

ADVANCED TECHNOLOGY FOR STRUCTURAL TECHNOLOGIES

The science behind lighter, faster,
stronger and more sustainable aviation



From the pioneers of flight to today's aviation engineers, one question has always risen above the rest:

How can we accelerate the advancement of aviation?

At Collins Aerospace, we never stop asking this question, and the answer evolves as technology advances. We're committed to bringing those technological advances to our customers across commercial and business aviation, defense, space and beyond.

By increasing our focus on optimized designs, advanced materials and the latest manufacturing technologies, we're opening doors to innovation in every sector we serve.



MEETING THE INNOVATION CHALLENGES OF TOMORROW – TODAY.

Our bold vision for the next generation of aircraft is combined with our 100+ years of experience in pioneering designs, material science and leading manufacturing technologies to provide today's customers – and tomorrow's – with endless possibilities.

We're using modern materials, such as structural thermoplastics and high-temperature carbon composites, to create integrated products and applications that can operate in even the harshest environments.

We're using modern manufacturing methods, like additive manufacturing and out-of-autoclave composites, to create lighter-weight, higher-performance structures at high production rate demand.

We're using industry-leading materials and manufacturing infrastructure to enable rapid industrialization. Our use of advanced materials, such as thermoplastic and Carbon-Carbon composites, spans across our products, from nacelles to brakes. We're also leveraging these composites to develop new sets of solutions within other platforms and for other markets. And we're creating solutions that can substantially reduce fuel burn and CO² emissions for in-service and future aircraft.

OUR PRODUCTS INCLUDE:

- Actuators and valves
- Composite fuel distribution
- Engine nacelle systems
- Flight control surfaces
- Landing gears and brakes
- Propeller and control systems
- Other specialized structural components

We're prioritizing more sustainable manufacturing and operations processes to improve energy efficiency, adding to our renewable energy capabilities and developing more recyclable materials.

As the aerospace industry aims to lessen its environmental impact and reach carbon net zero by 2050, there's more demand than ever for high-performance, integrated solutions that are lightweight, cost-efficient and create a more sustainable path forward for our industry.

Collins Aerospace is uniquely positioned to advance – and help shape – the future of aerospace and defense.



LIGHTER, STRONGER, MORE SUSTAINABLE

Through advanced materials and manufacturing efficiencies, we're engineering lighter, stronger, faster and more optimized aircraft parts designed to improve fuel efficiency and reduce maintenance and operating costs for customers.

DID YOU KNOW?



Thermoplastic composites may reduce component weight by up to 50% compared to metallic solutions and up to 20% compared to conventional thermosets.



Carbon-carbon (C-C) brakes require less replacement due to high strength and stiffness, low density and greater tolerance for high temperatures.



Thermoplastic composites and carbon-carbon are shifting the paradigm in product performance through their unique material properties that make them stronger and capable of operating more reliably in harsh environments.



Lighter, more integrated products on aircraft lead to less fuel burn, which reduces environmental impact.

INTEGRATED PRODUCTS AND TECHNOLOGIES

We're leveraging proven technologies developed in one area of our business and applying them to complex structures, solutions and platforms in other areas. This ability to integrate new and existing processes, materials and technologies from across the enterprise sets us apart in the industry. We're able to provide multi-functional structures and design solutions that help enable novel aircraft architectures and streamline future assembly lines.

HOW DOES TECHNOLOGY APPLY?



Collins is using a range of new materials, technologies and techniques – from additive and automated manufacturing to design optimization – to advance our offering of integrated products.

- Our future thin-wing-enabling technology that uses thermoplastic composites for compact structures, harmonic gear rotary actuators, carbon nano tube anti-ice, fiber optic sensing and complex, composite fuel pipes
- Lower weight and robust, composite landing gear components
- Compact flight control surfaces and folding wing tips, integrated with multi-functionality
- Lighter, thermoplastic door structures, as well as plug-and-play door solutions, optimized for slim system and mechanism integration

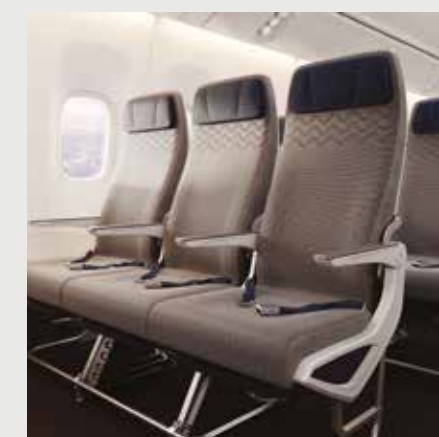


- Systems-integrated weapons bay and utility door solutions
- Lighter, more ergonomic designs for aircraft seating and other interior structures

When we use lighter composite materials in our manufacturing process, paired with optimized design for systems integration (actuation, mechanisms, sensing, signaling, de-icing, lighting), **we create an integrated solution**. That solution can then lead to a more efficient use of weight and space on an aircraft – the key to unlocking step-changes in more sustainable flight.



Automated manufacturing, such as forming, braiding, filament winding, thermoplastic welding, out-of-autoclave and automated fiber placement, **speeds up part production and delivery times**.



UNMATCHED EXPERTISE

We're propelling the industry forward with our experience, breadth of products and proven performance. The technology and materials may be advancing, but we've been innovating aircraft structures for more than a century.

WHY CHOOSE US?



A trusted partner that delivers on our commitments



Robust aftermarket support



Global network of maintenance, repair and overhaul sites



Significant R&D investment for constant innovation



Established industrial base to support high rate, large, structural assembly manufacturing

100+ years of industry experience

180+ platforms supported

130+ product lines

1,300+ customers

110+ countries supported



Collins Aerospace is not only committed to the advancement of aerospace, we're focused on advancing the well-being of our workforce, our communities and our planet, too.

Through robust corporate social responsibility and sustainability initiatives, we're asking what we can do now – and in the years to come – to have a positive impact on future generations. And by investing in the communities where we operate around the world, as well as in educational programs to inspire future STEM leaders – we invite the best and brightest minds in the industry to help us meet the challenges of today and tomorrow.

300+ sites

46 countries

16,000+ engineers

28,000 patents in-force and pending

\$3.1 billion invested in research and development

To learn more:

→ collinsaerospace.com



Collins Aerospace
collinsaerospace.com