HMC Lassos World's Largest Gear Grinder

Höfler Rapid 6000 Makes North American Debut

Buying the notion that size—and improved lead time—indeed matter, Princeton, Indiana-based Highway Machine Company (HMC) has taken giant strides into the next generation of outsize grinders with the recent purchase of a Höfler Rapid 6000 form grinder, the largest in existence. The machine is intended to help HMC—the only North American company to own one—grow its global customer base, which includes the heavy equipment, mining and construction industries, among others. A snapshot of the Rapid 6000's features includes:

- 50 HP spindle drive
- Onboard gear inspection system
- Internal grinding attachment
- Integrated system to grind alignment journals
- Software to grind teeth into a solid gear blank
- Software to dress wheel for profile modifications
- Root fillet grinding

The world's largest grinder—36.5' x 23.3' x 19.5'

Aside from that menu of goodies, the Rapid 6000's grinding capabilities/capacities are such that HMC will soon be making and delivering bigger gears faster than ever before. The six-meter machine will enable the company to finish internally and externally gears of up to 240" diameter and to AGMA 15 tolerances. In addition, the grinder allows for pinions with face widths of up to 85", and inspection capabilities for lead, pitch, profile and runout of gears up to 240" diameter.

Despite the all-good nature of the machine's capabilities and features, the question was put to HMC president Bob Smith—Why the need for the world's largest form grinder?

"Our primary business is servicing customers with large gears, and we recognized with the dramatic increase in costs of gearing due to steel prices, primarily, that the only way that we're going to be able to give our customers a better investment is to offer them higher-quality gears, which obviously offer extended service life. And we essentially believe that it will be far easier to sell customers," says Smith.

Adds John Schnarr, HMC sales manager, "It kind of evolved. We've been seeing increasing demand for higher AGMA quality specifications for large gears, and more and more customers that have had consultants come in and do a specification for their requirement," he says. "Those requirements have come to us with higher AGMA requirements and certifications. We've actually seen this for the last four years, if not longer, heading in that direction. We knew that we needed to increase our capabilities; there's no one else that's going to be able to certify those AGMA levels (currently between 11 and 12) onboard, which we'll now be able to do with this machine."

Schnarr also believes the machine upgrade will dovetail nicely with HMC's work in gearbox development and repair, two additional capabilities the company is now pursuing. That, and

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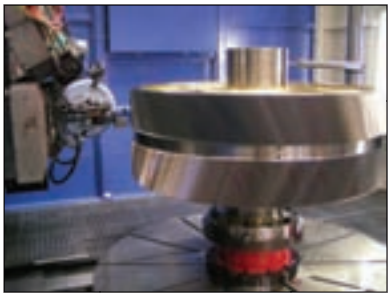

Workers (above) prepare the excavation prior to installation. Sixty yards of steel-reinforced concrete were poured to accommodate the machine's base. Another 16 yards of concrete were used around the machine's base in support of the housing. The machine is capable of producing gears with AGMA class 14–15 accuracies.

their ability to produce the largest size gears, positions HMC to go after wind turbine business as well. Schnarr is confident that the new grinder—as well as the recent purchase of a number of others, including large-gear-compatible CNCs—will provide the company an occasional advantage over competing OEMs.

"One of the things that we've always prided ourselves in is the ability to react," he says. "And being the size that we are, we've been a bit more nimble than the large OEMs can be, for example. And we can sometimes offer solutions that they can't offer, whether it be an interim fix or an alternative design."

Another huge reason for the need of increased efficiencies in the large gear world is the ever-increasing price of high-grade steel. Those companies that not only produce the gears but significantly improve their delivery time as well stand to be the suppliers of choice, if not necessity.

"About three years ago or so, we were paying somewhere around $1 per pound for seamless-forged, medium-alloy steel," says Smith. "Today we're paying upwards of three dollars." And that takes on added significance when the size of the gears HMC makes is taken into account.

"When we buy a forged ring, we're not talking four or five thousand pounds; we're talking anywhere from 40 to 80 thousand pounds," says Smith.

It's no secret that the cost spike upwards in quality steel has been attributed to demand in developing and emerging third world countries such as China, India and others. Beyond that, Smith says the higher cost can be traced back a few years ago when an inordinate amount of scrap steel was sold to China, as their ongoing development continued unabated. In fact, he adds, "All of Asia is influencing what's happening, both good and bad here in the West."

As things stand now, HMC is booked through 2009, its new capabilities notwithstanding. As a matter of fact, the new Höfler will not be available for actual production until late July, according to Schnarr. But the die has been cast.

"We want HMC's name to be synonymous with quality and longer-lasting gearing," says Smith, (and a gear made on this machine will) "offer longer service life because of less wear on the initial runoff with the Höfler, which gives us the ability to produce more product for our customers and make faster delivery times."

And just how big is the Rapid 6000? Suffice to say that its delivery requires up to six 40-foot and a number of 20-foot shipping containers to accommodate its dimensions.

One final question had to be asked: What can one expect to pay for the world's largest form grinder?

"It would have cost five to six million dollars a few years ago," says Smith. "But Höfler has cut some corners and made the pricing more palatable."

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