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Cutting Tools & Workholding



Lubing Up Productivity- Pg 22

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. . .and much, much more!



View of the Tri-Tech 5-axis head at work producing a 757 front window frame. The head is lightweight, quick and easy to install, and tilts a full 90° with 360° rotation to allow total control. MY Machine bought the head as a low-budget way to land a major 5-axis contract.

5-Axis on a Budget

How a Startup Company Used a Low-cost Tri-Tech 5-axis Head to Land a Major New Aerospace Contract.

*Story and photos by
C. H. Bush, editor*

How's this for an interesting situation? You're a freelance programmer. You have a seat of CATIA. You don't have a machine shop, but you have some old friends with whom you worked for quite a few years. They have a very small shop with a couple of inexpensive mills. They have a few customers, and so do you. Then one day you come across an opportunity of a lifetime: a major aerospace manufacturer who is very unhappy with the 5-axis work he is getting from his current vendor. What do you do? Sit back and wish you had a way to take that business or go for it and make a grab for the brass ring?

"I had everything I needed to take that business, except a company, a facility, people and machines to do the work," jokes Jamie Young, vp and co-founder of Baldwin Park, CA's MY Machine, Inc. "However, I was an expert 5-axis programmer, and I knew my friends and I could do that job perfectly if we could find a way to get set up fast enough. So, I said to the buyer, a man from GKN, 'If you give me a couple of months to put things together, I can make that part for you.' He said, 'You really think you can make that part?' I said, 'Absolutely.' He said, 'Okay, I'm interested. Get back to me when you're ready.' The job was producing the frames for the Boeing 737 landing lights."

Young did have one thing going for him. He and his friends had worked together for years at the same company, and while there, had discussed the possibility creating a company of their own.

As seen in CNC-West October/November 2010 issue

Jamie Young, right, and machinist Allen Tetter, discuss a part produced on the company's new DMG 1035 V eco high-speed mill.

"We all left the company at different times," Young says. "But they were the best I knew at what they did. Jesus Morales and Pedro Martinez opened a small job shop called M&M Aerospace. I started freelance programming for a lot of different people, including doing some work writing programs for people who bought the Tri-Tech 5-axis head. But we had kept in touch with each other, so I went to them with my idea."

5-Axis on a Budget

Young's idea was simple.

"I was familiar with the capabilities of the Tri-Tech 5-axis head," he says. "I knew it could easily do the Boeing job and buying that along with a good 3-axis mill would be a lot cheaper than trying to buy a full 5-axis machine. Of course, we needed a bigger space, and we needed some kind of CMM to do our QC work. I went to Jesus and presented my idea. He liked the idea, and the rest, as they say, is history. We formed a corporation with Jesus, his sister, Norma Tetter, myself and Pedro as partners. We named the company MY Machine, Inc. for Morales/Martinez and Young. We rented a larger space, bought a Haas VF-5 3-axis mill to mount the Tri-Tech on, bought a Faro measuring arm, a seat of VeriSurf to run it, and we were in business."

The MY Machine partners got their shop set up in record time, and submitted their bid to buyer.

"I went back to that buyer and said, 'Okay, everything's in line. Let me quote it.' He agreed and we submitted a quote. We haggled the price a little bit, and he gave me 10 each of the left-hand and right-hand landing lights. I wrote the program and delivered the first ten, and they were perfect, no tweaking needed. He gave us 10 more, still feeling us out. He was still having problems with this other vendor, but not with ours. He eventually give them all to us, and we've been doing them ever since. As far as we're concerned, that Tri-Tech head put us in business. It was a low-cost, yet high-quality solution to a tough problem."

Landing Lights Tough

The frame for the headlight cover (*see adjacent photo of frame being checked*) was a problem to produce for several reasons.

"The frame is two pieces of aluminum on the outside, a retainer that holds the acrylic glass together. It's basically the headlight of the plane that goes right on the front of the wing, close to where it meets the body. The lights let the pilot see while they're taxiing around on the runway. The holes had to be drilled to a true position of .028 or better.

Machine operator Hugo Macias checks a landing light frame on the Faro Arm bought when MY Machine first started.



The previous vendor was in the hundreds, causing the customer to have to tag every single one. The holes had to be drilled normal to the surface, and they all had different angles because of the complex contour. It was a matter of having the right program and good equipment."

