



Pneumatic Solution Ensures Model Bottles

AVENTICS presents innovation for PET bottle formation

Expert Interview

Dr. Frank Theilen, expert for digital transformation
at AVENTICS

One Push on the Button to Switch Over

Packaging machine manufacturer relies on elaborate
automation concept

Pneumatics
It's that easy

A man with dark hair, wearing a black polo shirt, is pointing his right index finger towards a network diagram. The background is a solid orange color. The network diagram consists of a series of white lines connecting various points, forming a complex web. The word 'NEW' is prominently displayed in the center of this network. Surrounding 'NEW' are five rectangular boxes, each containing a descriptive word: 'CONFIGURABLE', 'FUNCTIONAL', 'STRAIGHTFORWARD', 'EASY TO USE', and 'INFORMATIVE'.

AVENTICS[®]

NEW

CONFIGURABLE

FUNCTIONAL

STRAIGHTFORWARD

INFORMATIVE

EASY TO USE

AVENTICS.COM PRODUCT PORTFOLIO FOR PROS

In the new online catalog, you will now find all AVENTICS pneumatic products – with their product sheet, CAD data, and configurator. You can not only place an order with the click of a mouse, but also have all data relevant for your documentation at hand

Pneumatics – It's that easy!



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Pneumatics
It's that easy

*"To drive digitalization, we at
AVENTICS have set up the Digital
Transformation Office."*

Paul Cleaver
CEO AVENTICS



Dear Readers,

Alongside the Internet of Things, hardly any topic is discussed as much as the subject of innovations. Often, large corporations invest enormous sums. But is innovation really just a question of money? How do companies actually come up with good ideas? How are these good ideas then implemented and developed so they are successful on the market?

At AVENTICS, we rely on cooperation with our partners. First, we listen to our customers and users, and then we target our investments to increase efficiency and to make our technology easy to use. Our innovations always feature practical customer benefits right from the start. A typical example is our new diagnostic tool for cushioning: A simple LED traffic light indicates when the setting is correct, and installers can call up further information and details on their smartphone – making installation easier, faster, and more precise.

Our new solution for blow molding of plastic bottles is also the result of close cooperation with a customer. For the first time, a combination of valve, electronics, and software measures and regulates the valve settings during the process. This opens up new opportunities to improve process reliability and quickly implement new products. Ideas like these can only develop by listening to customers and users and taking them seriously. After all, a catalog of standard components are of no use here.

Another example comes from the woodworking industry: We assisted Baxley Equipment Company, a leading manufacturer of sawmill technology, in reducing cycle times, increasing machine speed by a full 30 percent. Other application examples show that we actively support our customers, for example when it comes to modernizing chemical plants with hundreds of AV series pneumatic valves, or ensuring connectivity by securely pressing pantographs for electric railroad engines to the overhead contact line.

For us, innovation means keeping up with digital transformation. This begins with a change in attitude. To drive digitalization, we at AVENTICS have set up the Digital Transformation Office. Online tools for selecting and configuring products, a modern Pneumatics Shop, intelligent products, and additive manufacturing – we offer a wide range of products and services designed to make your life easier. You can find out more in this issue of our A Mag. I hope you enjoy reading it. Please talk to us if you are on the lookout for new solutions – we would be happy to listen.

Yours,

A handwritten signature in dark ink, appearing to read 'P. Cleaver'.

Paul Cleaver
CEO AVENTICS

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INTERNATIONAL

Pneumobile

For the tenth time, the AVENTICS
Pneumobile held in Eger, Hungary,
has inspired students and young
specialists across Europe

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Smart Pneumatic Grid

Together, BOGE KOMPRESSOREN
and AVENTICS ensure intelligent
system networking

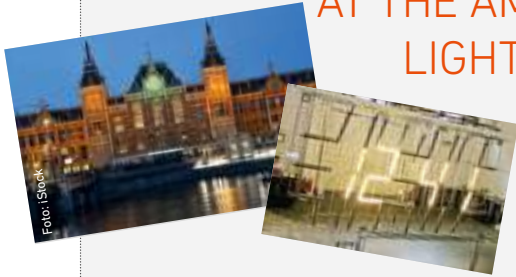
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MTS spol s r.o.

Slovakian AVENTICS sales
partner – market leader for
special solutions in assembly
and machine construction

KALEIDOSCOPE

PNEUMATICS FROM AVENTICS AT THE AMSTERDAM LIGHT FESTIVAL




Lambert Kamps caused a sensation with its tube lamp clock a few months ago (A Mag reported). Now, the Dutch artist will present his pneumatically driven clock at the Amsterdam Light Festival. The tube lamp clock will be showcased at Amsterdam's main train station from

November 30, 2017, to January 1, 2018. Wind and weather present the artist with a challenge. AVENTICS is therefore assisting Lambert Kamps with products suitable for use under extreme conditions. 

- www.amsterdamlightfestival.com/en
- www.youtube.com/watch?v=5_kkYBIjg9A

MOVIE MATERIAL: AVENTICS SYSTEM TECHNOLOGY



For more specific and complex needs, system solutions from AVENTICS are in high demand. A new video shows the benefits of these collaborative efforts. From planning to delivery, AVENTICS makes its customers' work easier for them. 

- www.youtube.com/watch?v=04LjqeYnNVI

AVENTICS NAMED "FACTORY OF THE YEAR" IN HUNGARY




Gyula Pomázi (l), who is also Deputy Under Secretary at the Ministry for National Economy, hands over the award to Krisztián Herczeg, Director Finance Hungary at AVENTICS.

The AVENTICS plant in Eger, Hungary, was honored as one of the best production sites in the country in May, 2017. The location may now call itself "Factory of the Year". AVENTICS was also honored in the categories "Best Management Process", "Best Production Support", and "Most Energy-Efficient Factory". This competition is held annually by the Hungarian trade journal "GyártásTrend" and supported by the Hungarian Ministry for National Economy. 

PNEUMATICS CHILD'S PLAY

LEGO Technic celebrates its birthday

The success story of LEGO Technic began 40 years ago. Ever since, creative minds both large and small all over the world have been fascinated by the company's products. And since 1984, pneumatic vehicles in their range have made pneumatics

child's play. Tomorrow's engineers can familiarize themselves with the technology early on, and maybe one day they will even belong to our team of pneumatics experts at AVENTICS. 




