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Intelligent Magnetic Gripping Revolutionizes Ferrous Automation Applications

These grippers reduce end-effector size, lower cycle time, ensure safety, and offer new solutions.

[Festo](#) reports surging interest in the [Electric Series](#) (E-Series) of intelligent magnetic grippers from [Magswitch](#), Lafayette, Colorado. Festo has been a Magswitch distribution partner since 2019.

Magswitch E-Series intelligent magnetic grippers are not electromagnets nor are they EPMs (electropermanent magnets). Magswitch E-Series units contain proprietary switching technology that enables reduced energy consumption, faster actuation, intelligent magnetic gripping, part correct/part incorrect feedback capabilities, and two to three times the holding forces of any similarly sized electromagnet or electropermanent magnet. Pole shoes that shape the magnetic field are offered in standard and custom configurations to ensure the correct grip for the application.

Magswitch E-Series intelligent grippers are smaller than electromagnets, which reduces the size of end of arm tools. With less weight and size, designers are frequently able to use a smaller robot, thus lowering capital cost as well as reducing footprint.

E-Series magnetic grippers are sought after in stamping applications, including progressive dies. In a stamping operation, intelligent variable field output can separate a single blank from a pile and then identify whether the blank is the correct thickness. These units can identify and grip individual blanks down to .6 mm in thickness.

In resistance spot welding applications, E-Series units provide single-sided gripping technology, eliminating the need for clamps. With clamps removed, the spot weld gun is provided simpler access to the product. With a rapid on/off actuation time of 250 milliseconds, the E-Series lowers cycle time compared to clamps.

E-Series intelligent magnetic grippers can be used in many other applications, including automotive assembly, white goods manufacturing, heavy industrial manufacturing, electronic assembly, bin picking, measuring, checking, ergonomic lift-assist, and collaborative cells.

“We are just at the beginning of envisioning the range of possibilities for intelligent magnetic gripping,” said Josh Bond, Automotive Industry Segment Specialist, Festo. Bond gave two examples of novel uses of intelligent magnetic gripping. In one unexpected application, an E-Series unit detects the presence of a welded bolt inside an automotive B Pillar and alerts if the bolt is missing. The solution was low cost and saves the manufacturer a considerable amount in rework from the early detection of missing bolts.

E-Series units with non-marring polymer offsets are being used for safe, fast, and effective gripping of A-

Class surfaces without blemishing those surfaces. The magnet uses a small amount of force to gently attach to, not bump, the surface, thus preserving the integrity of the finish. Once the part is gripped and separated from adjacent parts, the tool can be switched to full power for maximum performance. With the E-Series proprietary switching reducing magnetism to zero in the off state, ferrous particles fall off the gripper, ensuring a clean surface.

E-Series units feature world-class weight-to-force ratios and deliver breakaway forces from ounces to tons. They operate on 24 volts DC with serial communication protocols. There are options for control via any Ethernet protocol.

For more information on Festo/Magswitch intelligent magnetic gripping solutions write to magswitch.us@festo.com. Festo serves as a single source for automated gripping, including pneumatic and electric mechanical grippers, vacuum, adaptive, and magnetic in partnership with Magswitch. For the full range of Festo solutions visit <http://www.festo.ca>.

Press Images



Cobot E30

Magswitch E-Series intelligent magnetic grippers reduce end-effector size, lower cycle time, ensure safety, and offer new solutions. Shown here is the CoBot SmartMagGrip E30 for collaborative robotic applications. Magswitch E-Series ...

Festo Canada

Festo at a glance

Festo, the world's leading supplier of automation technology and technical education, is deploying its products and services to meet the challenges of digitization and smart production. Founded in 1925, the family-owned company based in Esslingen, Germany supports a wide range of needs for advanced solutions in factory and process automation. Festo Canada, celebrating its 50th anniversary this year, has been continuously elevating the state of manufacturing in this country with innovative products, optimized motion control solutions and unrivalled support. Globally, some 300,000 customers put their trust in the company's pneumatic and electric drive products and technology. In addition, Festo Didactic provides state-of-the-art training equipment and educational programs for industrial companies and educational institutions – about 56,000 customers worldwide. The Festo Group registered sales of €3.45 billion in 2024 financial year and is represented worldwide at 250 locations with about 20,600 employees. More than 8% of its annual turnover is invested in research and development.