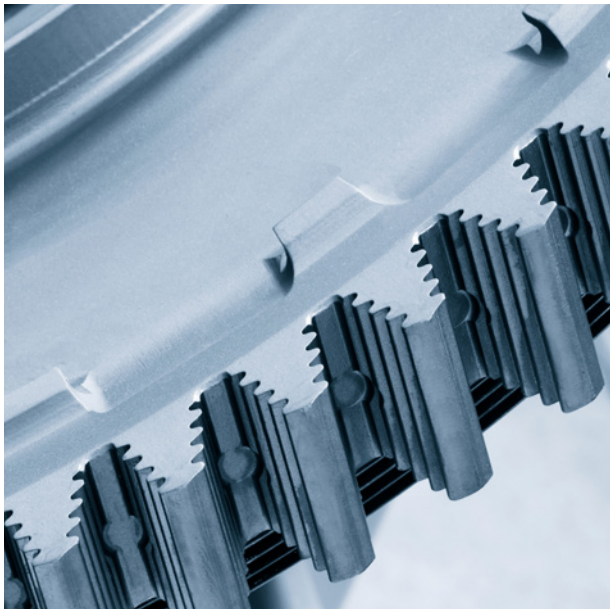
Case study

Preparation of jet engine compressor hubs for NDT by wet blasting

A major jet engine manufacturer reduced the processing time of their jet engine stage one compresor hubs from 3 hours to 20 mintues by replacing their manual wet blasting machine with an automatic Vapormatt Leopard Cub.



Due to the complex geometry of the 'fir trees' on the circumference of the hub the operator would spend to 2 to 3 hours manually wet blasting each disc. Wet blasting each 'fir tree' required the operator to blast every angle in the slot 10 times each, and to try and do it consistently the operator, in this case, used the windscreen blade as a kind of metronome to time the duration of each blast.

Even for this highly experienced operator, the process was susceptible to variance and human error, and was of course incredibly labour intensive, especially as every 'fir tree' had to be thoroughly inspected after blasting, to reduce the risk of scrapping the part. Inspection was difficult because the very fine blast media used made it visually hard to tell whether an area had been wet blasted or not. The fine novaculite / quartz blast media is very hazadous when used in dry blast processes, but is fully contained within the wet blast process.

Due to hubs being safety critical, the maintenance specification for them states that the same area of the hub can only be processed twice before it has to be scrapped - an expensive issue when each hub costs at least $50,000.

Replacing their manual operation with an automatic Vapormatt Leopard Cub reduced processing time from 3 hours to 20mins per hub and eliminated all human error, ensuring each angle of each 'fir tree' is blasted for precisely the correct amount of time and intensity.

As well as a MK3 wet blast gun for processing larger areas, this Leopard Cub is configured with a patented micro blast gun that is incredibly accurate. Making it ideal for processing the small individual angles in the 'fir trees.'

The Leopard Cub features a multi axis robot which, when combined with the movement of the machine's turntable, can blast any part of the hub, including every angle within each 'fir tree' with incredible accuracy. The blast head can move in increments of just 0.5mm if required.

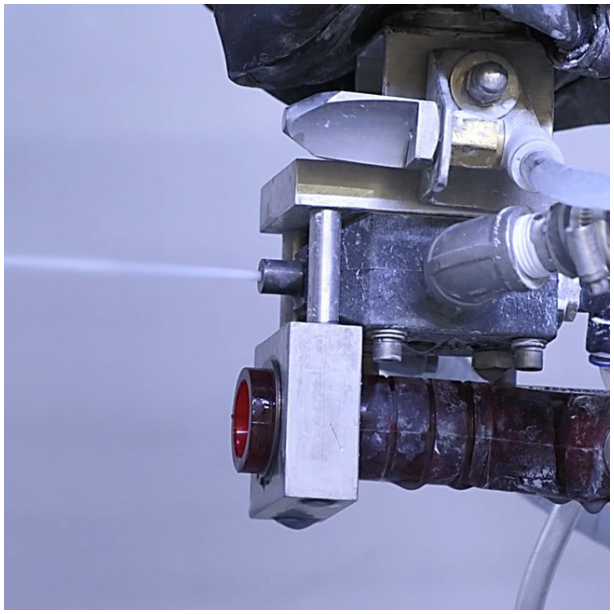
As well as the highly accurate automation, the Leopard Cub's ability to maintain a consistent blast from its blast guns is world leading thanks to the Vapormatt technology installed in the machine, some of it patented like the micro nozzle. Consistency of blast is especially important in automatic machines because the operator is no longer visually checking the part whilst blasting. Vapormatt's technology ensures the blast flow and the abrasive concentration in the wet blast slurry remains constant year after year, even as parts within the machine start to wear.

Finally, for added operator convenience, this machine also features a hoist and swing out turntable for the easy loading of heavy components.

To learn more about wet blasting applications and their related benefits for aerospace MRO operations and aerospace manufacturers, and to learn more about the automatic Leopard Cub wet blasting machine, visit:

vapormatt.com/industries/aerospace-mro
or
vapormatt.com/industries/aerospace-manufacturing

*Our wet blasting systems deliver distinct productivity and quality competitive advantages to our customers, because of this we are often asked to sign Non-Disclosure Agreements (NDAs) to keep our customers' details confidential. That is why we cannot include the name of the manufacturer in this case study.



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