



surface
treatment

aerospace coatings



supply chain excellence: a perfect fit and reliable.

The aerospace industry relies on high performance suppliers who implement time sensitive, complex processes with highest diligence. That is what Aalberts surface treatment stands for. Aalberts surface treatment, with 56 of their own plants in Europe, Asia and the USA, is the surface engineering specialist within the global player Aalberts (more than 16,000 employees, 154 plants in 21 countries). Aalberts surface treatment is a quality service provider for highly functional finishing of components and component groups that are used worldwide by leading manufacturers in their aircraft, helicopters, satellites, rockets and space stations.

a strong global network

56 locations in Europe, Asia and the USA



on time delivery (OTD) with the highest quality

Timely delivery and high quality standards are crucial parameters in aerospace. Aalberts surface treatment takes these challenges into account on a daily basis. System and process availability are precisely coordinated to actual projects and our specialists operate with a keen eye on the quality of the functional finishing. Aalberts surface treatment maintains a constant and reproducible finishing quality at the highest level. Automated operational procedures and certified quality management systems ensure the greatest possible reliability and exact surface qualities. Application-specific and cost-optimized coating solutions are implemented with a comprehensive range of patented and proprietary coating processes.

think global – best practice local

high quality standards in all plants

Together we are strong: more than 3,000 highly qualified specialists, certified and seamlessly documented production processes, modern systems technology, technological development partnerships and, not least, on time delivery (OTD) for our market partners' optimal production scheduling.

we support you on important issues such as:

- Coatings and processes for aerospace structural components: engines, fuselage components, wings and landing gears
- Functional security under extreme temperature fluctuations, climatic stresses, UV radiation
- High performance space-flight coatings
- Innovative coatings for aerospace
- Coatings and processes for new high-tech materials and composite materials

