In this Issue of Simplicity Matters

In an increasingly complex world, people naturally gravitate to whatever they can easily understand – especially tools they can quickly use to make life easier.

But the road to a simple solution is often long and requires engineering innovation to transform the technically complex into an effortless user experience. Thomas Edison, for example, tested 6,000 materials from the plant world alone before he discovered that carbonized cardboard was the best filament for the electric light bulb. Machine builders can relate to Edison’s quest for a simple, yet efficient solution.

Simple Control Solutions for Standalone Machines

When designing a standalone machine, many have found that the simplest control solution is based on a programmable logic controller (PLC) with high-quality connected components. The PLC in its infancy was, quite simply, a relay replacer. While the versatility of the PLC has grown, the physical size has shrunk. Now it is not uncommon to see micro PLCs fit into the palm of a hand.

Unlike programmable automation controllers (PACs) – designed for I/O-intensive, multi disciplined control applications – micro PLCs are ideal for controlling standalone, discrete machinery or processes that must fit into a very small footprint. Examples include machines with high-speed, repetitive, time-driven or event-driven operations, such as conveyors, form and fill operations, packaging operations, strapping machines, palletizing and wrapping machines, traffic light sequencing, gate control, cut-to-length lines, semi-automatic welding and painting, storage and retrieval systems, pump alternators, car washes, and vending machines. Many of these applications have traditionally been controlled by relays or custom single board controls, but are moving to micro PLCs for the increased flexibility and simplicity they offer.
Leveraging Cost-Effective Connected Components

Connected Components, such as micro PLCs, are the preferred control solution for standalone machines as they are low cost and provide “just enough” control to meet end customer requirements. Machine builders can add functionality to micro PLCs, such as analog or motion control, without expanding the control panel footprint by leveraging plug-in modules. To optimize machine designs and provide additional cost savings, Rockwell Automation offers pre-engineered bundles, which combine the PLC with a suite of best-in-class components.

With this approach, controllers, human-machine interfaces (HMIs), motor control and other devices seamlessly integrate to improve the reliability and accuracy of analog control circuits, reduce the cost and footprint of control panels, and simplify control power wiring within a panel. This engineering effort helps machine builders more quickly design and develop machines and leads to numerous operating efficiencies, such as fewer short circuits, voltage transients and electrical disturbances that can prove costly.

To quickly implement common control tasks, machine builders also leverage Connected Component Building Blocks (CCBBs). These application development tools include customizable blocks of PLC code, prewritten HMI programs to set up the operator interface easier, and preconfigured drive parameter files that take the strain out of implementing speed control tasks. CCBB tools also help with product selection, panel layout and generating a bill of materials by including wiring diagrams, application profiles and quick start guides.

Together, Connected Component bundles and CCBB application tools can help machine builders personalize their control solution to meet each customer’s requirements, minimize integration risks and eliminate the cost of unnecessary features.

Converting OEM Designs New Machine in Record Time

Combining a simple controller with a suite of components and application development tools makes it easier to design and build a standalone machine in a short timeframe.

For example, engineers at Kansas-based Contech, a converting machine builder, decided to design and build a midrange slitter/rewinder machine suitable for the growing market of machines with production rates of 600 to 700 feet per minute and with an appropriate midrange price to match it. Contech selected a Connected Components solution from Rockwell Automation for the control system. The overall solution is built around an Allen-Bradley® MicroLogix™ PLC for speed and index length control, Allen-Bradley PowerFlex® variable frequency drives for precise motor control, and the Allen-Bradley PanelView™ component HMI for more simplified operation.

With only one week to get the machine configured, wired, programmed and operational, Mike Wescott, controls engineer used the Connected Components Building Blocks (CCBBs) to easily and quickly implement common control tasks as part of the machine design.

Leveraging the programming shortcuts provided by the CCBB helped Contech cut programming time on the PLC by 30%, and more than 50% on the drives. The CCBB also helped save about 60% on the cost of the drives. Ultimately, Contech delivered a slitter/rewinder machine that cost about 50% less than a typical high-speed slitter/rewinder on the market today.

“The Connected Components Building Blocks saved us a remarkable amount of work and helped us deliver a brand new machine in record time,” said Wescott. “And because the solution will be repeatable on future projects, we will be able to get similar projects to market much faster than we ever have before.”

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Optimizing Exceptional Machines

Information for Machine Builders from Rockwell Automation®

Product and Service Highlights

Allen-Bradley® Micro800™ Control Systems

Machine builders and end users who need a cost-effective control solution for their small, standalone machine applications will benefit from the new family of Allen-Bradley Micro800 component-class micro programmable controllers. Designed to accompany other Allen-Bradley component class products, such as drives, motion control and operator interface products, the controllers are part of a solution bundle that offers machine builders easy selection, installation and commissioning of their low-cost, standalone machines. Ideally suited for standalone machine applications with fewer than 48 I/O, the initial launch consists of two controllers – the Allen-Bradley Micro810™ and Micro830™ controllers. The Micro800 family is programmed with a free downloadable software package called the Connected Components Workbench™.

