

Develop machines that provide greater flexibility and efficiency, and lower total cost of ownership.

Electric Linear Motion Control Solution

Achieve powerful, precision linear movements with electric actuator and servo motion control.



You need to design high-performance machines that meet exacting specifications, but offer the flexibility and efficiency to drive production improvement.

Whether you are developing machines for material handling, packaging or manufacturing, your customer demands a high-performance solution that offers the flexibility to meet changing production demands over an extended lifecycle. Reliability is essential to maximize availability and throughput, but machines must also be future-proofed and energy-efficient, not only to lower total cost of ownership, but also to support environmental sustainability goals.

“Machinery that helps companies be more agile to respond to consumer demands while reducing energy and labor costs is more apt to be considered when new machinery is being evaluated.”
– PPMI



“90% of manufacturers are aware of the 2050 net-zero target and nearly half were already committed to following through with concrete actions.”
– MAKE UK





In addition to providing precise and powerful linear movement, what if your motion control solution also helped increase the performance and flexibility of your machine, and reduced energy efficiency and total cost of ownership?

The Electric Linear Motion Control solution delivers precise and powerful linear movement.



Emerson's electric linear motion control solution incorporates the AVENTICS™ Series SPRA electric rod-style linear actuators and PACMotion™ servo motion control system. By providing a complete solution, this helps to simplify procurement, development and commissioning. Designed to provide advanced machine automation, the solution offers the highest levels of reliability and accuracy for assured uniformity and consistency of production. A high level of flexibility allows rapid line changeovers, enabling shorter production runs and increased machine utilization. Versatile electric actuators ensure the appropriate solution is provided for each application. When combined with high-speed servo motion control servo drives and motors delivering high-precision performance, this increases machine efficiency, enabling you to meet environmental sustainability targets.



“The ability to provide a complete high-speed electric linear motion control solution from a single source streamlines engineering development time.”
– Head of procurement at a global packaging machine manufacturer

Ensure flexibility to meet changing production requirements.

The flexibility provided by Emerson’s Electric Linear Motion Control solution enables you to design machines that allow the production of multiple product types, minimal changeover time and easy adaption over the machine’s life.

Flexibility ► p6

Increase machine efficiency to meet sustainability targets.

Through optimized linear motion control, Emerson’s Electric Linear Motion Control solution helps to increase machine efficiency and reduce energy consumption. This lowers the total cost of ownership for your customers and helps them meet their sustainability goals.

Efficiency ► p8



Design more FLEXIBLE machines for greater production agility.

Machines need to meet specific customer requirements, provide the flexibility to produce multiple product types, and meet changing production requirements over time. Extremely versatile electric actuators cover a wide range of application requirements to ensure the right selection for every individual machine. Motion control offering fast reconfiguration helps to minimize changeover time if producing different product types, while scalable solutions help cope with machine changes and different requirements over time as new generations of products are produced. This extends the life of machines and lowers the total cost of ownership.

What's your challenge?



"Machinery that helps companies be more agile to respond to consumer demands while reducing energy and labor costs is more apt to be considered when new machinery is being evaluated."

– PPMI

What's your opportunity?

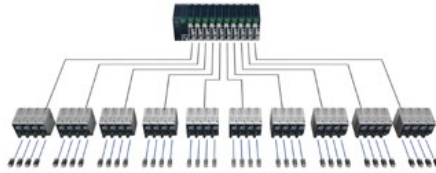


Packaging machines of a beverage company were equipped with mechanical cam discs. Each format change involved a complex, error-prone and time-consuming adaption. By upgrading to servo motion systems with electric cam discs, they can now convert the machines at the touch of a button.

Customized machines meet the demands of individual customers



Versatile electric actuators available in a broad range of shapes and sizes ensure the right solution for specific machine requirements. ▶ p10



Scalable motion control solution that is easy to design, develop and maintain. ▶ p12

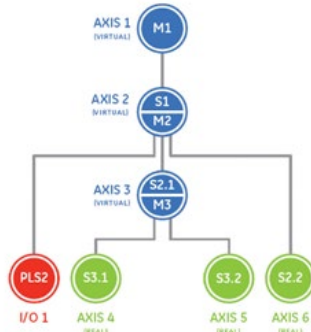


Multiple motor and drive options available to best fit your application. ▶ p13

Save engineering time and maintenance



Simple machine set-up, commissioning and upgrades reduces engineering and maintenance times. ▶ p10



