover for complex tasks. We plan systems, assemble valve systems, and help our customers start up the machines. We also offer training courses to our customers on a regular basis, either at our location or on site. Personal contact is always important: we hold in-house events in the spring and fall and are represented at the most important engineering show in Slovakia each year.

Have you seen an increase in electronic orders?

Jozef Tkáčik: Absolutely. AVENTICS has reduced its delivery time considerably, and that also applies to the order phase. The online configurators make it very easy for our customers to select suitable products online. Then they can order components and systems through the eShop or directly from their SAP system via EDI. We have also seen an increase in the popularity of pneumatics material kits from AVENTICS. The customer configures a system consisting of multiple components, we assign an order number and send everything off in one shipment.

What innovation from AVENTICS would you describe as particularly successful?

Jozef Tkáčik: I would definitely have to say the AV series. The valves are just half the size and weight of other valves. They are a popular product with machine manufacturers and end consumers. Energy efficient machines are a hot commodity, especially in the automotive industry.



NIMBLE GIANT PUTS OUT FIRES

Airport crash tenders ensure
airport safety



Accelerating 51 tons to 50 miles an hour within 21 seconds.
A high-performance extinguishing system helps fight fire from a distance
of 90 meters. The Z8 airport crash tender from Albert Ziegler GmbH
is the crème de la crème of its kind – and AVENTICS is on board.





Frankfurt airport. An engine catches fire during a passenger aircraft landing. The alarm siren goes off in the fire station. Firefighters spring into action, hit the big green button in the crew room, and run to their vehicles. Downstairs, they are awaited by airport crash tenders, twelve meters long and three meters wide. The model is known as the "FLF Z8," developed and built by Albert Ziegler GmbH. "Less than 30 seconds go by from the alarm until the truck rolls out," emphasizes Nils Conrad, team leader for the engineering and development of special vehicles. Electricity and compressed air are also supplied to vehicles in an idle state. Both drive motors are thus preheated with 1,400 hp in total and the air brake system is open. In less than 21 seconds, the FLF Z8 has accelerated its 51 ton weight to 80 kilometers per hour (50 mph). It can reach speeds of up to 135 km/h (84 mph). The vehicle can be anywhere on the airport grounds in less than three minutes.

An articulated extinguishing arm and front cannon volley up to 10,000 liters per minute of water, foam, and powder to fight the fire. When there are no headwinds, crew members can stand as far as 90 meters from the fire to begin their job of extinguishing it. Below the vehicle, a body/ground protection system with several water jets prevents kerosene leaks from damaging the Z8 airport crash tender.

HIGH FLOWS AND EMERGENCY PNEUMATICS

Situated between the Ziegler fire-fighting centrifugal pump driven by a 360 kW pump motor and the cannons, pneumatic systems and components from AVENTICS regulate the extinguishing agents. "The high pump capacity demands powerful pneumatic components with high flow rates and large cylinders,"

emphasizes Dietmar Huber, who is responsible for the pneumatics in the vehicle's design. On the Z8 airport crash tender,



HF03-LG valve system

several CD01 and HF03-LG series valve systems from AVENTICS control the actuators with up to twelve AVENTICS valves. NL2 series pressure regulators lower filter pressure from 15 bar to 10 bar when the vehicle is standing in the hall. The valves are actuated in series by the Ziegler PLC.

Ziegler not only relies on the electric remote control for the core functions: "With airport crash tenders, you need reliability and availability that is 100 percent," Dietmar Huber explains. "If the electricity fails, the crews can switch to manual emergency operation of the pneumatic valves. That is very important." The vehicles from Ziegler are used in airports around the world. They are designed to outlast the most adverse conditions such as high and low temperatures, dust, and extreme humidity; and so are the products from AVENTICS.

INDIVIDUAL CONFIGURATION – SIMPLIFIED LOGISTICS

For the PRA series pneumatic cylinders, Ziegler chose corrosion-resistant versions with stainless steel piston rods and metal scrapers. "Our vehicles are designed for a service life of 25 years," says team manager Nils Conrad. "We convince our customers with quality and the fact that we customize every single vehicle to meet our customers' needs." Modular pneumatics are very convenient in this regard.

"We communicate using online configurations and work with Ziegler to quickly develop pneumatic systems that are a good fit."

Bernd Höllwarth
Höllwarth Systemtechnik
sales partner of AVENTICS GmbH



"We can clarify any questions we have about individual systems solutions and components with our AVENTICS contact by phone or e-mail," says Dietmar Huber describing the longstanding collaboration. Specialists from AVENTICS compile the corresponding solutions in the online

a single order number. All components then arrive at Ziegler in a complete shipment. This simplifies purchasing and logistics. For repeat orders, all that is required is the previously assigned order number.



