

PRESSING ISSUES

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It's in the Bag



TG/BTM Partnership Adds Efficiency to Airbag Installation

TG Missouri Corporation is a designer and manufacturer of steering wheels, passenger airbags, side molding and interior and exterior trim components for the automotive industry. Dedicated to the principle that "time is money", TG is tightly focused on operational efficiency and vested in technologies that allow the Perryville facility to work with the precision of a single, well-oiled machine. Robotics, conveyor systems and other automated innovations populate the plant, streamlining and harmonizing all functions.

TG Missouri had been commissioned by one of its automotive customers to design and install a custom airbag in relatively small volume. The process called for a Lance-N-Loc "clinching" operation for which a special machine was mandated.

TG Missouri got a similar device from its parent organization in Japan but, while the machine performed the job for which it was created, it was not so suitable for the new product design. Each curtain airbag required seven or eight separate clinches, and an equal number of airbag position shifts pre-clinch.

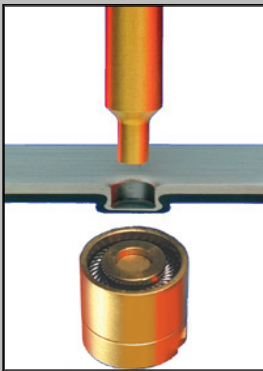
"In terms of operational efficiency, this clinch-shift, clinch-shift design didn't make a lot of sense", says Randy Georger, General Manager of Engineering, TG Missouri Corporation. "We needed something better; a solution that would perform all seven clinches simultaneously. That might sound simple and straightforward enough, but it was actually a fairly tall order. Several technical hurdles had to be overcome for such a solution to be feasible".



The new clinching machine would have to compensate for several factors, Georger explains. First, because the pitch between clinch points could change depending on product, the solution would have to be designed with the ability to vary pitch per customer. Another obstacle – the metal clinching plates were different from product to product, requiring customized clinching per brand. A fixture on either side of the vehicle had to be developed for each customer, one set for Customer A, another for Customer B, and so on down the road. "We were looking at eight staking units with four clinching fixtures holding the individual plates on each one", Georger adds. *(continued on back)*

Tog-L-Loc®

SHEET METAL JOINING SYSTEM



Spotlight On Products

BTM Corporation is the world-leading manufacturer of sheet metal joining systems. Sheet Metal Joining, often called Clinching, is a cost-saving alternative to spot-welding, threaded fastening, riveting and adhesive dispensing. The reason for these cost savings is the ability to achieve joint strength requirements while eliminating the need for costly commodities such as weld tips, fasteners, adhesives and associated production equipment. The foundation of these cost savings is BTM's patented Tog-L-Loc sheet metal joining system, which produces clean, strong, and consistent joints in most coated, non-coated and dissimilar materials.

Tog-L-Loc is a circular, leak-proof joint formed by drawing the metals into a circular "cup" and expanding the diameter to form a 360-degree lock below the bottom sheet. This is achieved through the use of BTM's patented 3-bladed die, which expands during the formation of the joint. The expanding 3-bladed die design reduces the amount of force

required to clinch a joint, while allowing for the easy removal of the materials once a joint is formed. It also provides a self-cleaning feature, which ensures joint quality is not compromised by foreign matter, such as oil, being left in the die. Tog-L-Loc is generally preferred due to its omni-directional strength characteristics, excellent fatigue properties and exceptional tool life.

BTM Corporation specializes in the design and manufacture of highly productive sheet metal joining equipment, components and accessories. We have extensive experience with automotive, appliance, electronics, furniture, building products and many other applications. For more information, see our web site at www.btmcorp.com, or call us at (810) 364-4567.

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(continued from front) "To foolproof the changeover operation, each fixture had to be identifiable via the Programmable Logic Controller (PLC) in each clinching machine. To further improve quality, each fixture needed sensors attached to make certain that the right plates were installed onto the fixtures".

TG Missouri ordered the machine in March, 2004. BTM came up with a design that matched all criterion required by the customer. The machine clinched a small bracket on either side of the airbag curtain fabric. (Bracket in this case refers to the piece used by the final assembly operator to mount the airbag to the automobile).

"We received the machine in July of 04, and had it working on the assembly floor in October that same year", Georger says. "We used it for the curtain airbag installation of one of our customer's products quite recently and now we're getting ready to move on to the next. The installation process has definitely been improved thanks to this machine".

According to Georger, the installation of the machine has thus far met the quality target overall. The installation process itself remains pretty much unchanged. The only real difference is that it's now being performed more efficiently because the effort previously expended in transferring parts through the machine has been done away with. It's still very early in the game, Georger admits - far too early to fully evaluate the ultimate impact of the machine on the airbag operation's manufacturing efficiencies and costs.

"We're still on a learning curve on all of this", explains Justin Walker, Production Engineer, TG Missouri Corporation. "The old machine was just a two-press which left operators with some difficult sequences to follow. If they were running left-hand, they would have to feed one side of the bag in first. Right hand requires the opposite sequence. There were other problems as well. One vehicle we work with has only seven clinch positions instead of eight. Therefore, the proper sequence was a challenge. These challenges have been mitigated by the addition of our new clinch system".

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BTM Corporation of Marysville, MI, USA has recently added Hawker Richardson of Australia, and Icoast Manufacturing, Group, Inc. of the Philippines to its expanding list of International Distributors.

Established in 1923 in Australia, originally as a machine assembler, Hawker Richardson earned the knowledge and respect of customers as a company delivering high quality equipment to the industry. Machine assembly ceased in 1995 and today, Hawker Richardson is reputed for their range of imported products which are "best of breed" from companies that have well established reputations for technical expertise

Icoast Manufacturing Group Inc. was established in 1995 by Mr. Manuel B. Baldonado and Danny I. Baldonado, a father and son team, who have many years of experience in the metal working field in both industrial and precision industries. Manuel was responsible for setting up various plants for Carrier Air conditioning while Danny is a German trained tool engineer. Icoast Manufacturing Group is focused on the production machining of Electro Mechanical Components and precision tooling, and also specializes in metal stamping.