



THE GASKET FABRICATOR

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President's Message

Gary Fell



It seems like I just finished writing to you and now it's time to start again. The Holidays are over. We had January to live up to our New Year's Resolutions or abandon them. In Wisconsin, we are midway through the coldest week of the year and looking forward to some warm weather at the GFA Spring Meeting in Savannah.

This will be our first Tuesday to Thursday meeting schedule. I welcome your feedback on this change. Did it allow time for you to attend the committee meetings and programs and still get home on Friday in time to spend the weekend with your family?

We have two presentations by members of the GFA; a format change recommended by the Programs and Locations Committee. The topics include a recent success story from one of our members and business acquisitions specific to our industry. Work has begun on the Expo program for the Spring of 2008. The Expo Committee held its first teleconference meeting on February 1st. A schedule of tasks to be completed has been defined based on the timetable developed for the 2006 program. We have invited the ISD members to participate in the 2008 Expo as they did in 2006.

GFA and ISD members will have an opportunity to participate in the 2007 Industry Survey. A teleconference was held to discuss changes for the 2007 survey to make it more useful to the GFA members. Your information is processed by an independent third party organization to ensure that the information you present is held in confidence. I would encourage all GFA Fabricator Members to participate. With a high percentage of member participation, the information can be used to benchmark your company's performance to our industry averages.

I want to remind new members to send your company profiles so we can include them in the newsletter. Take the opportunity at this meeting to participate in the committee meetings. The strength of our organization lies in the committee participation. The active committee members generate the ideas that help the organization grow. The 2006 Expo originated in the Programs and Locations Committee; the ads that are now part of the newsletters grew from a suggestion in the Communications Committee; the Products area of the website evolved from a program in the Technical Committee; and the revised format for Savannah came to the Board from the Associate Member Meeting. My point is that members have a say in what is presented at the semi-annual meetings, and where those meetings are held. If you feel a new approach is needed in some area, join a committee and champion your ideas. The committee rosters are the source of the GFA's Board Members and the President, Vice President and Treasurer.

GFA FUTURE MEETING SCHEDULE

March 27-29, 2007
Marriott Savannah Waterfront
Savannah, GA

October 3-5, 2007
Portola Plaza Hotel
Monterey, CA

NEW BUSINESS LAUNCH: INTERFACE SEALING SOLUTIONS

A new Tier One business called Interface Sealing Solutions (ISS) was launched by sister company Interface Solutions Inc. (ISI). The business, which delivers engineered sealing solutions for the heavy-duty diesel, automotive drive train and other key market segments, enters the marketplace with sterling credentials, including TS 16949 certification, a powerful new product offering called Select-a-Seal® Gen II (SAS Gen II), and roots in a company known for its technical innovation, engineering support and cost efficient product applications.

According to company spokespersons, ISS OEM customers will enjoy benefits that include proprietary sealing technologies, extensive validation capabilities, TS design process and customer focused product development.

In conjunction with its launch as a new business, ISS is bringing to market Select-a-Seal Gen II, the sealing solution that incorporates all of the performance-proven product advantages of SAS Gen I, but has the added benefit of stable bolt load retention at higher temperatures. SAS Gen II has passed GM 3155 reliability testing. Next generation sealing technology, currently called XGEN, is scheduled for launch later in 2007.

A resource available to the ISS business is a new, fully integrated, lean production facility that provides sufficient capacity to accommodate broad swings in customer orders, while satisfying customer needs for contingency planning.

NEW ASSOCIATION MEMBERS

Fabricators

Fouty & Co., Inc.

Oregon, OH

www.foutywaterjet.com

Unique Fabricating, Inc.