Motion control electronic reconfiguration enables motion profiles to be changed on the fly for rapid line changeovers. ▶ p12

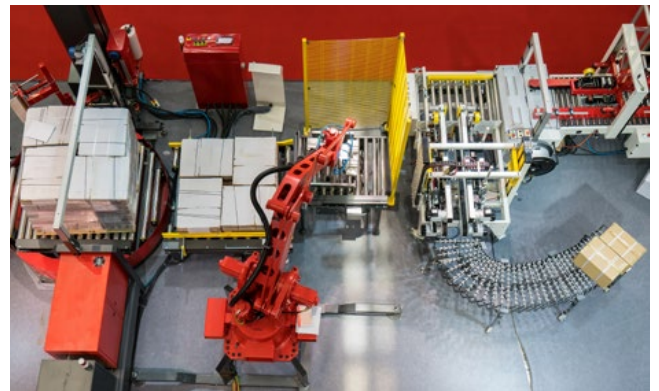


Single programming tool enables easy integration with PLC or PACSystems™ ▶ p12

Future-proofed design



Advanced motion control offers features that can be implemented now or in future generations of machines. ▶ p13



Scalable solutions with no performance loss ensure extended machine lifecycle. ▶ p13



Scan the QR code to discover how electric linear motion control solutions can improve application performance





Develop machines that support SUSTAINABILITY goals.

In addition to continued pressure to increase throughput and lower operating costs, manufacturers have ambitious environmental sustainability goals that require further reductions in energy consumption and scrappage. Emerson's extensive portfolio, including pneumatic and electric actuators and motion control solutions, ensures the appropriate solution is available to increase efficiency and reduce total cost of ownership. Extremely robust, reliable and versatile linear electric actuators help maximize machine reliability and uptime while reducing energy consumption. Precise control reduces energy consumption and ensures product quality that prevents material waste and scrappage; exceptional reliability and diagnostic functionality increases uptime and throughput; while scalability, flexibility and future-proofed technology help reduce total cost of ownership.

What's your challenge?



"90% of manufacturers are aware of the 2050 net-zero target and nearly half were already committed to following through with concrete actions."
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What's your opportunity?



Emerson's servo motion solution has enabled a significant improvement in product quality for a tire manufacturer, with a 12% decrease in rejects. Superfluous waste is prevented and plant efficiency has increased as required production quantities are achieved in a shorter time and consuming less energy.

Improve energy efficiency and sustainability



Versatile solutions enable the right technology to be selected for each application, maximizing energy efficiency and reducing operating costs. ▶ p11



Precise linear movements ensure uniform and consistent production, for assured quality and reduced waste. ▶ p11



Advanced servo control with high-precision movements reduces energy consumption. ▶ p13



In applications requiring deceleration of loads, braking energy can be reused by the electric drives to save energy. ▶ p13



Optimized motion controller settings that produce 'flat' acceleration ramps help to reduce energy consumption. This is simplified by commissioning software that minimizes oscillations and controller interventions. ▶ p13



Online sizing tools ensure correct product selection and prevent being deployment of oversized actuators that consume more energy. ▶ p15

Minimize total cost of ownership



Flexible solutions that extend the life of machines for lower total cost of ownership. ▶ p10



