

Drive Greater Productivity with Seamless Automation

FESTO



Every second and every kilowatt count in tire manufacturing. With the right motion technology from Festo, you can maximize equipment performance and strengthen your competitive edge.

Automation for a world in motion.



More productivity. Less energy. Greater competitive advantage.

The demands on tire manufacturing are continuously increasing: shorter cycle times, maximum quality standards, high machine uptime, and lower energy costs. To meet these challenges successfully, manufacturers need automation solutions that are powerful, flexible, and future-ready.

From preparing and mixing raw materials, tire building and curing to quality inspection, we offer intelligent pneumatic and electric automation solutions for the entire tire manufacturing value chain. Our components, systems, and software solutions work together seamlessly and can be easily integrated into both new and existing equipment.

You benefit from our many years of industry expertise, one of the most comprehensive automation portfolios on the market, and innovative solutions for greater productivity, energy efficiency, and process reliability. Together with you, we develop tailored concepts that sustainably optimize your production.

The result: Greater productivity, reduced energy costs, maximum availability, and a long-term competitive advantage.



Festo – Your Partner

Mixing

Curing

Service and support

Seamless Automation

Tire building

Quality inspection

From groundbreaking innovations to maximum productivity

In tire manufacturing, efficient processes, exceptional quality, and maximum machine uptime determine success. With Seamless Automation, Festo combines pneumatic and electric automation, intelligent sensing, and digital solutions in one integrated automation approach.

This means you benefit from perfectly matched components, systems, and services, from preparing raw materials all the way to final inspection. The result is more productive processes, lower energy costs, and future-ready tire manufacturing.

Festo. Best Fit in Automation.

Seamless Portfolio

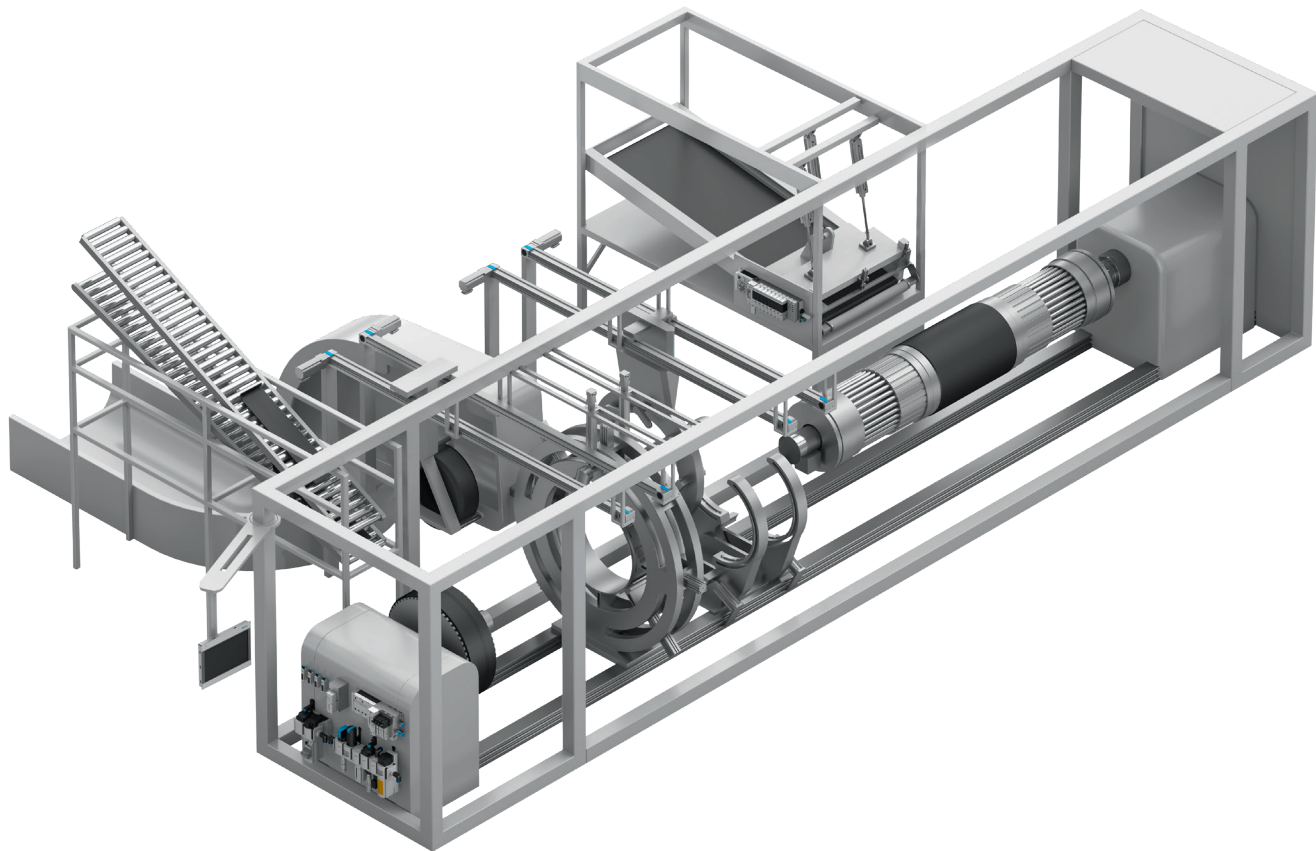
By combining pneumatic and electric automation with software and AI-based solutions, we offer a broad portfolio for industrial motion requirements.

Seamless Connectivity

Our open system architecture allows a seamless data flow between systems from Festo and third parties so individual components of different technologies can easily interact.