LaFayette, GA

www.uniquefab.com

Supplier

Zotefoams PLC

Croydon, Surrey UK

www.zotefoams.com

COMPANY PROFILES



For over fifty-five years, Prescotech Industries, Inc. has provided solutions for its end use customers who encompass various end use industries, such as Automotive, Appliance, Hot-Water Heater, Furniture, HVAC and Metal Building Construction. With a broad range of material suppliers and in house converting technologies, Prescotech philosophy is one of supplying:

- Zero Defects
- 100% On Time Delivery
- Effective Solutions at a Competitive Price

With four plants located throughout the Midwest, which entails over 200/MSF of both manufacturing and distribution capabilities Prescotech is centrally located to support the ongoing initiatives of various Fortune 500 companies, let alone has supported several end use markets in both Canada and Mexico.

The Prescotech Industries, Inc. "brand" is one of providing solutions in support of various end use markets. To this extent, Prescotech offers a diverse line of both products and capabilities which would include, but are not limited to, the following:

- Authorized Owens Corning Fiberglass Master Fabricator
- Authorized Dow Chemical Fabricator
- Authorized 3M Automotive and Converter Fabricator
- Authorized Gaska Tape Fabricator
- Authorized Avery Dennison Fabricator

Prescotech Industries, Inc. operations are ISO 9001 certified, and comply with the philosophy that was driven by the QS9000 quality management systems. Prescotech employs a state of the art IMS system that is EDI capable with various end use customers, let alone the capabilities of providing real time data to assist our end use customers and suppliers relative to inventory planning in support of JIT.

Prescotech also employs on-site engineering support at each of its plant operations. The engineering site capabilities also support our customers with CAD/CAM capabilities.

COMPANY PROFILES

CAN-DO NATIONAL TAPE

Can-Do National Tape was founded in 1972 as a distributor of adhesive tape products. In 1995 when the current owners acquired the Company assets, Can-Do began to focus on "converting" adhesive products. The Company expanded its capabilities over time, and Can-Do now has over twenty pieces of equipment dedicated to the fabrication of adhesive parts.

Can-Do is located in Nashville, Tennessee in a 50,000 square foot facility. The Company has been fortunate to have grown sales in excess of 15% annually for each of the past five years and attributes this growth to its converting and fabricating capabilities. Can-Do employs 20 sales and customer service people along with a full complement of administrative and production personnel.

Can-Do provides laminating, die cutting, sheeting, slit to width and rewind slitting services to its customers. At the same time, the Company continues to act as a distributor of adhesive tape roll goods. Consequently, Can-Do maintains good relationships with many suppliers of adhesive tape products as well as suppliers of foams, felts, foils, laminating adhesives and other components used in the fabrication of parts for the automotive, appliance and other manufacturing operations.

The Company is ISO9001:2000 Certified, and its Director of Quality is well versed in completing PPAPs and other required paperwork for its customer base. Can-Do National Tape recently updated its web site (www.can-dotape.com) to include technical data sheets on a variety of 3M products, and the Company prides itself on assisting customers with adhesive application problems.

During its recent years of growth, Can-Do has been able to maintain its original "can-do" spirit; and all customers are valued customers. We seek to provide first rate customer service, adhesive products of the highest quality and most competitive pricing. Please visit our web site and give us an opportunity to assist you with any adhesive application issues.



As a true entrepreneurial success story, Denver Rubber Company (DRC), originally Rocky Mountain Hydraulics was founded by Tom Jones in 1974 in his suburban garage with \$500 and a great idea. Initially a distributor of industrial and hydraulic hose assemblies and fittings, the direction of the company changed in the mid-'80's, when we expanded product lines to include pumps and gaskets and changed our name to Denver Rubber Company. DRC now occupies a 17,000 square foot facility in Denver and is run by two successive generations to the founder, who passed away in 2005.

DRC provides a diverse range of products and inventory to meet customer's requirements and is known for its accuracy and timely delivery. Our strong, long-term relationships with suppliers guarantees instant access to the materials needed. We assist the engineering staff of our customers by providing material recommendations, samples and prototyping. From prototyping to final production, DRC provides fast, accurate, reliable turnaround.

