

solid carbide & PCD  
**SOLUTIONS**

[www.alliedmachine.com](http://www.alliedmachine.com)

Ø 0.1181" - 0.7874" (3.00 mm - 20.00 mm)

 **SUPERION**<sup>®</sup>



**Optimize**  
your solution



**Decrease** your  
cost per hole



**Reduce** your  
setup time



**Conquer** tough materials with **PCD**

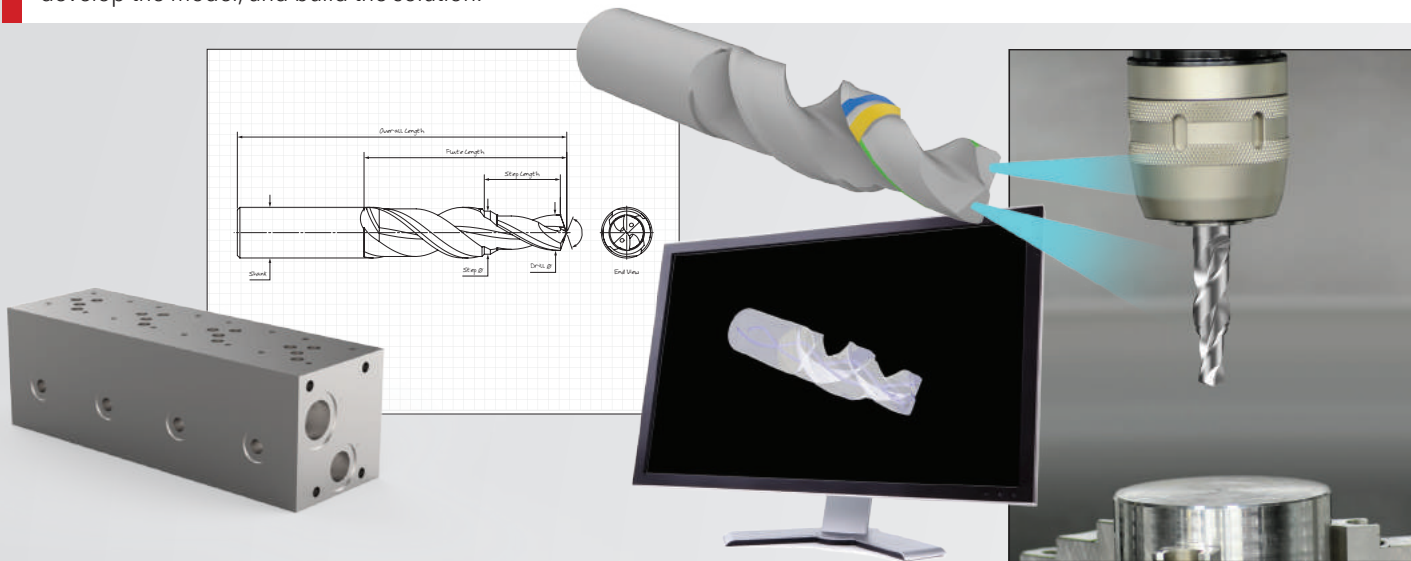


Allied Machine offers a wide range of drilling, boring, reaming, burnishing, and threading tools to lower your **cost per hole**.

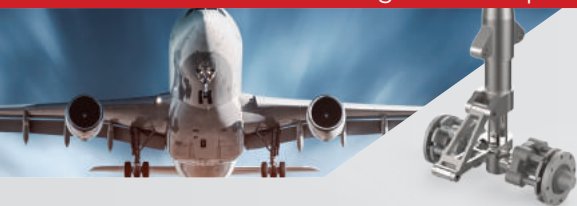


## FROM CONCEPT TO REALITY

Allied's team of engineers is ready to assist you with your application. We'll gather all the information we need about your application and turn your concept into reality. Give us a call today, and we will collaborate with you and listen to your needs, formulate a concept, develop the model, and build the solution.



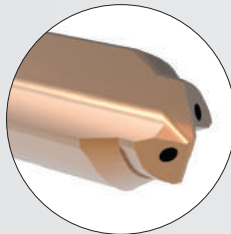
### AEROSPACE / Landing Gear Components



#### DRILL BURNISH TOOLS

Reduce cycle time, increase throughput, and increase profitability by combining roughing and finishing operations using our burnishing geometry for applications in which surface finish and hole tolerance are critical.

### AUTOMOTIVE / Crankshafts



#### COMBINATION TOOLS

Combine multiple steps and various profile features to improve throughput. Combination tools reduce cost per hole and increase profit potential.

### HEAVY EQUIPMENT / Manifolds



#### SOLID CARBIDE TOOLS WITH COOLANT

Solid carbide solutions optimize the manufacturing of manifolds. Most port specs call for at least three steps, and combining these features can reduce costs and increase throughput.