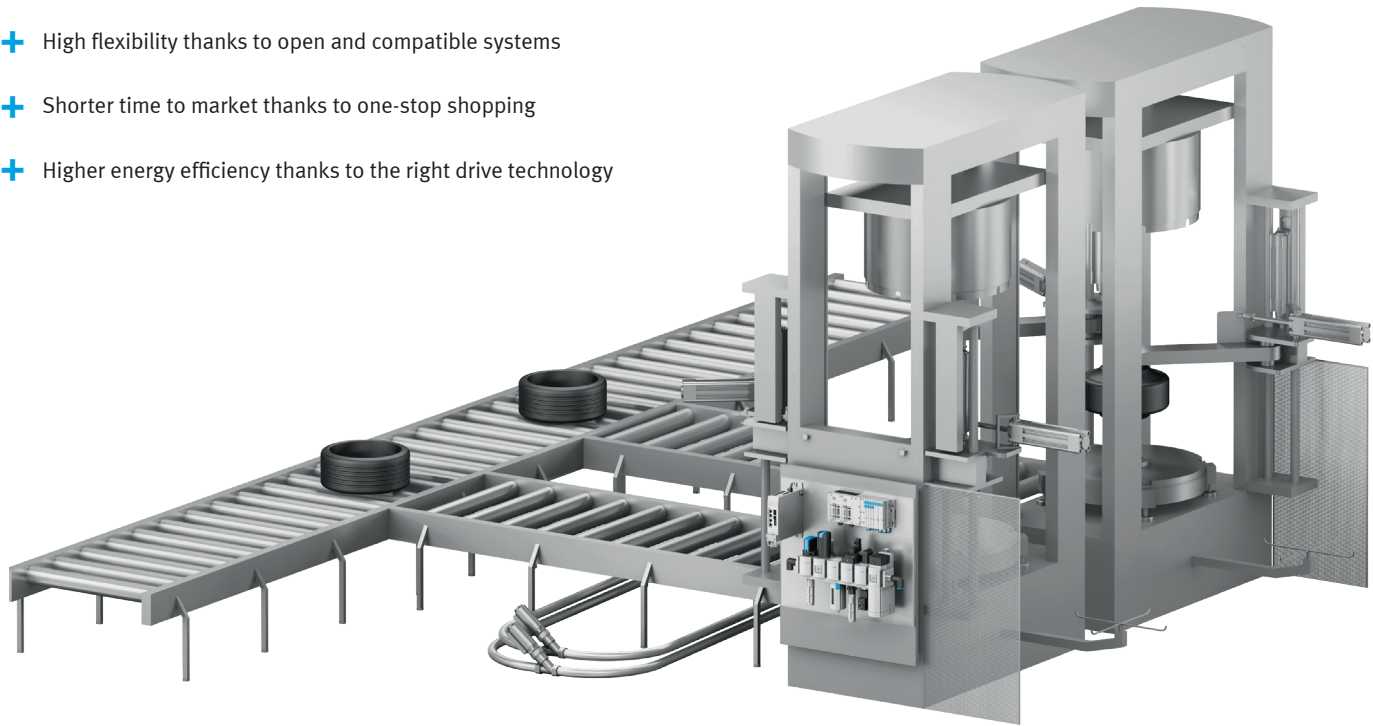
Seamless Experience

Our Digital Experience provides continuous support throughout design, operation, and maintenance across the entire project life cycle, with data transferred seamlessly across every process step.



Your benefits:

- + Easier integration of new solutions
- + High flexibility thanks to open and compatible systems
- + Shorter time to market thanks to one-stop shopping
- + Higher energy efficiency thanks to the right drive technology



Digitalization in tire manufacturing: From the machine to the cloud

Digital connectivity in tire manufacturing creates transparency across the entire value chain, from mixing, tire building, curing, and quality inspection to analyzing production data in the cloud. With integrated automation and digitalization solutions, Festo helps tire manufacturers optimize processes, increase machine uptime, and make data-driven decisions in real time.

Precision mixing with accurately configured technology

There is a real art to mixing the right materials using the right ratios. When mixing rubber, fillers, plasticizers, and chemicals, every factor must work together perfectly. This is only possible with reliable components that are tailored precisely to your requirements.

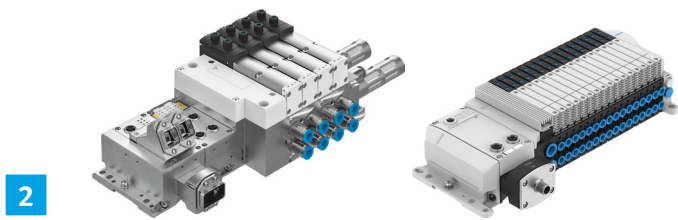
Discover how easily Festo solutions can be configured and integrated. This accelerates your engineering work and ensures safe, reliable processes over the long term, from compounding and rolling to cooling, including diagnostics and condition monitoring.



Process valves and actuator units

Eliminate extensive engineering work and complicated assembly of individual components, for example with the ball valve actuator unit KVZB that supplies the appropriate oils to your tire compound. The unit includes the quarter turn actuator DFPD, ball valve VZBE, pilot valve VSNC, and sensor box SRBC, and can be configured quickly with the process valve unit configurator.

