

# Solutions in Action

## B-K Tool & Design, Inc.



The IR Welder from B-K Tool & Design



“More and more manufacturing customers want to work with machine builders who can offer them skilled controls knowledge – and that’s definitely in our wheelhouse,” says Kevin Kahle, general manager for **B-K Tool & Design**.

The company has come a long way since its founding in 1981 as a tool and die shop. Today, B-K Tool offers the latest in machining technology and inspection equipment. B-K Tool now completes the same projects more efficiently and consistently, using easily programmed CNC equipment.

The company provides complete machines from concept to production, using the latest in robotics, vision systems and automated controls for customers. It serves customers across all industry sectors, including food and beverage, appliance, steel, plastic bottling and especially automotive. Many of its welding-machine designs for automotive customers feature resistance-weld cells, using a fixture and jig design.

One of its latest machine innovations, the IR (infrared) Welder, was customized for an automotive customer. B-K Tool redesigned a traditional pneumatic machine to an electric linear motor and added infrared light to control welding temperatures for the customer’s automotive parts.

With its speed and exacting temperatures, the IR Welder is a good alternative to hot-plate welding for more complex automotive assembly components, such as dashboard parts, washer bottles or other plastic vessels used in automotive fabrication. With its comparatively small footprint, the IR Welder also gives manufacturers more flexibility in production-line design.

An Allen-Bradley CompactLogix programmable automation controller (PAC) from Rockwell Automation manages all machine functions. The controller seamlessly connects with Allen-Bradley Kinetix 350 and Kinetix 6500 servo drives from Rockwell Automation for high-speed motion synchronization via the EtherNet/IP™ network.



Allen-Bradley® CompactLogix®  
Programmable Automation Controller



Allen-Bradley Kinetix® 350  
Servo Drive

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The system includes an Allen-Bradley PanelView™ Plus 1000 human-machine interface (HMI), which provides a user-friendly interface between the IR Welder and the welding process. The HMI simplifies system setup, which is a huge advantage in the changeover and part quality improvement process according to Kahle – especially when changing welding parameters. “Operators can set the parameters from the screen, so that each time they create a new part they can re-configure the welding parameters in less than an hour.”

In a production environment, two halves of injection-molded parts are unloaded from the press and sent to the IR Welder. The welder precisely lines up the two halves of the molded part and uses infrared light bulbs to heat both mating surfaces. The bulbs retract and the 2 halves are fused together. After the welder applies pressure to seal the fusion, the part is cooled and advanced via conveyor to the assembly line and testing area. B-K Tool’s turnkey capabilities include building leak-testing machines, assembly equipment, and integrating barcode printers and readers – and other equipment used in the post-welding process.

“What makes the IR Welder such a unique machine is its speed of control and easy setup,” says Kahle. “It significantly outpaces pneumatic machines.” The side jaws of the steel-framed machine are capable of indexing at 15 inches per second, with a final press pressure of 2,000 pounds. The light sled can index at 30 inches per second during shuttle.

According to Kahle, using servo drives instead of standard pneumatic drives to manage the IR Welder’s motion axes takes welding speed to another level, reducing cycle time and boosting productivity. It’s also a significant energy saver. “We see a big gain in energy efficiency by using motion control products in place of pneumatics,” he said. “The IR Welder requires less energy to run than a pneumatic machine using air.”

Allen-Bradley Motion Analyzer software from Rockwell Automation greatly simplified the design of motion control parameters for B-K Tool’s engineers. The software helps save critical time in the prototyping phase, allowing engineers to quickly design and validate new machine concepts before purchasing or installing actual equipment.

“Motion Analyzer is a wizard-based software tool that really helps us in the start-up process,” said Kahle. “It lets us easily spec out exact solutions for our customers by entering the machine’s parameters and setting up the motion axes on our equipment.”

Kahle estimates that Motion Analyzer saves B-K Tool design time and eliminates risk during machine configuration. “It gives us peace of mind because we know that all of the controls will work together when we’re done,” he adds.

B-K Tool sees unlimited opportunities to grow and provide more value for manufacturing customers by offering high-performance, automated machines that increase productivity and profitability. “We’re always looking down the road, anticipating what customers will require in the future,” says Kahle. “When we work with Rockwell Automation for control solutions, our customers know they’ll have a migration path forward – and high-functioning equipment for years to come.”

**For more information, contact:**

Kevin Kahle  
General Manager  
B-K Tool & Design Inc.  
Phone: 419.532.3890  
Web: [www.bktool.com](http://www.bktool.com)

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**Power, Control and Information Solutions Headquarters**

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846