

Cutting-Edge Grinders are Great—

BUT HOW'S YOUR WORKHOLDING?

Jack McGuinn, Senior Editor

Ok—you make big gears and you've gone out and purchased, say, a spiffy Höfler Rapid 900 or 1500, or maybe a Gleason 1600. Nice move. But some owners of such machines are finding them to be almost too much of a good thing. The problem, they say, is that while their new machine is state-of-the-art, they are finding that their workholding tooling is so last-century, particularly for large-gear production. It is somewhat like buying a complex machine and not having anyone on the floor capable of running it. Capacity is key today, and the best way to ensure that you are squeezing every dime out of that new machine is to complement it with innovative workholding.

And that is exactly what Milwaukee-based Rexnord did.

"The big thing was that we purchased a Höfler rapid 900 and we realized we bought the latest and greatest technology to grind the part, yet we were putting 1920-vintage tooling on here," says Marty Kuklinski, senior manufacturing engineer, Rexnord geared products division. "What we did in the past when we'd finish grinding the gear teeth geometry, we sat them on a thrust plate or thrust ring. We would have hundreds of these different plates because the OD of the plates would have to be less than the root diameter of the part that we're finishing.

"We approached Drewco and said 'Setup is killing us, because every time we go from one part to another we have to take this plate off, put another plate on; we've got to bolt the plates in place, which is standard throughout the



Top: Drewco's workholding system in action. Bottom: The part is held in place by the activation of three pedestals (Courtesy of Rexnord).



industry.”

Drewco, of Franksville, WI, had the answer.

“They asked us if we had an idea for shortening their setup time, so they gave us a family of 30 different gears—bore ranges of 3 to 12 inches—and we came up with a center pedestal setup. Because

of the large range we came up with three different series of mandrills or extending collets,” says Jeff Moczynski, Drewco engineer/engineering manager. “They initially wanted a big ring that the gear would rest on way out towards the root diameter of the gear. Some of these gears were six feet across and larger—

for all these gears you’d have to have a bicycle rack for storing all those plates. I suggested that we use these pedestals that would be precision-ground and move them in and out on the keyways of the table. They weren’t real comfortable with it at first, and the other thing they were concerned about was that with the weight of these gears, would our collet be able to center the gear to overcome the weight of it—one gear was 1,700 lbs. But manually, with just a wrench and a flange nut, we were able to turn the gears within a half-thousandth every time.”

Moczynski goes on to explain that “The activation of the collet was done by means of a custom-built hydraulic nut. This was done for two reasons—one, it provided direct axial force to expand the collet as opposed to the rotating/axial force a standard nut would provide; two, due to the depth or hub width on some of the larger gears, the activating nut was deep inside the bore, thus not allowing the use of a standard wrench. Operators activate the nut by use of a T-handle allen wrench—no big wrenches or extensions required.”

Rexnord was thrilled with the results—and the system’s simplicity.

“These uprights (pedestals) are in key slots, and what they did was make little spacer blocks for us that located off of a central pilot,” says Kuklinski. “And we just put these blocks in and slide these three uprights in place, and that positions the part like the thrust plate would under the root diameter. So now we’re not changing any of these plates. We have these uprights on a fixture and, based on the root diameter, they gave us gage blocks and we just set them in, and we bump up those three uprights, bolt them down and we’re ready to go.

“So, we’ve cut our setup time by 50 percent, if not more.”

Drewco has been equally effective with other gear makers as well, Milwaukee Gear among them.

Out of This World Gear Tooling



**QUALITY
TECHNOLOGY
PRECISION MANUFACTURING
OPERATIONAL EXPERTISE**




P E R F O R M A N C E

The quality and precision of our broaches and gears have won customers worldwide (and beyond!) – from the smallest gear-shop to NASA and the Mars Rover.

Precision manufacturing, modern equipment, advanced technology, and quality control, balanced with talented craftsmanship, means you get nothing but the **very best**.