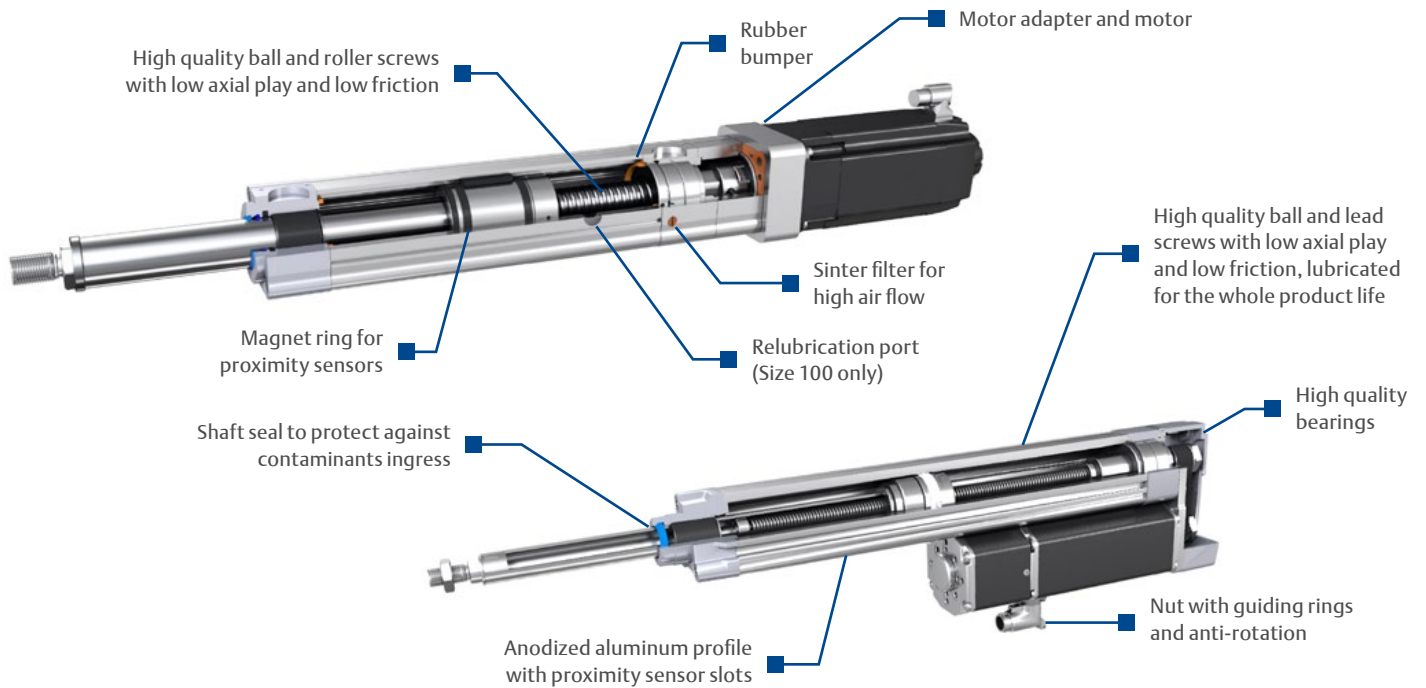
Robust and extremely reliable solutions that increase machine availability, for greater throughput and profitability. ▶ p10



Scan the QR code to discover how electric linear motion control solutions can improve application performance



The AVENTICS Series SPRA: Fast and powerful linear movement with high precision and efficiency



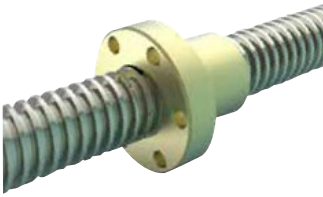
AVENTICS Series SPRA overview

The AVENTICS Series SPRA electric rod-style linear actuator is a cost-effective, high-performance solution, offering enhanced load capacity, accuracy and reliability. In addition to providing outstanding precision and repeatability, the Series SPRA is also extremely versatile and flexible, with a choice of three different screw technologies that allow implementation within a wide range of applications and can meet exacting application requirements. Compliance with the ISO-15552 standard, online selection tools and a wide range of mounting accessories ensures the appropriate implementation. [Select and configure your own SPRA electric actuator. Scan to learn more:](#)



Versatile screw technology

Lead screws



- High static force, withstands excessive vibration, operates quietly, and is cost-effective, and is ideally suited for self-locking applications

Precision rolled ball screws



- High-performance solution suitable for a wide range of applications, including those requiring high loads, precision and durability

Roller screws



- Suitable for very high-precision applications, heavy loads, high speed and harsh environments

Reduce engineering time

ISO 15552



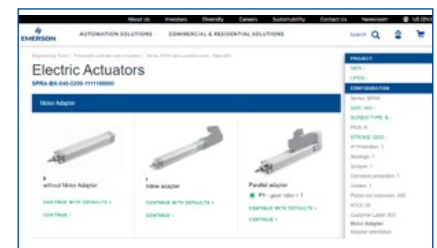
- Compliant with ISO 15552 cylinder standard, simplifying implementation and replacement

Online sizing software: MotionFinder



- MotionFinder helps you to select the appropriate electric actuator, providing possible solutions based on the application data provided and enabling comparison of different actuators

