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## Supplements

### Turning Points

Hoppe Tool Has Always Been on the Cutting Edge of Precision Machining

By *GEORGE O'BRIEN*



Eric Hagopian says the outlook is bright for the precision machining sector.

It all started in Avedis Hagopian's garage in 1941. The company he founded made gauges for gun manufacturers, including the Springfield Armory. Today, third-generation leaders Eric and Doug Hagopian are setting an aggressive course for a venture still making tools — including some for razor blade makers — but also parts and complete assemblies for commercial aircraft and military equipment. Its recent drive to become more automated reflects the direction in which the precision machining sector is headed.

Eric Hagopian held a solid block of aluminum in one hand, and a finished part — one of many that comprise the housing for an infrared camera fitted onto an MRAP (Mine Resistant Ambush Protected) armored vehicle now being used by the U. S. Army and Marine Corps — in the other.

As he talked about how the former was transformed into the latter, he was also neatly summarizing another transformation — this one in the way that precision machining shops,

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including Hoppe Tool Inc., the 66-year-old operation started by his grandfather, do most of their business.

That aluminum block is shaped through automation, Hagopian, the company's president, explained, referring to what is known in this sector as "lights-out manufacturing," where machines run nights, weekends, Christmas Day (essentially 24/7/52), and often unattended by people.

Were a machinist to create the same part, he said, it would require several operations on several different pieces of equipment.

That process would take longer and be more expensive, he continued, adding that automation allows machine shops to create parts and tools more quickly and efficiently, thus also making them more competitive. But the machines need people to program them and otherwise tend to them, he said, noting that an extreme challenge for this industry is finding enough people to handle that work.

Thus, while tending to the needs of the company's commercial and defense customers, Hagopian and his brother, Doug, Hoppe's vice president and treasurer, who together represent the third-generation management of the company, devote considerable time and energy to the task of making sure that there will be an adequate supply of machinists on the floor 10, 20, and 30 years down the road.

And they also remain focused on making sure they stay on the cutting edge of new technology, especially in the realm of automation. This assignment falls largely under the purview of Doug Hagopian, who, before returning to Hoppe in 1993, spent several years with the Robert E. Morris Co., better known to those in this business as REMCO, one of the world's largest distributors of machine tools.

There, he was an applications engineer (AE), working with clients ranging from Smith & Wesson to Ford Motor Co. to U. S. Repeating Arms Co. to help them optimize emerging technology.

"It was up to the applications department to figure out what combination of equipment and what level of automation would get them the most bang for their buck," he explained, adding that after the order was placed, the AEs would go to the plant, install the equipment, and train the staff to use it.

He's taken that experience back to the family business, where he has led a roughly decade-long series of investments that have enabled Hoppe to take on more work — and more types of work — and in the process take sales from \$5.5 million to more than \$13 million.

"Having done all that work with some pretty big companies helps me to be able to look a job and say, "I know exactly what to buy," he continued, "and give us the productivity we're looking for."

In this issue, BusinessWest looks at how Hoppe Tool has stayed on the cutting edge throughout its existence, and why

the third-generation leadership team likes the shape of things to come — literally and figuratively.

### Shop Talk

The infrared camera enables MRAP and HUMVEE operators to maneuver at night without the use of lights that would make the vehicle a much easier target for the enemy, said Hogopian, adding that the product, known officially as a tilt-and-pan assembly, is one of many Hoppe is now producing that speak to how warfare — and precision machining — have changed.

"Twenty years ago, we were making shell casings for Sidewinder missiles," he said. "Now we're making thermal imaging devices for M-16s. Fighting has changed; it used to be all air-to-air, and now it's mostly ground combat."

Adjusting to changes in fighting machines, weaponry, commercial transportation — and the processes for creating parts used in them — has been a fact of life since Avedis Hagopian started this company in 1941. An Armenian who emigrated in 1911 at age 7, Avedis Hagopian became a lead gauge maker at the Springfield Armory. He invented a tool that represented a minor breakthrough for the precision gauge manufacturing business, sold the concept to a local company, and used that money to start his own venture.

It took the name Hoppe Tool, because Hoppe became Avedis's unofficial nickname; apparently, some of his schoolmates would mispronounce his last name (Hoppe-gopian, or something to that effect). In any case, the nickname stuck, enough that it went over the door of a small plant on Page Boulevard in Springfield built a few years after the venture was launched out of his garage.

The company was started with a ready-made customer (the federal government) and had another advantage in the form of timing — the early years of World War II, said Eric Hagopian, adding that his grandfather supplied gauges used in gun manufacturing to many of the armories in operation then, including Springfield's and also facilities in Rock Island, Ill., Watertown, Mass., and Watervalet, N.Y.

Avedis's second son, Gary, took the helm in 1964 and later moved the company to an industrial park just off Route 291 in Chicopee. The original 10,000-square-foot plant has been expanded several times, with the footprint now exceeding 40,000 square feet. Eric and Doug started working at the company in a professional capacity in the early '90s, and took the reins in 1997 when their father retired.

