CFRP Machining
with ISCAR’s State-of-the-Art Technology
An integrated high resolution camera and microscope for a closer look. Both the tools and the parts are thoroughly examined to ensure the highest product quality and the utmost functioning.

High speed camera provides the ability to examine different aspects of the tool’s function and the influence of the drilling process over the material.

Kistler system enables measuring pressure, forces, acceleration and torques that influence the tool’s function and tool life.

Special Supporting Device for Automated Drilling Unit (ADU) imitating field conditions as in the aerospace industry.

ISCAR has established a CFRP machining Tech-Center with high-end technology of prototype design, testing and quality assurance for Each Composite Material Type.
**Drilling**

**SUMOCHAM**

An exchangeable drill for ADU/CNC machines. Provides repeatable and accurate holes without burr or delamination.

**SOLIDDRILL**

Micrograin carbide with diamond coating for longer tool life. Lower tangential forces, eliminates delamination.

Vc=60-150 m/min, 200-500 ft/min
Fz=0.015-0.025 mm/t, 0.0006-0.001 ipt

**Milling**

**SOLIDMILL**

Solid carbide interchangeable heads for side, facing, trimming, rampdown and orbital milling.

Vc=100-150 m/min, 330-500 ft/min
Fz=0.02-0.06 mm/t, 0.008-0.024 ipt
Milling

**SOLIDMILL**

**SOLID CARBIDE LINE**

**EPNC**
Diamond coated drilling and milling tool. Right and left spiral for rough trimming.

- \( V_c = 100-150 \text{ m/min} \)
- \( 330-500 \text{ ft/min} \)
- \( F_z = 0.03-0.1 \text{ mm/t, } 0.001-0.004 \text{ ipt} \)

Milling

**SOLIDMILL**

**SOLID CARBIDE LINE**

**EPNF**
Solid carbide right-hand spiral flute for endmill slotting, side and trim milling. Interpolation drilling for roughing and finishing.

- \( V_c = 100-150 \text{ m/min} \)
- \( 330-500 \text{ ft/min} \)
- \( F_z = 0.015-0.025 \text{ mm/t, } 0.0006-0.001 \text{ ipt} \)

Milling

**SOLIDMILL**

**SOLID CARBIDE LINE**

**EPX**
Carbide diamond coated with right and left spiral flute for side finishing milling.

- \( V_c = 100-150 \text{ m/min} \)
- \( 330-500 \text{ ft/min} \)
- \( F_z = 0.015-0.05 \text{ mm/t, } 0.0006-0.002 \text{ ipt} \)
As the usage of composite materials is becoming more and more popular due to its high strength to weight ratio, the highly abrasive nature of the carbon fiber content and the very strict specifications of the industry make it very challenging for drilling.

One of these substances, Carbon Fiber Reinforced Plastic, can be especially difficult to drill and exhibits different results compared to other common materials.

The technical specifications required by the aerospace industry, where the usage of the CFRP is very common, demand to overcome the typical failures of drilling CFRP, such as: surface anomalies, material cracking, delamination, etc. - yet with the goal to reach a plausible cost per hole. ISCAR has accepted the challenge and for the first time presents its innovative solutions for drilling composites by using exchangeable drills.

Tools
- Modular and integral drills compatible both with ADU and CNC machines.
- “Smart Connector” design for fast, accurate and repeatable replacement.
- Drilling and countersinking in one motion.
- Exchangeable drill with insert self-locking mechanism.
- Twisted tool body for easy and smooth chip evacuation.
- Compatible with MQL.

Drilling Heads
- Different geometries for CFRP and laminated multilayer parts.
- CVD diamond coatings for high wear resistance.