

GRUPPO
EJEA
— SINCE 1980 —

SPACE

We know how

MGSE - TEST BENCHES - STC - AUTOMATION - AUGMENTED REALITY



-We know how-

ESEA Group operates as a leading company in the field of industrial automation and the design and construction of customized machinery.

Since its foundation in 1980, ESEA has installed more than 700 customized machines for production and quality control.

Today, ESEA operates on a global scale, with installations in France, Germany, the United Kingdom, Sweden, Russia, Japan, the United States, China, India, Argentina, Korea and many other countries all around the world.

ESEA's activities range from international R&D projects, carried out in collaboration with research institutions and universities, to industrial projects, such as satellite and payload test equipment.

As grounding equipment, ESEA Group develops and manufactures Mechanical Ground Support Equipments (MGSE).

ESEA Group is able to satisfy the most diverse needs of its Customers; from assembling, to calibration, lifting, tilting, positioning, measuring, testing or transporting satellites or launchers: ESEA develops a tailor-made solution or prepares a turnkey equipment.

ESEA Group is a member of the "ICT AEROSPACE ABRUZZO" and of the "CTNA National Aerospace Technology Cluster", aiming to create the synergies needed to positively impact the development of national/regional strategies in Aerospace and the identification of technological solutions that best respond to the complex challenges of the sector.

ESEA Group is headquartered in Cepagatti (Pescara), where a 15.000 square meter facility houses the mechanical, electrical and software technical offices, as well as the production, R&D, testing, assembly and service departments. In addition, ESEA has a service unit that supports Clients during on-site commissioning and remote assistance, also through the innovation of augmented reality. The presence of 150 highly qualified members of its staff, combined with manufacturing skills and engineering leadership, plays a significant role in driving ESEA Group to success and will continue to do so for future achievements.

-We Know how-





Mechanical Ground Support Equipment (MGSE)



Test Benches



Spacecraft Transport Container (STC)



Automation

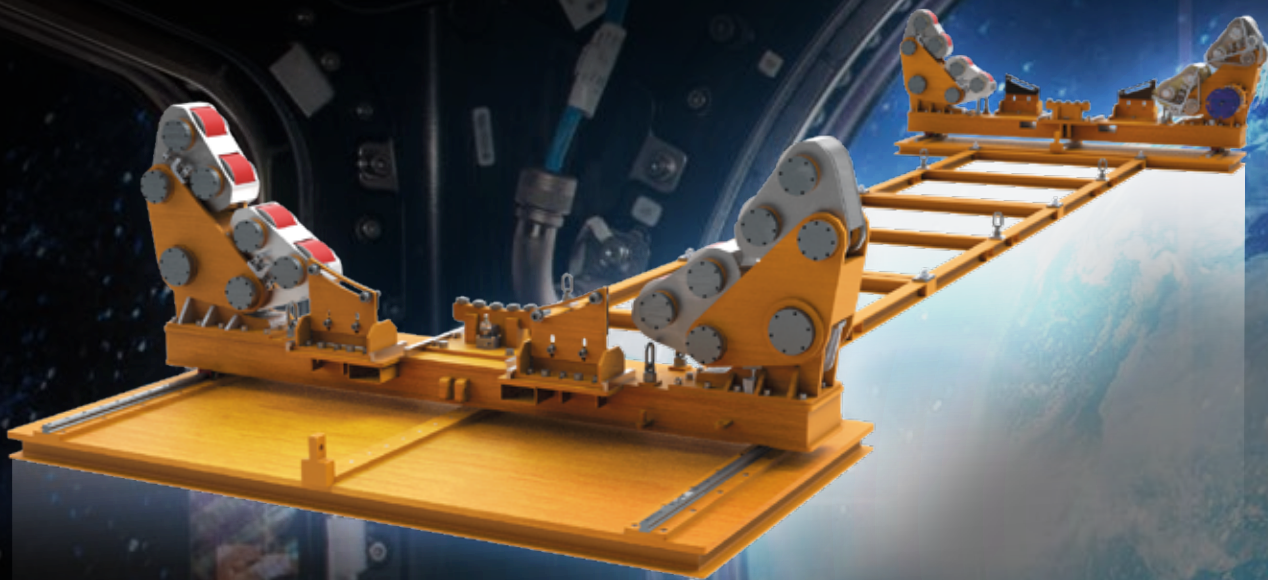


Augmented Reality & AI

Our Services

CASE HISTORY

ROTATING CRADLES (MGSE)



The **Rotating Cradles** machine is designed to simplify the process of handling and rotating of the structural casing of the solid rocket booster, built from pre-impregnated epoxy sheets through filament winding and automatic fabric deposition.