PRA profile cylinder

configurator. They can then send them right back and Dietmar Huber can view the specifications and CAD data on his computer. Sales specialists review the order and bundle all components for a job into a "pneumatics material kit" with

Albert Ziegler GmbH offers a comprehensive portfolio of fire-fighting vehicles and many other solutions for first responders. In 1891 the company started out producing textile hoses. The Swabians debuted their first fire truck in 1953. Today, Ziegler is part of the globally active CIMC Group and represented in the market by numerous national and international subsidiaries. Ziegler is no stranger to a global perspective. The company declared 2015 the "Year of Safety." Going beyond their own product range, the firefighting specialists approach the subject from a more inclusive perspective: What is required to improve on-the-job safety of firefighters in general? And what helps crew members to help others safely? AVENTICS is also working to make valuable contributions in this area.

2015: YEAR OF SAFETY



SIMPLY RELIABLE: LAMINATED SAFETY GLASS IN HOURLY CYCLES WITH THE LAMIPRESSVARIO

New process accelerates production
with a nearly 100% yield

Michael Muschiol pounds the window pane with the axe. He doesn't hold back. The glass fractures into a spider's web – but it does not break. "This pane is much thinner than normal safety glass and we made it in 90 minutes on our LamiPressVario."

Laminated glass production has been a topic that has engaged the managing director of FVG Marl for years now. He was so dissatisfied with conventional production techniques that he decided to approach the topic from an engineering angle. "All the other techniques are too time-consuming and only suitable for big industry, or the smaller systems have high waste rates. "Plus they demand expensive cleanrooms with extremely low humidity," says Michael Muschiol tallying up the drawbacks.

Laminated glass consists of one or more panes that are normally joined with an intermediate film layer. Depending on their intended use, these layers consist of various plastics that transform simple panes into safety glass, sound insulating glass, fire-rated glass, or even supporting elements for construction.

BUBBLE-FREE WITHOUT PRE-LAMINATION

All conventional processes require a pre-lamination step. The film needs to be stored and processed in a special cleanroom with very low humidity to ensure that it does not absorb any water. For pre-lamination, panes and film are stacked and driven through a heating channel with compression rollers. "Fine bubbles always develop between the film and the panes," explains the process engineer. "These tiny bubbles quickly lead to visual defects in the glass or, in other words, waste."

The process at FVG does not require pre-lamination and also allows the film to be stored at a humidity of up to 35 percent. "Instead of an expensive cleanroom, we just need a room that is clean and a dehumidifier," explains the managing director.

SIMULTANEOUS VACUUM, OVERPRESSURE, AND HEATING

The new process facilitates the production of laminated glass or other laminated materials considerably. It combines vacuum, overpressure, and heat transfer. The operator removes the bench from the LamiPressVario and loads it with the pre-assembled panes and laminate material. Michael Muschiol's patented reactor ring element forms the system's centerpiece. A silicon diaphragm separates the required process chambers in the machine and creates a specific distribution of forces. AVENTICS bellows actuators lift the bench from underneath to move it into the machine.

Depending on the specific film used, the LamiPressVario generates a 91 percent vacuum below the silicon diaphragm according to pre-programmed formulas. The reactor rings are used to fully extract air and residual humidity from the material between the panes. Overpressure is generated in the process chamber to create a process that resembles an autoclave. Heating plates integrated in the table create the required temperatures of up to 160 degrees. This process ensures a yield of flawless laminated glass products of nearly 100 percent.

"For completely new machines in particular, I go on site to look at the application and then we develop the perfect pneumatic solution."

Uwe Schanzenbächer, Sales Engineer
Regional Sales West, Germany



FROM SEVEN HOURS TO 60 MINUTES

The process takes a total of 90 minutes and for a double bench just 60 minutes, since cooling happens outside the chamber. Other techniques take seven hours for baking alone. "Imagine a jeweler with a damaged showcase window made of laminated glass," says Michael Muschiol by way of an example. "Larger suppliers easily need three to four weeks to deliver a replacement pane; smaller glass producers need at least five days to see whether the first attempt was successful. With LamiPressVario, the pane is on the truck within two hours."

PNEUMATICS THAT ARE 180 TONS STRONG

The crossbeams below the bench each rest on bellows actuators from AVENTICS. A total of 49 bellows actuators press up against the overpressure to lift the bench loaded with panes. For a four-meter bench, the load equals 180 tons. Burst pressure is reached at 24 bar, meaning a safety margin of 300%. AVENTICS bellows actuators are the perfect fit in this environment. They are temperature-resistant up to 90°C, one version up to even 130°C. The cylinder cover is composed completely of corrosion-resistant stainless steel, just like the air connection. The multi-layer bellows reinforced with diamond-patterned polyester threads on the interior is made of special chemical-resistant rubber. The lifetime of this material combination is much higher than that of materials used by others on the market.

