Q&A

INTERVIEW WITH AN INDUSTRY INSIDER

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What does the Koro Sharpening Service offer the gear industry, and how long have you been in business?

We sharpen only gear cutting tools. Most of the business is hobs. The changes we've seen in the industry over the years is the move away from vitrified grinding wheels to more super abrasives — the borizon and diamond wheels.

That's changed the processing a little bit, so we don't run vitrified wheels much anymore.

Our main business is Koro Industries Incorporated, which is a gear manufacturing company. We found that we could not find a timely service to get our hobs sharpened. And so we thought, "Well, there's got to be other people in the same boat. Let's get a hob sharpening machine and start sharpening hobs." We bought a Mikron hob sharpener. It's a special built machine for sharpening hobs. Once we started sharpening hobs, the business just grew from there.

Today, we actually have 10 hob-sharpening machines on the floor. That's what allows us to offer the customer quick turnaround. This is important because hobs are expensive. It's not like end mills or drills. You can send out a box of drills for sharpening, and you still have a box of drills that you can use for running your work. But hobs are not like that. Due to cost, you might have one or two hobs for a job, and you have to get it back right away so that the machine isn't standing idle.

Because we have so many machines, we're usually sharpening hobs with all the different hole sizes, anywhere from 8 millimeters up to an inch and a quarter to anywhere in between. Within this range are the common sizes we run daily.

How does sharpening accuracy affect the quality of a gear?

It affects the shape of the tooth — its profile accuracy. Proper tooth geometry will ensure that the gears will run smoothly with the mating part when it's in use.

The main factors that drive gear quality, and the things that we see that are wrong on hobs sometimes when they're sent in for sharpening, are they're not sharpened on center line. Also, the spacing between the rows of teeth is not right.

Say it's a 10-flute hob for ease of discussion. The cutting edge of each row of teeth should be exactly 36 degrees from those adjacent to it. If it's spaced incorrectly, then it changes the pressure angle of the workpiece gear, and therefore could cause it to be noisy when it's in use.

As the gear industry has evolved, how have you seen the sharpening needs of your customers change?

There are more carbide hobs being used now, so we run diamond wheels a lot more than we did at the start.

One of the other things we do is — since we're using a special built hob sharpening machine — we have coolant capabilities, so we can keep the hobs cool when they're being ground.

If it's not kept cool when you're sharpening a high-speed steel hob, it can affect the temper in the steel.

With carbide, if you get carbide hot and it cools incorrectly, it can crack.

How do you work with a customer when they come to you with a challenge?

Usually the challenge is that they've had the tool sharpened somewhere else that didn't have a hob sharpening machine, and so the errors that they usually get involve spacing error and center line.

We have to measure the hob first before we put it in the machine, because we want to start grinding on the tooth that has the most stock to bring it into center line and into the proper location. Otherwise, we run the danger of breaking the wheel.

By observation, which is usually just by visual inspection under the microscope, you can get a pretty good idea of how it was sharpened before and what method was used.

We always inspect prior to running the tools. If it's a long-time customer, we know they don't have that issue at their plant. But with new customers, we have to be a little guarded to be sure that we don't break a wheel.

Where do you see the gear industry in the next decade and Koro's place in that future?

I think there are going to be more gears made than ever before — pretty much like anything else that's in some kind of motion transmission.

The auto industry is changing with more and more electric vehicles, but there are still gears and worms being used. I think that as far as gear use goes in our manufacturing side, we see more worms and helical gears being used and running together than 30 years ago. And that could be because of the electronic motor control that's available. You don't need a gearbox on the end of the motor. The electronics can control the motor. You still need a worm and a gear to get that motion to where you need it, but you don't need a gearbox on the motor to reduce the RPMs to get the power.

We enjoy the diversity of industries in our customer base. We see a lot more work from medical device manufacturers now than in 1965 when Koro Industries started. For the future, we see ourselves providing open gearing for medical devices while maintaining our footprint in aviation and aerospace, which is where we started. We are problem solvers at Koro, and we see ourselves continuing to establish lasting customer relationships as we help solve manufacturing problems in an ever-changing world.

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