

Rockwell Automation Integrated Architecture Provides Tekkra Systems' Customers with Improved Throughput, Uptime and Rapid Changeovers.

Bundler's seamless interaction of motion and control yields 350+ products per minute and five-minute tool-less changeovers

Solution

Rockwell Automation Integrated Architecture

- Simplifies system design and communicates seamlessly with other machines on the production line
- Allen-Bradley ControlLogix controller integrates with Allen-Bradley Kinetix 6000 servo drives to create a single system
- Rockwell Software RSLogix 5000 programming software has an intuitive, open design
- Kinetix servo drives help reduce engineering and installation time, as well as deliver speed and flexibility demanded by customers
- Allen-Bradley PanelView Plus operator terminals allow operators to easily manage and control production
- EtherNet/IP connects the bundler with the rest of the facility and business-level systems for improved information access

Results

Bundles 350+ products per minute

- Servo-driven seal assembly delivered rapid, repeatable, high-quality seals that increased throughput

99% uptime

- Seamless interaction between the controller, software, drives and other automation solutions boosted reliability and uptime

Five-minute, tool-free changeovers

- Single, integrated platform gives customers the flexibility to run multiple products and pack patterns

Reduced control panel build time by nearly 30%

- Programming streamlined machine development

Reduces control panel space by nearly 30%

- Eight-axis Kinetix 6000 servo drives minimized panel space



Allen-Bradley Kinetix 6000 servo drives receive products and convey them down to one of six lanes. Multiple lanes increase throughput without sacrificing reliability.

Background

Armed with a knack for engineering, an entrepreneurial spirit, and an idea of a perfect packaging machine, Danny Vujovic co-founded Tekkra Systems Inc.

"I envisioned a packaging machine that could stay ahead of the ever-changing packaging industry," said Vujovic, electrical engineer for Tekkra Systems, Inc. "To fit this portrayal, the machine should operate swiftly and efficiently while making it easier for end-users to react to evolving consumer demands."

To accomplish this, Vujovic knew he needed advanced, dependable automation technology that could meet both his and an end user's expectations. He worked with Rockwell Automation to make his dream a reality.

Four years later, the Romeoville, Ill.-based Tekkra is a thriving machine builder that designs, manufactures, and integrates quality shrink bundling equipment and end-of-line packaging systems. Tekkra develops about 40 machines each year for virtually every industry, with customers ranging from start-up companies to Fortune 500 corporations.

LISTEN.
THINK.
SOLVE.™

Vujovic continues to hone and refine his original vision by staying abreast of the latest technologies and trends, as well as listening to customers. This insight, along with Tekkra's knowledge, commitment and experience, has paved the way for delivering revolutionary packaging solutions.

