

PROJECT BRIEF

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Project Number: CVK060201

Customer: Con-Vey Keystone - Roseburg, OR

Concept Systems' Contact: Jim Ford

Project Name: RFP Inline Slitter and Sanding

Description: The objective of the systems is to slit (or cut) paper overlay once applied and bonded to particle board panels. The paper overlay is applied and bonded directly upstream from the slitter stations. The panels enter the system individually and become continuous once the overlay has bonded to the panels. This then requires that the panels again be singulated via the cutting of the overlay between the panels. As the panels enter the slitter belt, the gap between the panels is detected and registered by the motion system. Once the detected gap is within the slitting window, the slitter engages to cut the paper and thus separating the panels. There is a second slitter that engages upon larger gaps to catch the trailing end of the panels. Both slitters and the belt the panels feed on are controlled via servo motors and motion control. This allows for precise gap detection, position control and an optimal cutting cycle.

After the panels leave the cutting station, they progress lineally until reaching the sanding station. Once at the sanding station the panels drop onto a lug chain that cycle to pass the panels through the sanders. The sanders clean up any excess paper left by the slitters. The lug chain is controlled via an AC Drive and uses the drives integrated profiler functionality to provide a very efficient and repeatable cycle. The cycle is initiated by an external sensor and tracked via encoder feedback. The profile is configured to start slowly to pick up the panel, then accelerating to the sanding speed, maintaining a constant speed through the Sanders and then finally decelerating to a slow speed to place the panel on the outfeed conveyor. The cycle is very efficient but soft enough to ensure the panels are damaged by the lug chain.



Results:

- Reduced Operator Interaction – previously the overlay was cut manually.
- Repeatable Control – the inherent servo and drive efficiency provides for very repeatable cycle control.
- Simple and Flexible – because the system is software based, it is very simple and provides for flexibility based on future products.

Services Provided:

- Controls Design and Document
- Motion, PLC and HMI Programming
- Drives Startup and Commissioning
- System Startup and Commissioning

Technologies/Platforms Used:

- Rockwell Software Logix5000 with integrated Motion Programming
- SERCOS Communications Protocol (Motion)
- EtherNet/IP Communications Protocol (Drives)
- Allen-Bradley ControlLogix Programmable Controller (PLC)
- Allen-Bradley Ultra3000 Motion Controller
- Allen-Bradley PowerFlex700 AC Drives
- Wonderware Operator Interface (HMI)