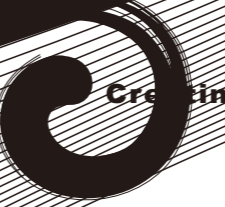


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Creating Nano Technologies Inc.
PVN & PEC Series Coating Equipment

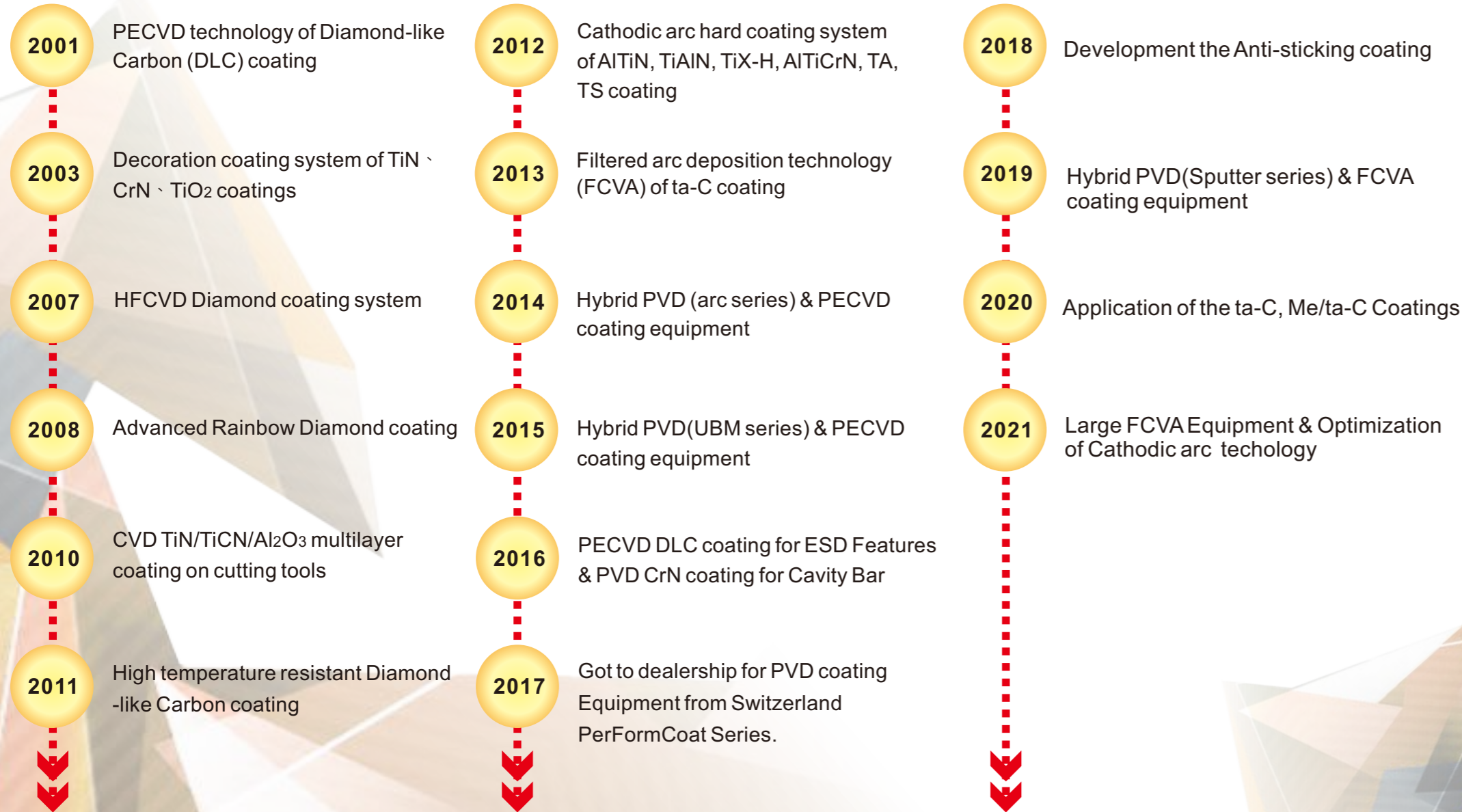


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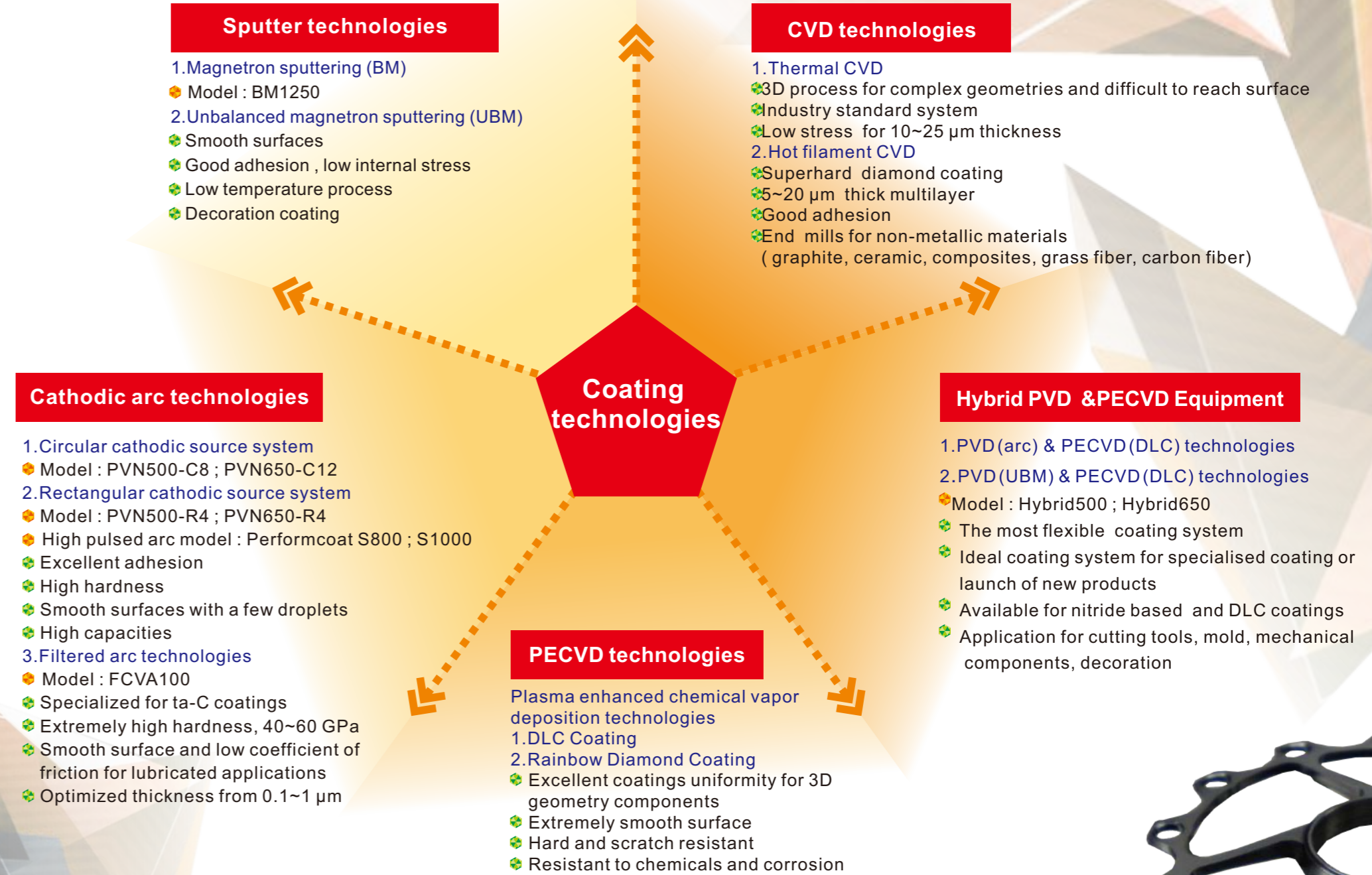
Creating Nano Technologies Inc.
PVN & PEC Series Coating Equipment

Creating Nano Technologies Inc.
coating technology evolution

For more than 15 years



Creating Nano Technologies Inc.
Coating technologies





PVD Hard Coating Equipment — PVN Series —

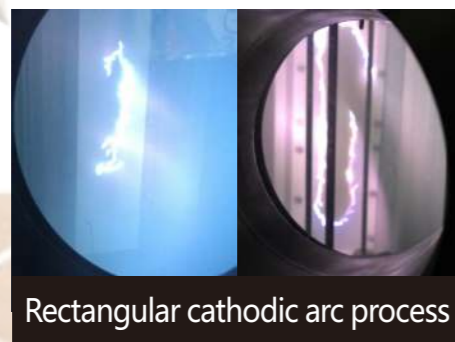
Features

PVN series hard coating equipment with Cathodic Arc Deposition technology provides the best tribological coatings to enhance the performance of cutting & forming tools, molds, mechanical components and other products.

It is a economical coating equipment for industrial production. In addition to excellent coating properties and high process reliability, it has high loading capacity to reduce cost per piece. If our standard models do not meet the production needs you want, we can customize a unique model for you.



Circular cathodic arc process



Rectangular cathodic arc process



Technical data of PVN Series Coating Equipment

Model	PVN500-C	PVN650-C	PVN500-R	PVN650-R
Technologies	PVD Cathodic arc technologies			
Foot print(mm)	W 1900 D 4000 H 2100	W 1900 D 4800 H 2600	W 1900 D 4000 H 2100	W 1900 D 4300 H 2600
Internal chamber size(mm)	Ø850 x 950	Ø850 x 1200	Ø850 x 950	Ø850 x 1200
Max. load(kg)	500			
Usable plasma volume(mm)	Ø480 x 550	Ø480 x 750	Ø480 x 550	Ø480 x 750
Spindles(mm)xPCS	Ø125 x 650 x 8	Ø125 x 850 x 8	Ø125 x 650 x 8	Ø125 x 850 x 8
Cathodic arc source	Circular	Circular	Rectangular	Rectangular
Cathode amount	4 or 8	6 or 12	2 or 4	2 or 4
Standard Bias power	DC 20kW/Pulsed (optional) Max. Inserts – DC 40kW			
Chamber	Stainless steel chamber with double walled jacket cooling			
Heater(kW)	32	40	32	40
Cycle time for 2~3µm (AlTiN)	5~6.5 hr (depend on production conditions)			
Shank tools capacity Ø6 x 50mm	2400	3840	2400	3840
Inserts capacity D10 x 4mm	2640 (5280)	3960 (7920)	2640 (5280)	3960 (7920)
Hobs capacity Ø80 x 180 mm	32	40	32	40
Electrical connection	3Φ+Ground 380V , 150A	3Φ+Ground 380V , 175A	3Φ+Ground 380V , 150A	3Φ+Ground 380V , 175A



Technical data of PEC Series & Hybrid Coating Equipment

Technical data of Hybrid Coating Equipment

Technical data of Hybrid system

Features

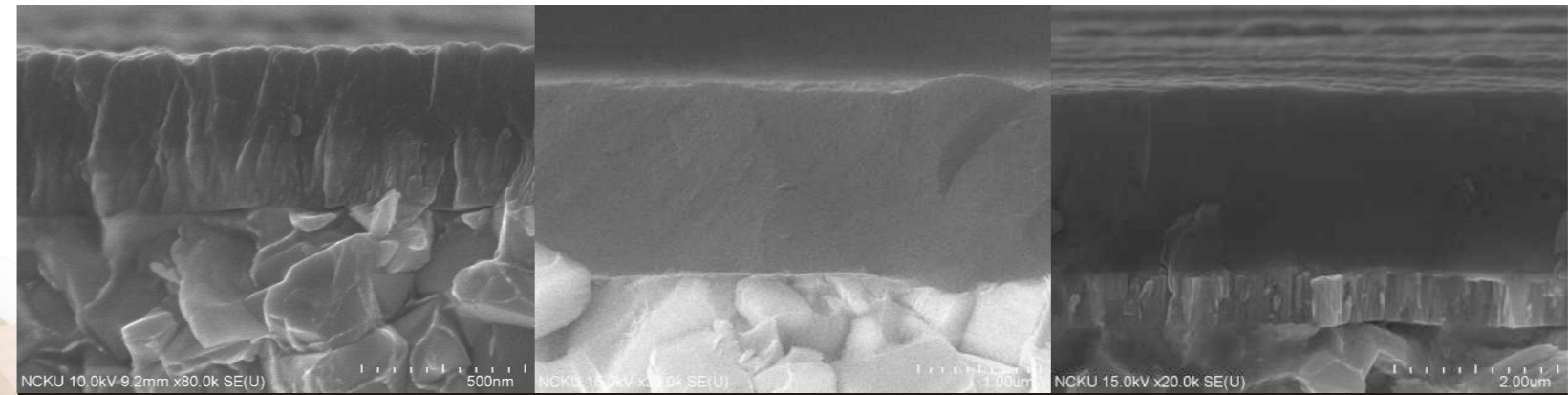
PEC series DLC coating equipment with latest Hybrid PVD-PECVD technology provides various diamond-like carbon coating processes for all kinds of application. Besides typical amorphous hydrogenated carbon (a-C:H) coating, we also supply advanced metal-containing DLC (Me/DLC) coating with outstanding adhesion strength and higher wear resistance.

