Aerospace Solutions
by Allied Machine

As more and more people take to the skies every day, the demand for quality parts at a higher rate is constantly growing. With aerospace solutions by Allied Machine, you can increase productivity, reduce time, and minimize scrap - all while generating higher quality parts.

How is this possible? It's simple, really. Our products are engineered to complete the most specific holemaking applications in the fewest number of steps possible. If you are currently using 4 tools to finish one step in a part, Allied Machine can find a way to combine those 4 tools into 1, reducing your inventory and cycle time per part. If you're having difficulty drilling a certain material, Allied Machine will engineer a solution to make that application a success.

It's just what we do.

Let us prove it...

Take, for example, the following results from a very real customer in a very real situation.

The Material:
Carbon-fibre-reinforced polymers (CFRP) are composite materials consisting of two parts: a matrix and a reinforcement (carbon fibre).

Unlike isotropic materials like steel and aluminium, CFRP has directional strength properties, which depend on the layouts of the carbon fibre and the proportion of the carbon fibres in relation to the polymer.

The Problem:
The customer is trying to drill CFRP material:

- The fibres are characterized by high strength
  - *The material is difficult to cut*
  - *This wears down the cutting tool and causes splintering and/or fraying*
- The plastic matrix is sensitive to heat (will melt)
- The structure is built up by layers of material
  - *The result is delamination upon exit*

T-A® PCD Special Geometry Insert

10 Holes | 20 Holes | 30 Holes | 40 Holes

50 Holes | 60 Holes | 70 Holes | 80 Holes

Competitor's Best Attempt

10 Holes

Why PCD?

What allows the PCD (polycrystalline diamond) insert to generate such high success is the sharp cutting edge made for extreme wear resistance. While other tools encounter massive tearing when exiting, the PCD insert geometry, along with precise OD corner prep and Notch Point® technology, encounters minimal delamination. This produces a near-perfect, tight tolerance and smooth hole.

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Aerospace Solutions


Central Fuselage Wing Box


Landing Gear


Aircraft Engine


6Al4V Manifolds


Bushings


Rod End

Since 1941, we have provided the world with practical and dependable holemaking solutions. We are proud to offer our skills and knowledge to help take the aerospace industry into the future. Call one of our holemaking specialists today.

ALLIED MACHINE & ENGINEERING

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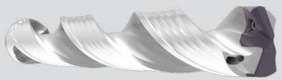
ALLIED MACHINE & ENGINEERING

Holemaking Solutions for Today's Manufacturing

Central Fuselage Wing Box

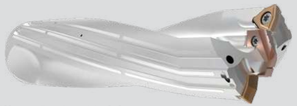
GEN3SYS® 18 Series Holder

- Double margin chromed bearing surface helps dispense heat
- Through coolant designed to aid in deep hole drilling and chip evacuation
- Threaded shank allows for use with portable drill motors using drill bushing guides



GEN3SYS® 18 Series Holder

- Helical chromed bearing surface helps alignment and stability
- Through coolant designed to aid in deep hole drilling and chip evacuation
- Threaded shank allows for use with portable drill motors using drill bushing guides

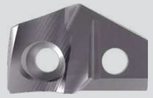


APX Drill 38 Series Holder

- Carbide clad bearing surface helps alignment and stability
- Through shank coolant
- Coolant ports along body to keep body cool and lubricated
- Threaded shank allows for use with portable drill motors using drill bushing guides

T-A® PCD Special Geometry Insert

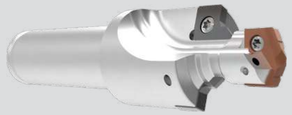
- K10 carbide substrate increases tool life
- PCD (polycrystalline diamond) tip designed for carbon fiber reinforced polymer (CFRP) material
- Notch Point® geometry, special corner clip, and drill point angle help minimize delamination upon exiting the hole



GEN3SYS® XT Special Aluminum Geometry Insert

- K20 carbide substrate, special geometry, and corner clip designed to create small chips in low speed and feed environments

Aircraft Engine



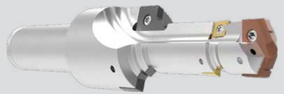
AccuPort 432® Mil Spec

- Creates special ports in engine manifold
- Creates the form with one tool
- Replaces 3 tools: (1) solid carbide roughing tool, (2) finishing tool, and (3) endmill
- Decreases cycle time

6Al4V Manifold

T-A® Original Holder with Wear Pads

- Main hole (largest diameter in hydraulic manifold) is drilled first
- Bolt-in guide pads or brazed pads increase straightness and rigidity
- Special flat bottom inserts can be used with same holder to create form in the bottom of the hole



Original T-A® Straight Flute ICS Holder

- Smaller diameter port tools used to connect cross holes
- Utilizes standard inserts

Standard T-A insert to drill the hole

Special flat bottom insert to clean the bottom of the hole

Landing Gear

GEN3SYS® XT

- Used to rough drill the clevis holes
- Available in 1xD, 3xD, 5xD, and 7xD

APX Drill with GEN3SYS® XT Pilot Insert

- Used for roughing out the cylinder part of the landing gear
- Replaceable heads allow for size changes on the same body
- Available with 40 mm flanged shank for series 38-44, and 50 mm flanged shank for series 38-95.

CBER® Boring Head

- Used to rough bore for straightness after rough drilling the clevis
- Used to finish holes within 0.02 mm depending on tolerance and surface finish requirements
- Integrated ER shanks for maximum rigidity
- Quick and easy to adjust

AccuPort 432® Port Contour Cutters

- Reduces number of tools required to produce hydraulic ports
- Up to 5 tools can be replaced: (1) end mill, (2) spot drill, (3) rough drill, (4) port tool, and (5) reamer
- Conforms to MS-33649 UN or UNJ specs
- Specials include MS-33651 or special gage lengths

ALVAN® Replaceable Head Reamers

- Used to finish the bored hole for size within ±0.0005 mm and surface finish as low as 1.6 Ra

Other Solutions

- Bushings
- Sleeves
- Rod Ends
- Bearing Housings
- Ground Support Tooling
- Hard Metal Components

Did you know...

The focus on technological advancement present within the aerospace and defence industry is also a key feature of our own development processes, enabling AMEC® to provide a range of high performance tooling to meet the rigorous specifications and expectations of this global market.