

COST EFFECTIVE SWISS TURNING HELPS MEDICAL DEVICES MANUFACTURER STAY COMPETITIVE

Bringing the surgical devices machining operation in-house at Osteomed Corporation in Addison, Texas, has helped that company reduce manufacturing costs while maintaining the highest levels of quality.

Osteomed Corporation manufactures the Osteopower line of precision power tools used in cranial facial and small bone orthopedic surgery, attachments for those tools such as drills, routers and burrs, plus plates and bone screws used in surgical procedures. The tools, attachments and surgical fasteners are often packaged as a unit in kit form for hospital use.

All of these parts are small and are manufactured in high volume from hard-to-machine materials such as titanium for the surgical fasteners and 17-4 stainless steel for power tool components and attachments. Precision machining operations are necessary to ensure quality. Prior to June 1997, all Osteomed machining was performed by vendors. However, the highly competitive nature of the medical devices manufacturing industry led the company to bring all of its screw manufacturing operations in-house. They have also expanded their in-house capability to produce components for their Osteopower tool line as well.



Swiss Turning Provides Accuracy And Efficiency

To gear up in-house production operations, Osteomed installed five Citizen Swiss-type turning machines, a vertical machining center and a laser marking system. Three of the Citizen turning machines are equipped with a compact bar feed system that helps keep the machines running efficiently.

"Bringing the machining operation in-house was a move toward a more cost effective operation. An important part of that strategy is to make sure that the in-house operation meets productivity requirements as quickly as possible," said Otis Blackwell, Osteomed Manufacturing Manager. "Maximizing the amount of time the machine tools are making parts is the key to increasing productivity."

That's where the bar feed systems come in.

Osteomed installed three Mini-RHINOBAR[®] single-tube hydrodynamic bar feeders designed and manufactured by Lexair, Inc., Lexington, Kentucky. The economical

Mini-RHINOBAR[®] system is engineered especially for Swiss-type CNC screw machines and small, fixed

head CNC lathes. It can be equipped with as many as 16 feed tubes in 1/8" increments to handle bars from 1/8" to 1-5/8" diameter and is available in models that can handle 6' or 12' bar lengths.



At Osteomed, two Citizen L-20 machines are dedicated to titanium screw production. Through the use of advanced servo technology, these machines are capable of cycle time improvements of up to 20 percent, making the bar feed system a critical component in the production installation. The Osteomed operation uses 3/16" diameter rod and takes 1-15 minutes per piece to produce a 30 pitch thread at 4,000 rpm. The screws vary in length from about two to three hundred thousandths of an inch to one inch.

The third Citizen, an L-25 turning center with six programmable axes, is used to produce components for the Osteopower tool product line including the housing, motor shafts, reciprocating shafts and other small pieces. Bar stock required for this operation ranges from 7/8" diameter down to 1/4" diameter in 17-4 stainless steel.

The Mini-RHINOBAR[®] is designed to reduce shop noise levels while providing improved bar stock stability. Oil fills the gap between the bar stock and the feed tube, acting as a noise dampening support. As the bar begins to turn, hydrodynamic forces move it toward the center of the feed tube. Centering forces increase as bar speed increases. Oil flow and pressure are controlled with a single Lexair valve which helps minimize setup time.

The system features a feed tube extension containing non-revolving bushings to support and stabilize the bar stock, eliminating vibration. This support, working with a dynamic bearing-mounted pusher cone that maintains contact with bar chamfer, allows much higher turning speeds than other bar feed systems. The front swing out mechanism includes a large barrel clamp to help reduce bar vibration. Ergonomically placed controls and a safety interlock switch help to facilitate system operation. An end-of-bar signal and an auto pusher retraction feature permit the Mini-RHINOBAR[®] system to operate unattended.

Single Setup Saves Time

The key to productivity in this type of manufacturing operation is the single setup capability that the combination turning center and bar feed system allow. The Mini-RHINOBAR[®] system can be operated by means of a remote pendant. At Osteomed, operators use the pendant for job setup.

"When the end of the bar is reached, an alarm sounds and an operator pulls out the remnant, loads a new bar, runs it in and tests the draw bushing for tightness," Blackwell said. "The total bar changeover time is about three minutes."

Blackwell added that he looked at magazine bar feed systems, but determined that for his operation, the single-tube worked best. "Magazine bar feeders are appropriate for certain production turning operations, but when I looked at the cost compared with single-tube feeders, I felt that the single-tube approach



was the most cost effective solution to our production needs."

Space Saving Size Adds Flexibility

The compact size of the Mini-RHINOBAR[®] makes it suitable for large or small shops. The 12-foot model used by Osteomed has an overall length of only 17 feet.

"It's a given that manufacturing operations never have enough room, no matter how large an area is available," Blackwell said. "The bar feeders are critical to maintaining high productivity, we have to have them, and the fact that they take up minimum floor space is an added advantage, particularly for a company like Osteomed that has rapidly expanded its machining operations and looks to continue that growth."
