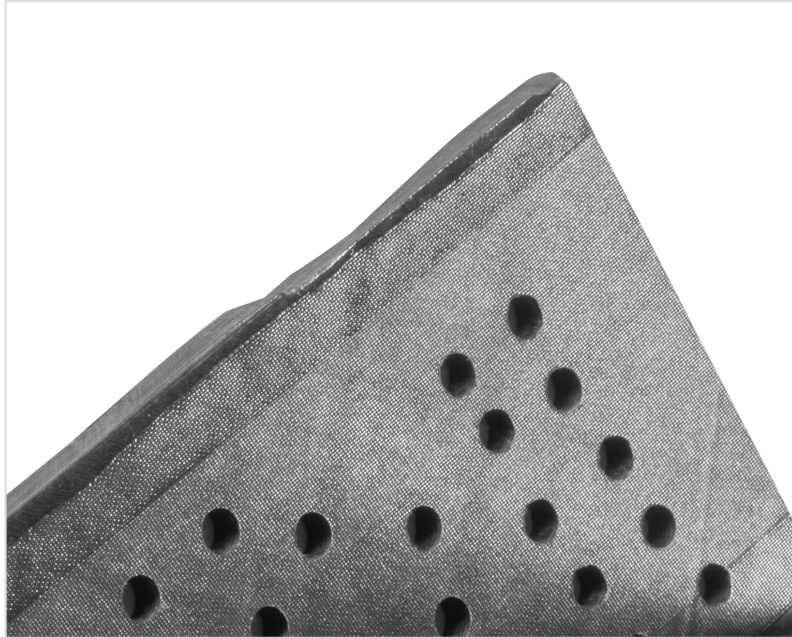


Application 1 | T800 CFRP Plate (6mm) (1/5)

Workpiece

- T800 CFRP (6mm)
- Drilling (hole diameter: 5.1mm)
- 260 (L) × 240 (W) × 6 (T) mm



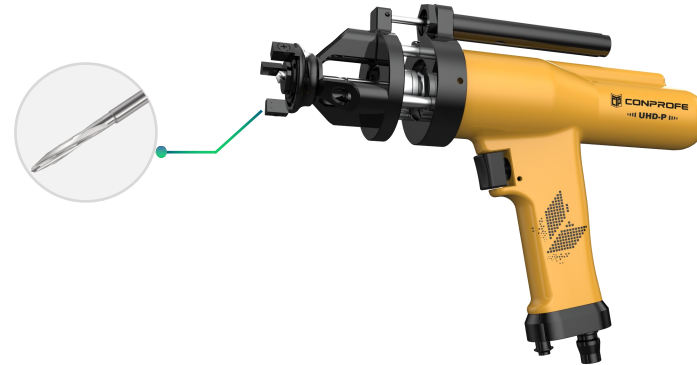
Challenges and Solution

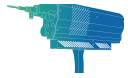
➤ Challenges

- ✗ Poor hole roundness
- ✗ Poor hole perpendicularity

➤ Solution

- + Conprofe Handheld Ultrasonic Pneumatic Drill UHD- PA185
- + Ultrasonic Dagger Drill (CDP d5.1x100° x36 HM 100xSD6-4F)
(bit diameter: 5.1mm)

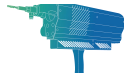




Application 1 | T800 CFRP Plate (6mm) (2/5)

Video





Application 1 | T800 CFRP Plate (6mm) (3/5)

Benefits

+ Hole roundness comparison:

0.0782 mm (traditional) vs 0.0301 mm (ultrasonic)

Roundness improved by 62%

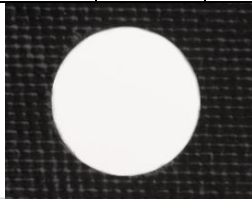
✗ Traditional

Roundness	#1	#2	#3	#4	#5	#6	#7	#8	Average
Traditional	0.0667	0.0428	0.0678	0.0948	0.0576	0.0955	0.1115	0.0885	0.0782