Thanks to the excellent properties (high hardness, low friction coefficient, smooth surface, chemical inertness, good biological compatibility) of DLC coating, it is widely used for cutting tools, molds, automotive components, decorative coating and medical device.



Technical data of Hybrid Coating Equipment

Model	Hybrid500-4S	Hybrid500-4A2S
Technology	UBM+PECVD	Sputter+Arc+PECVD
Coatings	TiN,AlCrN,WCC,Me/DLC	TiN,AlCrN,Me/DLC
Foot print (mm)	W 2200 D 4320 H 3000	W 2200 D 4150 H 2360
Internal chamber size(mm)	Ø850 x 950	
Max. load(kg)	500	
Usable plasma volume(mm)	Ø640 x 350	Ø580 x 500
Spindles(mm)	Ø140 x 650 x 10	Ø140 x 650 x 10
Target source	Rectangular	Sputter : Rectangular Arc : Circular
Cathode amount	4	Sputter : 2 Arc : 4
Chamber	Stainless steel chamber with double walled jacket cooling	
Heater(kW)	16	16
Electrical connection	3Φ+Ground 380V , 200A	3Φ+Ground 380V , 150A



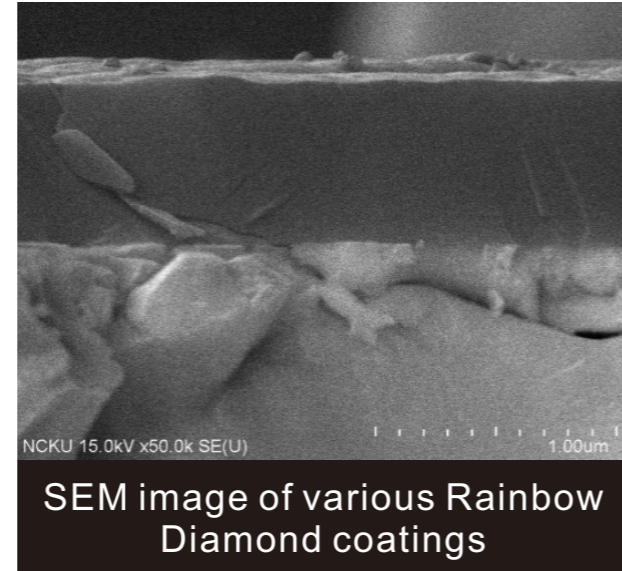
SEM image of various DLC coatings, including DLC Me-DLC(Left),(Middle) and Me/DLC (Right)



Rainbow Diamond Coating Equipment —PEC-RD Series —

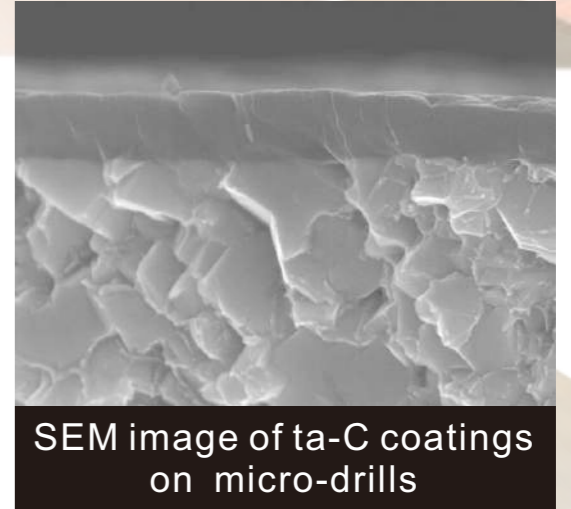
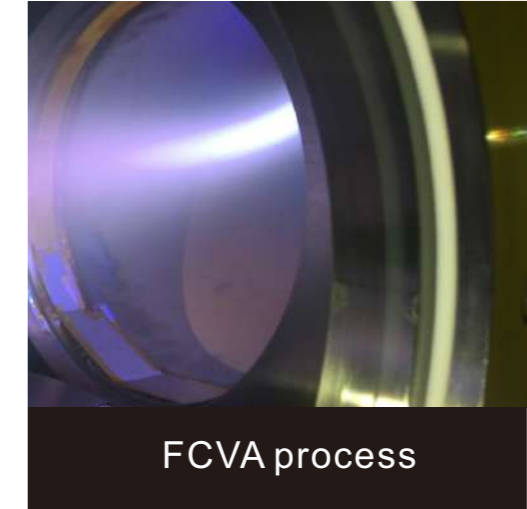