ON-SITE SUPPORT

The pneumatic control automatically ensures an even distribution of force across all bellows actuators on the crossbeams and prevents the bench from tipping. "AVENTICS provided valuable support with the pneumatic control," recalls Michael Muschiol. "It is very important for me to have a personal

contact person who can actually look at the machine here in action and support me with their expertise. This lets me concentrate on optimizing the process."

AVENTICS delivers the entire pneumatic systems solution with bellows actuators, valve technology, and a maintenance unit. The machine features a modular construction and the bench can be extended in two-meter intervals to a maximum length of 20 meters. "AVENTICS compiles all pneumatic components for the crossbeams into a material kit with a single order number to simplify ordering and logistics." Pneumatics material kits are compiled as a service of the System Request Management department at AVENTICS.

FVG Marl has already shipped the first machines. "One customer has already ordered an extension for his system," says the managing director proudly. Thanks to its innovative film, laminated safety glass produced on the LamiPressVario has a thickness of only 11 mm (with a P6B certification), making it a good match for standard frames. Various civil and military authorities have already certified its performance.



High safety margin: bursting pressure only reached at 24 bar.



FULL STEAM AHEAD: INTELLIGENT PNEUMATICS ARE ALREADY WELL-EQUIPPED FOR IOT

Decentralized valve electronics from AVENTICS
support modularization and networking

The Internet of Things (IoT) is already a buzzword in the automation industry – few other topics are receiving so much press. But few are aware that, from an automation perspective, IoT is hardly a revolution, but a gradual evolution towards networked components, modules, and machines that has been taking place over the past few years. Few other technologies demonstrate this development better than pneumatics combined with decentralized electronics.

One impressive example is the new AV series valve system. Ultra-compact pneumatic valves in this product family are as small as a credit card and weigh about half as much as comparable valves. This makes AV valves the ideal choice for decentralized arrangements near actuators. Modularization in mechanical engineering is made a lot easier, since function groups can be fully preassembled without a control cabinet.

An important feature for IoT: engineers can extend the valve electronics by up to ten I/O modules. The AES uses these modules to handle the process signals where they are generated and can also control individual actuators outside the valve system. This reduces wiring considerably, since the sensors and actuators are not connected to the control cabinet, but to the nearby valve system that features flexible positioning for application requirements.

In addition, the decentral I/O modules offer potential for further modularization, since only two cables for power and communication are needed to connect all pneumatic valves, sensors, or actuators linked to the AES with the higher-level control. This fully modular setup results in a practical side effect for end consumers as well: a subsequent expansion or conversion of installed systems is much easier.

DECENTRAL SIGNAL PROCESSING

The matching Advanced Electronic System (AES) supplies valve electronics designed to meet increased networking requirements. It regulates up to 64 decentral valves with a total of 128 coils.

OPEN COMMUNICATION STANDARDS

The Internet of Things demands shared protocols and interfaces across all levels and technologies. Data is exchanged via real-time Ethernet. Various open standards and manufacturer-specific

"IoT shouldn't be an idealized cloud; it needs to provide real advantages to users. That's our approach at AVENTICS!"

Dieter Michalkowski
AVENTICS IoT expert



interfaces are currently competing in this field. It's a situation that makes things more complex for machine manufacturers, since they need to use various protocols depending on customer requirements. The AES electronics support all conventional fieldbuses and Ethernet protocols. They meet the basic requirements for a seamless information transfer from company IT via the machine control to the pneumatic actuator and back again.

RELIABLE AND READILY AVAILABLE

The valve electronics record and prepare process and diagnostics data. This improves process reliability and quality monitoring. Pneumatic movements and sensors are continuously monitored and the results documented. If the pressure level on a cylinder drops, for example, and a movement is carried out with insufficient force or precision, this can be detected by the pressure sensors in the AES and the electronics issue an error message. Without these checks, an expensive mistake might not be caught until the final inspection.

Secondly, the data enable systematic condition monitoring. Internal data record assessments indicate wear occurring on individual valves or other mechanical

components before a failure occurs. Maintenance personnel can then plan an exchange and get it done during a scheduled production break. System and machine availability is enhanced considerably.

