PMA '99 Awards of Excellence in Metalforming

Annually, the Precision Metalforming Association (PMA) recognizes outstanding companies within the metalforming industry that have exhibited the highest standards of professionalism. This year, a total of eight awards were presented during a ceremony held in conjunction with METALFORM'99 in Rosemont, (Chicago), IL, on Monday, April 12, 1999. Recognition was given to metalforming companies that attained extraordinary goals in one or more of the following categories: A.R. Hedberg Training and Education Award; The Minster Machine Company Total Quality Management Award; PMA-Higgins Design Award; Seastrom Safety Award; Signature Technologies Process Control Award; Ulbrich Award for Competitive Excellence in Product Development; Vibro/Dynamics Corporation Productivity Award; and

A.R. Hedberg Training and Education Award

Capitol Concepts, Synergis Technologies Corp., Wyoming, MI, has received the 1999 A.R. Hedberg Training and Education Award, and a $3500 cash award, which will be donated to Ferris State University. The award recognizes outstanding achievement by a PMA member company in employee technical education through a comprehensive training program. This award is sponsored by HPL Illinois Inc., Lake Zurich, IL, in memory of A.R. (Ray) Hedberg, a leader in employee training.

Synergis Technologies, which employs 500 people, specializes in the design and manufacture of stamping dies and checking fixtures, serving the automotive and appliance industries. The company has a comprehensive educational program that includes in-house classroom and on-the-job training. Approximately 100 apprentices are training in eight different classifications, including: die maker, machinist, model maker, quality control technician, tool and die designer, maintenance mechanic, electronic technician and machine repairman. In addition, Synergis has specialized continuing training for all levels of employees in Unigraphics die design, critical chain project management, QS 9000 certification and auditor training. Various employee groups also have participated in workshops that develop awareness and improvement of interpersonal skills.

Through an ongoing relationship with the Grand Rapids area high schools, Kent Technical Career Center and Ferris State University, Synergis educates young people in careers available in the die design and build industry, as well as generating potential candidates for its apprentice program.

Since skilled trade help is in short supply, the goal of the Synergis apprentice program is to develop its own workforce through a "latest technology" course of study and exposure to new techniques of design, manufacturing, die assembly and tryout. All programs are taught and managed by Synergis personnel, with the exception of several basic classes offered at Grand Rapids Community College. To date, 33 apprentices have received certification, and many more are on their way toward graduation.

To expand its employees' education, Synergis currently is planning a "Master of Draw Technology" seminar/workshop. The one-of-a-kind program, an advanced course of study for die making and design, will focus on the latest technology in stamping. A wealth of value-added knowledge gained over many years, as well as new problem-solving advancements, eliminate much of the trial and error associated with the die-making industry. This program also will assist in achieving shorter and more reliable deliveries of high-quality dies.

As part of its commitment to in-house education, Synergis recently built a 12,000 sq. ft. Knowledge Center. The building features state-of-the-art audio/visual facilities and seating for 220 people. It is used for classroom instruction and conferences. In addition to employee education, the center is used for technical seminars for outside personnel through various industry associations, such as PMA.

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The Minster Machine Company Excellence in Quality Assurance Award

Perfection Spring & Stamping, Mt. Prospect, IL, has received the 1999 Minster Machine Company Excellence in Quality Assurance Award, and has donated the $5000 cash prize to local high school technical programs. The award recognizes outstanding achievement by a PMA manufacturing member in the development of a quality assurance program to ensure continuing improvement of its products and customer service.

Perfection is a family-owned business that employs 150 people. It specializes in manufacturing formed metal parts and assemblies for the automotive industry and other targeted markets.

Quality assurance at Perfection centers around its mission statement, which pledges "worldclass quality, cost-effective, precision engineered metal components and assemblies." In addition to QS 9000/ISO 9000 certification, it has developed a company-wide system to ensure this level of service, including employee training, problem-solving teams and internal audits.

Production standards are checked at each stage of the manufacturing process. As part of a proactive approach to problem-solving, Perfection engineers work closely with customers to anticipate issues and make changes to the product in the initial design stages. Due to this collaborative effort, as well as electronic die sensoring and preventive maintenance, Perfection has realized a significant decrease in time spent on emergency die and machine repair and has reduced the cycle time to bring new projects into production.

To emphasize the unified vision that supports Perfection's goals, each new employee is required to attend a half-day orientation session that includes presentations by top management executives. Each new employee also participates in an individual orientation with his or her immediate supervisor and is assigned a mentor in the same department who can provide answers about the job or the company. To ensure effective employee training, the company has formed a partnership with DePaul University's adult education program, which is funded, in part, by a $75,000 Prairie State 2000 grant.