Resembling Diamond Like coating improved product. The company developed new coating. Able to combine the nitride coating layer, reach a wider application.



Model	PEC500-RD
Technology	PECVD
Coatings	Rainbow Diamond
Foot print(mm)	W 1900 D 4000 H 2100
Internal chamber size(mm)	Ø850 x 950
Max. load(kg)	500
Usable plasma volume(mm)	Ø480 x 650
Spindles(mm) x PCS	Ø125 x 650 x 8
Sputter source	Stainless steel chamber with double walled jacket cooling
Heater(kW)	32
Cycle time(h)	4h (0,5~0,8µm)
Electrical connection	3Φ+Ground 380V , 150A

ta-C Coating Equipment —FCVA Technologies Series —



In addition to DLC coating equipment, we provide superhard tetrahedral amorphous carbon(ta-C) coating by CNT filtered cathodic vacuum arc (FCVA) process. ta-C coating is made of pure carbon. ta-C coating has much higher hardness (Hv4000~6000) than amorphous hydrogenated DLC coating.

FCVA100 Hardware

Foot print(mm) : (W)3500x(D)1600x(H)2365
 Internal chamber size(mm) : 450x450xH470
 Max. Load : 100kg
 Usable plasma volume(mm) : Ø360x100
 Spindle(mm) : Ø125x150x6
 Gun source : 2 set filter arc cathodic source
 Electrical connection : 3Φ+Ground 380V, 100A

