Case study

Composite fixings manufacturer for aerospace

How clever automation allowed a leading manufacturer of fixings to rapidly prepare studs and standoffs of different sizes and materials for bonding

Our customer (NDA in place*) is a world leader in adhesive bonding and fastening in the aerospace industry.

Their requirement was for an automatic wet blasting machine that can finish a range of different sized studs and standoffs to a specific Ra surface roughness that's perfect for bonding. The studs and standoffs are made from either composite, steel or aluminium.

All these size and material variables presented our Design Engineers with quite a challenge!

But as you'd expect from the world leader in wet blasting technology, it was a challenge our team of Engineers were more than up to.

The solution came in the form of a highly bespoke version of our automatic Oncilla wet blasting machine and this is how its clever design overcame the two main challenges...

*Our wet blasting systems deliver distinct productivity and quality competitive advantages to our customers, because of this we are often asked to honour 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.

Challenge 1: Different sized studs and standoffs
Solution: The blast program for the fixing in question is input via the machine's HMI. The program lets a six-axis robot and camera system know what size fixing to pick and place for processing.

Challenge 2: Different stud and standoff materials. Composites and metals require different blast media, but it takes a bit of time to swap from one media to the other, not ideal when you want to switch between composite and metal fasteners at a touch of an HMI button.
Solution: Incorporate separate blast chambers. One blast chamber is permanently set up for composites while the other is permanently set up for metals. The blast program selected for the fixing in question ensures the robotic gripper holding the fixings goes to the correct blast chamber.

The machine's packed with lots of other clever features too, like the variable use of compressed air. Compressed air is expensive, so to keep costs down the air pressure needed for blasting the fixings is only used while the fixings are actually being blasted, the rest of the time the air pressure is reduced to the minimum amount needed to keep the blast guns free from blockages. The resulting cost savings are very significant.

The end result is a whole range of different sized fixings made from different materials finished to precisely the right Ra surface roughness for bonding.

We've produced a video of this impressive machine in action which you can find on our dedicated composites website page: **vapormatt.com/industries/composites**

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