Product safety and quality

Delivering engines to power three out of every four of the world's commercial aircraft[16] is a major responsibility and why safety is the top priority at GE Aerospace.

Our Safety Management System (SMS)

Our strong product safety focus is incorporated in our SMS. GE Aerospace implemented its SMS for aircraft engines in January 2013, over 10 years before the U.S. Federal Aviation Administration (FAA) proposed requiring it. In 2017, GE Aerospace was the first original equipment manufacturer (OEM) to have its SMS accepted by the FAA.

Our SMS applies across all our engine product lines, not just those parts of the business operating under the privileges of FAA authorizations, including Defense and Systems, Propulsion and Additive Technologies, and aero-derivative businesses, as well as other affiliates and subsidiaries.

Our SMS is founded on four key tenets, following the International Civil Aviation Organization (ICAO) standard:

Policy: Embedding top-down commitment to safety in our policies

Promotion: Creating a positive safety mindset through training, education, and awareness

Risk management: Executing independent risk assessments that follow the approved FAA process

Assurance: Validating the effectiveness of risk-control strategies in design, manufacturing, quality, and product performance

Our SMS is interconnected with our Quality Management System (QMS), aiming to produce quality parts and products to specification every time while complying with all regulations. We seek to drive continuous improvement in all of our processes within our SMS and QMS—including deploying FLIGHT DECK, our proprietary lean operating model—to continue to raise the bar on safety and quality.

Raising safety concerns

GE Aerospace encourages employees to report safety concerns voluntarily and, if desired, confidentially, without fear of retaliation. Our Open Reporting system provides multiple options for employees to raise safety concerns, including directly through their supervisor, using an anonymous hotline, and via the Safety Program Management Teams (SPMTs). Employees with a computer also have access to a direct link to a product safety toolbox with detailed information on where and how to report safety concerns. A dedicated team evaluates these concerns and directs them to the appropriate stakeholder. We value safety concerns submitted by our employees and want everyone to raise any issues they may have.

Soliciting employee feedback

As everyone at GE Aerospace is responsible for safety and compliance, we regularly invite employees to participate in surveys to gauge knowledge of the importance of safety across our operations and business units. Participants help identify areas that are working well and highlight opportunities to increase education and take action.

> " Putting safety first requires that all of us at GE Aerospace create and uphold a strong safety culture. That means one where employees are encouraged to raise concerns and feel comfortable doing so. It's in this spirit that we seek to continuously improve our products, processes, and operations."
>
> **Chris Lorence**
> Vice President, Product Safety & Quality and Chief Engineer
> GE Aerospace

16 Includes equipment made by GE Aerospace and joint ventures.

Our holistic approach to product safety and quality

Given the central importance of flight and product safety to the company, our Board of Directors provides regular oversight of and engagement on safety and quality.

Our uncompromising commitment to safety is strengthened through our organizational structure, which is intentionally designed to create checks and balances with engineering teams reporting independently to the Chief Executive Officer (CEO) from product management teams.

Furthermore, our Flight Safety Office serves as a technical resource for the business as well as an internal technical audit function, providing another layer of internal oversight separate from the product management teams. In addition, our Flight Safety Office provides full flight safety and operational readiness support for both new and existing commercial and defense programs.

GE Aerospace has an uncompromising commitment to flight and product safety.

Dedicated cross-functional product safety rhythms further support our commitment to safety. They include:

Safety Program Management Teams (SPMTs): Each engine product line reviews and addresses potential model-specific product safety concerns across all aspects of manufacturing, field performance, maintenance, and repair, ensuring potential emerging trends are evaluated, and identified actions are implemented.

Enterprise Safety Program Management Team (ESPMT): This enterprise-level team verifies potential product safety concerns reviewed in product-level SPMTs are “read across” all product lines to understand if a potential issue could impact other product lines.

Product Safety Review Board (PSRB): The PSRB independently monitors the progress of investigations and corrective action plans defined by the individual SPMTs and the ESPMT, ensuring closure actions are completed.

> “Flight is an incredible responsibility. Everyone at GE Aerospace owns safety—at all levels of the organization from the shop floor to engineering and from sourcing to the leadership team. It will always come first.”
>
> **H. Lawrence Culp, Jr.**
> Chairman and Chief Executive Officer, GE Aerospace

Key industry groups and associations

GE Aerospace regularly participates in safety forums with regulators, other manufacturers, and industry associations to support our approach to risk management and to help the industry continue to improve its safety performance. Key forums addressing safety issues include the FAA Aviation Rulemaking Committees and the FAA Aviation Rulemaking Advisory Committees.

Examples of industry groups:

- Aerospace Engines Supplier Quality Consortium™ (AESQ)
- Aerospace Industries Association (AIA)
- Aerospace, Security and Defence Industries Association of Europe (ASD)
- Aviation Supply Chain Integrity Coalition (ASCIC)
- General Aviation Manufacturers Association (GAMA)
- International Aerospace Environmental Group (IAEG)
- International Aerospace Quality Group (IAQG)
- International Audit Practice Consortium (IAPC)
- National Safety Council (NSC)
- Rotor Integrity Steering Committee (RISC)

Our product quality framework

All new aircraft engines and component parts are manufactured under production quality systems that are approved by military and commercial aviation authorities and certified to conform to their type design. Similarly, fielded engines and component parts serviced within GE Aerospace shops are maintained to original manufacturer requirements using original manufacturer component parts and repairs, then returned to service under applicable commercial aviation maintenance organization approvals.