Contest

Do you also enjoy tinkering? Win a LEGO Technic Mercedes-Benz Arocs 3245. Send an e-mail with the subject "LEGO Technic" and your full name to amag@aventics.com by November 30, 2017. The winner will be drawn. The judges' decision is final. Employees of AVENTICS as well as their relatives and minors are not permitted to participate. The winner will be named in our next issue of A Mag.



The AVENTICS show truck makes a stop in Lengerich (Germany)

AVENTICS MAKES A STOP AT WINDMÖLLER & HÖLSCHER


AVENTICS recently held an event with around 100 employees of Windmüller & Hölscher, a supplier of packaging machines headquartered in Lengerich, Germany, informing them of new products and developments. Workshops addressed products from AV to ES05, as well as the Engineering Tools and the Internet of Things. The participants then gained some hands-on pneumatic experience visiting the AVENTICS show truck. 

KALEIDOSCOPE


MARK SYER IN CHARGE OF BUSINESS IN NORTHERN EUROPE



As a part of its growth strategy, AVENTICS announced on April 1, 2017, that Mark Syer would be joining the company. As the Managing Director Nordics, he will be responsible for business in Denmark, Sweden, Norway, and Finland.

Born in Great Britain, Mark Syer has extensive experience in sales, marketing, and business development. He last served as the Managing Director and Regional Manager Nordics, UK and Ireland for Freudenberg Sealing Technologies AB. 

SOUTH GERMANY HOSTS THE AUTOMATION WORLD

Stuttgart will once again host the Motek from October 9-12, 2017. AVENTICS will present new products and solutions for the Internet of Things at the world's leading trade fair for production and assembly automation. Measuring 200 square meters, the booth will focus on the motto "Pneumatics – it's that easy". 




► www.motek-messe.de/en

AVENTICS ACQUIRES THE BUSINESS OF VECTOR HORIZON TECHNOLOGY




As a response to customer demand, AVENTICS announced its acquisition of the business of Vector Horizon Technology (VHtek) in the spring of 2017. VHtek is a leading technology company specialized in innovative mechatronics for the global truck industry. The company develops electric actuators,

valves, emissions controls, and other components to increase efficiency and reduce emissions. 

PRODUCT INFORMATION IN A NUTSHELL

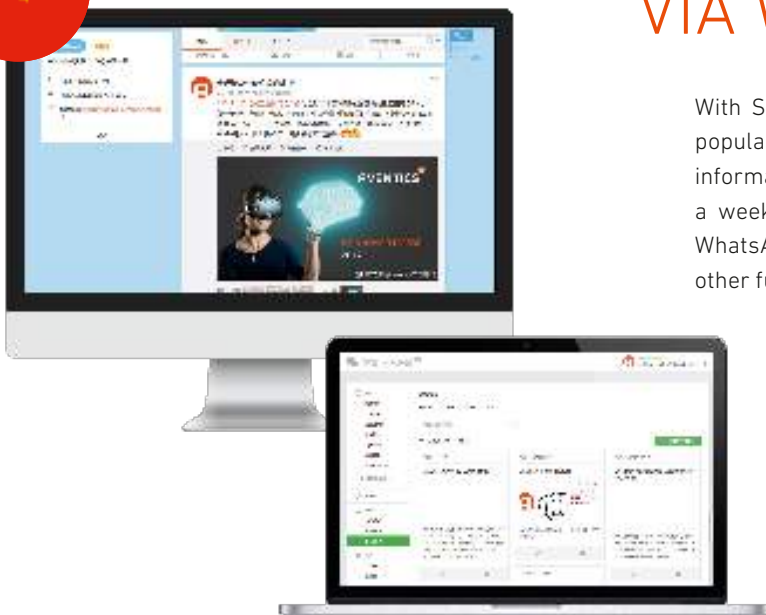



A new marketing format from AVENTICS promises key product information at a glance. With the help of the dual-sided "one-pagers" in DIN A4 format, customers can get an overview of a product within just two minutes. All one-pagers are available for download from the AVENTICS Media Center. 

► **Further information**

www.aventics.com/en/media-centre (keyword "one-pager")

AVENTICS COMMUNICATES VIA WEIBO AND WECHAT



With Sina Weibo and WeChat, AVENTICS in China is using two popular social media channels. Customers receive current information, e.g. on new products and events, several times a week. Weibo is similar to Twitter. WeChat is comparable to WhatsApp and Facebook, offering not only a messenger but other functions as well. 

► **Further information**

www.weibo.com
www.wechat.com

“KEEPING AN EYE ON BUSINESS MODELS AND CUSTOMER BENEFITS”

Interview with Dr. Frank Theilen,
Digitalization Expert at AVENTICS



Dr. Frank Theilen is the head of the Digital Transformation Office at AVENTICS, which was set up for this specific purpose. A Mag talked to him about how AVENTICS is facing these challenges and what digital changes are currently being driven forward.

For you, is digital transformation the same as Internet of Things?

Dr. Frank Theilen: *Digital transformation is much more. With the Internet of Things, the focus lies on networking machines and systems for production and the logistics chain. Digital transformation goes much further – and we always have to raise and answer the question of new customer needs and business models, such as marketing application software for status monitoring.*

“Configure and order products even easier online”

Where exactly is AVENTICS transforming?

Dr. Frank Theilen: Digitalization is nothing new to us. Take product selection, for example: From the beginning, we put a lot of work into programming our online Engineering Tools and we continuously check whether they meet our customers' requirements. The latest versions of our configurators, the calculation programs, the CylinderFinder, and the Cross Reference Tool set benchmarks in the pneumatics industry. We are now going one step further and integrating selected tools more closely into our new Pneumatics Shop. Why? This makes it even easier for our customers to configure and order our products online.



“WE ARE BEGINNING
A NEW ERA WITH OUR
PNEUMATICS SHOP.”

What's new about the pneumatics shop?

Dr. Frank Theilen: If you look at the Amazon or eBay websites from 2010, you'll quickly notice how much has changed. This is due to the technology in the background, but also to our evolving user habits. We are beginning a new era with our Pneumatics Shop. A user simply has to log on once (single sign-on) to use all its functions. This provides access to all relevant tools and the Pneumatics Shop. All available data, such as product configurations, can be transferred to other functions with the click of a mouse, meaning you don't have to enter anything twice. On the other hand, we have kept our proven basic functions such as showing your order history to be able to place repeat orders quickly, or delivery time specifications.

