

## Focus Technology Inc. Notes on Expanding Markets:

### A) Composite and Alloy Drilling/Milling



With Novator's orbital holemaking system, tools from Kennametal (left) reportedly can drill through stacks of metal and composite layers without delaminating the composite's fibers.

Focus Technology, through working with leading supplier of components for the Aircraft Industry began focusing on holemaking in material stacks for structural aircraft components for fuselages, doors, and beams and engines. To maintain structural integrity around riveted holes, aerospace manufacturers demand holes without any delamination or pulled threads in the composite layers. To machine these materials with one tool is difficult, because each material layer requires a different approach and unique tool geometry. A similar problem was occurring with the machining of core holes in aircraft engine casings, they could not use traditional methods to precision machine these holes due to heat deformation occurring around the hole. They needed a new technology to cut faster and “cooler”.

In response, we saw that one of our best customers, Kennametal, was developing a method to eliminate the need for a multistep process for opening up a hole: That being, drilling through each metal layer with standard metal tools, coring out an undersize hole in each composite layer with a helical cutting process to minimize delamination and burrs, and then reaming the composite hole to finished size with a diamond-coated reaming tool. The need for counter-sunk or chamfered holes may add another tool to the process. Or in the case of engine casings traditional hole making technology of boring, reaming and chamfering did not work due to poor tool life and heat deformation around the hole.



Kennametal's approach to holemaking in composite stacks is based on a partnership with Novator AB (Spanga, Sweden). Here, after creating a small hole in the stack layer, a "TwinSpin" spindle revolves the orbital milling tool to expand the hole cleanly, without delamination. "The cutting action is in the radial direction, so it basically cuts through the material in an 'orbital' motion," says Kennametal's Francois Gau. "It's the same principle as milling interpolation, but in a very small diameter. You get a double motion: the motion of the drill itself around its axis, and the motion of the drill around a bigger axis." Gau adds that aircraft manufacturers are interested now in reducing cutting forces and achieving better surface finishes with orbital drilling, which could save them as much as 50% in assembly costs.

What Focus Technology can do for you in these markets?

### A. Ramp milling or Orbital Drilling on Composites Materials or Super Alloys.

Focus Technology Inc has partnered with [Mitsui Seiki](#) of Kawajima Town district in Japan. The reasoning was logical because in the history of Mitsui Seiki, from its inception until today believes in “the ultimate in precision” and this philosophy continues to be their central focus and reason for existence. As such, they had been for many years a leading manufacturer of Jig Boring and Jig Grinding. The arts learned in development of such machines has evolved over the years and Mitsui Seiki had come to specialize in extremely rigid and accurate machines which bore unique capabilities in machining of exotic and tough materials to extremely exact tolerances. This was, in short, a market segment they already knew and understood well. Combine that with their knowledge in the art of Jig Grinding then they had already a clear understanding of what it took to make large machines with orbital head technology. This made them a clear choice to be a natural leader in developing the art of Ramp Milling or Orbital Drilling. As Focus Technology has worked further in this market we have come to grasp that the technology of [Mitsui Seiki](#) is light years ahead of any other participant in this market. Let us sit with your company and show you what this technology can do for you.

### B. Cutting Tools employed in the use of Ramp milling or Orbital Drilling.

As a leading supplier of [Walter and Ewag CNC Cutter Grinders](#) Focus Technology has always had an ear to the ground in the manufacture of new and exotic cutting tools. This was recently brought to the forefront of our business as Walter Grinders has jumped to the world wide lead in manufacture and development of End Mills due to its recent advancements in their machine software called Tool Studio. Put as simply as we can;  **“What You Model Is What You Grind”** Every change appears instantly in a high resolution 3D graphic and automatically rewrites the grinding program in the background  **Unlimited flexibility:** Variable helix...Variable rake...Variable core...Variable land width...New creative tool technology at your finger tips and extremely important in Ramp milling and Orbital Drilling Cutters and VariMills.

**From the latest in Machine Technology to the latest in Cutting Tool Technology – Let Focus Technology show you ways to improve quality, productivity in core drilling composites and exotic materials.**

