

<http://www.ffjournal.net/item/11898-peak-performance.html>



Hydraulic Presses

## Peak performance

By Lynn Stanley

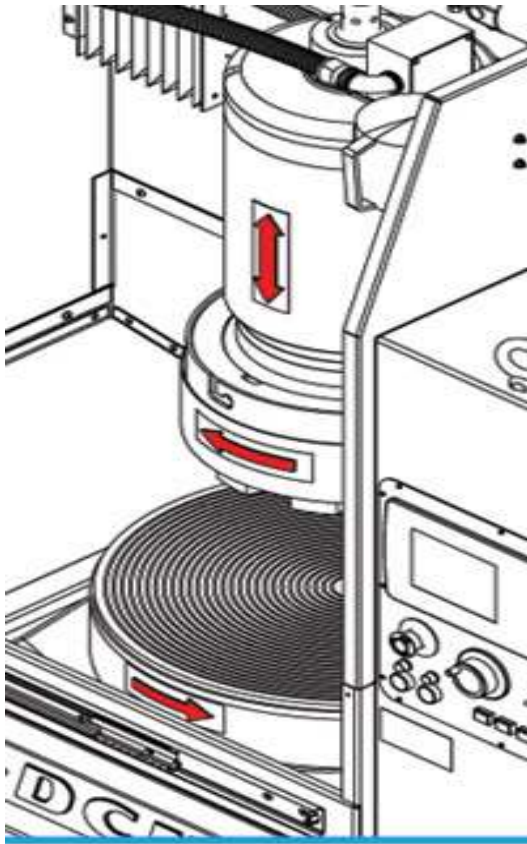
*Above: The DCM Tech rotary surface grinder boosts Precision Resource's production by putting tooling back into service faster.*

### Fineblanker cuts tool maintenance time in half with rotary surface grinding technology

**November 2013** - Processes like surface grinding don't get much play when it comes to the center stage event—the hydraulic press. Craftsmen skilled in the design, repair and performance of the tooling used in these heavyweight presses will tell you that the details behind the scenes are as important as the machines performing critical parts manufacturing. Similar to Goliath who was felled by a small stone aimed at his crown, Jason Stephens, machinist for Precision Resource's Mt. Sterling, Ky., fineblanking division, says, "If you aren't able to keep your tools sharp, they won't go into the press and you won't be fineblanking any parts."

Precision Resource, headquartered in Shelton, Conn., is a global pioneer in fineblanking technology. The manufacturer established its Kentucky Division in 1996 and equipped it with a stable of seven hydraulic fineblanking presses ranging from 630 tons to 1,400 tons, the largest commercially available for this purpose, to produce finished components for the automotive and off-highway markets. The division designs and builds its tooling in-house and also performs secondary finishing operations such as double disk grinding, rotary surface grinding, milling and machining.

One of the largest fineblankers in North America, Precision Resource has observed changes in the industry that have prompted it to adopt innovations in its tooling, bring CNC three-axis work in-house and install a nontraditional grinding solution from Winona, Minn.-based DCM Tech Corp. "We've seen



**The DCM rotary surface grinder's vertical spindle removes material from the entire surface of the component with each pass.**

a trend toward more complex parts,” says Stephens. “I think it’s largely because of the technology that OEMs are incorporating into vehicles. Fineblanking continues to support this requirement because our company understands what it takes to adapt. If you can’t adjust to new technologies you are going to get left by the wayside.”

### **Saving time**

Development of multistation progressive tooling lets the manufacturer create fineblanked parts with features such as forms, bends, coining, countersinks and counterbores. The multistage tooling, along with the division’s triple-action presses, which apply closing force, counterpressure and blanking pressure forces during forming, also allows the division to produce complex parts with customer-specified features right out of the tool. This eliminates secondary operations in some cases and expands design borders.

“We have 75 high-volume, active tools,” says Stephens. “They require constant maintenance to keep them in peak condition. Each time they come out of the press they are taken apart, cleaned and inspected to ensure they deliver optimal performance on the next production run. Surface grinding is central to our maintenance program.”

The Kentucky Division had been using a standard grinder with a 2-in.-wide wheel that operated on an X and Y axis. “We had a very narrow surface to work with,” Stephens says. “Some of our tooling contains some pretty large components, up to 12 in. long by 16 in. wide. What used to take us eight to 12 hours now takes just three to four hours.”

