

# Making its Mark in the Medical-Device Market



Micro Medical has been supplying the medical-device market since 1986, and as it nears its 25th anniversary providing medical-device OEMs with stamped and molded parts and assemblies, its executives share some valuable insights on what it takes to serve this growing yet demanding industry.

BY BRAD F. KUVIN, EDITOR

Micro Medical takes reinvesting back into its business very seriously, according to director of marketing Al Carolonza. “Even in this troubling economy, we continue to invest 10 to 14 percent of our gross annual sales back into the company,” he says, “whether it be new capital equipment (such as the Trumpf 5000-W laser-cutting machine shown here) or into our research and development efforts.”

**V**ertical integration: The process in which several steps in the production and/or distribution of a product or service are controlled by a single company in order to increase that company’s power in the marketplace.

Want to uncover some power in the medical-device marketplace? Look no further than Micro Stamping Corp., Somerset, NJ, and its Micro Medical Technologies division. For 25 years, the company has evolved into a major supplier of medical sub-assemblies and assemblies, precision high-speed stampings and multislide parts. It also conducts new-product development and design-for-manufacture engineering studies, and has developed expertise in a number of other manufacturing techniques—metal- and plastic-injection molding, tube fabrication, automated and cleanroom assembly, CNC machining, wire-EDM and every finishing operation under the sun including electropolishing and sharpening. Micro Medical boasts it’s ready to be the medical industry’s “supply chain, from concept to commercialization.”



**Micro Stamping recently invested in a new high-speed Bruderer press with an integrated inline inspection system (shown here). The system inspects lead-frame stampings at 1200 strokes/min., 12-out per stroke.**

“Customers in this market represent the most innovative and active developers of new products in the world,” says Carl Savage, vice president of sales and marketing. “And they require their suppliers to be the same—innovative and creative, and very diversified.”

### Rolling Tube in a Prog Die

Since 1986 when the firm stamped its first ligation clip for a medical OEM, Micro Medical quickly found that the catalyst for allowing it to grow its share of medical-device market would hinge on its ability to perform inhouse as many value-added and secondary processes as possible. The results speak for themselves—it now supplies parts and assemblies to nearly every medical-device company in the United States. And, since 2005 its medical-device business has more than doubled, now representing 60 percent of Micro Stamping’s annual sales.

Among its claims to fame has been the development of a proprietary progressive-die process to manufacture a rolled tube to replace traditional drawn tubing. Developed about 10 years ago for the manufacture of endoscopic instruments, the progressive-die tube-stamping process reduces part costs by as much as 75 percent, partly because

features such as slots and holes can be added in the die rather than as costly secondary processes.

“We can stamp tube from 3- to 10-mm dia.,” says director of technical services Frank Jankoski, “with wall thickness from 0.010 to 0.030 in., and perform operations such as lancing, coining and embossing.”

The process was recently enhanced as a testament to the firm’s dedication to continuous improvement—a must in the medical-supply game—by using laser welding to seal the seam in the rolled tubing.

“Up until a few years ago, we used to seal the joint by covering the tube with a piece of shrink tubing or by spraying on a seal coating,” adds Jankoski. “But that added 0.010 to the tube OD.”

Now the firm can laser-weld the seams, having optimized an automated welding process to fine-tune laser power, beam-spot size and welding speed to minimize tube distortion. It also integrated straightening and leak-testing stations into the process.

“We were early adopters of laser technology for manufacturing,” says Savage, harking back to 1994 when the firm developed laser-assisted metal-forming. “We developed that process for manufacture of titanium ligating

clips, where the wire used to form the clip must be bent back on itself on a 0.014-in. arbor. By firing a laser into the die, timed with the action of the press, we laser-zone anneal the material to avoid tears and cracks in the clip.”

### Doing More with Lasers

Yet one more example of Micro Stamping’s ongoing development of laser expertise is the recent redesign of a relatively large stamped part (6 to 12 in. by 3 in., of 0.060- to 0.070-in. stainless steel) into a fabricated part. “Burs and scrap rate led the customer to seek another solution,” says Jankoski. “We looked at the complex-shaped part and proposed, at a very large capital investment to us, to laser-cut the part. Scrap rate was reduced by 65 percent and secondary edge finishing eliminated, helping to justify our machinery investment as well as making the customer happy.”

“We take reinvesting in this business very seriously,” adds director of marketing Al Carolonza. “Even in this troubling economy, we continue to invest 10 to 14 percent of our gross annual sales back into the company, whether it be new capital equipment (such as the Trumpf 5000-W laser-cutting machine referenced above) or into our research and development efforts.”

In its ongoing efforts to vertically integrate new core manufacturing competencies, Micro Medical invested in this electrochemical surface grinder (from Everite Machine Products) to bring medical-instrument sharpening inhouse.



## Inline Inspection of High-Speed Stampings

Along with its new laser-cutting machine, Micro Stamping also recently invested in a new high-speed Brud-

erer press with an integrated inline inspection system. While not specifically for medical parts (Micro Stamping also supplies the electronics, automotive and aerospace industries), the state-

of-the-art press line represents yet one more commitment from the company to provide leading-edge services to its customers.

“We’re inspecting lead-frame stampings on that new press line at 1200 strokes/min.,” says Savage, “at 12-out per stroke. To develop that type of technology, we rely on our equipment-vendor partners such as Bruderer, as well as Trumpf and others, to help recommend the right equipment for the tasks at hand and for where we’re trying to develop expertise, and grow with our customers. We’re responsible for fit, form and function for the product we manufacture, not always the case with other industries such as automotive and appliance. We’re expected to study process FMEAs (failure mode and effects analysis) and perform design of experiments to better understand our processes and develop solid, robust manufacturing processes.”

## Growing Vertically

Vertical integration at Micro Medical Technologies reached a new level late in 2004 when it ramped up commitment to providing R & D support and design-for-manufacturability engineering services by building the Frank Semcer Development Center. Named for the

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company's founder, the 4000-sq.-ft. center is a self-contained think tank and prototype-development unit separate from production. Staffed by five engineers and five tool and die makers, and managed by Jankoski, the development center houses a full complement of equipment, including an Agie wire-EDM machine, a laser-welding cell, programmable Amada press brake and preproduction stamping presses.

"Some 80 percent of our medical projects begin in the development center," says Jankoski. "We work directly with our customers' engineering teams as early as possible in new-product development projects, to assist with design-for-manufacturability (DFM) activities. All of the major medical companies have embraced DFM in the last few years, and our expertise there has positioned us well with the OEMs as this trend has taken off. With medical products, making a part to print is not enough."

The development center also supports Micro Medical's efforts to new core manufacturing competencies. Citing one recent case, the firm decided to develop instrument sharpening as a core competency and bring that work inhouse.

"Very few companies offer this service," says Carolonza, "so we went out and developed that expertise here, including electropolishing of sharpened products coming off of our electrochemical surface grinder. We put the capital commitment behind the decision and trained operators, even before we approached any of our customers with the idea. Then we submitted full revalidation packages based on each customer's unique requirements, per ISO 13485 (the management system for the design and manufacture of medical devices)."

"If we were to subcontract for some of these services," Savage continues, "we'd be paying for another company to develop its expertise. We'd rather invest in our own health and well-being and develop new areas of expertise inhouse."

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