The cradles, one motorized and one free, are made of high-quality materials, designed to ensure the robustness and safety necessary for the management of loads up to 20 tons. The cradles are designed to adapt to any type of handling ring requested by the Customer. A tilting roller as support system has been included, coated with "Vulkollan" elastomer, in order to protect the surface during handling.

To ensure maximum safety, a system that prevents unwanted movement of the casing along its axis during rotation has been implemented, preventing falls or overturning. Furthermore, the connection structure between the two cradles has been designed to allow perfect alignment of the axes, which is essential for optimal operation.



STAND BASE (MGSE)

The **Stand Base** is a support device designed to ensure integrity and safety during the critical phases of satellite integration. Made of high-quality materials, including high-strength stainless steel, this device provides a solid and reliable base for positioning and supporting the satellite as well as its adapter.

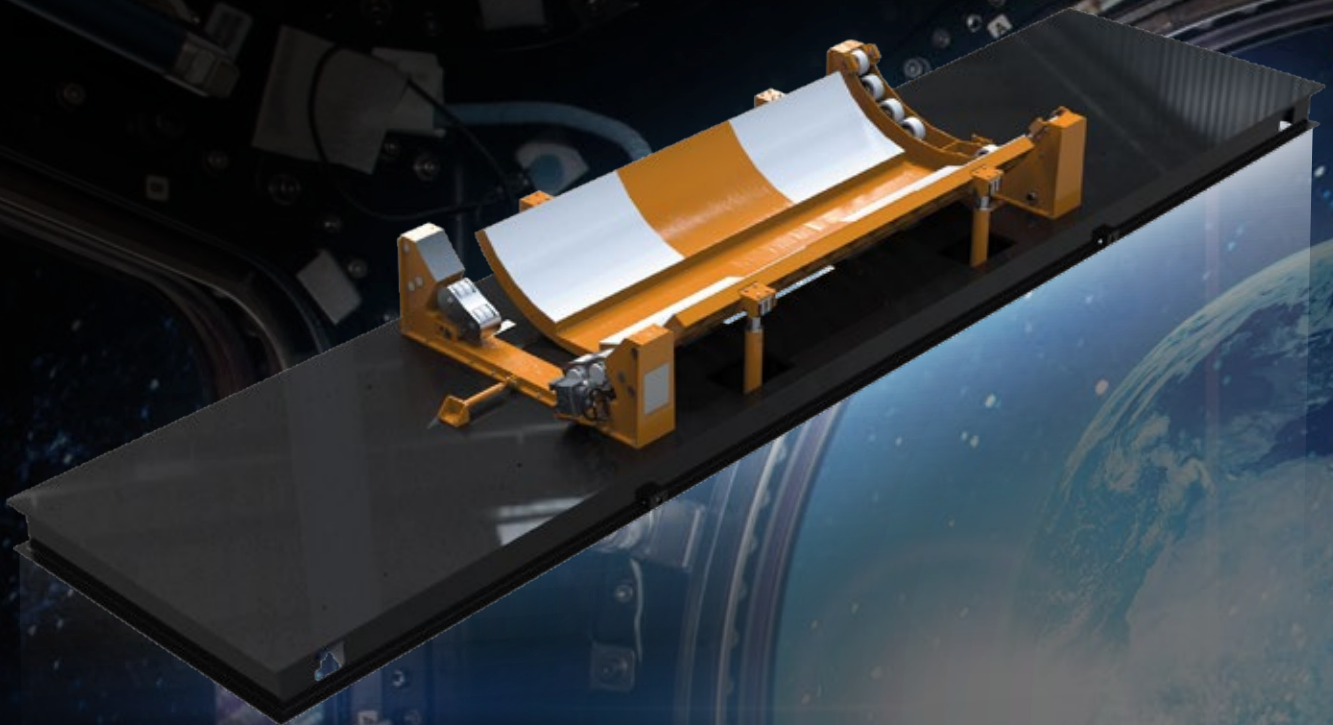
The height adjustment function allows the equipment to be leveled on uneven surfaces, while the braked wheels ensure easy and safe movement.