INTERNAL DATA PROCESSING WITHOUT PROGRAMMING

This topic exemplifies the evolutionary development of IoT. Advanced valve electronics have long supplied process and diagnostics data. Now, however, AVENTICS offers decentral processing without additional work for the control. With AES valve electronics, the machine manufacturer or system integrator no longer needs to program the diagnosis or status functions for pneumatics in the control, since they are already integrated in the AES. The electronics system records local data independent of the control, and prepares and supplies them to users for further processing, similar to apps.

Thanks to the Ethernet connection, retrieval can occur from any location with the appropriate permissions. Both internal maintenance personnel and authorized service providers can use system monitoring to increase the availability of the systems.

FLEXIBLE FOR SMALL BATCHES

A key aspect of IoT in the industrial context is the flexible production of small batches down to a single item. At the same time, nearly all sectors need to adjust to increasingly short product lifecycles. This has consequences for production equipment. Assembly and handling equipment in particular will be converted more frequently than in the past and adapted to new products. Because they are very modular and parameterizable, pneumatics can be quickly adapted to new tasks in intelligent industrial environments – it's an evolutionary process that AVENTICS is driving with full force.

OPTIMAL ENVIRONMENT

Customized continuous machining centers from BDM Germany get moving with pneumatics

Exteriors are crucial in terms of making an impression: windows and doors define a building's image and play a decisive role in energy efficiency and security.

UP TO

30%

OF A WINDOW SURFACE
CONSISTS OF FRAMES

A lesser known fact: up to 30 percent of a window surface consists of frames – many of which are manufactured by continuous machining centers from BDM Germany based in Verl.

Just as individual as modern facades, the range of window and door frames that can be produced from aluminum, PVC, wood, steel, or composite materials is virtually endless. Alongside aesthetics, functionality is gaining ground. Main criteria include energy efficiency, weatherproofing, burglarproofing, and environmental impact.

Frames consist of profiles that are also made on machines from the East Westphalian company BDM Germany. BDM Germany GmbH and the French company BDM France are gathered under the holding of BJM Dubus Machines and number among the leading manufacturers of continuous profile machining centers. The systems take over cutting and all processing steps such as milling drain slots and drilling ventilation holes, as well as assembly and finishing. Depending on their equipment, the

machines are up to 60 meters in length and enable cycle times of less than ten seconds per profile. What's a part of every module? Pneumatics from AVENTICS.

"We do our own development, set standards, and produce modular solutions, all of which helps us supply customer-specific machines. This means that we satisfy user requirements for greater flexibility in production," says Andreas Heeke, responsible for machine engineering at BDM Germany, describing the approach. "As a custom equipment manufacturer, we are always pressed for time and need to respond quickly. That is we need to reduce the engineering, assembly, and delivery time required for customer-specific machines."

Machines for PVC and aluminum profiles have the same basic design: they consist of a feed magazine, machining brackets, cutting center, and an outfeed belt. While PVC machines have an additional section between processing and the saw, aluminum machines need a more durable design to absorb material-related vibrations and higher cutting loads. "We are able to cover this entire spectrum with pneumatics from AVENTICS. We integrated powerful AV05 series valve systems in every single machine module. They are reliable and take up little space. This enables an optimized tubing concept, so we can disassemble the machine more quickly into its component modules between the final inspection and shipping to the customer," emphasizes Andreas Heeke.



“NO AIR WASTED”

Thanks to its diagonal construction and considerably smaller pilot valve, the Advanced Valve (AV) requires far less installation space. Valves made of high-performance plastics weigh so little that they can even be installed directly at the moving actuators. This proximity to the drive reduces compressed air consumption due to shorter tubing lengths and less dead space. For Andreas Heeke, it's an important advantage: “Especially since our customers are increasingly looking to achieve better energy efficiency so that no air is wasted.”

BDM Germany uses the AV valves from the feed magazine to the gripper to retract the profiles into the machine. They are also used for the transport grippers in the conveyor system transfer station. In addition to the multipole connection, BDM Germany increasingly uses the AV05 direct bus control for all standard protocols. The AV05 valves control PRA series cylinders as advanced ISO profile cylinders, as well as lightweight SSI series short-stroke cylinders with standard integrated elastic cushioning.

► Continued, p. 20

“We feel well taken care of with AVENTICS. Thanks to the regional support and short communication channels, I can always reach my contact person and quickly clarify technical issues.”

Helmut Landré,
Purchaser at BDM Germany





BDM Germany produces entire systems for processing aluminum window profiles.



Compact and lightweight: the new AV valve generation.

SENSORS ENSURE SAFETY

Individual PRA clamping cylinders and the SM6-AL distance measuring sensor measure the height and width of clamped profiles. Profile data is compared with the dimensions stored in the machine control to ensure that the correct profile is clamped for further processing, thus avoiding a collision with the milling head.