Process

Optimized thickness from 0.1~1 µm
 Cycle time(150~250nm):2.5~3h

Configuration To Order

FCVA350



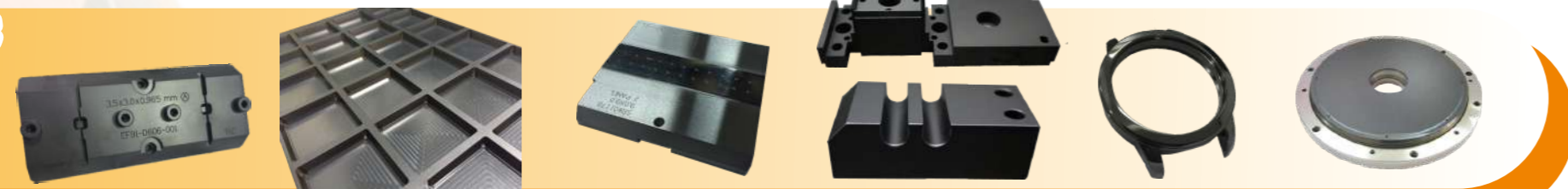
Coating Products

DLC technologies

Me/DLC



DLC



PVD



AlCrN



AlTiN



TiX-H

GS

PECVD



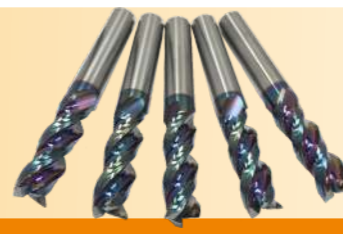
Rainbow Diamond coating

PVD+PECVD



TS · TA

FCVA



ta-C

CVD



TiN

Diamond

Coating Properties

Coatings	Color	Technology	Thickness(μm)	Hardness(HV)	Max operation Temp.(°C)	Coefficient of friction	Applications
TiN	Golden Yellow	PVD	1~5	2000~2300	500	0.5~0.6	<ul style="list-style-type: none"> Cutting tools, punches, pressing die and biomaterials
CrN	Silver gray	PVD	1~5	1500~2000	700	0.4~0.6	<ul style="list-style-type: none"> Extrusion, stretching, sheet metal forming tools and machine components, etc. Cutting tools for Cu and anti-sticking of semiconductor parts
AlCrN	Silver/gray	PVD	1~2	1500~3500	>1000	0.5~0.6	<ul style="list-style-type: none"> Cutting tools, punches, Package die and components It can machine hard materials (HRC55⁺) efficiently even at high temperature in dry condition
AlTiN	Black purple	PVD	1~4	3000~3500	900	0.4~0.6	<ul style="list-style-type: none"> High speed turning, milling and drilling process It is used for hard alloy and cast iron processing, especially in dry condition
R7	Red brown	PVD	1~4	2500~3000	800	0.4~0.6	<ul style="list-style-type: none"> Mills and drills for steel products and stainless steel(HRC48⁺) It is especially suitable for non-continuity cutting in wet condition
TiX-H	Metallic Golden	PVD	1~3	3800~4200	1100	0.5~0.6	<ul style="list-style-type: none"> It can machine hard materials (HRC55⁺) efficiently even at high temperature in dry condition
AlTiCrN	Gray black	PVD	1~5	2800~3200	900	0.4~0.5	<ul style="list-style-type: none"> Recommend to extend the lifetime and corrosion resistance of tools It is suitable for both wet and dry cutting condition
GS	Bright Golden	PVD	1~4	3200~4200	1100	0.4~0.5	<ul style="list-style-type: none"> It can improve chips removal and be used for non-ferrous metal materials processing. ex: Ti, Ni based alloy... It can improve chips removal and be used for stainless steel (304, 316, 4XX) process.
Rainbow Diamond	Bright Rainbow	PECVD	1~2	1000~1500	600	0.1~0.2	<ul style="list-style-type: none"> It is suitable for non-ferrous metal processing. Al, Cu, lead-free Cu and optical plastic machining, hard and soft PCB drilling, etc.
TA	Dark Rainbow	PVD+PECVD	1~5	3200~3500	900	0.1~0.2	<ul style="list-style-type: none"> It can improve chips removal and be used for stainless steel (304, 316) processing, hard Al alloy rough finishing.
TS	Golden Rainbow	PVD+PECVD	1~4	3800~4200	1100	0.1~0.2	<ul style="list-style-type: none"> It can improve chips removal and be used for steel (HRC55⁺), Ti, Ni, Cu alloy processing.
Me-DLC	Black	PVD	1~4	1800~2000	350	0.15~0.25	<ul style="list-style-type: none"> Basic wear-resistant parts Gage, fixture, screwdriver and tools Blowing bottle mould
DLC	Black	PECVD	1~4	1800~2200	350	0.05~0.1	<ul style="list-style-type: none"> CD-R disk mold, eye glass mold, mobile phone mold, semiconductor trimming die, plastic injection mold, IC molding mold, PM mold, aluminum extrusion mold, components of automobile and machine ESD(Electro-static discharge) Coating, surface resistance(Ω):10⁵~10⁹ Cutting tools for Al (Mg) alloy, Cu alloy, plastic, ceramics, composites.
Me/DLC	Black	PVD+PECVD	1~5	1800~3000	350	0.1~0.15	<ul style="list-style-type: none"> Diesel injection, pressurization pump, cam shaft, piston, and other automobile parts.
ta-C	Blue Rainbow	FCVA	0.1~1	4000~6000	500	0.05~0.1	<ul style="list-style-type: none"> PCB micro-drilling, cutting tools. Coating for heat dissipation in electronic component, and biomaterials materials.
Ti(C,N)	Dark gray	Thermal CVD	5~15	2000~3000	1000	0.35~0.7	<ul style="list-style-type: none"> Inserts/ molds with groove, ditch, blind hole.. Especially used for punch pins, eye mold and trimming tools
Diamond	Dark black	HFCVD	0.5~20	7000~9000	600	0.2~0.3	<ul style="list-style-type: none"> End mills for non-metallic materials (graphite, ceramic, composites, grass fiber, carbon fiber) and non-ferrous metal(Al, Cu) processing. Coating for heat dissipation, semiconductor materials, electrochemical electrodes.