GRUPPO ESEA

SINCE 1980

DEFENCE

We know how

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The ESEA Group, since 1980, operates as a leading global provider in the industrial automation sector, specializing in the design and construction of customized machinery.

Through a consistent path of innovation, we have delivered thousands of tailored solutions across various industries, all with the common goals of rapid growth and continuous improvement.

ESEA is a global provider, serving clients in the United States, Japan, France, the United Kingdom, Germany, Sweden, Russia, China, India, Argentina, Korea and many other countries.

ESEA’s activities range from international R&D projects, carried out in collaboration with universities, to customized industrial projects. The ESEA Group is able to meet the most diverse needs of its customers by respecting stringent requirements for the design and construction of machinery destined for the "defence", "military", "aeronautical", and "naval" sectors.

Located in the middle of Italy, Pescara, our ESEA Group headquarters span across a 15,000 square meter facility. It houses our mechanical, electrical, and software engineering, with production, R&D, testing, assembly, and service departments.

ESEA augmented reality services are the first choice for modern (remote) maintenance and installation of our machines.

A team of 150 professionals and our expertise stands for your success now and in the future.

-We Know HOW-


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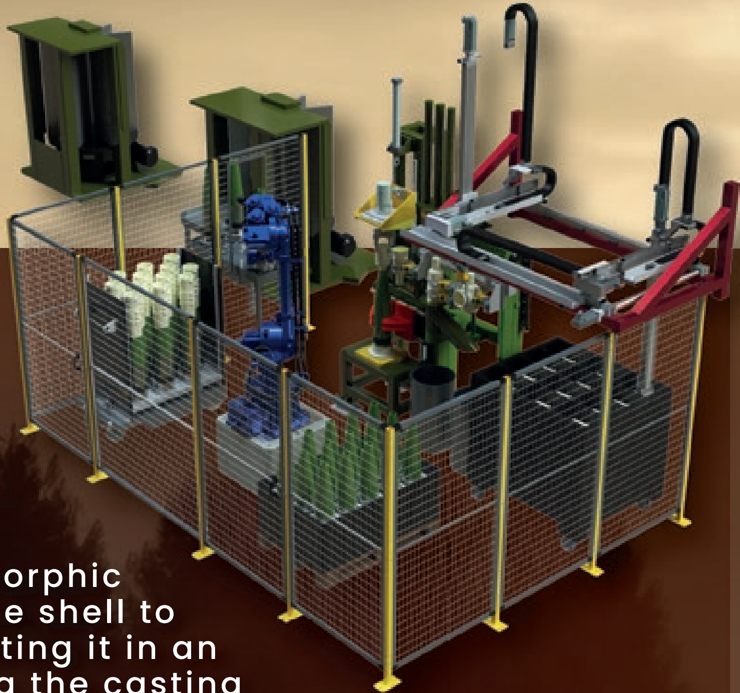
CASE HISTORY

Ammunition loading line

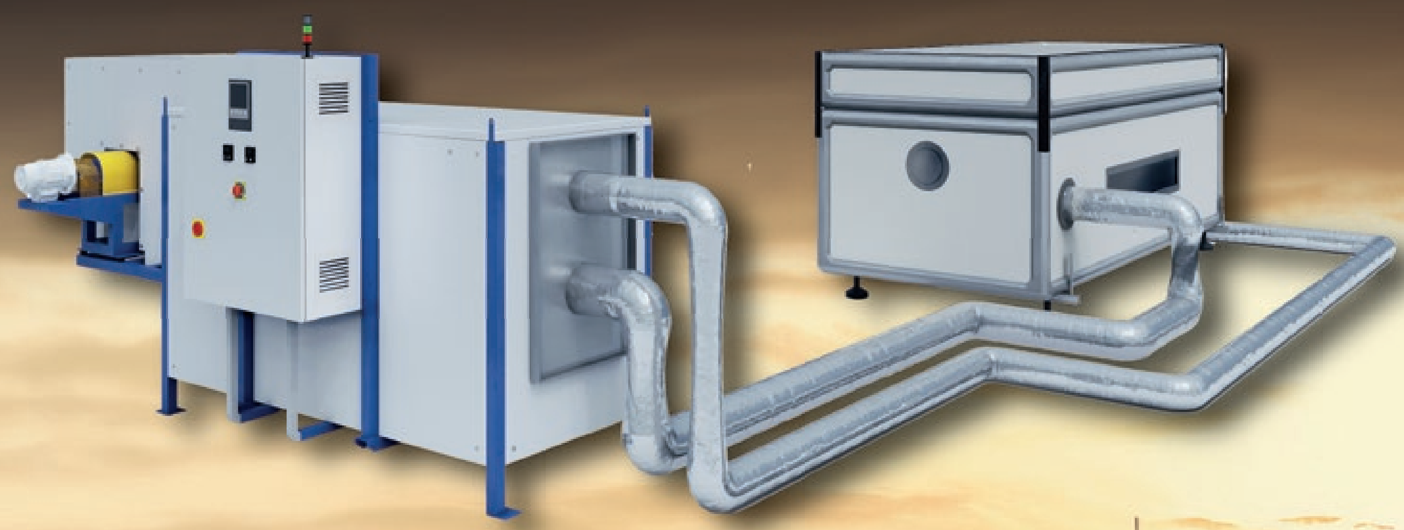


The ammunition loading line, suitable for working in C0Z1 environments, is tasked with speeding up the handling phases of the shells (from 76 mm to 155 mm), significantly optimizing the production rate of the process.

The system includes an anthropomorphic arm that autonomously picks up the shell to be processed from the cart, depositing it in an intermediate station for unscrewing the casting funnel.
At that point, a Cartesian arm will handle the extraction of the propellant and the palletization of the funnel for reprocessing. The shell will be placed on a conveyor belt that will take it to the ogive milling station.

Once this phase is completed, the robot will palletize the artifact in the finished product cart.

Slow Cook OFF - AOP 4382



The Slow Cook Off test bench has been designed and built according to the AOP 4382 standard to carry out experimental tests inside climate chambers with controlled gradient.

In particular, the slow cook test involves controlled heating of a properly insulated climate chamber, up to 400°C with a gradient of 3°C/h. Inside the climate chamber, an item will be placed which, with the progressive temperature, will be brought to explosion.

The main objective of the test is to determine the explosion temperature of the item during a fire or prolonged exposure to heat.

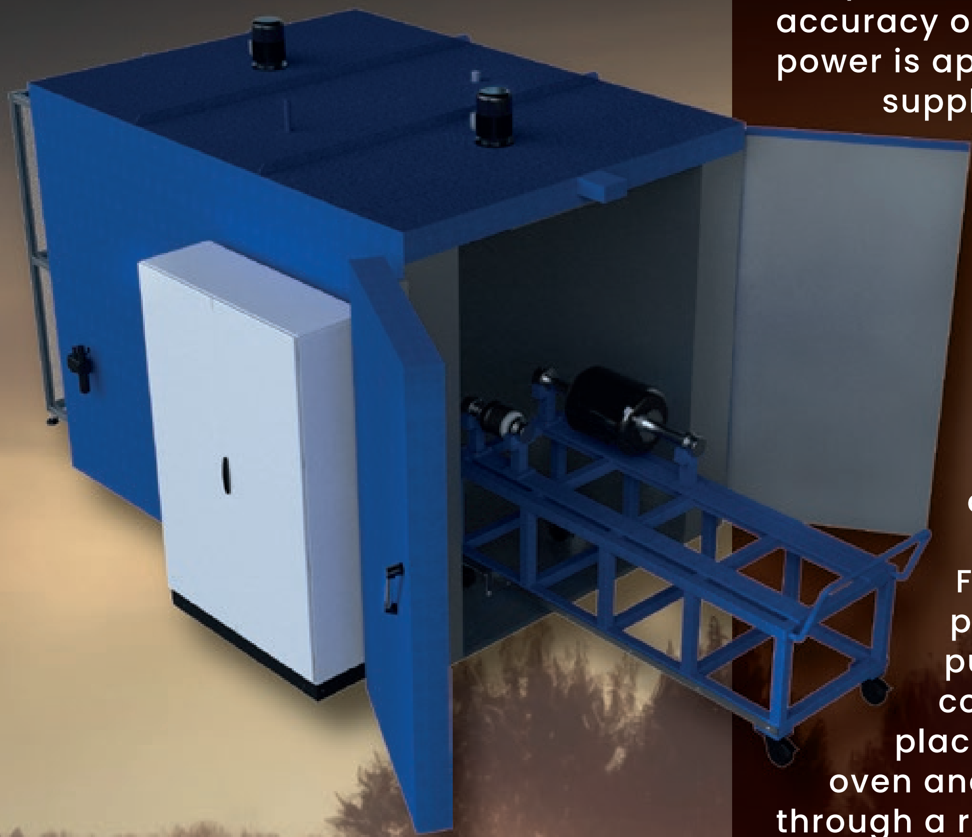
Fast Cook OFF - AOP 4240

The fast cook off (FCO) test bench was designed and built according to the AOP 4240 regulation, respecting the main requirements:

· Uniform heat flow with standard deviation of temperatures, inside the heart of the firebox, less than 10% of the temp. average.
· Reaching the furnace temperature of 550 ° C in 30 sec.
· Average heat flow greater than 80 kW / m2 in the first 20s. after reaching a min. of 800 ° C.
· The flames at the core exceed at least one meter, on each side the target object, engulfing it completely.

The Fast Cook Off test is conducted with the intention of determining the reaction grade following a direct detonation of the explosive artifact subjected to a fast heating induced by the development of incandescent flames from a hydrocarbon fire. During the test, the object is engulfed in flames of such size as to ensure that approximately 90% of the heat exchanged with the object under test is radiative.

Carbon item polimerizzation oven

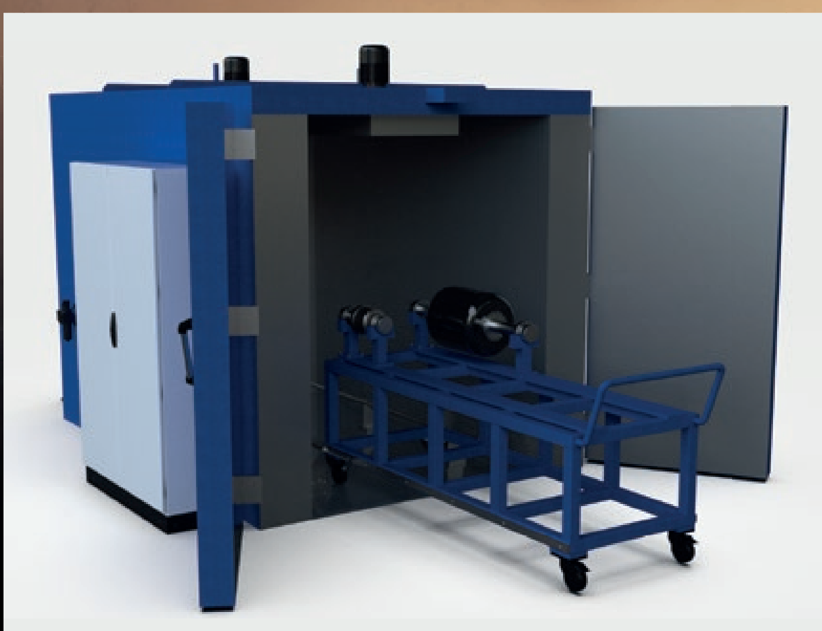


The carbon item polymerization oven allows for a maximum operating temperature of 300°C, with an accuracy of ±2°C. The total thermal power is approximately 48 kW, with a supply voltage of 400 V.

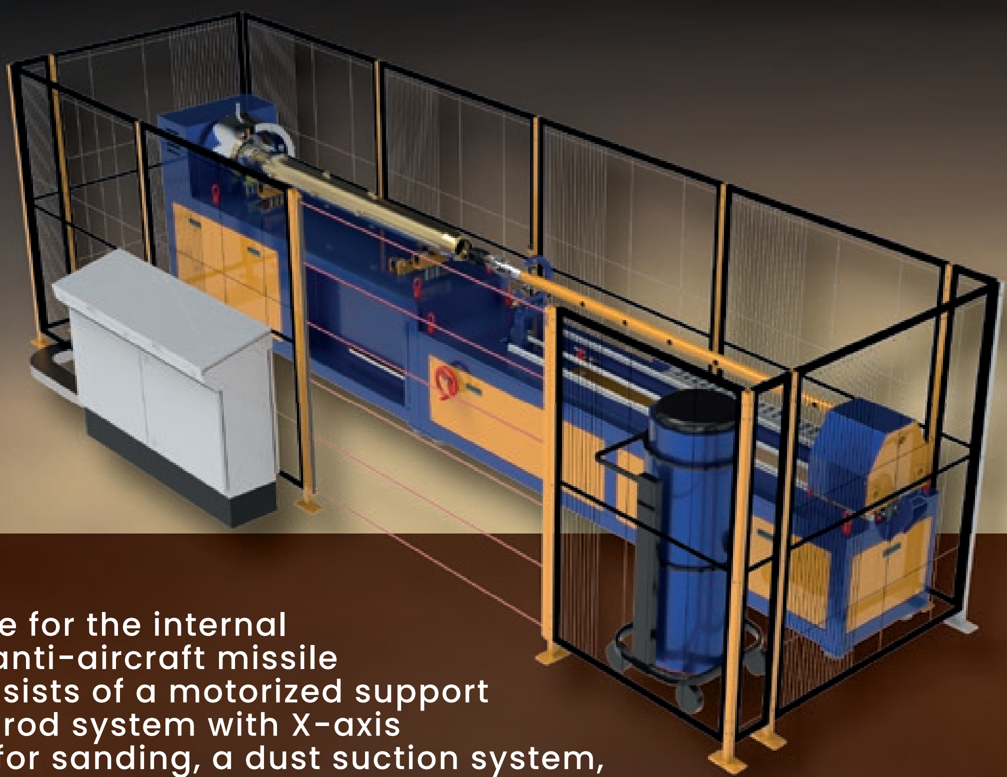
The oven features three heating zones and two agitator motors to ensure uniform heat distribution. Helical fans mounted on the roof ensure homogenization of the hot air inside the chamber.

