MANUFACTURER HELPING TO MAKE MEDICAL HISTORY

A small Qualicum Beach business is playing a key role in a major medical advancement that could revolutionize surgical practices.

Micro Precision Parts Manufacturing Ltd., already a leader in the ceramic machining industry after just three years of operation, has been prototyping pieces for a medical sector client developing implants that could advance surgical methods by an estimated 30 years.

The parts are so intricate, explains Micro Precision owner Steve Cotton, that specialized custom cutters are required -- most of them with a diameter of less than a millimeter.

"Ceramics are the newest cutting edge material, and the ceramics we are using have some incredible properties," he says.

"Some of the prototypes we have made took about a month to produce to the standard required. We had our heart in our mouths sometimes on the final finishing stages as one mistake can ruin all that work."

The work - few specific details can be divulged, due to pending patents and other business issues - is only possible because Micro Precision uses high specialized grinding equipment that just a handful of companies world-wide have.
Among those firms: NASA.

Technology that can be used to launch astronauts into space doesn't come cheaply, not even when it's used for other purposes. The two Hass computer numeric controlled (CNC) mills, and a small CNC mill and lathe, required a large investment by Cotton.

The precise nature of the work - tolerances are measured in microns (one millionth of a metre) - called for a sophisticated CAD/CAM program. He compared five systems before deciding on Mastercam software from Canadian distributor In-House Solutions Inc.

"This work could not have been done without it," he says.

"The initial investment is well worth it if you are serious about what you are doing. You have to spend the dollars and get the best available. It's given us a competitive advantage."
Learning the intricate nuances of the program was made easier by relying on In -House Solutions. Its Surrey-based sales and tech centre proved to be invaluable.

"Their team really made for a smooth transition into implementing Mastercam," Cotton recalls.

"That was key for us."

The payoff for this investment has been in landing contracts such as the medical implant prototypes.

Micro Precision was chosen for the job after a thorough competition among bidders that included having to use the hardest machinable ceramic to date, two points under the hardness of diamond. Once they were awarded the project, Cotton and oldest son Matthew spent six months on the production of small, complex 3D parts that had to be made to very precise tolerances.

"It was a bit daunting at first," says Cotton, "but it has been an amazing experience, and an invaluable learning opportunity."

It also gave him the chance to work with some of Canada's top inventors, including James Klassen, of Vancouver-based Concept Solutions Inc. He designed the parts, worked with Cotton to help develop the cutting procedure for the very hard ceramic.

"I thought we had reached our working limit, but the ceramic machining brought a whole new level to our businesses abilities."

Those abilities now include producing parts for robotic cameras, and manufacturing obsolete parts while also prototyping new ones for all types of industries.

Cotton says, though, that Micro Precision will never forget its roots - or his.

In his younger days he completed the famous Watchmakers of Switzerland Training and Education Program, and was trained and tested extensively by Rolex in Geneva, to ensure he could meet flawless corporate quality standards.

He ran his own shop in his native New Zealand before bringing his family to Canada, where the watch business eagerly greeted him.

In 2004 he started Micro Precision (then known as Micro Machining), combining the ancient craft of watchmaking with advanced CNC technology. He specialized in making parts for watches and clocks.

And though he's since manufactured hundreds of other items, he still finds watchmaking satisfying.

"It's really relaxing after working with the micron measurements, and thousands of tool-paths needed to produce some of the small parts."

Adding to the enjoyment is the fact that the firm has become truly family-owned and operated. Cotton and wife Tina run the firm, along with son Matthew. They expect to be joined next year by another of their sons, Tim, who recently started his training.

Keeping it in the family is the long-term goal - no matter whether it is to help medical science or to fix someone's antique clock.

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