The optimized design ensures complete accessibility, allowing a single person to easily perform all assembly and disassembly operations of the tools.

The anti-corrosion and anti-static properties of the structure prevent contamination of the components during their integration.



INTEGRATION BENCH (MGSE)



The **Integration Bench** is designed for the placement and assembly of a solid rocket booster, with a mass of 45 tons, ensuring their stability and safety of integration operations.

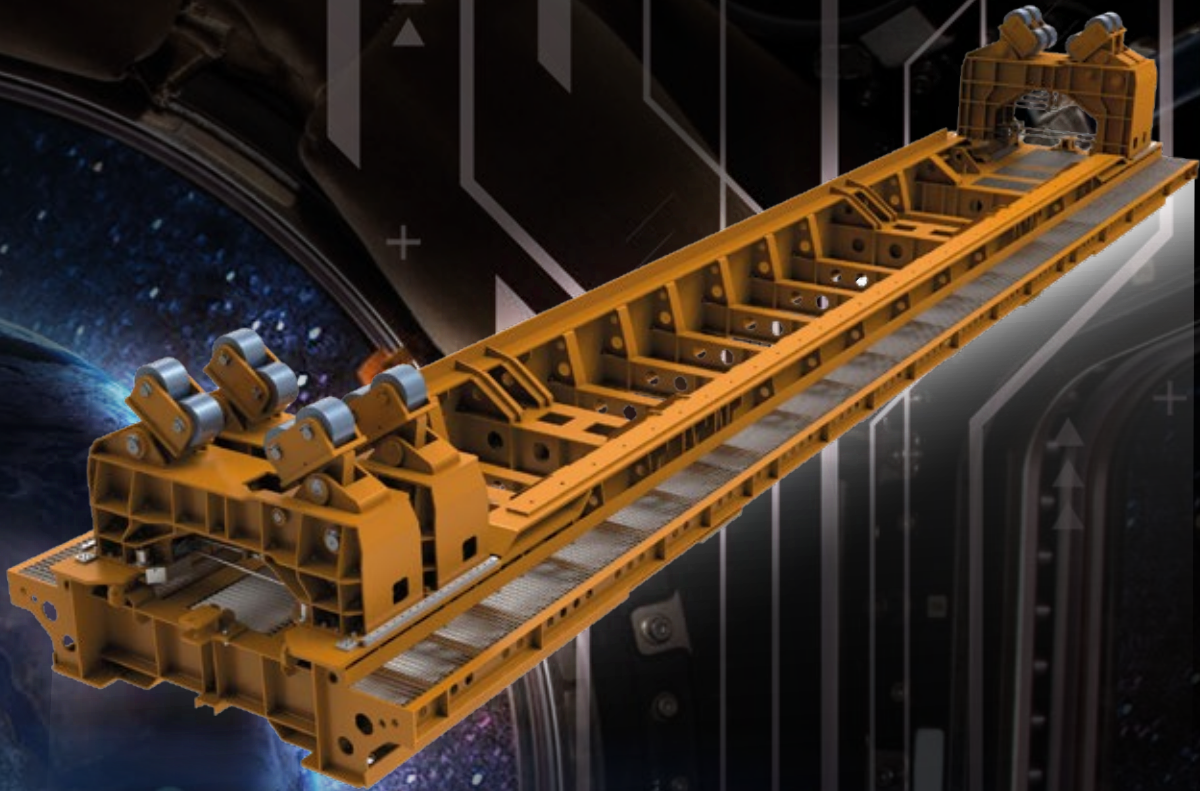
The rubber-covered support saddles are equipped with a hydraulic system that allows vertical translation. The hydraulic system is managed by a control unit equipped with automatic hydraulic power and ATEX electric motor suitable for C022 area.

The rotating saddles of the integration bench are designed to allow controlled positioning of a solid rocket booster, during the integration phases. Each saddle is sized to support the handling rings of a solid rocket booster, ensuring a safe and stable interface.

All components have a high safety factor to operate in extreme conditions (-10°C to +50°C, humidity 70%).



TRANSPORT PALLETS FOR SOLID ROCKET BOOSTERS (MGSE)



The **Transport Pallet** is designed for the handling of solid rocket boosters up to 120 tons, from Filament Winding Machine to Autoclave and to machine tools.