We are a custom fabricator of rubber and elastomeric components for the industrial marketplace. We custom die cut, slit, hand cut, laser cut, water jet cut and laminate rubber and elastomeric materials to match the most exacting specifications and prints. In addition, we provide bulk hose, bulk couplings, custom hose assemblies and pumps for use in industrial Original Equipment Manufacturer (OEM) markets.

Customers who benefit the most from our capabilities are OEM's in the industrial sectors that utilize innovation to be competitive in their markets. Our customer base includes companies in the Industrial Construction, Concrete, Floor Care, Sanitation, Rail, and Urban Transport industries.

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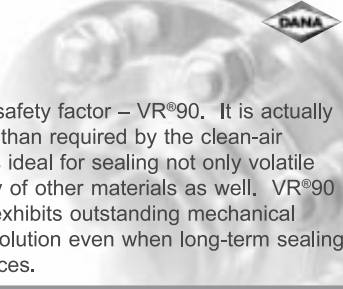
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COMPANY PROFILES



Founded in 1974, Midway Engravers offers a full array of rotary tooling for the Label and Converting industries, including automotive, medical, pharmaceutical, electronics, packaging and abrasives. Midway Engravers specializes in fully hardened, tool steel rotary dies. In addition, Midway has developed industry specific applications for the folding carton and abrasives industries.

ROTARY TOOLING

Midway Engravers utilizes state-of-the-art CNC (Computer Numerical Control) machining centers to manufacture all rotary tooling. This assures accuracy and repeatability. Using tool steel promises that all tooling will have the strength and durability needed for today's converting demands. Midway Engravers has complete in-house vacuum heat treating and tempering to guarantee quality processing of modern steels.

SPECIALTY PRODUCTS

Midway Engravers offers unique tooling designs that solve a wide range of converting problems.

- ¥ Pulse Air Ejection systems allow higher press speeds when using air ejection for slug removal. For small slug removal, Pulse Air is the most effective air ejection system available.
- ¥ The Pin Point® slug removal system removes interior die cuts from the web replacing cumbersome and inefficient air eject systems. In addition, the Pin Point® system results in higher press speeds with 100% slug removal that lowers converting time and costs.
- ¥ Vacuum Slug Removal System that allows scrap slugs to be cut from the web and removed by pulling the scrap into the tool. Scrap is then removed from the body using vacuum.
- ¥ Qwik Loc® Insertable Blade tooling enables the operator to change blades quickly, without removing the tool from the press. Qwik Loc® eliminates inefficient setscrew blade holders that strip out and

break. Insertable blade sheeters incorporating both the Qwik Loc® and Feather Lite® designs offer:

- 1) 30% tool weight reduction
- 2) Tooling cut off length flexibility
- 3) Easier handling
- 4) Reduced setup time
- 5) Increased profits
- 6) Economical tooling prices

All wear surfaces are fully hardened, tool steel for strength and durability.

- ¥ Micro-Perforation technology can now be incorporated into engraved rotary tooling. Micro-Perforation enables the converter to offer invisible, "clean tear" perforation capacity that was only available in steel rule dies.

INDUSTRY SPECIFIC APPLICATIONS

SINGLE STATION FOLDING CARTONS

Cutting and creasing of folding cartons in a single die station creates production "set it and forget it" capability. Fine Tune® adjustable gears achieve perfect creasing alignment without removing the tool from the press. Substantial profit increases are achievable through reduced setup time and reduced operator input.

BEARER-LESS TOOLING FOR CUTTING ABRASIVES

Bearer-less rotary tooling enables converters to process sandpaper and high abrasion products using high-speed rotary tooling. Midway's self-sharpening blade eliminates reconditioning and downtime costs creating increased production and profits.

