

# Permagard Aviation Services





## Exterior Protection Services

The Permagard coating systems are specifically designed and developed to protect all types of aircraft paint subjected to unique variants in operating environments and under the harshest of climates.

Permagard coatings have been successfully, tested and used on aircraft operating in freezing temperatures of Norway as well as the damaging ultraviolet rays and heat of Australia.

Permagard's reactive polymer technology is trusted to protect some of the world's most expensive painted surfaces.

### Asset Protection

Permagard's sophisticated Reactive Polymer and UV filtering technology protects aircraft paint against fading and oxidation thereby maintaining the paint's original aesthetic brilliance.

### Brand Protection & Reduction In Downtime

Permagard's unique polymer gloss spectrum ingredients react with the painted surface to produce an incredibly high gloss, low friction permanent coating. This protective coating dramatically reduces cleaning time and costs, by reducing the frequency and ground time required for washes.

### Performance Enhancement

Permagard has been proven to reduce parasitic drag on business jets, thereby reducing engine cruise power settings, ultimately saving fuel.

### Environment

Once applied, Permagard can be maintained without the use of harsh cleaning chemicals which damage aviation paints, as well as being detrimental to the environment. Permagard is a non-toxic, environmentally friendly solution to cleaning your aircraft.

## Testimonials:

By extending the life of the paintwork and reducing exterior cleaning time, Permagard can defer major repainting and increase the time our aircraft are in the air.

— **COO, Virgin Blue Airlines**

By reducing drag Permagard have proved a fuel saving of 3% which is considerable.

— **Chief Pilot, News Limited, Gulfstream IV**

Time is critical to us, Permagard saves us a lot of time on the ground cleaning our helicopters...time saves lives...

— **Norwegian Air force, Air Sea Rescue**

Using Permagard saved us repainting our fleet of 11 ATR 72 500's

— **Chief Maintenance Manager, Air New Zealand**





## Cabin Maintenance Services

At Permagard we completely understand the investment put into any size fleet of aircraft, the importance of having a pristine aircraft and the high standards required for both the airline and passengers. We have developed a range of services to not only clean and maintain your crafts, but also offer ongoing protection and hygiene for staff and passengers. Our maintenance services encompass:

- Leather repairs/redye
- Leather cleaning and protection
- Seat repairs
- Spot and stain removal
- Carpet Change

### Cabin Deep Cleaning

Permagard provide an intensive and comprehensive deep clean for our customers. For ongoing protection our Antimicrobial Shield can now offer long lasting surface protection and hygiene.

Permagard's Antimicrobial Shield treatment utilises the latest virus and germ killing Lysis Technology that is so effective in laboratory tests, in most cases it kills 100% of viruses and germ pathogens instantly on contact.

### Cabin and hold Disinsections

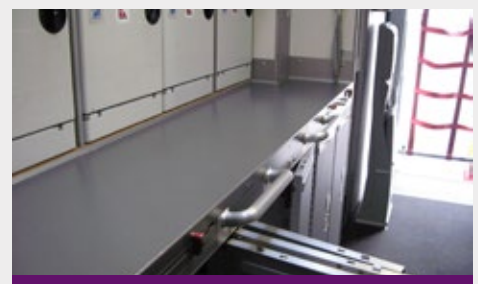
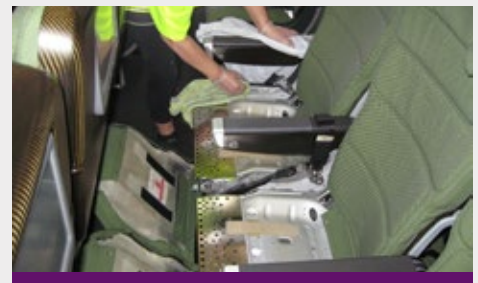
Permagard Aviation is approved by the Department of Agriculture for aircraft disinsections and as part of the interior deep clean program.

Permagard will provide this service in accordance to the Department of Agriculture's guidelines.

### Disinsection Certificates

Permagard provides an automated lodgement and electronic certificate process which is approved by the DOA.

