

THE INNOVATOR

Fall 2002

A quarterly publication of ...



**WELDING
FACILITY
DEBUTS**

**COMMON-
EDGE
CUTTING**

**TRUMPF
QUALIFIER
ACCURACY**

Partners to Success



"I credit our success to our great team, our outstanding customers, and our exceptional friends."

Our recent building expansion here at BEGNEAUD confirms my belief in learning from the past, living in the present, and looking to the future. At the end of 2001 I issued a verbal purchase order for a TRUMPF Tubematic laser tube and pipe Flexible Manufacturing System. I also began planning for the new two-story welding facility because I knew that we would soon require additional space.

As the economy began slowing down some of my employees addressed me out of their concern for the health of the company. In a weekly meeting I informed each and every employee that I was not going to cancel the purchase order for the Tubematic. I was not going to put the expansion on hold. I also reaffirmed my belief that each employee is equally important to the future of BEGNEAUD.

In 1982 the oilfield provided our primary customer base. When that industry took a turn for the worse, BEGNEAUD went with it. Some of my customers were not receiving payment from their customers, and therefore could not pay me. As a young man in my late twenties, the easiest remedy would have been to file for bankruptcy. Instead, in an effort to keep the business afloat, I sold my car and sailboat. I rented my house and moved into the shop. I received a loan from my father at an interest rate of 15 percent. This was not the only tribulation that I have faced throughout the 24 years I have been in business, but it was my first serious brush with the potential perils of entrepreneurship.

Although I have been told that my method of running a business is unorthodox at times, I

believe in what we are doing at BEGNEAUD. It is important to have employees that are multi-talented and come from diverse backgrounds. Those that have been with us for 10 years or more have at one time or another answered telephones, waited on customers, quoted jobs, welded, operated a laser, and completed any other task which needed to be done regardless of their primary job description. I believe that cross-training employees assists in team building. The employees learn respect for the jobs each of them do. In addition, the more they learn the more valuable they become to our company and themselves as skilled individuals.

My passion for metal work is what drove me to start BEGNEAUD; however, it is my passion for working with and helping people that has sustained that drive. I have been fortunate to employ, over the years, a group of people that share my enthusiasms.

At the start of BEGNEAUD, I would never have dreamed the company would be the size it is today. I credit our success to our great team, our outstanding customers, and our exceptional friends.

A handwritten signature in blue ink that reads "Donald M. Begneaud". The signature is fluid and cursive, written in a professional style.

Donald M. Begneaud
President/Owner, BEGNEAUD

TRUMPF Qualifier expands quality assurance capabilities

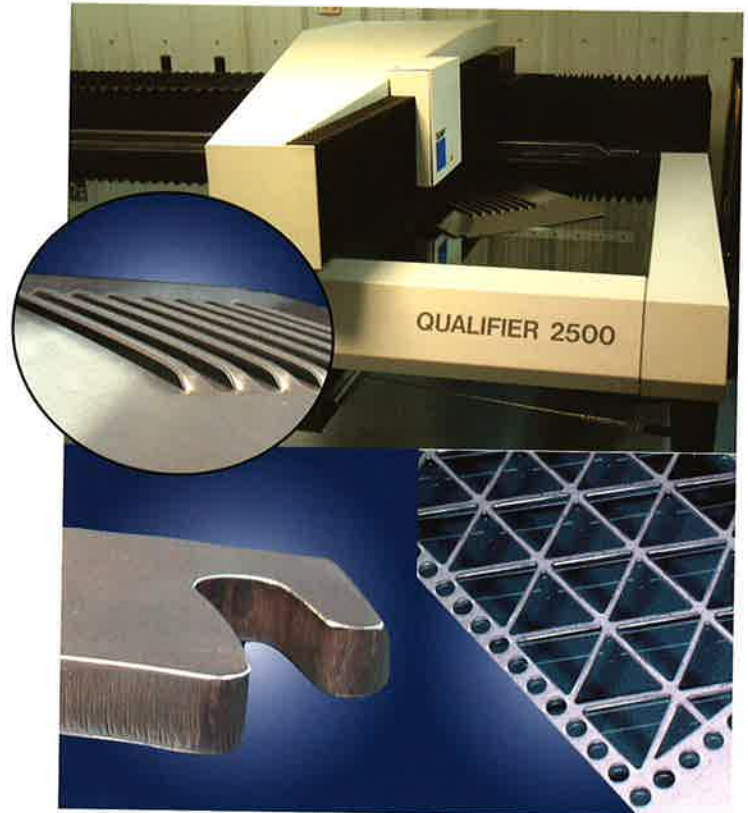
BEGNEAUD Manufacturing, Inc. is committed to providing our customers with the highest quality products at a competitive price. This is more than a quality statement; it is a living creed in which every BEGNEAUD employee takes pride. Quality plays a major role in the long-standing relationship between BEGNEAUD and TRUMPF, and was the deciding factor in BEGNEAUD making the decision to purchase the TRUMPF Qualifier (TQ) 2500 measuring device. Ours was the very first Qualifier in the United States.