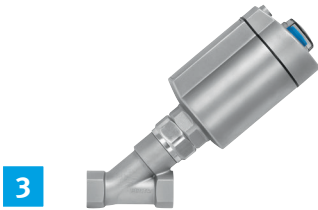
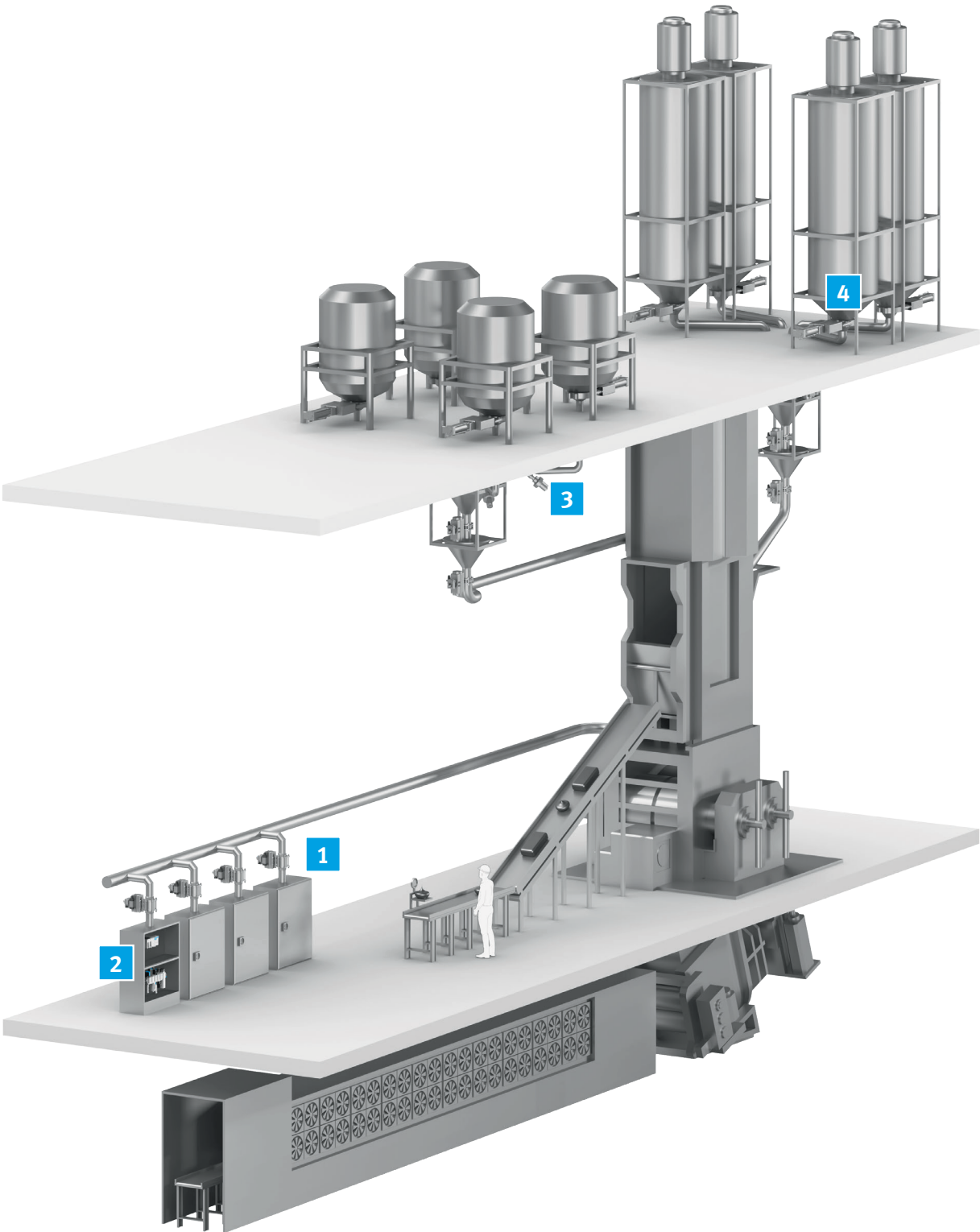
- Specifically tailored to your requirements
- Quick and easy online configuration (see page 15)
- Sturdy and durable
- Can be ordered using a single part number, including for replacement purchases



Electrical terminal CPX and valve manifolds VTSA/VTUX

Reliable process control for efficient mixing systems. Precise media control, reduced downtime, and sturdy components are essential in mixing. Together with the valve manifolds VTSA/VTUX, the electrical terminal CPX forms a powerful platform for the safe and efficient automation of mixing processes.

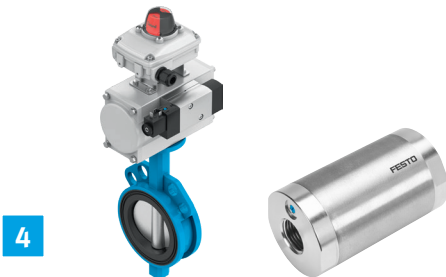
- Reliable control of pneumatic functions for stable mixing processes
- High machine uptime thanks to diagnostics, condition monitoring, and remote I/O functions
- Flexible integration of sensors and actuators, plus support for modern safety solutions with PROFI-safe, FSoE, and CIP Safety



Angle seat valve series VZXA/VZXB

Reduce maintenance effort and increase machine uptime. The modern angle seat valve series VZXA/VZXB simplifies maintenance in tire production as the actuator and seal cartridge can be replaced without removing the valve from the pipeline. This shortens downtime and reduces service effort and costs.

- In-line maintenance with no need to remove the valve
- Shorter downtime and better machine uptime
- Excellent flow performance, even with highly viscous media
- Less ordering effort thanks to a single order number



Butterfly valve unit KVZA and pinch valve VZQA

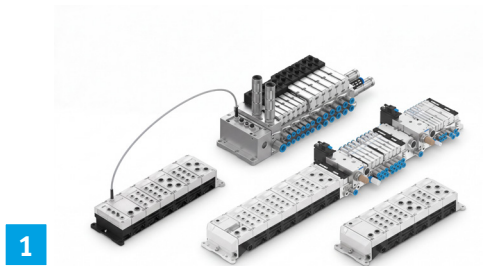
Control raw material flows simply and reliably. The butterfly valve unit KVZA enables safe opening, closing, and controlled discharge of raw material tanks. The pinch valve VZQA is suitable for precisely feeding very small quantities into the mixture. As ready-to-install complete solutions, they reduce planning and installation effort and enable fast commissioning.