Online configuration tools



- Customize the cylinder selected with the MotionFinder
- Add accessories, such as mountings, sensors or the motor
- Download CAD files
- Buy online - no registration required

Application flexibility

Sizing options



- 2000 mm maximum stroke length
- Range of diameters from 32 mm to 100 mm

Easy integration



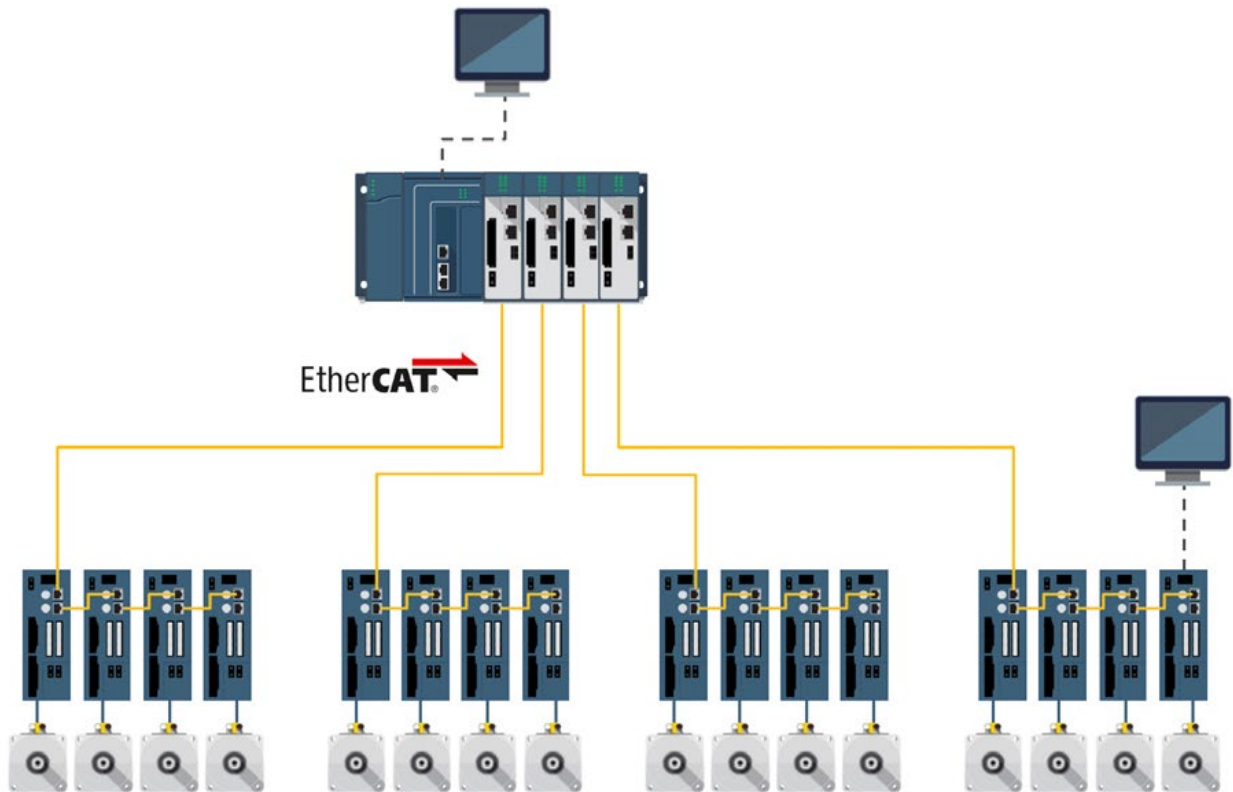
- Easy integration with PACMotion controllers and other servo motion control systems

Wide range of accessories and mountings



- Mounting motor in-line and parallel
- Mounting front/rear flange, feet, front/rear/swivel trunnion

The PACMotion system: Improve machine performance and efficiency



PACMotion servo solutions overview

The PACMotion system is an integrated motion and machine logic solution for advanced machine automation. This includes motion controller, servo motors, servo drives and motion configuration software, and is designed to provide easy integration and development of high-speed, high-precision applications, with synchronized motion of up to 40 coordinated axes. With a PACMotion system, many machine applications can be integrated into a single controller, reducing costs and increasing system flexibility. Motion systems can be scaled up without sacrificing performance, while easy expansion on the fly is possible without the need to redesign the architecture. Machine set-up, commissioning and upgrades are also simplified.

