The shark skin inspired technology improves efficiency by reducing drag | Photo source Lufthansa

'SHARKSKIN' TECHNOLOGY REDUCES AEROPLANE EMISSIONS

A thin film on the plane's surfaces reduces drag while adding very little weight

Spotted: Known for their speed underwater, sharks are some of the ocean's great hunters. Their smooth-looking, flexible skin consists of millions of tiny, overlapping scales that reduce drag. Working with chemical manufacturer BASF, Lufthansa Technik has created the AeroSHARK film for aeroplanes. The film is flexible, lightweight and consists of prism-shaped elevations 50 micrometres high. The elevations, called riblets, act like the shark's scales, providing lift while reducing friction.

Less friction helps a plane fly more efficiently, thereby reducing carbon emissions and the amount of fuel used on each flight. The biomimetic film can be cut to size and, due to its suppleness, applied in a variety of shapes. Tested in real flight conditions, the film withstands huge variations in temperature and air pressure and a mix of weather elements.

The developers expect an application of the film to last for up to four years with minimal to no maintenance required. Retrofitting older planes is easy to do and does not take extensive time on the ground to complete. Lufthansa Cargo's fleet of Boeing 777F planes will begin being outfitted with the technology in the first half of 2022. With the fuselages and bellies of the 10 freight planes covered in the film, the company hopes to reduce emissions by more than 11,000 tonnes in a year.

International airline Swiss is also convinced by the technology, recently announcing that it will be using the film on all of its Boeing 777s.

Turning commercial aviation into a zero-emission mode of transport looks like less of an impossibility as innovators continue to develop new types of green power and new means of reducing pollution. Springwise spotted a sustainable aviation fuel made from cooking oil, fats and plant compounds, and a single-person electric plane is due to start travel sometime in 2022.
**Takeaway:**

The aviation industry is continuously working to improve fuel efficiency – with significant success to date. Less fuel consumption means fewer carbon emissions per flight, and a flight today generates just 50 per cent of the CO2 compared to the same flight back in 1990. So far efficiency improvements have been delivered without changing aviation fuel. Successful measures include making planes lighter, changing how planes are flown, and making changes to aircraft design, such as the addition of wingtip devices. The new shark skin technology fits in this tradition of incremental improvement. But to really move the dial and make aviation truly sustainable, more fundamental changes in how planes are powered will be needed. Potential options including sustainable aviation fuel and electric power.