- KVZA with nominal sizes up to DN400 for high flow rates. VZQA with nominal sizes from DN6 to DN50 for lower flow rates.
- Reduced effort for selection, configuration, and procurement
- Ready-to-install complete solution for fast commissioning
- Sturdy design for high operational reliability

Tire building — Precision processes for shorter cycle times

In tire building, speed and accuracy are equally critical. When the carcass and belt package are precisely joined, production times are shortened, process reliability is improved, and tire quality is guaranteed.

Festo accelerates your processes with powerful drive technology that combines high dynamic performance with maximum precision and repeatability. Intelligent safety functions provide greater protection for your employees in critical machine areas. At the same time, energy-efficient solutions help reduce energy consumption for the long term.



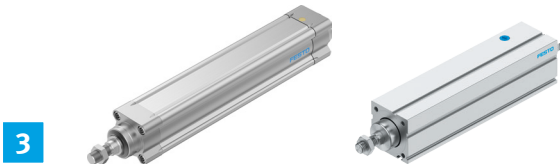
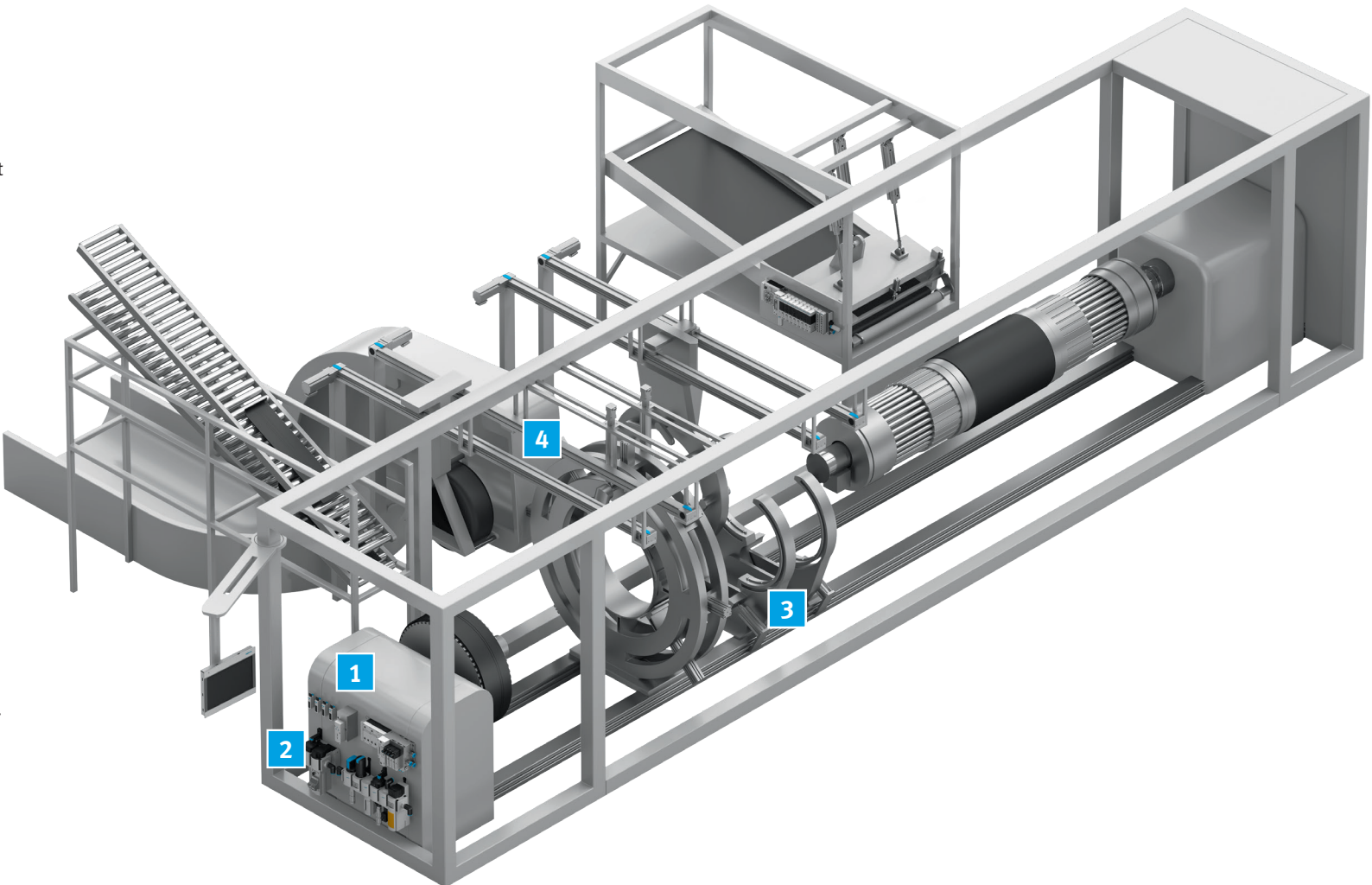
Electrical terminal CPX and valve manifolds VTSA/VTUX

- Flexibility and process reliability for tire building. Together with the VTSA/VTUX valve manifolds, the electrical terminal CPX forms a powerful platform for modern tire building machines. Its modular architecture enables easy integration, high flexibility, and safe, efficient machine designs.
- Precise pneumatic control for high process reliability and consistent tire quality
 - Integrated safety solutions with PROFIsafe, FSoE, and CIP Safety to protect people and machinery
 - Reduced downtime thanks to diagnostics, condition monitoring, and remote I/O functions
 - Flexible machine designs thanks to modular valve manifolds, multiple pressure zones, and easy integration of sensors and actuators