Underlying these commercial aviation regulatory approvals, our quality framework drives actions that include:

- Developing our people through continuing education
- Creating a mindset that strives for, but doesn't assume, zero defects, with the right processes in place and an advanced product quality planning (APQP) toolkit for managing change
- Optimizing our quality and business management processes

Inspection technology and innovation

We have a suite of advanced imaging technologies and methods that help us address safety and quality while driving faster, more efficient, and more sensitive aircraft engine inspections. These include ultrasound, X-ray, computed tomography scans, flash thermography, eddy current testing, fluorescent penetrant inspection, and dimensional metrology.

These modalities are commonly used in combination during part manufacture and subsequent field inspections to help the engineer best determine both initial quality and continued serviceability. Image-processing algorithms are developed for each inspection method to improve the accuracy and consistency of data interpretation.

We also strive to identify new methods that can increase the types of defects we can proactively detect within our components across the manufacturing and in-service lifecycle of parts.

Since 2019, we have voluntarily completed thousands of enhanced inspections of in-service critical rotating parts. In 2023, we enhanced our ultrasound inspections of critical rotating parts during production. Our researchers have also pioneered new inspection technologies for use at the engine module level during scheduled maintenance events without driving additional cost, turnaround time or increased workscopes.

Teaming up with suppliers

We have an oversight system and tools in place to support our suppliers in meeting our standards and in contributing to our efforts to continue to improve quality and create a philosophy that strives for, but doesn't assume, zero defects.

Combating unauthorized parts in the supply chain

In October 2024, the Aviation Supply Chain Integrity Coalition released a comprehensive report recommending specific actions to help prevent unauthorized parts from entering the aviation supply chain.

The report outlines recommendations across three critical areas: Strengthening vendor accreditation, digitizing documents and signatures, and improving part traceability.

In response, GE Aerospace—which led the formation of the coalition in early 2024 with leaders from across the aerospace industry—has digitized maintenance, repair, and overhaul (MRO) records dating back to 2015 and now digitizes key paperwork when an engine visits a GE Aerospace MRO shop. Artificial intelligence (AI) helps verify the validity of key data fields, flagging discrepancies in real time.

Investing in U.S. manufacturing

In March 2025, we announced plans to invest nearly $1 billion in our U.S. factories and external supply chain—nearly double last year's commitment—benefiting more than two dozen communities across 16 states. More than $700 million has already been allocated for specific projects to help improve engine safety, quality, and delivery for our customers. The investment includes more than $100 million dedicated to our external supplier base to ensure they are using the newest tools to produce parts, further reducing defects and supply chain constraints.

Nearly $1B

planned investment in manufacturing facilities and external supply base in 2025

Our new Customer Experience Center provides around-the-clock monitoring and support.

> “ The launch of the Customer Experience Center is helping us provide a differentiated customer experience, allowing our teams to directly engage with our airline customers to continuously monitor our commercial engines in service globally to help keep the fleet flying safely and reliably.”

Jayesh Shanbhag
General Manager, Customer Experience, GE Aerospace

Working with commercial customers

We work closely with airlines around the globe to help ensure they have the information needed to safely operate and maintain the products we produce throughout the product lifecycle.

In-region customer support teams
We support our customers around the globe 24/7, through a global network of dedicated aviation professionals, training centers, web centers, On Wing Support (OWS) technicians, and more.

24/7
global customer support

Flight Operations team
We have a team of pilots with engineering expertise whose flight ratings cover nearly every commercial aircraft type powered by GE Aerospace or GE Aerospace partnership engines. This team enables direct pilot-to-pilot dialogue, ensuring those who fly aircraft with engines we designed and produced have insights to augment their experience.

Customer training
We provide maintenance training and aids to serve our customers. These include training modules available on our Customer Technical Education Center University website, as well as maintenance videos posted on YouTube to help the aircraft maintainer with everyday engine maintenance tasks. Additional digital training aids are available through dedicated customer web portals and hands-on, instructor-led maintenance courses at six global training facilities.[17] In a typical year, we train around 6,000 customer mechanics across all our commercial product lines and training centers.

We also offer a detailed Powerplant Engineers Course that provides basic knowledge of jet engine design and how the engine hardware and systems work together.

Learn more about GE Aerospace’s training.

17 Includes two facilities operated by CFM International partner Safran Aircraft Engines.

Our Customer Experience Center

We monitor real-time data from operators’ fleets to identify potential issues that could lead to operational disruptions. Using advanced analytics, including AI and machine learning, we leverage data from millions of flight records every year to provide operators with appropriate and timely recommendations.

In November 2024, we launched an updated Customer Experience Center (CEC) in Cincinnati. The CEC serves as one of two global hubs—alongside its Shanghai counterpart—providing customers with around-the-clock monitoring and support, both virtually and on-site.

Airline customers have engaged in problem-solving sessions at the center, which has a digital infrastructure that connects real-time engine performance data with on-ground maintenance insights.

The connected digital thread of data collected in the field from both on-wing and off-wing experiences is not only helping reduce turnaround times for service visits, it also informs future engine designs—including technologies for the CFM RISE program—showcasing our focus on continuous innovation and customer-centric service.