AXIS
Tools for mICRO mACHINING

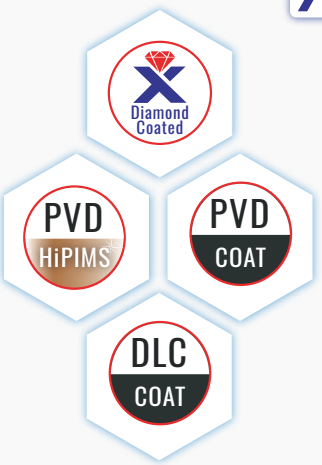
NexGen Premium Coatings

Advanced Coatings for Future Ready Tools

ISO 9001 Q ISO 13485 ISO 14001 45001

NexGen Coatings

Continuously evolving challenges, application and materials place high demands for Precision Machining Tools. Our in-house NexGen Coatings (CVD and PVD) facility allows us to offer High-Performance Tools tailored for emerging applications.
With advanced in-house pre preparation and Post-Coating processes, we ensure the best foundation for optimal Coatings productivity and superior part finishes.
Our proprietary engineered mICRO Geometries set our tools apart - making them "A" class above the rest.



NexGen CVD Diamond Coatings

The Ultimate Wear Resistant Solution

Chemical Vapor Deposition (CVD) Diamond Coating is a revolutionary technology that enhances tool performance with exceptional hardness, wear resistance and thermal conductivity. Engineered for extreme machining conditions, CVD Diamond Coatings provide unmatched durability and precision.

Life Increased
~10-25X

Ultra-Hard Surface

Significantly extends Tool life

Superior Wear Resistance

Ideal for abrasive materials like Graphite, Composites and Ceramics

High Thermal Conductivity

Reduces heat buildup for better cutting performance

Friction Reduction

Ensures smooth machining with minimal tool wear

Diamond Coated

Unleash Superior Performance
with
HiPIMS Coating

PVD
HiPIMS

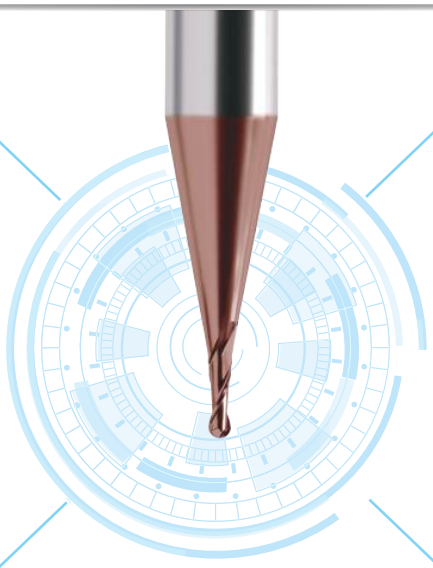
HiPIMS High Power Impulse Magnetron Sputtering

Denser | Smoother | Harder

Coatings for Better Machining Outcomes and Longer Tool Life

HiPIMS is an advanced evolution of DC sputtering technology, offering significantly enhanced performance. The process generates a high-energy plasma that achieves unprecedented levels of material ionization. This results in a high flux of ionized particles, which in turn forms an exceptionally dense and nearly fully amorphous coating structure, providing superior coating quality and durability compared to traditional methods

HiPIMS Coatings Key Benefits



- Excellent Hardness
- Exceptional Adhesion
- Enhanced Wear Resistance
- Extended Tool Life

HiPIMS coating reduces downtime and maintenance costs, contributing to overall cost-efficiency and productivity