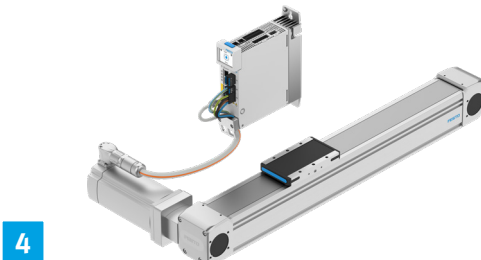
Energy efficiency module MSE6-E2M

- The MSE6-E2M automates energy savings in compressed air systems. This intelligent module with integrated sensors automatically monitors and controls the compressed air supply in both new and existing equipment.
- Automatic compressed air shutoff in standby mode
 - Leak detection and notification
 - Easy online monitoring of process-relevant data via fieldbus
 - Demand-based maintenance when leaks occur



Electric actuators ESBF/EPCC

- Precise motion for efficient tire building. In tire building, precision, dynamic performance, and short cycle times are critical for productivity and tire quality. The electric cylinders ESBF/EPCC enable reliable, highly repeatable motion sequences, from precise positioning to powerful joining and handling tasks.
- Precise and repeatable positioning
 - Short cycle times thanks to high dynamic performance
 - Sturdy design with IP65 protection
 - Stroke lengths up to 1,500 mm and feed forces up to 100 kN
 - Flexible integration into a wide range of machine designs

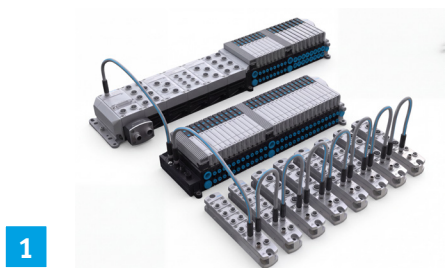


Ball screw axes ELGD-BS and toothed belt axes ELGD-TB

- Precision and dynamic performance for tire building. The ELGD axis series supports precise and efficient motion sequences when building the carcass and belt package. Depending on the requirements, the ball screw axis ELGD-BS or the toothed belt axis ELGD-TB provides the optimal combination of accuracy, speed, and reliability.
- High process reliability through precise positioning
 - Fast travel movements for short cycle times
 - Stroke lengths up to 8,000 mm
 - High reliability

Curing – Reduce costs, increase efficiency

Curing places extremely high demands on efficiency, reliability, and machine uptime. With the Festo automation platform, you connect pneumatics, electrical systems, sensors, and digital diagnostic functions in one integrated system. This creates the foundation for stable processes, reduced operating costs, and optimal utilization of your production capacity.



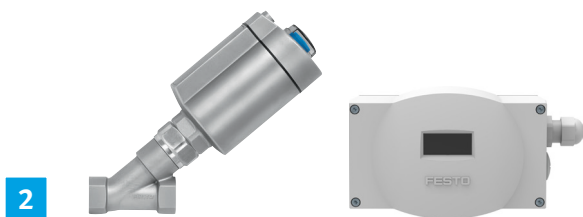
1

Valve manifolds VTSA/VTUX with remote I/O systems CPX-AP-A/AP-I

Flexible pneumatics and intelligent connectivity for efficient tire curing presses.

With the valve manifolds VTSA/VTUX and the remote I/O systems CPX-AP-A/AP-I, you create the foundation for flexible, reliable, and future-ready machine designs. Benefit from excellent communication, fast diagnostics, and maximum machine uptime.

- Flexible and scalable automation solutions for tire curing presses
- Fast installation and reduced maintenance effort
- High machine uptime through integrated diagnostic functions



