

Press Kit

Tire Technology Expo, Hanover, 21. – 23. March 2023

Contents

SMC at the Tire Technology Expo 2023

Deluxe energy saver: New SMC Air Management System from SMC reduces compressed air consumption by up to 62 % – Air Management System

Space-saving communication thanks to the EX600-W and compact EXW1 Wireless SI-Units – EX600-W and EXW1 Series

Fast all-rounder: LESYH#G series electric slide table combines top performance with precision – LESYH#G Series

Controller for the best safety: JXCLF Series Stepper Motor Controller takes safety and control to a new level – JXCLF Series

SMC company profile

USB-stick with all press information and photos

Press Release

Egelsbach, March 2023

SMC at the Tire Technology Expo 2023: Innovative solutions for greater productivity and lower CO₂ emissions

Modern production methods, new kinds of materials and vehicle models in the changing mobility environments – all in focus for more sustainability: Tire Technology Expo 2023 once again demonstrates the innovative power of the tyre industry. From 21 to 23 March in Hanover, SMC will be demonstrating the decisive contribution made by suppliers with its latest in-house developments: At Europe's leading trade show for the tyre manufacturing industry, the specialist for electric and pneumatic automation will, for example, be presenting solutions for the optimum use of energy, increased communication capabilities and all-round productivity increases.

From mixing rooms and extrusion to calendaring and tyre construction, to vulcanisation and inspection: The tyre industry is dictated by a variety of production processes for which SMC offers numerous solutions. Visitors to Tire Technology Expo 2023 can find out about an exciting and highly innovative selection of these in Hall 21, Booth 7035 – and see for themselves the many years of industry expertise of the leading manufacturer, partner and solution provider for pneumatic and electric automation technology. Trade show highlights will include the new Air Management System, which reduces compressed air consumption by up to 62 %, the EX600-W Wireless SI-Unit and its even more compact counterpart, the EXW1, the JXCLF Stepper Motor Controller, and the LESYH#G Electric Slide Table. SMC will thereby illustrate how performance, process reliability, energy efficiency and CO₂ reduction can be harmonised optimally.

More climate protection and wireless communication

Compressed air is one of the most important, but also most expensive energy sources in the tyre industry. Avoiding unnecessary consumption is therefore always a worthwhile target – both for the wallet and the carbon footprint. Because of this, SMC has developed the Air Management System in connection sizes ¼ to 1 inch, which can reduce compressed air consumption by up to 62 %. The digital unit consists of a combination of regulator, hub and shut-off valve and, thanks to extensive monitoring of pressure, temperature and air feed flow rate, helps to quickly and accurately detect anomalies in consumption and automatically take action against them. In addition to this, it can manage without a PLC thanks to the integrated OPC UA Server and connect an additional IO-Link

device via an integrated IO-Link Master. In addition to IO-Link, the protocols EtherNet/IP™, PROFINET are available.

Dynamic applications in particular – especially frequent tool changes for robots, rotary tables or inside safety cells – benefit from wireless communication, thanks to the increased freedom of movement. Visitors to the SMC booth can find out how this can be implemented in a particularly simple and comprehensive way using the EX600-W Wireless SI-Unit and the compact EXW1 version. The licence-free ISM band (2.4 GHz) is used for encrypted communication via the network protocols EtherNet/IP™ and PROFINET (EX600-W) or CC-Link (EXW1). The radio link is established in just 250 ms, and in the event of a fault, the system switches to one of the 79 available channels within just 5 ms.

From peak performance to safe control

Whether for positioning, moving or aligning: E-drives are used for a wide variety of application cases in the tyre industry. In Hanover, SMC will show how top performance can be combined with maximum precision using the extended and improved LESYH#G series of electric slide tables. The drive with endless track linear guide is equipped with a battery-free absolute encoder, which means that no time-consuming reference runs are required after an emergency stop, for example. What's more, it also stands out thanks to an acceleration / deceleration of 10000 (horizontal) or 5000 mm/s² (vertical) or less, and a max. speed of 800 mm/s. What's more, it has lost motion of 0.1 mm or less and, thanks to the use of a ball screw, its positional reproducibility accuracy is ±0.01 mm. In addition to this, it can move a max. payload of 12 (horizontal) or 20 kg (vertical).