ACCESSORIES AND SERVICES

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- ¥ Adjustable Wheel Tooling
- ¥ Fully Hardened, Polish Ground Replacement Anvil Cylinders
- ¥ Digital and Hydraulic Die Pressure Monitor Systems
- ¥ Digital Heat Sending Unit for Heated Tooling
- ¥ Complete Dieline and Blue Print Services
- ¥ Telephone and On-Site Consultation

TELESCOPING OF ADHESIVE WOUND ROLLS

*By: Dr. David R. Roisum,
Finishing Technologies, Inc.*

The following is part two of a two-part article. Part one appeared in the December 2006 issue.

ADHESIVE SHEAR

Shear is a pair of parallel but opposite forces. Liquids cannot sustain shear stresses indefinitely. When shear is applied, sideways movement will result. The speed of movement depends on the shear stress, the dynamic viscosity of the material and the thickness of the fluid layer. In fact, it is this principle that is used to measure viscosity of fluids on certain types of instruments such as rheometers.

Briefly, the resisting torque is measured on a shaft which is spun inside a cylinder filled with the test fluid. Another method is to measure the time it takes to empty a cup of fluid through a small hole in the bottom.

Kinematic viscosity, which shows up in many physical and engineering problems, is dynamic viscosity divided by density.

Dynamic viscosity is measured in the metric system in units of centipoise, or cp for short. The viscosity of water at room temperature in those units is very close to 1. The viscosity of oil might vary from less than 0.1 for a light oil suitable for a sewing machine to more than 500 for a heavy oil suitable for a gearbox. The viscosity of glycerin, which is similar in consistency to honey, is around 2000. However, tar is stiffer than honey. Wax is stiffer still.

Finally, even glass is considered by many to be liquid as evidenced by the greater thickness of the bottom of the pane versus the top on very old cathedral windows. The property of liquids is that eventually they will form a puddle, as they cannot even sustain the shear stress induced by their own weight. In the case of water, the puddle will happen very quickly. In the case of candle wax, you will have to be much more patient.

One very strong factor in viscosity is temperature. In the case of water, the viscosity will drop by a factor of 6 as temperatures increase from 0°C to 100°C. Some fluids are even more profoundly affected. The viscosity of oil might drop by a factor of 100 and glycerin by a factor of 800 over a similar temperature range. Thus, a beeswax candle may hold its shape indefinitely in the freezer but may be destroyed in a single afternoon in the hot sun.

NON-NEWTONIAN SHEAR

The behavior described above is for Newtonian fluids, in other words, fluids whose resistance to movement is proportional to the rate of movement. This describes most simple fluids composed of small molecules. However, polymers and many other materials such as slurries, pastes and gels are more complex. The slope of the shear stress versus shear velocity is constant and is the dynamic viscosity for Newtonian fluid. The viscosity of pseudoplastics, such as blood and polymer solutions, decrease with increasing velocity. In other words, the faster it moves the easier it moves.

Conversely, the viscosity of dilatant fluids increases or becomes stiffer with increasing velocity. Bingham fluids, such as toothpaste and jelly, resist a small shear stress indefinitely, but flow easily once a threshold has been exceeded. It is possible that PSA's and other web adhesives may have this tendency because rolls either seem to move noticeably or not at all. Thixotropic fluids, such as soil and ketchup, flow more easily after vibration.

PRODUCT DESIGN

The influence of temperature, adhesive material and time is profound for wound rolls. One client I worked with had nearly lost his best customer because most of the rolls stored in their warehouse telescoped during the summer months. To get useable material to the customer, we took the rolls from the supplier's manufacturing facility directly to the customer's converting plant in refrigerated trucks.

This was an interim step to buy time until we could work with product design. Simultaneously, we aggressively tapered the winding tension to absolute minimum at the outside of the wound rolls. The robust longer term solution, however, was working with the coating chemistry and coating machine to get higher-shear and/or thinner coatings. In fact, this is really a case of 'better living through chemistry.' While we might with great effort reduce the driving pressures in the roll by a factor of 2 by reducing winding tension, the viscosity of the adhesive can easily change by chemistry or temperature by an order of magnitude or more.