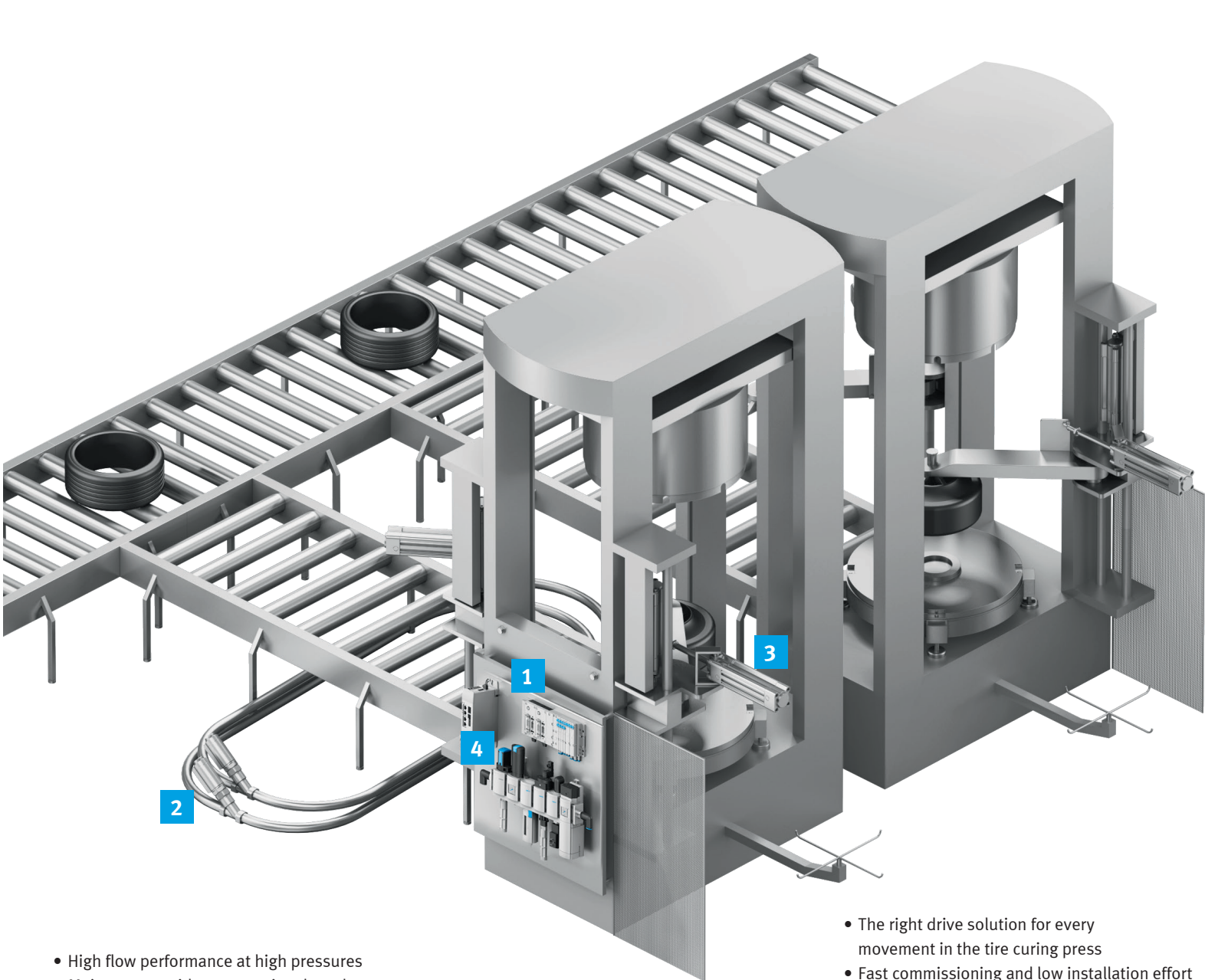
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Angle seat valve series VZXA/VZXB and positioner CMSX

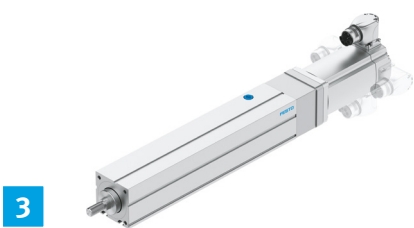
Reduce maintenance effort, increase machine uptime, and enable safe bladder filling.

The sturdy angle seat valve series is designed for steam, nitrogen, and water. Its flow-optimized design ensures reliable operation even at high pressures. The actuator and seal cartridge can be replaced directly in the pipeline. This shortens downtime and reduces service effort and costs.

Can be used for on/off operation or, with the positioner CMSX, as a modulating valve for filling the bladder.



- High flow performance at high pressures
- Maintenance without removing the valve
- Shorter downtime
- One order number for less ordering effort



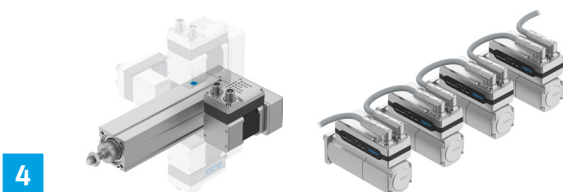
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Electric cylinders ESBF/EPCC

Precise motion for efficient tire curing presses.

The electric cylinders ESBF/EPCC enable precise and reliable motion sequences in modern tire curing presses. Whether the application requires high forces, compact installation spaces, or short cycle times, both series ensure high process stability and support cost-effective curing processes.

- High precision and repeatability for consistent curing results
- Dynamic motion sequences for short cycle times and higher productivity
- Rugged, durable design for reliable use in demanding production environments



4

Simplified Motion Series Gen2, EMCT, CMMT-ST/AS

The right drive solution for efficient tire curing presses.

Reliable motion sequences, reduced downtime, and efficient energy use are essential for a cost-effective curing process. With the Simplified Motion Series Gen2, the EMCT, and the CMMT-ST/AS servo drives, Festo offers the right electric drive solution for every motion task, from simple positioning to highly dynamic applications.

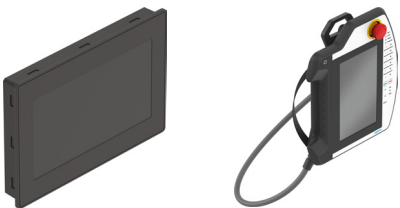
- The right drive solution for every movement in the tire curing press
- Fast commissioning and low installation effort
- Easy integration into automation and safety concepts
- Maximum availability and higher productivity

Quality inspection – Safety for every tire

Before a tire is shipped, it must meet the highest quality and safety requirements. Modern inspection processes using visual, sensor-based, and X-ray inspection methods ensure reliable detection of material and manufacturing defects. This maximizes tire and vehicle safety, guarantees consistently high product quality, and enables efficient, cost-effective inspection processes.

Festo boosts automated quality inspection with highly dynamic drive solutions and intelligent sensors. With precise measurements for testing runout, checking dimensions, or inspecting components, the highest quality standards can be met while keeping inspection processes efficient.

1

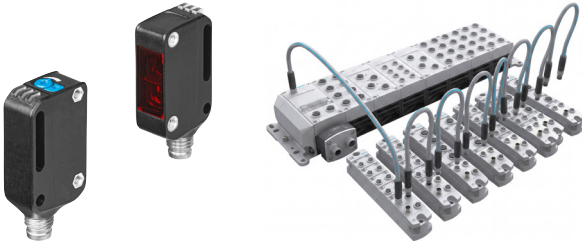


Graphical display and operator unit CDPX/CDSA

Transparent quality inspection ensures stable processes and less downtime.