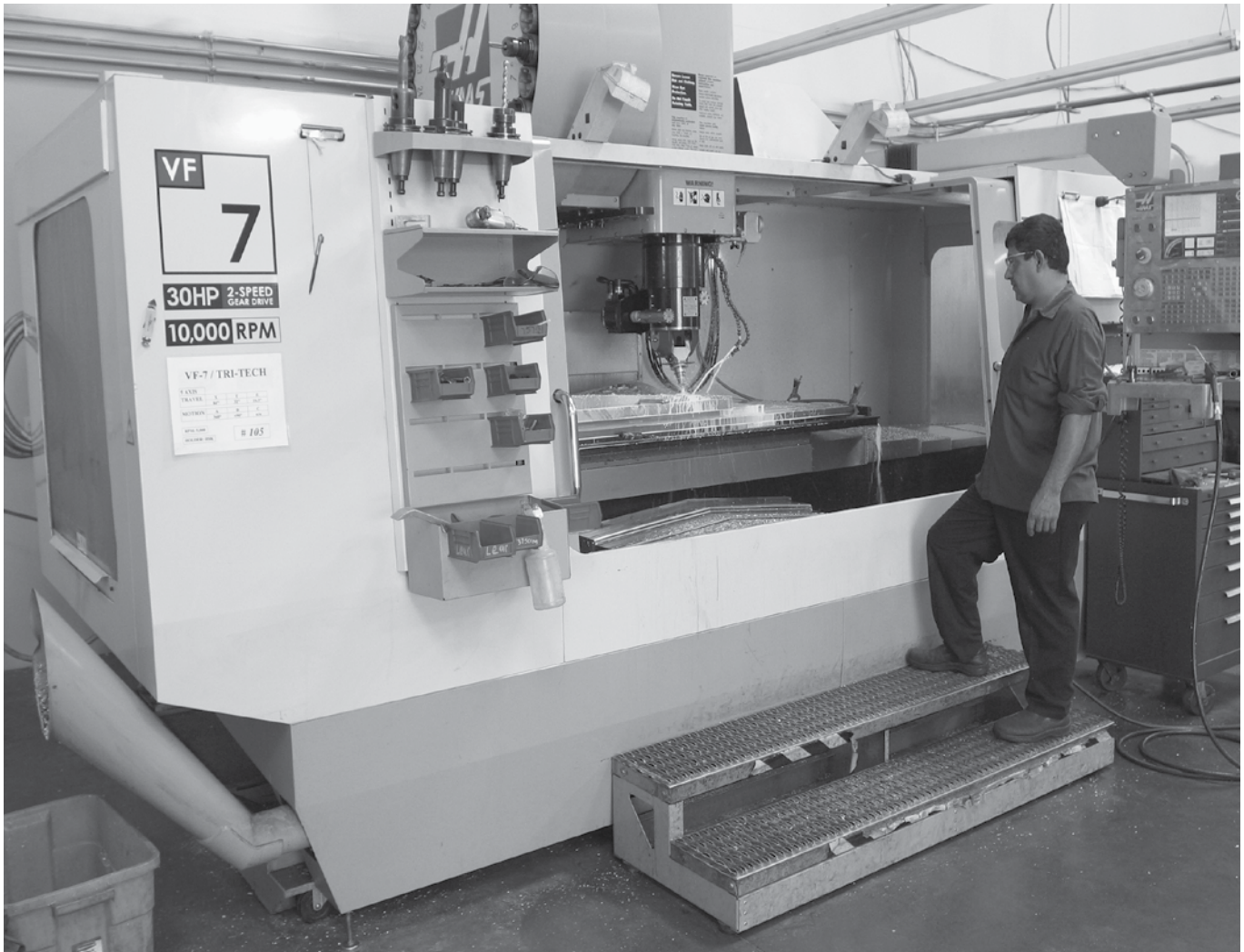
Advantages of the Tri-Tech Head

Young says the Tri-Tech offers a number of advantages for handling such jobs.

"For one thing, a lot of 5-axis heads can only tilt 25-35°. The Tri-Tech can tilt a full 90° in any direction," he explains. "Another thing is that it is light weight and really easy to install and remove. To install, it has a holder that you lift into the machine, then lower the spindle and bolt the Tri-Tech on. We asked Haas to look at the pressure to be sure the weight wouldn't be too much for the Z axis. They tested the pressure, and the machine doesn't even know it's there."

Portability of the head is another major plus, Young says. "With the Tri-Tech on the machine, you've got a 5-axis





MY Machine partner Pedro Martinez sets up the company's new Haas VF-7 to run a 5-axis part using a Tri-Tech head.

machine,” he says. “When you don’t need it anymore, you take it off, and instantly you’ve got a beefy 50-taper, 3-axis mill again. That’s about as flexible as you can get.”

To accommodate 5-axis control on the Haas machines, Young asked Haas to wire them specifically to accommodate the needed capability.

“Almost any mill can be used,” he says, “as long as it has enough Z-axis clearance to allow the head to move around. That’s about twelve and a half inches, I believe.”

Growing

Based on their performance on the 737 landing lights, MY Machine got more business.

“Those lights led to a lot more similar business,” Young reports. “We’re now the only supplier of the 737 landing lights, and we have a lot of business making different windshield frames, basically the same kind of work with formed, contoured sheet metal with 5-axis holes. We do the 757 windows, for example.”

The company has retained its original customers and has added some work for the automotive industry and for missile parts.

“We bought a Haas VF-7 to give us a larger work enve-

lope,” Young says, “plus we have two Mori Seiki mills, and we recently bought a DMG high-speed mill for hogging out small parts. Our original move was to a 7,000 square-foot building. Six months ago, we had a chance, because of the recession, to get a 20,000 square-foot building for only 15% more, so we took it and moved here. We now have a total of 7 employees, including the partners, and we’re looking to grow more.”

Where to Next?

After taking the big gamble 3 years ago, Young and his partners dreams haven’t diminished a bit.

“Our immediate goal is to become Tier 1 suppliers to the big boys,” Young says. “We’re AS9100 certified, and we already have supplier numbers for Boeing and for Lockheed, but we can’t sell direct to them yet. I don’t think it will be much longer, though. Our sales manager Bob Barker actually managed to have two major companies come out to inspect our facilities, so we’re kind of holding our breaths waiting for good news. Our long-term goal is to become a full, 5-axis shop with lots of big 5-axis machines, but until then, the Tri-Tech head is the best thing since the invention of Cartesian coordinates.” ■