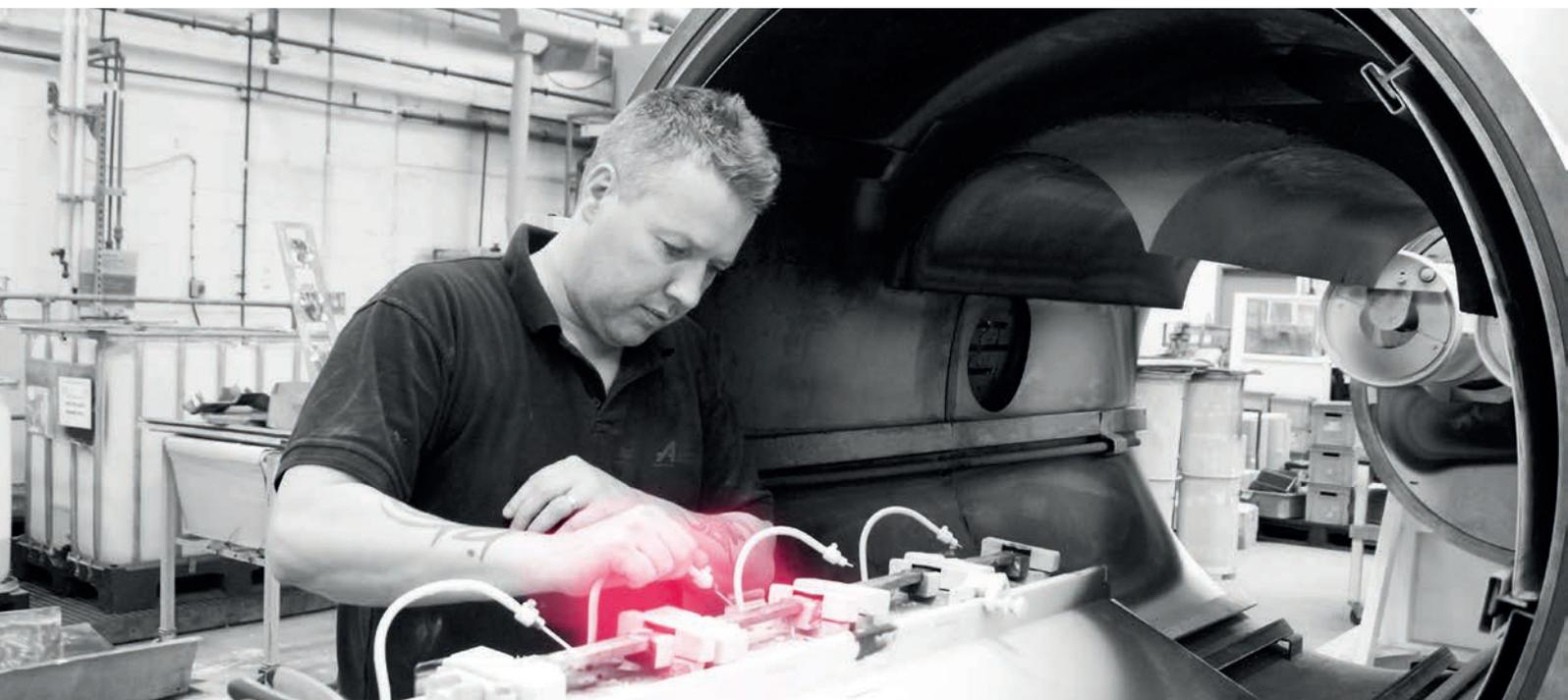


certifications

- Nadcap, in accordance with SAE Aerospace Standard AC7108 Chemical Processing
- Nadcap, in accordance with SAE Aerospace Standard AC714 Non Destructive Testing
- AS 9100D
- IATF 16949:2016
- ISO 14001:2015
- ISO 9001:2015
- ISO 50001:2011

processes (a summary)

- Hard anodizing (HSA)
- Sulphuric acid anodizing (SAA)
- Chromic acid anodizing (CAA)
- Tartaric / sulphuric acid anodizing (TSA)
(with good paint adhesion properties)
- Chromium-free passivation of aluminum and magnesium
- Electroless nickel plating
- Anti-friction coating
- IVD aluminum vacuum coating
(a replacement for cadmium treatment of steel and titanium components)



The IVD aluminum coating process avoids the environmental impact of traditional cadmium plating, and is a realistic alternative in most applications.

experienced. vigilant. jointly meticulous.

Transparent communication is an integral element of daily workflows at Aalberts surface treatment. Starting with expert consultation well before the project begins, through sample coatings, seamlessly documented production at the highest level, right through to rigorous quality assurance. Aalberts surface treatment has its own manufacturer of electrolytes. As a result, processes can be extremely rapidly adjusted to the smallest detail.

a selection of aerospace industry references

- AGUSTA WESTLAND
- AIRBUS GROUP
- BOEING
- BOMBARDIER
- COBHAM
- DASSAULT AVIATION
- EMBRAER
- GOODRICH
- HAWKER BEECHCRAFT
- HONEYWELL
- LIEBHERR AEROSPACE
- MOOG AEROSPACE
- NASA
- PRATT & WHITNEY
- RATIER FIGEAC
- RAYTHEON
- ROLLS ROYCE
- SAFRAN
- SPIRIT AEROSYSTEMS
- THALES
- ZODIAC AEROSPACE

applications

Aalberts surface treatment coats, for example:

- Components for complete systems in the cargo loading area on passenger and cargo aircraft (conversion systems, cargo loading systems, on-board baggage handling systems, spare parts)
- Robust and corrosion-resistant loading systems for helicopters
- Rails for folding tables and seats with anti-friction coating
- Press fit bushes for many applications, including landing gear, nacelles

applications



process steps

- non-destructive testing
- chromic acid anodizing
- flaw detection
- wax masking
- **HART-COAT®** on contact interfaces
- chromic acid anodizing on bonding parts
- fluid resistant coating

Complex applications require a combination of different procedures, as can be seen in the example of an aircraft wing stabilizer.



This check valve coated with **PTFE-DURNI-DISP** controls the supply of liquid helium. The coating offers very good adhesive wear resistance and outstanding dry running characteristics. It is heat-proof with excellent anti-friction and anti-adhesive properties and furthermore displays good corrosion resistance in combination with an intermediate layer. The dispersion layer combines valuable properties of **Electroless Nickel DURNI-COAT®** processing with the benefits of the fluoroplastic PTFE.



The airborne Stratospheric Observatory for Infrared Astronomy (SOFIA), jointly implemented by NASA and the German Aerospace Centre (DLR), made it possible for astronomers to observe the sky in the infrared wavelength range. This provides scientists with valuable data on the formation and evolution of stars and solar systems. Titanium fittings and titanium pins are located near the infrared beam path on the telescope structure. To minimize light scatter, they are provided with a deep black, light resistant, **oxide ceramic coating (KEPLA-COAT® black)**.