Scan to learn more:



High-speed servo motion control

PACMotion PMM345 controller



- Provides significant time and costs savings and greater precision and flexibility
- High-performance motion processing for greater productivity
- Accommodates up to four physical axes and one virtual axis
- Offers ease of integration, enhanced performance and simple path for migration

PACMotion servo drives and amplifiers



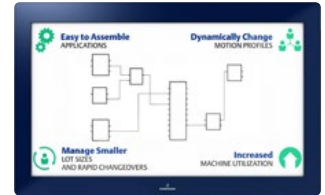
- Plug-and-play compatibility accelerates set-up and optimizes performance
- High bandwidth and velocity loops provide exceptional machine control
- Real-time performance feedback delivers superior accuracy

PACMotion brushless servo motors



- High acceleration rates provide superior machine cycle rates
- Brushless design, with low harmonic distortion and low cogging torque helps ensure efficient, smooth, low-maintenance operation
- Plug-and-play motor recognition and full-frequency auto-tuning result in fast deployment and ease-of-use

PAC Machine Edition servo software



- Single intuitive programming tool to deploy PLC logic, motion control, HMI and machine safety
- Open programming standards and protocols speed development and enhance interoperability
- Powerful diagnostics to debug issues and validate machine operation

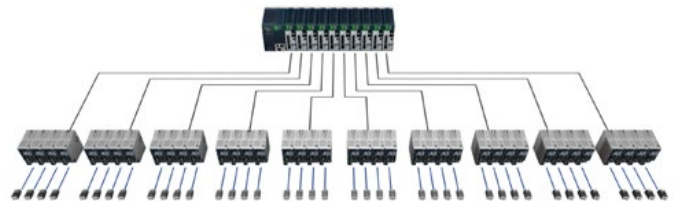
Easy integration and scalability

Seamless integration



- Motion module connects directly to the PLC backplane for faster development and lower costs
- Single programming environment for PLC logic, motion control, HMI and safety helps speed commissioning and simplify upgrades

Scalability



- Enables up to 40 synchronized servo axes and 10 virtual axes on a single PLC backplane
- Allows additional axes to be synchronized without changing the controller architecture
- Many machine applications can be integrated into a single controller, reducing costs and increasing system flexibility

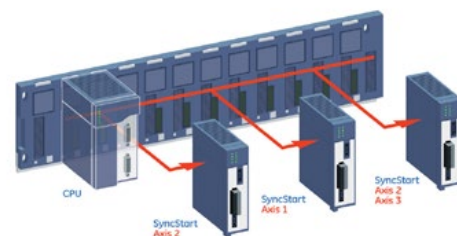
Flexible and precise

Flexibility



- Suitable for single point-to-point indexing to complex multi-axis machine control
- Embedded co-processor allows on the fly reconfiguration – changing master axes, camming or gearing profiles
- Optimize machine utilization with rapid line changeovers

Higher precision



- Faster settling to final motion positions and avoid material slippage at any point in the motion execution
- Simultaneous position loop control ensures precise positioning of all axes and elimination of phase errors
- 64-bit floating point precision and patented JerkFree technology enables microsecond accuracy

Analytics software: actionable insights for increased machine performance and energy efficiency



Monitoring parameters

- **Complete system** power and energy consumption
- **Drives** temperature, voltage, faults and warnings
- **Motors** temperature, current and torque
- **Actuators** position, velocity and force

Overall equipment effectiveness

- Availability – monitor log mileage, monitor temperature to support predictive maintenance
- Performance – monitor speed and acceleration to identify bottlenecks or interruptions
- Quality – monitor torque to identify irregularities that affect manufacturing processes

Efficiency and sustainability

- Reduce CO₂ footprint by monitoring power consumption
- Energy optimization by continuously improving the motion profile

