



## CASE STUDY

### Aegis Combat System Fire-Control Hardware Cabinet

#### SUMMARY:

#### Shock-Proof Cabinets Modernize Aegis Combat System

When the U.S. Navy sought to modernize its Aegis combat system's fire-control hardware, it faced the challenge of replacing legacy equipment racks with new digital cabinets that could fit existing spaces and survive the harsh naval environment. The Aegis MK 99 fire-control system uses Data Converter Cabinets as the critical interface between the ship's radar and its missile launchers [janes.com](https://www.janes.com).

#### CHALLENGE:

Cabinets had to be shock-proof for shipboard use and shielded against the high-power radar's electromagnetic emissions. The technical hurdle was to design an updated enclosure that maintained or improved performance without compromising on ruggedness.

#### SOLUTION:

Optima Stantron provided a modern MB-Series bolt-together cabinet engineered as a drop-in replacement for the older units. This enclosure is a hard-mount design (no floating isolators) built with reinforced framing to directly withstand ship shock. Using a weld-free aluminum structure with internal bracing, the cabinet can handle heavy shock and vibration loads. It was qualified to MIL-S-901D ship shock standards through analysis and testing, ensuring it would survive the same blasts as the original equipment. The enclosure also features conductive gasketing and filtering to meet MIL-STD-461 for EMI, given the close proximity to high-energy radar and missile systems.

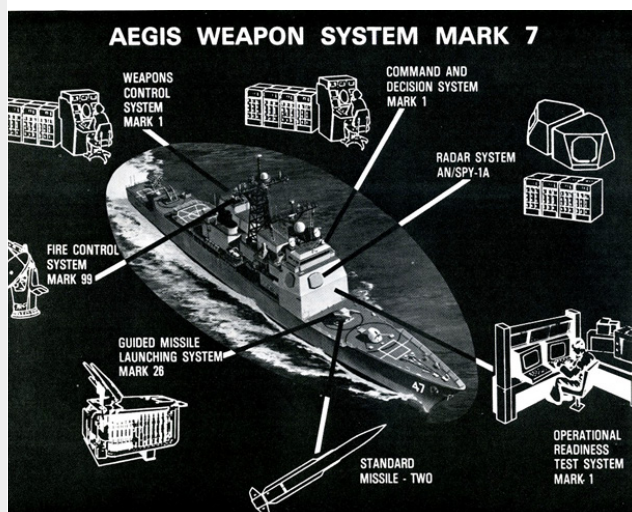
- **Compact footprint:** Dimensioned to fit the existing Aegis equipment bays, easing integration into guided missile destroyers.
- **Structural rigidity:** Hard-mounted frame with reinforced joints survives direct shock without deformation. (No welds means fewer failure points under stress.)
- **Shock and vibe tested:** Certified to withstand high-impact shock (MIL-S-901D) and continuous engine-room vibration, protecting the fire-control electronics.
- **EMI shielding:** Conductive seals and cable filtering ensure compliance with MIL-STD-461, preventing radar and radio interference.



**Figure 1 Optima MB Ultra-rugged bolt together cabinet**

## Outcome:

By deploying these shock-proof cabinets, the Navy extended the Aegis system's service life with state-of-the-art digital hardware in a rugged package. The upgraded Data Converter Cabinets now reliably link the Aegis radar and missile control systems even under battle shock conditions. This modernization improved system performance and maintained full combat survivability, all while avoiding a costly redesign of ship infrastructure. Optima Stantron's solution delivered an elegant balance of new technology and proven toughness—optimizing performance, mechanical design and versatility to meet the fleet's requirements.



## Elma Electronic

A global leader in embedded computing solutions including integrated chassis systems, board products, modular enclosures, equipment cabinets.

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