

Reliance Turns Up Again in Hard Turning World

Reliance Tool long known for their expertise in hard turning has quietly been moving the world of industrial ceramics into the 21st century.

Reliance in conjunction with Northern Illinois University has developed methods to machine silicon nitride, the preferred compound for many applications, including bearings and wear parts that require a very hard but lightweight material. Silicon Nitride measures about Rc 80, compared to Rc 58-60 or so for hardened tool steel. Silicon Nitride is especially suitable in all types of engines and aerospace since it is approximately ½ the weight of steel and is very stable at extremely high temperatures.

Traditionally this material has been ground using diamond wheels that were required to have profiles built into the wheel depending on the application.

While research is ongoing, Reliance and NIU are now offering to install a ceramic machining system in factories that use silicon nitride. This system is suitable for round parts as well as some milled parts. The savings over traditional grinding is substantial, reducing the machining time by 60 to 70 % depending on the nature of the finished shape.

Reliance also machines stabilized zirconium (Zirconia) in traditional CNC turning centers. The use of Zirconia does not result in weight savings, but its toughness in many applications will outlast carbide by a factor of two. Zirconia is not as brittle or as hard (mid 70's on the Rc scale) as Silicon Nitride and exhibits excellent wear properties. To have your parts evaluated for ceramic suitability, or discuss installation of a machining system call Richard Roberts at Reliance Tool.