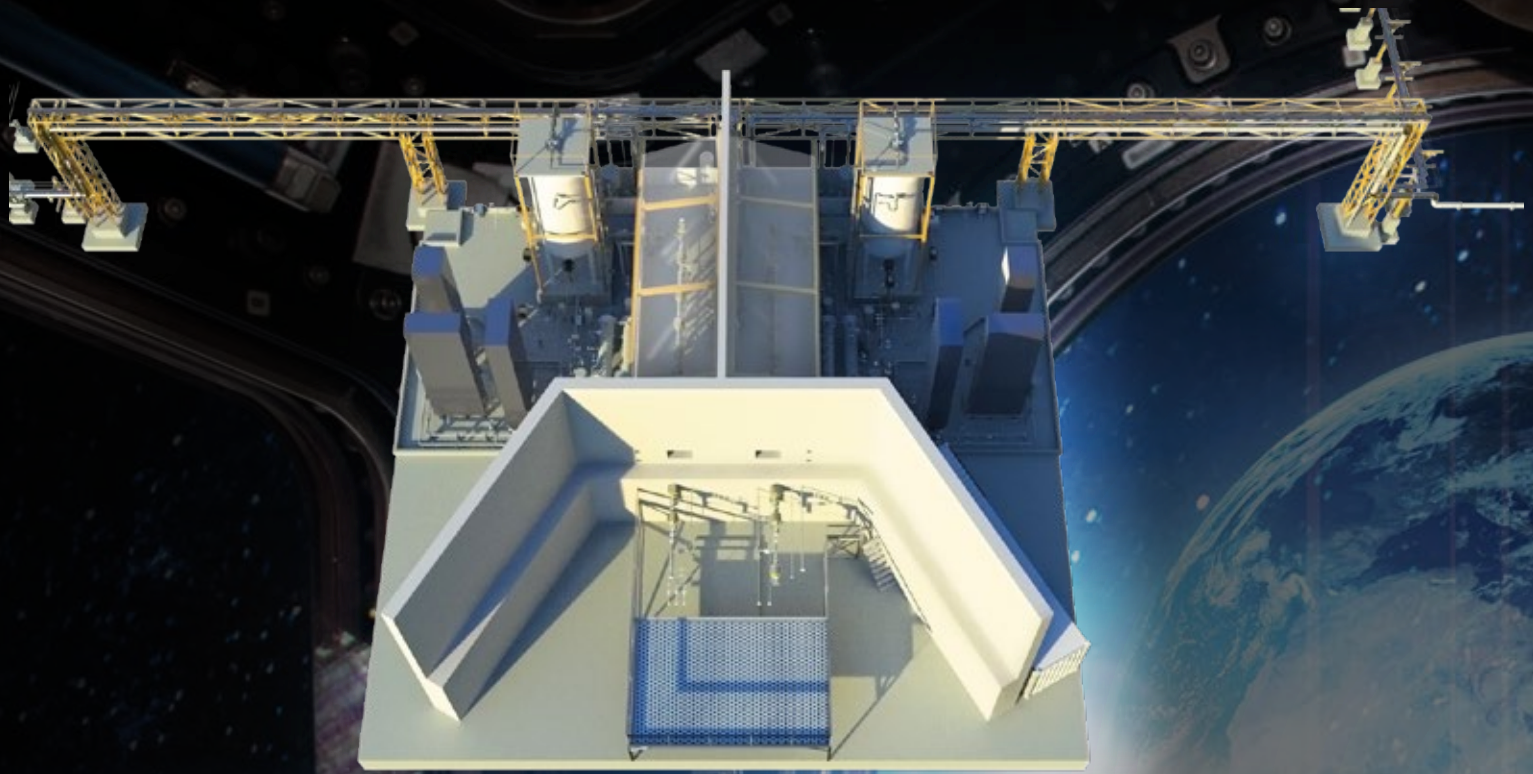
The transport pallet is equipped with saddles with horizontal and vertical translation to be able to adapt to different manufacturing configurations.

The Pallet has been designed to be used inside autoclaves up to a maximum temperature of 200°C, ensuring minimum deformation of the rocket booster and the possibility of rotating the same, during the curing process.

In addition to the integrated braking system on the wheels, quick locking systems for the saddles are also foreseen to ensure stability during transport and manufacturing operations.



