

Sustainability Efforts in Business Aviation

- Aviation accounts for 2.1% of global carbon emissions
- Private jets claim 2% of that total
- This equates to .04% of total global emissions
- Comparatively, road travel creates 10%, forestry 17% and agriculture 14%



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The entire aviation industry has united and committed to half total CO2 emissions by 2050 relative to 2005.



This is being accomplished by:

- Investment in new aircraft technology that includes Sustainable Aviation Fuel (SAF)
- Flying using more efficient operations
- Building and using an efficient infrastructure
- The use of effective global market-based measures

Electric aircraft

OEMs are at the forefront of developing technologies for increasingly efficient wing, rotor, fuselage, systems and engine design as well as innovations like hybrid, electric, and hydrogen-powered aircraft

Vertical Aerospace

The global aerospace and technology company that is pioneering zero-emissions aviation, announced in March 2023 that it continues to progress on its path to certification for the VX4, including securing the first ever Design Organization Approval (DOA) issued to an eVTOL manufacturer by the UK Civil Aviation Authority.



Joby Aviation

For more than a decade, Joby has been developing an all-electric aircraft with zero operating emissions. With less per-passenger energy consumption than market-leading electric cars, the aerial ride-sharing service aims to achieve clean and quiet flight. Certification of the aircraft is underway.

Eviation

Creators of the Eviation Alice, an electric aircraft designed to accommodate nine passengers and two crew members. Currently under development, its construction incorporates 95% composite material, is powered by two electric motors, and has a T-tail. The prototype first flew on 27 September 2022.



Volocopter

Developing urban air mobility solutions with three eVOTL aircraft: the VoloCity air taxi, the VoloRegion long-haul passenger aircraft, and the VoloDrone heavy-lift cargo drone. Volocopter plan to launch commercial flights in Paris by summer 2024.

Pipistrel

The first fully electric aircraft to be type-certified by EASA in July 2020 is the Pipistrel Velis Electro. This battery-powered plane is a small two-seater, intended for training pilots. It produces few emissions and low noise (<60Db).



ZeroAvia

The world's first hydrogen fuel cell-powered flight of a commercial-grade aircraft was achieved by ZeroAvia in September 2020. This technology results not only in true zero-emission flights but also in lower fuel and maintenance costs. ZeroAvia is now expanding its Hydrogen-Electric Aviation Program to a 19-seat aircraft.

ARC Aerosystems

This technology start-up based in the United Kingdom is bringing next-generation passenger and cargo air vehicles to market. ARC's development programs, which range from its C-series unmanned cargo aircraft to the nine-seat Linx P9 vertical take-off and landing passenger aircraft.



Airflow

Currently building an aircraft for middle-mile logistics and passengers which can carry nine passengers or 2,000 pounds of cargo and be staffed and operated by one pilot. Over the next decade, Airflow wants to develop fully autonomous, cargo-carrying vehicles.

Heart Aerospace

Developing a 19-passenger electric aircraft that can travel 250 miles and a backup generator for energy reserve and range extension.



Beta Technologies

The aerospace manufacturer is developing electric vertical take-off and landing (eVTOL) aircraft for the cargo and logistics industry.

Universal Hydrogen

Trying to make a carbon-free future possible by making hydrogen the universal fuel choice. The company developed a modular capsule technology solution for hydrogen transportation to power electric aircrafts.



Wright Electric

Building technology for large commercial airplanes and is developing its flagship electric aircraft. The Wright Spirit will be a zero-emission 100-passenger airplane for one-hour flights, and the Wright 1 will be a 186-seat single-aisle aircraft with an 800-mile range.

Sustainable Aviation Fuel

SAF can reduce current fossil fuel emissions by up to 80%

UAS International Trip Support

Sustainability initiative to encourage operators to make the switch to SAF: UAS will not charge fuel handling fees for those ordering SAF through it.



General Dynamics

The aerospace and defense company has flown more than 1.5 million nautical miles on sustainable fuel while purchasing more than 1.4 million gallons. Recently, it received the National Aeronautic Association's Sustainable Wings certificate for a record-setting trip from Savannah to San Francisco using a 30/70 blend of SAF and conventional Jet-A fuel.



