

Whitney

METAL FABRICATION NEWS

March 2005

Whitney Open House April 20 & 21!

See the New Whitney ProBEND Press Brake & PlateLASER® FLEX

Patrick Enterprises Produces Truck Parts With 3400 XP

INSIDE THIS ISSUE

**4400 MAX Provides
Power and Flexibility
for Degelman**

**Piranha Ironworker
& Press Brake Increase
Productivity**

**Bertsch Four Roll Bending
Machine Performs at
Universal Pipe**



**Chicago Metal Fabricators
Tackles Large to Small
& Thick to Thin With
PlateLASER-II**

Whitney

METAL FABRICATION NEWS

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W.A. Whitney, Piranha and Bertsch are members of the Mega Fabrication, Inc. family of companies.

For more information on any article or product, call us at 815/964-6771 or e-mail sroberts@wawhitney.com.

Editor
Sue Roberts

Production Manager/Art Director
Jeff Hoffman

Contributing Writers
Dale Bartholomew
Regional Sales Engineer

John Davis
Manager, Inside Sales Department

Mike Dixon
Business Development Manager
Express Products

Morrie Earnest
Regional Sales Engineer

Al Julian
Vice President, Sales & Marketing

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Relationships for the New Century

by Dave Barber, President, W.A. Whitney Co.

Thank you for taking time to read this issue of the Whitney Metal Fabrication News.

Your interest in Whitney is what keeps us going, both literally and figuratively.

As you read on you will find a series of real success stories from Whitney customers. They are benefiting from their decisions to go with Whitney products for their plate processing needs. We thank them very much for being our customers and for agreeing to share their stories in this publication. We value their relationships.

Relationships are the underlying theme for much of what you will read in this issue.

And quite frankly, the number one topic discussed around Whitney these days.

Last fall we changed one of our major relationships when we left Esterline Technologies and joined the Mega Fab organization. We ended a forty year long relationship and started a new one that will propel us well into the new century. As you will see from the articles about Piranha and Bertsch users, being a part of the Mega family has automatically expanded our sphere of relationships.

Some things change while many others stay the same. One thing for certain is that the entire Whitney team

is here because of you to serve your plate processing needs.

We thank you for your continued business and look forward to building our relationship with you as we all face the challenges and opportunities of our recovering economies.



Best wishes,
Dave Barber
President
W.A. Whitney Co.

“Go for the Gold” at Whitney's Open House!

April 20-21

**Easy registration...www.wawhitney.com,
call 815-964-6771 or contact your W.A. Whitney distributor**

Two Days of Information and Demonstrations Featuring Whitney's World Class Machine Tools

New products, improved technology, machine tools from sister companies Piranha and Bertsch, and free seminars make Whitney's 2005 Open House the metal industry's event of the year.

New Press Brake

New for Whitney! The first of the Whitney ProBEND Series precision press brakes will be introduced. This heavy-duty machine series comes standard with a graphical CNC control, Y1/Y2 synchronized hydraulic cylinders, standard four axis heavy-duty backgagge (up to six axis available), and multiple size, tonnage and tooling options. The ProBEND Series uses the latest technology, applying modern tool and programming practices.

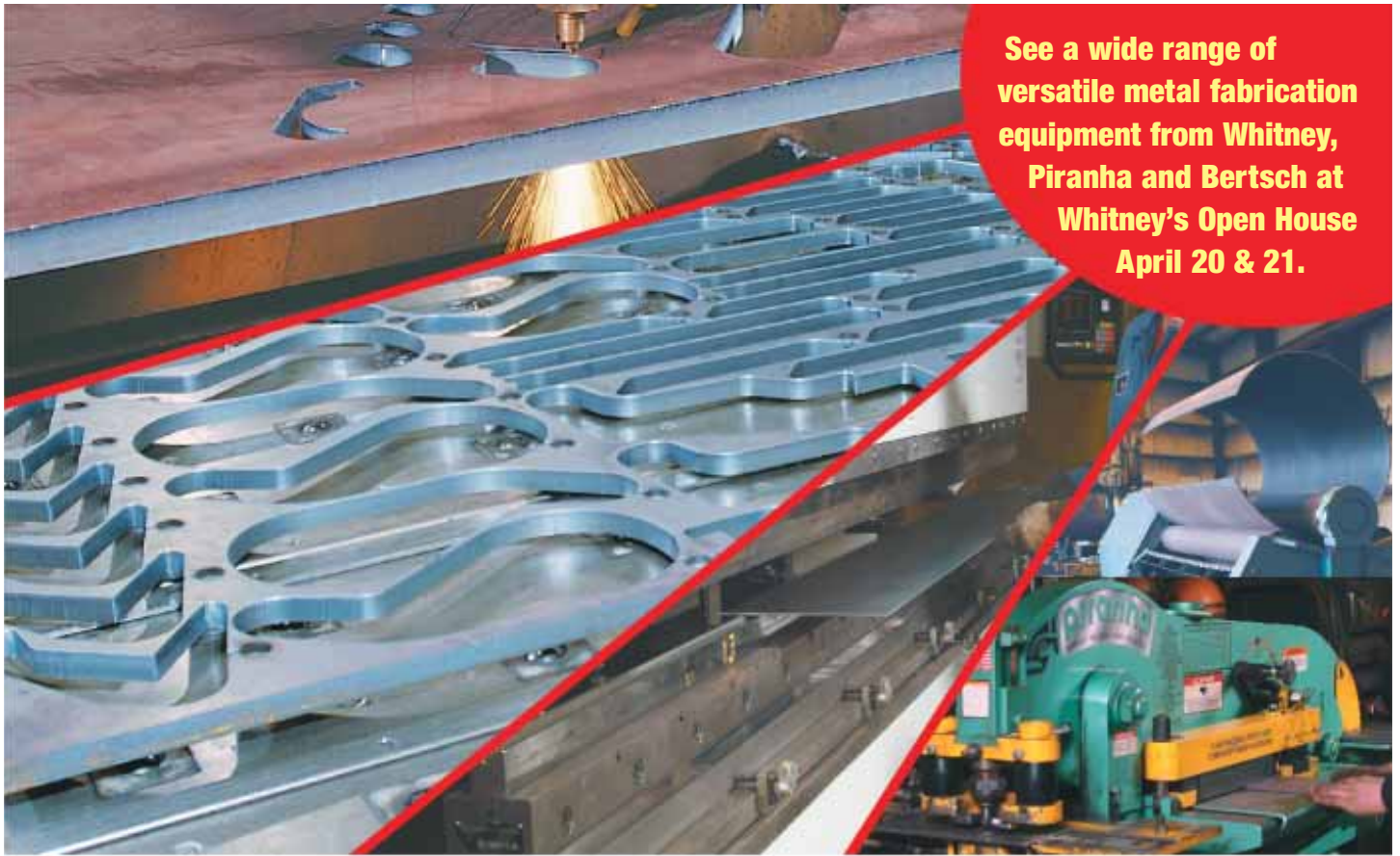
See how this technology saves money by reducing set-up time, decreasing cycle times and streamlining new product implementations.

New High Power PlateLASER®

7000 watts of laser cutting power is just one of the options of Whitney's new PlateLASER FLEX Series first demonstrated at the Open House. All machines in the new PlateLASER FLEX Series incorporate a 10' bridge but can be purchased in lengths of 8', 10', 12', 16' and 20'. Optical Repositioning is available on 20' machines to process sheets up to 40' in length.

Discover the new choices, capabilities and look of Whitney's PlateLASER FLEX.

Cont'd on page 4



See a wide range of versatile metal fabrication equipment from Whitney, Piranha and Bertsch at Whitney's Open House April 20 & 21.

Whitney Open House cont'd from page 3

New Plasma Technology

See how the most productive method of cutting plate continues to advance. The next generation of plasma cutting technology is available on Whitney's punch/plasma fabricating centers and the ADVANTAGE Precision Plasma Cutting Tables. Higher speed, better accuracy, and lower operating costs highlight this new technology.

Combination machines demonstrated at the open house: the largest, 4400 MAX which punches and cuts plate up to 1"; and the smaller, economical and very popular workhorse—the 3400 XP.

New Complementary Machines

Think of it as one-stop shopping for fabricators dealing with heavy plate. Piranha ironworkers and press brakes, and a Bertsch roll form join Whitney's products for Open House demonstrations.

A special opportunity to see—and register to win—Piranha's 10,000th P-50 ironworker. And, yes, this particular highly productive machine is actually gold. The P-50 is Piranha's most popular

model. The Sweepstakes is open to companies that own metal fabrication equipment. For complete sweepstake details visit www.megafab.com or just stop by the Whitney Open House.

New Tooling Technology

The right tooling for the right machines with the newest technology. Talk to the engineers who created Whitney's TuffSkin™

Premium Tooling and Slug-Magic™ Dies to learn why they increase productivity and lead to more profits.

Take a tour of the shop and see how Whitney can produce and ship most of your tools the same day you place the order.

New products, improved technology, machine tools from sister companies Piranha and Bertsch, and free seminars make Whitney's 2005 Open House the metal industry's event of the year.

And More...

Demonstrations of equipment from the Whitney Pro-Series—the most affordable tools for today's fabricator. Be sure to see the web and flange portable presses and the 1524 CNC fabricator that offers single station versatility and economy.

Free seminars to help you get the most from your press brake and to help you secure financing for your equipment additions. Details to be posted at www.wawhitney.com as they are finalized.

Experts from PRC, SigmaTek, Delem and Hypertherm to discuss your specific application questions. ♦

Leading the New Whitney

As a new member of the Mega Fabrication family, Whitney will continue to serve the metal fabrication industry from its location in Rockford, IL. W.A. Whitney was founded in the northern Illinois city in 1907.

The merger with MegaFab puts Whitney's products in the same family as Piranha—ironworkers, press brakes, and shears—and Bertsch—plate bending rolls and section rolls. All three are American companies offering the most recognized brands in the metal forming and fabricating machine tool industry.

David Barber was appointed president of Whitney. Barber continues his leadership of the company, promoted from the position of general manager. His thirty years of manufacturing experience have encompassed research and development, industrial engineering, quality assurance, and management of machining, assembly and facilities operations.



Dave Barber

Al Julian has been promoted to the position of vice president, sales & marketing at Whitney. Julian has been at Whitney for 17 years, and has served in several roles in marketing and product development. In addition to his experience at Whitney, Julian worked in project management, manufacturing engineering, and research and development for General Electric Co. and Modine Manufacturing Co.



Al Julian

Scott Filzen has been promoted to the position of director of operations at Whitney. Filzen has been with the company for six years, during which he has held managerial positions within the Engineering and Manufacturing areas. Prior to joining Whitney, Filzen served as a senior project manager at Beloit Corporation.



Scott Filzen

New Literature

Now available. Contact Whitney for your copy!

PlateLASER® Series

Learn about Whitney's PlateLASER and PlateLASER-II flying optics high powered laser cutting machines. The power, speed and accuracy you need for profitable cutting of thick (up to 1-1/4") to thin materials. Work envelopes up to 120" x 480". RapidPierce™, available only on Whitney's, gives you small holes in thick material without dross.



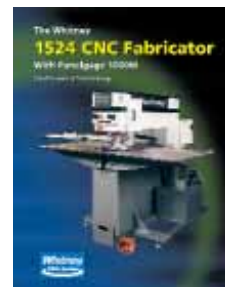
PRO-Series

A quick overview of Whitney's "Affordable Tools for Today's Fabricator" includes the 1524, the ADVANTAGE and STORM precision plasma cutting tables, and Whitney's line of portable web and flange presses. Discover the most affordable fabrication method for your applications.



