

Food Industry

Control Systems

**Improving Food
Processing Efficiency**



improving performance

ACSI is helping the Food Industry with everything from preparation to processing to packaging and inspection. We utilize the newest technology to automate control systems for sampling, adjustments, and portioning control in order to optimize your operation. As a result, our customers are seeing improved reporting, less waste, reduced downtime, improved product quality, and material savings. All of these benefits ultimately result in increased throughput and maximized profit.

Our control systems can integrate the following types of equipment and systems:

Conveyor Systems

Accumulation Systems

Diverters & Rejection Systems

Sorting, Routing & Barcode Systems

Quality / Open Flap Reject Systems

Merging & Combining Systems

Servo Systems - Positioning, Batching, Pitching

Collating & Closing Systems

Robotic Systems

Profile Systems



conveyor systems

ACSI controls conveyor motors using simple on/off control and speed control. Operation of all conveyors is integrated in order to ensure the smooth transportation of product from point A to point B. Starting and stopping is staggered, and interlocks ensure material is not delivered to a stopped conveyor.

Our control systems can utilize digital I/O and communications networks to interface with third party machines/devices, including

Case Tapers

Closing Machines

Metal Check Machines

Check Weighers

Coders

accumulation systems

Effective accumulation systems allow product to be accumulated in the event of a downstream stoppage. As a result, the upline process may continue without interruption (depending on the length of stoppage). ACSI's systems act as buffers to ensure product is correctly accumulated.

The accumulation sections are typically split by means of pneumatically-controlled stop blades (or gates), and photoelectric cells (PEC) are used to create the timing and input information necessary.



diverters & rejection systems

Diverters and rejection systems are typically comprised of simple PEC-triggered, pneumatically-operated, solenoid-driven actuators that alter the product flow based on situations elsewhere on the system; however, more sophisticated systems can also be used for this purpose. For example, ACSI has the capability to use barcodes to identify a single lane of product then choose the relevant packing lane. Both simple and complex systems can be controlled with ACSI's customized diverter unit software to ensure seamless integration into your overall system.

ACSI also employs several other production-related algorithms for speed control as well as product balancing. The advanced control solutions have a total of 512 different running permutations, designed to maximize running performance and efficiency, and ultimately result in energy savings for you.

sorting & barcode systems

Information for sorting systems is typically derived from barcode readers. ACSI control systems interface barcode readers using both serial and Ethernet communication. The information from the barcode is most often used to identify the product then make an immediate decision on the desired route.

ACSI systems interface with anything from a simple diverter arm to a more complicated "cam track" diversion system, or a full blown tracking system. In more sophisticated systems, the product is checked against credit and payment details held on a database, dynamically weighed to ensure that the payment corresponds to the package, then tracked through a belt-driven conveyor system and sorted to its correct distribution leg.



quality/open flap reject systems

ACSI control systems can incorporate open flap detection. These systems inspect the finished boxed product to ensure that each product has been correctly sealed. ACSI has successfully integrated vision-based systems and PEC-type systems. In many cases, our customers have identified ACSI as a company that could assist with proven problematic areas that other integrators had failed to resolve. Our flap detection systems have been proven to reduce palletizer down time by approximately 10%, which instantly translates into savings for your plant.

Rejection is accomplished with a high pressure air blast or a pneumatically-operated rejecting actuator, which is timed through the PLC using either PEC or encoder as the timing input. ACSI reject systems can also incorporate a servo-driven, pneumatically-driven, or inverter-driven (VSD) conveyors.

Vision systems have been used to confirm the printing and quality (shape) of the product falls within specified tolerance. Color systems can also check the quality of print - although the amount of processing time required for this can impede on production throughput rates. Basic shape systems have been installed to handle in excess of 180 products per minute.



merging/combining systems

These systems are used where it is necessary to get the production from two or more infeed lanes into a lesser number of outfeed lanes (normally one). ACSI has installed various merging systems from simple to stop blade type merging to more complicated dynamic systems. In all cases, speed is adjusted to suit so that the upstream devices are not overfed. PECs and encoders are typically used for timing inputs.

servo systems

Positioning, Batching, and Pitching

ACSI has developed numerous applications employing Servo motors, ranging from machine-type systems to simple, pre-defined indexing systems to complete motion-controlled systems. Indexing systems are typically controlled via digital I/O but can equally be controlled over communications networks, such as DeviceNet or ControlNet.

Our Batching/Pitching systems are capable of bringing rows together and releasing in a slug, or splitting batched product and releasing rows at regular intervals from an indexing process.

ACSI understands your need to maintain a desired product flow; therefore, our systems

- can automatically refeed product into the system during periods of lower throughput, or upline stoppages.
- can be used to separate indexed or erratically placed products into evenly spaced rows and fed to downstream equipment
- can interface with other software to help technicians set up critical parameters without programming knowledge

profile systems

ACSI has developed controls for profile systems to ensure the quality of a product prior to continuing through a process. Because incomplete or poor-quality product can interfere with production and possibly damage equipment, it is essential to have tight tolerance and minimum downtime for the profile system.

The product profile is traced using laser displacement sensors then sampled at a pre-determined interval. A 2-dimensional profile of the product is then recorded in a SQL database, and the product is tracked through the system and rejected if necessary. The SQL database allows for simple reporting for your tracking needs.

collating & closing systems

ACSI develops custom controls for unique collating systems. These systems may incorporate a combination of normal inverter-driven motors, solenoids, and indexing servo systems to collate and index a product prior to packaging.

Closing systems may be simple or may use random infeed "smart belt" systems to meter product into the flights of the machine without damaging the product. Lids can be controlled and applied to a box or other container. Each product can then be checked for a good seal then either rejected if not satisfactory or weighed and transferred to the next station.



robotic systems

ACSI has developed several applications involving the integration of a robot. Many projects have incorporated the system control (PLC) and HMI interfaces with a digital interface to the robotic systems. These systems can be used in loading/unloading applications, collating, batching, and material transportation systems.