What's planned?

Dr. Frank Theilen: Our Pneumatics Shop will go live in Austria, the U.S., and China at the end of 2017/beginning of 2018. Other countries will follow by mid-2018. Until then, our country units will work on local language versions. We want as many of our customers as possible to be able to take advantage of our offering in their native languages.

How far is AVENTICS in linking hardware and software in its products and solutions?

Dr. Frank Theilen: *We are working hard on the topic of digital engineering, and our Engineering Tools are an important starting point. We are developing digital solutions for a connected workflow in tandem with our customers. Another major aspect is the data collected from smart pneumatic products. Our "Smart Pneumatics Monitor" (SPM series) is a lean, efficient solution for condition monitoring and preventive maintenance. In many cases, it uses existing sensor data, processing it without putting a load on the machine controller. Users no longer have to program PLC interfaces since we use open sources and international IT standards.*

What role will 3D printing play in the future?

Dr. Frank Theilen: *We have been looking into the possibilities afforded by additive manufacturing, for example 3D plastic and metal printing, for some time now. For example in collaboration with the University of Hanover, we are researching how to optimize components and processes. 3D printing gives our engineers a whole new degree of freedom in designing products and allows us to produce components that otherwise would require capacities in series production that we don't have. Additive manufacturing will allow us to increase the long-term availability of our spare parts significantly. Components manufactured with this process will likely be even lighter and more compact. In return, this helps our customers and users increase energy efficiency and realize new concepts.*




**"3D PRINTING GIVES OUR
ENGINEERS A WHOLE NEW
DEGREE OF FREEDOM IN
DESIGNING PRODUCTS"**

“After all, digital transformation is about making the company more future-proof”

Currently, the product costs of 3D-printed components are still very high and there are not many materials available yet, especially for printing plastic. However, these issues will change in the near-term, considering the rate at which 3D printing is being developed.

How do you view your role as Head of the Digital Transformation Office?



Dr. Frank Theilen: *First of all, I'm not a guru who knows everything better. AVENTICS is currently working on many different projects focused on digitalization – just like many other technical companies. It's my job to work with the teams in order to prioritize and oversee topics. Often, it's better to do less at once – but to finish what you are doing faster and more efficiently. In addition to technical questions, we also have to keep an eye on business models and customer benefits. After all, digital transformation is about making the company more future-proof and quickly responding to changing conditions. *

“OFTEN, IT'S BETTER TO DO LESS AT ONCE – BUT TO FINISH WHAT YOU ARE DOING FASTER AND MORE EFFICIENTLY”

Dr. Frank Theilen is the head of the Digital Transformation Office at AVENTICS. After getting his PhD in production economics, the economist first worked in the financial sector and for several management consulting services. He is specialized in accompanying technical enterprises during realignment and in transforming their business models. He joined the AVENTICS team in 2013.

ONE PUSH ON THE BUTTON TO SWITCH OVER

Food packaging machines designed
and manufactured in Hungary



Foto: Stock

"Doroti was one of the first machine builders in Europe to integrate the new ES05 valve system."

Daniel Math,
Sales Engineer at AVENTICS




Hungary is among the 50 wealthiest states on earth, according to the adjusted gross domestic product per capita. With nearly 100,000 employees, food processing and packaging is the country's second largest industry sector. The food industry in Hungary is continuously modernizing its equipment, supported by local machine manufacturers like Doroti Pack Ltd. For more than 20 years, the company has been specializing in the production and servicing of state-of-the-art packaging machines.

Main products are DorPack thermoforming packaging machines for fresh food as well as for healthcare products, electronical devices or tools for the automotive industry. In addition to the main product line, the Hungarian engineers also developed a labelling system and other convenient accessories. Each DorPack thermoforming machine is individually designed to suit special needs and product parameters.

For many years, Doroti has been relying exclusively on pneumatic components and modules from AVENTICS. As an industry sector specialist, AVENTICS knows the special needs in the processing and packaging of food and beverages. The components are suited for use in different hygienic zones of food packaging. In addition to applying TC valves, PRA cylinders, fittings and accessories, Doroti was one of the first machine builders in Europe to integrate the new ES05 valve system. ES05 is a valve system that has been designed especially for standard

pneumatic applications and industrial automation. Due to a modular concept, low number of parts and the one-tool-concept, Doroti saves time in assembling its machines. The valve system allows individual configuration of up to 12 valves in one manifold. The AES electronics with fieldbus connection ensures optimum communication between actuators and machine peripherals.

The sophisticated automation design of the machines enables operators to switch over to different product sizes and types with one touch of a button. The machine control sends the changed parameters via AES to the ES05 valves. Immediately after the format switch the machine accelerates to the maximum speed of 16 cycles per minute.

DorPack thermoforming machines are power saving systems built in stainless steel design that are very simple to use for operators. The need of preventive maintenance and other services are minimal thanks to the AVENTICS valves. The machines are also suitable for modified atmosphere packaging (MAP). This atmosphere is usually a mix of carbon dioxide, nitrogen or oxygen. Packaging under vacuum extends the shelf life of the product by removing the atmosphere. This slows down the microbial deterioration of food, expanding the "best used by" date significantly. 



Each DorPack thermoforming machine is individually designed.


TRAFFIC LIGHT SYSTEM FOR OPTIMAL CUSHIONING

New Cushioning Adjustment Tool

In the past, you often needed experience, a special touch, and a lot of patience to correctly adjust the cushioning for pneumatic cylinders. AVENTICS' new Cushioning Adjustment Tool (CAT) is a diagnostic tool that assists the installer with an LED display and visualization in a smartphone app. Optimal adjustment of cushioning is important for trouble-free operation, quiet running, and high cycle frequencies in systems.

Easier, faster, and more precise – the three advantages of the CAT in a nutshell. Thanks to visual support with the LED traffic light system, even a child could correctly adjust the cushioning. The tool clearly shows the installer which way the cushioning needs to be adjusted. A smartphone app also visualizes the set cushioning characteristics and piston speed. This allows users to fully benefit from the excellent characteristics of AVENTICS cylinders in the system, as fine adjustment becomes a thing of the past.