For more information, visit:
http://ab.rockwellautomation.com/
Programmable-Controllers/Micro800

View the online brochure:
http://www.ab.com/programmablecontrol/
micro/micro800/get/virtualbrochure/

Connected Components Workbench™ Software

Complementing the new line of Micro800 controllers, the new Connected Components Workbench software follows established IEC-61131 standards. As a single package that is easy to acquire, install and update, the software makes it convenient and cost-effective for machine builders and end users to leverage one platform for their programming and configuration needs. It allows machine builders to program Micro800 controllers and configure other devices in the system, including PowerFlex drives and PanelView Component HMI products.

For more information, visit:
http://ab.rockwellautomation.com/programmable-
controllers/connected-components-workbench-software

The Building Blocks have much of their literature, HMI screens and program documentation translated into multiple languages. English, Portuguese, Italian, German, Spanish, Czech, Polish, more to follow.

Allen-Bradley Kinetix® 3 Component Servo Drives

The Allen-Bradley Kinetix 3 component servo drive from Rockwell Automation provides machine builders the ability to better match the needs of manufacturers of standalone machines. Offered in models as small as 100 watts, the drive provides the flexibility to tailor axes to a machine’s actual power requirement, which will minimize system size and cost. Its compact design makes the drive ideal for machines that require less than 1.5 kilowatts and up to 12.55 N•m of instantaneous torque, such as intermittent form/fill/seal machines, indexing tables, medical devices, laboratory automation equipment and semiconductor processing.

For more information, visit:
http://ab.rockwellautomation.com/Motion-Control/
Kinetix-3-Servo-Drive
Optimizing Exceptional Machines

Information for Machine Builders from Rockwell Automation®

Allen-Bradley PowerFlex® 4 Class AC Drives
PowerFlex 4 AC drives are designed to meet global OEM and end-user requirements for simplicity, space savings and cost efficiency. These compact drives provide intuitive features such as an integral keypad with local potentiometer and control keys that are active right out of the box. The PowerFlex 40 AC drives provide performance-enhancing motor control in an easy-to-use compact package. These drives feature sensorless vector control to meet low-speed torque demands. With flexible enclosure options, and simple programming, they can be installed and configured quickly. Packaged drives are also available to provide additional control, power and enclosure options in standardized designs.

For more information, visit:
http://ab.rockwellautomation.com/drives/powerflex-4
and

Allen-Bradley Bulletin 150 SMC™-50
Solid-State Soft Motor Starters
The SMC-50 smart motor controller helps enhance the efficiency and control of motors and processes. The solid-state design helps ensure more precise control of voltage and provides advanced monitoring and protection features to keep applications running smoothly, ease troubleshooting and reduce downtime. The SMC-50 motor starter offers nine standard operation modes (11 with all options), as well as motor and starter protection. Three configuration options also help enhance control and scalability.

For more information, visit:
http://ab.rockwellautomation.com/motor-control/soft-starters/sm-50

Allen-Bradley ArmorStart® LT Motor Starter
The ArmorStart LT motor starter is an integrated, pre-engineered solution designed for on-machine applications. Its one-piece design offers simplicity in wiring with quick disconnects for the I/O and communications that can help reduce total system design and installation costs by more than 30 percent. Optional power and control quick disconnects also help reduce wiring errors. Suitable for group motor installations, the ArmorStart LT motor starter also provides EtherNet/IP™ and DeviceNet™ connectivity in a robust IP66/NEMA Type 4 enclosure that is ideal for water wash-down environments. The ArmorStart LT motor starter is expected to be available for purchase in October 2011.
Optimizing Exceptional Machines

Information for Machine Builders from Rockwell Automation®

SAVE THE DATE:
Automation Fair® 2011
November 16 & 17, 2011
McCormick Place, Chicago, Illinois

The Automation Fair® event is the premier automation industry event uniquely designed to help manufacturers and machine builders optimize their automation investments to achieve their business goals. Held November 16-17 at the McCormick Place West in Chicago, 2011, marks the 20th anniversary for the annual Automation Fair® event.

The event brings together Rockwell Automation and its comprehensive, global network of partners to help customers learn about the latest technologies and trends in a single venue exclusive to manufacturers. Also attend the Global OEM Forum to learn more about defining value beyond cost and differentiating your machines in a competitive market.

To register, visit: www.automationfair.com

Allen-Bradley Tower Lights

The new, modular 40 mm (854J) and 60 mm (854K) Allen-Bradley Tower Lights are designed to perform multi status indication of machinery or processes on the plant floor. With a wide variety of light module functions, the tower lights help alert operators about critical equipment conditions in the factory. Both sizes offer an ample selection of bases to best match an application’s mounting requirements and are available as separate components to allow stack assembly in the field or as factory preconfigured arrangements to save installation time. The 854J and 854K tower lights meet global certifications and are rated for indoor and outdoor use. The tower lights are expected to be available for purchase in January 2012.

For more information on Machine Builder Solutions from Rockwell Automation, visit www.rockwellautomation.com/solutions/oem

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