

TechUpdate

Retrofittable Robotic System for Automating Press Brakes

RIBS (Robotically Integrated Bending Solutions) from Automated Concepts Inc., Council Bluffs, IA, is a retrofittable system that brings a robot into coordinated motion with any brand of down-acting CNC hydraulic press brake. With RIBS, users don't have to replace all their equipment in order to update and automate processes. RIBS features offline programming of the process, which reduces downtime. The system uses standard CAD files of a user's parts, offers process verification through a virtual 3D interface and provides full utilization of the press brake.

Users have an automated process that reportedly reduces the time between



bends, minimizes misuse of the tooling, organizes setups and optimizes the bending process.

The system features SimulEasy soft-

ware that allows the user to program an entire bend sequence offline and then upload the program into the press brake and robot. With only a few minutes of setup, the robot will follow pieces through bends to avoid back-bending and maintain consistent bend angles. The SimulEasy program also assists in tooling selection, robot-gripper design, regrip coordination, cell layout and clearance checks, and orders bend sequences

so that users can minimize cycle times.

For more information from Automated Concepts, write no. 350 on your reader response card.

Savings for DaimlerChrysler via New Vacuum Technology

A recent comparative vacuum-technology study performed by Dr. Kingman Yee, an associate professor of mechanical engineering at Lawrence Technological University, Southfield, MI, as part of a DaimlerChrysler program, found that air consumption could be reduced by 98 percent when equipping a robot's

end-of-arm tooling with a Coax multistage ejector from PIAB, a Swedish company headquartered in North America in Hingham, MA (PIAB USA Inc.). The ejector integrates the internal components of a multistage vacuum pump into a vacuum cartridge, allowing for a small, efficient, reliable and flexible product, according

to company officials.

Coax ejectors achieve an evacuation flow rate of 85 ft.³/hr. and produce a holding force of 100 lb., a 25-percent improvement over older models in use by DaimlerChrysler, according to Yee. DaimlerChrysler applies robots with vacuum end effectors for automating material handling of sheetmetal during automotive stamping applications.



To improve the firm's robotic-system performance and productivity, Yee researched manufacturing processes that would lower the costs of the company's material-handling applications. Specifically, he looked to decrease air consumption, reduce downtime and improve the performance and cycle time of robots and other equipment using suction cups to lift and transport parts.

In side-by-side comparisons with competitive vacuum ejectors and suction cups, Yee found that the Coax vacuum generators use only 1.1 ft.³/min. of compressed air per cycle, a 78-percent reduction compared to single-stage vacuum generators. Also, the PIAB Vacustat check valve, which shuts off the supply of compressed air when proper

suction is reached, further improves efficiency.

Resulting annual electricity costs as a result of upgrading the ejectors, Yee estimates, would drop from \$61.66 to \$0.56 per suction cup, based on an electricity cost of \$0.07/kW-hr. For a stamping plant employing 2000 suction cups, annual savings add up to \$122,200.

For more information on vacuum technology from PIAB, write no. 351 on your reader response card.

Modular Software Speeds Coil-Line Setup

Automatic Feed Co., Inc., Napoleon, OH, has developed OneButton modular software and control architecture, a simplified approach to coil-line setup and recovery, which, according to company officials, greatly reduces the time required to input new part-program recipes.

The software, part of the company's Smart system initiative, allows it to adapt to customer requests for different machine-mounted controls without the need to rewrite the code. The approach uses mapped inputs and outputs, called subroutines, allowing the base program for each Smart machine to remain the same, eliminating debug time for software additions. Only the subroutines are called as needed for change instead of hundreds of rungs of ladder logic. Additionally, if needed, individual machine programs can quickly be added as new equipment or processes—such as a blank washer—are added.

In a typical coil-line setup, operators using OneButton need only enter 14 core parameters compared to the previous 60 parameters, resulting in a 77-percent time savings. Operators identify the steel being run—line length and width—and the control software calculates and optimizes the production setup for that run.

OneButton's modular architecture allows for the testing of control modules, machine functions, safety interlocks

and production-cycle simulation on a per-module basis. Entire systems are proved out in modular form and then assembled in the customer's facility.

Smart systems are designed in modular units with self-contained mechanics, control devices and logic, reducing the number of components and system complexity. The control process, Dis-

tributed Device Architecture, is based upon a Device Neutral framework and removes control devices from tradition enclosures and distributes them throughout the machine.

