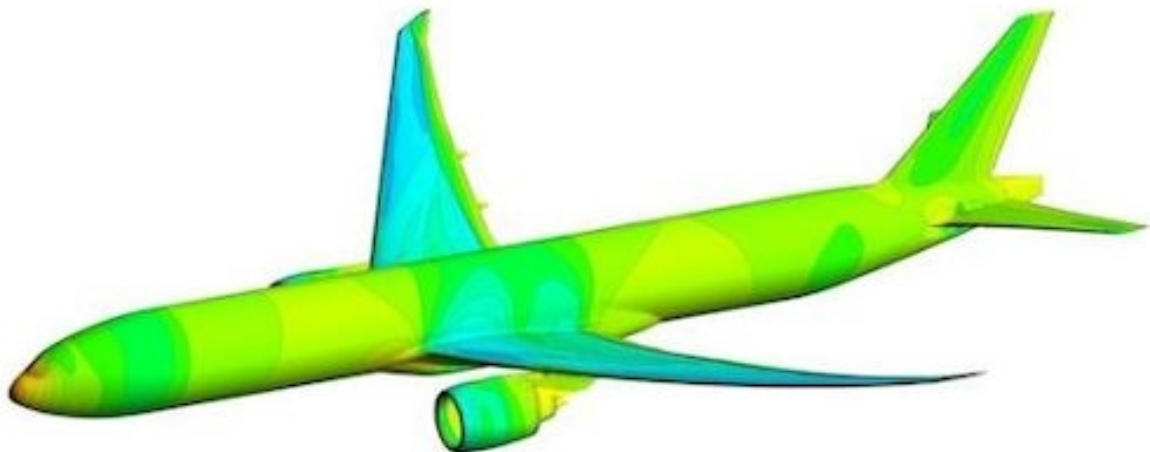




# LUFTHANSA TECHNIK USES ANSYS TO DEVELOP AND CERTIFY AEROSHARK FOR MORE SUSTAINABLE AVIATION

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Lufthansa Technik integrates Ansys' simulation solutions to design and certify AeroSHARK, a biomimetic coating technology that emulates shark skin and significantly reduces fuel consumption and CO2 emissions. By leveraging Ansys' computational fluid dynamics and high-performance computing technology, Lufthansa Technik and BASF designed the coating film with a subtle ribbed texture consisting of small elevations referred to as riblets. The riblet effect imitates the placoid scales on shark skin, which help sharks cut through water effortlessly by reducing drag and friction while increasing buoyancy. Engineers used Ansys' CFD to analyze turbulent flow phenomena surrounding the riblets to ensure they would generate the same effect.

Lufthansa Technik used Ansys' tools to build and validate smaller, more generic virtual prototypes

of AeroSHARK before scaling and tailoring the prototypes through comprehensive aerodynamic simulations. With the ability to simulate the entire aircraft, including in-flight behavior, and verify the riblet effect using innovative turbulence modeling, Lufthansa Technik reduced the risk of physical flight tests and drastically reduced the time to certification.

AeroSHARK is certified by EASA and FAA for two types of Boeing 777s and is currently operating in flight by SWISS)and Lufthansa Cargo. Once all eleven Boeing 777Fs at Lufthansa Cargo and all twelve 777-300ERs at SWISS have received their AeroSHARK modification, they will reduce the Lufthansa Group's carbon footprint by more than 25,000 tons annually.

Stefan Kuntzagk, senior engineer, aircraft performance, CFD, and flight test at Lufthansa Technik, commented: "AeroSHARK can significantly contribute to more sustainable air transport. With the ability to model aircraft and aerodynamic behavior in a predictively accurate, robust, and computationally efficient manner by using Ansys' simulation solutions, we can enhance and expand our shark-inspired technology to make entire subfleets more climate-friendly, reduce fuel consumption, and decrease CO<sub>2</sub> emissions for commercial aircraft."

Walt Hearn, senior vice president of worldwide sales and customer excellence at Ansys, said: "We are constantly amazed by the creativity of our customers, and Lufthansa Technik has elicited the same reaction with its trailblazing AeroSHARK coating technology, which has the potential to significantly reduce fuel consumption and CO<sub>2</sub> emissions. Our customers continue to demonstrate what is possible when Ansys' simulation solutions are combined with ingenuity and vision. As more sustainable propulsion systems are still being researched and tested, innovations like AeroSHARK are pivotal in the immediate reduction of aviation's carbon footprint."

Today, because of successful simulation-powered testing, 40% of the aircraft can already be covered by AeroSHARK with plans to extend its coverage to other areas of the plane.

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