LUFTHANSA TECHNIK: A SHARK LEARNS TO FLY

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Lufthansa Technik AG and its partners have succeeded in developing a guidance system for the automated application of multifunctional surface structures. This will make it possible in the future to coat large surfaces of an aircraft with a low-drag sharkskin structure. For the time being, the structure will be applied to the upper side of the wings and the upper and lower sides of the horizontal stabilizer only. Other application surfaces, especially on the fuselage, are expected to follow.

Earlier research conducted by Lufthansa Technik already confirmed the long durability and high benefit of this type of structure. In the process, the company was able to develop new coatings and demonstrate the stability of the riblet or sharkskin structure under real flight conditions. Thanks to the results of the "FAMOS" research project, the structure can now be applied automatically with the help of a guidance system.

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For this purpose, the coating is first applied to a UV-transparent mold (matrix) comprising the negative of the riblets' shape. The negative mold is pressed into the fresh coating, which is simultaneously hardened through UV light. When the negative mold is removed, the positive of the sharkskin remains on the surface. The matrix can also take the form of an endless belt, thus making an automated process possible.

"Our research has shown that we can reduce drag by five to eight percent despite a small amount of wear of the microstructures. This means airline operators would not only benefit from fuel savings of around one and a half percent, but would also be able to reduce the exhaust emissions of their fleets by a corresponding amount," said project manager Dr. Mathias Nolte.

If the process of industrialization and transition into production begins in the coming months, the automated coating of aircraft with drag-reducing sharkskin could become reality as early as 2019.

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