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# Tung TECH

Tungaloy Technical Articles

TurnLine

**AH905**

TUNGALOY

## Innovative Solution for Turning High-Temperature Alloys

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**M**arket trends have shown an increasing popularity of high-temperature alloys in many industries, particularly, aerospace, power generation, oil and gas, and even automotive sectors. When machining high-temperature alloys, cutting tools tend to break down quickly, shortening tool life. Customers in these industries demand high productivity and reliable tool life for these “difficult-to-cut” materials.

”Responding to these market demands, Tungaloy has introduced the grade AH905, PVD-coated inserts, in combination with HMM chipbreaker, which are both specially designed for turning of high-temperature alloys.”



N° 0003 April 2015 "AH905 Innovative Solution for Turning High-Temperature Alloys"

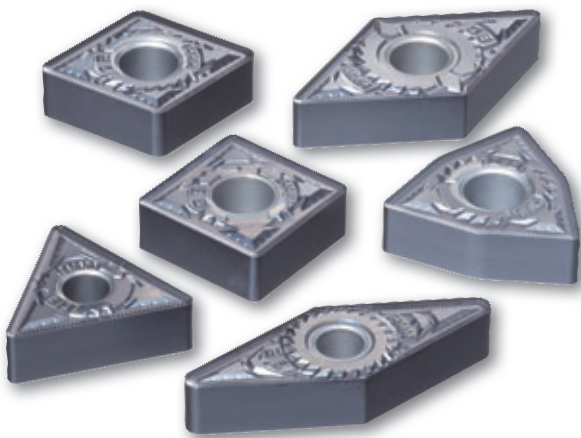
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[www.tungaloy.com](http://www.tungaloy.com)

## PVD COATED GRADE "AH905"

AH905, designed specifically for turning high-temperature alloys with its exclusive cemented carbide substrate, delivers well-balanced hardness and toughness. This substrate has strong resistance to high temperature, thus demonstrates exceptional chipping resistance in superalloy turning. The coating layer offers high adhesion strength and smoothness which allows better oxidation resistance than the conventional coatings. This PVD coating also provides excellent wear resistance. The ideal combination of substrate and coating offers stable and long tool life when machining high-temperature alloys.



### Special Surface Technology

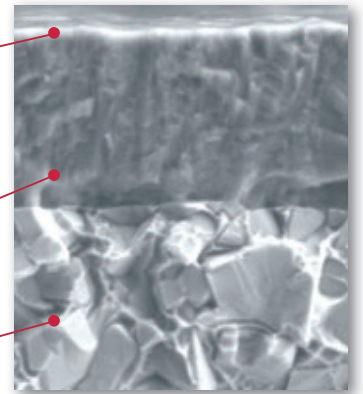
#### PREMIUMTEC

Smooth insert surface prevents chip adhesion and improves chip flow.

### New (Al,Ti)N coating

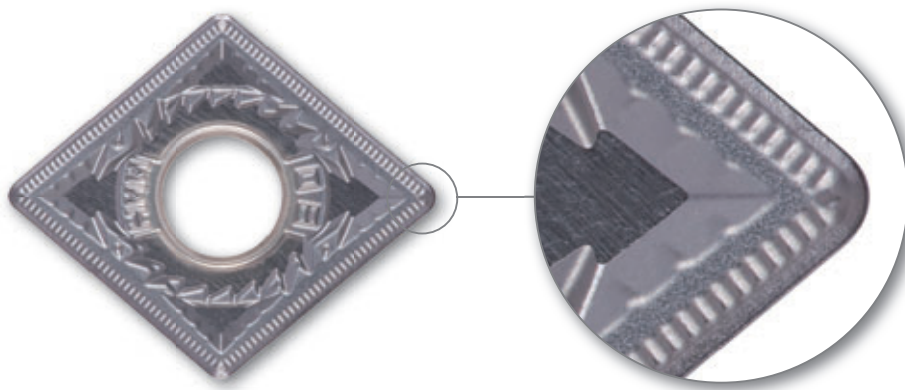
### Fine-grained cemented carbide

Provides high impact resistance



## "HMM" TYPE CHIPBREAKER:

The unique HMM chipbreaker is designed exclusively for turning high-temperature alloys. The HMM chipbreaker has a large rake angle and distinctive protrusions to reduce the cutting force and contact area between rake face and chips. These features inhibit heat penetrating the insert by directing it into the chips. The HMM chipbreaker prevents the adhesion of chips on the cutting edge, thereby reducing damage, such as notch wear or sudden fractures.

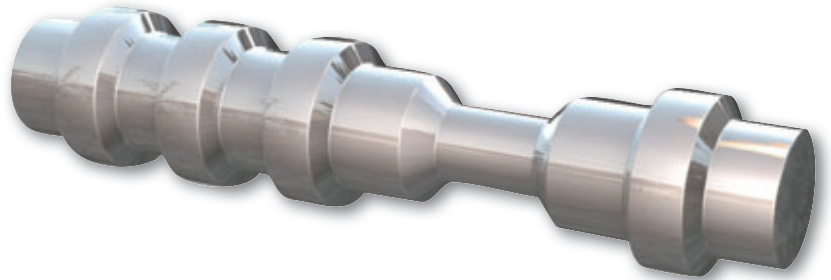


## CASE STORY: AEROSPACE INDUSTRY

**Workpiece:** Shaft parts  
**Material:** Inconel 718  
**Tools:** Toolholder: ACLNL2525M12-A  
Insert: CNMG120408-HMM AH905

**Cutting condition:**  
 $V_c = 60 \text{ m/min (200 sfm)}$   
 $f = 0.2 \text{ mm/rev (0.008 ipr)}$   
 $a_p = 0.7 \text{ mm (0.0275")}$

**Machine:** NC Lathe  
**Coolant:** Water soluble

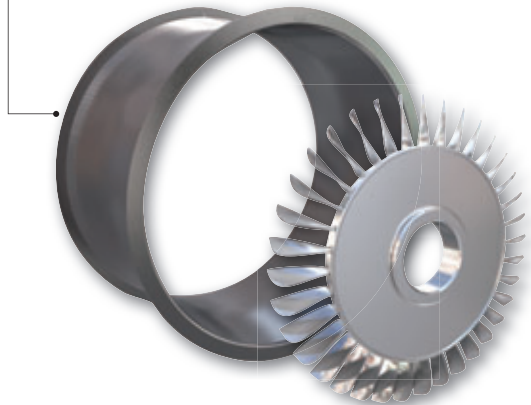


**Result:** With HMM chipbreaker in AH905 grade, tool life per corner is increased by 30%.

"The demand for difficult-to-cut materials, such as heat-resistant alloys, is expected to continuously increase in a wide variety of industries. The combination of AH905 grade and HMM chipbreaker is an innovative solution that provides manufacturers with dramatically increased productivity and reliability."

## TYPICAL PARTS:

• Fan case, compressor blade



• Medical parts