The TRUMPF measuring machine checks the geometric contours of work pieces quickly and with a high degree of accuracy. Brian Welz, TRUMPF Project Engineer for the Measurement Machines, says, "The machine is an ideal tool for documenting process quality and for quality assurance."

Optical scanning allows the Qualifier to achieve an accuracy level of plus or minus six ten-thousandths of an inch, .0006", on both the x and y axes. To begin optical measurement, a part is placed on the glass plate of the machine. The piece is illuminated from the sub-surface with parallel light beams which move in unison with a high-speed precision digital camera located above the work piece. The camera takes snapshots to create the part's silhouette.

"One part will encompass a multitude of pictures, each with a separate x and y coordinate. The pictures will be transmitted to the control system of the computer, where the customized software will compile the various snapshots and create one final image," Alan Smith, BEGNEAUD Quality Coordinator, informs. The composite image can be electronically overlaid to an existing Data Exchange File (dxf) or Geometry File (geo) to determine the consistency of the tolerance level of the part.

The Qualifier also provides another axis to measure the height of formed components such as beads or louvers. This is referred to as laser triangulation: a diode laser guides a laser beam onto various points on the work piece. The laser beam hits the surface at an



▲ A louvered part is shown being scanned, as well as a close-up view of the part. The Qualifier is utilized at BEGNEAUD to not only check parts for accuracy, but also in reverse engineering. Two additional parts with varying thicknesses and intricacies are shown.



"The machine is an ideal tool for documenting process quality and for quality assurance."

angle, which causes impact points located higher up on the work piece to appear offset to the camera. This offset is used to determine a measurement accurate to within four-thousandths of an inch, .004".

The TQ 2500 has a working range of four feet by eight feet. With its part merging capabilities, we also have the ability to inspect components with lengths greater than eight feet. An additional feature allows us to scan an array of parts with different variables associated with each part. BEGNEAUD CAD Specialist Bryan Lagrange provides an example: "One part, or section of a part, may require a tolerance level of .005", whereas another part or

section may only require .015". These variables can be written into the program."

Bryan concludes: "The Qualifier not only benefits the Quality Department in its ability to perform quality control inspections, but also is an instrumental tool for the CAD department because it allows us to reverse-engineer an existing part. Rather than having to measure each dimension of a customer's part manually, we are able to transform the Qualifier's scan of a part directly to a dxf." This technology will ultimately result in additional savings to our customers in terms of both end-product quality and reductions in engineering and proofing costs. ■

New Welding Facility High

There is a paradox in that Don's first passion was welding but he now frequently "designs out" the welding involved in manufacturing. Advanced equipment and innovative techniques often allow us the opportunity to produce a part in less time while maintaining the same quality and strength as a weld. Though improvements at BEGNEAUD have included lasers and other state-of-the-art machinery, welding is still the backbone of the company. The importance of traditional methods has always been acknowledged by Don, though he has also always been among the first to state the importance of encouraging new ways of manufacturing and operating.

BEGNEAUD continues – and will continue – to grow and expand. With growth comes increased recognition of how important it is to emphasize the value of the foundation of the company and the values it upholds: progress and innovation.

Our new welding facility is an impressive two-story building with tall windows and many unique features. When entering our new facility, the first things you may notice are the welding stations, the lathe or the large American flag the welders have always displayed proudly. However, chances are your eyes will be instantly drawn to our striking metal staircase. Sheet metal



"The building is progressive, featuring sheet metal in its design, working spaces

panels featuring a distinctive cut-out design lead the way to the second story. The design of the panels grew from Don's desire to show sheet metal featuring punch and forming work. This particular design pattern features rotating triangles in a repeated vertical pattern. The panels were built utilizing various machines at BEGNEAUD: TRUMPF press brakes, lasers and punches. Unique triangles, which were created utilizing a punch and laser combination process, have special significance because they are based on a shadow or halo of the center of the BEGNEAUD logo.

