ABCO AUTOMATION

CASE STUDY

PRESSED PRODUCT MANUFACTURING SYSEM

FOR A LEADING

WATER, HYGIENE, AND ENERGY TECHNOLOGIES COMPANY

PRESSED PRODUCT MANUFACTURING SYSTEM

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INTRODUCTION

Over thirty years ago, a large global provider of water, hygiene, and energy technologies developed a solid chemistry product for warewashing. This new product established advanced standards for control, safety, convenience, and low-use cost in the food service industry. With this product, the company demonstrated that solid chemicals provide superior performance while reducing packaging; transportation and storage costs; and water and energy use. In addition, the use of solid chemicals also improved worker safety, reduced spills, and ensured proper dosing and dilution.

To further develop its solid chemistry products, the company recognized that if they changed their current extrusion production process, then they could perfect the combination of ingredients as well as how the detergent is blended. As part of the new production process, the company also wanted to automate the production line. It would not only produce a solid detergent block but wrap, mark, label, and weigh the block. The company contacted one of its suppliers, ABCO Automation, for a solution.

APPROACH

ABCO designed and built a Pressed Product Manufacturing system that met all the criteria for a start-to-finish detergent block production line. The system solution included: a powder dispensing system, hydraulic press system, indexing dial, boat conveyor system, as well as a wrapping, marking, and labeling system.

ABCO integrated an auger filling system to dispense the correct amount of cleaning powder into forming molds. A weigh bucket system with collector and drop gate ensures that the correct amount of powder is dispensed into the mold. When the mold cavities are full, an indexing dial rotates the product molds to the powder pressing station. ABCO added a hydraulic power unit and hydraulic cylinder to compress the powder into solid blocks with a job-specified shape. ABCO chose an Programmable Automation Controller (PAC) for controlling and monitoring the entire system.

At the block removal station, ABCO utilized a pneumatic cylinder to raise plastic boats or carriers from the conveyor to the block molds. A hydraulic cylinder retracts the lower support plate, then a second hydraulic cylinder extends push rods down into the forming molds and pushes the pressed blocks out onto the plastic boats. Once loaded with product, the boats lower back onto the conveyor, where they exit the Pressed Product Manufacturing line in a single file.

An ABCO-designed and built deboater machine removes the pressed block from the boat, and the product block moves along a custom conveyor into the Benchmark infeed wrapping system. As part of the design, ABCO added servo motors and sensors to accurately space the blocks before they enter the wrapping system.

The seal wrapper automatically applies a film around each pressed block while a laser processing module laser cuts a U-shaped pattern into the wrapped film under the label area. This perforation enables the user to pull up on the label and remove/place the block without touching the detergent.

ABCO integrated an in-line checkweigh system with reject station to check the weight of the individual detergent block, making sure the block adheres to specifications. The production process is finished when a label applicator applies a product label to the detergent block before the block heads off to the case packing area.

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COMPONENTS

- Block press machine
- ABCO access platform with safety guarding
- Auger filling system
- Hydraulic power system
- Block press control system
- ABCO conveying system
- Product boats (carriers)
- Check-weigh infeed system
- ABCO pinch belt deboater machine
- Wrapping infeed system
- Wrapping system
- Laser processing module
- In-line checkweigh system
- Label applicator
- Allen Bradley control system

AUTOMATION SYSTEM BENEFITS

- Turnkey system ensures all components work together from the onset
- ABCO single contact point for design, build, installation, and startup of machines keeps the project on track, on budget, and online
- ABCO after-startup support ensures continual operations
- Fully automated operations maintain product standards, increase throughput, and reduce labor
- Centralized control station consolidates setup, alarm, maintenance, and operational functions
- Customized solution meets all production process criteria and allows specialized equipment to be integrated into process, such as a custom conveyor with catch pans, ventilation tie-ins, and stainless steel enclosure with glass doors.

PRODUCT BENEFITS

- Creates a consistent product
- Improves worker safety, solid blocks are safer to handle
- Maximizes product consumption, leaving no chemicals unused
- Minimizes impact on landfills, less packaging to throw away
- Decreases transportation and storage costs
- Reduces water and energy usage

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