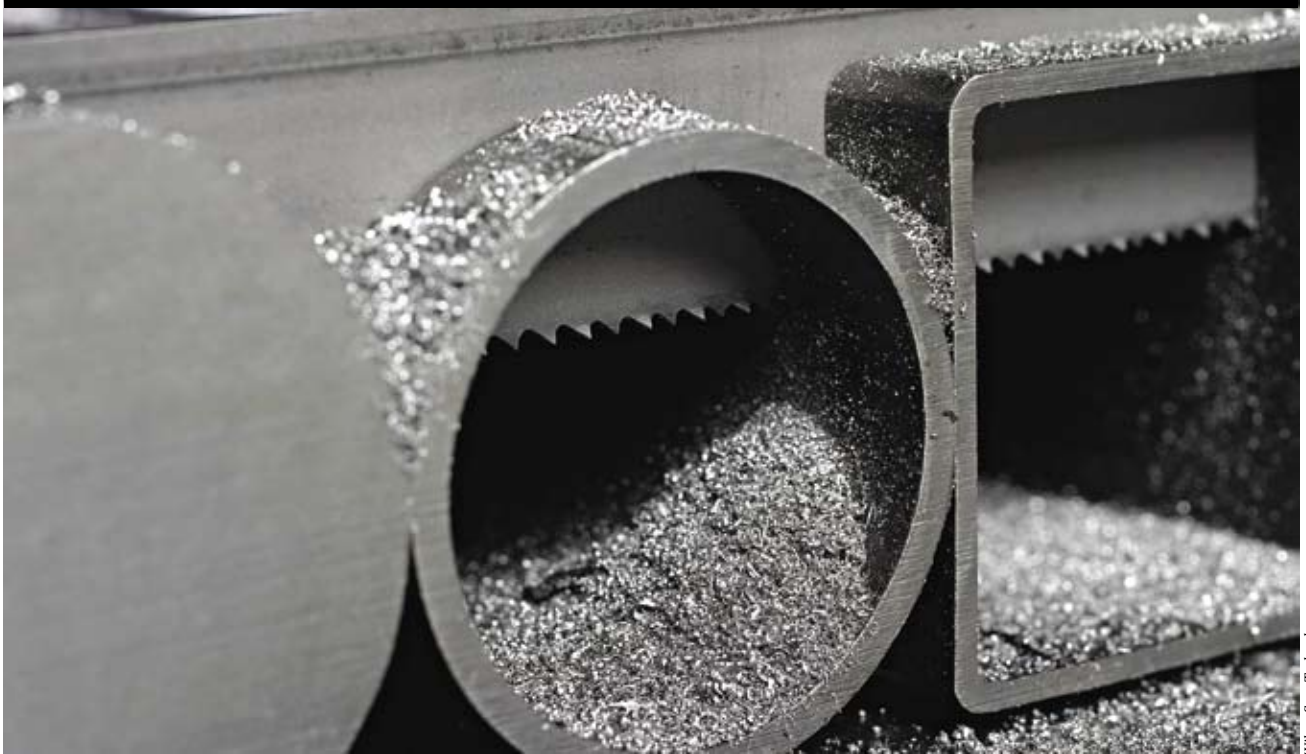


► BY ALAN RICHTER, EDITOR



Wilus Saw Technology

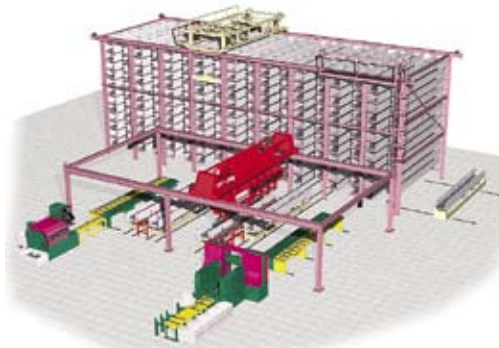
# Auto Saw

Just as there are numerous ways to saw bar stock, multiple methods exist to automate the sawing operation.

Part of an oath that doctors take states “First, do no harm.” The same oath might be helpful for saw operators. An inattentive operator can shorten blade life by selecting incorrect sawing parameters, damage expensive materials or produce out-of-specification lengths. Automation of sawing operations can help prevent those problems. It can also improve inventory control, increase productivity, reduce operating costs and improve sawing quality.