To ensure drives like the one above can do their job reliably, a suitable controller is also needed. With the JXCFL series, SMC will be presenting its new Stepper Motor Controller for communication via IO-Link, PROFINET, EtherCAT or EtherNet/IP™ and with STO and SS1 function at booth 7035. This series stands out in particular due to its high level of safety, with which the users meet the EN 61508 standards SIL 3 EN 62061 SIL CL 3, EN ISO 13849-1 Cat 3 PL e and EN 61800-5-2 STO, SS1. Instead of high costs for additional safety precautions, personnel benefit from improved safety at work thanks to the integrated function. Communication via IO-Link, PROFINET, EtherCAT or EtherNet/IP™ gives users access to a high level of data accessibility, remote control and diagnostic options for improved application control, among other benefits.

Trade visitors can find SMC at Stand 7035 in Hall 21 at the Tire Technology Expo 2023 in Hanover.



Figure 1:

The new SMC Air Management System in ¼ to 1-inch connection sizes, consists of a regulator, hub and shut-off valve, offers potential savings in compressed air consumption of up to 62 % thanks to the comprehensive monitoring of compression, temperature and air flow rate.

Photo: SMC Deutschland GmbH



Figure 2:

The EX600-W Series Wireless SI-Unit and the compact EXW1 Series (shown) provide, individually or in combination, secure radio transmission over distances of 10 m to 100 m respectively, for fast and easy tool changes thanks to a connection speed of 250 ms. They also use the network protocols EtherNet/IP™, PROFINET and CC-Link.

Photo: SMC Deutschland GmbH



Figure 3:

The LESYH#G series of electric slide tables combine speed, power and precision with safety and reliability, thanks to a battery-free absolute encoder. Together with a multitude of other advantages, it is one of the all-rounders among electric drives.

Photo: SMC Deutschland GmbH



Figure 4:

Thanks to the Safe Torque Off (STO) safety function and the Safe Stop 1 (SS1) function, the JXCLF Series Stepper Motor Controller ensures highly safe operation, primarily to protect personnel. The communication via IO-Link, PROFINET, EtherCAT or EtherNet/IP™ also makes it an ideal partner for Industry 4.0 applications.

Photo: SMC Deutschland GmbH

For more information, visit the SMC website at www.smc.de

Press Release

Egelsbach, March 2023

Deluxe energy saver: the new SMC Air Management System reduces compressed air consumption by up to 62 %

Pneumatic processes are standard practice in all sectors of industry. They also use a lot of energy, not least because compressed air is often wasted for various reasons. To remedy this situation and allow operators to benefit from other advantages, SMC has developed a new digital module for compressed air management with the Air Management System in ¼ to 1-inch connection sizes. Combining the regulator, hub and shut-off valve lets operators do more than simply monitor the pressure, temperature and flow of the air feed. By defining base parameters, operators can also make use of predictive maintenance and condition-based monitoring, ultimately reducing compressed air consumption by up to 62 %.

Compressed air is one of the most common energy sources in industry, and also one of the most expensive. That's because only around 10 % of the electricity used by an air compressor is supplied to the compressed air network in the form of effective output. This turns every cubic metre into a valuable asset and waste needs to be avoided. With this in mind, automation specialist SMC developed the new Air Management System in ¼ to 1-inch connection sizes. Above all, it helps to reduce compressed air consumption by up to 62 %. In this respect, the digital module particularly impresses with its monitoring of pressure, temperature and flow as well as the programmable automatic pressure reduction and shut-off. PROFINET or EtherNet/IP™ can be used to connect to higher-level controllers. The integrated OPC UA server also supports operation entirely without a PLC while still benefiting from the Air Management System. What's more, additional systems can be wirelessly integrated into the solution. This makes it quick to install and the system can be easily retrofitted, even in brownfield plants.