Energy efficiency is also a prime focus for the maintenance units. "Depending on the application and requirement, we can draw from the range of shut-off valves and ventilation valves to prevent an unnecessary loss of air here as well." Compressed air treatment steps such as filtering, regulating, lubricating, and dehydrating are already integrated in the maintenance units in the AS product family and ensure that the air supply meets quality criteria.

Hartmut Landré, a purchaser at BDM Germany, is very satisfied with the collaboration, too: "AVENTICS gives us a very well-rounded package – the technical, commercial, and logistical aspects are all well matched."

NEW PE2 PRESSURE SENSOR: PLAIN AND SIMPLE

FORGET TEDIOUS DOCUMENTATION:
THE NEW PE2 PRESSURE SENSOR
FROM AVENTICS MAKES STARTUPS
A SNAP. INTUITIVE MENUS FOLLOW VDMA
SPECIFICATIONS TO THE LETTER. AND,
IN ADDITION TO DEFINED ABBREVIATIONS,
THE EASY-TO-READ OLED DISPLAY SHOWS
THE SELECTED FUNCTION IN PLAIN TEXT –
IN ENGLISH, GERMAN, FRENCH,
ITALIAN, OR SPANISH. THE
PE2 FEATURES EXCELLENT
DURABILITY OVER ITS
LONG SERVICE LIFE AND
ENHANCES SYSTEM
AVAILABILITY.



1963

FOUNDED AS A FACTORY
OF C.P.O.A.C.

12,000

INHABITANTS



The picturesque AVENTICS location in Bonneville
situated in the mountains.

Home to the French AVENTICS plant, it's also a travel and holiday destination: Bonneville is located in the heart of the French Rhône-Alpes in the wine region of Savoy. About 27 kilometers southeast of Geneva, the city has just under 12,000 inhabitants. The well-known winter sports venues of Annecy and Chamonix are about 50 kilometers away. The Bonneville location was founded in 1963 as a factory of C.P.O.A.C., Compagnie Parisienne d'Outillage à Air Comprimé. It has been a part of the AVENTICS family since 1985, and its 350 employees produce more than one million valves per year.

But the Bonneville location is more than a production site. Traditionally, the location has pioneered the use of high-performance plastics in pneumatics as well as the integration of electronics. The French developers draw on this expertise to make pneumatic components even lighter and more compact. That is the key to enhanced energy efficiency. And it's why Bonneville is an important hub for the new AV (Advanced Valve) generation.

PART OF THE
AVENTICS FAMILY
SINCE

1985

MORE THAN

1,000,000

VALVES PRODUCED PER YEAR

AVENTICS FRANCE

Production plant and development site
with specialized expertise

The research and development department has been testing glass fiber and reinforced carbon plastics for nearly 40 years. The material properties are analyzed and continuously improved. The result is a higher strength that enables more sophisticated structures, and thus a significantly more compact design.

But the road from a viable concept to series production is a long one. Plastics atrophy after the injection process. The engineers drew from their decades-long experience to develop simulation modules that reliably visualize the proportions of this shrinkage. During the development of the AV03 generation, they calculated 800,000 points each with different e-modules in all three directions, depending on the fiberglass orientation. These orientations were computed using a Moldflow analysis. Measurements on the produced valves show a deviation

between calculated and real orientations of less than 3 percent. Bonneville therefore manufactures plastics with tolerances that are otherwise only achievable with metals.

The actual injection process presents another challenge. Due to the material and complex geometries, it takes place at over 1,700 bar. In addition, AVENTICS Bonneville processes two components in one shot and integrates the sealing technology. The longstanding experience with this process and specific expertise in tribology result in measurable advantages for the customer: plastic valves made in Bonneville withstand more than 120 millions switching cycles.

27 KM

SOUTHEAST OF GENEVA

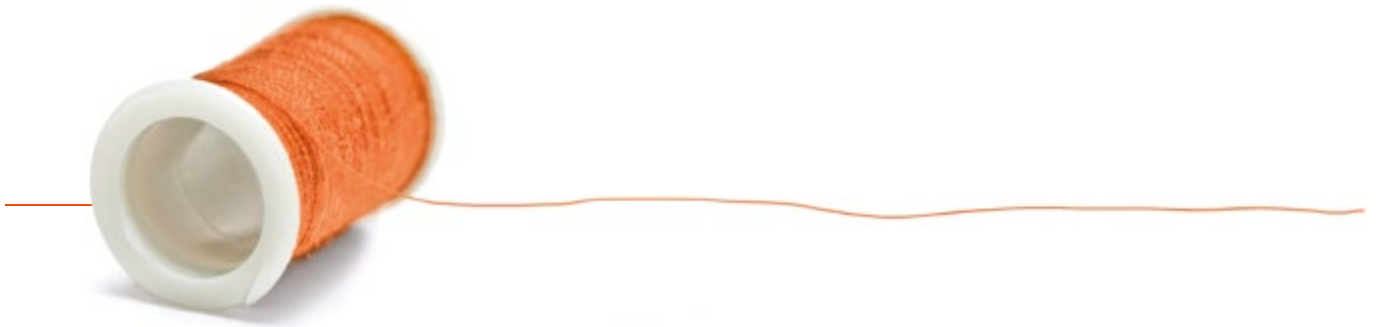
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EMPLOYEES

