

GEMSTAR'S CUSTOM HARD CASE PROTECTS AUXILIARY POWER UNIT FOR U.S. ARMY

Gemstar Manufacturing partnered with a leading military contractor and the U.S. Army to engineer a specialized protective hard case for a high-value Auxiliary Power Unit (APU). The APU required a durable, reusable container that could securely hold the unit, be easily transported, stored, and allow for quick field replacement.

The U.S. Army needed a deployable solution that allowed the new APU to be installed while the old unit was removed for repair and later returned to the field. Gemstar delivered a custom hard case designed to protect this heavy, yet fragile high-value asset during transportation and storage while enabling rapid field replacement to keep operations moving.



THE CHALLENGE

Working closely with military partners, Gemstar carefully interpreted the Army's requirements to meet the warfighter's needs. Due to the large size of the APU, a custom case was required. The solution, the Stronghold® 5935 – part of Gemstar's Stronghold protective hard case line of rotationally molded, double-walled, airtight, and watertight containers.

Designed for military-grade durability, stackability, and extensive customization, the Stronghold 5935 combined size, strength, and functionality to meet the Army's rigorous field standards. Key custom features included:

- Shock isolation and dampening system
- Airtight and watertight seal to control internal humidity and protect sensitive electronics
- Four-way lift access with a forklift bash plate
- Stackable design for up to three containers high during storage, deployment, and transfer
- Internal drain plugs to remove water during field unit replacement

Stackability was a non-negotiable requirement. Each case weighs 730 lbs., yet Gemstar engineered them to safely stack three high, ensuring efficiency in storage and deployment.

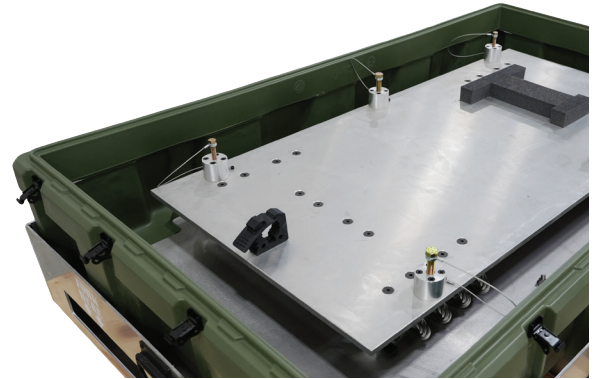
Reusability was another priority. The Army considered alternatives like wood or steel, but Gemstar's plastic solution provided lighter weight and better environmental control. The case features a custom internal humidity control system to safeguard electronic components.

ENHANCED FIELD USABILITY

A four-way lift access system provides flexibility in transportation and handling, while the forklift bash plate allows access from all sides. A major asset for field personnel was the development of part replacement kits that allow for the change-out of all serviceable parts. This package enables part replacement in the field instead of the more costly and time-consuming process of returning the unit to a repair depot.

Another key innovation is the wire rope isolator system, designed to manage static load. The wire rope is a large steel cable wrapped into the shape of a circle. The system provides a method to contain and control the static load of the container, allowing two to three inches of controlled movement within the case.

Additional features include a custom metal nameplate displaying container weight and essential safety and handling instructions for forklift operator



Wire rope isolator system, to contain and control the static load.

ROBOTIC ROTATIONAL MOLDING IMPROVES CONTAINER TOLERANCES

In manufacturing, Gemstar made adaptations and adjustments along the way, converting the project from strictly traditional rotational molding to its Robomold® robotic rotational molding technology to produce a straighter, more consistent container. At the outset, Gemstar bought a large rotomolding machine that was 100% dedicated for this U.S. Army program. “The unique size of the unit along with the weight and customization features required additional equipment,” said Barry Birkholz, Director of Technical Packaging. “We invest in our customers when it aligns with our capabilities.”

Gemstar made the conversion by redesigning the tool so it could be adapted to the proprietary Robomold® technology. Robotic rotational molding is a leading-edge technology that’s ideal for military, OEM, industrial, and commercial applications where precision and repeatability are essential. Because the manufacturing process is fully automated and involves a six-axis robot, Robomold® increases product consistency and quality. It also creates high tolerances with precision-distributed heat and material control for consistent plastic part repeatability and optimized strength-to-weight ratios.

READY TO SERVE AMERICA'S MILITARY

Gemstar designs and manufactures hard cases specifically for military applications. To learn more about Gemstar's expertise in military and government applications call us at 800.533.3631.