Savings for your wallet as well as the climate

Whether poorly controlled air consumption, undetected leaks or the lack of opportunity to optimise processes for standby and shut-off times: all are reasons that lead to unnecessary air consumption, which is expensive for companies and the environment. The newly developed Air Management System, a combination of regulator, hub and shut-off valve, solves these problems in a range of different ways and can generate savings in compressed air consumption of up to 62 %. That's

because the comprehensive monitoring of the air feed pressure, temperature and flow enables anomalies in consumption to be quickly and precisely identified and automatically counteracted.

This is thanks to the programmable pressure reduction and shut-off times based on preset machine conditions. These features allow the digital module to automatically respond to errors, for instance with a pressure reduction. Preset parameters also allow shut-off and standby times to be defined, which are automatically activated. This generates considerable energy savings as well as optimising the efficiency of processes – a clear benefit for the bottom line as well as the carbon footprint.

Predictive maintenance and easy integration

Besides the air flow, the Air Management System can also monitor pressure and temperature, which lets operators precisely determine base parameters for machinery and equipment over time, the high-definition data collected as a result creates a digital fingerprint of the optimum operating conditions. This also allows threshold values to be defined, which can be used to check the status of a plant and, if errors occur (e.g. due to leaks), maintenance measures can be planned or initiated. The comprehensive nature of the high-quality data also makes it possible to monitor the general status of the equipment. Potential failures are detected early on, giving operators the opportunity to respond quickly.

And the Air Management System is also easy to integrate, even in brownfield applications. In the wireless design, a master unit is physically connected to an industrial ethernet network and wirelessly connected to a remote unit. This does away with the need for time-consuming, space-hungry wiring, while the air piping is also not affected by the installation. The data transmission, which allows up to 10 wireless modules to be connected to a single Air Management System, is encrypted for secure transmission over a radius of 100 m. Communication with higher-level systems can either take place via the OPC UA open standard, which does not require a PLC, or the EtherNet/IP™ or PROFINET protocols. As an IO-Link master is integrated into all Air Management Systems, an additional IO-Link device can also be connected.

The comprehensive equipment, which includes protection class IP65 or IP67 depending on the type of regulator, gives operators from completely different categories of industry an optimum solution for their compressed air management in order to save energy, costs and, ultimately, CO₂. This is true no matter whether it is used in general manufacturing, the automotive, paper or food industries, or in machine tool manufacturing, electronics or life sciences.



Figure: The new SMC Air Management System in ¼ to 1-inch connection sizes comprised of a regulator, hub and shut-off valve offers potential savings in compressed air consumption of up to 62 % thanks to the comprehensive monitoring of pressure, temperature and flow.

Photo: SMC Deutschland GmbH

For more information, visit the SMC website at www.smc.de

Press Release

Egelsbach, March 2023

Space saving communication thanks to the compact, wireless SI units EX600-W and EXW1

For high productivity and efficiency, dynamic applications need maximum, unrestricted freedom of movement. In particular, lead wire connections in communication are a source of disruption in areas of frequent tool changes in robots, index tables or in applications in a safety cell, for instance. To establish a highly flexible as well as safe connection, SMC has extended the wireless SI unit EX600-W with the new compact EXW1 series. In addition to establishing a fast connection in just 250 ms, disruption-resistant transmission thanks to the use of the 2.4 GHz ISM frequency band and the integration of up to 127 remote modules, operators can save additional space and benefit from excellent compatibility with common communication protocols.

Whether for welding, gripping or handling: numerous applications demand speed and flexibility together with high process stability. This is where cables for integrating valve terminals or sensors into the higher-level controller can prove to be a real hurdle. SMC's portfolio already contained an efficient solution with the modular remote EX600-W module, which it has now comprehensively extended with the compact EXW1 type. Operators benefit from the high performance figures of the modular variant and can also combine the two as necessary. As the specialist for electrical and pneumatic automation, as always, SMC offers additional benefits when it comes to space and weight savings as well as the use of an additional communication protocol.