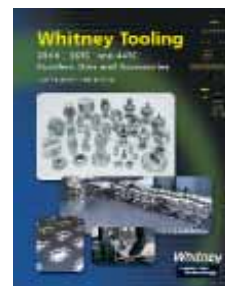
1524 CNC Fabricator With Panelgate 1000M

A variety of hydraulic punching and forming capabilities from an easy-to-use single station fabricator. The 50 ton punching capacity of the 1524 easily fabricates materials to 1/4" thick with standard strippers—up to 1/2" thick with optional strippers. The Panelgate 1000M CNC Control stores an estimated 200 programs, offers simple canned cycle programming and communicates in conversation-type, plain English. Several additional options!



Tooling

All the options on Whitney's 28XX™, 36TC™ & 44TC™ tooling conveniently located in one catalog. Charts, graphs and a comprehensive section of engineering data will help you determine the best tool for your application. Information on the newest tooling developments—SlugMagic™ and TuffSkin™—is included.



Whitney



Fifth wheel angles are cut out efficiently on the 3400 XP.



WHITNEY PUNCH/PLASMA—3400 XP APPLICATION

Patrick Enterprises Saves Time With 3400 XP

Pembroke, Virginia, a small community nestled in the Blue Ridge Mountains in the southwest part of the state, is not where you would expect to find a world class supplier of fabricated and machined parts and weldments, but Patrick Enterprises Corporation is well on its way to becoming just that.

Founded in 1984 by Paul B. Collins, Patrick Enterprises began in a small garage in Patrick County, VA, well south of its current location. At that time, there were only four employees and work mainly consisted of supplying carts and maintenance parts for the regional textile and furniture manufacturers. Not that Collins was a stranger to big-time manufacturing. In fact, he was the vice president of manufacturing for a mining equipment manufacturer in Pembroke, with responsibility for several facilities. Eventually, that company shut down the Pembroke facility, and Collins left to work with a family friend who had a machine shop. Quickly, Collins realized a need for a fabricating shop in the area, and he started a new business in a 40' x 100' service garage. Eventually, Collins' former employer left the Pembroke facility vacant, and Collins took the risk of purchasing the 50,000 square foot facility for Patrick Enterprises.

Today, Patrick Enterprises Corporation in run by Mark Collins, the second of three sons, there are 42 employees including Mark's wife Teresa (controller and human resources), and brothers Dwight (materials/purchasing) and Ken (quality assurance). Patrick now has a full complement of fabricating, welding and machining equipment that processes material from 28 gauge (0.015") to 6" thick plate, and machined weldments up to 20,000 lbs. Processes include laser cutting, plasma cutting, oxyfuel, shears, CNC punching, press brakes, welding, and painting. In addition, unlike many other metal fabricators, Patrick has a large complement of machining equipment including CNC mills, lathes, and boring mills. In 1999, a 10,000 square foot addition was built, bringing the facil-

ity size to 60,000 square feet. Patrick's customers include major players in the heavy truck and construction equipment industries, and they compete against both regional metal fabricators, and global fabricators from countries like Mexico and India.

At a time where the term "outsourcing" has taken on new meaning (as in "global outsourcing"), Patrick has actually strengthened its position and penetration within its existing customer base. Mark Collins attributes Patrick's success to a high level of customer service. For example, some of its work is high profile, high priority work where another supplier is unable to ship fabricated parts in time. Patrick receives orders today that need to ship tomorrow morning, or line stoppages may occur. This premium service brought Patrick's name to the forefront within its customers' purchasing organizations, and earned Patrick the opportunity to compete for higher volume contract work.



Ray Martin and Jamie Lucas review a stack of fifth wheel angles produced on the 3400 XP.



Owner Mark Collins attributes Patrick's success to a high level of customer service.

For the last several years, Patrick has been contracted to produce fifth wheel angles for the heavy truck industry. These hole-intensive parts are made from 5/16" thick high strength steel, and are the mounting surfaces for the fifth wheel assembly at the rear of a heavy truck. In order to fabricate these parts, Patrick took steel plate, sheared it to size (in two directions), punched the sheared blanks on a CNC press, and deburred the sheared edge and punched holes.

Up against both capacity constraints and cost pressure, Patrick set out to purchase additional equipment for the manufacture of the fifth wheel angles in 2004. In March of 2004, they took delivery of a Whitney 3400 XP punch/plasma machine, and they hit the ground running. The 3400 XP now produces fifth wheel angles at a rate of one to two minutes apiece. This represents a savings of 4-1/2 to 5 minutes for each part. Even the deburring operation has been eliminated as they have found

that there is no need to deburr either the punched holes or the RAMPAGE! plasma cut edge as produced on the 3400 XP. This time savings translated to an annual savings of approximately \$200,000 on fifth wheel angles alone. Additional parts such as fifth wheel ramps and cross-members yield additional savings. For example, the 3400 XP produces cross-members in one-half the time of Patrick's production laser, located across the aisle from the 3400 XP.

The 3400 XP could not have been purchased at a better time. Like all contract shops, Patrick is constantly under cost pressure from its customers. Steel prices have increased almost two-fold, and the forecast for fifth wheel angles calls for a 40 percent increase over previous levels.

"It used to be that service and quality were most important to our customers" states Mark Collins. "Today, quality is a given, and everyone seems to be putting pricing first. Right now, we would be in major trouble if we didn't have the 3400 XP. If I knew then what I know now, I would have bought two machines. For plate fabrication, I don't see another machine that competes."

Patrick has quickly adapted to its new machine. Instead of just punching holes and contouring the parts complete, Patrick, with the help of Whitney's application services, developed a process to use common line cutting. This both improved material utilization and reduced cutting time. Mark has also embraced Whitney's online ordering system for punches and dies. "It's easy. I don't have to worry about calling people and leaving messages. I just do it and it's done." Next on his agenda is trying TuffSkin™ tooling.

After three months in production, two employees are trained to run the 3400 XP, and two additional employees are being trained. This is part of Mark Collins' philosophy that his employees



Operator Jamie Lucas oversees operation of the Whitney 3400 XP.

Patrick Enterprises offers both fabrication and machining services. Here, a long weldment is machined by Jeff Westbrook.



need to be cross-trained on many processes. For example, 3400 XP Operator Jamie Lucas has been with the company for 10 years, and is able to run all CNC punch presses and shears, as well as spray painting. Press Brake Operator Jason Cook can run almost every piece of equipment in the fabrication and weld shops after eight years with the company. "It is impossible to find trained fabricators," says Collins. "For that reason, we take welders and machinists who are willing to be cross-trained."

In addition to training, Mark has taken advantage of other opportunities as well. The State of Virginia offers a program for reviewing safety programs proactively to determine compliance to OSHA (called OSHA SHARP—Safety and Health Achievement Recognition Program). A large banner in the lobby proudly boasts Patrick's compliance, indicating that Patrick Enterprises is a safe workplace.

After several years at the helm (Mark phased in to replace his retiring father in the late nineties), Mark now sees the realities of running a fabrication shop run deeper than just making parts. His three biggest concerns today?

1. Difficulties in sourcing material. Patrick has found that they need to hedge their bets by stocking at higher inventory levels today in order to meet their quick delivery requirements.
2. Rising cost of employee benefits. Benefits, most notably health insurance, are rising dramatically. This makes it

difficult for a small business to compete against larger corporations for the same labor pool. He finds that employees are more interested in benefits than wages today. This past year, even though health care insurance premiums rose substantially, Patrick actually reduced the employee's share of the premiums.

3. Growth under control. Mark feels that he could double his business today—the work is there. But growing too fast is risky. Mark's goal is to grow his business a modest 30 percent this year, and to double his sales within five years.



Jason Cook bends the fifth wheel angles into their final form.

Quality Shop, Unmatched Customer Service, Cost Competitive, Safe Workplace, Global Competitor, World Class Manufacturing, Patrick Enterprises. ♦

CMF's PlateLASER-II Captures New Customers

Nestled in the heart of Chicago's South Side Manufacturing district, Chicago Metal Fabricators has made bold moves to differentiate themselves from their competition.

Established in 1908, CMF has always taken pride in the ability to tackle any job; small or large; thick or thin. The company specializes in heavier materials, but manufactures products from materials as thin as 16 gauge stainless steel. Primarily a job shop fabrication business, CMF assists customers with design and manufacturing engineering of products. And in a more casual vein, they work with local artists on community projects.

Manufacturing capabilities include conventional plate processing equipment such as plasma and oxy-fuel cutting, punching, press brakes and shears. The company also specializes in welding. Every welder is AWS certified.

Randy Hauser, president of CMF says laser cutting was not new to the company. "We had lots of laser capacity to choose from. But we wanted something that was unique from anything else in the market." That desire prompted CMF's purchase of the Whitney PlateLASER-II with processing capabilities up to 1-1/4" in mild steel.

"We were outsourcing quite a bit of work to our sister companies. The volumes continued to grow and that helped with our justification. Now we do the work in-house and keep the flow steady."



Randy Hauser, Chicago Metal Fab President, holds a typical customer part cut from 1/2" stainless steel.

Size, Speed, Accuracy

During the evaluation process for selecting the right machine, Hauser considered the overall needs of CMF. The company worked in material from thick to thin and needed a machine that would cover both ends of the spectrum efficiently and at the same time be cost effective and profitable. The PlateLASER-II stood out above the competition.

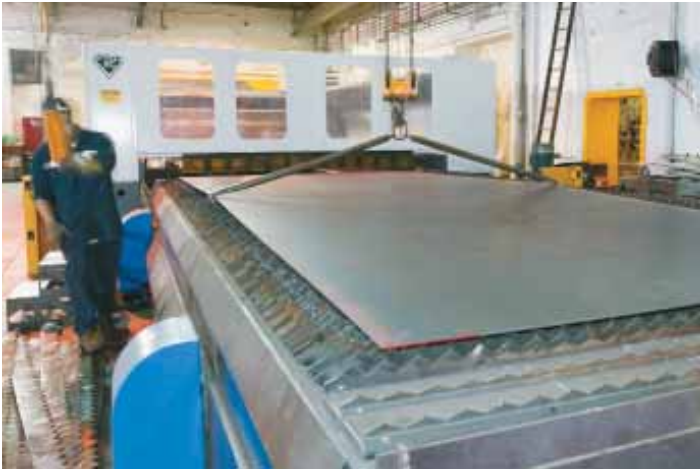
"We always had a source for laser cutting, but this one broke out of the mold. Other brands were fine for plate, but were not productive for sheet metal. We knew we needed a machine that would handle cutting up to 1". But we also needed the speed



Whitney PlateLASER-II quickly exchanges 10' x 20' pallets.



CMF's Whitney PlateLASER-II with 10' x 40' pallet shuttle.



Operator Sergio Cervantes loads material while the machine is running.

and accuracy to do work down to 16 gauge stainless. Customer tolerances keep getting tighter. We needed a machine that could hold tighter tolerances."

CMF selected Whitney's largest PlateLASER®-II model with a 10' x 20' working envelope and dual pallet shuttle tables. Two of the pallets can be coupled enabling part processing up to 40' in length. That capability helped CMF capture new projects and increase business with existing customers.

One job involved processing large side panels for rail cars. "We had always been in rail cars," explains Hauser, "but we never could have tackled this particular job without the PlateLASER-II. This ma-

chine got us into doing large side panels." Each of the panels requires 1100 holes on a plate 95-1/2" wide by 456" (38 feet) in length.

