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## **Boom Supersonic and Rolls-Royce Agree on New Collaboration for Supersonic Overture Engine Program Design**

### **Engine Studies Advance Program Development and Focus on Sustainability**

DENVER, Colorado – July 30, 2020 – [Boom Supersonic](#), an aerospace company building the world's fastest civil aircraft, and leading industrial technology company, [Rolls-Royce](#), today announced an engagement agreement to explore the pairing of a Rolls-Royce propulsion system with Boom's flagship supersonic passenger aircraft, Overture.

The goal of the new agreement is to work together to identify the propulsion system that would complement Boom's Overture airframe. The engagement will involve teams from Boom and Rolls-Royce collaborating in engine-airframe matching activities for Boom's flagship supersonic passenger aircraft, Overture. The teams will also examine certain key aspects of the propulsion system. The teams will investigate whether an existing engine architecture can be adapted for supersonic flight, while Boom's internal team continues to develop the airframe configuration.

"We've had a series of valuable collaborations and co-locations with Rolls-Royce over the past years to lay the groundwork for this next phase of development," said Blake Scholl, Boom founder and CEO. "We look forward to building on the progress and rapport that we've already built with our collaboration as we work to refine Overture's design and bring sustainable supersonic transport to passenger travel."

The priorities of this engagement are informed by Boom and Rolls-Royce's shared commitment to sustainability. Both companies recognize that supersonic passenger travel has to be compatible with a net-zero carbon future, and the two teams will work together to address sustainability in Overture design and operations. Overcoming the technological challenges of supersonic flight provides a unique opportunity to accelerate innovation sustainably.

"We share a strong interest in supersonic flight and in sustainability strategies for aviation with Boom," said Simon Carlisle, Director of Strategy, Rolls-Royce. "We're now building on our valuable experience in this space as well as our previous work together to further match and refine our engine technology for Boom's Overture."

As a result of this collaboration, Boom and Rolls-Royce expect to make significant progress towards finalizing Overture's aircraft configuration and propulsion system.

#### **About Rolls-Royce Holdings plc**

- Rolls-Royce pioneers cutting-edge technologies that deliver clean, safe and competitive solutions to meet our planet's vital power needs.
- Rolls-Royce has customers in more than 150 countries, comprising more than 400 airlines and leasing customers, 160 armed forces, 70 navies, and more than 5,000 power and nuclear customers.
- Annual underlying revenue was £15.45 billion in 2019, around half of which came from the provision of aftermarket services.
- In 2019, Rolls-Royce invested £1.46 billion on research and development. We also support a global network of 29 University Technology Centres, which position Rolls-Royce engineers at the forefront of scientific research.



**BOOM**



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### **About Boom**

Boom Supersonic is redefining commercial flight by bringing supersonic flight back to the skies with Overture. This historic commercial airliner is designed and committed to industry-leading standards of speed, safety, and sustainability. Boom's vision is to bring families, businesses, and cultures closer together through supersonic travel and make the world dramatically more accessible. Boom is the first commercial airplane manufacturer to commit to a carbon-neutral flight test program and to build sustainability into its entire aircraft program. The company is backed by world-class investors and has 30 aircraft on pre-order. Founded in 2014, Boom has assembled a team of over 140 full-time employees who have made contributions to over 220 air and spacecraft programs. For more information, please visit <https://boomsupersonic.com>.

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## Sustainability FAQs

### Can supersonic flight really be sustainable?

Sustainable supersonic flight has recently become possible thanks to steady progress in efficient aircraft design, the continuing development of sustainable aviation fuel infrastructure, and the increasing availability of high-quality carbon offsetting. Boom has long been carefully focused on minimizing Overture's environmental impacts, including both noise and emissions footprints, and Rolls-Royce shares this priority.

