After each Top Shops benchmarking survey, I examine what we establish as the top 20% benchmarking group in order to choose an Honors Program winner for each of the four survey categories. I comb through survey responses, websites, blogs, social media channels and other resources that indicate a shop’s strength in a particular category before chatting with them to learn more. Here are the winners for our ninth annual survey:

- **MACHINING TECHNOLOGY:**
  STRATON INDUSTRIES (straton.com)  
  Stratford, Connecticut
- **SHOPFLOOR PRACTICES:**
  METALQUEST (metalquest.net)  
  Hebron, Nebraska
- **BUSINESS STRATEGIES:**
  ACECO PRECISION MANUFACTURING  
  (acecoprecision.com)  Boise, Idaho
- **HUMAN RESOURCES:**
  SDP/SI (designatronics.com)  
  Hicksville, New York

While each of these companies certainly excel in their respective categories (as you’ll read in this article), all of them are also strong in other areas of their businesses. (They are “Top Shops” after all.) For example, Straton has a wealth of in-house machining and manufacturing capabilities to be a “one-stop” shop for customers, but it also has a robust training program. MetalQuest is a leading adopter of data-driven manufacturing and robotic automation, but it also works closely with area trade schools to help develop the next generation of manufacturing talent. AceCo established an employee stock ownership program (ESOP), which spurs its employees — all company owners — to continuously think about ways to improve the organization, but it also has developed competency in highly accurate machining for the semiconductor industry. SDP/SI (Stock Drive Products/Sterling Instrument) has made great strides to break silos and improve communication between employees, but it also has adopted collaborative robotics and 3D printing.

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Therein lies the benefit of attending our Top Shops Conference (topshopsevent.com) September 9-11 in Cincinnati: You have the opportunity to learn firsthand from these shops. Part of the program is a panel discussion that I will moderate featuring representatives from each of these four shops. (See the sidebar on page 86 for more event information.) This has been a popular feature of past conferences. Not only will it enable you to hear more about their strategies, strengths, challenges and issues, but also it will give you the opportunity to ask questions. The following gives you a taste of what they might discuss — tactics that have led them to succeed and grow as leading U.S. machining businesses.

**COMPLEX PARTS FAST**
That’s STRATON INDUSTRIES’ business strategy in three words, says David Cremin, company president.

Founded in 1961, Straton has a wealth of machining and manufacturing capabilities. “We have a big array of precision equipment because we want to be a one-stop shop for our big customers, many of which are in the aerospace industry,” Mr. Cremin explains. “This helps us maintain control over all aspects of a customer’s work in house. That’s how we achieve the speed to turn challenging jobs in short order.”

Straton, which is ITAR registered, certified to ISO 9001:2015 and AS9100D, and is a Federal Aviation Administration-certified repair station for helicopter and fixed-wing aircraft components, updates its technology annually. The shop invested $1 million last year in new machine tools and supporting software and is close to investing at that level this year. “We read what our customers are looking for and needing machining-wise,” Mr. Cremin says. “We also buy according where we feel pressure to add to our already extensive manufacturing capabilities.”

To that end, the shop is not married to any one machine tool brand. “We look for specific equipment characteristics we can capitalize on,” Mr. Cremin explains. “Having a mix of machines and capabilities is important to being flexible.
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and accommodating. Because this can present challenges for our shopfloor employees, though, we try to stick to FANUC controls and use SolidWorks and Mastercam for part design and programming throughout. That makes having a machine mix doable.”

Straton’s equipment list includes HMCs; five-axis machines; wire and sinker EDMs; jig, surface and cylindrical grinders; and VTLs to 46-inch-diameter capacity. The shop also has stamping, engraving, welding and heat-treating capabilities as well as an array of inspection equipment. It is currently considering adding a horizontal boring mill, sensing opportunities for that type of work, and likely will purchase a larger VTL at some point soon.

At least a half dozen of its machines have spindle touch probes. Straton has started retrofitting machines that were not purchased with probes, and new machines it purchases are often ordered with probes. They are primarily used to speed and simplify setups and perform in-process measurements. “As an experiment a few years ago, we ran the same job on two machines, one with a probe and one without,” Mr. Cremin says. “The machine with the probe turned that job significantly faster than the other, so that sold us on this technology.”

The shop also has a large-format 3D plastic printer that it chiefly uses during the quoting process for new jobs. “Looking at a CAD file of a complex part is one thing, but it’s another to actually hold a part in your hands and study it,” Mr. Cremin explains. “It helps our machinists and inspectors determine optimal ways to approach the job, design fixtures and so on.”

