

## THE PROBLEM

Managing tooling  
for small parts

## THE SOLUTION

Unique toolholding system

Innovative toolholding system proves its worth at a Quebec machine shop

PHOTOS BY DENY CARDINAL



Rego-Fix PG toolholders.



Continual investments in machining technologies and high end tooling and toolholding systems keep SMP Tech competitive.



Rego-Fix toolholders in a DMG MORI five axis machine. SMP Tech was impressed with the quality and the performance of the toolholders.

# Get a Grip on It

BY  
MARY  
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The PGU 9000 system is part of the powRgrip toolholding system SMP Tech uses in its machining operations.

When you invest in high end machining technology, it's a given you invest in high end tooling. That's the philosophy behind SMP Tech's investments, says Sébastien Baril, who owns and runs the St. Hubert, QC, company with partner Alain Lacombe.

"We invest in technology for success. We're starting to replace older machines with new ones and our plan is to replace those old machines at a rate of one every one or one and a half years."

So when SMP Tech invested in its first five axis machine in 2004, a DMG MORI DMU 50 EVO, to address its growing complex parts customer base, it turned to Serge Hébert, a manufacturing agent for Rego-Fix, and to Rego-Fix's distributor in

Quebec, H.T. Technologies, based in Terrebonne.

"We purchased standard ER toolholders from Rego-Fix," says Baril. "We tested other collet holders too to compare and we saw a big difference with the ER toolholders. They were much better than standard quality toolholders we used to purchase. When we did the comparison with another toolholder, we liked the performance of the Rego-Fix ER product."

Baril says he was impressed with the quality of the ER collet.

"I've purchased hundreds of collets over the years and usually with standard collets you'll find burrs inside the collet and you'll never see this on a collet from Rego-Fix. It's clean and it's precise. For example, we drill using

SMP Tech owners Alain Lacombe, left, and Sébastien Baril, right. The company purchased more Rego-Fix tooling for five axis and for milling to increase its machining flexibility.



a 1 mm diameter drill with coolant through and this kind of tool is fragile. If the toolholder is not precise, it's going to damage the drill and break it. And this has not happened with the ER collet.”

### High tech for high tech customers

SMP Tech's investment in high end machining technology includes machines such as multi-tasking lathes from Okuma, five axis machines from DMG MORI, a Swiss turn machine from Tugami, and tooling from Seco Tools, purchased through Drillmex, St. Julie, QC, the exclusive Seco/Niagara tools distributor in Quebec. Baril says the company invests in high end technology to meet the needs of its prime customer base in high tech sectors such as laser products and industrial cameras. SMP Tech has carved a niche in such markets, with the ability to machine complex parts with tight tolerances.

Impressed with the Swiss-made build, quality, rigidity and performance of the ER collets, SMP Tech turned once again to Rego-Fix in 2008.



“We wanted to purchase more tooling for five axis and for milling to be more flexible,” explains Baril. “Serge [a Rego-Fix manufacturer's representative] showed us the powRgrip [PG] toolholding system from Rego-Fix. We compared and tested it against different systems and again, we found there was a big difference with the PG system. The PG system is much smaller, more rigid and much more precise than almost any other collet system in the market.”

SMP Tech installed the powRgrip PGU 9000 unit. What makes the toolholding system unique is the concept of combining the tool, collet

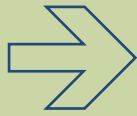


SMP Tech uses Rego-Fix tooling almost exclusively. The PG system is used on its five axis machines, such as the DMG MORI seen here, and on milling and multi-tasking machines.

and clamping unit into one system for quick tool changes. The system uses hydraulic power to press shallow-tapered collets (to help maximize the clamping force) into a holder with a matching taper, using up to nine tons of force. To unclamp the tool, the compression cycle reverses. Clamping and unclamping cycles are eight to ten seconds. More importantly, it provides SMP Tech with a reliable and precise system for high speed machining applications: runout is  $\leq 0.003$  mm and a “Z” repeatability of 0.010 mm (.0004 in.) even after 20,000 tool changes.