## Removing Responsibility

“A lot of people are interested in automating sawing so they can remove the responsibility of the operator to program the machine,” said Jeff Cor-



Remmert

**A Remmert automatic storage and retrieval system functions similar to a bridge crane connected to a storage rack system to bring a cassette containing a bar or bars of material to a saw.**

man, engineering manager for Continental Machine Inc., Savage, Minn. Continental is the saw manufacturing division of DoALL Co., Elk Grove Vil-

lage, Ill., and is the North American distributor of German-made Remmert automated storage and retrieval systems (ASRS).

Jerry Kroetch, president of Scotchman Industries Inc., Philip, S.D., agreed with Corman’s statement. In addition to building circular cold saw machines, Scotchman offers programmable stop and programmable feed systems for saws and other machinery to reduce setup time and increase accuracy. “If you can read a tape measure, you can program this feed or stop system,” he said. “The payback comes from the elimination of scrap because of operator error.”

Kroetch explained that the stop system allows an end user to program up to 99 different length profiles, with

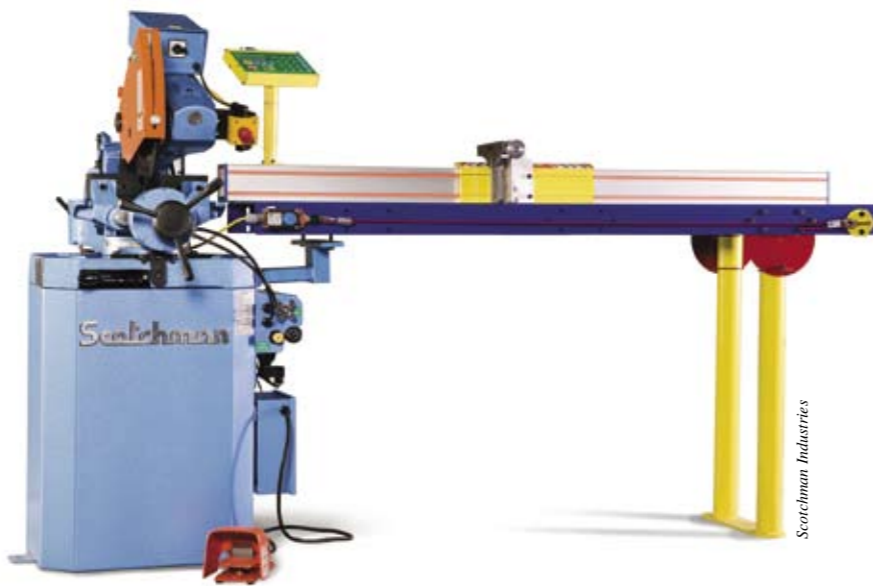
the ability to cut up to 998 pieces for each profile. If more than 998 pieces are needed of a specific length, the operator programs one or more additional profiles to cut the stock to the same length and handle the difference.

The programmable stop system can be connected to a manual or semiautomatic machine, whether a Scotchman product or one from another builder, but the operator always has to manually move the material to the stop. The stop is belt-driven and automatically moves to the desired length keyed into the control panel, Kroetch noted.

### Fully Automatic

To turn a semiautomatic sawing machine into a fully automatic bar-feed machine, a programmable feed system is required. "It's the identical system as the stop system except it has an advanced interlock kit that's wired into the machine you want to adapt it to," Kroetch said. He noted that a semiautomatic machine is one that has a material-clamping vise that automatically opens and closes hydraulically or pneumatically.

He explained that instead of using the system as a stop, the end user of a semiautomatic saw connects a vise or other material-clamping device to the



**A programmable feed system turns a semiautomatic saw machine into an automatic one, but it still requires manual loading.**

feed system, enabling the system to clamp the workpiece material and automatically move to the programmed length in the desired quantity. Length and quantity information is stored in a programmable logic controller that comes standard with the system. After the machine makes the cut, the system feeds the material to the same length or next programmed length. When only a remnant remains, the operator removes it, loads a single bar or bundle of pieces to be cut together, hits the start button and the machine automatically cuts the material to length.

Most customers want to saw material about 20' in length, but a system can be ordered to handle a maximum length of 123', said Kroetch.