SPTF TEST BENCH



The **SPTF** is a space propulsion test and development center located in Perdasdefogu, Sardinia (Italy). Esea Group contributed to the realization of this important project. The facility plays a key role in the study and validation of propulsion technologies for rockets, liquid-propellant engines and thrust systems used in space exploration.

The **SPTF** is designed to conduct a series of tests crucial to the evaluation and validation of space engines. These tests may include the following:

- **Engine start test:** To test the engine's reliability and performance under simulated flight conditions.
- **Endurance test:** To evaluate the engine's long-term endurance and ability to operate under extreme conditions.
- **Environmental compatibility test:** To examine how the engine's responding to various environmental factors such as temperature, pressure and vibration.
- **Flight simulation tests:** To reproduce the operating conditions of an engine during launch and operation in space.



PRESSURANT LOADING EQUIPMENT (PLE)

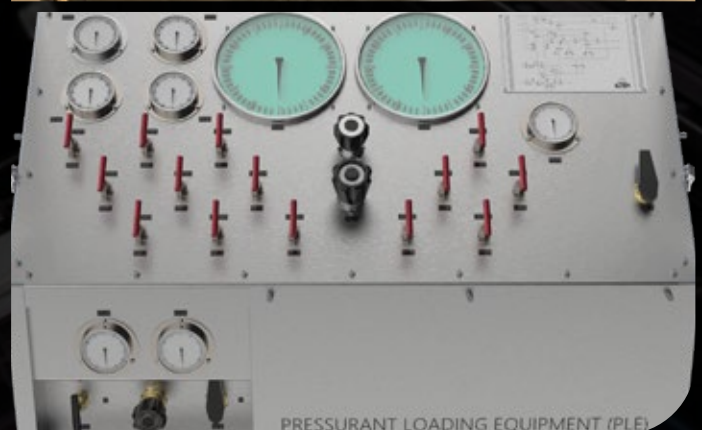


The **Pressurant Loading Equipment (PLE)** is designed to pressurize tanks, for the aerospace sector, with helium and/or other gases at their mission pressure up to a maximum of 439 bar.

On the front panel all needed pressure gauges, pressure regulators and valves for manual control are installed, as well as a screen-printed functional diagram.

The PLE is able to depressurize tanks into the atmosphere or ensure recovery of the pressurization gas.

The PLE can also be used in ATEX classified environments.



SPACECRAFT TRANSPORT CONTAINER (STC)



The **Spacecraft Transport Container** is designed and built to protect aerospace components from external environment contamination, during the transport phase between its initial plant and the launch station.

The transport container is made of antistatic materials and equipped with HEPA filters, guaranteeing a cleanliness class 100.000 (ISO 8), reducing the accumulation of electrostatic charges to a minimum.

The inert gas environmental control system ensures optimum pressure, temperature and humidity conditions.

With an optimized side door accessibility and a reliable locking system, the Container ensures maximum safety and protection during the transport and storage of a space cargo.



SLIDING COVER (SPECIAL STC)



The **Sliding Cover** is a special STC because it is able to move thanks autonomously to a lifting and movement system with swivel motor-wheels, controlled by a radio control.

This movement system allows loading/unloading operations from trucks to be performed without the aid of external lifting equipments and without exposing the aerospace component to the risk of contamination.



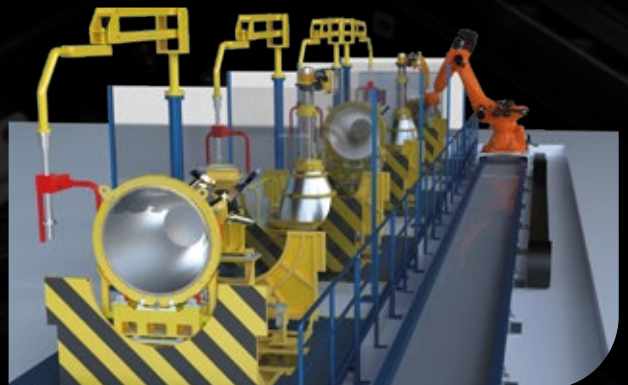
CRYOGENIC ENGINE ASSEMBLY LINE

The **Cryogenic Engine Assembly line** handles all stages of manufacturing and assembly of liquid propellant engines for aerospace use, from component integration, to testing and final packaging. The line is made up of several stations equipped with an anthropomorphic arm that allows the positioning of the liquid propellant engine, with a vertical or horizontal axis in order to facilitate integration operations. A vertical lift allows the liquid propellant engines to be positioned at different heights depending on the operations to be performed.