Analytics software overview

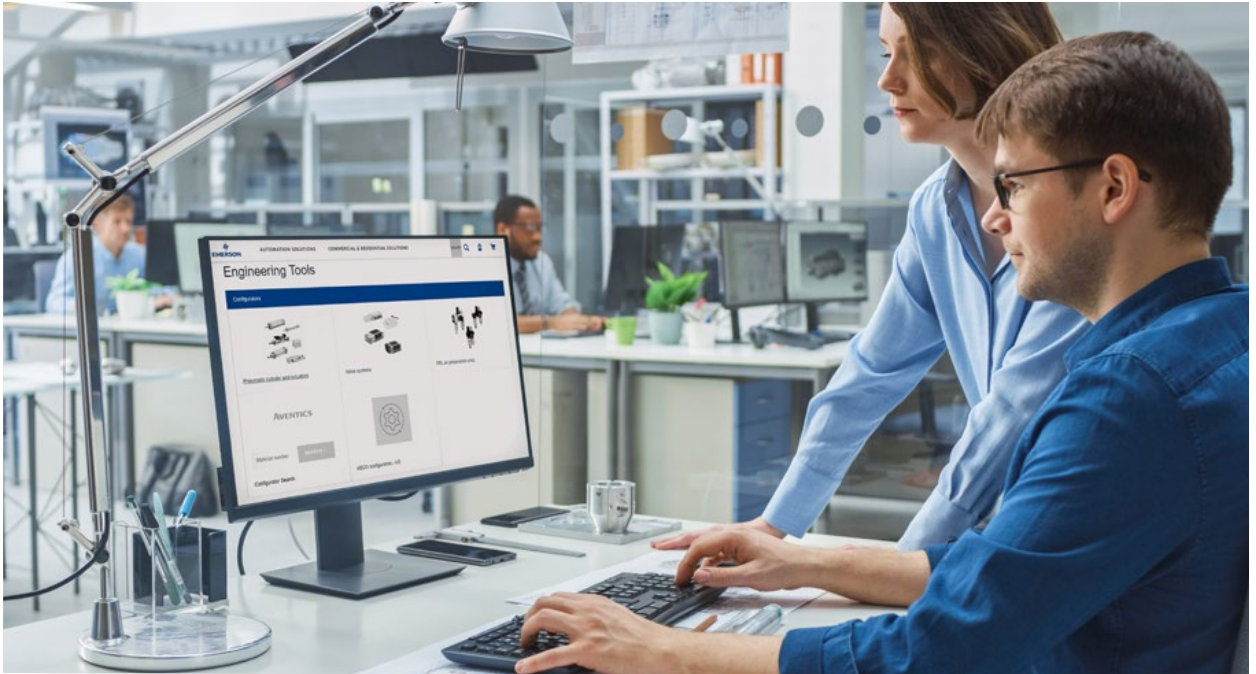
Emerson's industrial internet of things (IIoT) applications and analytical software enables manufacturers to gain access to actionable information that can help them make improvements in overall equipment effectiveness (OEE) and support their energy efficiency and sustainability goals. By monitoring a range of parameters it is possible to detect irregularities that affect machine performance and product quality, understand the

health and remaining service life of equipment to prevent unexpected downtime, gain insight into energy consumption and optimize the effect of improved motion profiles on energy efficiency.

[Scan to learn more:](#)



Online engineering tools: easily size and customize your linear motion control solution



Emerson's online store and digital customer experience incorporates user-friendly products finder, sizing and configurator tools, enabling quick and easy selection and customization of the appropriate electrical actuator for your linear motion control application.

- Online engineering tools immediately accessible 24/7, 365 days a year.
- Easy selection of accessories, mountings, motors and sensors.
- Online products finder helps you find the right actuator for your application within just a few clicks.
- Configurator tool to create customized products that match your application requirements.
- Set parameters in the configuration program to create a tailored product to your specification.
- Produce 3D models and download technical documents and CAD drawings.

Turnkey solutions: Reduce project complexity, cost and risk

Emerson can also develop complete integrated motion control solutions that greatly simplify your automation project. Our extensive portfolio and global engineering expertise enables us to build complete turnkey solutions, customized to your specific application.

An optimized solution tailored to your application can be provided already engineered, tested and ready to install, maximizing convenience and providing superior performance.

This offers both end users and original equipment manufacturers project cost and time saving, and allows you to focus on where you can add the most value.

- Project teams are skilled in understanding and capturing your application requirements.
- Best-in-class products help maximize performance, reduce maintenance and minimize lifecycle costs.
- Solutions fully designed, engineered and tested by Emerson are ready to install.

Design high-performance machines
that meet the operational targets of
your customers.



AVENTICS™

With Emerson's electric linear motion control solution, you can enhance the flexibility, energy efficiency and operational performance of your machine.

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