Unique Spindle-Retention Knobs Optimize Machine-Center Productivity

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Custom fabrication and machining shops as well as tooling suppliers report benefits and quick ROI from using High Torque retention knobs from JM Performance Products, Inc. (JMPP), Fairport Harbor, OH.

JMPP, a manufacturer of CNC-mill spindle-optimization products, designed the knobs to be used in existing toolholders to eliminate the bulge at the small end of the older, which stops it from making full contact with the taper of the spindle. The knobs overcome what the company claims is a key design flaw inherent in CNC v-flange tooling by eliminating the toolholder expansion. By increasing contact with more than 70 percent of the spindle surface, a range of CNC-milling issues are overcome, according to company officials. These include vibration and chatter, poor tolerances, non-repeatability, poor finishes, shortened tool life, excessive spindle wear and tear, run-out, and shallow depths of cuts.

Since tight tolerances are essential in high-speed machining, if the toolholder doesn't fit the spindle precisely, decreased productivity and reduced tool life are inevitable, according to John Stoneback, JMPP president. "Bridging this gap of missed productivity can conservatively help job-shop operations achieve a 10-20-percent/hr. competitive advantage via faster setups, better feed rates and more rigid tools–reducing tooling cost by 20-50 percent or more," he explains, noting that to aid manufacturers in identifying monetary benefits in converting to its retention knobs, JMPP offers a free ROI calculator.

Longer than traditional retention knobs, JMPP's patented High Torque retention knobs have a precision pilot to increase rigidity–a relief below the flange forces threads into a deeper cross-section of the toolholder. Hard-turned to ensure precision fit, the knobs are balanced by design with threads cut to start and finish 180 deg. from each other. The knobs meet ANSI, JMTBA, ISO or DIN, and JIS standards.

JMPP details a number of fabricating companies that have benefitted from using the High Torque retention knobs. One, Enterprise Welding and Fabricating, Inc., Mentor, OH, is a family-owned metal fabricator specializing in sheet-metal fabrications featuring core component parts for large heavy-trucking and agricultural OEMs. In 2017, Enterprise purchased two new DMG Mori machining centers, a CMX 1100 and a NHX 6300. They required a quick, full tool-up conversion to JMPP High Torque knobs–30 for the CMX and 60 for the NHX. Notably, the NHX machine leveraged a higher-strength version of the knobs since it was a bigger machine.

"We needed to get these machines up in one day and JMPP filled the order with our applications engineer onsite," says Bob Ludwig, Enterprise manufacturing engineer. "These were new machine investments and the previous knobs and toolholders we used had bulged in the past, so we didn't want to go down that path again. The assembly was simple, and we've used the knobs for more than six months with high efficiency and no problems."

Another family-owned job shop, Olson Custom Designs (OCD), Pittsboro, IN, services a myriad of industrial markets via custom machining and fabrication. Its owner, Mitch Olson, recalls seeking the best tooling solutions to push OCD's milling machines to the limit, ultimately opting for JMPP's High Torque knobs.

"We've got the machines to handle nearly any material, run size and complexity," he says. "We have a lot of money invested in the tooling and JMPP's knobs provide better overall finishes, and require less hours and shorter runs."

JMPP officials note that larger manufacturing entities have achieved similar results by implementing the retention knobs.

JM Performance Products, Inc.: www.jmperformanceproducts.com