

# WIRE EDM IS THE Rx FOR MEDICAL MANUFACTURER

**M**anufacturing medical devices is a painstaking business. Manufacturers must produce parts with a high degree of accuracy, reliability and durability, all while addressing competitive pressures to reduce costs and time to market. Not only that, but the medical industry is subject to extensive regulation by the FDA and similar regulation agencies in other parts of the world.

Greer Manufacturing Inc. is a family-owned and operated precision machine

shop that has been predominantly serving the medical industry, but also the industrial and aerospace industries, since 1989. They are known throughout the industry for their extensive knowledge of CNC precision machines and their high quality control standards.

Their customers span the globe. "We have just as big of a customer base in Europe and Japan as we do here. We work for the largest medical OEM's in the world," states Jim Greer, president

of Greer Manufacturing, Inc.

Located in Prospect, CT, just 30 miles south of Hartford, Greer Manufacturing operates a 16,000ft<sup>2</sup> climate-controlled, one-source production facility. Greer Manufacturing's 30 employees manage more than 60 modern CNC machines, including machines for deep hole drilling, Swissturning centers, lathes, CNC machining and turning centers, and wire EDMs. Employees wear many hats and have multiple responsibilities



▲ FANUC wire EDM machines have the most reliable AWF Auto Wire Feed (threader) system on the market.

including programming, setting up and operating the machines. "We do things differently here," Jim explains.

The bulk of Greer Manufacturing's business, in fact 95% of their business, is machining state-of-the-art medical instruments, calling for close tolerances and high precision. Parts are typically ½" to 1" wide and are manufactured in exotic metals. Most customers require ISO 9000 compliance and part features must hold tight tolerances of up to  $\pm 0.0003$ ". Greer Manufacturing consistently meets the requirements naturally, but until recently, it wasn't always easy to manage production.

### AILING PRODUCTION PROCESS

Previously, Greer Manufacturing was using manufacturing methods that involved a number of vertical machining centers (VMCs) that required extensive tooling and labor. Manufacturing a part was a multi-process operation and a complicated task. In addition, the whole process was labor intensive, requiring six operators to run the equipment around the clock.

Time had proven that the parts Greer Manufacturing was producing were too difficult to machine following their current production process. So, six years ago, the company began to consider their alternatives and decided to try EDM. Moving to EDM was a logical choice for the medical tool manufacturer, where speed, accuracy and surface finish are all important considerations. EDM is one of the most accurate manufacturing processes available for creating complex or simple shapes and geometries. EDM wire technology removes material and shapes a part by using electric discharges to melt or vaporize the metal, which can simplify production. However, after they purchased their first EDM wire machines, they experienced some downsides and became unsatisfied with their machines' performance, as well as the cost and maintenance they required.

"After our initial EDM experience, we found a number of issues we needed to pay close attention to," comments David Greer, VP of Greer Manufacturing Inc. "With some EDM machines there are problems with the threader. To obtain speed and accuracy, the machines also required a more expensive wire coated with zinc. The wire was also flaking off in the manufacturing process, which required frequent wire replacement, filters, diamond guides and other expensive consumables."

Greer Manufacturing began to investigate solutions for the problems they were encountering. Eventually their research led them to purchase their first FANUC wire EDM machine from Methods Machine Tools Inc., a supplier of precision machine tools located in Sudbury, MA. "Methods' machines helped us really reduce the labor involved in our production process. The auto-threading feature is ideal and extremely easy to use," David says.

FANUC wire EDM machines feature a very reliable AWF Auto Wire Feed (threader) system. The key to its success is its ability to anneal its wire prior to the threading operation, putting a point on the end of the wire. This allows the FANUC wire EDM to thread fully submerged over the total Z-height of the machine in most applications, virtually eliminating unwanted "misses" during the process. This is a clear-cut advantage over other EDM machines and allows for more reliable unattended operation.

The new FANUC wire EDM machine eliminated most deburring and buffing from Greer Manufacturing's part production, and reduced multi-operational jobs to just two-operation jobs. For Greer Manufacturing, this contributed to an overall per part cost reduction of 10%. Multiplying that 10% savings by the 5 to 10,000 parts Greer Manufacturing produces each month adds up to significant cost savings.

They were having so much success with the machine from Methods that they purchased an additional eight FANUC wire EDMs.

Method's FANUC wire EDM machines utilize the latest in power supply technology, producing workpieces faster and more accurate than ever before. While many EDM manufactures boast high speed, the FANUC wire EDM ensures productivity and profitability coupled with affordable operation costs and high speed.

The FANUC wire EDM machines incorporate "AI Pulse Control," a patented power discharge monitoring system that sorts and counts each discharge pulse. Monitoring the discharge at this level allows the machine to automatically compensate and adjust for poor cutting conditions in order to maintain greater cutting speeds regardless of gap contamination.

In addition, FANUC's AI Pulse Control optimizes cutting speeds in interrupted-, stepped-orirregular-shaped parts where poor flushing conditions exist, making open gap cutting easier and more productive than ever. Thus, FANUC's AI Pulse Control allows the operator to get the highest speed possible without wire breaks when open gap conditions are unavoidable, which means there is less time building fixtures and more time cutting workpieces.

The FANUC wire EDM machines also feature Nano Interpolation. When processing workpieces, the NC command resolution is an unprecedented 0.00000004" with Nano Interpolation, maintaining extremely close positioning accuracy to the programmed cutting path, producing workpiece tolerances that are higher than ever.

### WIRE WORKS

Perhaps the greatest cost savings came from the FANUC features that simplify many tasks for the operator, which

reduced the number of operators Greer Manufacturing needed to run their equipment. The 12 EDM machines they now have can be operated by just two people versus the six operators required in their previous scenario. In addition, the FANUC wire EDM machines also come equipped with a standard feature: Cut Monitor provides the capability of remote operation and process monitoring, eliminating the need for a nightshift.

“We gained more hours of the day with the addition of our FANUC Wire EDM machines from Methods,” Jim comments. “We are able to do more work with less people, increasing our production significantly.”

With the low maintenance costs associated with the FANUC wire EDM machines, Greer Manufacturing has been able to improve their productivity and cut their consumable costs. “The cost of consumables, such as filters and replacement wire, has drastically been reduced and the time that our other EDM’s were down has gone from each



^ After realizing a large cost savings with FANUC wire EDMs, Greer added eight more.

machine being down for a few hours weekly to a short time, perhaps only once a month for routine maintenance with the FANUC wire EDM’s from Methods,” comments Stephen Greer, a vice president at Greer Manufacturing.

Today at Greer Manufacturing, FANUC wire EDM machines have become an integral part of their machining process. Because of the FANUCs’ accuracy

and productivity, they can assure their customers are getting the highest quality parts in a timely manner. **tmd**

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