The diagnostic tool is simply fixed to the cylinder. CAT detects if and how the cushioning setting has to be changed by evaluating the position and speed of the piston using magnetic sensors. The device only measures 5.5 by 8.3 centimeters and can be removed once everything has been set correctly. An integrated battery that can be recharged via a micro USB connection supplies the power. The associated app is compatible with Android and iOS smartphones. CAT can be used to commission and check AVENTICS cylinder series PRA, CSL-RD, MNI, ICL, ITS, TRB, and CCL.

The Cushioning Adjustment Tool adds to AVENTICS' wide range of engineering and assembly tools. Digitalizing pneumatics reduces costs, increases system reliability, simplifies machine designs, and boosts life cycles. 



GETTING A GRIP ON WOOD, CARDBOARD, AND GLASS

New vacuum generators from AVENTICS

AVENTICS recently added the latest multistage ejector generation to its product range. Compared to the previous series, the modular product is lighter, quieter, and easier to use.

Making work easier for the customer has always been a priority at AVENTICS. The company continues to follow this philosophy with its latest product for vacuum technology. Installation of the multistage ejector is straightforward: Any mounting orientation is possible and only two lines have to be connected for compressed air and vacuum. The modularly designed multistage ejector is also easy to disassemble, which simplifies cleaning.

Less weight and noise are further advantages of the new product. It is available with a base body made of sturdy plastic. Two nozzle cartridges can be integrated, depending on the housing module. Up to three modules can be lined up to achieve a higher output, as required.

The new multistage ejector is available in two variants: The high-flow (HF) version is ideal for permeable material. It is used, for example, in the woodworking industry to transport particle board and wooden pallets. In the packaging industry, it is used to handle cardboard and boxes. The high-vacuum (HV) variant ensures a consistently

high vacuum and has been designed for non-permeable and smooth material. This product is used, for example, in glass or metalworking.

“Our expertise has flowed into the innovative nozzle technology used in our multistage ejectors. Thanks to the geometry of the interior of the nozzle, you can differentiate between a high vacuum and high flow,” explains Wolf Gerecke, Director Strategic Product Management at AVENTICS. “Compressed air consumption can be reduced by selecting the right ejector for the application,” he continues. The pneumatics specialists are on hand to help with the right selection if needed.

In addition to pneumatics components, AVENTICS also has decades of experience in vacuum technology. AVENTICS’ product range includes vacuum generators, vacuum cups, floating suction pads, and vacuum accessories. Available online, the Engineering Tools also include a vacuum calculation program that can be used to determine the number of required vacuum cups. [A](#)



WORKPIECES UNDER CONTROL WITH IO-LINK


Intelligent compact ejectors with display

AVENTICS has launched four compact ejectors on the market with its ECD series. The new products reduce air consumption significantly and are optionally IO-Link-capable.

AVENTICS has expanded its offering in the area of vacuum technology with the new ECD (ejector compact display) ejector series. The new series consists of four product versions: ECD-BV, ECD-SV, ECD-IV, and ECD-LV. Equipped with a special nozzle, these compact ejectors ensure more efficient vacuum generation. When operated at the optimum pressure of 4 bar, air consumption is reduced by 15% compared to a product without this technology. The new ECD ejector series is suitable for handling metal and other non-permeable workpieces, as well as pastries and other slightly porous products.

In the cost-effective basic variant ECD-BV, the compact ejector is equipped with two switching valves on the top of the product. In contrast to the basic variant, the ECD-SV (Smart Version) has an LED display that operators can use to directly read the vacuum values. The product also comes with a system monitoring function, an electric air economizer, and automatic drainage. It can be used with a wide range of workpieces.

The ECD-IV (Intelligent Version) compact ejector is equipped with a digital display that shows all of the values as numbers. Operators can manually enter the switching point and hysteresis via the user-friendly display. This product also comes with an IO-Link connection for bi-directional communication with all common fieldbus systems. Remote parameterization and diagnosis are possible. Errors in the system can be detected early thanks to detailed condition monitoring. Condition monitoring enables forward-looking maintenance, which assesses and optimizes system performance.

With its ECD-LV (Large Version) compact ejector, AVENTICS offers a fourth variant. This product is comparable to the intelligent version ECD-IV, but enables higher performance. 

WITH AN OPTIMAL
PRESSURE OF
4 bar,
AIR CONSUMPTION
IS REDUCED BY
15%



Basic Version



Smart Version



Intelligent Version



Large Version


COMPACT SOLUTION FOR UNIVERSAL APPLICATION

New LS04-AF Directional Valve

When it comes to single valves, engineers aim for a compact design and wide range of functions to be able to cover as many applications as possible with a single standard component. Here, the redesigned LS04-AF directional valve for flows from 170 to 310 m/min is setting benchmarks.

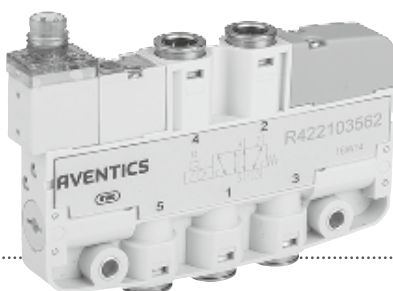
Like the LS04-XS optimized for smaller flows, the AF variant is only 10.8 mm wide and its largest version weighs just over 60 grams. It is a shining example for AVENTICS' expertise in processing high-performance materials. With new material compositions, refined production processes, and changed pilot valves, the engineers cut its height down by another five millimeters.

The new LS04-AF valves switch at least 20% faster than the previous generation. The fastest switching times are 9 milliseconds for switching on and 22 milliseconds for switching off. The shorter the switching times, the more precisely machine manufacturers can control processes and reduce cycle times.

The abbreviation AF in the LS04 series stands for "all functions". The directional valve performs all common pneumatic functions, such as 5/2 SR, 5/2 DS, 5/3 CC, 2x3/2 NC-NC, NO-NO, NO-NC. With a 4 mm diameter, the flow reaches up to 180 l/min and up to 310 l/min with a 6 mm diameter. The working pressure remains between 2 and 7 bars. When using an M8 plug with three pins, the valve meets protection class IP65. Users can also continue using the 2-pin variant. Assembly requires just two metal-reinforced sleeves. The LS04-AF is designed for application in temperatures from -10°C to +50°C. 