- Inspection, measurement, and diagnostic data available at all times
- Worldwide access to machine data
- Fast response to deviations
- Easy operation via the CDSA
- Support during commissioning and optimization
- Fast service and troubleshooting

2

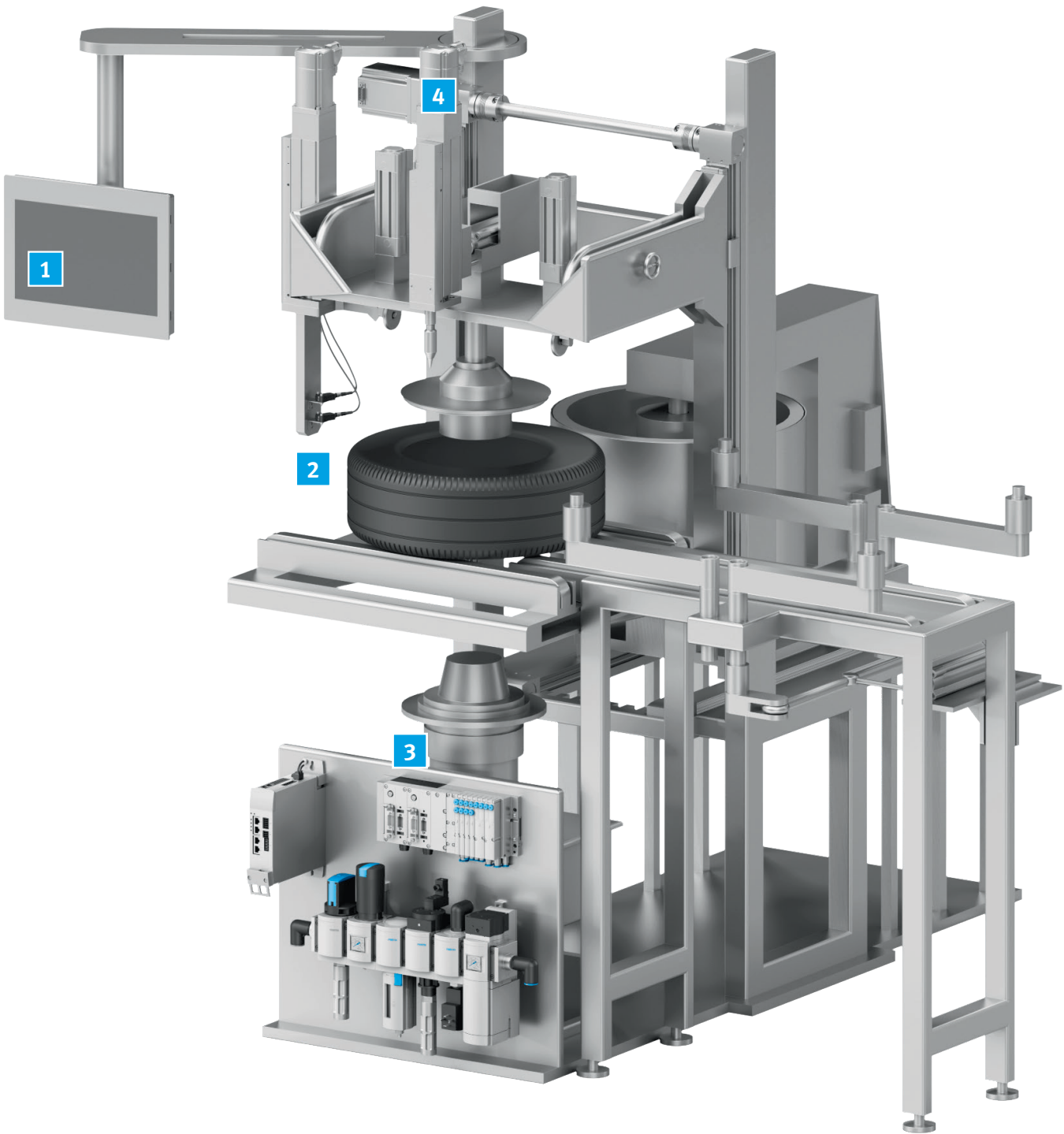


Opto-electronic sensors SOOE and remote I/O systems CPX-AP-A/CPX-AP-I

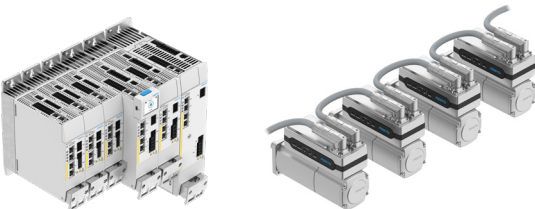
Precise sensing for reliable quality inspections.

With opto-electronic sensors SOOE, positions, contours, and distances can be precisely detected in automated inspection processes. In combination with the remote I/O systems CPX-AP-A/CPX-AP-I, you benefit from fast data transmission, easy integration, and reliable evaluation of quality characteristics.

- Precise detection of deviations in dimension, position, and quality
- Fast commissioning thanks to a standardized sensor and operating concept
- Flexible integration into centralized and decentralized inspection systems via IO-Link and CPX-AP



3



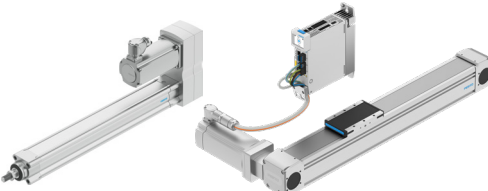
Simplified Motion Series Gen2, EMCT, CMMT-ST/AS

Precise motion control for reliable inspection results.