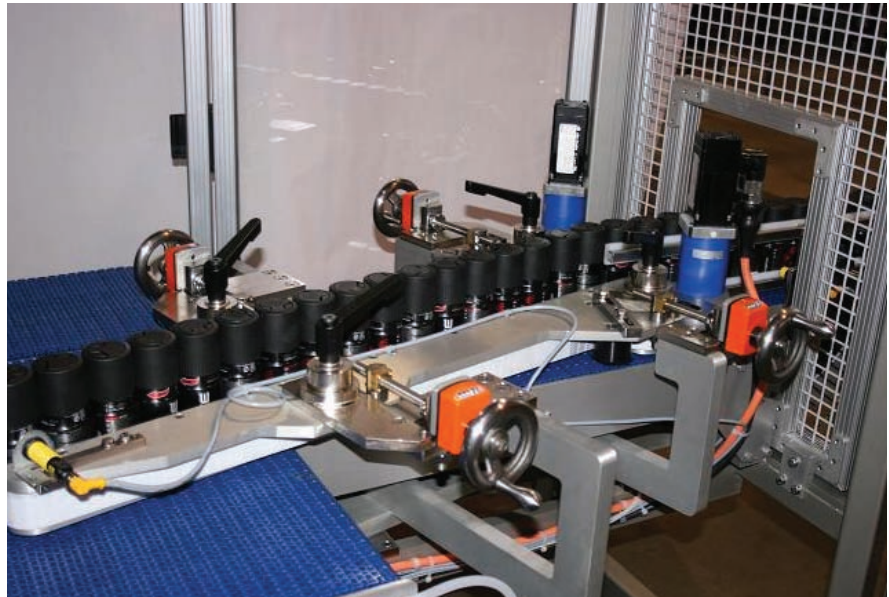
Challenge

When an end user seeks a packaging machine for their facility, they demand a fast, efficient and reliable machine that boosts productivity. End users also want the flexibility to create several packaging formations, handle various-sized products, and accommodate other changing, consumer-driven demands. For example, large retailers trying to reduce inventory bundle together products into smaller product packs, such as three deodorant sticks as opposed to six.

Tekkra reacted to end user demands by designing a continuous-motion bundler that can collate, arrange and shrink-wrap an end user's product – anything from bulky containers to the smallest of pharmaceutical bottles. First, an in-feed conveyor gathers the incoming products, splits them among one of six different lanes, and guides the products toward the shrink-wrapping process.

A dual flight system collates the products into pack patterns and conveys the arrangement into a web of film. Then, a continuous motion seal assembly wraps and cuts the plastic around the product. Finally, a heat tunnel shrinks the film tightly around the product and conveys it towards a discharge assembly. The discharge assembly transfers the finished bundles to the customer's conveyor at a 90 degree angle.

"Manufacturers struggle with finding solutions to meeting continuously changing consumer demands," said Vujovic. "Our goal was to develop a shrink-bundler that could attain 99 percent uptime and bundle 300+ products per minute – something not available to end users with competitive offerings. We also wanted to provide customers with versatility to accommodate various



Products zip down the conveyor to be arranged in pack patterns and shrink-bundled.

product sizes and the flexibility to enact fast, tool-free changeovers."

Solutions

Equipped with this vision, Tekkra standardized its machines on Rockwell Automation to facilitate making their vision a reality.

"In order to build an efficient, flexible machine, the automation needed to be seamless, easier to use, and completely integrated," said Vujovic. "Based on our previous experience, I knew Rockwell Automation Integrated Architecture™ could deliver a solution that met our customer's production demands while easing design, programming and configuration on our end."

The Integrated Architecture system uses sophisticated control, motion, networking, information and visualization technologies to meet both Tekkra and its customers' needs. Tekkra's continuous-motion bundler uses this integrated platform to provide customers with a high-speed, efficient and versatile bundler.

Instead of using outdated concepts such as mechanical cams to transport product through the machine like many bundler manufacturers do, Tekkra's engineers improved machine flexibility by employing an Allen-Bradley® Kinetix® Integrated Motion solution. The solution features an Allen-Bradley

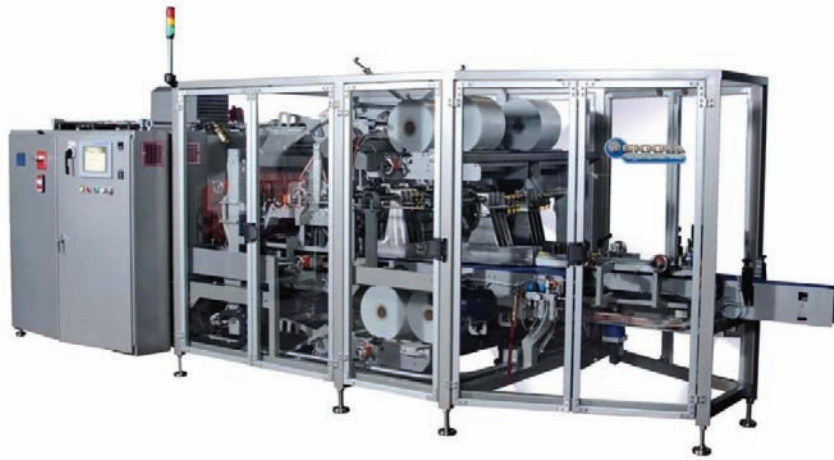
ControlLogix™ programmable automation controller, Rockwell Software® RSLogix™ 5000 programming software, Allen-Bradley Kinetix 6000 servo drives, and Allen-Bradley MP-Series™ servo motors.