In addition to requiring multiple passes for tool sharpening, the standard grinder was draining production uptime. At a trade show, associates saw DCM Tech demonstrate its DCM IG 280 SD rotary surface grinder. Ease of use and minimal maintenance were deciding factors for the Kentucky Division, which installed the DCM rotary surface grinder in 2012.

Coil feeders and straighteners feed carbon steel and stainless steel coils to the presses. Parts are visually inspected before being sent for additional processing that may be required, such as drilling or tapping. Parts are then packaged and shipped. “We didn’t have any DCM machines prior to the grinder,” says Stephens. “It looked good to us and we thought, ‘We’ll give it a try.’ Once we used it, we thought, ‘My goodness, why didn’t we get one of these sooner?’ It’s a huge time saver for us, even on our small, 1-in.-square tooling.”

DCM Tech trained operators to use the grinder because, according to Stephens, “it runs a little bit differently.” DCM designs and builds an innovative line of industrial rotary surface grinders and automotive rebuilding equipment. The design and function of the wheel orientation and table action are what separate DCM machines from conventional horizontal spindle reciprocating table surface grinders. Mike Anderson, product manager for DCM Tech, likens the machine’s grinding action to the way a lawn mower blade cuts grass. The machine’s vertical spindle positions the grinding wheel so that its diameter actually becomes the grinding area. “Basically, material is removed from the entire

surface of the part with each pass under the wheel's diameter face, similar to the action of grass passing under a lawn mower blade. With a conventional grinder, the horizontal spindle presents the grinding wheel 'on end,' like a lawn mower blade running upright. You wouldn't mow your lawn that way; it would take forever. The DCM IG 280 SD rotary table moves the part under the grinding wheel in a circular path. RPMs for the grinding wheel and the table also can be adjusted for faster feed rates."

The DCM rotary surface grinder's design and function allow machinists like Stephens to cover the entire surface of a component. "We can run nearly all our tooling from die inserts to main punches and counter punches on the rotary surface grinder in half the time or less," he says. "Shorter turnarounds on these jobs means we can put the tools back into service faster, and that's what it is all about—being able to produce the most parts in the shortest amount of time."



DCM Tech's product manager Mike Anderson setting grind parameters on the machine's programmable control.

### A stronger product

The Kentucky Division uses a cubic boron nitride wheel on the rotary surface grinder. Its programmable control allows operators to save grind parameters by part name while a servo-driven Z-axis provides true feed rates and repeatable positioning. Tool maintenance and repair work performed with the rotary surface grinder help maintain the tooling's ability to deliver clean sheared and straight-cut edges. In addition to functional bearing surfaces, the cut or finish allows parts to hold very tight dimensional tolerances.

Tool room machinist Scott Allan also finds the rotary surface grinder handy for roughing operations and prep work prior to milling. Allan turns a radius on each part used in a punch or die insert for tooling that has a Rockwell C hardness ranging between 57 and 60. "It's very difficult to mill hardened material," he says. "We're able to use the DCM rotary surface grinder to grind the material off before it goes to the milling operation. This saves a lot of wear and tear on the mill machine cutting tools."

As tool components begin to show wear, Allan removes the tool and uses the rotary surface grinder to regrind the top. "Grinding gives you a much stronger product because you don't have to introduce heat through a weld, which can weaken a fineblanking tool due to the pressure it has to withstand," he says. Once the worn section is ground off, the component is milled and restored to original condition. "We also use the DCM rotary surface grinder as a roughing operation if we have a lot of material on the parts coming up," he says.

DCM's swarf removal coolant filtration keeps parts from becoming heated. "If you need your tool to maintain a close tolerance in the press, you need the coolant to prevent the part from heating up," says Allan. "Otherwise your component will come out too thin." DCM's air mist collector also contains the grinding mist helping to keep the work atmosphere clean. "You aren't breathing in coolant vapors or fine particles coming off the steel," Allan adds.

Saving hours on its grinding operations and minimizing wear on its milling machines contributes to uptime on the Kentucky Division's hydraulic presses, making the DCM rotary surface grinder a durable workhorse in a high-volume work environment. [FFJ](#)