

Temposonics®

Magnetostrictive Linear-Position Sensors



Sense and Stack

551018 A

Case Study



The Accustak is an automated downstacker that can handle 200 sheets/minute with four to eight new setups per shift.

MTS Sensors Provide the Control

Original equipment manufacturer, Alliance Machine Systems was looking for a way to fully automate its existing downstacking machine for the paperboard packaging industry with the goal of reducing set-up time in the field. To do this, the company required a position sensor that provided quick, on-the-fly measurements and feedback. By choosing a magnetostrictive position sensor by MTS Temposonics® Linear-Position Sensors, Alliance was able to completely automate the machine and reduce set-up time by 66 percent.

“Our goal was to reduce set-up time,” said Alliance Electrical Engineer, Lynn Vershum. “Our original set-up time was three minutes and now it is approximately one minute. The (MTS) sensor helped us do that.” This is a significant achievement, because when the customer is producing 200 sheets per minute with eight to ten new set-ups per shift, the numbers add up quickly.

Alliance Machine Systems International LLC is a manufacturer of material handling equipment designed to maximize finishing line profitability in the corrugated cardboard industry. Operating some 55,000 square feet of manufacturing and warehousing space with more than 139 employees, Spokane, Washington-based Alliance provides a global source of innovative products and services to enhance the efficiency and performance of the corrugated industry. Accustak® is one of its main products, a fully automatic downstacker for a rotary die cutter. The Accustak is dedicated to high-speed, high-quality bundle or stack building with fully automated setups that produce faster run speeds and reliable downstacking for paperboard packaging.

MTS Sensors Division provides highly accurate linear-position sensors that enable manufacturers automate processes thereby increasing productivity. Alliance chose to integrate an MTS Temposonics sensor to meet key manufacturing goals and ultimately increase productivity and machine capability.

Alliance originally used an encoder with a belt system to sense the position of a single belt at a time. The encoder could not monitor all of the belts simultaneously and had a moving head with an inductive sensor. The moving head had to count each trim belt to determine its position. This meant it took longer to move trim belts to position thus slowing the set-up and assembly process. Alliance needed to find a sensor that was (physically) flexible enough to wrap around the Accustak machine while taking numerous measurements quickly and simultaneously.

The Accustak also required a sensor that would interface with Alliance's existing fieldbus protocol, specifically a device that could be directly linked with Profibus. This step would eliminate the need for external interface modules, thereby reducing footprint and overall cost. In addition, the sensor needed to be extremely durable and flexible in order to withstand the harsh conditions of a typical packaging plant.

“Our equipment is designed to last a long time with minimal service,” Vershum said. “MTS products also met those standards, which made integrating the two a natural choice.”

All specifications are subject to change. Please contact MTS for specifications that are critical to your needs.

The Solution

To help accommodate the complete automation of the Accustak, Alliance selected an MTS Temposonics R-Series flexible position sensor. MTS Systems Corporation is the inventor of magnetostrictive linear displacement technology and the world leader in position sensors.



The Accustak automated downstacker with an integrated MTS Temposonics Sensor.

"MTS manufactures accurate, reliable and durable sensors, which is important for our machines," continued Vershum. "Because the MTS Sensor is free of moving parts, it is less susceptible to failure."

The R-Series Sensor provides a 150" sensing element that is flexible and durable. It is capable of sensing 15 magnet positions simultaneously, thus meeting Alliance's need for rapid multiple position measurement. With the fully automated system. The operator enters simple product parameters the values and the machine calculates the default trim belt positions. The trim belts are automatically set up with an adjuster using trim belt position feedback from the MTS transducer. The linear position sensor feeds back the position of the 12 to 15 trim belts immediately and simultaneously. The operator can fine-tune the setup and save the setting so the machine will know how to set up the next time the order is run. As the material comes out of the die cutter, two or three trim belts grab the material and transition it from the rotary die cutter to the Accustak. For that reason, the trim belt position is critical to the process. Accurate and repeatable setups of the trim belts produce faster runs with fewer jams and decrease down time — resulting in higher production and a better return for the customer.

In addition, the R-Series Sensor is interfaced directly with a Siemens controller; thereby eliminating the need for external interface modules.

Conclusion

MTS' Temposonics R-Series Sensor was able to add flexibility and durability to the Accustak machine while enabling it to become fully automated. The sensor's compatibility with existing fieldbus networks provided fast, simultaneous measurements and ultimately contributed to reduced set-up time, cost and space savings.

"We are able to produce higher run speeds with improved quality bundles," Vershum concluded. "We chose an MTS Sensor because it offered the best price and performance in the market."

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All Temposonics sensors are covered by US patent number 5,545,984.

Additional patents are pending.

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