Happy and secure with wireless technology

Both the modular variation of the EX600-W series as well as the compact EXW1 series offer a range of benefits thanks to their wireless design: getting rid of the signal line eliminates downtimes caused by cable breaks, while the reduction in cables enables the selection of smaller and lower-cost cable drag chains. Plug-in contacts (e.g. for tool changes) are also entirely eliminated. All of this generates considerable cost savings as well as improving the carbon footprint by doing away with copper cables. At the same time, the range between the base module and the module with the compact EXW1 of 100 m, or 10 m with the modular EX600-W, is a particular advantage for long plants.

The license-free ISM band (2.4 GHz) used for transmission is not only free, it also makes welding applications in particular, which have a typical frequency of 1 GHz, less susceptible to errors. This is because the high currents used in this area cause electromagnetic fields that influence the signals transmitted via copper cables. In both variations, the remote connection is established in just 250 ms, which enables a rapid plant restart, particularly after a tool change. The wireless communication is secured by encrypting the transmitted data. In addition, certain channels can be specifically excluded by blacklisting, which prevents faults. If a fault should ever occur, frequency-hopping spread spectrum transmission means that another frequency is switched to within 5 ms – with 79 channels available for this purpose. What's more, the EXW1 series can be fitted with an optional external antenna. This enables communication even when the wireless (base) module is installed at a location with metal shielding (such as a control cabinet or safety cell).

Lightweights with strong selling points

While the modular EX600-W module already impressed with a low weight of just 300 g, the EXW1 series has seen a further volume and weight reduction by around 86% and 87% respectively (for the E-CON type). This benefits the moment of inertia of the moving axes, which enables higher accelerations and leads to shorter cycle times, while also allowing the supporting axis to move higher net payloads. In addition, the scalability of the modules provides a cost benefit: new instruments (such as sensors) can be retrospectively integrated into the EXW1 series and in combination with the EX600-W series (only WPN, WEN and WSV types).

The connection of the two series to the higher-level controller takes place via a stationary base unit using the conventional route to the PLC. Operators that decide on the EX600-W series can use the EtherNet/IP™ and PROFINET network protocols, while CC-Link is available for the EXW1 series. All three network protocols can be used in the combined modular and compact module. In this case, the communication speed and response time is that of the EX600-W series (250 kbps/5 ms); this is 1 Mbps/2 ms or 250 kbps/5 ms for the EXW1 series. What's more, an IO-Link master can also be wirelessly integrated, which allows IO-Link devices to be integrated and benefit from the wireless technology.



Figure: The wireless SI unit in the EX600-W series (left) has been extended with the compact EXW1 series (right). As a stand-alone solution or in combination, they enable secure wireless transmission over a distance of 10 m or 100 m, offer fast and easy tool change thanks to a connection speed of 250 ms and use the EtherNet/IP™, PROFINET and CC-Link network protocols.

Photo: SMC Deutschland GmbH

For more information, visit the SMC website at www.smc.de

Press Release

Egelsbach, March 2023

Fast all-rounder: the LESYH#G series electric slide table combines top performance with precision

From positioning to aligning and conveying to the press fit: electric drives keep the manufacturing industry moving. At the same time, the requirements in terms of process stability, capacity and the range of applications are constantly increasing. In order to continue to meet the growing demands of users in future, SMC has once again updated its LESYH series, which is well-established with numerous customers: with the LESYH#G extension, the automation specialist has developed an electric compact slide with ball screw drive in a highly rigid design that combines the advantages of a battery-free absolute encoder with high speed, precision and a compact design. Other features such as the extensive communication capabilities and the comprehensive areas of application make the solution an all-rounder when it comes to e-drives.

Whether in the automotive or electrical industry, mechanical engineering or general manufacturing: when workpieces need to be moved, positioned or aligned, users across all industries turn to various e-drives. This also includes SMC's well-known LESYH series, which has now been extensively upgraded and improved with the LESYH#G series. The electric compact slide with its endless track linear guide is a convincing combination of a battery-free absolute encoder and high performance in terms of speed, acceleration, payload and cycle time. It also scores with high positioning accuracy and a low reverse backlash, which enables very precise applications, offers various communication options and saves space thanks to its compact design.