CASA part 145  
approved organisation





## Lufthansa Technik Cyclean® Engine Wash

145 Aviation Services is Permagard Aviation's CASA approved part 145 maintenance organisation specialising in Engine Compressor Washes utilising Lufthansa Technik's revolutionary Cyclean® Engine Wash Technology.

Cyclean® units are already in operation in over 20 countries worldwide with over 40,000 successful washes performed to date. The unique design allows operators to clean their engines quickly and efficiently without the need to blank engine bleed and sense lines.

In addition, there is no requirement to perform post wash engine runs which provides significant savings in fuel and maintenance costs for the operator.

### The Cyclean® technology

Contrary to conventional engine wash methods which use large amounts of water, Cyclean® utilises a dual nozzle 360° arrangement which sprays pre-heated water (to 70°C (160°F) at 65 bar (943 psi) directly into the core engine.

This provides a fine, evenly distributed amount of atomised water through the engine's gas path. The amount of water injected is optimised for each engine type. This ensures efficient cleaning of the compressor and at the same time minimises the amount of residual water remaining within the engine.

The advanced equipment ensures easy preparation and short washing times without the need to perform costly post engine wash runs.

Cleaner engines run at lower temperatures needing less fuel and therefore emit less CO2 and other harmful greenhouse gases.

The improved overall performance achieved saves real money on MRO expenses during the engine's life cycle. In addition, using Cyclean® for your engine washes reduces workload, avoids costly and time consuming towing (engine washes can be performed directly at the gate) and yields less waste water.

Thanks to the significantly reduced amount of water and its high precision, pinpoint injection, run-ups become obsolete which allows greater flexibility and more opportunities to perform the engine washes.

### Advantages:

- EGT margin improvement up to 20°C (36° F)
- Fuel flow reduction up to 1% (Maintenance costs decrease due to higher on-wing time)
- Greenhouse gas emission reduction
- AMM or a faster, customised EO Procedure for Engine Washes
- No post wash run-ups required
- Overall service time for each engine is less than one hour (using our faster, customised EO procedure).
- Human error reduction due to the precise programming of the Cyclean® unit designed to cater for the specific engine types selected.

**The approval includes but is not limited to the following engine types:**



- V2500-A1
- V2500-A5



- CF34-3 /-8 /-10
- CF6-50
- CF6-80C2 /-E1 /-A2
- GE90-110 /-115
- GEnx-2B



- CFM56-5A /-5B
- CFM56-5C
- CFM56-3 /-7



- RB211-535 /-524
- AE3007
- BR700 / 715
- Trent 500 / 700 / 800 / 900 / 1000 / XWB



- PW4000-94" /-100" /-112"
- PW2000
- PW120 Series; PW150
- PT6



# Permagard Aviation Services

## 1. Interior Maintenance

- Plastic repairs on seats, sidewalls, linings, OH bins, monuments etc.
- Replaceable items such as carpets, gallery filters, ovens, seats and their components, soft furnishings etc.

## 2. Cabin/Flight Deck Cleaning and Rejuvenation

- Cabin deep clean, including associated access requiring certification
- Carpet cleaning
- Leather cleaning and protection
- Spot and Stain Removal

## 3. Hygiene and Infestation Control

- Residual disinsections and DAFF certificate management (AUS)
- Antimicrobial coatings
- Odour control
- Pest control - Cockroach baits, Bed bugs
- Biohazard cleaning

## 4. Cabin Appearance and Compliance Management

- Cabin surveys and defect management
- Cabin condition monitoring software
- Cabin component compliance through RFID technology

## 5. Exterior Appearance and Management

- Paint rejuvenation and protection using the latest reactive polymer technology
- Dry wash for proven cost savings
- Wet wash with portable water reclamation to meet our environment obligations without moving the aircraft to a wash bay

## 6. Engine Wash

- Cyclean technology with no invasive maintenance procedure or engine run post wash
- CASA approved SB's

Now you can have the more technical elements of ground services performed and certified by an organisation with a Part 145 quality system, culture and asset management appreciation without paying the full price of a dedicated AMO.

### PERMAGARD

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CASA part 145 approved organisation