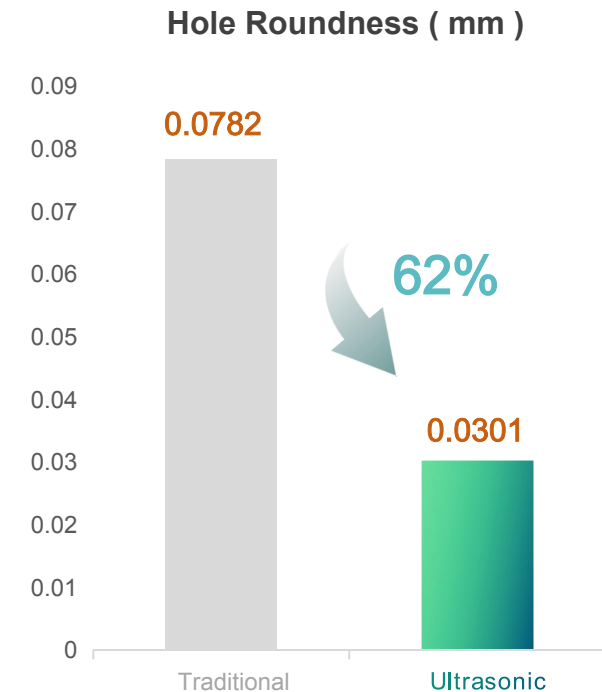


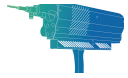
✓ Ultrasonic

Roundness	#1	#2	#3	#4	#5	#6	#7	#8	Average
Ultrasonic	0.0374	0.0321	0.0348	0.0393	0.0254	0.0231	0.0220	0.0267	0.0301



Comparison





Application 1 | T800 CFRP Plate (6mm) (4/5)

Benefits

+ Hole perpendicularity comparison:

0.0821mm (traditional) vs 0.0426mm (ultrasonic)

Perpendicularity improved by 48%

✗ Traditional

Perpendicularity	#1	#2	#3	#4	#5	#6	#7	#8	Average
Traditional	0.1138	0.0393	0.1292	0.0694	0.0661	0.1145	0.0864	0.0379	0.0821



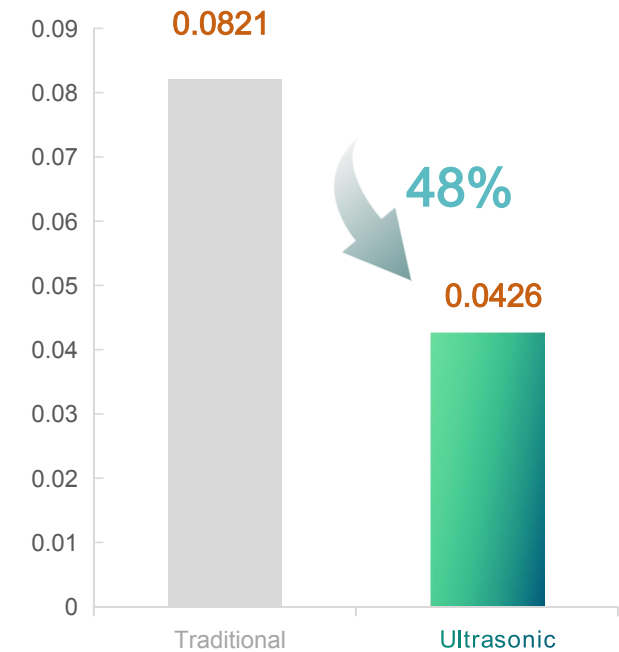
✓ Ultrasonic

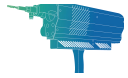
Perpendicularity	#1	#2	#3	#4	#5	#6	#7	#8	Average
Ultrasonic	0.0083	0.0379	0.084	0.072	0.0325	0.0517	0.028	0.0261	0.0426



Comparison

Hole Perpendicularity (mm)





Application 1 | T800 CFRP Plate (6mm) (5/5)

Benefits

+ Hole roughness comparison:

Sa **1.5543 μm** (traditional) vs Sa **0.3765 μm** (ultrasonic)

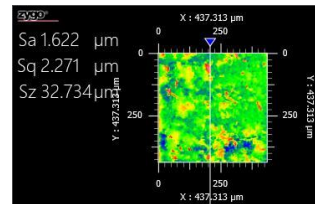
Roughness reduced by **76%**

✗ Traditional

Roughness	#1	#2	#3	#4	Average
Traditional	1.232	1.622	1.872	1.491	1.5543

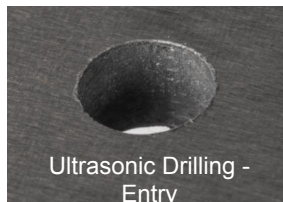


Traditional Drilling - Entry

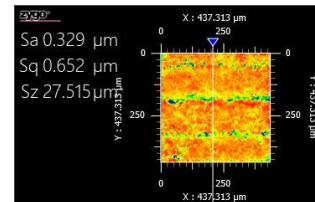


✓ Ultrasonic

Roughness	#1	#2	#3	#4	Average
Ultrasonic	0.329	0.409	0.322	0.446	0.3765



Ultrasonic Drilling - Entry



Comparison

Hole Roughness Sa (μm)