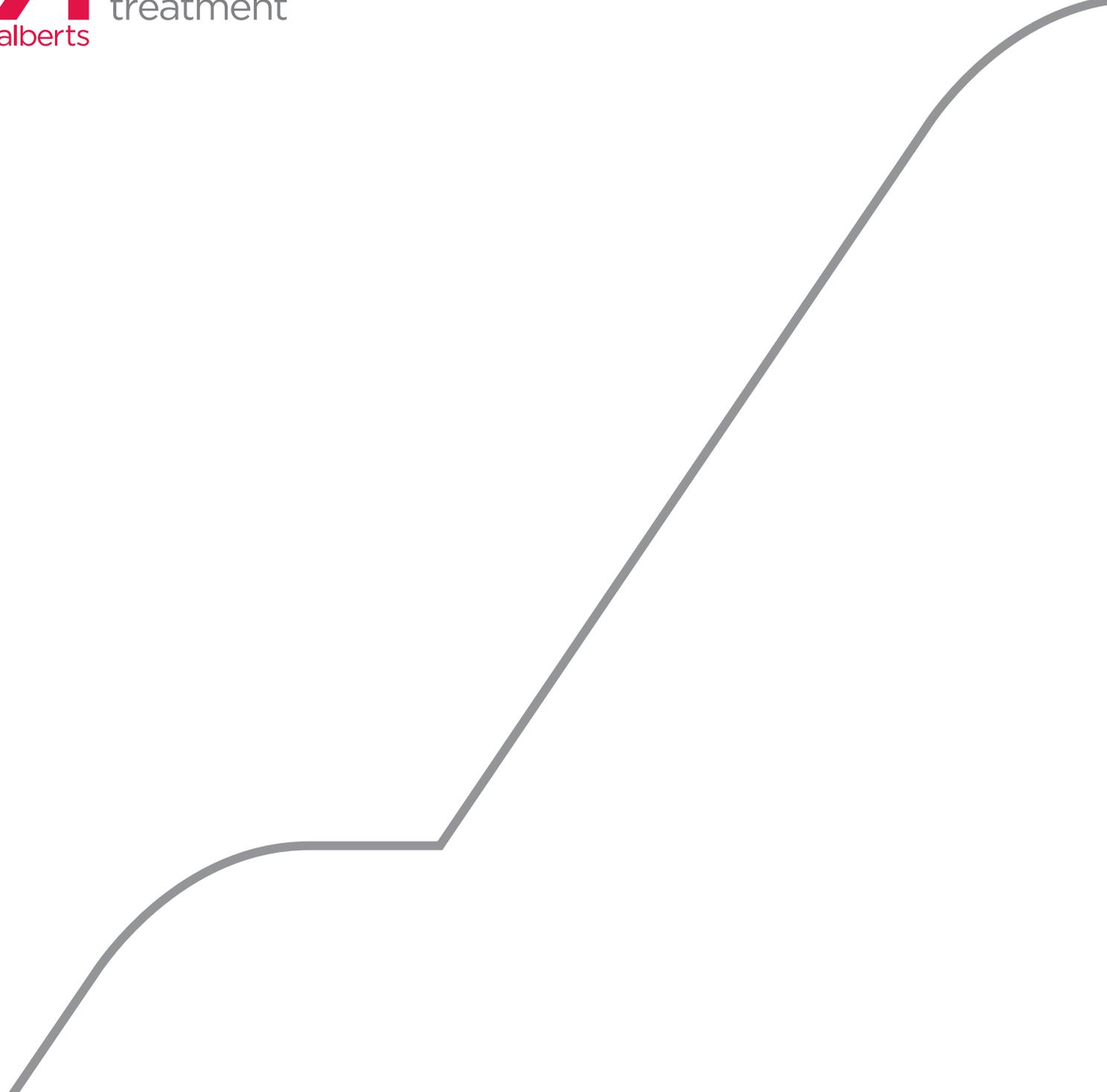
B/E Aerospace Fischer GmbH is a world leader in the sector of crash proof and extremely lightweight helicopter seats. They comply with the highest international standards and in the required stress tests even withstand a vertical application of force of 30 g (!). The company counts on Aalberts surface treatment's **hard anodizing (HART-COAT®)** for the coating of aluminum structural parts for the substructure.



IVD aluminum vacuum coating offers good corrosion protection even at high temperatures. The coating can serve to prevent bimetallic or galvanic corrosion. The corrosion resistance can be increased in all cases by a subsequent chemical conversion coating. Another big advantage of IVD aluminum vacuum coating is that it can be painted with very little surface pretreatment. The surface is suitable for many paints, including commonly prescribed liquid-tight epoxy resin-based primers and dry film lubricants. IVD aluminum vacuum coating is primarily used in the aerospace and defense industries. The process is certified for NADCAP and for a number of large aerospace companies including Airbus, Boeing, Bombardier, Leonardo, Safran and United Technologies. The components that are coated for these end users can vary in size and complexity to a surprising extent, from small fasteners to larger components such as airframe components.



With our various **DLC (Diamond Like Carbon)** coating variants, manufactured using both PVD and PACVD, friction coefficients of $\mu < 0.1$ can be achieved towards steel. With a special DLC variant helicopter drive components are coated, in order to get low-friction wear protection.



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