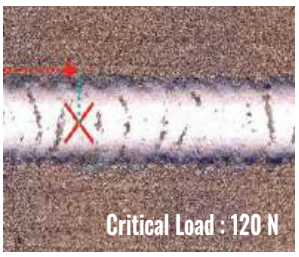
NexGen Coatings

	Materials	Coating	Features	Coating Color	Structure	Hardness ~ Approx.	Coefficent of Friction	Coating Thickness (µm)	Max. Work Temperature
Diamond Coated	CFRP / GFRP, High Silicon Aluminium, Graphite, Sintered ceramics, Green stage ceramics, Tungsten	AxiD-Fibre	• High hardness near to natural Diamond improves the abrasive wear	Grey	Multilayer, sp3	10,000 $_{HV0,05}$	0.15	9	650 °C
	Graphite	AxiD-Carbon	• Smoother coating having high hardness ensuring dimensional accuracy and longer life in Graphite electrodes	Grey	Multilayer, sp3	10,000 $_{HV0,05}$	0.15	9	650 °C
	Composite, Aluminium, Graphite	AxiD-Multi	• High hardness and high Thermal conductivity enhances long service life	Grey	Multilayer, sp3	10,000 $_{HV0,05}$	0.15	3 /14 /17	650 °C
	PCB Material High Tg ≥ 170°c IMS PCB	AxiD-Micro	• High hardness and extremely abrasion resistance • High surface finish and cost effective solutions for PCB like applications	Grey	Multilayer, sp3	10,000 $_{HV0,05}$	0.15	10	650 °C
	Carbon fibers, Composites, Sintered ceramics	AxiD-Aero	• Smoothest surface and high hardness provides a longer life in aerospace materials like CFRP	Grey-Shiny	Multilayer, sp3	10,000 $_{HV0,05}$	0.15	9	650 °C
PVD HiPIMS	Cast Iron, Unalloyed, Alloyed and High Speed Steel	AxiH-Ferro	• High toughness allowing higher cutting speeds, feed and depth of cut • Very good oxidation resistance • Extremely smooth	Anthracite	HiPIMS AlTiN-based	3200 $_{HV0,05}$	0.35	1.5 / 3 / 4.5	1100 °C
	Aluminium, Titanium and Non-ferrous metals	AxiH-Alu	• To avoid built up edges and offering maximum coating adhesion	Silver	HiPIMS TiB_2-based	4000 $_{HV0,05}$	0.35	1 / 2	1100 °C
	Super alloys, Hardened Steel, Stainless Steel, Titanium, CrCo	AxiH-Inox	• A balance between hardness and toughness • Smooth surface, high thermal stability	Red Gold	HiPIMS TiAlSiN-based	3500 $_{HV0,05}$	0.35	1.5 / 3	1100 °C
	Hardened Steels, Super alloys HRC ≥ 50, Dies and Mold Machining	AxiH-Steel	• Super hard coating	Red Gold	HiPIMS TiAlSiN-based	3700 $_{HV0,05}$	0.35	1.5 / 3	1100 °C
	Ferrous Alloy Materials, Steel Alloys	AxiH-Alcro	• Extraordinary smooth, no droplets • Excellent adhesion and impressive increased in Tool life • Highest wear resistance	Light Grey	HiPIMS AlCrN	3500 $_{HV0,05}$	0.35	1.5 / 3	1100 °C
PVD COAT	Mild Steel, Carbon Steel, Stainless Steel, Brass	AxiP-Hyper	• Resistance to chemical reaction • Smoother surface • High hardness and resistance to abrasive wear	Anthracite	NANOCOMPOSITE AlTiN-based	3500 $_{HV0,05}$	0.6	1.3	1000 °C
	Mild Steel, Carbon Steel, Aluminium alloys	AxiP-TiN	• Antisticking properties, high toughness, refractive coating chemically inert	Gold	NANOCOMPOSITE Ti-based	2800 $_{HV0,05}$	0.4	1-5	800 °C
DLC COAT	Plastics, Soft Aluminium, Copper	AxiC-DL	• High lubricity to tool surface enhances better chip evacuation • Suitable to non-ferrous application	Black	Amorphous	2500 $_{HV0,05}$	0.1-0.2	0.5-1.5	300 °C
		AxiC-DLA	• High hardness for protection against wear • Protection against adhesive wear for longer tool life and better quality of processed component	Rainbow	Amorphous	5000 $_{HV0,05}$	0.1	0.5	500 °C

