Roundtable Q & A: Machining

John Whynott & Dave Ogren

Question 1: What new developments are on the way or have been recently introduced that would be of interest to medical device manufacturers with regard to materials for machining?

John Whynott (JW), Technical Product Manager, Mikrotech LLC: Over the last decade, a number of new technologies have been developed in the field of micromachining in response to growth driven by the demand to make products smaller. It's changing the way designers look at developing components for their medical devices. These new technologies will give medical device designers increased flexibility to add complex features into a smaller package size. These capabilities will allow them to more easily differentiate their products from the competition and thereby acquire a sustaining competitive advantage and pricing power.

Dave Ogren (DO), Senior Manufacturing Engineer, Stellar Technologies: Many types of material have been developed to improve machinability. Many times, the function of the component is not impacted by using material with increased machinability and should be included in the material specification of the component. The designer can obtain this information from his machining supplier or the manufacturer of the specific material type.

Question 2: How do medical device manufacturers realize the greatest savings in cost or time to market with machining processes/technology?

JW: During the product development cycle, medical device designers will typically design machined components for prototyping and design verification. Machining is a very cost-effective solution and one of the fastest ways to obtain components during the initial stages of the product development cycle. The combination of the two provides a perfect balance for designing medical devices. The design of a medical device for minimally invasive surgery (MIS) can often have many different design iterations before the final appearance and functionality of the product is complete.

DO: Partnership with a multi-capability supplier provides the fastest speed to market. Multi-capability suppliers can produce the components using a variety of capabilities to allow one-stop production of complex components and assemblies requiring a package of machining, laser processing, and cleanroom assembly. This type of supplier is equipped to perform all supporting types of function, such as wire processing, heat treating, welding and soldering, laser cutting, and chemical processing. This type of service reduces time to produce complex components and assemblies along with improving product quality through complete engineering of all functions prior to production.

Question 3: What is an avoidable error medical device designers/manufacturers make with regard to specifying machined components?

JW: Companies will often go to machine components to launch medical devices for FDA submission. It allows companies to launch the device quickly and obtain design stability in the marketplace prior to considering converting to molding. But for the medical device industry, one of the pitfalls of attempting to convert machined components to molding is after FDA approval. The conversion is more often than not met with roadblocks that result in opportunity costs of lost time and inability to capture the full cost benefit of converting from machining to molding.

DO: Cost saving can usually be realized if the machining supplier is brought into the design function by improving the design for manufacturability. Many times, small changes that do not affect component function can lead to dramatic savings by designing components to standard size tooling and eliminating features that are costly to produce. The supplier will challenge the necessity for the features that drive up the component cost.

Final Word: Any thoughts/comments on machining processes, materials, or equipment that you would like to share with medical device manufacturers to aid them?

JW: Advances in machining technology have given designers greater flexibility to design smaller, more complex devices for minimally invasive surgery while not compromising manufacturability, thereby enhancing their ability to create new and more innovative products. These changes in technology will potentially increase the growth of the MIS market by allowing conventional medical devices used for open surgical procedures to be converted to MIS procedures. The ability to [produce] smaller, more complex devices will allow designers the freedom to design small

medical devices and [provide] surgeons greater freedom to manipulate the devices throughout the body, producing fewer traumas for patients.

DO: Allow your supplier to assist in component design, including material selection and component features justification. Partnership in design provides the greatest opportunity for long term cost savings and overall most efficient process to develop a product.

Use a supplier with complete package of capabilities to allow one-stop manufacturing of the requirement. This provides best speed to market and superior quality components, assemblies, and products.

An outsourcing partnership provides the best opportunity for successful product development in an accurate, timely manner.

Source URL (retrieved on *04/19/2015 - 8:14am*):
http://www.mdtmag.com/articles/2011/05/roundtable-q-machining