He adds, "The holes must be within .015" tolerance over the whole plate. They all have to line up to other components that have 30 to 40 holes on a side. Accuracy was key to getting the job."

The PlateLASER-II is accurate to within $\pm .001$ " over the entire operating range.

Aluminum Cutting

What made the rail side panels even more of a challenge is that they are made from 3/8" aluminum. Normally lasers are not recommended for processing aluminum, but the PlateLASER-II with 6000 watts of cutting power and its special anti-back reflection option is capable of processing aluminum up to 1/2" in thickness.

Whitney's patented Intelligent Laser Control™ with dynamic piercing and lead-in functions establishes a stable start process for aluminum cutting. The patented dual-axis cutting head allows for independent individual control of focal lens height, nozzle stand off height, power, assist gas and laser beam pulsing functions.

Having the aluminum cutting and hole making capability has helped CMF obtain more business from the rail market. "We always did quote quite a bit of carbon. Now we can do the aluminum components as well."

CMF currently processes many parts for the rail industry such as steering yokes and column bolster bogies. The bogies are used in high-speed rail applications. All assemblies must pass ultrasonic and magnetic particle tests. Some assemblies are required to have welds inspected by x-ray.

Aluminum cutting also opened up other new markets to CMF. "We weren't really looking at laser cutting aluminum as a new market. We just kept running into new work we had never quoted before."

Large Work Envelope

CMF's PlateLASER-II is equipped with a 120" x 240" dual pallet shuttle. Unusual for a machine of this size, it allows



Rail car side — 95" x 35' with 1100 holes in 3/8" aluminum.

the operator to load and unload material while the machine is making parts. "It really saves on material handling. That's the largest single hidden cost. It's tough to capture, but you know it's out there," says Hauser.

Having the large work envelope has helped bring in other types of jobs. "Having the 120" width helps. One new job was a big wheel for a food processing filling machine. It was essentially a big 108" diameter wheel with all sorts of contours and holes."



Bob La Tourneau (left) and Sergio Cervantes (right) view requirements for tube sheet critical dimensions.

made from 16 gauge stainless were processed by sister companies. Fit-up and weld quality are critical for these pressure vessels. Large stainless bulkheads, formerly machined, are now cut on the PlateLASER-II reducing both costs and lead times.

Heavy plate stainless steel cutting is another advantage CMF enjoys. When cutting stainless, CMF uses the full 6000 watt capacity whenever possible to achieve maximum cutting speed and best surface finish.

Multiple focal length lenses up to 12.5" provide a larger spot size diameter and longer depth of focus area. This allows material to be cut efficiently and molten material to be blown through the wide kerf.

Using nitrogen as the primary assist gas helps create a smooth finish that is free of the dark burned edge common with other forms of thermal cutting. In some cases it can be nearly reflective.

Having the PlateLASER®-II has helped CMF enter stainless markets such as food processing and water treatment. "The

Cont'd on page 14

Stainless Steel

In addition to piece part work, CMF is a contract manufacturer for completed products. One product is internal heating elements for airplane de-icing equipment. The assemblies are made of multiple stainless components, including tubing, that must be rolled to exacting tolerances. During the recent down turn in business, this is one product that maintained a strong demand.

PlateLASER®-II stainless steel cutting capabilities have helped reduce cost and lead time for the de-icing units. Large shells



16 gauge stainless steel shells for heat exchangers.



Long parts formed to close tolerances.



Steering yoke weldment. Welds are critical and require ultrasonic and magnetic particle testing.



High speed rail car parts. All welds require X-ray inspection.

CMF PlateLASER®-II Statues Grace “Above and Beyond” Award Dinner Tables

CMF produced mini-versions of the “Above and Beyond” award, presented to actor Gary Sinise last June, to grace tables of the award dinner guests. The awards, produced on the PlateLASER-II from 1/4" stainless steel, feature the outline of a soldier with an internal cut-out in the shape of Vietnam.

Following are excerpts from the article “Gary Sinise Honored As First Recipient of Above & Beyond Award” by Deb Kochman. The first article appeared in the June 2004 online newsletter at www.sinisefans.org.

The historic Chicago Hilton was the setting for the first annual National Vietnam Veteran’s Art Museum “Above and Beyond Patriot’s Award” (ABPA) on April 29th honoring inaugural recipient Gary Sinise.

The award will be presented annually, “To a civilian who contributed to the morale and welfare of the men and women of the United States military demonstrating an above and beyond dedication to those in uniform, without financial remuneration nor as part of a political or social platform.” Proceeds from the event benefit the National Vietnam Veteran’s Art Museum located at 1801 South Indian Avenue, Chicago.

Sinise was selected for this honor based on his long-standing support for the men and women serving in the U.S. military including 11 USO tours and numerous other contributions to benefit veterans over the past 20 years. This year’s event raised \$160,000 for the museum.

The evening began with a VIP reception followed by a reception in the hotel’s International Ballroom where selected works of art from the museum’s 1000 plus piece collection were displayed.

Following the reception, the Award and Tribute portion of the evening proved to be an hour plus of wide rang-

ing emotions from the purpose of why the museum exists to the military humor of guest speaker General Tommy Franks to the emotional acceptance remarks made by Sinise. The steadfast and trusted voice of Master of Ceremonies journalist Bill Kurtis guided the 368 guests including Sinise’s wife, Moira Harris, his children, Sophie, Ella and McCanna, and parents, Bob and Millie Sinise, and extended family members, through a retrospective of Sinise’s career and current projects.

Also present and recently returned to U.S. soil, was Sinise’s cousin Lt. Corp. Eric Fundersol who was greeted with a round of applause, and surprising Sinise was Sandra Chavez, home from her tour of duty in Iraq. Ms. Chavez was instrumental in working with Mr. Sinise in launching the school supply drive now known as Operation Iraqi Children.

The most eloquent congratulatory message was that from Apollo 13 director Ron Howard:

“The phrase ‘Above and Beyond’ truly defines you well, my friend. Half measures have no comfortable foothold in your heart or mind. In matters of family, friendship, art, work or duty to humanity, your thoughtful, methodical drive to ‘get it right’ is an example we all ought to follow.”

The mood was lightened by the military humor of retired four star General Tommy Franks who earlier in the evening commented that Sinise was a “true American hero.” Franks’ tone turned serious when he spoke of Sinise’s leadership and how it is symbolic of the dramatic and sophisticated change in the public’s sentiments toward the men and women in uniform.

Sinise was visibly moved as he took the podium to accept the Above and Beyond Patriot Award and a genuinely



Statuette from dinner sponsored by National Vietnam Veteran’s Art Museum honoring inaugural “Above And Beyond Award” recipient Gary Sinise. Figures were cut from 1/4" stainless steel on PlateLASER-II.

warm embrace from General Franks. His first comments were that nothing ever meant more and that he was so lucky—lucky to live in this country, to have his parents there with him to share this occasion, his children healthy, a loving and devoted wife, and a successful theater company.

Sinise spoke of his recent USO experiences focusing primarily on his visit to Iraq where some the soldiers he met were helping to rebuild Iraqi schools. He personally visited one of the Iraqi schools and was deeply affected by the relationships between the soldiers and the Iraqi people, especially the children. He talked of how the children adore the soldiers and how deplorable the conditions were at the school.

This experience in particular ultimately led to the birth of Operation Iraqi Children, a cause Sinise is obviously passionate about and equaled only in his passion for supporting the men and women in uniform. ♦



Thick, high-strength materials are easily cut with the PlateLASER-II's 6000 watts of power.

CMF cont'd from page 12

PlateLASER-II has helped tolerance wise and edge wise. With nitrogen we get a nice, clean and pretty edge. Other thermal processes won't give us this clean of an edge. Customers who had to turn to waterjet for their 1/2" and 7/8" stainless now have an alternative," Hauser says. "Some parts will be much less expensive from the PlateLASER-II."

Cutting heavy stainless is something CMF has mastered. Bob La Tourneau, process engineer, says, "We've got 1/2" stainless down to a science. We have worked with 3/4" and 1" also. Small holes are no problem and the edge always looks good."

Better Forming

Customer requirements for forming continue to be critical. "It's not uncommon for us to see tolerances of 1/32" in formed 1/2"



Heating coil for de-icing units. Stainless steel tubing must be rolled to exact tolerances. Randy Hauser points out the bulkhead cut from 1/2" stainless on the PlateLASER-II. Machining operations were eliminated on this part with the PlateLASER-II.



Bucket parts are first cut on the PlateLASER-II. Holes are reamed for size and surface finish. After forming, parts are trimmed using layout lines previously engraved with the PlateLASER-II.

plate," claims Hauser. "If you don't start with an accurate plate, you don't have a hope of getting it formed within spec."

Forming plate and long parts can almost be an art. Now CMF can provide better quality parts to the forming area to make the operator's job easier. CMF often tackles plate jobs with requirements for straightness typically seen only in sheet metal. "With long parts we have low heat input at the edge. This makes for straighter parts. Easier to bend. With the laser we have far less bow or camber. It is much easier to hold tighter tolerances on the legs of a long channel."

The straightness characteristic also helps with parts for long conveyor sides. "Most have rollers that bolt up. If the holes don't line up, or the sides are not even," Hauser explains, "the belts will run off track and bearings wear out quickly."

For some of those longer parts, the laser has reduced lead times. "We eliminated the need to outsource laser work. Longer parts that our sister company could not handle were a problem. The long lead-times just killed us. Having the laser has knocked our lead times in half."

Having laser quality parts also helps CMF welders. "In the weld shop, fit-up and weld are better and less time consuming. Often we can enhance fixturing time with slot and tab techniques. This reduces the time we spend building weld fixtures. The total time for a single weldment job can have as much as half the time spent building fixtures. With the laser, we can add slots and tabs or other alignment tools to reduce fixture costs," continues Hauser.

"The laser is so versatile we can build fixtures and templates, scribe in layouts and dimension coordinates in areas where you can't measure them. With a big weldment, the parts just have to fit."

Fully Integrated

The addition of the PlateLASER-II was a bold step for Chicago Metal Fabricators. Now CMF stays a step

ahead of the competition by providing complete fabrication services from thick to thin.

"We can stay fully integrated and be a single source. Most customers expect us to respond in days versus weeks. Besides benefiting down stream operations, we have more flexibility. The machine is fast enough that we can take parts from the plasma and help eliminate bottlenecks. It's not cost prohibitive especially for parts 1/4" and below. It gives us another alternative in our shop even if the customer may not need laser tolerances," Hauser says.

"With the laser we have a good compliment of equipment. From fab to weld to assembly. Competitors may do component work, but not large fabrications and weldments with the final assembly. This laser has filled the gap as far as being fully integrated and state-of-the-art at the same time. High technology with the laser helped reduce second and third operations, often eliminating drilling and punching."

CMF, like other fabricators, faces many challenges as the economy continues to improve. Most evident is expectations on turn-around time. "Everybody wants everything tomorrow. With the laser we have the flexibility to respond. As people get busier they want jobs faster."

In a redefinition of their shop, CMF now assigns teams of people to work on fabrications. They share responsibilities instead of being departmentalized. One team follows a job's progress through all operations.

Another challenge is a skilled workforce. "In our mature industry it is often difficult to find workers who possess all the skills we need today. With the laser they need to be computer



Tube sheets, 92" wide. Three parts made from one sheet 240" long with 336 5" diameter holes.