Mr. Cremin says the shop discovers new technology from a few different sources. One is trade publications such as Modern Machine Shop. Another is industry trade shows including IMTS and Eastec. The shop also visits its customers to see what equipment they are using or considering. “Ultimately, we ask ‘Does this make sense for us?’ when evaluating new technology,” Mr. Cremin notes. “If we feel it does, there’s a good chance we’ll pull the trigger on it.”

Do You Know How Much Cardboard You Have?

After a quick scan of the custom manufacturing software Scott Volk developed at MetalQuest, the shop’s VP/COO can tell you exactly how much cardboard he has in stock in his Kenna-metal ToolBoss vending system. Why is this important? Because unexpectedly running out of cardboard could shut down a multi-machine, multi-robot cell that produces parts called segments from raw material to completed and boxed. This cell is representative of how the shop leverages extensive data collection and robotic automation to its advantage.

President Scott Harms started MetalQuest in 1996. From day one, the company, which focuses on medium- to high-volume work...
— typically for part families — has used advanced equipment to set itself apart from others. “Our first machine was a three-axis CNC lathe to perform turning and milling operations, and that type of multitasking capability became our niche,” Mr. Harms says. “At that time, most shops were still using a mill and two-axis lathe to complete parts. In fact, today, we have just one two-axis lathe in our tool room. All others have some combination of subspindle and live tooling to potentially machine parts complete.”

Six years later, Mr. Volk joined the company and spearheaded the development of the shop’s data-collection software. He started by taking inventory of all raw materials and consumables and bringing in the ToolBoss vending system to manage that. He also continued to grow the software to the point that data collection has been integrated

MetalQuest has 13 robots. It buys them direct from the manufacturer and integrates them itself. Photo: MetalQuest

Not all automation in a machine shop requires robots. MetalQuest’s bar-fed, live-tool lathes can machine parts unattended for long stretches of time. Photo: MetalQuest
into all front-office and shopfloor operational systems. The software Mr. Volk created ties together a variety of manufacturing tools, including Exact JobBoss ERP, Okuma’s Connect Plan machine monitoring system, Hexagon’s PC-DMIS measurement software, QC-Calc SPC software, two Zoller tool presetters and the vending system. “All of these elements can communicate with each other,” Mr. Volk explains. “Plus, there is just one point of data entry for a process change, such as adding a new type of cutter, and all associated information about the change is then automatically pushed to all other relevant systems.”

The software tracks all shop metrics. “If a customer was to send me a packing list number, I could provide any information relative to how that job flowed through our facility from the raw material purchase order to the point of it being received at its facility,” Mr. Volk says. “I could even provide the coolant concentration level when the parts were machined if need be. Tracking and analyzing data means we’re not making educated guesses here.”

MetalQuest also takes a do-it-yourself approach to automation. “We now have 13 robots,” Mr. Harms says. “We buy them directly from FANUC and do all the integration ourselves.” For example, the aforementioned segment cell includes a pair of Okuma 2SP-250H CNC turning centers, each having dual forward-facing horizontal spindles and a gantry loader taking parts from one spindle to the other. Each turning center performs OP-10 and 20 work and drops parts on a conveyor. A robot picks parts from the conveyor, delivers them to a de-gaussing station and then to a pin stamping machine for part marking. Another robot delivers those parts to a VMC for a slitting operation. After that, robots are used for deburring, dipping parts in rust preventive, building cardboard boxes with internal dividers and placing parts in the boxes. “Once an operator loads raw material into the cell, there is no other interaction with the cell except to remove filled boxes,” Mr. Harms says. A second such cell is nearly complete and online.

“Our employees embrace the robots,” he continues. “From day one, we’ve continuously automated a range of processes, so when we did finally start adding robots, they simply viewed them as just another automation upgrade. They understand we want to stimulate their intellect, not simply have them mindlessly move parts from point A to point B.”

Good Things Happen When Employees Become Owners

There are a variety of scenarios that can play out when shop owners become interested in selling their businesses. In 2011, ACECO’s owners opted for an ESOP. Sid Sullivan, company president, says that since the transition, the shop’s value (based on purchase price) has grown tenfold largely because the employees/owners now have a more vested interest in the operation’s performance. The change has also led to greater reinvestment into the business. “It’s a win-win-win for the employees, the company and our customers,” he says.