FIRM TIES

Schlumberger Group and AVENTICS:
four decades of trust





From elegant tailored suits made in London's Savile Row to grandmother's hand-knit sweaters, from functional wear for athletes to protective gear for firefighters, from furniture to car seat textiles: the yarn in all of these examples could very well have been produced on machines and complete production lines from NSC Fiber-to-Yarn. What's been part of the process for more than 40 years? Pneumatic components and systems from AVENTICS.

NSC Fiber-to-Yarn is a company of the NSC Group, N. Schlumberger & Cie with headquarters in the Alsatian town of Guebwiller in France. Founded in 1810, it numbers among the oldest companies in the world. For more than 200 years, the company has been a leading manufacturer of machines and production lines for the textile industry. Customers from around the world use its hackling machines, tensile testing machines, and combers to produce yarns made of wool, cotton, and linen fiber for a wide variety of applications.

Production solutions from NSC Fiber-to-Yarn have defined leading-edge technology in the industry for years. The availability and reliability of all components play a key role. For pneumatic motion sequences, the manufacturer has closely collaborated with AVENTICS since the 1970s. The pneumatics specialist supplies NSC Fiber-to-Yarn with HF valves as well as PRA, KPZ, and CCI cylinders and fully equipped boards with integrated air treatment. "We are currently in the process of converting to the new AV05 valve generation," says Pierre Jattefaux, the longstanding NSC contact at AVENTICS. "They are extremely compact and the new AES electronics give us more options to simplify construction and startup." NSC Fiber-to-Yarn also uses various AVENTICS cylinders and maintenance units.

"Over the years, we have developed a transparent, trusting relationship that allows us to exchange ideas about NSC Fiber-to-Yarn markets as well as company development," emphasizes Pierre Jattefaux. Both companies will continue to remain strong partners in the future.



An AVENTICS PRA cylinder in use at NSC Fiber-to-Yarn.



FLEET-FOOTED DANCERS

Sander controls in-line winder with pneumatics

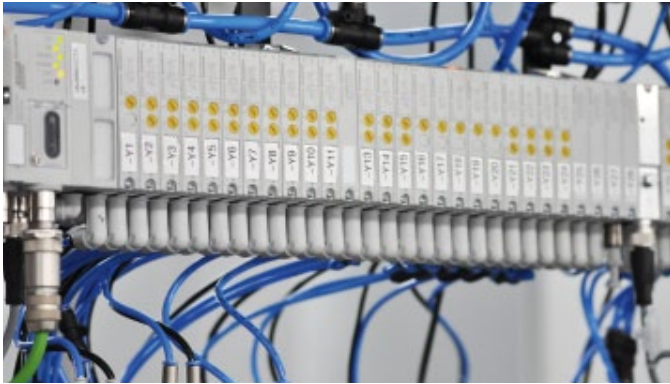
Once an extruder starts to produce film, there is one golden rule: no shutdowns. Like for steelworks, paper plants, or the semiconductor industry, every break in production is extremely costly and the equipment needs to be re-commissioned in an elaborate process.

One critical process station for film extruders is the downstream winder that places the film on rolls. Once a roll is complete, the film needs to be cut, redirected, and placed precisely onto the next roll without glue in a continuous process. During this time, a material accumulator buffers the film that continues to be produced. These in-line winders and web storage units are the specialty of Sander Maschinen und Anlagen GmbH in the Westphalian town of Bad Oeynhausen, Germany.

Storage volumes and times must be precisely aligned with automatic roll changes and the insertion of film. "We would have a big problem on our hands if even a single cylinder or valve in this fine-tuned system were to fail. Reliable, durable components are an absolute must," explains managing director Fred Sander. "Since our company's founding in 2002, we have had good experiences with the proportional valves from the ED family. And also because of the specific features of the PRA cylinders we have meanwhile branched out to include a wider spectrum of AVENTICS pneumatic components from proportional valves to these cylinders and finally the AV03 valve system and SM6 position sensors."