The ControlLogix solution which incorporated an eight-axis servo system eliminates multiple application programs and other redundancies by providing a single integrated system that simplifies the system architecture and streamlines the machine development process.

The Kinetix 6000 eight-axis servo drives boost machine performance and reduce Tekkra's design time. Designed to make wiring, programming, operation and diagnostics easier, the servo drives reduce engineering and installation time.

Additionally, the drives provide Tekkra's customers with the speed and flexibility needed to handle demanding motion applications. Servo drives separate products into multiple lanes, arrange pack patterns, and deliver rapid, repeatable, high-quality seals. By leveraging servo-driven assembly, Tekkra's customers increase throughput and enact fast, tool-free changeovers.

The eight-axis design saves panel space while the servo drives and machine's streamlined layout maximize accessibility. "This unique



Tekkra Systems' continuous motion bundler uses Rockwell Automation Integrated Architecture to provide customers with increased throughput, uptime and the flexibility to run a multitude of different products.

attribute gives them easier access to clear a jam and enact changeovers."

Motion control features embedded in the RSLogix 5000 software and the ControlLogix controller provide complete synchronization. To accommodate customer specifications, requirements and requests, Tekkra can accordingly and easily program the software. Tags can be replicated and shared, which reduces programming time. Due to the software's intuitive and open design, customers grasp the user-friendly technology quickly.

Tekkra's customers can easily control the overall operation and manage product changeovers from an Allen-Bradley PanelView™ Plus human-machine interface (HMI). As a window into the machine, the HMI provides information about machine status, fault information, and overall equipment effectiveness.

The bundler's EtherNet/IP connection also contributes to the machine's integrated control capabilities. With this network, the bundler connects with the rest of the facility and

business-level systems. The networked controllers, drives and HMI allow customers to monitor machines and control the manufacturing process by communicating with other machines on the line. Additionally, EtherNet/IP's remote diagnostic capabilities allow Tekkra to provide 24/7 customer support.

Results

By using the Integrated Architecture system from Rockwell Automation, Tekkra provides customers with the flexibility, versatility and speed they demand from a shrink bundler.

Tekkra exceeded its initial goal of 300 products per minute by delivering a completely integrated machine that can reliably handle 350 products per minute. "One high-speed machine with integrated motion capabilities reduces floor space, increases reliability and streamlines production," said Vujovic.

Even while operating at rapid speeds, Tekkra met its goal of 99 percent uptime. The seamless interaction

between the controller, software, drives and other automation solutions contributed to the machine's reliability.

By leveraging the capabilities of the Integrated Architecture system, Tekkra's customers can quickly and easily run multiple products and pack patterns at varying speeds quicker and easier. "The bundlers' five-minute, tool-free changeovers boost efficiency and flexibility," said Vujovic. "On the other hand, a machine that requires users to manually change parts typically requires two to six hour changeovers, as well as more time and money spent on maintenance and parts."

In addition to expediting the changeover process, the Integrated Architecture system eased programming, slashing panel build time by nearly 30 percent. Further streamlining the design process, the eight-axis Kinetix 6000 servo drives helped reduce panel space by nearly 30 percent.

The intuitive, user-friendly design also eases machine operation. If a customer needs troubleshooting, Tekkra can access the machine remotely over an EtherNet/IP connection to identify and resolve the issue.

"As we move towards the future, we're looking ahead to our next big project: building a packaging machine that offers a completely electronic, instantaneous changeover at the push of a button," said Vujovic. "Whatever our vision, we'll work with Rockwell Automation to help us create the most technologically advanced, sophisticated machines in the industry."

The results mentioned above are specific to Tekkra System's use of Rockwell Automation products and services in conjunction with other products. Specific results may vary for other customers.

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