

PRECISION ABRASIVE MACHINING

PAM is a state-of-the-art technology for machining a variety of features or shapes in brittle materials such as glass wafers, ceramics and COMPOSITES in the AEROSPACE Industry where it is critical to ensure low stress impartation to the substrates -- thereby eliminating:

Drill bit wear/tearing and exit hole burrs due to mechanical drilling (no heat build-up)

Stresses that can cause internal (unseen) delamination & damage with mechanical drilling

Burnishing and distortions from laser drilling (where delamination often occurs)

Layer delamination associated with Water-Jet processes (wet process)

AND PROMISES:

A high degree of accuracy and repeatability to within 50µm

Fast turn-around and prototyping for design changes

Overall higher quality than CNC, waterjet or laser drilling

Acoustical benefits not possible with other processes

For more information please contact:

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 **IKONICS**[®]
Advanced Material Solutions

INTRODUCES

 PRECISION ABRASIVE MACHINING



 **IKONICS**[®]
Advanced Material Solutions

2302 Commonwealth Ave.
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COMPOSITES
&
OTHER BRITTLE MATERIALS

FEATURES

ADVANTAGES

BENEFITS

No burrs, spurs, burning

No secondary machining processes

Part ready for immediate use
Low stress/temperature on material

No delamination of layers

Integrity of composite material

High yield machining process keeps cost under control

No conventional tooling needed

No tools to wear out or replace

No need to sharpen or purchase specially coated, expensive tools

Entire process is dry – no messy coolants or slurries

No distortion due to moisture or wetting and easy clean-up

Better just-in-time deliveries
Quality product / high yields

Minimal stress or heat imparted to composite

Thermally more stable and virtually distortion free

Accuracy of features results in higher quality product and minimizes potential of catastrophic failure

Produces smooth & consistent holes and/or features

Conventional cutting tools can dull and wear out causing irregular hole geometries

All features/holes within a part and from part to part are high quality and consistent

Hole taper is a default of the process

May improve transfer and sound attenuation (see acoustical tuning)

Maximize sound deadening with flexible designs and hole patterns

Any shaped hole or slot is possible

Squares, rectangles, multiples of any shape

Opens up broad design flexibility for various performance features

Like features (holes, slots, etc.) machined at the same time

High productivity/throughput vs. doing these one, two or three at a time

Maximize yields and keeps costs down

Never miss a hole no matter how large the matrix or array (all holes/features present)

Assurance that customer thru-holes specs are met – especially where POA is critical

Quality assurance – high yields

Extremely flexible and rapid design changes and turn-around for proof of concept

Little slow down in production and fast prototyping

Go from Development to Production quickly. Change designs on the fly at minimum cost

Remove large amounts of material quickly

Not restricted to doing one hole or feature at a time

High productivity and consistency of parts

Can be completed on complex curved parts

Replace need for metal screens, rivets and bonding processes

Weight reduction, minimize composite failure