AceCo started in 1960 as a job shop. Over
the next few decades, the company established competencies in producing planer heads, finger joint knives and other industrial wood knives. This eventually led the company into the food processing knives specifically related to processing — perhaps not surprisingly — French fries and potato chips. In the mid-’80s, local high-tech companies such as Micron Technology required complex parts used in equipment that produced semiconductor memory and microprocessor chips. Shortly after, AceCo started a division dedicated to this industry. Today, the majority of the company’s business is dedicated to providing those parts as well as similar ones used in equipment that manufactures LCD and OLED screens. Parts like these require precision machining and high-end equipment. In fact, developing more accurate machining processes has helped semiconductor OEMs to shrink the size of their chips over the years, which remains a continuous goal for them.

In 2011, the company owners decided to sell this division. Prior to establishing the ESOP, consideration was given to possible strategic partners and shopping the business altogether. Mr. Sullivan, who was CFO at the time, proposed an ESOP to protect the company’s legacy and reward the employees long-term. “I told them ESOPs create owners, and owners have a stake in the game.”

Mr. Sullivan says he anticipated possible employee skepticism when the plan was rolled out. “However, we release the stock price every year, and we have a third party perform an annual valuation on our company,” he notes. “Employees can clearly see the impact their hard work and improvement initiatives have on their stock shares, and that motivates them to do even more in that regard.”

Eventually, AceCo initiated a formal continuous improvement plan in which, among other initiatives, the company’s 180 employees were
encouraged to submit two improvement ideas each year. Mr. Sullivan says having control over what changes might be made is quite different than having someone dictate what those changes might be. “This has been incredibly successful for the company,” he notes.

The ESOP has also spurred higher reinvestment in the company. “The U.S. government views an ESOP as a transition plan, a way to continue business,” Mr. Sullivan explains. “As a result, the company pays no state or federal taxes, and we can — and do — put that money back into the business. Last year, we reinvested approximately $9 million thanks to the tax savings. When our employees retire, they'll receive the benefits from their ESOP as ordinary income and pay the required taxes. That’s what makes this work.”

In fact, AceCo currently is constructing a 92,000-square-foot facility that will consolidate some of its present facilities. Thanks to the tax savings, no debt financing will be necessary.

Breaking Silos
Most people know SDP/SI because of its 1,500-page catalogs, notes Robert Kufner, company president since 2013. Established in 1950, SDP/SI offers more than 87,000 mechanical components and assemblies as standard items. It also manufactures custom products. Although these are two separate entities, they are branded as one.

Recently, SDP/SI along with Quality Bearings and Components (QBC), and QTC Metric Gears, all divisions of parent company Designatronics, has gone through a number of significant changes. “In the last five years, we’ve worked through a major ERP system change, revamped our website and online store, and consolidated our four separate operations into one new
$24 million facility,” Mr. Kufner says. “These changes, the new facility in particular, did wonders for improving our internal communication and customer service, and they helped strengthen our overall company culture.” In fact, the company was named a top workplace in Long Island by Newsday in 2018.

Though branded as one division under Designatronics, SDP/SI (as well as QBC and QTC) functioned as separate businesses. “Picture one long building with a wall down the middle,” Mr. Kufner describes. “Although there are similarities between SDP and SI, and both were feeding products to the same catalog, there was no communication between them, and no resources were shared. They were operational silos.”

This is no longer the case with the new building, even with SDP functioning as a union shop and SI an open shop. “With the new facility, we were finally able to literally and metaphorically break down the wall between the two entities,” Mr. Kufner says. “This did require a good bit of training to facilitate communication between all parties and teach them how to engage with and rely on each other. It also meant we had to trim away some managers who were not helping establish our open culture or on board with our new mission and vision. That’s simply the reality of any type of drastic change like this.”

In addition to communication training, the company has offered import/export and lean manufacturing training, and has initiated an apprenticeship program. It also offers tuition reimbursement for outside education.

Still, SDP/SI struggles to find new employees. The Long Island area has a large concentration of financial and service firms, but not much in the way of manufacturing or technology. This has spurred the company to consider training those in automotive repair programs to be machinists. It has also had success training engineers who are more comfortable on the shop floor than in an office to be machinists.

The company also is offering signing bonuses for both new hires and the employees who find them. “An employee who finds us a machine operator will receive a $2,500 bonus as will the new person,” Mr. Kufner says. “Similarly, we offer $5,000 bonuses for setup personnel and experienced gear cutters. Finding good people remains our biggest hurdle and biggest threat to growth.”

This problem also has the company considering acquiring small machine shops in the area to boost capacity.

That said, the new manufacturing facility, which Mr. Kufner says is one of the most modern on the east coast, also serves as a selling point to potential new hires. “We like to bring people in and show off our building with its clean, epoxied floors and environmental control,” he says. “It’s one way we can change their mind about manufacturing.”