

A HIGH-TORQUE CONVERSION

Eliminating toolholder expansion provides an easy and cost-effective way to achieve high levels of performance from CNC machines and cutting tools. Expansion can occur when a standard retention knob is installed in a toolholder. Pressure exerted by thread engagement, coupled with the elastic properties of the steel used to make the toolholder, creates a bulge at the small end of the holder.

Once expansion occurs, the holder will not pull entirely into the machine spindle. As a result, the holder can't make contact with as much as 70 percent of the spindle surface. This lack of complete con-

END USER	SOLUTION PROVIDER
Hansen Engineering Co. (310) 534-3870 www.hansenengineering.com	JM Performance Products Inc. (800) 322-7750 www.jmperformanceproducts.com

CHALLENGE	Increase productivity and decrease machine downtime.
SOLUTION	Install high-torque retention knobs in toolholders.

tact can lead to vibration and chatter, nonrepeatability, shorter tool life, excessive spindle wear, tool runout and out-of-tolerance parts.

Hansen Engineering Co. is well aware of these problems. The Harbor City, Calif., job shop produces multiple-axis parts and major struc-

tural assemblies for the aerospace industry in two buildings on its 43,000-sq.-ft. campus. The majority of HEC's CNC machines have 10,000-rpm to 15,000-rpm spindles.

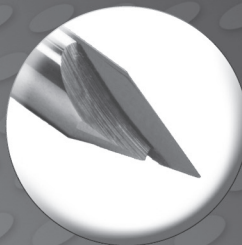
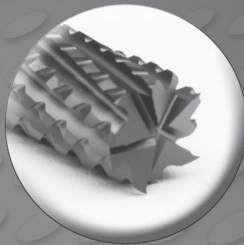
Over time, heavy-duty machining jobs began to present issues. Toolholders were getting stuck in the

Introducing:

EXPERT Series Tooling

EXPERT Composite | EXPERT Aluminum | EXPERT Titanium

- PCD Tipped Carbide Tooling for Composite and Non-Ferrous Metals
- Optimized Geometry to Dramatically Lower Costs Through Efficiency
- Fewer Burrs, Better Finish Quality
- Swiss-made Precision; Tight Cutting Diameter Tolerances
- LASER Grinding Capabilities for Custom Forms



GenSwiss
 Advancing Small Parts Manufacturing
 413-562-4800
www.genswiss.com

LB LOUIS BELET[®]
 Swiss Cutting tools



Productive Times



Hansen Engineering

Far Left: With a standard retention knob, taper deformation on the toolholder prevents it from properly mating with a CNC machine tool's spindle. Left: The high-torque retention knob from JM Performance Products enables a toolholder to have close to 100 percent contact with the spindle.

spindle because of deformation, evidenced by wear marks at the top and bottom of the holders. Fretting appeared on contact surfaces and increasingly long cycle times developed. These problems led to more production shutdowns to allow the machines to cool

off for significant periods of time. In addition, chatter and the resulting poor surfaces were recurring when roughing titanium, stainless steel and aluminum.

Seeking a solution, HEC engineering personnel attended a trade show where they saw JM Performance Products, Fairport Harbor, Ohio, demonstrate the benefits of JMPP's high-torque retention knobs. These knobs are longer and reach deeper into the holder's threaded bore than a standard knob, JMPP reports. Relief located below

THREAD MILLING OUR EXPERTISE!



Customer - Driven Supplier of the finest quality Thread Milling / Form Milling / Specialty Milling Systems and Solutions, for the machining, metalworking, and manufacturing industry, for the **next millennium**



advent-threadmill.com

800.847.3234 | 100% Made in the USA

COOLER BY DESIGN

AFC Hartmetall, the #1 trusted choice for premium quality tungsten carbide blanks.

- ▶ Patented German engineering and manufacturing
- ▶ Premium and sustainable raw material sourcing
- ▶ 10°, 15°, 20°, 30°, 40° helix available from stock
- ▶ 8° - 65° custom helix upon request



847.599.9550 | afcarbide.com

westec
Sep 12-14, 2017
Booth 2134-A

EMO Hannover
18-23-9-2017
Booth D23 Hall 3

the flange forces threads—which are cut to start and finish 180° from each other—into a deeper cross-section of the toolholder. As a result, all thread engagement occurs in a region of the toolholder where there is a thicker cross-section of material to resist deformation.

Intrigued by their potential, HEC initially purchased 25 high-torque retention knobs. They properly installed the knobs in some of their existing toolholders by following calculated torque specifications and using a retention-knob socket and torque wrench. The parts manufacturer immediately saw a 5 percent decrease in the spindle load when cutting titanium with a 3" (76.2mm) high-feed, indexable-insert milling tool.

HEC also used the retention knobs for an aluminum forging job that had chatter problems. Among the tools tested for the job were a 1¼"-dia. (31.75mm) knuckle rougher and a 2"-dia. (50.8mm) finisher.

"The results were positive, as the chatter was eliminated and it produced the best finish we have ever seen on these parts," said Curtis Sampson, shop lead man at HEC. "After that, we bought 50 more knobs and immediately noticed improvements. We've been increasing their use over time ever since."

Since installing the high-torque knobs on the toolholders used on 14 CNC machines, requiring about 120 knobs per machine, HEC has realized roughly a 15 percent increase in productivity and a decrease in machine downtime.

In addition, the retention knobs reduced the decibel level in HEC's shop. "Our machines used to make a loud noise when changing tools, and JMPP's high-torque retention knobs solved that problem," said Jose Campos, toolcrib buyer for HEC. "They also eliminated fretting of the toolholder shank."

Because the high-torque retention knobs lower the

spindle load, machines experience less wear and tear. HEC's power meter indicates a significant reduction in power consumption, and tool life improved when roughing titanium and stainless steel with tooling assemblies that have the knobs. In addition, HEC now realizes savings by being able both to increase the speeds and feeds and to shorten cycle times.

FIVES' CUSTOM ENGINEERED CITCO TOOLS & GARDNER ABRASIVES ACHIEVE MAXIMUM RESULTS TO INCREASE PRODUCTIVITY



www.fivesgroup.com

— Cutting Tools | Abrasives



fives ultimate machines
ultimate factory

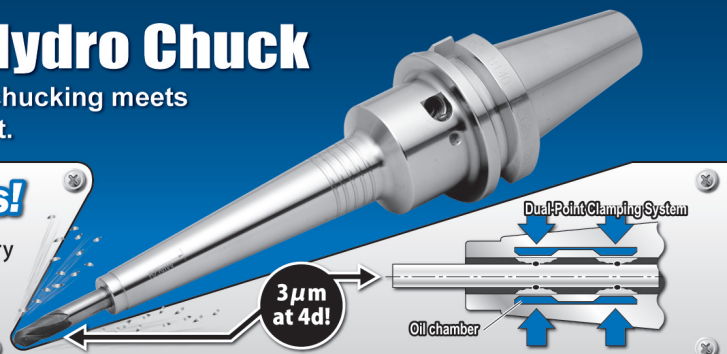


PHC-SA Slim Hydro Chuck

The precision of hydraulic chucking meets the accessibility of shrink fit.

Replace your shrink fit holders!

- ✓ Easy setup with a hex wrench - No risk of burn injury
- ✓ Narrow body ideal for **tight-space** applications
- ✓ Oil chamber dampens cutting vibrations
- ✓ Avoid long cutting tool breakage



NT USA CORPORATION

WEB www.nttoolusa.com
Tel 615-771-1899

E-Mail sales@nttoolusa.com
Address 318 Seaboard Lane, Suite 301 Franklin, TN 37067