Individual function circuits govern insertion and cutting, including the control of the dancer, a freely moving pulley. Pneumatic cylinders move the pulley up and down to ensure that the tension setting remains constant. The ED02 pressure regulators monitor this setting. The highly dynamic regulator compares actual and target values and responds automatically to volume changes in the dancer cylinder.

Photo: Shutterstock



Compact and clearly arranged: AV03 valve system in the automatic turret winder.



Fast and precise: ED02 pressure regulator for dancer control.

STICK-SLIP EFFECT CONSIDERABLY REDUCED

"The difficulty lies in switching between an idle state and a fast start-up. The dancer cannot jerk," Fred Sander explains. "Previously, we used expensive, hard-to-install custom cylinders to prevent a stick-slip effect." This occurs when static friction is much higher than dynamic friction, which is a common occurrence due to seals on the piston rod and the piston on pneumatics cylinders.

"The smooth-running variant of the PRA cylinder series provides an optimal solution to this longstanding issue," says the managing director and explains that the "lubrication and sealing material are designed to minimize the stick-slip effect. We haven't experienced any interruptions in production sequences with the use of these cylinders."

The improvements to the proven ISO profile cylinder also offer a low weight, short cycle times, and quiet running thanks to elastic damping element and improved cushioning. Sander configures the PRA cylinders based on the respective application with the Internet configurator from AVENTICS.

STANDARDIZED PNEUMATICS SAVE TIME AND MONEY

Among other components, the company uses the new AV03 valve system. In combination with the ED02, the AV03 delivers pressure values that can be reproduced and documented at any time. This is especially important for machine operators that

wind different products on the same line. They can store and retrieve product-specific instructions. The PLC sends the new parameters via a fieldbus or a real-time Ethernet protocol like PROFINET IO to the AES valve electronics, which support all conventional protocols.

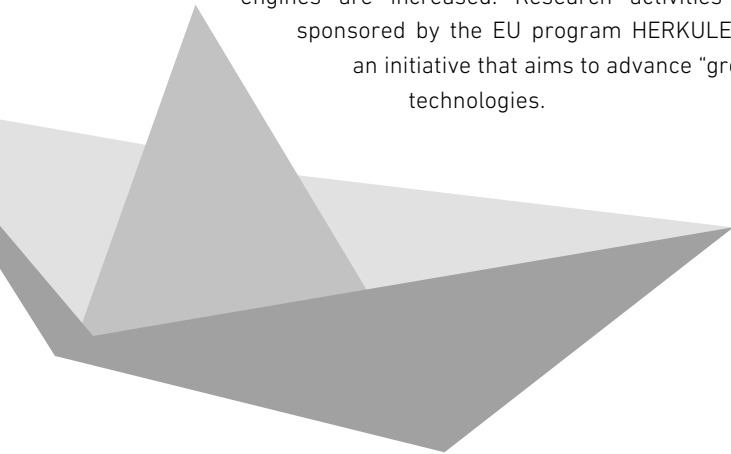
"Thanks to the electropneumatic concept from AVENTICS, we can offer our customers a reliable, fully automated turret winder that guarantees fast, precise control of the dancer rollers and thus enhances machine availability considerably. At the same time," Fred Sander adds, "we can standardize the pneumatic control as much as possible – which represents a benefit in terms of time and money when you consider the variety of customized machines."

In addition to cutters and winders, Sander delivers laminating machines, rewinders, slitters and cross-cutting units, roll saws, and web material storage units that are also suitable for cleanroom applications. For non-stop operation before or after a production line, Sander offers various types of turret winders. Depending on individual customer requirements, the winder is supplemented by a slitter or cross-cutting unit along with additional processing stations.

KALEIDOSCOPE

INJECTION SYSTEM FOR MARINE DIESEL ENGINES

In cooperation with MAN Diesel & Turbo, AVENTICS is currently working on a new VIT (variable injection timing) positioning unit with a positioner. It provides optimal control for fuel injection timing in marine engine cylinders, which reduces fuel consumption and exhaust emissions. At the same time, VIT efficiency and the service life of the marine diesel engines are increased. Research activities are sponsored by the EU program HERKULES II, an initiative that aims to advance "green" technologies.



APP FOR FAST PRODUCT INFOS



Today, most people have their smart-phones with them wherever they are. AVENTICS takes advantage of this fact to make life easier for its customers. If engineers need information on installed AVENTICS products, they can use the company's new PN-QR-Code app. It only requires a smart-phone to scan the QR code on AVENTICS components and systems. The AVENTICS App redirects users to the corresponding online information on the company homepage.

