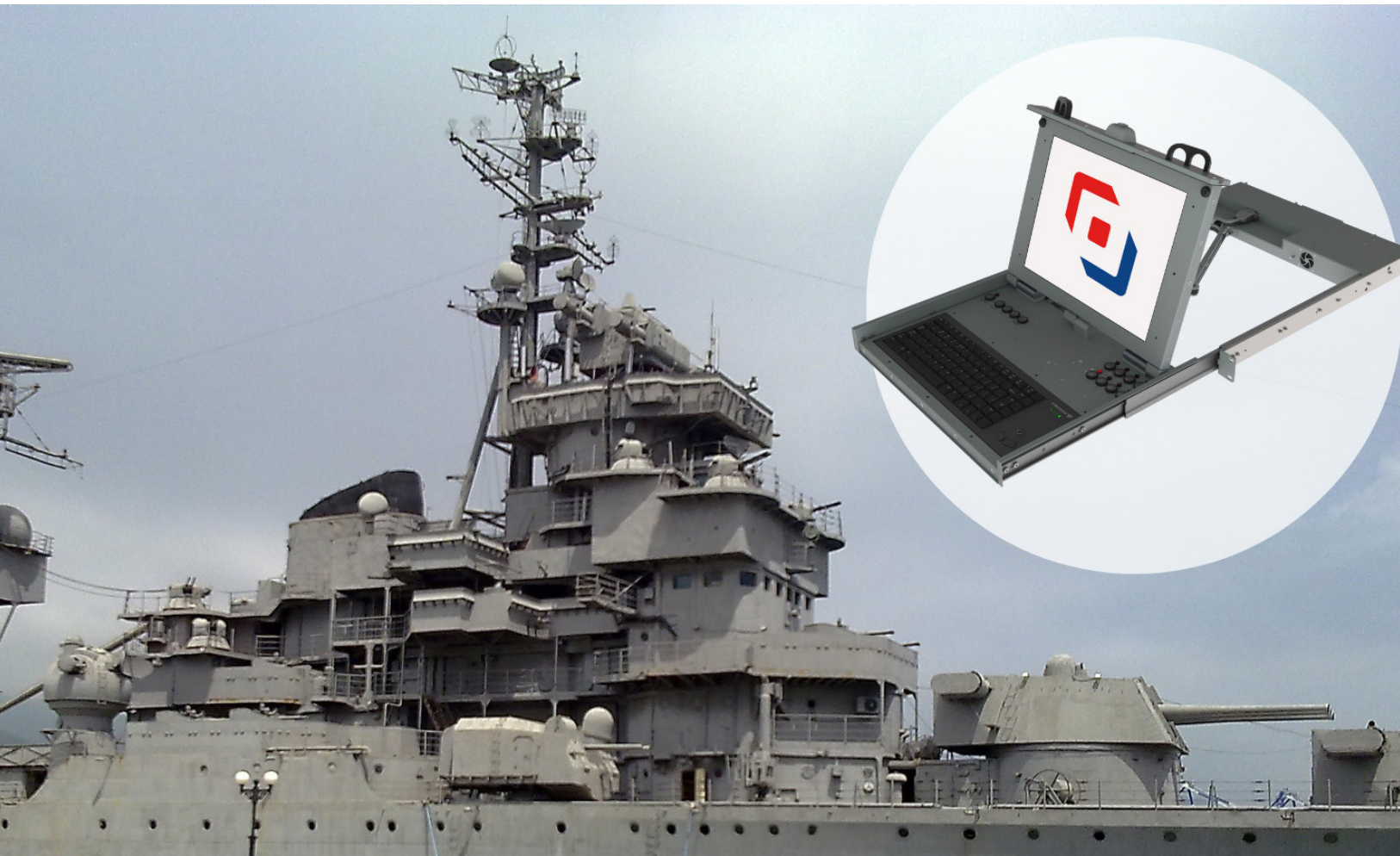




Case Study: Complex In-Service Tech Refresh

Background

A tech refresh is the planned process of replacing or upgrading aging hardware and software to maintain or improve performance, security, and supportability of mission-critical systems. It's often driven by certain components reaching end of life (EOL) or end of support (EOS) status.

The Challenge

One of our customers came to us as they had been awarded a contract to carry out the replacement of some military-grade kit currently in use in a maritime application. It was no longer feasible to maintain the current equipment, so a full replacement was required. The equipment in question was two 1U servers and a KVM (keyboard, video, mouse) drawer.



The system had to withstand extreme shock – the requirement was 20G with the KVM in its extended position. All units also had to be TEMPEST compliant and needed to meet a service life requirement of 15 years.

The legacy kit was heavily customised in terms of the racks themselves, so it was a challenging design project to ensure everything fitted. Bespoke cabling, connectors, and mounts were necessary. Additionally, a custom radio interface required a specific I/O card, and a custom interface PCB needed to be designed.

The Solution

Our team set about designing the rackmount units to fit the required spec. They included a custom-designed pcb to replicate a legacy interface, as well as interfacing to a proprietary communication card, plus multiple serial ports.

Once built, the units were rigorously tested to meet the demanding levels of ruggedness. The environmental / EMC requirements that were met or surpassed included:

- -10°C to +70°C storage temperature
- +15°C to +40°C operating temperature
- 15g shock operate through
- 20g shock survive
- Vibration MIL STD 810g Method 514.7
- EMC – CE qualification
- TEMPEST – SDIP 27 level B
- Low magnetic signature

A land-based mock-up of the platform was created to allow for a test fit-out to ensure the enclosure, cabling, mounting points etc were all in line with the legacy kit. The system was also designed to be self-licensing, so custom BIOS was written to enable Windows to be activated without being connected to the internet.

Further on in the project, a retro-fit module to support fibre optic capabilities was also added. As these signal levels were higher than a standard serial port, this module had to be custom-designed and re-TEMPEST certified.

Technical support through the project was as important as the design and manufacture, and our experts guided the customers' team through the entire process.

Maintaining Functionality in the Field

Our experienced team of security-cleared staff regularly undertake highly complex tech refreshes for land, sea and air systems. We are able to assist with design, prototyping, testing, manufacture and complete project management to meet the most demanding military and industrial requirements.

[Get in touch](#) with us to explore our extensive capabilities and rugged system knowledge.

