Cell leader Alfonso Banuelos adds tools to the 494-tool magazine on the company's new Toyoda FMS. The system has 44 pallets serving 3 Toyoda FH450S III 4-axis horizontal machining centers purchased from Selway Machine Tool Company.

Target: Zero Setup Time

This Highly Successful Aerospace Job Shop Says Zero Setup Time Is a Realistic Goal.

Story and photos by C. H. Bush, editor

When most young men decide to found a machining job shop, they tend to follow a typical path toward growth. They start in a garage or a small hole in the wall. They often keep their day jobs and work their own business at night until they gain enough momentum to go at it full time. Frequently they don't have a clear vision of where they want to take the business. They'll accept any kind of job that walks in the door just to stay alive. Eventually, though, if things go right, they find some kind of niche and a business formula that allows them to succeed.

Allen Sumian, on the other hand, founder-president of Valencia, CA's highly successful True Position Technologies, Inc., broke with this mold right from the beginning.

"When I started my business in 1990, I knew exactly what kind of work I wanted to do," he says. "Prior to jumping out on my own, I had worked for my father, Victor Sumian, as production manager in a manual machine shop he founded. Even though all the work was done on manual machines, my dad's company specialized in producing highly complex, very close-tolerance parts. So, when I started True Position Technologies, I knew that's what I wanted to do, too, and that's what we've done ever since. Our niche is producing very complex, close-tolerance parts in volume incements ranging from one to 100 pieces, usually with ten-page drawings and the tolerances as tight as a tenth. For us a large order might be 50 parts a month."

True Position founder-president Allen Sumian (left) and Tim Meade, company sales, discuss a new order just received.

A Profitable Niche

Sumian broke with the normal start-up pattern in other ways, too.

"With help from my father and another close family friend, we started in an 8,500 square foot building," he says. "We had a couple of Fadal CNCs, a couple of Bridgeport manual mills and a couple of Hardinge lathes. Several employees came along with me from my dad's previous business, so we had some experienced people right out of the box. From that first building we moved to a 20,000 square foot facility and we just recently moved again, this time into a modern, 44,000 square-foot facility. Things have gone very well for us."

To get started, the fledgling company inherited a couple of customers from the old business.

"What really helped us was that a couple of major customers followed us," Sumian says. "There was an aerospace engineering company, Sterer Engineering, which later became Eaton Aerospace. Today Eaton is still one of our very best customers. They came with us because they knew what we could do, and we told them we were going to go with CNC equipment. They knew that was the wave of the future, and apparently liked that."

Since his early days, Sumian has stuck with original goal: build highly complex, close-tolerance parts.

"So far I've seen no reason to change," he says. "We have just under a hundred very experienced employees, we have a beautiful new ISO/AS/EN certified facility, and we have an equipment list that makes a machine-tool salesman's mouth water. Our productivity per employee is outstanding. I'm not sure what else I could want."

When Sumian talks about a "beautiful" building, it's not just casual talk.

"I guess I got my ideas about workplace aesthetics from my dad," he says. "Dad always said, 'If you're making complex products you have to have an environment that's conducive to that.' He was trained in the old school in Armenia, and part of that training was to keep a clean, well-ordered shop. I knew he was right, which is why we keep our shop that way, too."

The Quest for Efficiency

From the beginning, Sumian was eager to find ways to increase production, improve quality and stay competitive.

"We started out with what I call a standalone philosophy," he says. "As time went on, we added people and equipment, but mostly the equipment was Fadals, Haas and standard 2-axis lathes. But eventually we came to realize that if we wanted to sustain our growth and become globally competitive, we had to do more than that."

For Sumian, the "more" at first was to shift to manufacturing cells made up of standalone machines.

Cell manager Tony Argueta punches in his ID to retrieve a cutting tool from True Position's new AutoCrib tool crib.

"We grouped our machines into logical cells producing families of parts," he says. "Then we created dedicated teams with a lead man in each cell, who pretty much runs the cell. Our basic idea was to create small factories within the factory. That means each cell is responsible for a variety of products. Recently, with our last move, we incorporated inspection and deburring points right in the cell. That makes each cell a standalone manufacturing center. We don't have any kind of set rule about a one-to-one relationship, you know, like one man to a cell. If it's one-to-one or one man to three machines, it doesn't matter. It's whatever the job requires. At this point we have a tier of employees for every cell, which has worked out very well for us."

Going Horizontal

In spite of the efficiency he had achieved with the factory-in-a-factory cell approach, Sumian knew he needed to do still more, if he wanted to stay competitive. So, about 5 years ago, he decided to give a palletized horizontal machining center a try.