An AGV system allows the liquid propellant engines to be moved between the various assembly and packaging stations.

Each station is also equipped with equipment for controlling of assembly and testing operations, such as automatic torque-angle screwdrivers, bar code readers and vision systems.

The line supervision system allows for the traceability and historicization of all operations performed. This automated approach optimizes assembly and packaging operations, minimizing errors and increasing productivity.



AUTOMATED FIBER PLACEMENT (AFP)

EFESTO



EFESTO stands out for high productivity and quality in advanced aerospace manufacturing. This innovative AFP machine features a modular design engineered to reduce footprint and tool dimensions, improving accessibility in deep molds and enabling the production of complex, tight-radius convex and concave structures with exceptional ease.

The intuitive programming software allows customized trajectories for advanced composite drone parts and airframes.

EFESTO redefines AFP technology through its compact and versatile architecture:

- **Modular & Slim Tooling:** Reduced dimensions for enhanced accessibility in complex molds.
- **Multi-Material Capability:** Use of slit tape or towpreg in different sizes.
- **Material Flexibility:** Compatible with thermoplastic and thermosetting materials.
- **Rapid Set-up & Scalability:** Fast reconfiguration for smart factory environments.
- **High Deposition Precision:** Accurate layup for lightweight, high-performance structures.
- **Maximum Productivity:** Designed to meet industrial mass production targets.



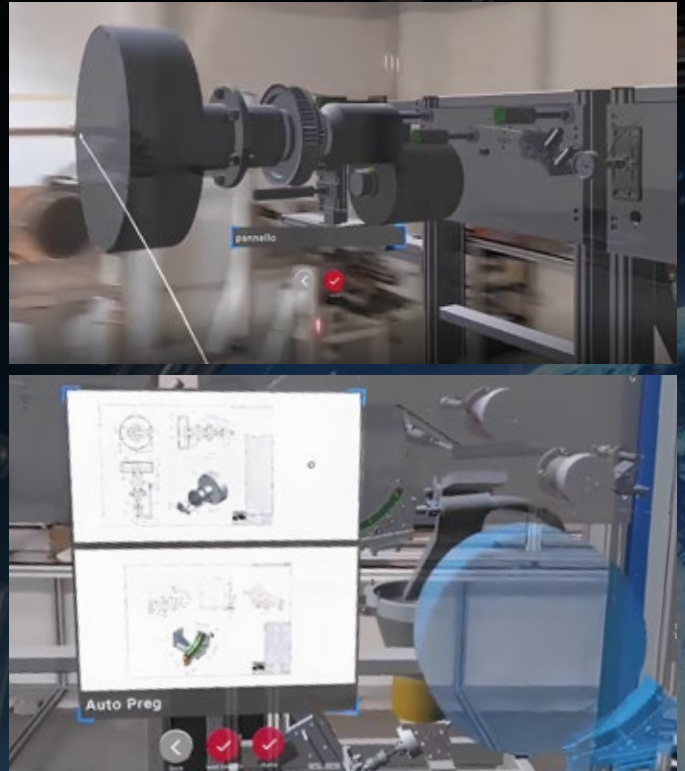
AUGMENTED REALITY

ESEA integrates cutting-edge technologies to be able to offer our Customers a first-class remote maintenance and assistance service.

Thanks to **Augmented Reality (AR)**, operators can receive direct and complete on-field, keeping their hands free to carry out tasks in complete safety.

AR technology allows the operator to view instructions and maintenance data, directly on their smartglasses, making operations more efficient and reducing downtime.

With remote assistance the problem-solving process has been drastically simplified, allowing our customers to communicate directly with our experts through an interactive channel. This means greater productivity, less operational downtime and higher quality support.



ARTIFICIAL INTELLIGENCE (AI)



By collecting and analyzing Big Data from our machines (process parameters, sensor signals and quality measurements), we implement AI models that learn the “normal” production signature and detect even small drifts in real time.

When deviations appear—e.g., fiber tension, temperature, resin distribution or deposition accuracy—the system suggests corrective actions and can automatically fine-tune setpoints to keep the process within specification.

This closed-loop approach improves repeatability, reduces scrap and downtime, and strengthens traceability: each part is linked to its digital production record, enabling faster root-cause analysis and continuous improvement across future runs.

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