Perfection has developed, and recently revitalized, a network of more than 100 problem-solving teams. Team leaders are able to seek advice and work together at weekly leadership support meetings. With the help of its customers, the company also has formed an "impact team," which is a group of employees with an intensive focus on improving one task at a time.

Production standards are checked at each stage of the manufacturing process through a series of controls that have been adopted by the company as part of its QS 9000 system. As part of a proactive approach to problem-solving, Perfection engineers work closely with their customers to anticipate issues and make changes to the product during the initial design stages. This eliminates wasted time and expense. Because of this collaborative effort, as well as electronic die sensoring and preventive maintenance totaling more than 150 hours each month, Perfection has realized a significant decrease in the amount of time spent on emergency die and machine repair and has reduced the cycle time to bring new projects into production.

Monthly internal audits also are conducted by tracking a randomly selected part from order through shipment. This close monitoring, along with customer suggestions, allow management personnel to recognize where corrective action needs to be taken.

Honorable Mentions

Two companies—United Technologies/Carrier and Johnson & Hoffman Manufacturing Corp.—

were named runners-up for the 1999 Minster Machine Co. Excellence in Quality Assurance Award.

United Technologies/Carrier, Indianapolis, IN, a manufacturer of furnaces and fan coils, developed an internal quality assurance system to comply with ISO 9001 standards in only six months. The program includes investment in new measurement and testing equipment and frequent review of internal audits, which are highlighted at quarterly meetings and in the company newsletter. United Technologies also has implemented a week-long orientation for new employees, as well as continued training for all employees, which discusses and emphasizes key issues in an effort to create a quality-oriented mindset among the staff.

Johnson & Hoffman (J&H), Carle, NY, a supplier to the automotive airbag industry, has proved its commitment to quality through its QS 9000-compliant system. Through the efforts of its quality improvement team, which analyzed product defects and charted progress, as well as an increased awareness by the entire J&H staff, the company's rejection and sorting percentage was reduced from more than six percent in November 1991 to less than one percent in September 1998.

PMA–Higgins Design Award

Assembled Products (a unit of Jason, Inc.), Wheeling, IL, is the winner of the 1999 PMA-Higgins Design Award and a $5000 cash prize. Created by the Worcester Pressed Steel Co., Worcester, MA, and now sponsored by PMA, the PMA-Higgins Design Award recognizes a manufacturing company for outstanding achievement in developing an innovative product design.

Assembled Products was honored for its innovative manufacturing process, which achieved maximum efficiency in the fabrication of coil components for household electric meters. In partnership with its customer—a leading maker of household electric meters—Assembled Products was contracted to develop an improved process for manufacturing left- and right-hand current coils.

These copper coils are made from 0.21-in. dia. copper wire and are an essential component in all household electric meters. The customer's own production method, used previously, consisted of a three-step process. Formed epoxy-treated wire and a set of solder-coated "feet" made from copper strips were joined together by brazing.

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Copper coils are made from 0.21-in. dia. copper wire and are used in all household electric meters. The previous production method consisted of a three-step process. Formed epoxy-treated wire and a set of solder-coated feet made from copper strips were joined together by brazing. Assembled Products formulated a six-step continuous process, wherein the entire coil is formed from one piece of copper. In addition to simpler raw material requirements, this process eliminates any inconsistency that may result from incomplete brazing.

six-step continuous process, wherein the entire coil is formed from one piece of copper. Rather than stamping the blades (feet) separately, they would be made from the same wire on a coining press. Initial wire forming would be completed using a Bihler BZ 2, and special tooling would be used to form twists and the final 90-deg. bend. In addition to simpler raw material requirements, this process eliminates any inconsistency that might result from incomplete brazing.

Within eight months, the new system provided a production rate of more than 2,500,000 coils per year. The Assembled Products process design requires less floor space, and fewer workers are needed to oversee production—only two operators, instead of eight as in the earlier process. Ultimately, the customer realized a 65.5 percent savings over its prior production costs.

Seastrom Safety Award

E. J. Ajax and Sons, Inc., Fridley, MN, has received the 1999 Seastrom Safety Award. Sponsored by Seastrom Manufacturing Company, Inc., Twin Falls, ID, the award acknowledges either an effective comprehensive safety program or a specific innovative idea in the context of an effective safety program.

The award recognizes E. J. Ajax's achievement of having worked for the past eight years with no time lost due to job-related injuries. Included is a cash prize of $1000, which will be donated to the Minnesota Safety Council. The council will use the donation to purchase textbooks for its reference library.

E. J. Ajax and Sons' program includes extensive personal protection equipment provided by the company, a committee that works with top management to review safety procedures and policies and an incentive program directly linked to the company's premium savings on workers' compensation insurance.