Don's first experience with manufacturing panels for stairways was when Danny Dechamps, then-President of TRUMPF, USA needed metal panels manufactured for their new facility in Connecticut. The construction was being handled by a general contractor who typically looked to his usual vendors for whatever work was necessary. However, it was important to Dechamps that a TRUMPF customer was involved in this particular aspect of the construction. Don was chosen because of the BEGNEAUD reputation for quality. Don negotiated and an agreement was made that the work would be done for time and materials rather than through a bid process. The negotiation included an initial estimate and a verbal agreement that Dechamps would approve final costs before the work was done. The TRUMPF panels were gorgeous and were subsequently featured in Architectural Digest.

The growth of BEGNEAUD can be described as a steady progression. Expansions have been ongoing, but the welding department wasn't expanded until our new facility was built. The new building features many innovations.

Traditionally in welding shops, walkways are placed in the center. However, our facility features aisles on the outer sides, placing the welding stations together. The



▲ These panels in TRUMPF's Connecticut offices were produced by BEGNEAUD and subsequently featured in Architectural Digest. Don's experience with this project inspired the design and fabrication of the custom panels featured on the staircase and second floor of our new welding facility.

Highlights Form and Function



the design of the boards and tool silhouettes. This was the first project she worked on at BEGNEAUD and it has proven to be an educational one. She explains: "I have worked on this project from its inception and I learned various aspects of production: from using the Qualifier to scan the tools for the silhouettes; to using Solid Edge for the drawings; to learning what types of tools are used on a regular basis in welding. This has given me an opportunity to work directly with Don and draw from his ideas and experience. The board and silhouettes are pleasing to the eye and offer the welders and machine operators an organized, practical way to keep their tools in order and readily available."

uturistic, and incorporates aces and tool utilization."

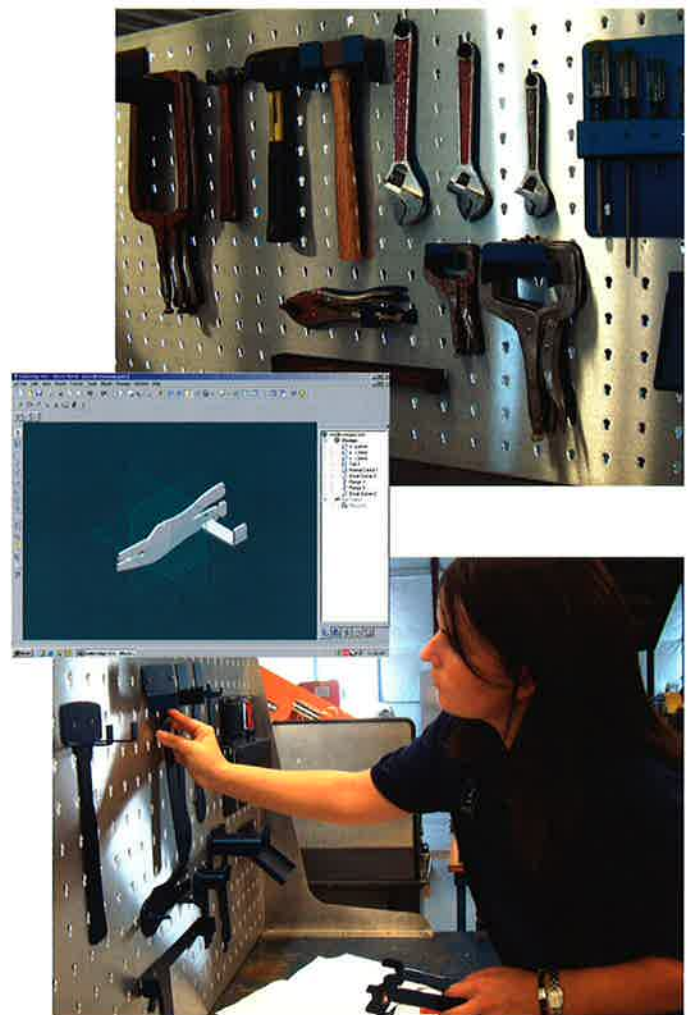
space between the stations and building's outer walls can be utilized for storage and as alternate paths between stations. A utility trough for electricity, shop air, inert gas (and potentially any other utility in the future) runs below the floor, allowing easy access for changes and repairs. Most of all, the building is designed to adapt to changing company needs. The goal of flexibility has been achieved by implementing these and other aspects of Don's ideas. Don explains: "I chose to incorporate some of my ideas of what would work best for me and my employees. The building is progressive, futuristic, and incorporates metal in its design, working spaces and tool utilization. It is wonderful to reap both practical and aesthetic benefits from the entire project."