Precision, repeatability, and short cycle times are critical in automated inspection processes. With the Simplified Motion Series Gen2, EMCT, CMMT-ST/AS, Festo offers the right drive solution for quality inspections, from simple positioning tasks to highly dynamic measurement and inspection applications.

- Excellent precision and repeatability for reliable measurement results
- The right solution from simple positioning to highly dynamic servo applications
- Fast to commission and easy to integrate into modern inspection systems

4



Electric actuators for precise quality inspections

Reliable measurement results thanks to precise motion.

Precision, repeatability, and high dynamic performance are essential in quality inspection. With the electric cylinders EPCC/ESBF and the ball screw axes ELGD-BS and toothed belt axes ELGD-TB, you can implement precise positioning and inspection tasks, from measuring geometric features to automated runout inspection.

- High precision and repeatability for reproducible inspection results
- Dynamic motion for short inspection cycles and maximum productivity
- The right solution for applications ranging from compact inspection stations to demanding measurement systems

Increase safety and reduce energy consumption

Use the expertise and experience we have built up at Festo to comprehensively optimize machine safety and energy efficiency in your tire production. At Festo Didactic, we provide information, training, and consulting, and we can also offer comprehensive programs such as Energy Saving Services.



Machine safety

Where are the safety-critical points in your tire production process? And how easily can you equip these areas with safety technology?

Our free safety technology guide answers key questions about safety-related pneumatics and electrical systems. It outlines standards and guidelines and presents suitable solutions. Download it here:

→ www.festo.com/machinery-safety

For comprehensive safety validation, Festo Didactic offers targeted training and consulting solutions. Our trainers have extensive international experience and prepare you optimally for your specific safety tasks, with training optionally taking place at your site. Learn more at:

→ www.festo.com/didactic



Energy efficiency

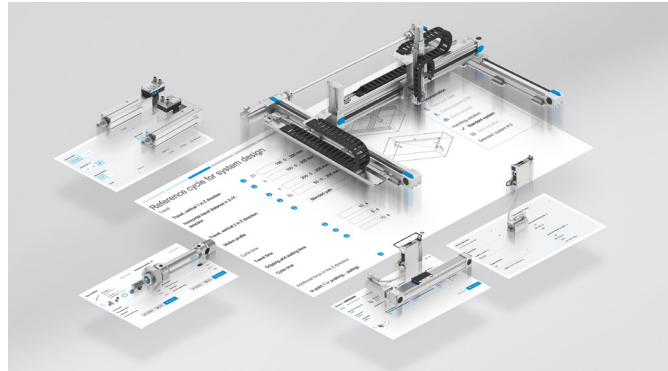
Give your production efficiency a decisive boost, from mixing to quality inspection. We support every area of production with energy-saving products and solutions, from engineering through operation.

Festo also offers a comprehensive approach to optimizing your compressed air systems with our Energy Saving Services. We identify potential savings, implement optimization measures, and increase process reliability at the same time, from compressed air generation to leak detection. Choose individual services or a complete package. Our experience shows that customers often achieve a return on investment within just a few months.

→ www.festo.com/energyefficiency

Accelerate your engineering and installation

As a solutions partner to the tire industry, we are committed to helping you increase productivity at every stage of the value chain. Our continuously evolving software and engineering tools make an important contribution to helping you achieve better results in less time, whether in engineering, commissioning, or maintenance.



Find the right solution faster with digital engineering tools

Do you want to compare pneumatic and electric systems and create a technically reliable system design? Festo engineering tools help you systematically evaluate requirements and design actuators for a perfect fit, from the initial design concept to final sizing.

→ **Festo engineering tools**

Digital support for selecting, designing, and validating drive solutions.

→ **Pneumatic simulation**

Simulates motion, forces, speeds, and cycle times.

→ **Electric Motion Sizing**

Sizes axes, motors, and mechanical components based on your application data.



Engineering can be this easy:

Configurator for process valves and process valve units

This configurator makes it easy to select the optimal solution, whether for manually operated or fully automated process valves. After you enter your parameters, the configurator immediately recommends suitable combinations for your specific application. Pricing and delivery time information is displayed instantly, providing full transparency and enabling an efficient procurement process. See for yourself at:

Butterfly valve unit

→ www.festo.com/kvza

Ball valve actuator unit

→ www.festo.com/kvzb

Angle seat valve

→ www.festo.com/vzxa



Festo Experience Center

Experience automation firsthand at the Festo Experience Center where product innovations and productivity potential are made visible. You can test strategies and software applications using sandbox environments, or you can apply modern drive and control solutions to your operational challenges in workshops with Festo experts.

→ www.festo.com/FEC



Fast commissioning of a complete drive solution:

Festo Automation Suite

The PC-based Festo Automation Suite combines parameterization, programming, and maintenance of Festo components in a single program. It also enables commissioning of the complete drive package, from the mechanical system to the controller. Ideal for making industrial automation simple, efficient, and seamless.

→ www.festo.com/automationsuite



Festo is a global player and an independent family-owned company with headquarters in Esslingen am Neckar, Germany. Festo has set standards in industrial automation technology and technical education ever since its establishment, thereby making a contribution to sustainable development of the environment, the economy and society.

The company supplies pneumatic and electrical automation technology to 300,000 customers of factory and process automation in over 35 industries. Digitalization, AI and the LifeTech sector with medical technology and laboratory automation are becoming increasingly important. The products and services are available in 176 countries. With about 20,600 employees in over 250 branch offices in around 60 countries worldwide, Festo achieved a turnover of around €3.33 billion in 2025. More than 8% of this turnover is invested in research and development. In this learning company, 1.5 % of turnover is invested in basic and further training.

Festo Didactic SE is a leading provider of technical education and training and offers its customers worldwide comprehensive digital and physical learning solutions in the industrial environment.

→ www.festo.com