

# Aircraft cleaning delivers more than just a spotless impression

[Content preview – Subscribe to **Jane's Airport Review** for full article]

**Exterior cleaning of aircraft can save money, reduce corrosion, and satisfy environmental improvement ambitions. *John Barker reports***

Keeping the exterior and engines of an aircraft clean can save up to 1.7% of fuel costs. In addition to the financial benefit, such savings can be used by airlines to demonstrate carbon footprint reductions by 2020, in line with targets under the ICAO Carbon Offsetting and Reduction Scheme for International Aviation (CORSA). Therefore, it is hardly surprising that more interest is being shown in aircraft cleaning.



*Juniper 2x50-gallon compressor wash rig in position to perform an engine wash on an A380. (Juniper)*

1744512

There are about 25,000 commercial aircraft, excluding light aircraft, in active operation in the world today. Procedures and processes vary across aircraft types and operating regions, but typically each aircraft is cleaned externally at least four times per year at an estimated minimum cost of USD1,000 each time. Although there are variations in cost and frequency, this indicates an annual expenditure of at least USD100 million, and possibly more (excluding capital expenditure).

In practice, frequency and thoroughness is dictated by factors such as regional variations, flight frequency, technical requirements, and subjective views on the public presentation of the aircraft. There is also the issue of volcanic dust, and for military aircraft, general decontamination and the requirements of stealth skins.

Cleaning represents a significant cost to aircraft operators and so presents an opportunity for technical innovation in a sensitive market, with possible spin-offs into other markets where equipment cleaning is necessary, such as railways and road transport.

### **Three categories**

There are basically three types of cleaning: exterior surfaces, engine, and technical. Cleaning of external surfaces can be done wet or dry, and by hand or machine; engine (compressor) cleaning is usually accomplished by specially designed machines that are temporarily attached to the engine intake; and technical cleaning is achieved with a handheld spray directed at specific sections of the aircraft as required by the engineering staff, often combined with airframe cleaning.

All airframe external cleaning is often done by hand, but machines can also do the job. One example is the Nordic Dino series, manufactured in Sweden by Aviator AB. Dino is a self-propelled computerised system, with a spraying system and rotating brushes. Currently, Dino can only work as a wet wash system. “Dry cleaning is a very labour-intensive method and we are looking at different brands of dry cleaner which could be used with a rotating system” said Jan Brunstedt, CEO of parent company Aviator Robotics. “At present, we still have most requirements for water wash, but particularly in regions where water is short, dry wash is growing. New paint systems and fuel savings is generating demand.”

The military market, he added, “is growing due to the introduction of anti-radar paint and carbon fibre surfaces that need cleanliness for crack detection”. The Dino sells for USD500,000–600,000 per unit.

Another mechanised system of wet cleaning the airframe uses a modified aircraft de-icer. Typically, the anti-icing tank is filled with detergent or other cleaning fluids, which is injected into the hot water spray nozzle. This method has the advantage of using a basically standard piece of equipment that is built in greater quantities and is more widely available than the rotating brush alternative.

Yet another effective method applies detergent with a foam applicator. It is claimed that this provides a better cleaning capability, dries on the aircraft skin slower, and penetrates further into the skin. This not only cleans more effectively, but also enables better corrosion protection, if the right product is used. However, foam is more prone to being blown around in the wind than a water mixture and this has deterred some operators from using it. One of the possible disadvantages of the dry wash system is that it can increase the risk of corrosion.

**[Continued in full version...]**

(603 of 1866 words)

For the full version and more content:

## **Jane's Airport Review**

**The industry leading source for global developments in aviation security and air traffic control**

[Subscribe to Jane's Airport Review for access to the latest news, analysis and data:  
http://magazines.ihs.com/](http://magazines.ihs.com/)

For advertising solutions visit [Jane's Advertising](#)