During testing of the PG system on its milling machines, Baril says the company looked at two main things: the quality of finish on the part and how the toolholding system would perform handling tooling as small as a strand of hair, 0.254 mm (0.010 in.), to mill parts as small as 3.175 mm sq (0.125 in. sq).

“With a collet system you have the holder, the collet and the nut and it's usually big. We're doing small parts and we often have to go inside them so we needed a toolholder that was smaller for the same cutter. I looked at shrinkfit systems but we needed a high end system for repeatability. When we looked at the investment for shrinkfit versus the PG system, the cost was about the same, except I preferred the simplicity of the PG toolholding system.”

**THE EQUIPMENT**

**FOR SMP TECH PARTNERS** Sebastien Baril and Alain

Lacombe, one reason they selected Rego-Fix's ER and PG toolholding systems was quality. The products are made in Switzerland.

The powRgrip (PG) system in use at SMP Tech consists of a toolholder (BT30, CAT40 and HSK63 styles), collets (PG 10, 15 and 25) and a clamping system. An important feature for Baril was the quick clamping operation, less than ten seconds, which requires no heating. The flexible system clamps all types of toolshanks and materials in h6 tolerances from 0.2 to 25.4 mm in diameter.



Part of the simplicity that Baril refers to is the ability to change tools quickly and easily. It was a key selling point for SMP because of the company's decision to purchase and inventory additional tooling for flexibility.

"We decided it would be better to have more tooling and have the ability to preset everything when the machine was running. We wanted to go a step further and have standard tools preset all the time. We use standard drills, and regular and long end mills. Even if we use them three or four times a year, we try to ensure those tools are preset all the time. So we intend to purchase

more toolholders to help us improve efficiencies."

What SMP Tech does not plan to purchase is a tool balancing machine.

"We had plans to purchase a tool balancer but with the PG system, we've never had to balance the tool, even on the high speed DMG MORI's we run at 18,000 rpm all the time. We don't need it because of the PG system. It's a big investment for this system where you clamp the tool in the collet but the payback is high."

**Not just quality**

While Baril is impressed with the quality of performance of the PG system, he says he is equally impressed by Rego-Fix's customer service. He cites a story to illustrate how the company responded to a challenge he encountered a few years ago.

"In Europe they use end mills with longer metric shanks and when Rego-Fix produced it for North America in inches, they didn't think it would be different. But it turns out if you take a half inch end mill shank, it can be too short for the collet on the PG system. You need to have a tool engagement minimum length to achieve the maximum accuracy and gripping force. The Rego-Fix rep called me and said Rego-Fix wanted to see this issue. He said to me at the time that they didn't think a half inch round tool would be a problem. They sent everything back to Switzerland and did testing and the result of that testing was a new collet Rego-Fix developed called a short shank. So now the company offers a standard collet and a short and long shank collet version. And all of that because we told them about the problem we were having. They came back to us with a solution."

Indeed, Baril is impressed with the service and the Rego-Fix products.

"It is expensive high end tooling but you never have problems. When you order a Rego-Fix holder you won't have any problem."



Sebastien Baril is impressed with the Rego-Fix tooling. Rego-Fix ER collet system in forefront and the PG tooling system in the background.

**Growing forward**

Today, SMP Tech uses Rego-Fix tooling almost exclusively: the ER collet system primarily for lathes and turning centres and the PG system for five axis, milling and multi-tasking machines. In addition to investing in more toolholding systems, the company recently purchased a new Okuma multi-axis lathe, the LB300, equipped with a Y axis for slot milling that Baril says will provide the shop with greater machining flexibility.

He adds that 2016 and beyond is looking promising.

"All of customers have said they're looking to grow. We have some projects pending and if they come through, we'll install a palletized system and look at more automation." SMT

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