"We had both verticals and horizontals over the years," he says, "but making the move to a multiple-pallet machine was a bit of struggle. When you start doing the analysis, you're looking at it and saying, well, what about spindle time? You may have 40 pallets, but only one spindle. You can have all those pallets, but if the cycle times aren't a lot faster, the gain may not be there. With only one spindle the pallets are just going to sit. The question for us was: which is better, more

Cell leader Douglas Hernandez (l) and machine operator Kenni Martinez perform inspection duties while the new 32-pallet 5-axis Matsuura MAM72-35V cuts parts unattended.

machines or more pallets?"

To help answer his question, Sumian turned to Selway Machine Tool Company for help.

"We eventually decided on a 6-pallet, 4-axis Matsuura H.Plus 405 horizontal with 240 tools," Sumian says. "We wanted to see how it would work out for us before we made a jump into something bigger and more costly."

In order to achieve efficiency, Sumian dedicated six parts to the new Matsuura.

"One problem with our previous cells was the amount of setup time required to do changeovers," he says. "But the Matsuura enabled us to take some of what we call momentum business, repeating jobs, and make them more efficiently. Those are very complex jobs that might require us to produce only 20 or 50 a month."

Target: Zero Setup Time

In 2000 Sumian had read a book entitled *Lean Thinking* by James Womack and Daniel T. Jones. The book had opened his eyes about how to approach manufacturing, he says.

"Two things really happened that changed my point of view," he recalls. "One of them was reading the Womack book. The other thing was that one of our customers, the Control Systems Divison of Parker Hannifin, came in and provided actual lean manufacturing training. "

One idea that had struck Sumian was the notion of achieving zero setup time.

"Most shops would laugh at the idea," he says, "but in fact it is achievable. We define setup time as the spindle down time between finishing one part and starting the next. If you can have that spindle keep going without stopping, you've achieved zero setup time."

Physically setting up parts to be held for machining is just one of the possible bottlenecks to achieving zero setup time.

"Another is stopping the machine to put in the needed cutting tools," Sumian says. "Which is why our first six-pallet machine had a 240-tool capacity. That machine held all the tools needed to run the six parts we put on it. So, when one pallet was finished, the machine started on the next. No downtime for tool changeover."

The first 6-pallet Matsuura worked out so well, Sumian has taken the plunge into some really heavy equipment.

"We now have two 6-pallet Matsuura H.Plus 405s," he says. "Then just before we made the move to our new facility we bought a 32-pallet, 5-axis Matsuura MAM72-35V and a Toyoda FMS with three 4-axis FH 450S III Series Horizontals fed by 44 pallets. These machines have 494 tools each, which they can share. Once parts have been programmed for these machines, we expect and get zero setup time. Selway was extremely helpful during the purchase process and during the learning curve for our people. These machines run 24/7 and account for our high productivity."

The True Position shop floor is already packed with equipment, including lathes and numerous other horizontal and vertical machining centers.

Goal: Playing on the World Stage

In 2007 Sumian and his sales associate Tim Meade visited the Paris Air Show at the suggestion of a European representative.

"That trip really opened my eyes," he says. "I suddenly realized we were no longer a local company. We all hear about outsourcing. We hear about our customers moving facilities or products over seas. This trip made me realize that we're no longer just a local company competing with people here in Southern California or even the United States. We're competing on a world stage against some really heavy hitters. What I realized is that we're not really unique over here. It's naive for us to think that nobody can do what we do. It's just a matter of time. If we don't get it together and stay on top of technology, we're going to lose."

The trip to Paris didn't scare Sumian or make him doubt himself, however.

"What it did was make me want to continue to grow," he says. "I'm still fairly young (*only 43, Ed).* I want to build this company and keep it viable. I want to be able to compete globally, which means we have to keep finding ways to reduce the amount of labor in our production, but we can do that. We'll keep adding equipment, but it will be equipment that lets us improve quality and grow without adding on more people. We have 100 employees now, and if we're smart we won't need more. The future is all about technology driven by experienced employees."

As part of his effort to increase efficiency, Sumian has hired a full-time "Lean Facilitator," whose job is to seek out inefficiencies in the shop's processes.

"We have long-term agreements with a number of customers," Sumian says, " and that helps. Right now we're building parts for Eaton, Textron, Parker Hannifin and other major customers. We also service the semi-conductor, medical and high-performance auto industries, too. We'll just keep delivering great service and good quality on complex parts and the rest will take care of itself.?"■