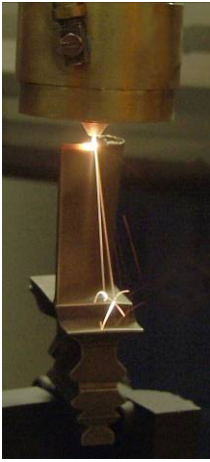


Huffman IGT Blade Processes



FOR IGT BLADES, "ONE STOP" MULTIPLE SOLUTIONS FROM HUFFMAN



TIP GRIND, TIP CAP WELD, SQUEALER TIP WELD

Huffman grinders remove the damaged tip, in preparation for tip cap and squealer tip weld. Then grind the finish tip radius after weld. Huffman Laser Systems weld with or without powder to secure the tip cap (replacing EB welding). Laser powder weld the squealer tip aka race track.



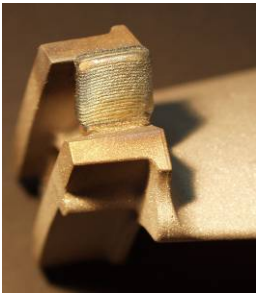
ADAPTIVE RECONTOUR GRIND

After a blade tip is welded, Huffman multi-axis grinders can automatically digitize the blade airfoil contour, then generate and execute an adaptive CNC program to blend the tip weld to match the base metal airfoil profile,



NEW Z-NOTCH HARDFACE, REPAIR FULL Z FORM, and SEAL TIP WELD

Huffman multi-axis laser cladders can weld the hard face on new blades, or full Z-form on repaired blades. The same machine cycle can also include seal tip and cutter tooth configurations.



PRE & POST WELD GRIND ANGEL WINGS

For new and repair blades, a Huffman 5-axis machine can combine angel wing grinds with tip grinds and even tip recontouring.



ROOT FORM GRIND

Depending on the part size and configuration, Huffman can apply electroplated CBN, vitrified CBN, or dressable ceramic wheel technology to root form grinding. With 3 to 6 axes of simultaneous motion, Huffman machines can be configured to grind root forms only, or to combine operations and finish multiple features in one grinding cycle.

ABRASIVE WATERJET HOLE DRILLING AND CLEARING

Huffman's high-precision, multi-axis waterjet systems use high-pressure water with or without abrasive to drill cooling holes, in new and repair parts. The process can drill new round or shaped holes through both TBC and base metal. When TBC is sprayed over existing cooling holes, the waterjet system can use vision technology to adaptively find the hole and clean out the TBC. The process produces a smooth wall, thereby improving air flow characteristics and thus component life. Holes can be drilled into cavities with minimal far-wall damage.

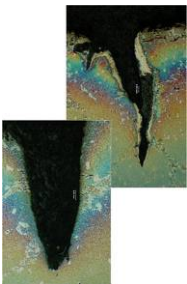


ABRASIVE WATERJET TBC STRIPPING

Our patented TBC and Bond Coating removal process for all types of combustion hardware including liners, transitions, shrouds, nozzles, buckets, blades, and vanes. The capability includes HVOF and diffused coating. Waterjet stripping is safer and more environmentally friendly than acid stripping. There's no need for masking, and no risk of pitting, inter-granular attack or hidden damage. You get a perfectly clean surface ready for brazing, coating, or welding.

NON-FIC CRACK CLEANING

Our revolutionary crack-cleaning process is replacing FIC. It removes all non-metallic material from cracks and the surface generated by turbine operation, greatly simplifying braze repair processes.



www.SpringfieldMfgLLC.com

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