### AUTOMOTIVE / Transmission Components



#### SOLID CARBIDE STEP TOOLS

You can rely on Superior's state-of-the-art manufacturing facility, built specifically to satisfy the customer's need whether it's 10 drills or 1,000 drills. Superior will provide consistent and effective solutions to your production needs.



## Old adage, modern innovation: the right tool for the job.

Reduce costs and eliminate headaches by calling us to help solve your challenges. If your current process doesn't seem to be providing the results you want, you might be using the wrong tooling. Our customer was using a diamond-coated end mill to machine guide pads on frac pocket plugs used in down-hole oil drilling. The guide pads were made from fiberglass and glass wound filament material, which is very abrasive and shortens the life of cutting tools.



When the diamond coating wore off the end mill, the carbide substrate was exposed directly to the abrasive material, and the tool would quickly fail. The customer needed an optimized tool to extend tool life in this abrasive material and to solidify the repeatability of the process.

The customer tested the **Superion® PCD flat bottom drill** in this application. The PCD substrate is more wear-resistant in the fiberglass material and provided more even wear of the tool throughout the process. Much to the customer's delight, the Superion drill ran at a higher penetration rate, which shortened cycle time. Most importantly, the Superion drill increased the customer's tool life from 7,500 holes to 50,000 holes (a 567% increase).

A costly application became effective and worry-free by finding the right tooling. The Superion drill didn't just increase the customer's tool life; it provided a repeatable, reliable process so the customer could "set it and forget it."

Don't tolerate unnecessary hassle and stress in your production. **Call us to help you find the right tool for the job.**

<b>Product:</b> Superion PCD flat bottom drill <b>Objectives:</b> Increase tool life <b>Industry:</b> Oil & gas/petrochemical <b>Part:</b> Frac pocket plug guide pads <b>Material:</b> Fiberglass and glass wound filament <b>Hole Ø:</b> 0.380" (9.65 mm) <b>Hole Depth:</b> 0.275" (6.99 mm)	Measure	Diamond Coated End Mill	Superion PCD Flat Bottom Drill
	RPM	4500	7500
	Speed	448 SFM (136.55 M/min)	746 SFM (227.38 M/min)
	Feed Rate	0.008 IPR (0.20 mm/rev)	0.008 IPR (0.20 mm/rev)
	Penetration Rate	36 IPM (914.4 mm/min)	60 IPM (1524.0 mm/min)
	Cycle Time	0.46 sec	0.28 sec
	Tool Life	7,500 holes	50,000 holes

► Superion PCD solid carbide flat bottom drill

567% tool life increase



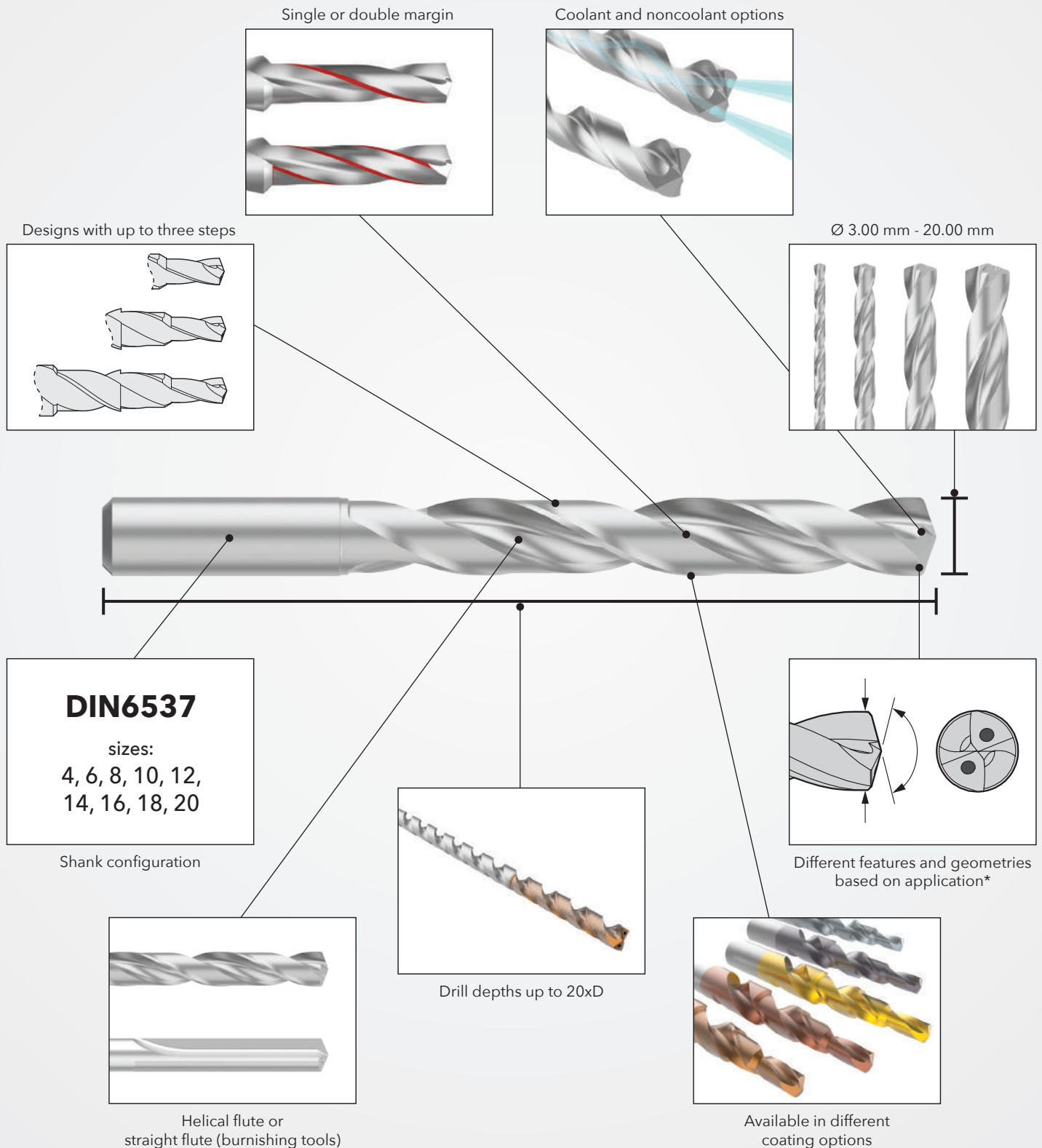
The PCD substrate for wear resistance in abrasive materials provided:

- ✓ Increased tool life
- ✓ Increased penetration rate
- ✓ Repeatable/reliable machining process

# SOLID CARBIDE TOOLING SOLUTIONS

## CONFIGURE YOUR TOOLING SOLUTION

We have a wide range of configurations we can design for your application. Below are some of the different design capabilities we utilize to fit your tooling needs. The solid carbide solutions are available from  $\text{Ø } 0.1181'' - 0.7874''$  (3.00 mm - 20.00 mm).



\*The optimal geometry will be selected by our Engineering Team per your application details.



**OUTSIDE THE BOX SOLUTIONS**

If the tooling design you need doesn't fit within the standard configuration matrix, we can create a specific special design to fit your application.

**THE SUPERION PHILOSOPHY**

Utilizing the long-standing tradition of product excellence and innovative solutions at Superion, we continue to be an industry leader in serving our partners in the metal cutting industry. With a foundation and initial growth focused on our automotive partners, we have not strayed away from our roots of capability and process improvements.

We have taken these roots and stretched them across new industries and new solutions, getting involved in new segments of the automotive industry, the aerospace industry, the defense industry, equipment testing, material processing, and more.

With significant investment in technology, Superion has opened the doors for our team to manufacture new solutions including several carbide and PCD configurations. The key focus is (1) providing solutions that reduce the customer's costs and increase their throughput and (2) developing sound, capable processes that allow for consistent and repeatable performance.



## SOLID CARBIDE / PCD TOOLING SOLUTIONS

### WHO IS SUPERION?

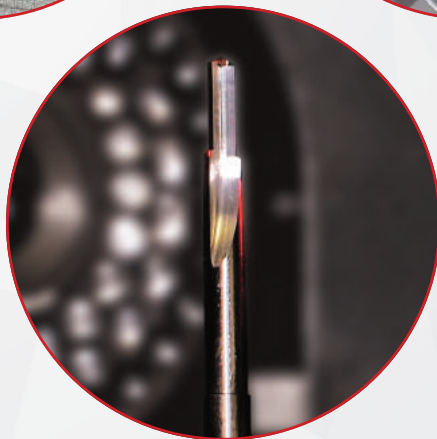
Allied Machine's brand, Superior, manufactures cutting edge solutions in both solid carbide and PCD tooling.

### WHY SHOULD YOU USE SUPERION?

- State-of-the-art manufacturing automation allows for high repeatability and consistency, regardless of the quantity you need.
- Superior provides application-specific solutions tailored to meet your toughest demands.
- Superior tooling excels in difficult and unique material applications.
- Our goal is to provide you a quality solution to exceed your need on a schedule that satisfies.

### WHEN SHOULD YOU USE SUPERION?

- If finish is critical and dimensions are tight, Superior will deliver a tool to maintain your tolerances.
- If your tooling budget requires regrinds and the ability to remanufacture, Superior tackles your needs.
- If you're dealing with CFRP or other unique materials, Superior tooling is the right solution.



Allied Machine offers expert engineering support. Whether you need a quote, a test, or an application solution, a highly skilled and trained engineer is standing by, ready to help.  
[www.alliedmachine.com/contactus](http://www.alliedmachine.com/contactus)

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