SETTING NEW BENCHMARKS
FOR FLOWS FROM

**170 to
310 l/min**





INNOVATIVE PNEUMATIC SOLUTION ENSURES MODEL BOTTLES

Controlled blow molding process reduces material and energy requirements while optimizing PET bottle formation

Thanks to AVENTICS' new, innovative a world first, users can now monitor the pre-blow molding process in the production of PET bottles online, in real time, and immediately make any necessary adjustments. This results in reduced material and energy consumption during high-throughput PET bottle production. For the first time, PET bottle formation can now be controlled and adjusted during the blow molding process.

With this new solution based on proportional technology, AVENTICS is entering uncharted technological territory. In collaboration with a major filling company, the pneumatics specialists performed extensive research on the blow molding process. By combining a proportional valve, control electronics, and software, the solution records the actual values occurring during the process and compares them with the set points.

The new solution is intended for applications in the pre-blowing process. The set points for this step can either be stored in the electronics or transmitted via all common realtime Ethernet protocols and fieldbuses. During a blowing period of around 200 milliseconds, enough control cycles are available to

precisely control bottle formation. This allows process technicians to intervene as needed, for example to reduce material consumption and fine-tune the formation of the bottle wall. Additional energy savings are possible by lowering the pressure level or reducing the furnace temperature.

Process data taken from the analysis can be used to derive continual improvements. At the same time, quality documentation is carried out in order to safeguard and track the process. In addition, trend analyses of the data enable the detection of wear before a failure can occur. Condition monitoring notifies maintenance early on to be able to carry out the necessary work in planned maintenance breaks.

The electropneumatic solution also meets new requirements in bottle production resulting from the trend towards more and more complex PET bottle shapes and smaller batches. As a software-based solution, the bottle formation process can be changed easily, without any mechanical alterations, and specific to each blowing station on the machine. The software can also automatically control process events, for example reaching the

*"To develop this system solution,
we listened exactly to what the end
customers said and really took
in their requests."*

Xavier van Aelst,
Director Food & Beverage



yield point and target bottle volume, according to specifications and keep them constant provided no wear limits have been reached. Once saved, parameters for a bottle type or specific material can be opened and activated at any time, significantly reducing waste during start of production. In close collaboration with product designers, the developers at AVENTICS validated numerous sample settings during the pilot production phase of new bottles.

On printing of this A Mag, a number of users already learned more about the potentials of the new proportional valve and tested pilot scenarios. At drinktec 2017, the world's leading trade fair for the beverage and liquid food technology, AVENTICS presented this new solution to the professional public for the first time. 



NEW MID-CLASS MODEL WITH LUBRICATION-FREE PLAIN BEARING


RTC-SB rodless cylinder

Anyone who has bought a new car is familiar with the dilemma: there's the thrifty basic engine ideal for city traffic. But those regularly taking long trips on the highway would likely choose a premium engine. Most customers look for a compromise between these extremes, so automobile manufacturers offer variants with subtle differences in performance. AVENTICS has followed the same approach for its RTC series rodless cylinders, expanding the family to include the RTC-SB for average requirements.

With five variants, the RTC series of rodless cylinders now covers an even wider range of applications. The new, double-acting RTC-SB with a piston diameter ranging from 25 to 40 mm closes the gap between the basic version (RTC-BV) and the versions designed for higher loads, the RTC-CG (compact guide) and RTC-HD (heavy duty). As with the other rodless cylinders, at the heart of the RTC-SB is its oval piston shape. In relation to its size, it offers a very high load capacity. As a result, engineers can draft even more compact machine designs.

What's special about the new RTC-SB variant? It features a lubricant-free plain bearing. This version gives the rodless cylinder a particularly high load capacity for its size. Its maximum speed is 6.5 m/s at strokes of around 6600 mm. At the same time, no lubricant is necessary, which is crucial for applications with strict hygiene requirements. The slide play is optimally adjusted right at the factory.

A wear-free magnetically attached exterior strip, scraper, and sealing strip protect the cylinder from dust and dirt. Adjustable pneumatic cushioning extends the service life and ensures precise and gentle operation. Form-fit connection technology with standardized mechanical interfaces simplifies machine design and speeds up assembly significantly since no re-adjustments are necessary.

In cars and pneumatics, it's about fine-tuning the products to meet the users' requirements exactly. RTC-SB is yet another milestone. 

PISTON DIAMETER

From 25 mm
to 40 mm



"WE ALREADY PRODUCE 25% OF THE SOLD SYSTEMS LOCALLY"



India is one of the world's strongest growing economies. More than twice as many vehicles are produced here than in France, and nearly three times as many commercial vehicles as in Germany. The subcontinent is the world's largest tractor manufacturer. The government initiative "Make in India" is also speeding up the trend towards greater automation in industrial applications. AVENTICS sees great potential here and has now established an Indian subsidiary.

General Manager Anthony Raju Suresh is responsible for activities in India. After completing an additional degree in strategic management, the engineer began his career in India and other countries in the automation industry and fluid technology. A Mag talked to him about the Indian market and his personal goals.

What characterizes the pneumatics market in India?

A. R. Suresh: The Indian market is very price-sensitive. This doesn't mean that customers only ever buy the cheapest product, but the one with the best value for their money. In automation, customers are increasingly looking for products that are easy to use. What they want is the most efficient solution, and here, quality is playing an ever more important role.

Which AVENTICS products come off best in India?


A. R. Suresh: Our AV03 valve system for demanding applications is a major success. The start of sales for the ES05 valve system for standard applications has also been very promising. Customers also purchase our ISO valves and cylinders, as well as complete control cabinets and handling

systems. We already produce 25% of the sold systems locally in India. The Indian government has started a "Make in India" initiative, and it is crucial to our success to increase our local capacities.

How is Sales positioned?

A. R. Suresh: The Bangalore location in southern India has both offices and production space, as well as a warehouse. AVENTICS is also present across the country with sales offices in Mumbai, Chennai, Ahmedabad, and Pune. An office in Delhi is planned. Our direct sales currently consists of eight very experienced engineers, who support our customers with their expertise. We have also established a dense network of distributors with over 30 sales partners across the country.

What are your personal goals?

