

GLOBAL SOLUTIONS

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BIG GEARS CUT down to size

Most gear manufacturers measure throughput in dozens, perhaps hundreds of parts per hour. But scattered throughout the world is a small, elite group of gear shops producing gears many meters in diameter, and where productivity is measured in days, even weeks per gear. So with gears costing many hundreds of dollars each and taking days or weeks to produce, many of these producers have found that the rewards of applying the latest Gleason profile grinding machines are gratifying indeed.

Unigear, unique capability. Up here in the rarified air of big gear production, a small company just outside Montreal, Canada has made a name for itself as a leader in the production of cylindrical gears as large as 240" in diameter.

In the world of large gear production, where throughput is often measured in weeks, and a single gear can cost thousands of dollars, gear shops on three continents are using new Gleason Grinders to meet the challenge.

Named one of Canada's 50 Best Private Companies, Unigear is unique in its ability to turn out big gears faster, cheaper and at higher quality levels for the large gear boxes that drive mining, steel processing and pulp and paper equipment. That's because Unigear President Ron Mehra has invested in CNC machines that are many times more productive than their manual counterparts—so that a gear sold for \$600.00 five years ago now costs his customer \$450.00 (this,



despite rising labor and material costs!) Not that Mr. Mehra is losing money. That same gear used to take three hours to make; now it can be produced in 20 minutes.

"We invest in the best," says Mr. Mehra. And in this case it's predominantly Gleason-Pfauter

profile grinders and hobbers. Mr. Mehra became a believer 12 years ago when he was able to replace some 20 manual hobbers with just two CNC Gleason-Pfauter hobbers, with (a 1 Meter capability and a 3 Meter capability). But if there's a flagship in the Unigear shop it's probably the most recent acquisition, a Gleason Pfauter P 1200 G Profile Grinder. It's a machine, says Mr. Mehra that has opened new doors by bringing remarkable productivity to the hard finishing of gears in the AGMA Class 10 or higher quality levels.

For example:

"A major U.S. pump manufacturer was buying very high quality spur gears from Switzerland, but with all the added cost and delivery issues that entailed," says Mr. Mehra. "They tried to find a domestic supplier but two U.S. gear shops tried for eight months and failed. No wonder, what with an AGMA Class 14 quality level, and the toughest tool steel material imaginable. But we thought we could do it with the Gleason-Pfauter and, after just eight weeks had turned out a totally acceptable product. Now we've added \$750,000 a year in new business—and the customer has cut his gear set costs from \$22,000 to just \$12,000. Nor have they ever reported a gear failure in the field. It's the ultimate win-win scenario."



Brains and brawn. Mr. Mehra believes the P 1200 G is the perfect marriage of smart CNC capabilities and a powerful, productive design. 'Smart' is critical at Unigear because setup and operation must be fast and user-friendly, even if the operator doesn't have many years of experience on that particular machine. 'Productive' is also important for all the obvious reasons, but also from the standpoint that leadtimes are shrinking because of smaller inventories and more one-off requests. That's why Unigear's next generation Gleason-Pfauter P 400 G Profile Grinder, already on order, is equipped with all the latest bells and whistles, including:

- On-machine inspection to analyze stock distribution and compensate for heat treat distortion and part runoff.
- On-machine dressing that integrates the dressing unit with the grinding head to ensure the highest level of repeatability. Compensation for wheel wear between dresses is automatic.
- The flexibility to also grind internal and external gears with Gleason high-precision vitrified or plated CBN wheels.
- An integrated Windows user interface with a Gleason Pfauter dialogue program that provides for quick, simple and operator-friendly programming.
- A grinding technology database that recommends and optimizes the "perfect production" methodology.
- K-Chart inspection that allows specific input for both profile and lead modifications.
- Tooth twist compensation for noise-control and high performance applications.

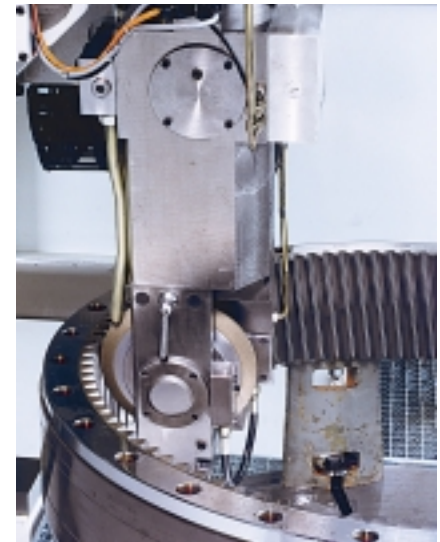
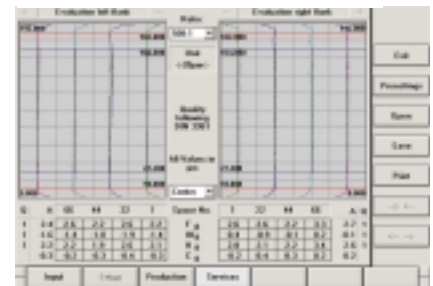


Gleason-Pfauter Hobber at Unigear.

The domino effect of downtime. Rounding out the Unigear/Gleason success story is, according to Mr. Mehra, service. Unigear absolutely dreads downtime, because of the domino effect it causes downstream. "If we can't deliver one of our gears on-time in a repair situation, this ultimately might mean that an entire steel mill might be impacted, costing our customer millions," he says. "Our experience with Gleason-Pfauter from a service standpoint has been excellent. They can be here in 24 hours, or communicating immediately by phone, fax or computer. In the world of big gears, depth of resources and quality are vital."

As one of Korea's leading producers of large gears (up to 6 Meters), **Kyung-In Gear Manufacturing Co.** is using new Gleason technology to position itself for expected increases in the number of high-speed gear boxes and speed increaser gear boxes needed by the fast-growing windpower energy field. Kyung-In Gear's new Gleason Pfauter P 2400 G Profile Grinder is producing results similar to those reported by other customers: quality improved by two levels, cycle times as much as three times faster than competitive machines, delivery times cut in half, and vast reductions in production costs and manpower requirements. (See subsequent issues of **In Motion** for more on Kyung-In Gear.)

Lead chart evaluation.



Grinding arm for internal gears.

Fully automated gear inspection.



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