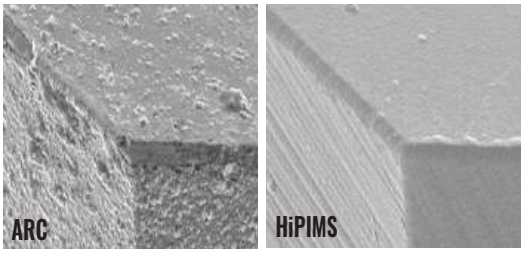
HiPIMS Coating Features

PVD HiPIMS

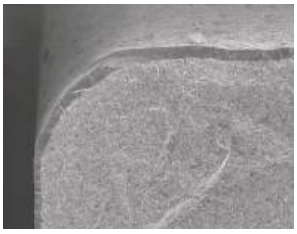
Highest Adhesion



Extremely Smooth and Droplet Free



Homogeneous Coating of the Cutting Edges

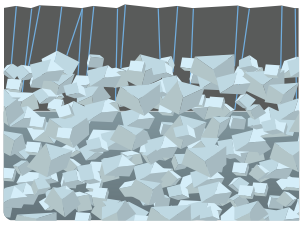


Very Good Residual Stress Management

CVD Diamond Coating Features

Diamond Coated

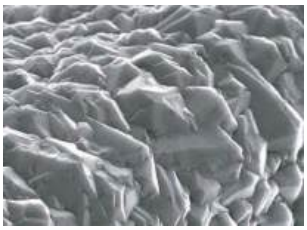
Excellent Adhesion and Very Smooth Surfaces



• Cobalt • Tungsten Carbide • Diamond

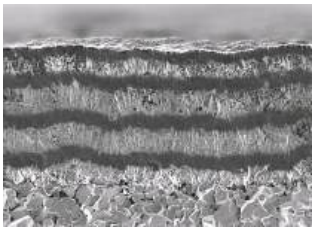
Wide Range of Coating Thickness

High Process Reliability



Microcrystalline Diamond Coating

Nano-Crystalline Diamond Coating



Multilayer Diamond Coating

Environmental Benefits of Tool Coating

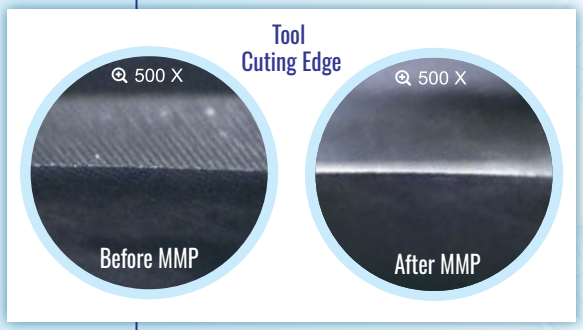
Advanced tool coating processes contribute to environmental sustainability in several ways:

Extended Tool Life	Reducing Carbon Footprint	Energy Efficiency	Reduced Material Waste	Coolant Use Reduction

Achieve Unmatched Surface Quality and Performance

with

MMP Superfinishing



MMP TECHNOLOGY
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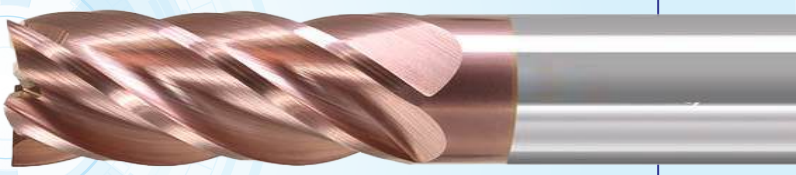
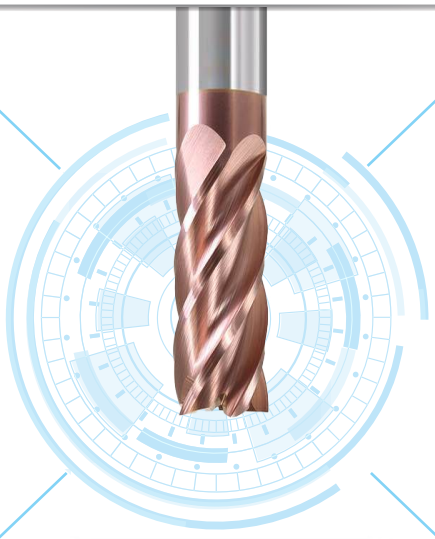


Finely Honed Cutting Edge + Superfinished Flutes

MMP (Micro Machining Process) superfinishing, which achieves an ultra-smooth surface finish

MMP Superfinishing maps and characterises surface roughness into different frequency ranges and filters them to deliver application specific surface objectives, with a degree of precision that is unique and unmatched in the market. Such consistent and high level of surface characterisation and calibration and stabilisation of the cutting edges elevates the tools performance to the next level in high precision and micro machining applications.

MMP Superfinishing Benefits



- Higher MRR (Material Removal Rate)
- Better machined surfaces
- Lesser tool changes and setups
- Higher productivity
- Better cost economics

MMP Superfinishing process enhances tool longevity and ensures consistent performance over time, improving the quality of the final product

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