Photo: Rolls-Royce

Rolls Royce and Gulfstream

In December 2022, Rolls-Royce and Gulfstream Aerospace conducted the first original equipment manufacturer test flight of an ultralong-range business jet powered by 100% SAF.

Current Rolls-Royce engines for business jets can operate with 100% SAF

Sustainable Design and Production

More OEMs are taking measures to improve production sustainability such as using clean energy for manufacturing and incorporating sustainably sourced materials into aircraft. R&D innovations are creating more efficient engines and increased aerodynamics.

Bombardier

In 2020, the Global 7500 became the first business jet to complete an Environmental Product Declaration (EPD). EPDs are a fact-based plan addressing the complete life cycle impacts of producing aircraft, including the carbon footprint from suppliers, the materials, and the manufacturing process. The materials used in the Challenger 3500 cabin give customers spec options with recycled and sustainable materials.



Bombardier has committed to a 25% reduction in greenhouse gas, a 20% reduction in energy consumption and a 5% decline in hazardous waste by 2025.

Embraer

In November 2021, Embraer launched Energia, a family of concept aircraft designed to meet its net-zero carbon emissions goal. The four types will seat nine to 50 passengers, with the first models ready between 2030 and 2040. The Energia family will test hybrid-electric propulsion, full electric propulsion, hydrogen-electric propulsion and hybrid SAF/Jet-A turbine propulsion. Embraer is also aiming to make all its aircraft SAF-compatible by the end of the decade.



Embraer is aiming to be carbon neutral by 2040 with 100% use of renewable energy in operations

AMAC Aerospace

This MRO works with suppliers to use recycled materials and natural materials for aircraft interiors.

Textron

As part of its Achieve 2025 Energy Use and Greenhouse Gas Emission plan, Textron Aviation built a 121-turbine, 300-Megawatt Soldier Creek Wind Energy Center in Kansas. This will eliminate 100,000 metric tons of greenhouse gas emissions, previously used for manufacturing and administration, annually.

Gulfstream

Gulfstream has advanced aerodynamics to reduce drag and create more environmentally efficient engines so they can fly faster while offering as much as 32% improvement in fuel efficiency. The next-generation Gulfstream Symmetry Flight Deck harnesses advanced flight deck technology to create improved operational efficiency with fewer go-arounds, less time from power-up and taxi to takeoff, and other flying efficiencies that reduce fuel burn.

Carbon offsetting

Offsetting programs empower operators and individual pilots to offset the impact of their flying by supporting large-scale sustainability initiatives.

4AIR

The first and only rating system focused on comprehensive sustainability in private aviation, 4AIR's General Aviation Program enables private pilots to offset the impact of their own flight activities.

Level 1

Carbon Neutral:

100% offset of an aircraft's carbon dioxide (CO₂) footprint, typically through carbon credits that fund sustainability projects such as solar power.

Level 2

Emissions Neutral:

300% offset of an aircraft's carbon footprint to account not only for CO₂ but also for non-carbon emissions that affect the climate such as soot, water vapor and nitrous oxides.

Level 3

Beyond Neutral:

300% offset and 5% actual reduction in emissions through the additional use of Sustainable Aviation Fuel (SAF) credits.

Level 4

Climate Champion:

A \$2 per metric ton of emissions contribution to the Aviation Climate Fund, which supports advances in sustainable aviation technology, ultimately to achieve a goal of Net Zero Flight – no added emissions from flight activities.

Sino Jet

On 22 April 2022, Sino Jet announced the import of its own Dassault Falcon 7X business jet from France, and "carbon neutrality" was achieved through adopting low-carbon emission initiatives and the offsets of China Certified Emission Reductions (CCER) throughout the entire flight in the aircraft introduction. This is the first carbon neutral flight in China's business aviation history.

Reducing single-use items

VistaJet

Since April 2021, VistaJet has maximized fleet optimization to improve fuel-efficient consumption by 8%; worked to make the adoption of carbon offsetting by VistaJet Members grow to over 85%; ensured single-use items are kept to a bare minimum, having achieved an over 90% reduction in their use.

VistaJet has pledged to be carbon neutral by 2025

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