

Tungaloy Technical Articles

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DrillLine

DEEPT^{RI}DRILL

TUNGALOY

Remarkable productivity and stability for deep hole drilling

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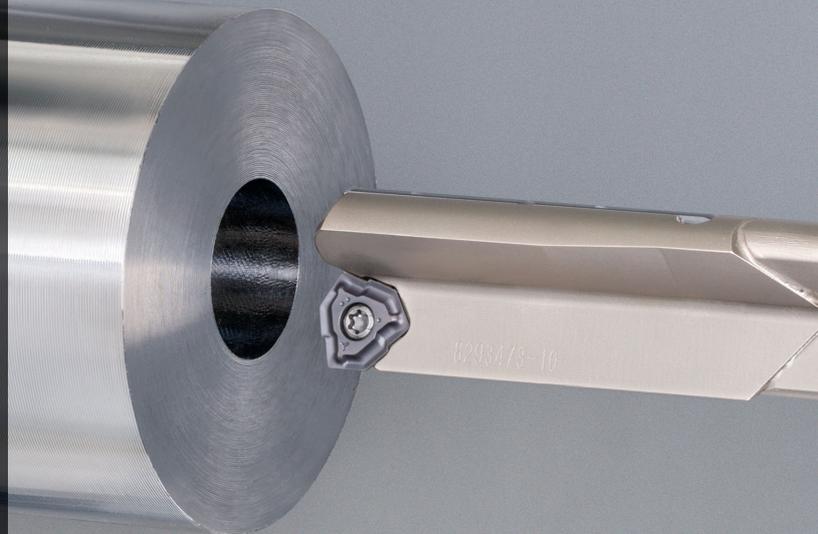


TUNG FORCE

TUNGALOY ACCELERATED MACHINING

Deep hole drilling is one of the most common bottle necks in any production. Brazed gundrills or long drills made of HSS or carbide have been commonly used for making deep holes. Brazed gundrills are slow, requiring a long time to make a hole.

"With the introduction of DeepTri-Drill, we are restarting the clock of technological advancement for deep drilling that had has been stopped in since the 1930s."



TungTech "DeepTriDrill: Remarkable productivity and stability for deep hole drilling"

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SIMPLIFIED MAINTENANCE THROUGH ADVANCED TECHNOLOGY

The biggest problems with brazed and long drills are the need for re-grinding and the requirement of spare tools to maintain production. Re-grinding is a burdensome task for any job site and leads to long periods of profit-cutting inactivity.

Using a combination of indexable inserts with three cutting edges and guide pads with two usable sides, DeepTri-Drill is able to reduce machining cost while maintaining the high level of performance that customers require in deep drilling operations. The indexable system of DeepTri-Drill offers easy insert changing and eliminates the need for re-grinding operations and excessive spare tools.

"With these advancements, DeepTri-Drill can achieve drastic reduction in time and cost for tool management."

SUPREME CHIP CONTROL AND EXCEPTIONAL STRAIGHTNESS

Long solid drills sometimes suffer sudden breakage in deep drilling operations due to bending whereas DeepTri-Drill can produce exceptionally straight hole, preventing the sudden breakage. Moreover, it achieves excellent circularity and good surface finish.

"This improvement is achieved by the optimized positioning of cutting edges and guide pads based on BTA specifications and knowledge known to Tungaloy's engineering team."

The layout of a cutting edge and guide pads generates a burnishing effect added to the finish of the work. DeepTri-Drill also features a unique cutting edge design with an optimized chipbreaker and splitter, allowing chips to be much smaller than the ones an average brazed or solid drill produces. Small chips are easy to evacuate, prevent jamming, and achieve secure drilling, making it also possible for DeepTri-Drill to be used even in low coolant pressure condition.



Special cutting edge geometry and ideal positioning of guide pads provide high hole accuracy

HIGHER PRODUCTIVITY

Brazed gundrills are low-productivity tools with a typical feed rate less than 0.1mm/rev. Solid drills, on the other hand, require high maintenance and suffer issues as mentioned previously.

DeepTri-Drill, however, can apply a better feed rate and higher cutting speed than a traditional brazed gundrill due to a coated insert with high rake angle and its optimized design structure. DeepTri-Drill provides 2 to 5 times higher productivity than a brazed gundrill as can be witnessed in the case stories below.



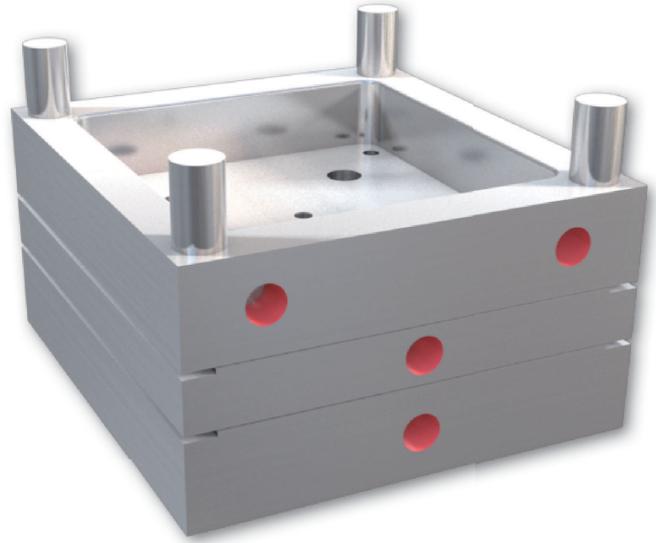
CASE STORY: DIE & MOLD

A Die & Mold manufacturer had difficulties trying hard to reduce production time of a die in which the deep drilling operation of numerous cooling holes was significantly high. Being an existent end-user and having the trust on Tungaloy's capabilities, the customer have called Tungaloy representative asking for solution. DeepTri-Dill was applied, and succesfully solved this bottleneck:

Workpiece: Die cast mold
Material: SKD61 / C55
Machine: Horizontal machining center
Coolant: Wet (internal supply)

DeepTri-Drill:
Drill: MCTR22.00XM32-15
Guide pad: GP06-100 F2122
Insert: TOHT110405R-NDJ AH725

Cutting conditions:
 $V_c = 88 \text{ m/min (285 sfm)}$
 $f/\text{rev} = 0.08 \text{ mm/rev (0.003 ipr)}$
 $V_f = 102 \text{ mm/min (4.02 ipm)}$
 $H = 330 \text{ mm (13.0")}$



Advantage: With DeepTri-Drill cutting speed have been **increased 2.5 higher** and **the feed 2 time faster** than with the regular brazed drill, thus increasing performance and with much higher reliability.

"The production lead time of the mold was halved, from 10 down to 5 days."

TYPICAL PARTS:

