GRUPPO ESEA

SINCE 1980

DEFENSE

We know how

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Since 1980, the ESEA Group has been operating as a leading company in the industrial automation sector and in the design and construction of customized machinery.
In a continuous innovation process, the Group has created thousands of customized solutions in various sectors, maintaining the objectives of rapid growth and continuous improvement.

ESEA's activities range from international R&D projects, carried out in collaboration with research institutions and universities, to entire customized industrial projects.
ESEA Group is able to satisfy the most diverse needs of its Clients, respecting the stringent requirements related to the design and construction of machinery intended for the "defense", "military" "aeronautical" and "naval" sectors.

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-

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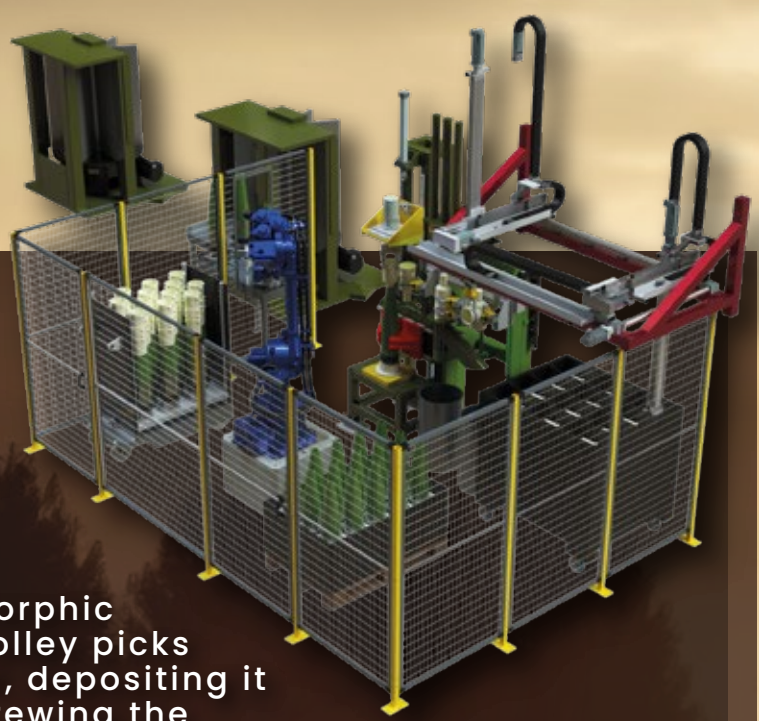
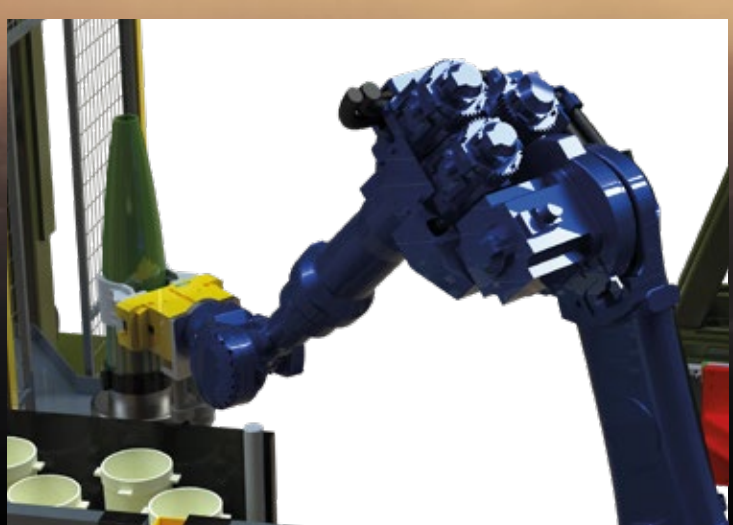
CASE HISTORY

BULLET ASSEMBLY LINE

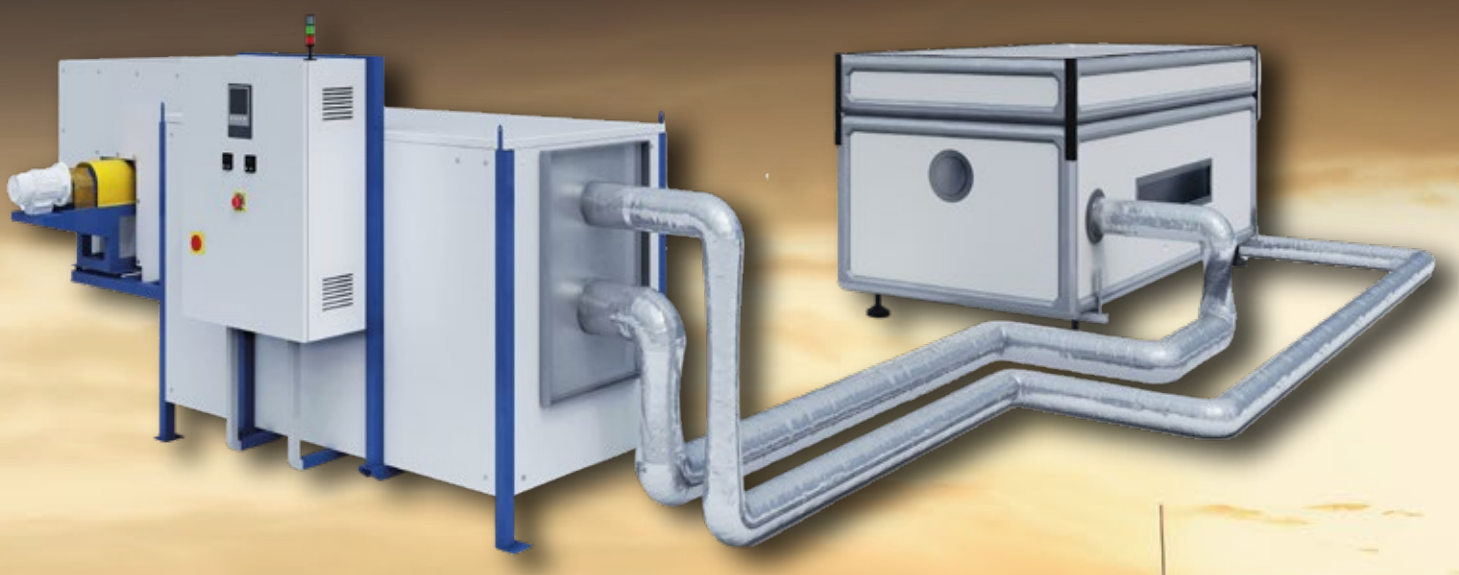


The **Bullet assembly line** is especially designed to be installed in C0Z1 classified environments, allowing to speed up the ammunition handling phases (from 76 mm up to 155 mm), significantly optimizing the production rate of the process.

The system includes an anthropomorphic arm that autonomously from the trolley picks up the ammunition to be processed, depositing it in an intermediate station for unscrewing the casting funnel.
Subsequently, a Cartesian arm will take care of extracting the propellant and palletizing the funnel to be reprocessed.
The ammunition will be housed on a conveyor belt that will move it to the nose cone milling station.
Once this phase completed, the robot will palletize the product in the finished product trolley.



SLOW COOK OFF – AOP 4382



The Slow Cook Off (SCO) test bench was designed and built according to the AOP 4382 regulations related to the conducting of experimental tests inside a controlled gradient climatic chamber.

In particular, the Slow Cook Off test involves the controlled heating of an item inside a suitably insulated climatic chamber, up to 400°C with a gradient of 3°C/h.

The item with the progressive increase in temperature will be brought to explosion. The main objective of the test determines the explosion temperature of the item during a fire or prolonged exposure to heat.

FAST COOK OFF – AOP 4240

The Fast Cook OFF (FCO) test bench has been designed and built according to the AOP 4240 regulation, respecting its main requirements:

- Uniform heat flow with standard deviation of temperatures, on the inside of the core of the fire, less than 10% of the average temp.
- Reaching of the hearth temperature of 550° C in 30 sec.
- Average heat flow greater than 80 kW/m2 in the first 20 sec. after reaching a min. temperature of 800°C. The core of the fire exceeds by at least one meter on each side of the test object, completely enveloping it.

The Fast Cook Off test allows to determine the degree of reaction of the explosive artifact when it is subjected to a rapid heating induced by the development of incandescent flames coming from hydrocarbon fires.
During the test, the object is enveloped by flames of such dimensions as to ensure that approximately 90% of the heat exchanged is radiative.

CARBON ITEM POLYMERIZATION OVEN

The **Carbon item polymerization oven** guarantees a maximum operating temperature of 300°C, with an accuracy of ± 2°C.
The total thermal power is approximately 48 kW, with a supply voltage of 400 V.

