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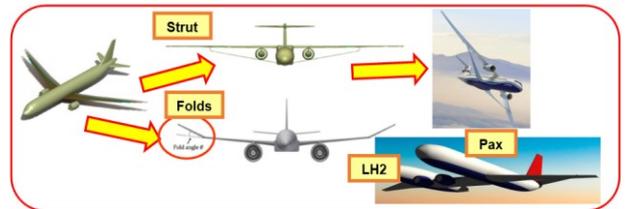
# The Drive for Sustainability Inspires Unconventional Thinking on New Aircraft Designs

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**Date:** Thursday 23 May 2024, 18:00

**Location:** HAW Hamburg, Berliner Tor 5, Hörsaal 01.10

With growing realisation of environmental issues and sustainability, we need to minimise reliance on fossil fuels. A “realistic” vision of aircraft development scenario for 2050 and beyond is imagined to be four-fold: battery-electric for very short ranges, hybrid - hydrogen fuel cells for short ranges, Liquid Hydrogen (LH2) for the medium ranges, and Sustainable Aviation Fuel (SAF) for the longer ranges with air-to-air refueling and formation flying.



For improving flight efficiency of airliners, ideas are towards increasing the wing aspect ratio to 14 and beyond, overcoming the adverse structural effects. Strut or truss braced wings are being considered as in the NASA X-66. Another unconventional idea is to use flared folding wingtips that cope with gusts. Such ideas will be discussed.

Using LH2 fuel requires a great deal of unconventional thinking. LH2 being (a) cryogenic with low energy density and (b) potentially explosive, presents a challenge for designing a safe, efficient, and certifiable aircraft. The overarching constraint is that the LH2 fuel system must be segregated from the passengers – no obstruction of exits and compliant with emergency landing requirements.

*Dr Raj Nangia graduated from University of London with BSc and PhD in Aeronautical Engineering and has worked on several UK and International aircraft projects: Hawker Siddeley Gnat Trainer, Hawk, Concorde, Harrier, & ASTOVL Developments, EAP, Typhoon, Advanced SST, Blended Wing bodies, Civil & Military Intake Developments, HALE & UCAV's and currently Tempest.*

*He has published 150+ papers & presentations, several with international authors at international aerospace conferences.*

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