

APPLICATION PROFILE

Narrow Web Label Printer

An Integrated Architecture solution that delivers innovation and high throughput for machine builders and their customers

Advantages

- The Integrated Architecture™ system reduces programming time, improves information flow between components, and brings unmatched flexibility to machine design
- RSLogix™5000 programming software is the only software required to program both motion and sequential control
- Add-on Instructions (AOIs) for roll diameter calculation and print registration ease the implementation of the unwind, infeed, print, outfeed, converting and rewind press sections

The Challenge:

Flexography, or flexo, gets its name from the requirement that the printing plate surface maintain contact with the web (paper, nonwovens or film), which it does by being flexible. The method is commonly used on flexible packaging, cartons, shopping bags, food and hygiene bags, self-adhesive labels and wallpaper.

A multi-station flexographic printing press is designed to precisely apply water-based or ultraviolet (UV) ink droplets from an anilox roll to a plate roll containing the image. The image is then transported to the substrate via contact with the impression roll. The ability to apply a dot of ink precisely onto another dot of ink is what defines color print registration and determines whether something is in focus to the human eye. It's an important measure of quality on the finished film, paper or carton.



Increasing competitive and market pressures are causing converters to demand more flexibility, higher productivity, better yields and less waste from their converting machinery investments. To meet changing styles and packaging requirements, end users are seeking machines with interchangeable sections and variable-size print roll sleeves.

Additional end user requirements:

- Compensation for gear-marking generated by the machine's mechanics
- Eliminating pull-out, as print registration must be held during speed changes of the web
- Registry with and without electronic registration correction (ERC)
- Re-registration of a pre-printed web for inseting and additional color application
- Compensating for printing long and short due to web variation
- Constant sampling and trending of the error in the web for ongoing correction
- Web guide for cross register control in certain applications
- Servo positioning the rolls to archive setup axis data for future jobs

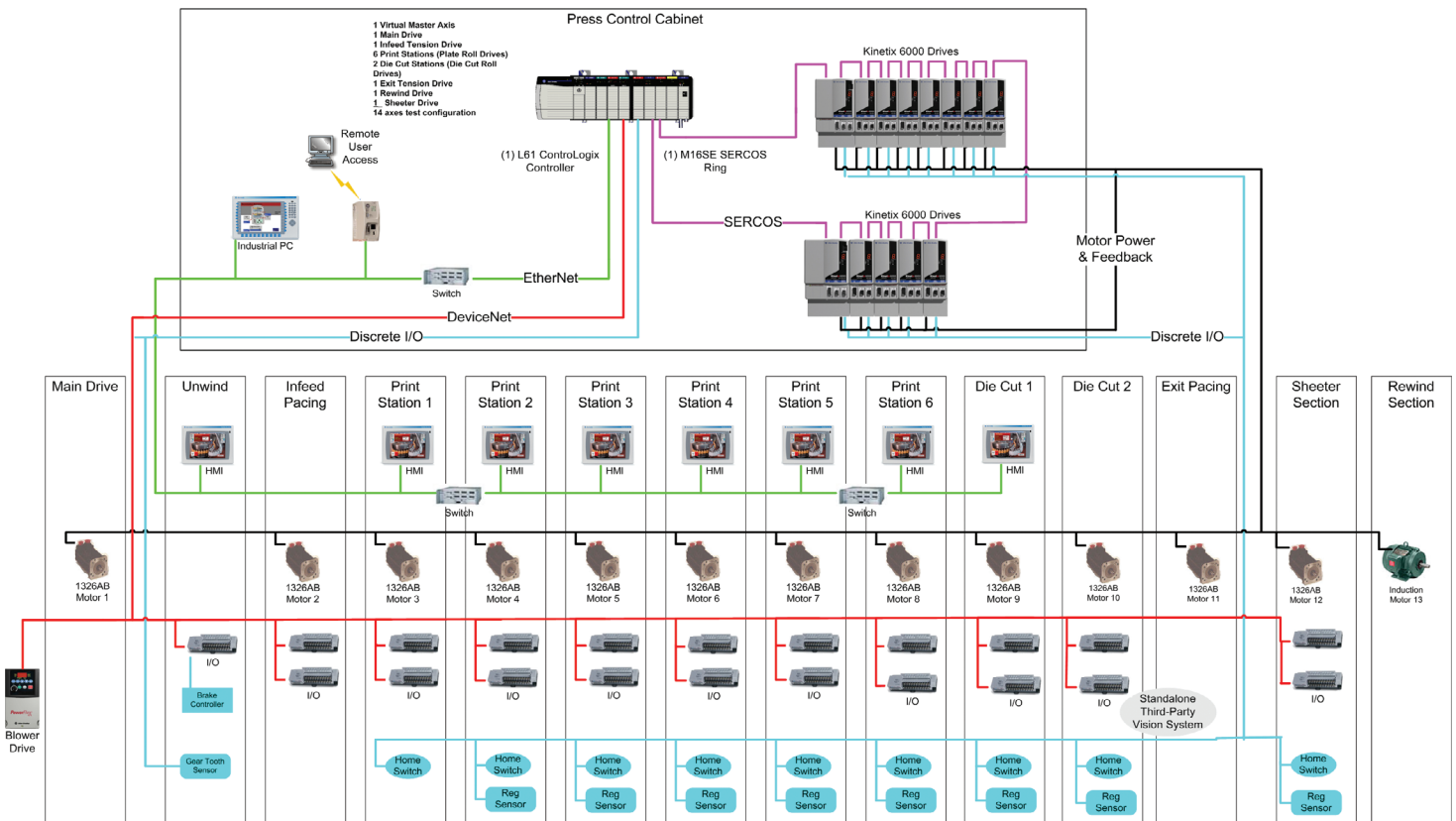
The Solution:

The Rockwell Automation Integrated Architecture system uses the Integrated Motion leverages the Logix Control Platform to seamlessly integrate with Kinetix® servo drives, servo motors and actuators. This Integrated Architecture platform reduces programming time, improves information flow between components, and brings unmatched flexibility to machine design and unprecedented efficiency to the manufacturing floor. The scalable Logix controller platform combines motion and sequential control into a single multi-tasking controller platform, resulting in lower system costs, easier maintenance and simplified system installation. For this application, the ControlLogix® processor delivers the speed, resolution and accuracy needed for reliable web control and axis synchronization via the fully digital, SERCOS-based Kinetix servo system.

The Solution:

RSLogix 5000 software is the only software necessary for both motion and sequential control, eliminating the need for multiple programming tools. The Power Programming methodology utilizes the RSLogix 5000 development software powered with Phase Manager and Add-on Instructions (AOIs) to implement the integrated velocity, torque and position requirements of the unwind, infeed, print, outfeed, converting and rewind press sections.

Individual PanelView™ Plus operator interface stations may be implemented on each print deck for configuration and troubleshooting and to facilitate insertion and removal of print sections. An industrial PC running FactoryTalk™ ViewSE displays diagnostic data on each print deck to confirm that the machine is producing accurate print registration while displaying the vision system capture data as another operator feedback mechanism of precise color application.



The Result:

The flexographic label printer in this application runs at a speed of 750 feet per minute and has a repeat length range of 5.5 to 24 inches. The press maintains print registration tolerance of +/- 0.003 inches during normal operation, well within the +/- 0.005 inches typically specified. A requirement of +/- 0.015 inches registration tolerance during web acceleration and deceleration was also achieved. Full production quality is achieved within one repeat length.

The time to develop the application was reduced by utilizing the power programming modular approach to application development. This methodology employs developing and testing the control logic for a single station and instancing that code multiple times through the use of AOIs and global objects. Rockwell Automation is investing time and resources to the development of application code libraries that can then be leveraged by our customers to achieve faster time to market, lower their total cost, and build innovative higher throughput machines.

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