Roto-Flo's Servo-Actuated CNC

TO DEBUT AT IMTS

Roto-Flo's Model 3251 48" horizontal servo CNC is the first of its kind for the company—a clear departure from its long history of hydraulic-driven spline and thread-rolling machines.

Most anyone that has been in the gear industry—or any machining and tooling oriented business, for that matter—is probably at least somewhat familiar with the Roto-Flo workhorse line of hydraulic-actuated spline and thread rolling machines. After all, they've been at it for decades.

But things are changing at the Detroit-based company. For starters, the Roto-Flo brand and company has since 2005 been owned by U.S. Group, and is operated by its subsidiary, U.S. Equipment Company. And now with that infusion of change comes another—the new 48" Model 3251–CNC—Roto-Flo's first CNC servo-actuated, horizontal spline and thread rolling machine. The machine debuts at this year's IMTS.

Paul Simon, Roto-Flo CEO, explains the addition of the servo-driven machine.

"The key motivating factor in developing the servo-actuated machine was bringing technological advancement to the spline rolling process. Servo-actuated machines provide productivity improvements, more predictable process control, easier machine setup and improved environmental considerations (no hydraulic fluids, electricity savings and reduced noise)."

The 3251–CNC is capable of producing "cold-formed splines, grooves, worms, threads and other part features with high precision," according to a company new-product release. The obvious difference between this servo-driven Model 3251–CNC and its predecessor, the hydraulic-driven Model 3251 (still available) is the latest technology in CNC controllers and closed-loop A/C servomotors. With those advances—feed rates of over 1,400 IPM, for example—part throughput is increased up to 20 percent.

The key is the servo technology, which allows for maximum-minimum speed modulation. This includes driving the tool rack, which allows for rapid traverse of the tooling to the part, slowing to a controlled entry rate to account for "part inertia control" and accelerating for optimum part quality and productivity.

In addition, says Simon, "By using servo motor technology with ballscrews to provide the variable and adjustable tool rack motion, rather than fixed hydraulic systems, tool life and part quality can also be increased because the servo drives allow the forming process to be fine-tuned."

It is this technology—not exclusive to Roto-Flo—that makes the hydraulic-driven machines of old a somewhat endangered species. Some of the well-documented drawbacks with hydraulic spline and thread rolling machines include:

- Once a part is rolled, the tailstock must fully retract before the slides return to their previous setting.
- Part sensing during rolling is unavailable, which in turn leaves no room for error in part sizing that can result in costly tool jams and machine crashes.
- Maintenance-intensive (fluids, filters, cylinders, etc.)
- Expensive to run, and getting more so with out-of-control energy costs.

On the other hand, other welcomed attributes of servo-controlled CNCs include:

- Energy savings. Hydraulic systems run non-stop; CNC servo motors run only when needed.
- Smaller footprint. Hydraulic systems, with their fluids, filters, cylinders and other necessary parts, require a good deal of floorspace. That all goes away with servo CNCs.
- No hydraulics = maintenance savings (see above).
- Greener. None of the above mentioned hydraulic fluids, oils, etc. to worry about or recycle. Servo motors also run cooler, which leads to savings

continued

on air conditioning.

• Quieter. AC-servo motors reduce noise by 50 percent over continuous-running hydraulic motors.

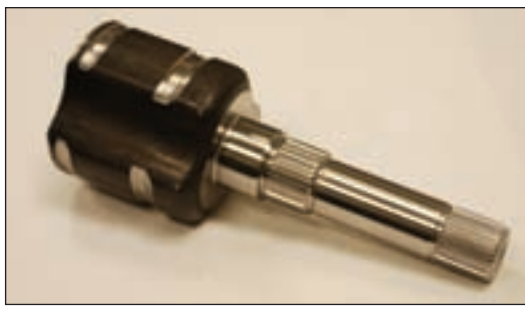
• Faster setup. The CNC control positions the racks, so an operator no longer needs to adjust stops and switches.

• Enhanced part precision. Unlike hydraulic spline rolling, servo-driven CNCs can re-roll with ease and as needed to fine-tune a specific part feature.

The Model 3251–CNC is the first out of the gate for Roto-Flo, but, says Simon, "New models are under continuing development," including a 36" version.

And for users of hydraulic-driven machines, don't despair. Roto-Flo still makes them and intends to continue doing so. In fact, Simon adds, they still represent a big chunk of the company's business.

"We have customers that still desire hydraulic-actuated machines, and we will continue to provide that model. These customers tend to be customers in developing countries that do not have the expertise in CNC technology and domestic companies with a shortage of CNC expertise in their maintenance departments."



Nothing new there, unfortunately, regarding skilled workers here at home. Which makes the fact that both the hydraulic- and motor-driven versions are easily Fanuc-automated a very good thing indeed.

See the Roto-Flo Model 3251–CNC at IMTS in **Booth 7511**.

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