



FUTURE OF AVIATION WITH SUCCESSFUL NET-ZERO FLIGHT - ETIHAD AIRWAYS & WORLD ENERGY

News / Airlines



Etihad Airways in partnership with World Energy operated the first net-zero flight that is powered entirely by Sustainable Aviation Fuel Book & Claim and direct emission reductions. The service was also the first transatlantic flight operated by Etihad to use contrail-reducing technology supplied by SATAVIA. Using a combination of sustainable aviation fuel and operational efficiencies, the net-zero flight reduced CO2 emissions by 250 metric tonnes. This was achieved by displacing approximately 26,000 gallons of petroleum-based jet fuel through the use of net-zero equivalent gallons of World Energy's SAF at Los Angeles International Airport.

The Washington Dulles to Abu Dhabi service was originally intended to fly with a physical blend of SAF and Jet-A1 fuel via Sharm El Sheikh to deliver delegates to COP27. However, the challenges inherent in current global SAF regulations, policy, infrastructure, and supply made this ambition

contradictory and would have significantly reduced the climate benefits.

The key challenges to overcome were the cost, availability, and access to SAF, which current infrastructure and delivery capabilities would have required transporting the fuel from California to Washington D.C. via tanker, at an additional carbon and financial cost. Moreover, SAF can be blended with conventional jet fuel only up to 50 percent, meaning that today's only option to address the remaining 50 percent as well as any residual emissions is through a Book & Claim system.

The flight achieved Etihad and World Energy's objective to demonstrate that net-zero aviation is possible using SAF Book & Claim and government subsidies as well as other financial offsets, as a stopgap solution until the supply, cost and global infrastructure for SAF delivery is available.

Mariam Alqubaisi, Head of Sustainability & Business Excellence, Etihad Airways, commented : "This flight has proved Book & Claim is the only feasible path to net-zero commercial aviation using current technology, and is the transition framework required until the supply of sustainable aviation fuel reaches its maturity and availability. Net-zero commercial aviation is possible, but we have to be honest as an industry and say there are significant logistical challenges to using SAF at present. We are committed to making good our commitment to sustainable aviation, and our Greenliner and Sustainable50 partnership programs continue to test and refine our roadmap to achieving net zero emissions by 2050 and halving net emission levels by 2035. Our latest flight further validates our commitment, but equally shines a light on how much further we all need to go."

Gene Gebolys, CEO, World Energy, said: "We are making long-term commitments with leaders to decarbonize transport. Our work with Etihad is strategic and rooted in purpose. It will drive innovation and accountability so we can scale sustainable fuels and make a real and impactful reduction toward effectively decarbonizing aviation."

Laia Barbarà, Lead, Aviation Decarbonization, World Economic Forum, said: "The Etihad and World Energy net-zero flight is an exciting example of industry action applying concepts from the Clean Skies for Tomorrow coalition, like the SAF certificate (SAFc) program. SAFc makes net-zero aviation possible today, flying on sustainable aviation fuels."

Through the Book & Claim system, Etihad reached its net-zero goal by purchasing SAF for the flight. However, none of the SAF bought was used by the actual aircraft. The SAF, which Etihad purchased, was delivered by World Energy to LAX, added to the airport's main fuel supply tanks, and sold as conventional jet fuel. The SAF attributes, including its emission reduction claim, are instead registered in the RSB (Roundtable on Sustainable Biomaterials) Book & Claim Registry, following the robust procedures outlined in the RSB Book & Claim Manual[1] – a set of requirements developed in collaboration with global industry and environmental experts that defines how SAF can be transferred via Book & Claim in a credible and robust way that significantly accelerates fossil displacement and sectoral decarbonization. World Energy and Etihad are pilot participants in the RSB Book & Claim program, and the SAF used is also certified against RSB's best-in-class sustainability standard.

Building demand for SAF, which in turn will lower its cost and spur infrastructure investment, will require that Book & Claim is established as an industry standard for voluntary systems such as [Science Based Targets Initiative \(SBTi\)](#). Aviation is a low-margin business with fuel as its biggest cost. Scaling up SAF will require voluntary participation from everybody in the supply chain. The net-zero flight demonstrates that the platform exists for the industry to work toward making SAF viable.

In addition, the service was also the first transatlantic flight operated by Etihad to use contrail-reducing technology supplied by UK-based green aerospace company SATAVIA. Aircraft contrails cause surface warming responsible for up to 60 percent of aviation's overall climate footprint. Until recently, technical challenges made contrail prevention difficult or impossible, but SATAVIA's DECISIONX:NETZERO platform enables flight plan optimization for contrail prevention in addition to post-flight climate impact analysis.

The Book & Claim system is an efficient method to achieve carbon emission reductions in aviation and make meaningful progress toward achieving climate goals. All parties view Book & Claim as a necessary solution to unlock corporate-end-customers who are willing to commit the resources and grow SAF demand, beyond what airlines alone can support financially. SAF is already recognized by [SBTi](#) as a valid action to mitigate aviation emissions. RSB's Book & Claim System will help demonstrate to the voluntary greenhouse gas accounting bodies that the purchase of the SAF via Book & Claim can be done in a robust and credible way that significantly accelerates fossil displacement and sectoral decarbonization.

The net-zero flight is the latest in a series of "EcoFlight" tests since Etihad launched its Greenliner programme in 2020, each one testing and proving a series of concepts.

*The flight is net-zero rather than 'Carbon Neutral' as it is achieving more than offsetting its CO2 emissions. To categorize this flight as net-zero, Etihad is demonstrating the absolute maximal direct emissions reduction operations possible. This includes (but is not limited to):

- Purchasing SAF via Book & Claim to cover the entire flight fuel use, including all residual emissions
- Using its Etihad Greenliner fleet – the Boeing 787 – with competitive fuel efficiency per passenger
- Maximizing and ensuring cargo and passenger load factors to maintain efficiency
- Pre-flight engine wash and aircraft cleaning for aerodynamics and engine efficiency
- Intensive flight planning and direct routing, including continuous descent, reduced auxiliary power unit (APU) burn and single engine taxiing
- Contrail prevention activity with SATAVIA to reduce non-CO2 climate impact
- In-flight service to reduce waste production and Scope 3 waste to CO2 impacts

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