WET VS. DRY AIRCRAFT WASHING: ALL YOU NEED TO KNOW ABOUT AIRCRAFT CLEANING TYPES

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Aviation industry has evolved significantly in how it approaches aircraft cleaning, moving away from manual methods toward automated solutions that are more efficient. Today, understanding the differences between wet and dry washing methods is crucial for making decisions about aircraft cleaning services. What makes these two cleaning techniques different, and when should you use each one?

The numbers behind each method

Wet and dry aircraft exterior washing differ primarily in the resources needed. Wet washing involves the use of water, soap, and to remove dirt, grime, and other contaminants from the exterior surfaces of the aircraft. Despite its name, dry wash is not completely waterless and represents a relatively new solution in aviation maintenance. Rather than using large quantities of water, specialised aviation-grade cleaning agents are applied with cloths or sprays and then wiped off.

These techniques differ significantly in how much water they use. For narrow-body aircraft, robotic

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wet washing requires approximately 200-250 liters of water-detergent mixture (90% water, 10% detergent). The subsequent rinsing phase uses an additional 500-1,000 liters of water, depending on local practices and available equipment. Wide-body aircraft need 500 liters of water-detergent mixture for the washing phase, followed by 1,000-2,000 liters for rinsing.

In contrast, dry washing offers notable efficiency gains.

Veronika Andrianovaite, Chief Commercial Officer of Nordic Dino Robotics commented: “Robotic dry washing uses way less water: just 45 liters of water and 5 liters of detergent for a narrow-body aircraft and double the amount for wide-body.Modern aircraft cleaning machines dramatically reduce these timeframes: narrow-body aircraft can be completed in 1-2 hours, and wide-body aircraft in approximately 4 hours. It also only takes one robot operator and one or two manual helpers. Rather than following a strict ratio, we recommend an initial wet wash after prolonged periods without cleaning, followed by frequent dry wash cycles to maintain cleanliness and prevent heavy contamination buildup. This approach is more effective than alternating between methods on a fixed schedule. Think of it like washing a car covered in sand – no one would attempt to clean it without water first. The same principle applies to aircraft. Heavy contamination requires wet washing to avoid simply smearing dirt across the surface, while light contamination can be safely addressed with dry methods."



The numbers behind traditional manual washing reveal why many facilities are exploring automated alternatives. This labor-intensive process consumes 8,000-10,000 liters for narrow-body aircraft and 10,000-12,000 liters for wide-body aircraft. Beyond using excessive amounts of water, manual washing requires significant human resources and time investment. Crews of eight to twelve people usually complete the procedure in three to six hours for narrow-body aircraft and six to eight hours for wide-body aircraft.

When to use wet vs. dry wash

Selecting the appropriate cleaning method depends on several factors, primarily the aircraft's

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condition and operational environment. Wet wash is recommended for heavily soiled aircraft that haven't been cleaned for extended periods or have significant surface contamination. Sometimes referred to as "deep clean," this method delivers superior cleaning results. Meanwhile, dry wash is best suited for routine maintenance cleaning of aircraft that are regularly serviced and haven't accumulated heavy dirt buildup.

Another consideration when choosing a cleaning method is the region where the aircraft operates. Dry wash should be avoided in sandy environments, particularly in the Middle East region, where sand accumulation on aircraft surfaces creates significant risks. Using the dry wash method in these conditions would grind sand and abrasive particles into the aircraft surface, potentially causing damage to the aircraft's exterior finish and compromising its aerodynamic properties.



Wet washing and environmental limitations

However, wet washing isn't always an available option. Environmental regulations and water restrictions at many airports can limit when and where this method can be used. These limitations vary significantly by region and airport, as well as by the types of cleaning agents used.

"The fundamental requirement is a basic water collection and drainage system for runoff, needed for both indoor hangar operations and outdoor washing. Beyond this baseline, local regulations determine additional requirements such as approved cleaning agents – environmentally friendly versus industrial-strength chemicals – and supplementary water treatment systems," explains Andrianovaite.

Most Nordic Dino clients operate with standard drainage systems without additional treatment facilities. It's important to note that drainage infrastructure isn't universally available across airports, which means aircraft washing typically occurs in dedicated wash bays, wash racks, or hangars equipped with appropriate drainage systems.

There are airports where wet washing is restricted due to environmental concerns, including some

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major international hubs. In certain cases, operators have chosen to implement dry wash exclusively because the requirements for wet washing operations are prohibitively strict.

“For instance, at Frankfurt Airport wet washing is prohibited in hangar facilities due to outdated drainage and collection systems that cannot handle the runoff effectively. In Barcelona and Madrid, wet washing is banned during summer months due to national water shortages, with all available water reserved for tourism, but in winter wet operations are permitted. Wet washing is also discouraged in places like the United Arab Emirates and Singapore,” notes Andrianovaite.

Both wet and dry washing serve essential roles in aircraft exterior cleaning, each offering distinct advantages. Most importantly, both methods are handled more sustainably and efficiently through robotic washing systems, such as Nordic Dino solutions. Whether implementing wet or dry approaches, they deliver a faster, safer, and cleaner alternative to traditional washing methods.

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