



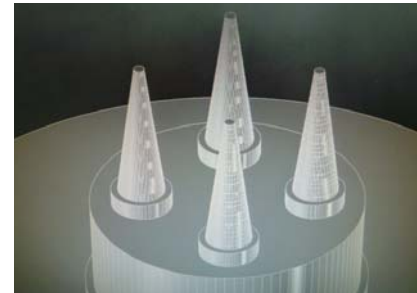
**PRECISION  
MACHINING  
TECHNOLOGIES**

# Why Tecdia Precision Machining Technologies?

Tecdia has accumulated over 40 years of experience in machining technologies through manufacturing of diamond tools, precision nozzles, and unique customer designs. Our products are used in many industries including but not limited to optical, biomedical, aerospace, camera module, and semiconductor processing.

We are equipped to support sample builds to mass production.

## Concept Formation



## Prototyping



## Mass Production



## Evaluation / Optimization

TECDIA Innovative Ideas  
+  
Customer Evaluation  
+  
Evaluation Feedback

# General Capabilities

Machine Type	Skills			Typical Materials
Milling / Drilling	Precision Hole Drilling	Ultra - Small Hole Drilling	$\phi 0.010$ mm (Max. 2.5 D)	SS303
			Concentricity: $< \pm 0.005$ mm	
		Small Hole Drilling	$\phi 0.020$ to $\phi 0.075$ mm (up to 10 D)	
			Concentricity: $< \pm 0.005$ mm	
	General Processing	Hole Drilling	$\phi 0.080$ to $\phi 12.0$ mm	Steel, POM*, Ti, Al, SS etc.
		Reaming	$\phi 2.0$ to $\phi 12.0$ mm	
Tapping		M3 to M12		
End Milling	Cylindrical Processing	$\phi 0.050$ mm $\pm 0.005$ mm (Max. 0.3 D)	SS303	
Lathe Processing	Precision Hole Drilling	Small Hole Drilling	$\phi 0.030$ to $\phi 0.090$ mm	SS303
		Hole Drilling	$\phi 0.10$ to $\phi 0.90$ mm	Steel, POM*, Ti, Al, SS etc.
	General Processing	Hole Drilling	From $\phi 1.0$ mm	Steel, POM*, Ti, Al, SS etc.
		Reaming	From $\phi 3.0$ mm	
		Tapping	M3 to M10	
	Micromachining	Cylindrical Processing	$\phi 0.20$ mm $\pm 0.02$ mm (Max. 5.5 D)	SS303
Microgrinding	O.D. Processing	Tapering	From $15^\circ$	Tungsten Carbide, Steel, Brass, SS304, HSS, TY-100**, etc.
		Tip Rounding	$R = 0.010 \mu\text{m} \pm 0.005 \mu\text{m}$	
	Custom Tool Manufacturing	Tapering	From $15^\circ$	
		Cylinder Forming	$\phi 1.0$ to $\phi 10$ mm ( $\pm 0.003$ mm accuracy)	

\*POM = Poly oxy methylene  
 \*\*TY-100 = Au - Pt - Pd - Ag alloy

Machine Type	Skills			Typical Materials
Surface Treatment	Liquid Repelling	AEGIS Coating		Steel, SS
	Other Treatment Methods	Tempering		HPM38
Gas Nitriding				
Adhesion Technology	Adhering	POM* or Metal (SS) + Metal (Epoxy Attach)		SS, Tungsten Carbide
	Welding	YAG Laser Spot Welding		SS
	Brazing	Diamond + Metal Attachment		Diamond, Tungsten Carbide, Steel
	Ceramic Bonding	Firing	Heat Resistant Ceramic Bonding	Diamond, Quartz
		Deformation Fitting		SS
	Shrink Fitting	Ruby + Metal Attachment		Ruby, Tungsten Carbide, Steel, SS
	Press Fitting	-		SS
	Diamond Polishing	Pyramid Machining	Conical	$60^\circ$ angled tip, $5 \mu\text{m}$ tip flat
Square			Tip Alignment $< 1 \mu\text{m}$	
Triangular			Tip R $< 0.1 \mu\text{m}$ (100 nm)	
Tip Machining		Tip Rounding	$R = 10 \mu\text{m}$ to $1.0$ mm	
		Sharpening	$40^\circ$	
O.D. Machining		Thin Sheets	$t = 50 \mu\text{m}$	
	Oblong Rod	$\square 100 \mu\text{m}$ or larger		
Sawing Machine	Cutting	-		Diamond, Sapphire, Quartz
Lapping Machine	Lapping	$\nabla\nabla\nabla\text{FL}$		SS303, HPM38, Ruby

# Tecdia has many micromachining technologies.

Our products are a result of the combination of our experience with a variety of materials and our expertise in micromachining technologies.