A. R. Suresh: I would like to gain significant access to the Indian market, increasing AVENTICS' market share in a time when German pneumatic products are in high demand on the market. We will expand on our many years of experience in pneumatics to be able to support different customers in their challenges with this technology. To reach this goal, we are constantly working on our services and processes – and above all, we make it easy for our customers to work with us. 

MODERN SOLUTION DESIGNED TO LAST DECADES

AV series replaces 25-year-old valve technology
in chemical plant

*"We delivered the valve systems
pre-assembled and tested, which saved
valuable time during commissioning."*

Daniel Boner,
Sales Engineer at AVENTICS



The chemical process industry doesn't think in years, but in decades. Existing systems are continually modernized to keep them state-of-the-art. Take Swiss company Claviag AG, for example: The construction chemicals plant for the dry mortar industry opened its doors in 1968 and has now renewed its pneumatic control technology with hundreds of AV03 series valves.

In 1968, the newly opened chemical plant in Moosleerau in the Swiss canton of Aargau started a minor revolution. Up to that point, tiles were always placed in a mortar bed, a very labor-intensive process requiring highly skilled workers. That year, Claviag AG began producing the first redispersable polymer powder, branded ELOTEX®, to date an important component in tile adhesive, among other products. Over the years, they added further dispersion powders to their product range, and Claviag AV now manufactures thirty different powders for the dry mortar industry.

Staying state-of-the-art

In the past almost fifty years, Claviag AG has not only improved its formula and process reliability in manufacturing its products,

but the company has also continually replaced its technical equipment, keeping its plant state-of-the-art. In the early 90s, Claviag AG switched to Bosch valve systems for its pneumatic control technology, which back then were already electrically operated by PROFIBUS. The valves actuate numerous metering units as well as other actuators in the branched system.

After over 25 years in use, spare parts were no longer available. This is why Claviag AG decided to modernize its pneumatic control system and take advantage of the latest technology. The decision was quickly made in favor of the AV03 valve series from AVENTICS – the successor company for Bosch and Bosch Rexroth pneumatics activities established in 2013.




Since several hundred of these valves had to be installed in the plant's basement, a compact design and simple assembly were a must. The slider's diagonal arrangement inside the valve allowed engineers at AVENTICS to reduce the valve to the size of a business card.

Conversion itself was complicated enough: More than two hundred air tubes had to be allocated correctly and combined with the corresponding electric control signals. In Laatzen, AVENTICS pre-assembled the valves on aluminum plates according to Claviag's specifications and then sent the ready-to-install modules to Switzerland. There, AVENTICS specialists provided assistance during conversion.

More than 80% less electronics

The AES valve electronics make this task especially easy. While the electronics of the old Bosch valve systems only had space for a maximum of twelve valves, the AES hardware controls up to 64 valves with two coils. This reduces the hardware requirements for electronics

by more than 80 percent; AES supports not only PROFIBUS DP but also the PROFINET IO, EtherCAT, DeviceNet, CANopen, EtherNET/IP, POWERLINK, and IO-Link protocols.

For the forward-thinking plant planners at Claviag AG, the AV valves offer another crucial advantage: they reliably achieve up to 75 million switching cycles. This means the Swiss engineers can focus on other topics for many, many years. The robust AVENTICS pneumatics won't be giving them any trouble for the foreseeable future. 

Since 2008, Claviag AG has belonged to Akzo Nobel Chemicals, leading manufacturer of redispersible polymer powders, cellulose esters, and special additives such as thickeners, hydrophobing agents, additives for reducing efflorescence, and additives for preventing spotting.



READY FOR THE INTERNET OF THINGS: SMART PNEUMATIC GRID WITH OPC UA

**BOGE KOMPRESSOREN and AVENTICS ensure
intelligent system networking**

A lower energy consumption for compressed air applications, actuators under control at all times, and adaptability to new conditions. BOGE KOMPRESSOREN and AVENTICS show how this requirement profile can be met with the Smart Pneumatic Grid.

In automation, vertical networking to the Internet of Things is currently the most discussed topic. Offers quickly turn into extremely complex IT solutions that require a great amount of effort to implement. However, manufacturers often only want to gradually introduce vertical networking to gain experience

and verify its efficiency. "And when it comes to the Internet of Things, pneumatics will be the easiest drive technology to handle with the least amount of effort required per movement," states Wolf Gerecke, Director Strategic Product Management at AVENTICS. "Users look for solutions that are easy to implement,

"And when it comes to the Internet of Things, pneumatics will be the easiest drive technology to handle with the least amount of effort required per movement."

Wolf Gerecke,
Director Strategic Product Management
at AVENTICS




that help them cut operating costs, and increase the availability of their machines."

This is where the Smart Pneumatic Grid, developed in collaboration between BOGE KOMPRESSOREN and AVENTICS, comes into play. The system is based on the machine-to-machine communication protocol OPC UA, which is accepted across manufacturers. "Intelligently networking compressed air generators and compressed air consumers unlocks a variety of potentials for monitoring, controlling, and optimizing entire system topologies," says Peter Boldt, Head of Engineering at BOGE, describing the advantages of this approach. Wolf Gerecke reaffirms: "By knowing the current and upcoming air consumption, we can optimize control of the compressor performance, allowing users to significantly decrease energy consumption."

OPC UA is currently the top standard for horizontal and vertical networking in the automation sector. It transfers data and statuses from devices to other components, machines, or superior instances, independent of fieldbus communication with the control.

The Smart Pneumatic Grid identifies the energy need down to the individual consumer level and visualizes it clearly. With minimal effort, machine manufacturers and users can take this information and derive needs-based control rules for the BOGE compressors.

Another advantage: "The Smart Pneumatic Grid also indicates an increase in air consumption, that is, a leak, specific to the consumer so maintenance can act in good time before a machine standstill can even occur," reinforces Wolf Gerecke.

BOGE and AVENTICS established the technological basis for this intelligent system networking within the "it's OWL" cluster promoted by the German government. BOGE KOMPRESSOREN Otto Boge GmbH & Co. KG is a leading supplier of compressors and compressed air systems headquartered in Bielefeld, Germany. 





ENHANCING SAWMILL PERFORMANCE WITH “IDEALLY” CUSHIONED ALUMINUM CYLINDERS

Speed and reliability of AVENTICS products impress
Baxley Equipment Company

Pneumatics continues to be a valuable player in many types of industrial automation applications. When OEMs need reliable components, a compact design and low-maintenance technology to actuate machinery, pneumatics can be trusted to deliver steadfast and long-lasting operation even in very difficult and “dirty” environments.