SUMMARY

Telescoping, egg-shaped rolls and flat tire rolls have one thing in common; layers have slid on each other. To design products that are resistant to this behavior begins with the adhesive which allowed this

Continued on next page...

TELESCOPING OF ADHESIVE WOUND ROLLS

Continued...

movement. While limiting roll size reduces the defect incidence, efficiencies at the supplier and the customer are both reduced. While avoiding exposing the product to high temperature works, this can be expensive and difficult to do at all parts of the product's life cycle.

While leveling the product helps, most are already making continuous efforts in that area. While packaging restraint can help, the forces developed can be quite large. While storage design can help for eggs and flat-tires, the sling is uncommon. While winding tension programs can help, they have limited ability to accommodate products that were not initially designed for robustness of manufacture.

All aspects of design must be considered when wound rolls go out of shape. However, it is the adhesive that often merits the most attention because it is the strongest factor. Indeed, it is the adhesive that makes this problem common to adhesive coated rolls, where it is almost unknown to a myriad other web products.

NEWSLETTER

The Gasket Fabricator is published by the Gasket Fabricators Association and distributed to all members and prospective members of GFA.

PresidentGary Fell
 Vice President.....Clem Foley
 Executive Director.....Robert H. Ecker
 Administrative Director/Newsletter Editor..... Peter Lance
 Communications Committee Chair.....Jim Winchell

Members are encouraged to contribute articles and items of interest to the *Gasket Fabricator*. All contributions should be addressed to: Executive Director, GFA, 994 Old Eagle School Road, Suite 1019, Wayne, PA 19087-1866, Phone (610) 971-4850, Fax (610) 971-4859, Home Page: www.gasketfab.com, E-mail: info@gasketfab.com.

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TECHNICAL ARTICLES

By: Larry Pyle, LFPtechnologies

LASER CUTTING TECHNOLOGIES

The laser cutting technology uses a laser beam to cut materials and is usually used in industrial manufacturing. Laser cutting works by directing the output high power laser, by computer, at the material to be cut. The material then either melts, burns or vaporizes away, leaving an edge with a high quality surface finish.

Advantages of laser cutting over mechanical cutting vary according to the situation, but important factors are:

- Cutting edges are tight and parallel
- Reduced heat affected zone
- Possibility to operate on complex profiles and reduced curving radius
- Absence of mechanical distortion of the laser worked piece
- No influence of the hardness of the material
- No problems to cut material previously coated

Some materials are very difficult or impossible to cut by more traditional means. These would generally be materials that absorb heat readily.

The most popular lasers for cutting materials are **CO2 and Nd:YAG**, though semiconductor lasers are gaining prominence due to greater efficiency.

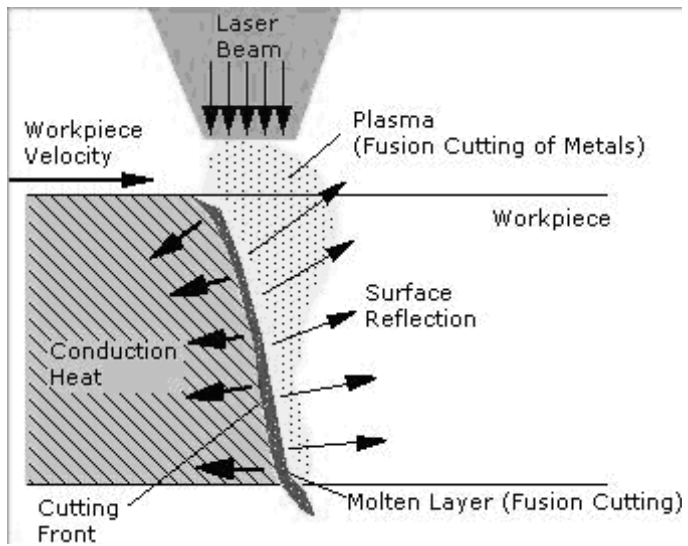


Figure 1

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LASER CUTTING TECHNOLOGIES

Continued...