Safe, fast and precise

Equipped with a battery-free absolute encoder, the new LESYH#G series is controlled by a single electrical controller. The drive position is stored even if the power supply is disrupted. As soon as power is restored, the drive can immediately resume its work from the last position without time-consuming reference runs. Moreover, since the absolute encoder does not require a battery, the ecological footprint and maintenance effort are reduced. The rapid restart is just one of the advantages in terms of speed. Because with an acceleration/deceleration of a maximum of 10000 (horizontal) or 5000 mm/s² (vertical) and a maximum speed of 800 mm/s, its performance in these two

areas has been increased by 200 % in each case compared to the existing series. In addition, a 39 % shorter cycle time of now only 0.37 s ensures an additional boost in productivity.

The LESYH#G series also scores when it comes to precision: the reverse backlash is a maximum of 0.1 mm and the positional reproducibility is ± 0.01 mm thanks to the use of a ball screw. Optionally, a D-M9 series signal generator from SMC can also be attached via an integrated mounting groove in order to be able to reliably check drive positions such as end position or intermediate positions. The ball screw drive also allows the electric compact slide to be used as a Z-axis for lifting and lowering. It can move a maximum payload of 12 kg horizontally (or a maximum of 20 kg vertically). Taken together, the high-precision drive enables users to cover a wide range of applications.

Powerful in communication and more

The high-performance stepper motor controllers of the JXC5H/6H and JXCEH/9H/PH series are available for the e-drive, with the help of which the aforementioned maximum acceleration and speed values can be achieved. The former are direct-input type (parallel I/O) for step data entry, where users can choose between "Easy Mode" for immediate use and "Normal Mode" for more detailed settings. The JXCEH/9H/PH series, which supports the EtherCAT® (JXCEH), EtherNet/IP™ (JXC9H) and PROFINET (JXCPH) communication protocols, are available for use as a fieldbus system.

Available in sizes 8, 16 and 25 and equipped with a stepper motor (24 VDC), the LESYH#G series electric compact slides can achieve strokes of 50, 75, 100 and 150 mm. Their compact and light design means the units weigh only 1.06 (size 8, stroke 50 mm) or a maximum of 6.22 kg (size 25, stroke 150 mm) – equipped with a lock, the weight increases by only 0.16 (size 8), 0.32 (size 16) and 0.61 kg (size 25).

Its comprehensive performance spectrum makes the LESYH#G series the perfect solution for a wide range of challenges: from pressing and press-fit applications with pushing operation of all kinds to positioning applications, including alignment, conveyance and pick-and-place, to high-speed path control applications.



Illustration: The LESYH#G series of electric compact slides combine speed, power and precision with safety and reliability thanks to a battery-free absolute encoder. Together with a multitude of other advantages, it is one of the all-rounders among electric drives.

Photo: SMC Deutschland GmbH

For more information, visit the SMC website at www.smc.de

Press Release

Egelsbach, March 2023

Controller for top level safety: The JXCLF Series Stepper Motor Controller takes safety and control to a new level

To ensure that electric actuators are able to perform safely across industry, the right controller is required for control and diagnostics. Restrictions here may have far-reaching consequences: from loss of performance to an unsafe working environment for employees. Using comprehensive communication to achieve a high level of control over applications and to guarantee the safety of machinery and people in equal measure, SMC has provided the JXCLF Stepper Motor Controller. This addition to the established JXC Series fulfils several safety standards thanks to safety functions like Safe Torque Off (STO) and SS1/-t operation, hits the mark with communication via IO-Link, PROFINET, EtherCAT and EtherNet/IP™ and it offers further advantages such as an LED status indicator.