For carbon fiber items placed in cooking can be put in rotation by connecting them to flanges placed on the bottom of the oven and supporting them through a removable carriage.

The control panel allows for data visualization and download via a data logger and offers the flexibility and intuitive recipe management.



Sanding machine



The machine for the internal sanding of anti-aircraft missile casings consists of a motorized support structure, a rod system with X-axis translation for sanding, a dust suction system, and a fixed perimeter protection.

The support structure locks the individual enclosure via a chuck and rotates it at adjustable speeds up to 60 revolutions per minute. The sanding rod system, prepared with 60-grit sandpaper, moves along the X-axis at adjustable speeds up to 5 m/minute and, once inside the enclosure, it moves along the Y-axis via a pneumatic system for sanding and dust suction. Pneumatic pressure adjustment systems are provided during sanding to prevent processing defects.

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

Metal casing cleaning trolley

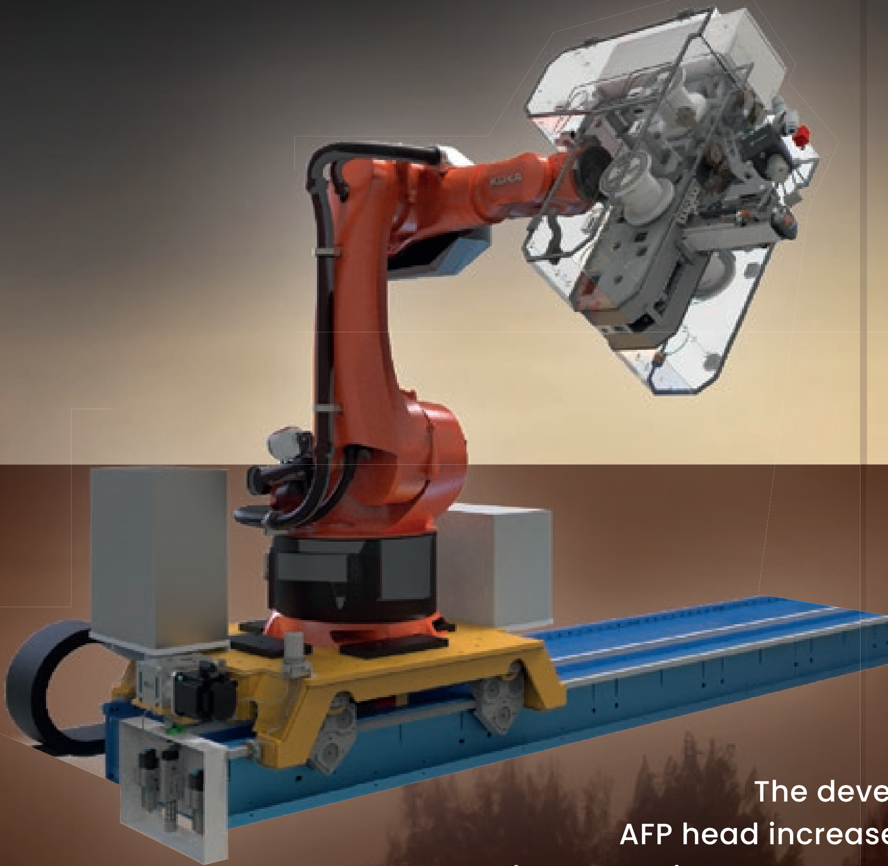
The Trolley is specially designed to support the metal casing of the missile's engine during internal cleaning and chemosil application phases. The pneumatic motor rotates the casing, while the thrust support system ensures controlled movement. Rotation speed is adjustable to optimize the process, with a maximum stop time of 1 second for operator safety.

Emergency buttons are located at both ends of the trolley to immediately stop the motor in critical situations. The rotation speed of the casing can be set between 5 and 20 revolutions per minute during machine setup phases.

However, access to this feature is limited by a safety key to ensure safe and controlled use.

Automatic Fiber Placement (AFP)

EFESTO



ESEA modular AFP head has demonstrated high rate and high quality in commercial aerospace production.

The development of an innovative modular AFP head increases the capability of the machine to produce complex, convex and convess parts, based on tailored trajectories thanks to the user friendly programming software.

ESEA head offers advantages such as multiplicity of slit tape widths, very short slit tape path, capability to produce complex parts, high accuracy of laying and rapid head change to decreased downtime of the machine and higher throughput of manufactured parts.

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