CMF produced the component parts for this stainless steel statue located near Chicago's Midway Airport.

literate, but also need to be a craftsman. They need to know the basics of metal fabricating."

CMF considers employees a main strength of the company. "Our estimators have 20 to 30 years fabricating experience. Our plant manager also helps with the estimating. He has the knowledge to help bid the job right. We have broad capabilities to fabricate just about everything."

Machine Support

Reliability and support for the PlateLASER-II have met CMF expectations. "PRC support has been great," says La Tourneau. "Once we diagnose the problem we have a fix in one day max. They ask the right questions to get to any problem."

As far as Whitney support, Whitney service engineers know all the applications and help out with tough jobs. La Tourneau thinks CMF made the right choice, "I think it's a great machine. Best machine here at CMF."

Artists Perspective

Chicago Metal Fabricators also works with local artists. One project involved cutting components for the stainless steel statue placed near the entrance ramp at Chicago's Midway Airport. The sculpture depicts a bird and jet aircraft as seen from the ground. The original sculpture was a small model and CMF was responsible for expanding component pieces to over 20 feet tall. Each part was individually drawn and matched to assure perfect fit-up.

Another project involved producing small figurines for a banquet honoring actor Gary Sinise. Each figurine is made from 1/4" stainless and depicts a Vietnam soldier. The parts were cut on the CMF PlateLASER and required an intricate internal cut-out in the shape of Vietnam.

To sum it all up, Hauser feels, "Customers are happier because we can hold tighter tolerances than before. With the laser we have enormous capabilities. A lot of our customers, especially in stainless and aluminum had trouble finding someone who can even do their parts. They realized significant cost savings on parts they used to have to machine." ♦

Making the Most of Your Capital Investment

Choosing to invest money in new capital equipment is an important decision. Choosing the specific equipment for that investment is an even more important decision.

While there are many good reasons to invest, the overriding majority of investors do so for one reason—to make money. When this is the rationale for your next equipment purchase use the following guidelines to assist you in evaluating which equipment will maximize your return.

New equipment can make money in the following ways:

1. Make existing products less expensively than current methods.
2. Provide capacity that procures additional profitable work.

In addition to the potential to maximize profit, risk must also be considered. All new investments carry risk—the amount of risk is equal to the amount of the fixed costs associated with the investment.

Understanding Costs

Before we perform an analysis of alternatives, it is important to define where the cost of owning and operating a piece of equipment comes from. Costs can be divided into three classifications:

1. Direct Labor
2. Operating Costs
3. Depreciation Costs

Direct labor costs are the incremental labor-related costs that are applied to the work as it is being processed. These costs are generally associated with the operator's time while running a machine, but may also include set-up, sorting and palletizing parts, and unproductive time. Labor costs are affected by: a) the hourly rate of the operator; b) the amount of time spent on a specific job; and c) the percentage of the operator's time applied to a given workstation. For example, an operator who has a burdened hourly rate of \$20.00 spends fifteen minutes running Job A (total time including set-up). He is also running a similar machine at the same time, and applies one-half his time to Job A, and the other half to Job B. The labor costs associated with Job A are:

$$\text{Labor Costs} = \$20.00 \times (15/60 \text{ hours} \times 50\%) = \$2.50$$

As different machinery and process alternatives are considered, the cost of ownership profile changes. Each profile can be represented as a pie chart to compare processes.

Incremental Operating Costs can be more complex, and the formulas are different for all machines. It is best to gather information from machinery manufacturers assuring proper evaluation of operating costs. Operating costs should consider

all consumable items associated with any given process. This includes, but is not limited to, punches and dies, nozzles and electrodes, lenses, gas, electrical power consumption, and maintenance and repair.

Depreciation (fixed) costs take the cost of purchasing the equipment and break it down to a per-hour cost. If the machine is financed, this is the monthly payment divided by the number of hours the machine runs each month. For example, Machine A is leased, and has a monthly payment of \$10,000. The machine runs two 8 hour shifts, and is utilized 80 percent of the time. We will assume that there are 22 production days per month. The depreciation cost associated with Machine A is:

$$\text{Depreciation Cost} = \$10,000 / [22 \text{ days} \times (2 \text{ shifts} \times 8 \text{ hours}) \times 80\% \text{ util.}] = \$35.51/\text{hour}$$

Cost of Ownership Profile

Now that we have defined where our costs come from, let's look at each process and machine to determine its associated cost structure. Each type of machine has a different profile of ownership cost. In general, more automated machinery have higher depreciation costs due to higher initial investments and lower labor costs.

Process speed also affects all three aspects of cost—labor, operating and depreciation. That is because most costs can be brought to an hourly level, normally measured per work performed (per piece), not per hour. Therefore, if the total cost of operating a machine is \$50/hour, a machine that produces 10 parts per hour has a cost of \$5.00 per piece, and a machine that produces 25 parts per hour has a cost of \$2.00 per piece.

As different machinery and process alternatives are considered, the cost of ownership profile changes. Each profile can be represented as a pie chart or stacked bar chart to compare processes. When displayed in this manner, it is easy to see where the bulk of the costs lie.

As an example, let's look at machine cost of ownership comparisons for a typical light plate cutting application where the bulk of the work is the production of somewhat hole-intensive

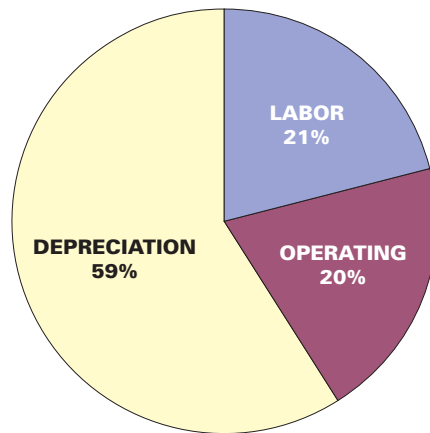
parts. The mild steel is in the 1/4" through 1/2" thickness range.

A single head plasma-cutting table (high definition) has a relatively low initial investment, and therefore a low monthly payment (depreciation). However, the operating costs may be expensive because the consumable life per part is low because of the hole-intensive nature of the work. The punch/plasma process greatly reduces the consumable costs by punching internal features and lowers labor costs with its fast speed, but has a higher investment level that increases depreciation costs. The laser-cutting process has a high investment level and slower speed that greatly increases depreciation costs. However, the process lends itself to reducing labor by allowing operators to run/support more than one machine at a time. Figure 1 shows typical profiles for these three processes. The magnitude of the overall costs will vary based on the specific work.

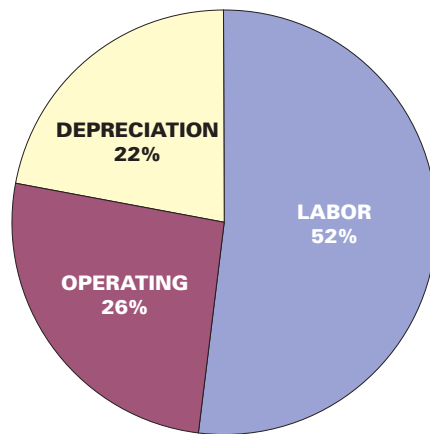
Process Cost Refinements

Once the cost of ownership profile is established, it is easy to see the source of the process costs. This comparison can refine the machine selection process by offering a roadmap for choosing the areas of opportunity that have the highest potential return. For example, if labor costs are 10 percent of the overall cost of ownership, and operating costs are 50 percent, perhaps it is best to attack operating costs first.

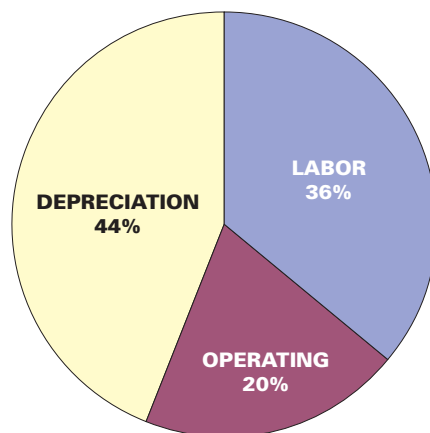
The cost profile of a typical plasma-cutting table showed that operating costs represent a substantial portion of the overall cost. When faced with this profile, Hypertherm Inc. embarked on a process refinement to attack operating costs while maintaining or improving the other cost aspects. The result was the Hypertherm HPR130, replacing the HD3070 in Hypertherm's product lineup. The HPR130 reduced operating costs by 50 percent or more, yet maintained or improved its speed and investment levels. The result was the modified cost profile in Figure 1 that



LASER CUTTING MACHINE



PLASMA CUTTING MACHINE



PUNCH/PLASMA MACHINE

Figure 1. Cost profiles for laser, plasma and punch/plasma machines.

compares much more favorably to alternative processes (e.g. laser) with lower risk (less investment level).

Speed plays a prominent role in both the labor and depreciation content of cost. In 2002 and 2003, Whitney introduced the 3400 XP and RAMPAGE!™. The need for these two process refinements was defined by using a model detailing the effect of speed in the overall cost of ownership. The net result: the cost of owning a 3400 XP was reduced by 33 percent over a previous generation 3400 RTC.

Much has also been done to improve the cost profile of laser cutting machines. When cutting sheet metal, cycle times are relatively short, and it may be necessary for an operator to service only one machine. However, as cycle times get longer, as with heavier plate, operators may be able to service two machines at one time, cutting labor costs in half.

The depreciation costs of cutting light plate are a large percentage of a laser-cutting machine's cost profile. This is because these machines have high investment levels and long cycle times in plate cutting. The only way to improve the depreciation cost picture is by increasing the number of parts produced on the machine. This requires increasing the utilization percentage by working three shifts and weekends.

Many times, customers purchase automation systems that allow them to work in a "lights out" environment, believing they will reduce labor and increase utilization. The fallacy is three-fold:

1. The investment level increases substantially and forces the monthly payment to be much higher. Running three shifts and weekends are now required just to get the depreciation cost per part back to the level of a basic machine with shuttle table without weekends. If the lights-out operation is interrupted on the weekend, utilization decreases and the associated depreciation cost increases because there are fewer parts over which to amortize the monthly payment. Similarly, as the in-

vestment level goes up, the risk goes up. If workload drops off, the monthly payment is amortized over the remaining workload at a higher per piece rate.

2. The limiting factor to production is the laser-cutting process itself. An automation system will not allow it to cut parts any faster, but only to increase the utilization levels. Since most laser-cutting machines have shuttle tables, the material handling attacks the time that is internal to the machine cycle, so effectively managing shop personnel can attain the same level of utilization.

3. The labor costs are still there. Direct labor personnel are still required to remove parts from skeletons, sort and stack them, and dispose of the skeletons. This is required whether it is done as the machine is producing the work, or if it is done following lights-out production. Since the labor is required anyway, it may be more advantageous to purchase a stand-alone machine with shuttle table, and man the machines when necessary over the weekend and third shift. This lowers the depreciation costs substantially since the investment level is lower and the utilization remains high.

In essence, from a financial perspective when processing light plate, laser automation appears to be a high-risk, low-return investment.

The Effect of Capacity

Up to this point, we have addressed the costs involved with making money. Capacity addresses the revenue side of the equation. Capacity is the amount of product that a machine can produce. Machines that have higher capacity can produce more parts. Assuming that each part produced is profitable, higher capacity results in higher profit as long as you can fill the machine to capacity.