CO2 laser:

The carbon dioxide laser (CO2 laser) was one of the earliest gas lasers to be developed (invented by Kumar Patel of the Bell Labs in 1964), and is still one of the most useful. Carbon dioxide lasers are the highest-power continuous wave lasers that are currently available. They are also quite efficient: the ratio of output power to pump power can be as large as 20%. The CO2 laser produces a beam of infrared light with the principal wavelength bands centering around 9.4 and 10.6 micrometers.

Because of the high power levels available (combined with the reasonable cost for the laser), CO2 lasers are frequently used in industrial applications for cutting and welding. They are also very useful in surgical procedures because water (which makes up most biological tissue) absorbs this frequency of light very well. Some examples of medical uses are laser surgery, skin resurfacing and dermabrasion. During the cutting process the energy absorbed from the material in the zone in which the laser beam has focused comes transformed in heat (see figure 1 on previous page). The heat locally provokes to a quick increase of the temperature of the piece: the fusion and/or the vaporization of the material.

Industrial laser cutters are used to cut flat-sheet materials as well as structural and piping materials. Some 6-axis lasers can perform cutting operations on parts that have been pre-formed by casting or machining. Laser cutters usually work much like a milling machine would for working a sheet in what the laser (equivalent to the mill) enters through the side of the sheet (or at the edge of a pre-blanking hole) and cuts it through the axis of the beam. It is not recommended that the beam be used to pierce metal but to start at an edge to minimize flashback.

There are generally three different types of industrial laser cutting machines. Flying Optics lasers usually feature a stationary X and Y-axis table where the cutting laser moves over the work piece in both of the horizontal dimensions. Flying Optics is popular due to the low cost of stationary tables, and their higher cutting speed limits, since the mass of the optics is smaller than the mass of the table.

Both Hybrid and Pivot-Beam lasers usually involve a table that has the capability of X-axis travel. Because of this, the head has to move only in two directions, thus improving its efficiency, as the path traveled is shorter. Pivot-Beam lasers offer the highest performance per watt and the most reliable cut consistency of the three styles.

Nd:YAG laser:

This technology lasers are optically pumped using

a flash lamp or laser diodes. They are one of the most common types of laser, and are used for many different applications: cosmetic medicine (laser hair removal, vascular defects), dentistry, fluid dynamics (used for flow visualization in fluids), manufacturing (engraving, etching, or marking a variety of metals and plastics). They are extensively used in manufacturing for cutting and welding steel and super alloys. For automotive applications (cutting and welding steel) the power levels are typically 1-5 kW. Super alloy drilling (for gas turbine parts) typically uses pulsed Nd:YAG. They are also used to make subsurface markings in transparent materials such as glass or acrylic glass.

In the Gasket industry, lasers are used extensively for prototyping of metal armors and for samples with low volume orders. It can be a very quick and economical method for producing development samples.

WATERJET CUTTING TECHNOLOGY

In the 1950's, forestry engineer Dr. Norman Franz experimented with an early form of water jet cutter to cut lumber. However, the technology didn't advance notably until the 1970's. Today the water jet is unparalleled in many aspects of cutting and has changed the way products are manufactured. Many types of water jets exist today, including plain water jets, abrasive water jets, percussive water jets, cavitation jets and hybrid jets.

A water jet cutter is a tool capable of slicing into metal or other materials using a jet of water at high velocity and pressure, or a mixture of water and an abrasive substance for cutting metals or other hard materials. The process is essentially the same as water erosion found in nature but accelerated and concentrated by orders of magnitude. It is often used during fabrication or manufacture of parts and other devices. It has found applications in a diverse number of industries from mining to aerospace where it is used for operations such as cutting, shaping, carving and reaming.