Modern sawmills are perfect examples for this type of application. Mill operators seek the highest throughput rates possible, with machine downtimes kept to a minimum – and that requires heavy-duty machines with components engineered for durable, repeatable performance.

Baxley Equipment Company, a division of Timber Automation, LLC of Hot Springs, AR (USA) is a leading supplier of sawmill technology to the North American lumber industry, providing a broad range of products and complete systems such as trimmers, sorters, stackers, feeders and edgers. According to Tommy Green, chief engineer at Baxley, the AVENTICS aluminum pneumatic cylinders Baxley specifies for its equipment deliver the performance their systems need, which other cylinder providers can't match.

“We’ve used AVENTICS aluminum cylinders with Ideal Cushioning technology in our trimmers and sorters for several years, and we’ve found them to be superior to other cylinders on the market,” Green said.



Ideal Cushioning, combined with the lighter weight and relatively lower cost of aluminum pneumatic cylinders (compared to steel construction) enables Baxley to supply highly competitive trimmers that accelerate lumber processing while reducing excess piston movement and bounce.

Reliability in demanding sawmill environments

The sawmill environment can be brutal on machinery: wide temperature fluctuations are common, dust from the manufacturing process damages equipment, and vibrations stress and grate machinery.

In the past, heavy-duty steel pneumatic cylinders were preferred for lumber production machinery; many mill operators felt that the speed of equipment like planar mill trimmers and sawmill trimmers, combined with harsh conditions, required steel cylinders, said Jim Apel, AVENTICS District Sales Manager. More recently, that preference has changed.

"Sawmills are always striving to produce more lugs per minute. Working with companies like Baxley, we've shown that our medium-duty TRB ISO 15552 aluminum cylinders using Ideal

Cushioning technology allows them to do that," he said. "In fact, our cylinders allow the trimmers to actuate faster than they did with steel cylinders and they last longer."

Faster and more productive sawmill trimmers

Baxley uses AVENTICS TRB ISO 15552 series cylinders with "Ideal Cushioning" technology on two key types of equipment: high-speed sawmill trimmers, and sorter systems, which are used to separate and stack finished lumber according to length. Both systems operate at very high throughput rates, and the AVENTICS cylinders with ideal cushioning actuate key movements on both systems.

In the sawmill trimmer, Baxley uses the AVENTICS cylinders with diameters of 100 mm and 125 mm and various stroke lengths. The cylinders actuate the saws that trim boards in lugs to the desired length. Standard trimmers have between nine and eleven saws, controlled by a machine PLC.

The saws are spaced approximately two feet apart; two saws drop down in tandem between boards in lugs – one cutting the forward or "zero" end, the other cutting the board at the desired standard length, ranging from 6 to 24 feet.

The throughput rate ranges from 120 to 200 lugs per minute, and Baxley has engineered its latest generation trimmers to operate with very tight intervals between each board – 26 inches from the trailing edge of one board to the next. This means that the cycle time for the saws to drop, cut and retract is ultra-tight – 120 milliseconds or less is the usual cycle time, says Green.

Each cylinder is paired with an AVENTICS 581 series ISO directional valve with integral flow control. The valve is one of AVENTICS' fastest valves, with Teflon™-encapsulated O-rings that allow it to resist friction and keep up with the trimmer's throughput rates.



Ideal Cushioning adjustments are made with a standard screwdriver (as shown on this PRA-type pneumatic cylinder) so that the piston stops right at the end cap with zero speed.



The trimmer uses AVENTICS Series 581 ISO valves with integral flow control. This is one of AVENTICS' fastest valves, with Teflon™-encapsulated O-rings that allow it to resist friction and keep up with the trimmer's throughput rates.

"At the speeds we run now, other cylinder designs just can't go that fast – the cylinders wouldn't hold up. With the AVENTICS cylinders and Ideal Cushioning we can do that, with almost no downtime related to cylinder failure," he said.

Ideal cushioning improves cylinder efficiency

AVENTICS developed Ideal Cushioning to significantly improve the efficiency of pneumatic cylinders and lengthen their operating life. It's a method of decelerating the pneumatic piston as it reaches the end of its stroke inside the cylinder. Essentially, there is no end-of-stroke bounce or end-cap slamming, a main source of cylinder wear, slowness and noise. To achieve Ideal Cushioning, the cylinders used must physically have superior cushioning capability (like the TRB cylinders).

With Ideal Cushioning, the piston velocity is at its maximum speed throughout the entire stroke sequence. Its velocity is exactly zero by the time it reaches the end cap. By reducing the piston velocity to zero at the end of travel, the cylinder incurs less stress. Vibration in the host structure is reduced and the total cycle time is improved, sometimes boosting machine speed by as much as 30 percent.

According to Green, Ideal Cushioning, combined with the lighter weight and relatively lower cost of aluminum cylinders (compared to steel construction) enables Baxley to supply highly competitive trimmers that accelerate lumber processing while reducing excess piston movement and bounce. In addition, less wear on the cylinders reduces the amount of maintenance and cost needed for replacement parts.

Sorter systems help maximize mill productivity

Baxley provides similar operational advantages in its sorter systems, which also use AVENTICS cylinders and valves. These high-speed, large-scale systems automatically sort thousands of finished boards into stacks or packages for warehousing and shipping.

A Baxley sorter can have from 15 up to 100 bays. Conveyor chains push finished, trimmed wood boards through the sorter. When a specific size board reaches the corresponding bay in the sorter, a "tipple" actuated by an AVENTICS TRB cylinder opens the space to drop the board onto the bay. It then closes, allowing the next board in line to pass through the sorter to reach the correct bay.

"Actuation time is even more critical and faster on the sorter," Green said. "We typically need to open and close the tipple in about 90 milliseconds." Each bay in the sorter has one pneumatic cylinder, so on their largest machines there can be up to 100 pneumatic cylinders. Each cylinder is paired with an AVENTICS 740 series directional valve with integral flow control. These lightweight valves can be installed close to the cylinder, rather than on it, eliminating the need to add flow control to the cylinder and keeping weight to a minimum.

"We use AVENTICS cylinders on the sorter for the same reason we use them on the trimmers: reliability and speed," said Green. "We've had really good experience with them, and I know there are Baxley machines in mills that have been running for several years without cylinder failure."