Particularly for applications that harbour a certain degree of potential risk and are therefore equipped with safety equipment such as range sensors, emergency stop switches or safety PLCs, it is essential to have a controller that is optimised for such applications. The total package should at the same time offer capacity, communication and flexibility. This target has been achieved with the new JXCLF Series: The Stepper Motor Controller extends the successful JXC Series primarily in the area of safety, while also delivering an impressively high level of communication via IO-Link, PROFINET, EtherCAT or EtherNet/IP™ outstanding flexibility thanks to the writing of drive data based on the client's requirements, and compatibility with incremental or battery-free absolute encoders. The new solution is complemented by an LED status indicator, which provides an initial fault diagnosis, and regional technical support, which enables commissioning can be carried out directly by SMC field employees.

Safety first!

The new JXCLF Series has two safety functions: the Safe Torque Off (STO) function and the "Safe Stop 1" function (SS1, time-controlled). STO is a safety function that immediately prevents torque or power generating energy from being supplied to the motor. This function corresponds to the stop category 0 in accordance with EN 60204-1. If the motor is not yet at a standstill when the STO is activated, the motor will continue to coast until it slows to a standstill. The SS1 function (time-

controlled) brakes the motor and triggers the STO safety function after a time delay. The SS1 function corresponds to stop category 1 in accordance with EN 60201-1. The functions SS1 and STO are always performed consecutively.

Using the controllers, operators can thus meet the standards EN 61508 SIL 3, EN 62061 SIL CL 3, EN ISO 13849-1 cat. 3 PL e und EN 61800-5-2 STO, SS1.

All-round communication and customer-specific settings

Communication via IO-Link, PROFINET, EtherCAT or EtherNet/IP™ enables access to the controller data as well as remote control via industrial networks. This allows manufacturing processes and the device status to be better monitored, the degree of automation can be increased, and manipulation of the controller can be detected during the process and also blocked. This in turn achieves improved process stability. Remote maintenance and monitoring with the extensive use of data in real time creates the ideal conditions for Industry 4.0 applications.

Known as a blank controller, the JXCLF Series can be written to with the precise data of a drive with which it is to be combined and used. This gives operators added flexibility without the need to keep in stock any specific drive, which in turn reduces both storage outlay and costs. Operators can use the ACT Controller 2 or JXC-BCW programmes to write the data. These are available to download for free from the SMC website.

Service, insight and restart – fast and direct

Thanks to the support of SMC's technical field service, users save time and money and benefit from trouble-free commissioning. The attached LED status indicator, which provides information at a glance, also makes the initial fault diagnosis quick and trouble-free. The JXCLF Series is also compatible with incremental or battery-free absolute encoders. Above all, the latter permit the resumption of operations without a time-consuming reference run, and the absence of a battery not only reduces storage costs but is also kinder on the environment.



Illustration: Thanks to the Safety function Safe Torque Off (STO) and Safe Stop 1 (SS1), the JXCLF Series Stepper Motor Controller ensures extremely safe operation, above all to protect personnel. Communication via IO-Link, PROFINET, EtherCAT or EtherNet/IP™ also makes it the ideal partner for Industry 4.0 applications.

Photograph: SMC Deutschland GmbH

For more information, visit the SMC website at www.smc.de

Company Profile

About SMC Deutschland

Leading manufacturer, partner and solution provider for pneumatic and electrical automation technology – SMC Deutschland GmbH provides a comprehensive product range, from valves to temperature control devices, with more than 12,000 basic models and over 700,000 variations for all kinds of industrial sectors. The innovative automation solutions of the company based in Egelsbach near Frankfurt am Main can be found in the automotive, electric, photovoltaic, medical, packaging and food industries, among others, as well as in machine tool building, robotics and automation. SMC Deutschland generated a turnover of 185 million euros in the 2021/22 financial year and employs more than 735 people in Germany. In addition, a comprehensive expert service and distribution network is at the disposal of all customers.

SMC Deutschland GmbH is part of the SMC Corporation, which can be found in 83 countries worldwide with over 31 production locations. The global market leader for pneumatic automation technology, with a market share of 39 per cent, generated a turnover of 5.6 billion euros in the 2021/22 financial year and employs some 21,620 employees worldwide.