When looking at first operation machines (plasma, laser, punch/plasma), adding capacity normally brings in work for downstream operations such as press brakes and welding. Subtle differences in costs can yield large differences in profitability when there are substantial cycle time disparities. For example:

Machine A produces 50,000 pieces of Part A per year.
Each piece costs \$6.00 to manufacture, and sells for \$7.00.

Machine B produces 100,000 pieces of Part A per year.
Each piece costs \$5.00 to manufacture, and sells for \$7.00.

Annual Profit for Machine A is as follows:
Profit (A) = 50,000 pcs x (\$7.00 - \$6.00) = \$50,000

Annual Profit for Machine B is as follows:
Profit (B) = 100,000 pcs x (\$7.00 - \$5.00) = \$200,000

Part A requires downstream bending. This adds \$0.50 in cost, and \$0.75 in selling price. No additional bending capacity is required.

Revised Annual Profits:

Profit (A) = 50,000 pcs x (\$7.75 - \$6.50) = \$62,500

Profit (B) = 100,000 pcs x (\$7.75 - \$5.50) = \$225,000

In this example, the faster machine with a 20 percent cost of ownership advantage offers a return on investment of 3.6 times that of the slower process. Since it has more capacity, the 20 percent cost advantage translated to a 360 percent profit advantage.

Economical punch/plasma machines allow job shops to offer better pricing and maintain substantially higher profit margins.

Minimizing Risk

Which machine has more risk—Machine A or Machine B? The answer may not be as simple as it looks.

Suppose Machine A derives most of its cost from incremental costs such as labor and operating costs, and Machine B derives most of its cost from fixed costs such as depreciation. If that is the case, Machine A may still be a smart investment. If your customer reduces his requirements to 20,000 pieces per year, Machine A will still be profitable, yet Machine B may actually lose money since you will still need to make your monthly payment regardless of how much you run the machine. If \$4.00 of the \$5.50 cost for Machine B is depreciation (at 100,000 pieces per year), that gets revised to \$20.00 per piece at levels of 20,000 pieces per year, for a total cost of \$21.50 each. In that case, you would actually lose \$15.00 on each part, or \$300,000 annually!

For risk minimization, it is important to find machinery and processes that have a higher percentage of the incremental costs (labor and operating) and lower percentages of fixed costs (depreciation).

Putting It All Together

Now let's look again at the first operations processes.

Punch/Plasma machines generally out produce laser-cutting machinery 2 to 1 or even 3 to 1 (higher capacity). The cost of ownership is normally substantially lower than lasers—30 percent or even more—and the percentage of depreciation cost to total cost is much lower than lasers. Punch/plasma has lower risk. Financially, it yields a much higher return—as much as an order of magnitude above lasers. A large percentage of work in the 10 gage and thicker range can be processed with either process.

The most successful job shops use both processes. High quality laser cutting machinery helps job shops open doors to new customers. Economical punch/plasma machines allow job shops to offer better pricing and maintain substantially higher profit margins.

Own a laser? Make your next machine a Whitney punch/plasma machine and see how our customers make money. ◆

Good Fabricator Made Better

The 1524 Fabricator, introduced by Whitney in 1997, was developed as a faster, better, more accurate and more flexible alternative to the older, manual style fabricator and ironworkers.

It achieved its goals when it was introduced and continues to carry on the Whitney tradition of versatility and continual improvement. This good product is now even better.

Before we get into the recent improvements, let's look at the basic advantages of the 1524 design.

- Easy to install and quick to begin producing parts. Trouble-free installation consists of lifting off the transport, leveling, connecting power sources and aligning the punch and die. These easy installation steps are typically handled by the purchaser.
- Operator training on the easy-to-use control is usually complete in half a day, moving the operator quickly from training to production.
- Quick change 28XX tooling—available in next day shipments from Whitney—is tough and economic.



The 1000M control is standard on all 1524s and all other fabricator models—1330, 1530 and 1548.

- Versatile! The 1524 not only punches and forms flat parts, it can be quickly adapted to punch up to 3" leg up angle iron. Additional control valves added to the hydraulic power unit allow the operation of a Whitney angle shear and/or Coper/Notcher/Bender.



The 1524 is ideal for short-run applications where punching and forming accuracy is critical.

Most recent improvements to the 1524 make this economical Fabricator an even better match for your shop floor.

- An Anti-Rotate Attachment is now standard on all 1524 machines. This gives added support to the tooling—particularly useful for tough applications—to keep the punch and die in alignment.
- A new Panelgag 1000M Control features absolute encoders which means there is no homing of the machine required, saving production time. With the 1000M Control, Whitney support is guaranteed. The 1000M is standard on all 1524s and all other fabricator models—1330, 1530 and 1548.

Both the Anti-Rotate Attachment and the Panelgag 1000M Control are available as retrofits on older Whitney fabricators.

The 1524 is ideal for short-run applications where punching and forming accuracy is critical. Its features offer a perfect mix of production flexibility. ♦



Wisconsin Metals Provides “Anything in Metal”

Wisconsin Metals, a full-line metal service center in Reedsburg, WI, has the right formula for growth. With a young management team, and an eye toward the future, they completed the most recent of five expansions spanning the 20-year history of the company, and added a STORM precision plasma cutting table to their machine tool list.

Sean McNevin, a manager, describes Wisconsin Metals as a service center focusing solely on Wisconsin. Distribution has always been the mainstay of the company with simple fabrication services enhancing their offerings.

“We do a lot of cut to length and simple forming where a customer’s equipment doesn’t have the capability ours does,” says McNevin. “We focus on saving our customers time and effort. We make it easy for a lot of OEMs and job shops.”

Anything in Metal

Although Wisconsin Metals doesn’t market their fabrication capabilities as stand-alone services, they received enough requests for precision cut parts that the Whitney STORM was added to their press brake, shear, roll forming, welding, ironworker and vertical saw capabilities. The STORM plasma cutting table is an economical tool for producing precision metal parts from material up to 1" thick.

“Anything in metal” is the company slogan. When providing value-added parts, they may be repairing a farmer’s equipment, simplifying a job-shops’ project, or helping an OEM maintenance department stay ahead of the never ending “to-do” list. Prototypes, replacement parts, and smaller runs are typical jobs for Wisconsin Metals.

McNevin explains, “Many of our customers certainly have the capability, equipment, and expertise to do some of the jobs they send us. But in a matter of minutes, they can email us a CAD file,

we’ll download it, cut the parts out and deliver. The cost of the service can’t be measured against the downtime they would have if they interrupted a production run. We can easily save them up to a half a day.”

Choosing Quality

With a broad range of tables to choose from, Wisconsin Metals did their homework before investing in the STORM. A key factor was payback. Based on existing jobs, without aggressive promotion of the new capability, payback is expected in less than two years.



Customer parts from 11 ga. through 1/2" are programmed, produced and ready for delivery in “a matter of minutes” on the STORM.

“We chose the STORM with the HT2000 Hypertherm torch so we would have the ability to do part runs for our OEMs. When their production is full and they need a little help we can run their parts on the STORM and give them the quality they need,” says McNevin. The HT2000 was chosen from four performance-related torch options available on the STORM tables.

Ease of Use

Service and training was—and still is—important. McNevin pointed out that Whitney understood the company’s needs and



The management team at Wisconsin Metals from left to right: Rita Tracy, Sean McNevin, and Neil Cray.

worked with them to be sure the STORM, the selected torch package, and its software packages fit.

Since everyone in the shop at Wisconsin Metals is trained on all shop equipment, the STORM had to be operator friendly. The Parametric Shape Library offers 49 shapes to easily create more than 300 parts at the cutting station. Positioning, rip cutting and homing is accomplished with an easy-to-use manual mode.



The largest stocking steel service center in central Wisconsin. Future plans are to continue expanding the selection of available materials.

Grouping or nesting of parts can be done either manually or automatically with nesting software based on the complexity of the jobs flowing through the shop.

Using the STORM shape library and Autocad software, Wisconsin Metals can design and produce parts that are simply traced on cardboard, or e-mailed as CAD files. Short lead times are not a problem with everything handled in-house.

The nearing 100 year anniversary of Whitney, established in 1907, also played a part in the choice. McNevin says, "Whitney is the leader. It makes a difference."



Teresa Owen takes an order. If Wisconsin Metals doesn't have the material on hand, they know where to find it.

What's Next?

What does the future hold for Wisconsin Metals? Continued growth by investing in personnel, technology and equipment.

Looking forward, McNevin explains, "We're the largest stocking warehouse in central Wisconsin, but we don't strive to be the biggest, just the best."

"We'll continue being a one-stop shop for our customers. If they want the raw material to fabricate themselves—they can have that. But if they need a couple of parts burned out, now they can call us and we'll do that. With the addition of the STORM, our shop has evolved with our distribution." ♦



Jeff Meyer, shop foreman, displays parts cut on the STORM. Many parts are easily created by using the Parametric Shape Library which offers 49 standard shapes.

Degelman Produces With 4400 MAX

Manufacturers who provide a wide variety of agricultural equipment products can be found throughout North America. The Western Canadian province of Saskatchewan is no exception. A population of just over 1 million people occupies nearly a quarter of a million square miles in "The Land of Living Sky." Recognized as a world leader in dry land farming technology, thousands of skilled workers make products used for tillage

and rock removal, spraying and fertilizing, livestock and forage, zero- and minimum-tillage seeding, and grain handling, storage and transportation.

One of these highly regarded agricultural manufacturing companies, Degelman Industries, is located in Regina, the capital city of Saskatchewan. In 1962 on the family farm in Raymore, Wilfred Degelman developed a uniquely designed rock picker and founded the company that bears his name. A move to Regina in 1966 began a series of expansions. Dozer blades were added in 1969 and commercial rotary mowers in 1998. Their current product lines include land levelers and rollers, strongboxes for snow removal, rock rakes and diggers, and straw control machinery.