Brief descriptions, datasheets, and operating instructions are just a swipe or touch away thanks to the PN-QR-Code app. With the integrated Contact Locator, users can quickly find the nearest AVENTICS contact anywhere worldwide. The app is available as a free download in the Apple App Store and Google Play Store for Android in English and German.

WIN FOR SMART AIR



This May, 46 teams from seven countries met up once again for the annual Pneumobile. The engineering competition and race is geared toward students throughout Europe. With their own, often spectacular designs they competed in the categories "arcade", "distance" and "race". The overall winner of the 8th International AVENTICS Pneumobile Competition was the Hungarian team No. 55 "Smart Air."

IN-HOUSE EXHIBITION A GREAT SUCCESS

The Southern Germany region in-house exhibition in Aschheim near Munich was a first for AVENTICS. A total of 80 customers were in attendance to find out about new products and system solutions from AVENTICS. The exhibition focused on machine safety and improved energy efficiency. Regional Manager Klaus Horak: "We were able to establish AVENTICS once again as an expert that offers its customers valuable information and background knowledge in addition to high-quality products and services." One clear customer request: a repeat performance of the exhibition next year.



Regional Manager Germany South Klaus Horak and his team.



The show truck featured AVENTICS products in action.

SECURE HOLD UP TO
5 MIL.
TIMES

With its LU6 locking unit, AVENTICS supplements its safety portfolio to include reliable holding functions and additional safe braking functions for pneumatic cylinders in accordance with ISO 15552. As a "proven component," it prevents dangerous movements and provides dependable protection against unexpected axis movement. The units come in seven sizes and cover the spectrum of piston rods with diameters measuring from 32 to 125 mm and stroke lengths up to 2,850 mm. The maximum holding force is 12,000 N. The B10 reliability value achieves up to five million switching cycles in holding operation and up to two million braking cycles.

VIRTUAL COMPARISON

It's a familiar Internet service: online comparisons of products from different manufacturers. With the AVENTICS Cross Reference Tool, it's especially easy. Before making a purchase, customers can click the Cross Reference Tool homepage, which up menus with for the manufacture and series. The corresponding products as search results, including pricing information. Orders can then be placed with three simple clicks.



Further information: www.aventics.com/crt

"IN CHINA FOR CHINA"

Wu: I strongly feel that AVENTICS is very ambitious and committed to grow China.

Gilbert Wu,
President AVENTICS
Greater China



Employees in their own words: In April 2015 Gilbert Wu joined AVENTICS as President Greater China. Prior to various management positions in the pneumatics industry he studied at Shanghai Jiao Tong University, Donghua University, and Indiana University Bloomington.

Mr. Wu, why did you decide to join AVENTICS?

Gilbert Wu: AVENTICS is one of the world's leading industrial companies in pneumatics, a place where my background and skills can be utilized and developed. I believe that AVENTICS has growth opportunities and its future prospects are exciting in China.

As a new employee, what is your impression of AVENTICS and its culture?

Gilbert Wu: I strongly feel that AVENTICS is very ambitious and committed to grow China. The Chinese colleagues are a young, energetic and dynamic team with "Can Do" - attitude. I am very proud to work with them. Also, I am impressed by the state of art of products and highly qualified engineers in this organization.

What are you passionate about?

Gilbert Wu: Passion is the most important attitude for a person and the first step to be successful. I love to work in the passionate, energetic and initiative atmosphere. Now with AVENTICS Greater China I am passionate about operating under local self-sufficient operational management. We are full of energy with expediting our localization initiatives and improving the route to customers, market and sectors.

Why do you believe AVENTICS will be successful in Greater China?

Gilbert Wu: AVENTICS has many years of experience in the areas of industrial automation, commercial vehicles, life science, railways, food & beverage, and energy. This allows us to better understand customer needs in the market. The technology of our products is the premium value.

What are your plans for Greater China?

Gilbert Wu: In order to grow we are going to expand our sales network by creating more direct sales offices in China and increasing indirect sales channels to realize the geographic coverage and win more business. Also, we need to develop products according to customer needs, expand our product range through potential acquisitions and continue improving our operational excellence. "In China for China" is enabling us to build a new AVENTICS on site position and create the foundation for long-term success.



AVENTICS^A

THE INTERNET OF THINGS INTELLIGENT PNEUMATICS



Yanan Li, Quality Manager, contributes her expertise to make the Internet of Things yield real advantages.

Systems digitalization holds enormous potential: AVENTICS provides concrete and efficient solutions. For example: systematic condition monitoring for the enhanced availability of systems and machines, self-configuration and communication on all levels for safe processes and improved quality – and intelligent pneumatics like the AV valve generation. AVENTICS – Pneumatics for IoT

You can find more details at:
www.aventics.com/iot



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