



## Lufthansa Technik Uses Ansys to Develop and Certify AeroSHARK Technology for More Sustainable Aviation

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*Lufthansa Technik uses Ansys' simulation solutions to create and validate an aircraft coating technology inspired by shark skin that significantly reduces drag, fuel consumption, and CO<sub>2</sub> emissions*

### / Key Highlights

- Lufthansa Technik integrates Ansys' simulation solutions to develop and verify AeroSHARK, an innovative aircraft coating technology that imitates the characteristics of shark skin to reduce aircraft drag and friction
- By simulating the entire aircraft using Ansys software, Lufthansa Technik was able to de-risk the technology for flight testing and drastically reduce time to certification

PITTSBURGH, June 6, 2023 /PRNewswire/ -- Lufthansa Technik, one of the world's leading providers of technical aircraft services, integrates [Ansys'](#) (NASDAQ: ANSS) simulation solutions to design and certify AeroSHARK, a biomimetic coating technology that emulates shark skin and significantly reduces fuel consumption and carbon dioxide (CO<sub>2</sub>) emissions.



By leveraging Ansys' computational fluid dynamics (CFD) and high-performance computing (HPC) technology, Lufthansa Technik and BASF, a chemical company, 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 the European Union Aviation Safety Agency (EASA) and the American Federal Aviation Authority (FAA) for two types of Boeing 777s and is currently operating in flight by Swiss International Air Lines (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.

"AeroSHARK can significantly contribute to more sustainable air transport," said Stefan Kuntzagk, senior engineer, aircraft performance, CFD, and flight test at Lufthansa Technik. "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."

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.

"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," said Walt Hearn, senior vice president of worldwide sales and customer excellence at Ansys. "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."

Visit [Ansys at the 2023 Paris Air Show](#) in France from June 19-25 to learn more about simulation's impact in the aviation industry.

### / About Ansys

When visionary companies need to know how their world-changing ideas will perform, they close the gap between design and reality with Ansys simulation. For more than 50 years, Ansys software has enabled innovators across industries to push boundaries by using the predictive power of simulation. From sustainable transportation to advanced semiconductors, from satellite systems to life-saving medical devices, the next great leaps in human advancement will be powered by Ansys.

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