Slim ShrinkFit chucks – Solid or modular

For many machining processes, particularly in the Mold and Die industry, slim and long tools are required for machining of deep cavities.

TSF Slim fit Chucks for mold and die industry
Extended tools are required to machine deep cavities. Diebold offers a modular system of ShrinkFit extensions and reductions.
With this system of modular extensions all the necessary forms and lengths of ShrinkFit toolholders can be combined. No purchase of expensive special tools is required because of the capability of building the required tool extensions with base holders and inexpensive accessories. The runout of each ShrinkFit holder bore is <0.003 mm (.00012”). This ensures that the tip of the cutting tool, even at maximum extension is still at runout of <0.01 mm (.0004”)

**Shrinking of TSF (Slim Fit) and TUS (Ultra Slim) toolholders:**
ShrinkFit machines and toolholders have taken a large portion of the total market for toolholders. Users who require tooling capable of extremely precise holding, especially in high-speed applications, are insisting on ShrinkFit technology. For high speed machining ShrinkFit tooling is the appropriate way for holding cutters in the aerospace, automotive, and mold and die industries.

The 40 micron double-fluted cutter, is now working reality. This opens up great opportunities for new cutting strategies to deal with exotic materials or to micro-manufacture products. Diebold offers the product line TSF (ThermoGrip™ Slim Fit) especially for the mold and die industry. The product line TUS (ThermoGrip™ Ultra-Slim) is designed for high speed machining using very small cutters. Due to the small design, the contours of these holders are very sensitive during shrinking. They overheat very quickly, shrinking parameters of the shrink units must match the toolholder design exactly.
With the advent of High-Speed Cutting (HSC), toolholders with extremely thin wall cross-sections were required. In response, Diebold developed the MS 502, a low-energy, programmed-pulse inductant unit to reliably heat these smaller toolholders without damaging them.

An air cooler is used to cool down the hot tools in less then one minute.

Micro Shrink Unit MS 502

The most important thing in the shrinking process is the exact energy output of the power generator and the corresponding time period. The shrink process takes only between three and seven seconds. If the energy input is too high, the tool will overheat in only a few seconds. The result is that the microstructure of the material changes and therefore the shrink cycle time will take much longer, the gripping force of the holder will decrease and the toolholder will become useless.

Shrink tools for machining graphite:
Diebold uses a special, proprietary coating on their toolholders intended for the Graphite industry. This ensures that the toolholder is corrosion-resistant, and minimizes the amount of graphite adherence on the taper. This helps to eliminate one of the biggest causes of spindle damage, ground-in particles.
In 2000, after earlier informal contacts between different companies manufacturing HeatShrink technology, Representatives of Marquart, Bilz, Diebold and Komet agreed to cooperate in the development and improvement of HeatShrink technology. Each of these companies had patents in this field, and by consigning these patent rights to a new group, the members of the group could focus on R&D and avoid costly patent disputes and simplify licensing.

In 2005, Uwe Marquart decided to sell his company, Marquart, to an investor. In 2008, the investor dissolved the company. Diebold purchased Marquarts ShrinkFit program and all its associated patents, and the rights to the brand name Pyroquart®. In addition, Diebold hired Marquarts experienced design team. This product line was subsequently expanded and integrated into the ThermoGrip™ sales program. Pyroquart™ has a short overall length for stability, resulting in a toolholder with increased clamping and higher retention forces toolholders produced to the DIN Standard. Pyroquart™ is the ideal ThermoGrip™ toolholder for high speeds and feeds and heavy loads.

PYROquart HSK-A 100

By taking advantage of the years of combined R & D programs, the ThermoGrip® Group has been able to offer these and other fine ThermoGrip™ ShrinkFit products.

With expertise and innovative strength the ThermoGrip™ partners specialize in High Tech shrink process technology. We constantly work on technological progress. For more information please visit us at www.hsk.com.

Hermann Diebold, CEO