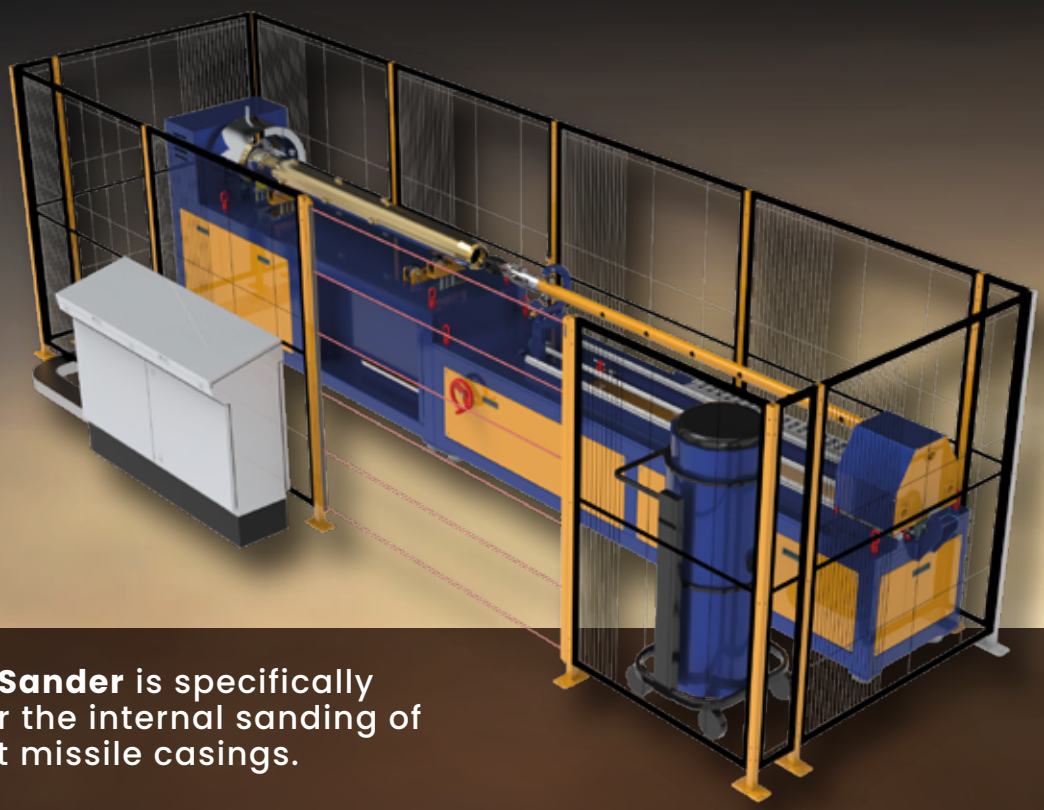
The oven has three heating zones and two stirring motors to ensure uniform heat distribution.

The axial fans mounted on the upper part ensure homogenization of the hot air inside the chamber.

For carbon fiber items placed in firing, a rotation of the same is possible by connecting them to flanges located on the bottom of the oven, assurig support with a removable trolley.

The control panel allows the display and download of data via data logger and offers the possibility of managing recipes in a flexible and intuitive way.

CASING SANDER



The **Casing Sander** is specifically designed for the internal sanding of anti-aircraft missile casings.

The machine is composed of a motorized supporting structure, a sanding system, a dust extraction system and a fixed perimeter protection.
The supporting structure allows the locking of the single casing by means of a self-centering spindle and its rotation at an adjustable speed up to 60 rpm.
The sanding rod system, equipped with 60 grit sandpaper, moves on the X-axis at an adjustable speed up to 5 m/minute and, once inside the casing, moves on the Y-axis by means of a pneumatic system for sanding and dust extraction. Pneumatic pressure adjustment systems are provided during sanding to avoid defects in the processing.

A color touch operator panel allows the setting of recipes for the automatic loading of the processing parameters.

METAL CASING CLEANING TROLLEY

The **Metal casing cleaning trolley** is designed to support the metal casing of a missile's engine during the internal cleaning and chemosil application phases.

The pneumatic motor rotates the casing, while the thrust bearing system ensures the controlling of its movement.

The rotation speed is adjustable to optimize the process, with a maximum stop time of 1 second for operator safety reasons.
The necessary emergency buttons on both ends of the trolley are foreseen to immediately stop the engine in critical situations.

The rotation speed of the casing can be set between 5 and 20 rpm during the machine's setup phases.

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.

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