

Metalforming for Medical



The market is big and growing, and success can be had, but only for metalformers that deliver what the unique and demanding medical industry expects.

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The \$86-billion medical-device market in the United States, covering typical medical products as well as dental and related optic components, is expected to grow by 10 percent in 2007. With an aging population, the market should only become stronger.

Not an Easy Market to Serve

Sounds like a can't-miss opportunity for parts makers, but the challenges are daunting. Off the top, political efforts to revamp the healthcare system may eventually affect the part-pricing structure and ultimately the profit margin for suppliers of parts, components and assemblies.

Medical-grade materials present a host of challenges. The exotic metal alloys frequently employed to produce parts can be expensive, often require long lead times and must be tracked and secured in the plant—even the scrap. To get the most bang for the buck, medical metalformers must pay careful attention

to die design to minimize scrap, and employ systems to gather the valuable scrap for secure storage and recycling. On top of that, the variety of materials can react quite differently to lubricant formulations, forming pressures, secondary operations and post-processing. Residue from some alloys can contaminate others, often necessitating strict cleaning procedures for equipment and careful job scheduling to ensure “clean” part production.

Medical customers also demand strict adherence to part-quality and production specifics. Something as simple as a one-time switch of a part run to a different press can require a formal customer approval. Quality requirements abound, especially for sterile components, small intricate parts and implantable devices. Often, metalformers of medical parts employ cleanrooms and production equipment designed to limit oil or lube escape, and inhouse or contracted part-cleaning processes.

Challenges galore, but the market offers security and growth, and we've talked with some metalformers about how they meet the challenges and successfully serve medical customers.

Small Shop Meets Medical's Unique Needs

With 39 employees operating a two-shift operation, Top Tool Co., Blaine, MN, churns out \$5 million in parts annually, with a large share of that owing to its 30 years of service to medical customers. In 28,000 sq. ft. of space, the company produces precision metal components for electronics and consumer-products customers, too, but medical is a whole different animal. From strict confidentiality requirements to detailed process specs to complicated material handling and storage, medical customers demand a lot, and demands

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part production, aided by intricate in-die and in-process sensing.

No Such Thing as Scrap

Work material demands no less attention to detail at Top Tool. The company works with materials such as titanium, platinum, brass, phosphorus bronze, nickel silver, beryllium copper, stainless steel and aluminum, in thicknesses down to 0.0015 in. Precious metals such as platinum may cost thousands of dollars per troy ounce, and often the material may determine if stamping is best suited to progressive dies or possibly staged tooling.

“When working with precious metals, progressive dies are not necessarily the most efficient means of production,” says Abraham, noting that employing carrier strips means that much of the material may not end up as a part, but as scrap. “In such cases, we may use blank tooling and then hand



Presses at Top Tool form these 0.0015-in.-thick stainless-steel anatomical matrixes (left), used in dentistry, with stamping and secondary operations used to produce these anatomical-matrix clamps.

transfer the blank to other tooling for forming. We will compare the labor cost of performing multiple operations with the material cost of performing the entire operation in a prog. die to tell us what tooling is best for the job.”

With such high material costs, scrap at Top Tool is treated just like incoming material—inspected, tagged, bagged and secured.

“When we are ready to use new

material, we take it out of security, run it and then take the remaining good and used material and secure that,” Abraham explains. “We weigh the material again after we run it, and account for used material based on our calculated scrap factor. We have processes in the die to ensure that scrap material is gathered. We tend to be quite lean in saving material and reducing scrap in one step.”

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