Whether the system is a programmable stop or feed, it can be set up to feed the material from the left or right, depending on shop layout. "If you buy it to feed right to left and you made a mistake, all you do is invert it and hook it on the other side," Kroetch said.

He contrasted that with turnkey automation systems that generally are available to feed in only one direction. "The last thing a customer wants to do is buy a machine and have to redesign his shop to fit that one machine,"

Kroetch said.

### Space Matters

Automating the sawing process can also make better use of a facility's space and provide additional benefits. This is the case with an ASRS, which functions similar to a bridge crane connected to a storage rack system to bring a box, or cassette, containing a bar or bars of material to a saw, according to Continental Machine's Corman. "Automated storage and retrieval systems are space efficient, using vertical space better than any other type of storage system," he said. "If you're simply looking to reduce man-hours, it's almost impossible to justify an ASRS. But when you look at enhanced safety, inventory control, stock damage prevention, increased space utilization and top that off with eliminating the need to move [the shop] or add-on to the building, all of sudden it becomes easier to justify."

Corman noted that the high cost of land makes the technology popular in Europe. "In the U.S., if you run out of space you can throw another 40' onto the building and it doesn't cost you that much, but that's starting to change," he said. "Plus, if you add another 40' onto

your building, that means that whatever material-handling system you had before becomes even less efficient."

Also, a sawing automation system might include an in-feed conveyor to transport the material from the ASRS to the saw and, for a highly automated system, a discharge conveyor to take the cut pieces to a device that places them into discrete bins.

The level of sophistication depends on a facility's needs and the depth of its pockets. Michael Masters, national technical manager for Wikus Saw Technology Corp., Bensenville, Ill., said high-end systems include robotic forklifts that collect materials from bar-coded racks and bring them to the machine for lights-out sawing. However, metal distributors are probably the only ones requiring that level of automation, and even those facilities often incorporate manual machine loading "because the cost for the system that does everything by itself is astronomical," Masters said.



**HE&M's "Steel Service Center" system is a long-stroke, hydraulic shuttle-positioning system that automatically indexes to a preprogrammed length for a preprogrammed quantity of parts. Positioning material via the shuttle-feed system frees the operator from repositioning materials after each cut.**

"Oftentimes, people request very sophisticated systems," Corman said, "and then when they find out what the price is, they opt for something less sophisticated. Most of what we do here at DoALL is much simpler; automated but not to the degree of an ASRS." That might mean taking a standard bandsaw and incorporating a material-handling in-feed system, such as a bar loader or chain transfer system, and a discharge device that moves the cut parts onto a staging table or into a deburring machine.

### Price Point

Automation hardware has advanced in recent times. The software side is where the main gains are being made to increase productivity while reducing costs, said Nick Grose, sales representative at Oshkosh, Wis.-based Industrial Manufacturing Solutions LLC, Pryor, Okla. "In the past, if somebody wanted the ability to saw material with-

out touching it, it cost \$150,000 to \$200,000 to achieve it," he said. "Now, with programmability being much more readily available, it's becoming much more affordable for smaller shops."

For example, Grose said the price for adding programmable down feed and band speed to a hydraulic double-column saw with a computer-controlled traverse system has dropped in the last decade from a range of \$15,000 to \$18,000—without the machine—down to about \$3,500. "It would not surprise me if in 5 to 10 years that comes standard just to stay competitive with the industry," he added.

One element of sawing automation that isn't available at any price is automatic blade replacement. That's because, as Masters explained, an operator currently needs to physically grab and twist a blade to position it into the side guides of a machine, and safety switches require that equipment doors are properly opened and closed when changing a blade. "It would require quite a complex robotic arm system to do that," he said. "Eventually there will probably be something like that."

For now, saw operators must perform the task as sawing automation suppliers continue to offer systems to lower the cost per cut, increase accuracy, shorten setup time and reduce manpower requirements so workers can focus on running other equipment.

While automation systems reduce the amount of responsibility for traditionally low-skill saw operators, manufacturers sometimes struggle just to find people willing to work. "Unemployment in Oklahoma where the HE&M machines are manufactured is below the national average," Grose said, "and within a 20-mile radius of the plant, unemployment for a welder or a machinist is less than 1 percent. And that's the guy or gal who doesn't want to be employed." △

### The following companies contributed to this report:

**Continental Machines Inc.**  
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