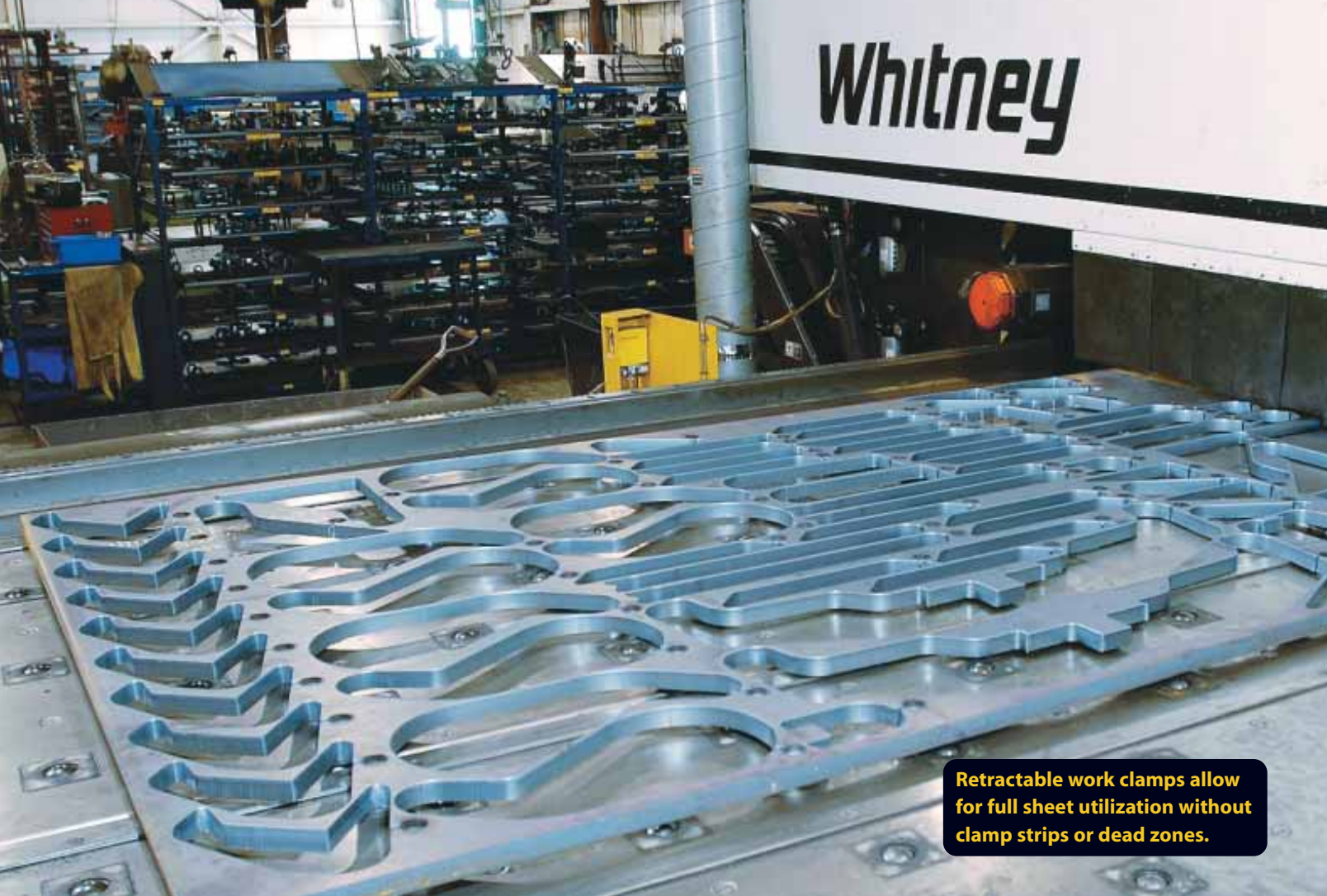
Serving the Market

The products that Degelman Industries manufactures are developed after direct communication with the markets they serve. Face-to-face meetings with farmers at agricultural products shows give rise to new ideas. The company considers four factors when deciding if a product should be developed: Is the product salable? Does the product fit into current manufacturing capabilities? Can the product be manufactured at a competitive cost? Is there a readily available market for the finished product? Key to the success of a new product is quality and durability, and each is heavily field tested and scrutinized in a development cycle of six months to two years.



Top left: Degelman RC1510 Rotary Cutting machine in transport position.

Bottom left: Degelman Rock Picker



Retractable work clamps allow for full sheet utilization without clamp strips or dead zones.

Degelman Industries occupies 128,000 square feet and employs 140 workers. Privately held and family owned, Degelman continues to head the company as president, and his six children oversee daily operations including research and development and plant operations. The Saskatchewan labor market supplies a wealth of skilled labor, many of whom come from rural backgrounds and farms. Within the family of current employees, 30 percent have seen over 25 years of service at Degelman.

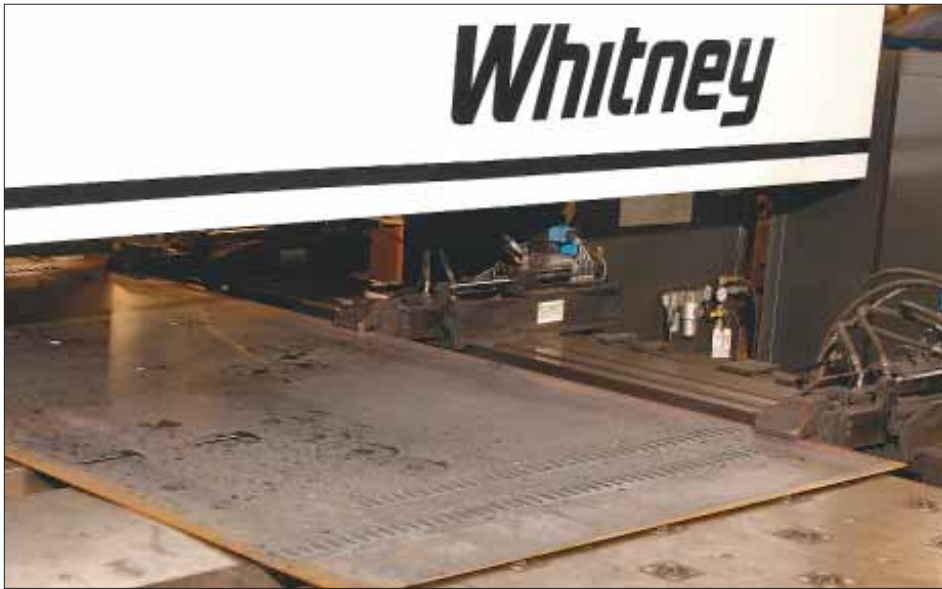
Traditional methods of manufacturing—shears and oxy-fuel cutters—were used during the early years. As the company expanded, cleaning and painting operations were added and machinery was upgraded. Production requirements and

quality expectations demanded that Degelman move to robotic welding. Blair Flavel, operations manager, recalls that traditional manufacturing equipment could not support robotic welding requirements and moved the company into advanced manufacturing technology. Today the plant is populated with CNC milling machines and lathes, multi-axis press brakes, CNC plasma cutters, and CNC punch/plasma.

Customer expectations have led to the implementation of some lean manufacturing concepts. Degelman has reduced lot sizes by a factor of ten. Flavel says that the key is coordination in all aspects of operation. They use a minimum/maximum system whenever possible, both in production and in purchasing. One problem with lean con-



Left: Plasma cutting with 400 amps. Right: Compression bushings are pressed into a punched and shaved hole at the 4400 MAX.



Degelman uses the 4400 MAX for gage through 1" material.

cepts, he believes, is that it does not adequately level the load in seasonal markets. Degelman's philosophy is to run in batches large enough to allow reaction to customer demands within seven days yet small enough to equalize production throughout the year and keep production costs competitive.

Searching for Power, Speed and Flexibility

The need for a fast and flexible operation demanded a study of new fabrication manufacturing processes beginning in 2000. The staff was in place and prepared. All that remained was finding the right piece(s) of equipment.

The first step was determining the type and thickness ranges of the materials moving through the shop. Much of the load was in 7 gage mild steel, but most work centered on nearly equal amounts of 3/8", 5/8", 3/4", and 1" steel. Any considered solution had to process all of the thicknesses effectively. A second concern was the need to produce a high quality, straight hole of 1.25" diameter through 1" plate. Degelman uses a compression bushing to improve their product reliability and durability. Unfortunately, a traditional punched hole had too much break out, a plasma cut hole was too inaccurate, and a laser cut hole was too expensive. Drilling and machining historically produced the best hole.

Degelman was also faced with a tremendous amount of outsourcing. Blair Flavel understood that outsourcing could reduce capital investment costs by minimizing the number of machines required, but that it also reduced direct control over production run sizes, quality, response times, and costs.

Laser technology was sometimes used to cut many of the parts that Degelman outsourced. Although the costs were often high, they could be less than in-house production costs that were burdened by multiple set-ups for numerous secondary operation and non-value-added material handling. With the advances in laser plate cutting technology, it was natural that laser-cutting machinery would be a priority. A visit to the International Manufacturing Technology Show (IMTS) held in Chicago, Illinois in 2000 presented a wide array of lasers that might support their operations. It was at this time that Degelman witnessed the capability of punch/plasma equipment. The machine shown at the Whitney booth (a 3400 RTC) was able to process a maximum of 1/2" thick material, but information describing the recently in-

troduced 4400 MAX compelled them to visit the nearby Whitney factory to see the machine up close.

The Whitney 4400 MAX

Specifications for the 4400 MAX are impressive. It has 100 tons of hydraulic punching force that can successfully fabricate material from 14 gage through 1". It has a working envelope of 96" x 160" that supports larger part sizes. An optional Hypertherm HT4400 oxygen plasma system cuts at very high speeds (70 IPM in 1"; 160 IPM in 1/2"), surpassing the cutting speeds of laser by a factor of two or more. Edge quality and accuracy were well within requirements and dross-free cutting could reduce the amount of grinding. Blair Flavel was well acquainted with plasma cutting but his prior experience with older systems brought some skepticism. Morris Elynuk,



Degelman Programmer Glenna Herman and Operations Manager Blair Flavel join Wallace Machinery Sales Representative Dan Joss in a discussion of the 4400 MAX.

who supervised the production floor, also questioned whether the 4400 MAX could truly perform as advertised.

Whitney prepared numerous time studies that documented actual floor-to-floor part times. Initial results showed a possible production rate for punch/plasma that was three times that of the laser. Estimated scrap rates were 10 percent that of their current traditional methods. Furthermore, when compared to stand-alone fine plasma cutting systems, production requirements (for the sample) dropped from 50 percent of capacity to 6 percent—one machine could replace several!

Production costs drive profitability. A typical 1/2" part that was costing \$15.94 to produce with current methods would drop more than 50 percent to \$7.47 by using a laser. Significant. But that same part would cost only \$3.14 if made on a 4400 MAX—a reduction of 80 percent. Similar results were seen in a typical 1" thick part—traditional processing cost \$4.66; laser processing cost \$3.73; punch/plasma processing cost \$1.66. The economics were clear.

A challenge remained, however. A major part of the justification included eliminating the secondary processing required to make the 1.250" diameter holes in 1" plate. Whitney produced a sample part that demonstrated the technique of punching and shaving to achieve the straight sided hole needed for the bushing. This involved pre-punching a hole smaller than the desired finished diameter, and then re-punching the same hole with a punch of the final diameter along with a die of minimum clearance. The result was a hole with straight sides suitable for the bushing.

During the sales cycle, the Whitney distributor for Saskatchewan, Wallace Machinery, worked directly with Whitney to provide information and samples. Dan Joss even drove sample parts from Winnipeg to Regina late one night. The process was validated and verified by demonstration. The 4400 MAX was justified financially. They installed their machine in August of 2002.

Efficient Production

Today, 90 percent of Degelman's sheet and plate is first processed by the Whitney 4400 MAX. They have eliminated shearing as an operation, keeping only a single shear for utility work. The greatest impact has resulted from the punch and shave operation that produces the bushing holes. Instead of requiring multiple secondary operations, the compression bushings are now installed by the operator of the 4400 MAX immediately after the parts come off of the machine.

Half of the parts are created in disposable, ever changing nests (dynamic nesting) to accommodate fluctuations in demand. The remaining parts are made from fixed nests (kit nesting) that



Eighty percent of robotically welded assemblies are produced on the 4400 MAX.

supply common product components. Glenna Herman utilizes SigmaNEST® to support the five or six nests per day that are required. They have a library of nearly 8,000 part numbers and create about 10 new part programs each week. Operators like the Whitney a lot. The old plasma only table was dirty and slow. The 4400 MAX is fast, reliable, and clean.

Would Degelman Industries purchase another 4400 MAX if needed? Blair Flavel says yes, indeed!

"We probably wouldn't consider anything other than punch/plasma for future needs. The accuracy on punch/plasma is more than good enough to accommodate robotic welding. 80 percent of everything we robotically weld comes off the 4400."