Another progressive feature of the facility is found in the unique pedestals which house electrical outlets and are placed along the center of the utility troughs. The pedestals are made of aluminum and Don designed a slanting profile for the top so the pedestals would not become a catch-all for miscellaneous items. The cover panels are removable so if they need to be worked on the electrical components are easily accessible. With form following function, the pedestals are both practical and stylish.

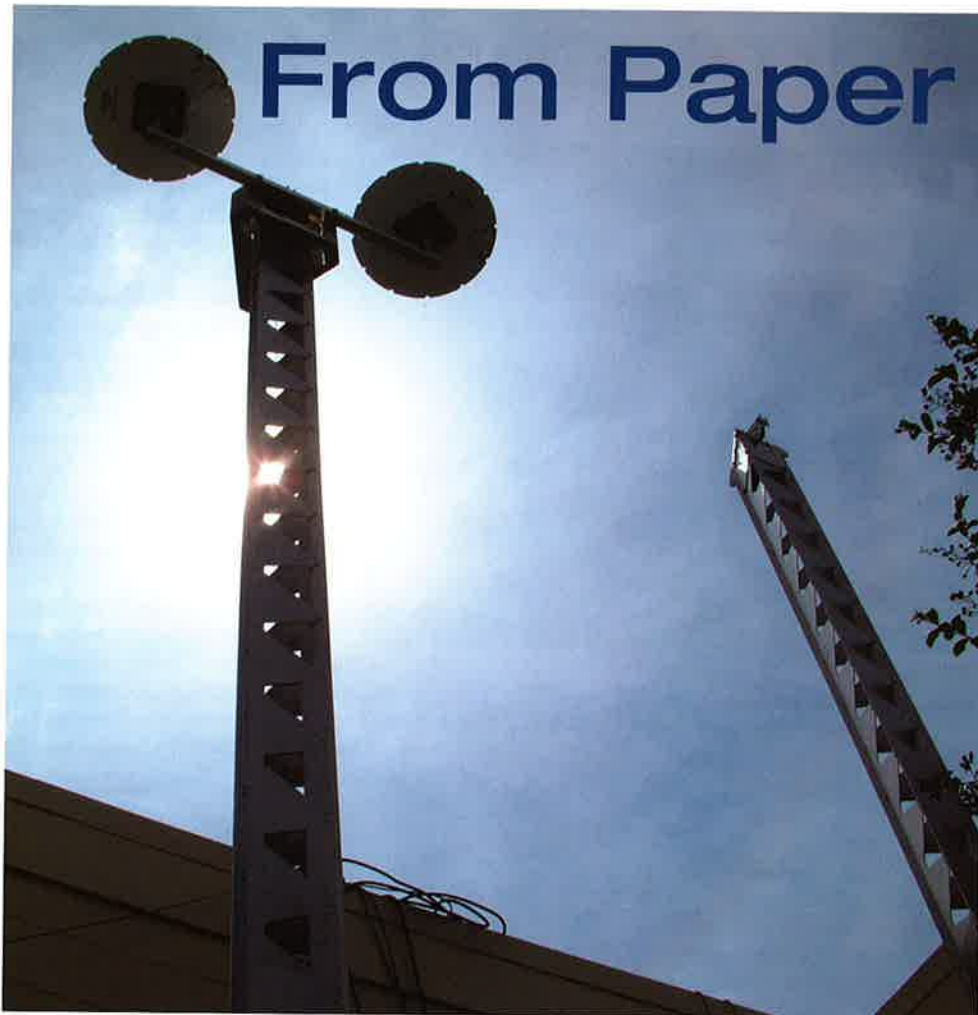
Another concept that assists in keeping everything neat and organized is the improvement of our tool boards. The new tool boards feature a silhouette of the part that belongs in that specific space on the tool board. Rather than having a painted outline to place a tool on, employees will now use anodized metal silhouettes that will not fade or need to be re-painted. This allows for more flexibility, because the silhouettes can be easily rearranged as additional tools are included. The original boards had places for each tool "cast in wood," and hooks had to be moved and outlines re-painted as changes occurred. This new method is much more flexible.