Supersonic flight will make the world dramatically more accessible, and it is critical that this improvement in global connectivity does not adversely impact the health of the planet. Sustainability has been a key tenet of Boom's culture since the company's inception, and we incorporate environmental considerations into every key decision at Boom. Here are a few of the measures we are taking at Boom and on the Overture program:

- Committing to a fully carbon-neutral test program for the XB-1 demonstrator, using the opportunity to build relationships with SAF and carbon offset providers.
- Ensuring Overture's design maximizes fuel efficiency, reducing carbon emissions and operating costs hand in hand.
- Facilitating carbon-neutral Overture operations by accounting for SAF and offsetting starting early in the development program.
- Planning for a LEED-certified Overture production facility and assessing how to maximize aircraft end-of-life recycling.

For many people, supersonic travel is still synonymous with Concorde, which was a technological marvel of its time. But aerospace technology has advanced greatly since Concorde was built, specifically three areas of innovation will greatly improve the fuel efficiency of Boom's flagship, Overture.

- **Engine.** Concorde used afterburning engines that were state of the art when designed; Overture will use more efficient engines. This is where Boom and Rolls-Royce's shared commitment to sustainability comes in. We feel confident that Rolls-Royce will be able to create the most efficient engine possible for Overture.
- **Materials.** Concorde was constructed of aluminum. Overture will use carbon composites which are not only lighter, but more easily shaped into aerodynamically optimal forms.
- **Aerodynamics.** Advanced computing allows thousands of iterations of aerodynamic testing, whereas Concorde was designed using slide rules and costly wind tunnel models, limiting the ability to optimize.

### What are the most promising sources of sustainable aviation fuel (SAF)?

The route to building a SAF-powered supersonic fleet relies on many sources of SAF—together, they will form a key part of addressing the carbon footprint of Overture. While we are interested in traditional, plant-based biofuels, we are excited about the possibilities of municipal solid waste, industrial waste gases, and atmospheric carbon dioxide as innovative SAF feedstocks, as well as exploring the use of synthetic fuels and e-fuels.

Because supersonic airplanes will complement—not supplement—the subsonic fleet, we are keen to identify novel SAF sources that won't compete with subsonic uses. Over the course of our engine development program, we plan to test SAF from a number of pathways to ensure proper engine function.

Rolls-Royce is working with the public sector and collaborating with the oil and gas industry to drive wider availability of sustainable fuels.



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## What have been Boom and Rolls-Royce's experiences to date with SAF?

### Boom

In 2019, Boom performed a series of engine ground tests on XB-1 engines using a high blend of SAF. This 84% HEFA fuel gave us valuable data on how XB-1 would perform when powered by a high blend of SAF. The tests met our expectations, showing similar engine performance characteristics to conventional, petroleum-based fuel and offering us confidence that XB-1 could be powered by SAF.

We are also a member of both the Commercial Aviation Alternative Fuels Initiative (CAAFI) and the Roundtable on Sustainable Biomaterials (RSB). CAAFI and RSB are leaders in helping accelerate production and use of SAF. Membership in the two organizations has given Boom a valuable opportunity to make connections with current SAF producers and users, and we will use our platform to exert a positive influence on SAF adoption.

We launched a partnership with Prometheus Fuels, a company making road and aviation fuel from atmospheric carbon dioxide, and we are also engaging with other SAF producers.

### Rolls-Royce

We are working with oil and gas companies to develop more SAF processes and increase the volumes available, as well as exploring whether a small modular nuclear reactor could be used to power a [synthetic fuel plant](#). We're also working with airlines, regulators and governments.

We are also exploring the creation of synthetic fuels through electrolysis, known as e-fuels.

We're involved in a research project at the Brandenburg University of Technology Cottbus-Senftenberg, which includes building a demonstration plant to produce sustainable fuels using electric power. The plant will test the use of sustainable fuels for mobility on land, water and the air. It will look at the generation of heat and power, and what the carbon footprint of the process looks like.

Most of our aircraft engines can already operate using blended Sustainable Aviation Fuels, and have already flown using them. We believe that all of our newer engines would probably be able to operate on 100% SAF and we're in the process of verifying that so potentially the regulatory cap of 50% blend can be lifted.