JOB SHOP Technology
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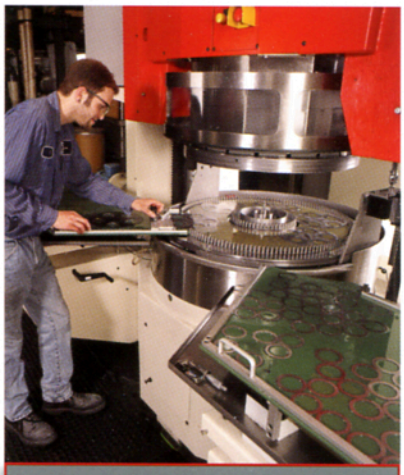
Columbia Grinding Adds Flat Honing Technology

Oak Creek, WI—

Columbia Grinding has kept a steady eye on the future while working to establish its reputation as "Flat Work Specialists™". Over the years, the Oak Creek, Wis., job shop has consistently expanded its repertoire of grinding, lapping, and honing services. Today, Columbia Grinding applies its services to a long list of products, including stampings, machine parts, and molded foundry products, such as powdered metal parts. The company works with an equally wide array of materials that include basic metals, high alloys, and plastics.

After adding flat honing/grinding technology to its production operations in April (see May/June issue of *JST*, p. 87), Columbia Grinding is now able to provide ultra-flat finished surfaces on metals, alloys, and other materials. The firm's newest capabilities augment an already extensive offering of Blanchard, surface, and double disc grinding services.



Columbia Grinding uses state-of-the-art flat honing/fine grinding technology to provide ultra-flat finished surfaces on metals, alloys, and other materials. Photos courtesy of Columbia Grinding.

"We cover a large spectrum, from large roughing jobs with relatively open tolerances to very fine finishing of small parts," says Richard J. Lussier, president. "On our new Flat Honing/Fine Grinding machine, we can hold +/- 1 micron on a given load of parts and hold flatness across a part of 1 light band (one eleven millionth of an inch). Depending on the material, when asked to, we can generally hold a 4Ra [surface finish]."

The majority of the company's equipment is dedicated to flat work jobs. Columbia's seven Blanchard grinders are used for "the rough and big projects," Lussier says, while four surface grinders are dedicated to tool room work and production jobs. For high-volume work, the company counts on its seven double disc grinders, which cover the three basic styles of double disc grinding: feed-through, reciprocating, and rotary carrier. The firm's lapping department comprises six machines: three single-sided, two double-sided, and a 705 Stahli two-sided Flat Honing/Fine Grinding machine, the firm's newest.

A wide variety of precision ground parts produced by Columbia Grinding.

"Most of our work is 2nd or 3rd tier, but we do deal with some OEMs directly," Lussier discloses. "We do work for a lot of different industries, from automotive to agricultural to the medical field. We do a lot of work for machine manufacturers. We even do work in the area of consumer products."

Although technology plays a huge role in the company's day-to-day operations, Lussier knows that there's more to a company's success than the depth of its equipment list. He credits Columbia's attainment of ISO 9001:2000 certification as a key to much of the company's growth and innovation.

"As we grew, we found that to sustain that growth, we not only needed new machines and processes, but also needed a management system to aid in that growth," he commented. "Our ISO program gave us that management system. We have found that ISO provides the basics that allow our personnel the opportunity to be innovative. Today, you will find a machine on our floor that holds [a tolerance of] +/- 1 micron because of that system."

Lussier told of an instance when a customer was line boring 5 small connecting rods at a time. The first operation after forging and heat treating, he said, was to grind the faces.

"We were double disc grinding to flatness tolerance of 0.001-inch, which we were holding with no problem," he recalled. "The customer would then line bore these parts. They then did a 100% inspection of this operation. They would reject 5-15%, most of which dealt with the line-up of the two bores.

"Through discussions with the customer, we offered a different process of double-sided lapping. We did an experiment and were able to hold a flatness of 0.000011-inch. The most striking benefit was the parallelism control; we were able to hold 0.000020-inch. This allowed them to clamp these parts with no distortion and, thus, the line bore issue was put to rest." JST