Erin Begneaud, a BEGNEAUD CAD operator and University of Louisiana at Lafayette architecture student, worked with Don on

Welding is a tried-and-true method, and the foundation on which our company was built. This essential process will continue to fuel our progress, and is now located in a new building with a new look as we move into the next phase of *Innovation Through Common Sense*. ■



▲ Erin Begneaud, a BEGNEAUD CAD operator and University of Louisiana at Lafayette architecture student, used the Qualifier to scan tools and Solid Edge to render their silhouettes. Here she works on the placement of the silhouettes on the new tools boards used in our welding facility.



From Paper Sketch

considerable amount of material waste. With these problems in mind, Don began doodling on a napkin. He soon realized that we could save time and material by having the pieces common-edge cut.

Because the assembly required identical parts, Don concluded that one part could be flipped and placed right next to the other, providing a common edge that could be cut with one laser pass, creating two parts at a time. In addition to the amount of cutting time saved, material waste would also be considerably decreased.

With the solution in hand, Don went to the BEGNEAUD CAD department where his paper sketch was transformed into a computer-generated drawing. From there, the project went to the Computer Aided Manufacturing (CAM) department to have a program written for the TRUMPF TC6000L Punch/Laser Combination Machine.

Why? is a simple question children consider essential to advancing their knowledge and understanding. As adults most of us do not want to ask this question for fear of appearing obtuse. At BEGNEAUD, one of the first things an employee learns is to always ask why. This is evident when you speak to any veteran of BEGNEAUD. It fuels the sense of innovation that drives our company to improve upon existing design processes or create new ones.

One such design process – used to create both the BEGNEAUD stage and tented display booth – was featured in the Summer 2001 issue of *The Innovator*. Both designs were inspired by Don Begneaud's relentless fascination with trusses and structural members. The booth, in fact, now serves as a portico and focal point for the BEGNEAUD training center entryway. After the booth was completed, Don came up with an idea for improving the manufacturing processes involved.

The original designs for both structures called for time-consuming cutting processes and a

▲ Global positioning antenna towers manufactured by BEGNEAUD for Fugro-Chance. The towers were manufactured utilizing common-edge cutting and they feature a trolley which allows vertical movement.



▲ The strength of the tower design was tested. Don used a weight scale, slings and forklift to determine the rigidity of the prototype structure. Initial tests uncovered weak spots in the gussets; subsequent design revisions increased the strength of the tower.

"Placing triangular voids in calculated to lighten the weight of the assembly

to Empirical Testing

According to Amanda Lantrip, BEGNEAUD CAM Operator, the project was "a fun and creative challenge. It taught us a number of new and greater opportunities the TC6000L will offer us."

At this point the parts were cut and test assembled, which allowed for a true time study and testing for the rigidity of the final assembly. These efforts proved worthwhile soon thereafter, Don recalls.

"Don Dunbar of Fugro Chance, Inc. (Chance) approached me with the idea of using square tubing with a sleeve that would slide up and down for their Global Positioning System (GPS) antennas. I showed him the model that I had been working on and advised him that we could build a trolley with vertical movement capabilities using this procedure." Dunbar agreed, and the end result not only exceeded the project requirements, but also created an aesthetically pleasing piece.

"Placing triangular voids in calculated areas throughout the part allows us to lighten the weight of the completed assembly without sacrificing strength," Don explains. "I saw a similar concept in a book I borrowed from Russell Greene about I-beams, which describes an efficient method of increasing rigidity in beams. I began thinking of ways to adapt this technique to sheet metal."

"I am not a degreed engineer. A lot of my projects are built using empirical testing. For this particular design I used a weight scale and slings to test and determine the rigidity of the prototype structure. The first time I pulled on the antenna tower, I noticed weak spots in the gussets: from there, I was able to modify the design and improve its strength."

