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"To save fuel you either cut weight, improve the aerodynamics or raise engine efficiency"

FRANZ-JOSEF KIRSCHFINK
Technology projects director, Lufthansa Technik

Lufthansa is investing in fuel-saving technologies, not only to cut its kerosene bill but also to position the group favourably for future aircraft support business opportunities.

The German flag carrier will be the first airline to test the pilot-controlled tow-tractor Taxibot for scheduled aircraft operations at Frankfurt this year. The semi-robotic tug, developed by Israel Aerospace Industries, will be used to move the airline's departing Boeing 737s from the ramp to the runway to avoid using the main engines for regular taxiing.

"Lufthansa is always up there when it comes to innovation," said one judge.

The objective of the six-month Taxibot trial is to evaluate its practicality in daily operations at a major airport, as well as actual fuel savings, says Franz-Josef Kirschfink, technology projects director at Lufthansa Technik (LHT). Three tugs will be deployed by the airline's ground-handling arm from August.

Taxibot lifts up the nose landing gear like a conventional tow-tractor. However, the aircraft's wheels stand on a rotating platform, which allows free nose-gear steering movement and translates the pilot's control inputs – via the nose wheel tiller in the cockpit – into directional inputs for the tug. The pilots stop and control the taxiing speed with the aircraft's wheel brakes.

However, Lufthansa also wants to be involved in the development of an aircraft-mounted electric wheel drive system and tested a demonstrator on an Airbus A320 in Frankfurt in December 2011.

The non-flyable equipment was assembled from off-the-shelf components to assess ground handling and gather specification data for the planned prototype development by US system suppliers L-3 Communications and Crane Aerospace. LHT wanted to become a partner to contribute its parent carrier's operational expertise and retrofit existing aircraft with the electric taxiing system.

But L-3 and Crane have called off their joint development, considering the necessary investment too high. Now the rival electric main wheel drive mechanism by Honeywell/Safran and WheelTug's electric nose wheel motors are the only aircraft-mounted "green taxiing" systems in development.

LHT is holding co-operation talks with the respective system suppliers about being a partner.

To improve fuel efficiency in flight, Lufthansa is testing aircraft paint with a sharkskin-inspired riblet texture on two Airbus A340-300s. Eight 10 x 10cm (4 x 4in) test patches have been placed on the fuselage and wings of each aircraft to assess the coating's durability in regular flight operations.

Germany's Fraunhofer research institute – with technology project leader Airbus and coating supplier Mankiewicz – has invented a process whereby a dirt-repellent texture is imprinted into the surface during painting. The A340 trial was originally planned to last a year but has been extended by another 12 months after the paint showed "very positive" durability characteristics, says Kirschfink.

"There are essentially three ways of saving fuel. You either cut weight, improve the aerodynamics or raise engine efficiency," says Kirschfink. "We try to work on all three areas."

MICHAEL GUBISCH


Lufthansa

Franz-Josef Kirschfink

PAST WINNERS

2012 Cathay Pacific | **2011** Qantas | **2010** Emirates | **2009** Air New Zealand | **2008** Scandinavian Airlines | **2007** Royal Jordanian
2006 All Nippon Airways | **2005** IATA | **2004** British Airways | **2003** Alaska Airlines | **2002** Finnair