Vapormatt

White paper

Aerospace MRO wheel and brake cleaning and de-painting for NDT

Wheel and brake cleaning for NDT

Wheels and brakes are put under enormous stress when landing and require regular non-destructive testing (NDT) to ensure they remain safe.

To ensure accurate and safe inspection, wheels and brakes must be thoroughly clean for NDT methods like eddy current testing (ECT). However, the cleaning process can be time consuming and laborious, tying up a skilled inspectors time.

Using Vapormatt's formula of plastic media, mild detergent, hot water and air, wet blasting thoroughly and rapidly cleans aircraft wheels and brakes, removing oils, grease, brake dust and thanks to the flowing nature of the wet blast slurry, it can completely clean the most complex of wheel geometries in preparation for NDT.

With a blast formula set for wheel or brake cleaning, wet blasting does not damage painted layers, instead, it effectively simulates hand scrubbing without the laborious manual effort.

The effect of wet blasting aircraft wheels in preparation for NDT

Before

After

Aircraft wheel paint removal for NDT

After a certain amount of use, wheels and brakes need more rigorous NDT which requires paints, primers, sealants and other coatings to be removed.

Using the same specially developed formula described above for wheel and brake cleaning, and at the touch of a button, a higher pressure can be used to rapidly remove multiple layers of coatings along with oils, grease, brake dust and all other contaminants in one operation and without damaging the wheel or its Alodine or anodised layer. It is even possible to remove specific layers of paint.

Repeated paint and strip cycles are less destructive when using the Vapormatt proces compared to dry plastic blasting.

The benefits of wet blasting for wheel and brake shop managers

Removing multiple coating layers, oils, grease, and all contaminants in one operation delivers significant time and cost savings for MRO wheel and brake shops compared with manual, starch or dry plastic media blasting, and chemical stripping processes.

Vapormatt's wet blasting formula has been proven to be the fastest way to clean and de-paint wheels and brakes.

The highly controllable process is operator friendly and requires no hand scrubbing, harmful chemicals and creates no dust.

With wheels and brakes being rapidly and thoroughly cleaned, more time is left for inspection and in turn the capacity of the wheel and brake shop operation is increased.

Wet blasting is highly cost-efficient due to reduced labour, lower material consumption, and decreased waste disposal costs compared to traditional cleaning methods.

Wet blasting vs dry blasting

Unlike dry methods with starch or plastic medias, which can sometimes cause surface damage due to excessive abrasion or heat build up, wet blasting is gentler on the material being cleaned. It eliminates any potential damage to the surfaces of aircraft wheels and brakes, ensuring they remain structurally sound.

Dry plastic media or starch blasting tends to be slower, when pre-washing and drying is taken into consideration, compared with the single step wet blasting process. It also creates dust and does not always protect

operators from harmful carcinogens such as cadmium when paint layers are removed. Wet blasting suppresses dust and airborne particles, making it a safer, cheaper and cleaner method compared to dry blasting.
This is particularly advantageous in MRO facilities where cleanliness is crucial for safety and regulatory compliance.

Dry blasting requires separate wheel and brake washing, hand scrubbing and drying stages prior to dry blasting. Wheels and brakes are simultaneously cleaned and de-coated when wet blasted and there is no need for them to be dry prior to blasting.

There is also a risk of concealing cracks through over peening when dry blasting, which can negatively affect NDT and safety.

With Vapormatt's wet blasting formula there is no risk of peening the surface. The flowing nature of wet blasting exposes cracks by cleaning them out rather than concealing them, making them more visible during NDT, improving inspection accuracy, speed, and subsequent safety.

A crack before and after wet blasting

Before

After

Health, safety and environment (HSE)

As an added operator / environmental health benefit, brake dust, chromium particles in some primers, and other potentially harmful contaminants are contained within the slurry, so unlike dry blasting and some other finishing processes, there is no risk of inhalation.

As well as eliminating dust, wet blasting reduces the need for harsh chemicals minimising environmental impact and reduces operating costs compared to solvent-based cleaning methods.

During the wet blasting process, water and blast media is recycled through the closed loop system with paint debris being filtered out, making the whole process highly efficient and significantly more environmentally friendly compared with other cleaning and de-coating processes.

Conclusion

Wet blasting is used globally as the fastest, safest and cleanest method for NDT inspections of aircraft wheels and brakes. Having an easy to use process ensures the safety and reliability of the aircraft by facilitating thorough cleaning and accurate testing of critical components, as well as creating more capacity in wheel and brake shops by easing the burden on the cleaning stages.

Vapormatt Puma manual wet blasting machine

Vapormatt

For further information contact:

Vapormatt Ltd
Vapormatt Innovation Centre
Robins Drive
Bridgwater
TA6 4DL
United Kingdom

t +44 (0) 1823 257976
e sales@vapormatt.com

Vapormatt.com