For more information on modular software and control architecture from Automatic Feed Co., write no. 352 on your reader response card.

Plasma-Cutting Machines in Three Models

Firepower has launched a new family of plasma-cutting systems called the A-Series. The Firepower A-Series family from Thermadyne Industries, Chesterfield, MO, includes three new units for cutting across applications, from light-gauge sheet to 3/4-in. plate. Individual units making up the A-Series family are

the FP-20A, FP-35A and FP-70A.

Cutting applications for A-Series units include automotive repair HVAC installation and metal fabrication and art. While A-Series units especially are suited to the automotive market, these machines reportedly fit virtually any cutting job, as they are able to cut all

electrically conductive alloys cleanly. Respective outputs of A-Series machines: FP-20A—20 A at 115VAC and 25 A at 230VAC; FP-35A—15 to 35 A at 230V; and FP-70A—25 to 75 A at 230V.

A-Series units are equipped with the 1Torch, the top-of-the-line Thermal Dynamics cutting torch that features a robust SureLok head design, comfortable ergonomic handle and a durable, lightweight and flexible lead.

A-Series machines incorporate efficient and lightweight inverter technology that provides good cut performance with economical operation. Systems include air regulator, spare consumable parts and work lead.

For more information on plasma cutting systems from Thermadyne Industries, write no. 353 on your reader response card.

New Laser Lights a Path to Productivity at Stamper/Sheetmetal Fabricator

Dane Manufacturing Co., Dane, WI, a precision stamper and sheetmetal fabricator, recently added a Salvagnini Lightning laser-cutting machine to its lineup, to provide laser-cutting services to its customers.

The machine is one of 25 Salvagnini laser-cutting machines operating in the United States. Without human intervention, the automated setup loads blanks, cuts the intricate shapes as-programmed, robotically unloads finished parts, destroys the scrap/skeletons and files reports. A built-in sorting device automatically separates finished parts from the skeleton.

The machine features a 60-by-120-in. worktable with a z-axis stroke of nearly 4 in. Maximum x-y axis speed is 11,800 in./min with positioning tolerance of ± 0.002 in. It employs the newest generation of limited-divergence 2500-W or 3000-W Rofin slab lasers. The 3000-W unit can cut mild steel as thick as 3/4 in.,

stainless steel to $\frac{3}{8}$ in. and aluminum-alloy sheet to $\frac{7}{32}$ in.

Since Dane installed the machine, in August 2005, it's gained three new customers and has expanded its business by 25 percent in sales, according to president Troy Berg.

For more information on laser-cutting machines and services from Salvagnini America, write no. 354 on your reader response card.

Five-Axis CAM Software Programs Variety of Laser-Cutting Machines

Australian metal fabricator Laser 3D operates 13 laser-cutting and welding machines in its pair of job shops in Melbourne. Supporting the controls for the machines, from Trumpf and Laser Lab, with programming routines became a challenge as the firm expanded.

"We needed to look for ways to improve our response time and accuracy for our five-axis laser-cutting operations," says Brian Finn, managing director. "Fixture production was slow and programs were not accurate enough to meet our needs."

The firm settled on Peps SolidCut Laser, from Camtek Ltd., Malvern, Worcestershire, UK, for programming its five-axis machines, since the software could handle Trumpf and Laser Lab equipment. "Other systems we looked at either could not program both machines," says Finn, "or did not apply circular interpolation in the NC code, so the programs were very long and made even the simplest of modifications at the machine impractical."

Since installing the new programming software, the firm has enjoyed measurable savings in design and build time of its fixtures. And, setup of programs at the machines takes half the time it took using manual teaching. But, the biggest improvement came, says the firm, due to circular interpolation and the

program's built-in macros for holes, slots and other features. It can automatically identify and profile 3D component boundaries and apertures. And, the programmer can use the software to automatically identify standard shapes supported by the post processor, then output CNC code using canned cycles of the machine tool.

Laser 3D uses the software to program a Trumpf laser cell, three Laser Lab five-axis Pentacon machines and other equipment. Its next step: apply the Peps package for its two-axis machines.

For more information on cam software from Camtek, log on to www.peps.com, or write no. 355 on your reader response card.