The Whitney 4400 MAX currently runs 20 to 24 hours per day, seven days per week. Degelman allows four hours per week for routine maintenance and the operators are responsible for daily upkeep and cleanliness. It has been integrated into their lean manufacturing concepts and runs multiple families of parts with low lot sizes without the cost penalties incurred by traditional manufacturing.

Degelman Industries is known for their innovation, product quality and durability, and customer support. The addition of a 4400 MAX to their operation places them in the forefront of manufacturing technology in "The Land of Living Skies." ♦

Cut Your Structural Punching Time

Whitney's Portable Hydraulic "C" Frame Presses save you time by going to the structural fabricating job. These useful tools quickly punch all types of structural shapes including angles, beams, channels, flat bars and plate.

Designed to accommodate any structural punching job, the Portable Presses are available in both flange and web configurations and in a variety of sizes.

The Flange Presses punch the flange of beams and are excellent for punching the legs of angles and flanges of channel. They also work well for putting holes in the edges of plates.

The Web Presses have a pedestal die area for punching the webs of wide flange beams and channels.

Both style presses are available in tonnage capacities from 20 to 250 tons with throat depths from 2-1/4" to 30".



A jib crane and suspension spring position the 90-ton Model 791 Web Style Press to layout points on a wide flange beam.

"Once we had the Portable Press set up with a jib crane and suspension spring, our fab shop crew was able to cut production time for a five story building by three days. This resulted in significant dollar savings."

The mobility factor of a single Portable Press—or two or more creating a Portable Press Fabricating Center—is an exceptional advantage.

When punching long sections, Portables save time and eliminate excessive material handling, particularly when compared to doing the same jobs on a stationary ironworker.

For example, holes can be punched along the length of a wide flange beam, both

in the flanges and webs, by suspending a pair of portables (flange and web style) over the material with jib cranes and suspension springs.

A construction fabricator says, "Once we had the Portable Press set up with a jib crane and suspension spring, our fab shop crew was able to cut production time for a five story

building by three days.

This resulted in significant dollar savings."

Each Portable can be easily positioned to the layout marks and the holes punched. The press is moved, not the beam, greatly reducing material handling. However the beams can rest on either work stands or a roller conveyor. A roller conveyor allows for quicker lateral positioning.

Significant savings are also seen when Portable Presses are used instead of other methods such as magnetic based drills. One user comments, "You can punch five holes while you are magnetic drilling one. I love to punch over mag drilling...any day."

Call today to learn how Portable Presses can streamline your punching processes! ♦



A Model 771 Web Press is held in a table fixture for punching clip angles. The press is easily removed for use as a portable.



John Oten fabricates parts on Piranha's most popular ironworker, Model P-50, at K&K Manufacturing, Cross Plains, WI.

PIRANHA IRONWORKER APPLICATION

Piranha's Most Popular Ironworker Increases Productivity Three-fold

A full line of pull-behind trailers, decorative hand-rails, production runs of components for construction companies, custom truck racks...and an endless variety of truly custom parts...are all produced at K&K Manufacturing in Cross Plains, WI.

This small fabricating shop grew out of the need to diversify when the family farm was struggling for profitability in the late 1980s.

Kip and Kim Kalscheur, two brothers from the rural family of seven children, started "welding things together" mainly creating repair parts for agricultural equipment.

Today K&K Manufacturing has its own structure which has been expanded twice, located on the family farm property. But location is about the only thing that has stayed the same.

K&K has added four employees, purchased fabricating

equipment, and now delivers parts to companies as far away as Grand Island, NE. In the summer months they struggle to keep up with orders for their own line of trailers—available only at the K&K facility.

Seeing is Believing

When you are in charge of a busy, tightly-run shop, it is hard to get away to check out new equipment. So Kip appreciated the opportunity to see a Piranha ironworker in action at his own facility. One of Piranha's several demonstration trucks in operation around the country stopped at K&K.

"The big thing was seeing the ironworker on that demonstration. We saw the P-50 in action and said we have to have one of those," says Kip. "When it started producing parts during that

demo we asked if it would slow down... because the other ironworker slowed down during a run. Nothing works as fast as this machine."

The Piranha P-50, single-operator model doesn't slow down. The 10 horsepower motor that's standard on this model provides unmatched speeds when compared to under-powered machines from the competitors. K&K's Piranha, capable of punching 60 holes per minute at a 1/2" stroke, reduced the run time of one of K&K's construction component jobs by more than 50 percent.

Kalscheur explains, "The two parts we do the most have ten holes each and we run 400 parts at a time. Speed matters. On the other brand ironworker it took a full two days—on this machine it takes less than a day."

Speed, Quality, Flexibility

Automatic urethane hold-downs on the punch strippers assure production speed without compromising the quality of the punched part. Fabricated parts are flat with clean, burr-free holes.



Kip Kalscheur was impressed by the P-50 when he saw it demonstrated at his own facility. Piranha has several demonstration trucks in operation around the country.



In the summer months, demand for K&K Trailers exceeds availability. The trailers are available only at K&K Manufacturing,



The coper-notcher capability on the P-50 is used virtually everyday—faster and more accurate than any previous process.

Even though the P-50 is used primarily for larger punching jobs because of its ease and speed, all of its fabricating capabilities come in handy. K&K always takes time to serve a customer by making one or two custom parts. Every feature—the plate, angle and bar shears, bending attachment, the punch end, and the coper-notcher—is used at least once every day.

“When we first looked the machine over we asked if Piranha could replace the coper-notcher with something else, but the way the machine is setup they couldn’t. And we’re glad they didn’t. Now we use that coper-notcher every day,” says Kip.

“Everything about this machine is better,” he adds. “It’s almost three times faster and it doesn’t go through punches any quicker than the old machine. I can tell you for sure that when we need to buy another machine, it will be a Piranha.”

Piranha offers five models of single-operator ironworkers and five models of dual operator ironworkers with capacities ranging from 36 to 140 tons. The P-50 Models have 50 tons of punching power, an 8" throat depth, 13-1/2" open height, and 4-1/4" stroke length. The plate shear is 15-1/2" long. The angle shear can shear up to 5" x 5" x 3/8". The standard bending attachment is 8" long.



Components for construction companies keep the P-50 busy. With orders up to 4,200 pieces, production speed is critical.

Additionally, it comes with the industry’s best integrated coper-notcher. The P-50 runs on a 10 horsepower, 3 phase motor (single phase option available). ♦

Piranha recently produced the 10,000th P-50, its most popular model. Users consistently find that the P-50 offers outstanding return on investment!



A finishing coat of paint may be added to K&K parts before they go to the customer.

Fab-Masters' Piranha Makes Better, Faster Bends



The price and mechanics of the Piranha 250-12 contributed to the purchasing decision at Fab-Masters, Inc.

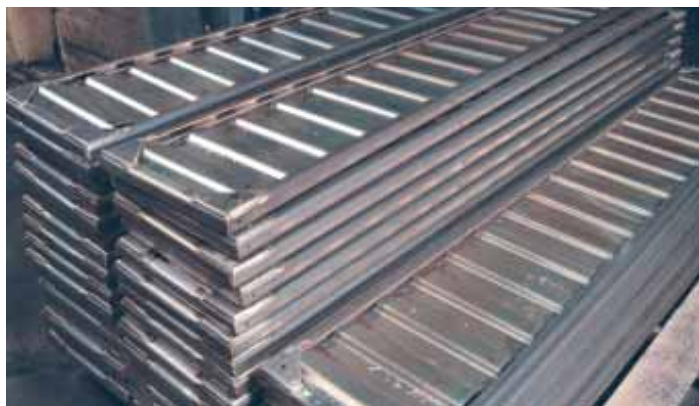
Centrally located in Janesville, WI—about one hour from Madison, Milwaukee or Chicago—Fab-Masters, Inc. serves metal fabricating customers, providing quality parts from light gage sheet metal to plate steel in mild or stainless and aluminum.

Fab-Masters opened its doors in 1995 with 4,000 square feet. Bob Knutson, today's president, and Paul Mielke, vice president, were the original employees. In less than two years, square footage doubled and capabilities and employees were added.

Ten years later, Fab-Masters is positioned for its fourth expansion, another 8,000 square feet, with plans for more weld stations and a second shift to enhance its 25 person work force.

Dedication to Quality

Jim Hannebaum, vice president of sales and marketing,



ISO 9001:2000 certification helped Fab-Masters secure contracts for military vehicle components.

began dedicating his metal fabricating expertise to the company in 2000. A point of pride for Hannebaum and the company is the ISO 9001:2000 certification granted in July 2004.

"It took nearly two years, but our customers were insisting on the certification," says Hannebaum. "A lot of our business is military contracts requiring the ISO. Now there is room to keep expanding those sales."

In addition to producing components for military vehicles such as the Hummer, M1 and Bradley, Fab-Masters supplies parts for a broad variety of manufacturers. Lot sizes run anywhere from five pieces to several hundred. Although basically a job shop, Fab-Masters does produce one finished product—sprinkler soffit enclosures for Grice Engineering.

Fab-Masters quality assurance program provides contin-

uous monitoring of all operations as well as final inspections of parts and assemblies. Each shipment includes a Quality Assurance Report, assuring that the parts are made to exact specifications.

Adding a Piranha

When more tonnage was needed for their bending operations, Fab-Masters compared capabilities of several brakes before choosing the Piranha 250-12 Press Brake.

Hannebaum explains, "We looked at the price and the mechanics of the various press brakes. Our decision to buy the Piranha was based on its capability of crowning to get straighter bends and more true bends. We like the single cylinder stroke that eliminates drifting which uses operator time and reduces quality."

Key to Piranha bend quality is the heavy-duty mechanical linkage system combined with an exclusive Preloaded Ram System. Full rated tonnage for bending and punching is achievable at any point across the bed.

"The Piranha is an easy machine to setup," adds Hannebaum, "and with the automated backgauging systems you can get multiple bends—a big plus for us because it eliminated double handling of material.



Jim Hannebaum, Vice President Sales & Marketing (left), and Bob Knutson, President, developed a marketing plan and gathered investors to get the company started in 1995.

"Throughput time for our bending operations is a third of what it used to be. What took one and a half to two days on the old mechanical, we do in four or five hours."

Competition and Automation

Fab-Masters knows how to grow their business. The problem they face today is finding capable employees. Competition is fierce to hire people who can weld, read blueprints, do the fabricating and understand the mechanics of the equipment. So they hire and train.

Adding automated, easy-to-use equipment like the Piranha Press Brake, speeds the process along.

The Hurco Control, one of Piranha's control options, stores 600 jobs or 2400 bends with a simple job mode for quick bends. Set-up is fast with data carry forward which minimizes keystrokes and allows quick edits and correc-

tions. Bend allowance is automatically calculated and adjustable for each station.

"The Piranha serviceman trained several of our people on using the Hurco control and the brake itself. When we have a large quantity of parts we'll set up the machine, put an operator there and we're ready to go." ♦



Shop Foreman Lee Ekleberry is one of Fab-Masters' employees trained to program and set-up the 250-12.



The automated backgauging system eliminated double handling of parts. For some jobs, production time is now a third of what it used to be.

Bertsch Four Roll Bending Machine Reduces Handling for Universal Pipe

"When Bertsch came out with this four roll it looked like a good machine," says Anthony Jurkas, owner of Universal Pipe & Supply in Joliet, IL.

Robert Jaris, Jurkas' uncle, began Universal in 1976 as a pipe distribution facility. Jaris also established a shop in Ft. Myers, FL which is owned by Lou Lehman today. Both shops have identical four roll Bertsch models.

