

Case Study: Building Products Manufacturer



Quad Plus®



Manufacturer automates changeover process to increase efficiency.

Objective

- Automate product changeovers on a building product manufacturing line.

Solutions

- Implemented 3 servo axis motors driving two adjustable pin stop pantographs and one slitter knife pantograph.
- Updated firmware on drives to allow integration with existing PLC.
- Interpreted recipe data and programmed drives to automate pantographs and solenoids adjustments.
- Two engineers remained onsite throughout the upgrade and commissioning process.

Results/Benefits

- The manufacturer is experiencing significantly reduced downtime between product changeovers.
- The labor-intensive process of changing active products has been eliminated.
- The manufacturer's machine now automatically adjusts for the varying lengths and widths of different products with the push of a button.
- Onsite support, which minimized production downtime during the upgrade, gave the manufacturer the confidence they needed to complete a necessary upgrade.

Background

A building products manufacturer needed to reduce line downtime and increase efficiency by eliminating production interruptions during product changeovers. Additionally, any upgrades had to be completed on a strict project timeline to minimize the loss of production time. The building product machine was originally programmed so each zone would receive recipe data about the active product being run in the previous zone, but required a section shut down when an active product change occurred. An operator had to lock out air and electrical, enter the zone, and manually adjust each pantograph to fit the new product specifications.

Quad Plus Solution

To automate the changeover process and eliminate manual adjustments, three critical updates were performed: new hardware was installed including three servo drives and distributed IO, a specific firmware version was installed on the new drives so they could communicate with the existing PLC, and programming was needed to automate the new section of the machine.

The first part of the solution was to implement three new axis servo drives that controlled two adjustable pin stop pantographs along with one slitter knives pantograph. Once installed, the drives needed to be configured and added to the manufacturer's existing PLC.

In order to accomplish this task, the new servo drives required a specific firmware version that is compatible with the existing PLC. The firmware was selected specifically not to exceed the PLC's firmware compatibility.

Quad Plus engineers had to interpret the recipe data for product specifications (length and width of each board) as the active product approached this section of the machine. The PLC commanded the servos to drive each pantograph to a specific set-point based on board width. At any point, if the pantographs became out of position within a given tolerance and time frame, an automatic zone shut down was programmed to minimize product waste. The pinstops, which are controlled by the distributed IO, had to be completely automated to evenly space each board of the active product.

Quad Plus engineers were able to minimize the downtime during commissioning by remaining onsite around the clock until start-up was complete. They also stayed during production trials to ensure that every product ran smoothly. Because of Quad Plus's commitment to quality upgrades and strict adherence to project timelines, the manufacturer regained the losses within one week of using the new system.

Now, with new servo drives, integration, and programming, the machine has the capacity to run different products, all varying in lengths and widths, with the push of a button. Manual adjustments and changeover downtimes are no longer a concern.