

Machining

Video: Examining the Myths of High Performance Toolholders: Just Add Coolant

Brought To You by Haimer USA | Dec 07, 2017

As everyone knows, applying coolant while machining keeps the cutting tool edge cool and clears chips away from the cutting zone. This is even more important when high speed machining.

Drew Strauchen, vice president of marketing and business development for HAIMER-USA, states, "That's why we offer our Cool Jet system as standard with nearly all our shrink-fit holders. We developed it so that the angled internal bores in the walls of the holder facilitate coolant while exiting the nose of the chuck, right where you want it."

Yes, But...

While applying coolant through capabilities to a toolholder is beneficial, we want to highlight that having this feature does not make all toolholders suddenly equal. Thus some clarification is needed. Adding coolant or other features to toolholders that have inherent balance, gripping or concentricity problems will not create a high performance assembly.

Coolant Does NOT Correct Imbalance or Runout

Toolholder components, such as collets, collet nuts, side-lock screws and retention knobs, all have a profound impact on the balance and/or runout of the overall assembly. For example, a simple pull stud can take a holder that is balanced to G2.5 at 25,000 rpm and reduce it to G2.5 at less than 4,500 rpm. Collet nuts and Weldon flat end mills can have the same or greater impact, because most collet nuts are not balanced by themselves, and Weldon flat tools are imbalanced by their very nature (a hunk of metal is missing from one side).

Side-lock end mill holders, by design, force cutting tools off centerline when the one-sided setscrew is clamped against the flat on the cutting tool. While good concentricity may still be possible with this system and others with some manipulation, an inordinate amount of time has likely been lost in the process.

Coolant Does NOT Provide Tool Security

Tool security is always paramount in High Speed Machining, particularly when machining strategies like full radial engagement and trochoidal milling are being employed. Tool security means 100% assurance that the tool cannot twist or pull out during machining. Some systems, like collet systems and hydraulic chucks often lack enough sufficient frictional clamping torque to ensure total tool security. And in ultra-aggressive machining environments, such as when the aforementioned milling strategy is being used, micro-creep is possible with even the best frictional clamping systems.

This is why HAIMER offers shrink fit holders with optional **Safe-Lock™ technology**, which adds an additional form fit clamping to guarantee pull out cannot occur. Moreover, unlike some other anti-pullout systems that utilize the 100-year-old Weldon flat, the Safe-Lock™ system does not sacrifice balance, axial adjustability or runout accuracy in exchange for total pull out protection.

Busting the Myth

While HAIMER absolutely recommends adding coolant through capability for any application where through-the-tool coolant is not an option, the simple basics of toolholder effectiveness cannot be forgotten. Adding coolant through options to a high quality toolholder will yield high quality results, but coolant through just a “good” holder simply cannot.

Learn more about the benefits of coolant ***here***.

Previously featured on Haimer USA Blog.

www.mscdirect.com/betterMRO

Copyright ©2024 MSC Industrial Supply Co.