Guaranteed the most rigid shank cutters and the highest quality level disk cutters made. Products that perform. Why use Broach Masters/Universal Gear? Because your **parts matter!**

As a complete source for all your tooling and production needs. Broach Masters/Universal Gear will supply you with the highest quality products and services that you and your customers expect. **Experience the difference!**

**Call 530 885-1939 or visit
www.broachmasters.com**

Manufacturers of:

- Broaches**
- Spline Broaches
- Fine Pitch Gear Broaches
- Form Broaches
- Serration
- Bearings
- Shaper Cutters**
- Disk Shapers
- Shank Shapers
- Hex and Square Cutters
- Special Form Cutters
- Inspection**
- Master Gears
- Go-No Go Gages
- Posilock Arbors
- “Quick Spline” Software



Made in USA

1605 Industrial Drive
Auburn, CA 95603
Phone (530) 885-1939
Fax (530) 885-8157
Web:
www.broachmasters.com




"We were using a lot of traditional manual tooling—solid bushings, clamp plates—and now we use a set of six pedestals with the expanding mandrill from Drewco," says Mike Pascavis, gear supervisor. "You put the part on, clamp it up, and it holds the part very well. It works very well on our Höfler Rapid 1500 and Gleason 1600. If you make a significant investment in a gear grinding machine or hobber, why limit yourself with your table tooling? You can cut down your cycle and setup time by investing in efficient tooling. Our old way was labor-intensive; now we'll do a 50-piece run and guys are taking only 10 to 15 minutes for setup. The savings start adding up."

Drewco's Moczynski explains that both customers were given a setup sheet for each part, so they knew what mandrill was needed with which collet. He also points out a residual benefit in that the work area is much less cluttered, especially in the number of storage racks. And speaking of capacity, the new workholding system is keeping the pedal to the metal on those new machines.

"These new grinders and hobbers—they have much higher capacity. So with our short setup times, in conjunction with better grinding equipment—they (Rexnord) gave us a whole raft of parts and they ran this machine 'out of business,' " says Moczynski. "They actually started using the older hobs and grinders, and we put them out of business as well."

Rexnord's Kuklinski certainly concurs.

"It gives us a lot more flexibility to go from Part A to Part Z because with the old system we had we would load the work up so we're not changing all those thrust plates—we'd try to almost batch the work through," he says. "Now you can run one part at a time regardless of what the next part is. The setup time is so short that we can jump from one

size to another and—presto—the setup is changed and we're ready to go."

Prior to taking shipment of the Höfler, Kuklinski explains, the machine builder provided cycle times based on some test parts that Rexnord sent them. And then a light bulb went off.

"Based on (the test cycle times) and based on the machine that we were taking work off of, we saw a percentage increase (in productivity). But then we started looking a bit further when the machine was in transit and we said 'We're going to make it up in the grinding time, but we're still going to lose out in setup.' So we figured at that time that we better take a hard look at our tooling and say—'Wait a minute, we need to take another step here and move into the 21st century.'"

For more information:

Drewco
3745 Nicholson Rd.
Franksville, WI 53126
Phone: (262) 886-5050
Fax: (262) 886-5872
jeffm@drewco.com
www.drewco.com

Mike Pascavis
Milwaukee Gear
5150 N. Port Washington Road
Milwaukee, WI 53217
Phone: (414) 962-0737
Fax: (414) 962-2774
mpascavis@milwgear.com
www.milwaukeegear.com

Marty Kuklinski
Rexnord Geared Products
3001 W. Canal Street
Milwaukee, WI 53208
Phone: (414) 397-4604
Fax: (414) 937-9012
marty.kuklinski@rexnord.com
www.Rexnord.com

Modultherm EXPANDS CAPACITY

ALD and ALD-Holcroft Vacuum Technologies introduced a larger size of the ModulTherm vacuum heat treating system. The ModulTherm can now process load sizes of 36" x 36" x 72" with weights up to 7,000 lbs. Previously, the ModulTherm could only accommodate load sizes of 24" x 30" x 40" and 2,200 lbs.

"We've found justification for this size system based heavily in the wind power generation, bearing and construction equipment markets," says Klaus Loeser, vice president of new technologies at ALD-Holcroft Vacuum Technologies. "Too many opportunities have had to settle for atmosphere processing but could truly benefit from the attributes of vacuum. Now that possibility is realized."

The larger version system is available with high-pressure gas quenching, oil quenching, intensive quenching and interfaces to press quenching.

"Our ModulTherm concept has now taken another 'growth step' in maturing as the industry standard for high production vacuum thermal processing. Now more than ever, the versatile nature of the ModulTherm is needed," says Bill Gornicki, vice president of sales and marketing for ALD-Holcroft. "As load sizes and part sizes increase, choices in quenching become an absolute necessity. In conjunction with last year's introduction of five separate quenching options, the ModulTherm is uniquely positioned as the standard for automated large load processing. High volume production of large components can now benefit from the significant value of low pressure carburizing."

For more information:

ALD-Holcroft Vacuum Technologies
49630 Pontiac Trail
Wixom, MI 48393-2009
Phone: (248) 668-4130
Fax: (248) 624-3710
sales@ald-holcroft.com