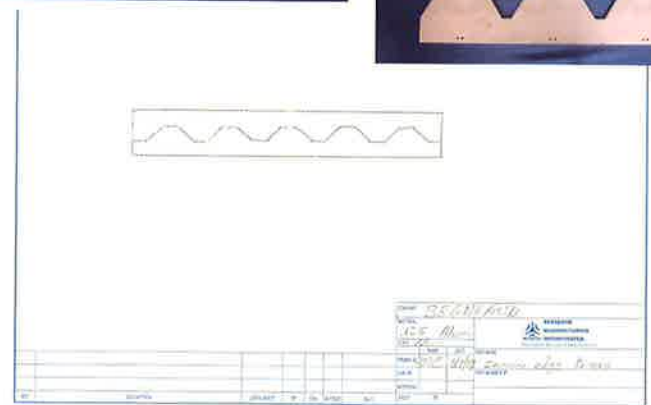
Don's persistence and willingness to ask why is proving beneficial not only to BEGNEAUD, but also to the manufacturing industry as a whole. His ingenuity is continually expanding the market for sheet metal job shops.

No one can predict the future, but one thing is certain: the industry is continually changing. At BEGNEAUD, we embrace change because it continually challenges us to innovate. ■



▲ Don attaches the slings to the scale used in the empirical testing. Don attached the slings to his forklift to complete the process of measuring the strength of the prototype. Various forms of empirical testing are used at BEGNEAUD to ensure the highest degree of quality and usability.

Because the assembly required identical parts, Don concluded that one part could be flipped and placed right next to the other. This kind of ingenuity is continually expanding the market for sheet metal job shops.



▲ Don first sketched the idea for using common-edge cutting. The BEGNEAUD CAD drawing Don created from his sketch is pictured above. Before and after photos highlight the common-edge cutting used to form the assembly.

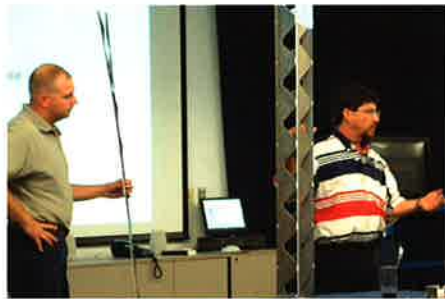
areas throughout the part allows us while maintaining tower strength."

The BEGNEAUD Touch

One of our favorite activities at BEGNEAUD is informing professional associations about the services we are able to provide. Recently, we hosted a Continuing Professional Development (CPD) Course for the Engineering Department of Frank's Casing Crew and Rental Tools, Inc. (Frank's). The Louisiana Professional Engineering and Land Surveying Board has listed Frank's Engineering Department as an approved Sponsor/Provider of CPD. Subjects are generally technical in nature, and must aim to enhance the technical skills or knowledge of ethics of the engineer.



Don Begneaud began the evening with an informative outline of the history of BEGNEAUD. René DeMoura, CMfgE, BEGNEAUD Senior Vice President and Research and Development Manager, followed with a presentation on designing for the manufacturing industry.



Tours of the BEGNEAUD facility and demonstrations of our high-tech equipment were given after the presentation. Mark Sibille, Senior Design Engineer for Frank's, had this to say of the group's experience: "It would be almost impossible to attend such a program without being entertained, refreshed, and inspired, much less informed."

For more information on how your association can learn about the technology available at BEGNEAUD, please call Andy Begneaud at (337) 237-5069. ■

The Lingo

Gussets: a triangular-shaped brace made of sheet metal

Calendar of Events

October 29 - 31	FABTECH International North America's Largest Annual Metal Forming and Fabricating Event
October 31	24th Anniversary of BEGNEAUD
November 1	All Saints' Day
November 28	Closed for Thanksgiving Holiday
December 25	Closed for Christmas Holiday

Employee Anniversaries

October	Jim Ousse Mark Faul	4 years 15 years
November	Dawn Comeaux Daniel McCullough	3 years 1 year
December	Joe Cagle Kelly Schultz	5 years 1 year

Contributors

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Photographers: Don Begneaud and Tiffany Privat

Member of:



Louisiana Association
of Business and Industry



National Federation
of Independent Business



Society of Manufacturing
Engineers



American Welding Society



Fabricators and Manufacturers
Association



Greater Lafayette
Chamber of Commerce



Mothers Against Drunk Drivers



LAFAYETTE
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Acadiana Arts Council



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