Due to its remarkable safety record, E. J. Ajax and Sons last year presented each employee with a $500 safety bonus. These bonuses represent 50 percent of the difference in annual premium savings. In 1987, when the company's experience modification factor was 1.18, E.J. Ajax promised to share its savings with employees when that factor fell below 1.00.

The safety program at E. J. Ajax and Sons includes extensive personal protection equipment provided by the company. A committee works closely with top management to review safety procedures and policies. The company also has established an incentive program directly linked to its premium savings on workers' compensation insurance.

To monitor the company's safety policies, a six-member committee, comprised of employee volunteers, meets quarterly with top management. They review any minor incidents and determine whether there are patterns that indicate a need for a change in safety procedures. In case of an emergency, E. J. Ajax also has formed a group of first responders, all of whom are trained in first aid, CPR and dealing with bloodborne pathogens.

To avoid job-related injuries, E. J. Ajax has established stringent policies with regard to safety violations. Any employee having one or two violations within a 12-month period receives a verbal reminder. After a third violation, he or she receives a written reminder and a one-day, decision-making paid leave of absence; a fourth violation results in automatic termination. Additionally, random drug testing is in effect for all safety-sensitive employees, including top management.

E. J. Ajax provides every employee with all necessary protective equipment and services, including

Red Wing safety boots, Kelvar glove liners and forearm protectors, safety glasses (including prescription safety glasses), hearing protection, a weight limit for lifting, and medical and disability insurance. Safety training is offered as well. A minimum 100 hours of training is required as part of the company's four-year punch press operator apprenticeship.

The employees of E. J. Ajax and Sons are encouraged to offer suggestions regarding safety and other work-related issues, reinforcing the partnership between management and staff. All safety suggestions, which are top priority at production meetings, receive a posted response within 24 hours. This year to date, 44 safety suggestions have been submitted to management.

Signature Technologies Process Control Award

Trico Products Corp., Brownsville, TX, has received the 1999 Signature Technologies Process Control Award. Sponsored by Signature Technologies, Carrollton, TX, the award recognizes a manufacturing company for the innovative application of process control technologies and products that result in significant quality and/or productivity improvements. The winner may choose either a $1500 cash prize or a complete Signature Technologies analysis system valued at $12,500.

Trico Products is a supplier of windshield wiper systems to the automotive industry. It currently employs about 535 people. At Trico, process control was focused upon the manufacture of its drive lever, a component of the windshield wiper that controls the distance of the wipe pattern. Specifically, the company looked to improve conformity with regard to the drive lever hole-to-hole location, which has a tolerance of 0.004 in.

Three years ago, when preliminary process capability studies revealed an unstable condition, the performance Ppk was rated at approximately a 1.00 level. Since the automotive standard acceptance is 1.67 Ppk minimum on all critical characteristics, it was necessary to tightly control the process.

At Trico, a team consisting of tool engineering, manufacturing management, and setup and quality personnel was formed to spot process weaknesses and design a control plan. The process was measured with a series of customized variable data gauges developed by the team, which allowed operators to check and adjust punch holders without removing materials from the press.

A team consisting of tool engineering, manufacturing management, setup personnel and quality personnel was formed to determine process weaknesses and design a control plan. The process was measured using a series of customized variable data gauges developed by the team, which allowed operators to check and adjust punch holders without removing materials from the press. This innovation helped Trico to reduce downtime. Additionally, capability studies have confirmed the process about 2.00 Ppk, thus exceeding customer requirements.

During the prototype run, use of the gauge revealed that as material thickness changed, the tool had to

be retargeted to meet hole-to-hole measurement specifications. This process has been made more capable using statistical data, which indicate the relationship between material thickness and hole measurements.

Use of the new process has lessened the need for inspection. Mistake proofing now is part of Trico's process control, using strip detection and a hot pilot to assure proper feed with each press stroke. Operators are able to verify their own parts. Each employee is given the tools and instructions necessary to check his or her own work.

Ulbrich Award for Competitive Excellence in Product Development

Amherst Metal Products, Amherst, OH, has received the 1999 Ulbrich Award for Competitive Excellence in Product Development, along with a $1000 cash prize. Sponsored by Ulbrich Stainless Steel Inc., it acknowledges a PMA manufacturing member that demonstrates outstanding innovation in developing and manufacturing a product that best uses metal in the displacement of a nonmetal competitive material.

Amherst Metal Products was honored for its development of a stainless steel throat cover for commercial faucets. It was designed to fit existing models.