Universal's first Bertsch was a 1/2" 10' three roll, purchased in the early 1990's. It replaced a roll form machine purchased from a European manufacturer about 10 years earlier. "That machine

pleted product. So you're not handling it twice," Jurkas explains. "With the three roll you were turning the plate around to get the other side and that was time consuming."

With a four-roll, only one entry of material is needed to complete the forming cycle. There is a four step rolling sequence: 1) feed plate and square against the rear roll; 2) raise entry roll to pre-bend the leading edge; 3) lower entry side roll and raise rear roll; 4) continue rolling, trailing edge will pre-bend automatically, then lower pinch roll and open hinge for cylinder removal.

Increased speed is also an advantage of the four roll.

"Steve Kincaid, our operator, rolls enough cans in half a day to keep the welder busy for the day and into the next morning." Variable speed control from 0' to 14' per minute allows the operator to adjust the forming operation depending on material thickness and composition. And, the Bertsch four roll pre-bends up to its full rated capacity from either side of the machine.



The speed of the four roll Model 87-10 impressed Anthony Jurkas, owner of Universal Pipe & Supply in Joliet, IL. Pipes from this job are joined by welder Rodolfo Diaz into 20' sections for the road boring industry.



needed a lot of maintenance and parts were very hard to find," says Anthony. "So we sold it and looked around for a Bertsch."

Jurkas was impressed when he was introduced to the four roll Bertsch Model 87-10 which rolls A36 up to 7/8" and 10' wide in 2000. He added it to Universal's machine roster and Lehman also purchased an 87-10 for the Florida plant.

Increased Production

"The reduced material handling really interested me. You put a plate in one time and the next time you handle it, it's a com-

Universal's customer base is primarily the road boring industry and casting contractors within the midwest. "We get as far east as Ohio but if you go further with this size pipe, freight gets to be an issue."

An example of a typical job on Universal's Bertsch is 54" diameter pipe produced from 10' wide A36 plate. Two pipe sections are formed and go to welding. The welders do a bead on the inside and finish the job with submerge welding. The 20' sections are used to hold back dirt while pipe or electrical cables are put in place. Then the void is typically filled with aggregate.



Bertsch roll forms pre-bend up to their full capacity. Here, operator Steve Kincaid rolls 10' wide 1/2" A36.



Adjusting to the Market

Today Universal is running the Bertsch four roll every day, running from 3/8" up to 1". Downtime is virtually non-existent but if a part is needed, Bertsch overnights it to Universal to keep them on schedule.

"There was a time when we switched gears to the buying and selling of pipe and didn't run it for a while, but now there are very few days we are not running. I have a good rapport with our customers and they were glad we got back into rolling," explains Jurkas.

In addition to monitoring their customer's needs and continuing good service, Universal implemented changes to keep competitive. Rather than stocking a lot of plate, they order per job, lowering overhead. Cutting of plate is kept to a minimum by ordering stock that works within a job's parameters, controlling excess production time and wasted material.

Bertsch hydraulic four-roll bending machines are reliable, highly productive machines for piece parts as well as production requirements. Several models are available offering capabilities to form steel from gauge through 14" thick.

Options available include: cone rolling attachments, side or overhead supports, feed tables, CNC controls, hardened rolls, digital readouts, electronic leveling of rolls and electronic speed control.

According to Anthony, the Bertsch contributes to cost control by keeping waste to a minimum with little or no flats. "We don't have much waste—it rolls pretty true."

Universal also downsized the work force to focus the company's efforts specifically on pipe distribution and production. This allows them to offer their customers the best service and flexibility within the pipe supply arena at a good price.

Jurkas' business strategy works. He is anticipating an upswing in business from both established and new customers, "It seems like I'm bidding a lot of work.

"There are some customers that tend to get in a bind—they wait until the last minute for job changes and need pipe right away. We can't do it all the time but we always try. They know I'll give them pretty good service. They can reach me almost 24 hours a day." ♦

SlugMagic™ Dies and Cooperation Solve Tough Tooling Application

The cooperative process started with a call from David Ordway at Farwest Steel Corporation. He wanted to know if Whitney's new SlugMagic Dies really worked.

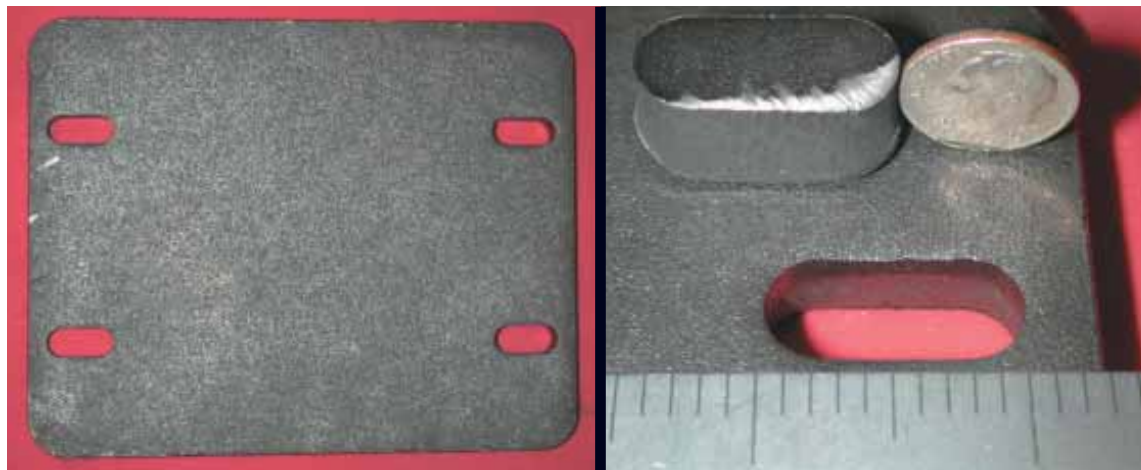
The Process Improvement Team agreed to contact Whitney. Ordway called Whitney Service and explained the problem and the urgency of quickly finding a solution. Farwest needed

to provide a quality, cost efficient part from this troublesome A36 for a customer the company had just pulled on-board.

"I called Whitney because we see lots of flyers come across our desk and we don't know which products really work," explains Ordway, Farwest's part programming and Whitney specialist and member of the Farwest Whitney Process Improvement Team. "We'd

tried some of the slug-holding dies from a different company and they didn't work."

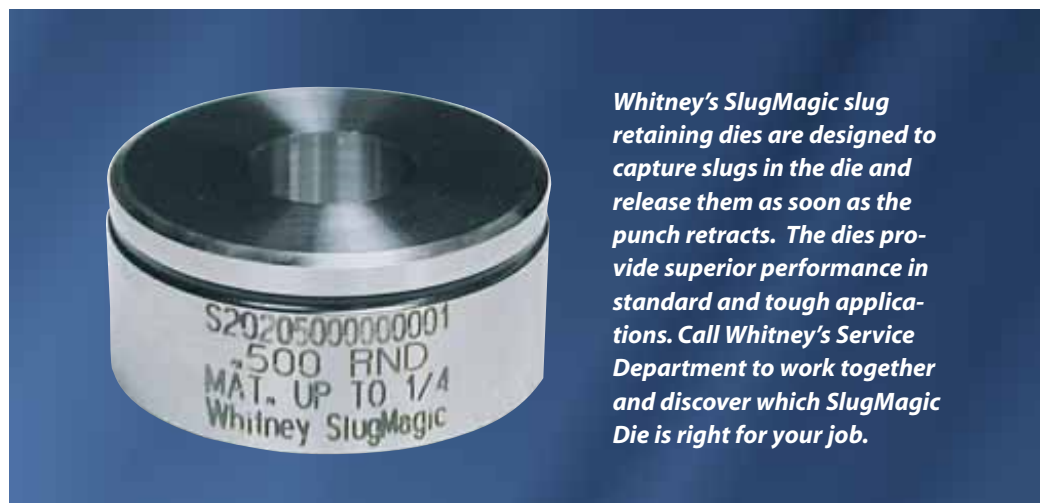
Since the call wasn't a standard order, it was transferred to Mike Dixon, Business Development Manager. This began a joint effort between the Farwest team and Whitney to eliminate the slug-pulling problem.



Left: The finished part produced on the Whitney 661 machine. Right: Slug showing evidence of the slug pulling problem that was solved by Whitney and Farwest using SlugMagic Dies.

Farwest Steel, a multi-plant plate, rebar and structural service center headquartered in Eugene, Oregon, was faced with a slug pulling problem when running some shot blasted, oiled 1/2" A36 plate with a "slightly different" chemistry, and punching obround holes. Something about the steel created more slug pulling than normal. Unfortunately, Farwest had purchased a large amount of this steel at a very good price and needed to use it.

A Whitney Process Improvement Team including Operator Mark Revell, Sales Staff Member Jeff Laing and Whitney Programmer David Ordway, work together to understand the needs and priorities of the team and its machine. The team, involved in this effort, was developed to continually monitor and improve utilization of the Whitney 661 punch/plasma fabricating center.



Whitney's SlugMagic slug retaining dies are designed to capture slugs in the die and release them as soon as the punch retracts. The dies provide superior performance in standard and tough applications. Call Whitney's Service Department to work together and discover which SlugMagic Die is right for your job.

The first attempt at a fix was a set of Whitney's new Slug-Magic™ S3 dies which had never failed to prevent slug pulling in 1/2" material—including the shot blasted and oiled variety. During the development of the SlugMagic Dies Whitney leveraged its position as the machine builder to determine the optimal pinch point for Whitney machines. This explains why the SlugMagic products work in Whitney machine tools when other dies may not.

Understanding the need for quick success, the set of dies were produced and overnighted to Farwest the same day as the call. Results were a slight improvement over the standard straight dies, but not the solution needed. This was quite alarming to the engineering staff at Whitney.

"I could see the mechanics of what was happening," says Ordway. "We investigated where the slug was being retained, how deeply it was being held, and how easy it came out of the die. We noticed that the slugs causing the problem had a scraped top from the plate pulling across them."

Ordway's thought was that a lower pinch point on the SlugMagic die might provide enough extra slug pull prevention. So Farwest and Whitney worked together to give Ordway's recommendation a try.

Another set of SlugMagic dies (S4 for use in material up to 3/4") with the lower pinch point—were overnighted to Farwest. The shorter distance from the bottom of the die to the pinch point worked. Farwest's fabricating shop was able to satisfy the expectations of their sales department, their

management, and most importantly, their customer.

"The ability to have my tool supplier listen to my technical opinion is very important to me. Sometimes a solution to a problem can't be bought off the shelf and you have to reinvent the wheel." Ordway believes that the willingness to listen and cooperate on a

technical problem "is pretty rare in this business."

He also finds value in being able to discuss the technical aspects of the entire 661 punch/plasma machine when faced with an unusual application or material. But whether an easy job or a challenge, Whitney punches and dies are the only tools used in Farwest's 661...per operator preference.

"Whitney is the supplier of our machine so I feel confident about the tooling always matching and being made with the machine in mind. We always get good service—with one day turn-around when we need it. When we have a problem, I sense an urgency in your voices and that makes all the difference in the world. Our problem becomes Whitney's problem." ♦

"The ability to have my tool supplier listen to my technical opinion is very important to me. Sometimes a solution to a problem can't be bought off the shelf and you have to reinvent the wheel."

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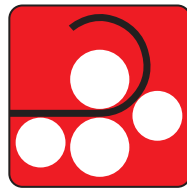
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