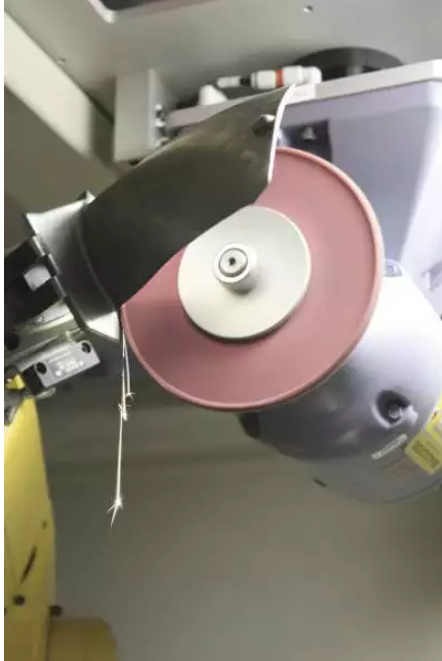


Robotic finishing on aerospace turbine blades

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AV&R Aerospace, Montreal QC, needed to refine its precision application of robotic finishing of aerospace turbine blades. It found what it needed with the Smooth touch wheel from Rex-Cut.

Known as profiling, a precise edge is needed on the blades to control airflow while increasing efficiency and fuel economy in aircraft engines. When the blades are first cut, there are sharp edges and square angles that need to be profiled to very exact tolerances. The first generation of blades supported by AV&R Aerospace needed a tolerance of 100 microns. This tolerance continued to shrink, dropping to 37.5 microns in the second-generation blade, and falling as low as 12.5 microns in the current generation.

To achieve such demanding specifications, AV&R Aerospace tested many types of abrasive wheels. Non-woven nylon convolute wheels simply could not achieve the required tolerance consistently. But the firm found that the Smooth Touch wheel, from Rex-Cut, was able to hit the 12.5 micron mark in a very repeatable fashion.

Rex-Cut wheels are crafted from non-woven cotton fiber that's denser than non-woven nylon. Cotton fiber abrasive products have a cushion action while in use, and due to their density, will hold up well grinding on an edge. Rex-Cut wheels can be used with precision without changing the geometry of the part.

Non-woven cotton wheels feature a consistent finish throughout the life of the wheel, and there is no backing that can gouge the surface of the material. In fact AV&R Aerospace discovered that Rex-Cut wheels lasted ten times as long as other products.

Rex-Cut wheels and the human touch

When AV&R Aerospace helped their clients move from human deburring to robotic operations, they had to meet the needs of very demanding inspectors. There was a very specific process, known as Tri-blending, where abrasive wheels were needed to join three different surfaces. The inspectors were used to very specific results achieved by human operators, and AV&R Aerospace knew they needed to replicate these results if they were to be successful.

The firm once again tested multiple abrasive wheels, but only Rex-Cut wheel achieved the same results as a human operator when deployed in a robotic application. The Rex-Cut Smooth Touch wheels, using cotton's inherently natural mechanical strength, combined with laminated layers of abrasive, were able to hold up under the high-stress environment and "fool" the inspectors.

AV&R Aerospace won the Fanuc America's ASI 2014 Innovative System of the Year Award with its Jet Engine Blades Weld Blending and Profiling System, and this Blending and Profiling System is outfitted with Rex-Cut Abrasives Type 1 Smooth Touch wheels.

Normand Stoycheff, support and client service manager with AV&R Aerospace, highlights one other important value of working with Rex-Cut.

"We work in a high technology environment," he explains. "Every time we have a new order for a new part that is to be crafted manually, if I need help, I would call Rex-Cut and they would create the custom abrasive that I needed. This is something that I really appreciate from this company compared to other larger firms. Because we're small, so it's hard to gain the understanding of the big companies—they're simply not listening to us. With Rex-Cut, I tell them my process and they suggest a solution. They even created the Smooth Touch high-density abrasive especially for us. It's that level of service that really makes the difference."