"Sawmills are always striving to produce more lugs per minute."

Jim Apel,
District Sales Manager at AVENTICS




User-friendly cylinder set-up tools

AVENTICS provides a range of tools to help companies like Baxley select the right cylinder for a given application and then easily set the cycle time and cushioning to reach the "ideal" state. Calculating the amount of cushioning needed is a straightforward process. The AVENTICS velocity time meter (VTM), allows precise monitoring of the piston speed and cycle times, eliminating any testing and readjusting used to set the cushioning.

The VTM is attached to the outside of the cylinder tube and enables the true velocity of the piston to be determined quickly and easily; adjustments are made with a standard screwdriver so the piston stops right at the end cap with zero speed.

According to Green, Baxley typically sets the trimmer cushioning using these tools before the trimmer is shipped to the customer's mill. For the sorters, because they are assembled on-site, Baxley provides a start-up service to configure the cylinders and ensure the cushioning is set correctly.

Pneumatics offers competitive advantage

Green said both the speed and reliability provided by the AVENTICS products give Baxley a competitive edge with mill operators who need maximum throughput and minimum downtime. "We're using cylinders and valves that can operate faster than other brands we've tried, which allows us to design faster systems. If we didn't have the technology and components to run that fast, it would be more challenging to build systems that fully satisfy our customer's requirements." 

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MTS: AUTOMATION SPECIALIST FOR UNUSUAL TASKS

AVENTICS sales partner – market leader for special
solutions in assembly and machine construction





Slovakia is a small country at the heart of Europe with an exceptionally strong industrial presence. No other place in the world has a higher production of cars per capita. "There is a very high demand for automation and special solutions here," states Juraj Habovstiak, Chief Executive Officer and majority shareholder of MTS, spol. s r.o., the AVENTICS partner in Slovakia.

The history of MTS is a typical example of this demand: "We began in 1996 as a dealer with 5 people, and currently we

Wherever possible, MTS uses pneumatic components and solutions from AVENTICS. The MTS engineers are currently noticing the trend towards networking components, including pneumatics, in their customer requirements. Fieldbus and Ethernet solutions simplify installation and commissioning. They also afford users more options for diagnosis. "Our customers may specify different protocols, but this is no problem for AVENTICS since the valve electronics support all standard systems," underscores the CEO.




"There is a very high demand for automation and special solutions here"

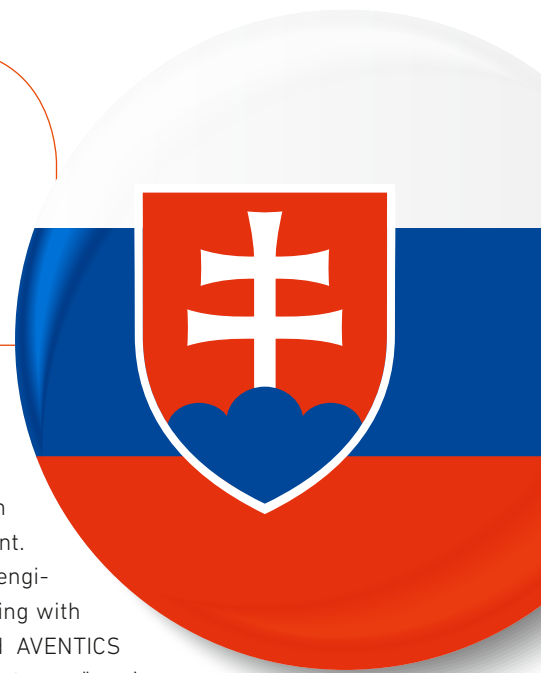
Juraj Habovstiak
Chief Executive Officer and majority
shareholder of MTS, spol. s r.o.

employ 230 specialists for automation and special machine construction." MTS collaborated with Bosch Automationstechnik, a predecessor company of AVENTICS, early on, as well as with other manufacturers from the areas of automation and image processing for machines. Today, component sales still makes up a good quarter of its revenue.

For Juraj Habovstiak and his employees, the transformation from dealer to automation specialist came at an early stage – after all, he had already worked in special machine construction for ten years. "Nearly all plants in Slovakia used to have their own department, but today external companies like us take on these tasks," emphasizes the mechanical engineer, pointing out that MTS is now Slovakia's market leader for special solutions in assembly and machine construction. Its main customers include the automotive industry and its suppliers, as well as electronics companies. "We have already automated many assembly solutions for workpieces weighing up to 100 kilograms," recalls Juraj Habovstiak.

The comprehensive, easy-to-use online tools for configuration are especially important. "We have very young engineers who enjoy working with this type of tool, and AVENTICS currently offers the best ones," praises the CEO.

And while MTS' focus primarily lies in Slovakia, customers that have had positive experiences with special solutions from MTS have already placed a series of orders for other plants across the world: MTS has installed plants in Romania, South Africa, Mexico, and China. "Here, we take advantage of the remote diagnosis capabilities of our systems for fast troubleshooting," states Juraj Habovstiak, describing the service concept. AVENTICS' global network also plays an important role for fast spare parts delivery and other services. 



PNEUMOBILE 2017

Jubilee victory in Hungary goes to the Baltic Sea

For the tenth time, the AVENTICS Pneumobile held in Eger, Hungary, has impressed students and young specialists across Europe. The task: to design and build a vehicle propelled by pneumatics alone.

While the first competitions were about getting the vehicle to run at all, the challenges have grown from year to year. At the jubilee competition, the 46 teams from seven European countries had to maintain an average speed of 15 km/h in the endurance event. The winning team from Riga managed over 7,400 meters with the provided air – a value that some hybrid vehicles strive to reach with their electric drive.

And the Pneumobile vehicles gave impressive performances in the arcade and acceleration races as well. "Some teams worked on the project for months, investing over 1,000 hours of their time," emphasized István Gödri, Vice President Operations Hungary at AVENTICS in Hungary. AVENTICS provides the universities with defined equipment packages the young engineers can use to realize their concepts, and hosts the competition in downtown Eger. "The participants all gain experience, and the best team is the victor," stated István Gödri thanking the participants while honoring the winning team, BEST-Riga from the Technical University of Latvia. This was the first time a Baltic team came out on top – until the races start again next year.



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