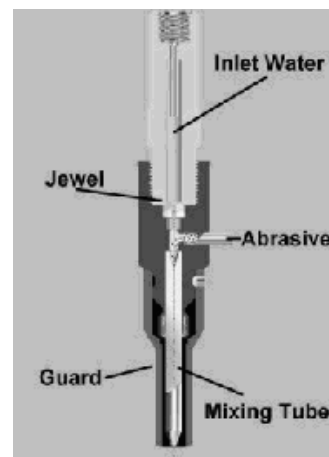


Figure 1: Nozzle

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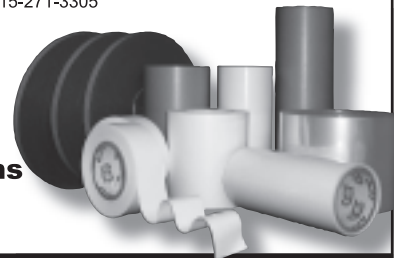


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WATERJET CUTTING TECHNOLOGY

Continued...



Figure 2: Orifice-jewel mounted in steel insert

The cutter is commonly connected to a high-pressure water pump where the water is then ejected out of the nozzle (see Figure 1), cutting through the material by bombarding it with the stream of high-speed water forced through a jeweled orifice (see Figure 2). Typically, jewels are made from sapphire, ruby or diamond. Additives in the form of suspended grit or other abrasives, such as garnet and aluminum oxide, can assist in this process. Because the nature of the cutting stream can be easily modified, water jets can be used to cut materials as diverse as fish sticks and titanium. There are few materials that can't be effectively cut with a water jet cutter; one of these is tempered glass, which shatters when cut, regardless of the technology used. Certain ceramics cannot be cut also. Water jet cuts are not typically limited by the thickness of the material, and are capable of cutting materials over twelve inches thick, however at a very slow rate.

An important benefit of the water jet cutter is its ability to cut material without interfering with the material's inherent structure as there is no heat affected zone. This allows metals to be cut without harming or changing their intrinsic properties.

Combined with a programmable XY table, the water jet cutters are capable of producing rather intricate cuts in material. The kerf, or width, of the cut can be change by changing parts in the nozzle, as well as the type and size of abrasive. Typical abrasive cuts are made with a kerf in the range of 0.04" to 0.05", but can be as narrow as 0.02". Non-abrasive cuts are normally 0.007" to 0.013", but can be as small as 0.003". These small cutters can make very small detail possible in a wide range of applications.

Commercial water jet cutting systems are available from manufacturers all over the world, in a range of sizes,

and with water pumps capable of a range of pressures. Typical water jet cutting machines have a working envelope as small as a few square feet, or up to hundreds of square feet. Ultra-high pressure water pumps are available from as low as 40,000 psi up to 87,000 psi.

Water jet cutting can be an economical alternative to blanking with tools, especially in prototype and low volume production. In the Gasket industry, it is used for producing low-volume copper and MLS cylinder head

If you have technical questions you would like to see answered in future issues, please send them by e-mail to lfptech@sbcglobal.net.

BENCHMARKING REPORT

Below are the results from the Benchmarking Survey. This survey was undertaken to give GFA members a thumbnail sketch of how other members are fairing at this time.

We had 35 out of 66 Fabricator responses.

1. Most Recent Quarter Sales Compared to Previous Quarter

UP	DOWN	SAME
21	10	4
60%	29%	11%

2. Current Quarter Sales Projection Compared to Last Quarter

UP	DOWN	SAME
27	2	6
77%	6%	17%

We had 26 out of 53 Supplier responses.


1. Most Recent Sales Compared to Previous Quarter

UP	DOWN	SAME
18	6	2
69%	23%	8%

2. Current Quarter Sales Projection Compared to Last Quarter

UP	DOWN	SAME
20	2	4
77%	8%	15%

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