

Value-added Manufacturing

ProTechnique EDM parts are used in the creation of devices like this COM DEV space-qualified output multiplexer, which is used on a communications satellite. The unit is designed to survive severe vibration during launch and operation in space.

Value-added part manufacturing, in theory, is a no-brainer. In practice, however, it's often a case of easier said than done.

At ProTechnique EDM, Milton, Ont., the company's parts, most of which are destined for use in the satellite and microwave transmission industry, move through the shop from a milling machine to an electrical discharge machine (EDM) and finally to a coordinate measuring machine (CMM) and a deburring station.

By working in this manner the company is able to add value to the part at each stage of creation. And thanks to an integrated and well-thought-out workholding system, tolerances can be held within 0.0005 in.

Parts remain in their workholding devices as they move through the shop. Because of this, setup time is reduced as is noncutting time.

With multiple EDMs and milling machines on-site, the company has the capacity and capability to work in today's market of short lead-times. But this wasn't always the case. The company

evolved over the past eight years to be able to work like this.

"In 2001 I started with one wire EDM and a plan," explained company founder and President Grant Fowler.

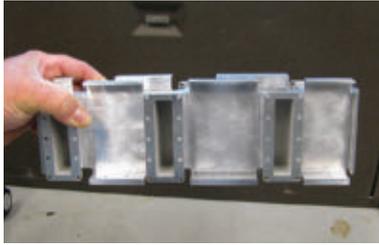
A tool- and diemaker by trade, Fowler used his technical background and entered the field of machine tool sales and applications support for Oakville, Ont.-based Elliott-Matsuura, a machine tool distributor. It was while working

at Elliott that Fowler grew to enjoy the problem-solving nature of his work and noticed a need for a shop that could produce a complete part that encompassed both accurate EDM work and precise milling.

"My specialty was in small-part work, and I saw a definite need for it in this area," he explained. "I was always happiest when working with customers in their shops rather than on the sales side



ProTechnique EDM founder Grant Fowler (left) and CNC Supervisor Heinz Wenger stand with the company's new five-axis machining center.



ProTechnique EDM performs complex machining and EDM.

of the business. I guess it was just a natural progression.”

In 1999 the planning began. With the help of his father, a chartered accountant who Fowler calls “a real asset,” the idea for ProTechnique was born.

Then began the hard part.

2001: A Space Odyssey

In just the corner of a rented shop, and with one wire EDM, Fowler started producing parts in June 2001 and soon realized the need for his own space. By that September another wire machine had been purchased to address the needs of the growing business.

The following April the company moved to its current Milton location.

The early years were growth years for the company as a milling machine was added to the shop. Then, even more capability was added when a manufacturing software system was adopted. Additional wire and die sink EDMs, band saws, and a grinder were soon added, and in 2006 a Zeiss CMM was introduced to the shop for in-process control and offline electrode qualification.

“We have kept our technology up-to-date as much as possible,” said Fowler. “In the EDM process these days cutting speed is increasing, and there is much more flexibility in the equipment thanks to wire feeders on the wire EDMs and toolchangers on the die sinkers.”

Since one of the challenges of doing business today is the unpredictability of orders, unattended manufacturing is becoming more and more important. By running equipment overnight, the company can handle even rush jobs.

New Technology

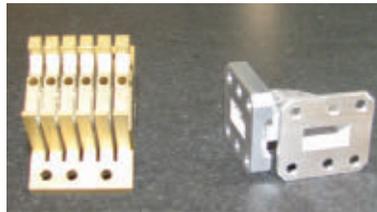
The latest addition to the company’s group of machine tools is a five-axis

machining center.

According to Fowler, this Brother TC-22B-0 five-axis machining center had both the right footprint for his shop as well as the needed capability.

“A demo was done for us at Elliott-Matsuura’s showroom and it was just the right technology for us at the right time,” he said. “Most of our parts need multiple positioning, and by going with a five-axis machining center we have easily doubled our throughput on the milling side by reducing setup time and the time spent manually indexing the part. We couldn’t be competitive anymore without adding five-axis capability.”

While he admitted that this new technology has put more strain on the company’s programming department, a



Shown are samples of the company’s wire and die sink EDM work.

secondary benefit has been a reduction in the amount of deburring parts needed after coming off the five-axis machine.

This new machine also has allowed the company to take on more work.

“We have a lot of customers that used to just send us their EDM work that now send us the complete part to do,” said Fowler.

Working Smart

When part volumes come in lot sizes of 25 to 30, scheduling how work moves through the shop is important; however, the most important step comes when the part goes out the door.

Being flexible also means that material storage and ordering become important too.

“We do a lot of work in 6061 and 7075 aluminum,” explained Fowler. “We can’t afford to have material just lying around, but we need to have enough stock on hand to be able to react quickly to a customer’s needs. Also, as lead-times for parts are coming down, we can’t afford

to have some of that lead-time be spent waiting on material to arrive.”

The price of material also means that rework has to be eliminated.

“If you are doing one-off or two-off work, you just can’t make mistakes,” he added.

This need led to both the addition of on-machine probing and the introduction of the CMM to the part production process.

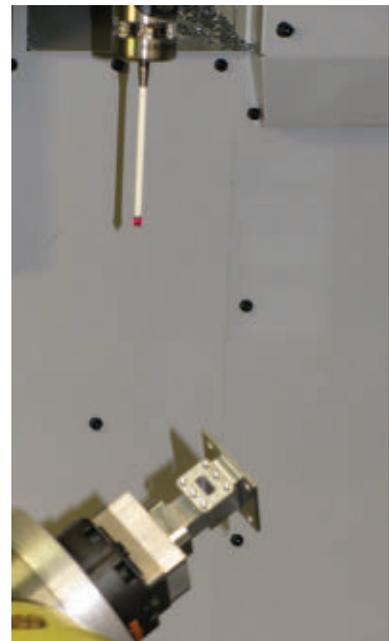
“We put the CMM in three years ago because we were getting pieces in that we just couldn’t measure,” said Fowler.

An ISO 9001:2000 designation is a testament of ProTechnique’s ability to consistently provide products that meet its customers’ needs as well as applicable regulatory requirements.

By investing in technology, having a staff that is well-trained, and working smarter not harder, ProTechnique is well-positioned to survive this economic downturn.

“Our future is in the production of high-quality, multiple-operation parts that require a quick turnaround,” said Fowler. ■

For more information, visit www.elliottmachinery.com and www.protechnique-edm.com.



On-machine verification reduces rework and scrap creation.