The throat cover was developed in close partnership with Moen, Inc., whose commercial faucets previously used plastic throat covers. This restricted them in markets that require all-metal faucets, primarily hospital applications.

Due to design constraints, Amherst could not make changes to the existing casting. To create a throat cover with a secure fit, Amherst used ribs within the escutcheon and designed angled legs on the cover that locked into place. Self-locking tabs hold the base of the cover in place during assembly, allowing Moen to preassemble at the factory, thus easing installation.

Production of the throat cover was challenged further by time constraints. Using ProE modeling, Amherst provided Moen with a prototype within two weeks of beginning the project. Production was completed in less than four months.

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Vibro/Dynamics Productivity Award

Shinei USA, Inc., Hillsboro, OR, has received the 1999 Vibro/Dynamics Corporation Productivity Award. Sponsored by Vibro/Dynamics Corp., Broadview, IL, the award recognizes outstanding achievement by a PMA manufacturing member in the development and implementation of programs, processes and use of assets that lead to significant improvements in productivity.

The award recognizes Shinei USA's improvements to the manufacturing process of a heat sink package for microprocessors that saves time and expense, and yields more consistent results. Among primary requirements for the project was a round, recessed compartment that would fit tightly around the microprocessor without actually touching it. The compartment would be approximately 75 percent of the material thickness in depth; the project was to be completed with a quality level of less than 1500 DPM (defects per million) and cost significantly less than an aluminum die casting.

After considering several possible changes to the process, machining was found to be the most beneficial. Initially, Shinei used milling machines to cut the punched work-

pieces. Due to increasing demand, however, the company later opted for a process that combined milling and stamping, and enlisted the aid of Belhaven Applied Technologies, Kennewick, WA, a custom machinery fabricator. The companies worked together to develop a machine that would meet these requirements.

The new process sends coil strip through a stamping die, where it is cut and formed into individual pieces. In addition, two stainless steel inserts and two aluminum rivets are installed in the same tool. The counterbore is added at the milling machine station, and the final product is released by a parting-off die. Extensive electronic sensoring is used to check the machine's accuracy.

Use of the new machine saved $240,000 in equipment costs and tripled the rate of production. Shinei's production time for each part has been cut from one minute to two seconds. Defects have been reduced to fewer than 1000 per million.

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William O. Jeffery III IRMCO Environmental Improvement Award

Weiss-Aug Co., Inc., East Hanover, NJ, has received the 1999 William O. Jeffery III IRMCO Environmental Improvement Award, including a $2000 cash prize. Sponsored by IRMCO, Evanston, IL, the award recognizes a PMA member company that exemplifies environmental responsibility and improvement.

This year's award acknowledges Weiss-Aug Co.'s achievements in using aqueous chemistry to eliminate harmful cleaning solvents and lower water consumption, while providing aesthetic and economic benefits to its customers.

Weiss-Aug Co.'s environmental improvements began as a response to federal legislation that severely limited the manufacture and use of 1-1-1 trichloroethane (TCA)—a potentially hazardous chemical solvent used in degreasing. The company volunteered to reduce its use of TCA, eventually eliminating it altogether.

The new aqueous systems require more specialized cleansing processes, paying specific attention to water temperature, pH balance and detergent—factors that vary depending upon the type of metal. The company also relies on spray washers to apply greater water pressure through the washing and rinsing cycles. To effectively remove oils that remained after using the spray washers, Weiss-Aug purchased systems that use ultrasonic waves and two rinse baths to remove contaminants.

Lubrication systems, used to decrease lubricant waste, were purchased from EFD, Inc., East Providence, RI. The equipment sprays a predetermined amount of lubricant

Customers and employees alike have benefited from Weiss-Aug's environmental program. Employees enjoy a cleaner working environment with less chance of exposure to hazardous waste. In addition, the nature of the new cleaning process means less residue is left on the products. This provides a noticeable cosmetic improvement.

on each strip before it enters the die. This effort has resulted in a 40 percent decrease in lubricant consumption over the past year, requiring less time and resources for cleaning.

Weiss-Aug also has reduced its waste output with the use of a new water filtration system. The system works in two ways. First, many of the contaminants are removed by filtration prior to discharge into the mainstream sewer system. Second, a portion of the wastewater is cleaned and reused in the wash tanks. These combined efforts have reduced output of harmful chemicals by up to 300 gallons per week.

Customers and employees alike have benefited from Weiss-Aug's program. Employees enjoy a cleaner working environment with less chance of exposure to hazardous waste. Due to the nature of the cleaning process, less residue is left on the products, resulting in a noticeable cosmetic improvement. Also, because aqueous cleaning is more cost-effective than chemical cleaning, Weiss-Aug has been able to lower the cost of its products. **MF**