Over the past few decades, the company has moved well beyond the gauge-making foundation laid by its founder, and into parts and complete assemblies for a wide range of commercial and defense clients. Work comes in two primary categories: aerospace, specifically components for commercial aircraft engines and on-wing accessories, as they're called; and defense, primarily parts and assemblies involving military reconnaissance.

"Our business has changed over the years ... we've gone from a job shop sought out for individual piece parts to being a contract manufacturing partner," Eric said. "The companies that have been able to successfully grow are the ones that have been able to morph into that contract manufacturing aspect."

Those aforementioned partners include Raytheon, Honeywell, DRS Technologies, Goodrich Aircraft, and many others, he continued, adding that the company still handles some parts and also some tools — including technology used by razor-blade manufacturers to mass-produce the four- and five-blade cartridges now on the market.

As an example of the work now being handled by the company, Eric cited the mirror assemblies for infrared cameras installed on the Global Hawk reconnaissance plane used by the U.S. Air Force. The customer is Raytheon, he said, adding that the process starts with a block of aluminum, like the one he displayed while giving BusinessWest a tour of the plant.

"That block is turned and milled into what's considered a substrate, which is then put through several different stabilization processes through heating and cooling to give it thermal stability," he explained. "Once we're done with that substrate, we send it to Raytheon, who machines it with a diamond tool and is able to create an optically perfect face on that mirror."

### **Parts of the Whole**

While working to continually expand its client base, Hoppe is also engaged in two separate but ultimately intertwined initiatives.

The first involves continued investment in new automation technology, and the second focuses on personnel — or making sure the company always has enough qualified machinists to program and oversee the increasingly complex automated equipment on the shop floor.

As he talked about the former, Doug Hagopian said it's been over the past decade that the company has fully embraced the computer age of precision manufacturing, and over the past five years or so that Hoppe has evolved from a company that ran 11 hours a day to one that's humming for all 24.

"It's like going out and buying another company — there's really no other way to describe it," he said of the major investments the company has made and the opportunities afforded to it by new, automated machines — a transformation that has nearly tripled sales without shedding or adding any staff.

"It's been a gradual progression," he said of the drive to intelligently automate the company. "Since 2001, we've probably invested more than \$5.5 million in new equipment, and it has really paid off; when customers come in and see your commitment to that automation, they start sending work that you wouldn't normally be able to attract."

Looking ahead, he said the next step for the company will be to stick its toe into the next generation of robotic arms, which will automate more processes.

"These are mounted on the floor in front of a machine," he explained. "You put the parts on a pallet next to the machine and program the arm to grab the part, open to the door to the machine, put the part on the work holding, come back out, and close the door. When the part is finished, the robot opens the door, reaches in, grabs the part, and puts it on the floor.

"That's real, true automation, and that's what is coming — the big dogs like Ford are already doing it," he said, adding that more automation will not lessen the demand for machinists at companies like Hoppe.

"We're going to take our personnel and train them on how to operate this technology, so that the robots do the leg work making the parts and the people use their heads to make it all happen."

As for the work to put more of these machinists in the pipeline, Eric Hagopian said his company, like many in this sector, has become much more proactive with regard to showcasing the industry and its job opportunities. The reason is simple: self-preservation.

Hoppe recently staged a tour of its facilities involving Lt. Gov. Tim Murray, Chicopee Mayor Michael Bissionnette, and other elected officials, a guest list that attracted significant media attention, as the Hagopians hoped it would. The television cameras went inside the plant, said Eric, and, hopefully, helped to convince viewers that modern machine shops are not the dark, dirty, noisy mills of generations past.

Rather, they are clean, often quiet, and, more importantly, host good-paying jobs that would appear to have a solid future given the current demand for new aircraft and the ongoing evolution of third-world countries into industrial, commercialized nations.

"Overall, it looks good for this industry ... the forecast is very strong," he explained. "Boeing and Airbus have new platforms of jets coming out. For Boeing, it's the 787, which will replace the 737, and for Airbus, it's the A-350, which will compete with the 787.

"Airlines are discovering that it's less expensive to buy brand-new airplanes that are more fuel-efficient than it is to keep older planes in the sky," he continued. "This is going to fuel our businesses for many years to come, between the building of replacement aircraft and the spare parts business, which is lucrative and lasts for 30, 40, or 50 years."

Eric Hagopian said the company is involved in a number of initiatives created by the local chapter of the National Tooling and Machining Assoc. (NTMA) to spur interest in precision machining and thus increase the supply of qualified help (see related story, page 42), and recently awarded its first scholarship to a young person looking to enter the field.

"He'll be attending Asnuntuck Community College this fall," Hagopian said. "We're sponsoring his tuition for an associate's degree in manufacturing technology. It's an expense, but it's something we have to do if we're going to have good machinists down the road."

### **Finishing Stage**

More than 60 years after Avedis Hagopian set up shop in his garage, it's clear that the schoolmates who couldn't pronounce his name did more than devise a different means for referencing him.

They gave this sector a name, Hoppe, that would, six decades later, become largely synonymous with cutting-edge work — and cutting-edge thinking — in precision machining.

And with those strong forecasts for companies that supply the aerospace industry, it's a name that would appear to have a very bright future.v

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