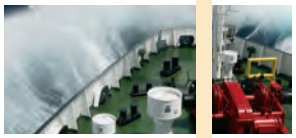

PRODUCT APPLICATION NOTE

**Shipboard Electrical Protection**

# *Implementing Reliable Surge Protective Solutions on Vessels*

*Modern shipboard electronic equipment is sensitive to power surges and exposure to transient overvoltages which can lead to high failure rates and costly repairs. Raycap has products designed to protect any and all service voltage configurations required for shipboard power systems.*


## *The Challenge*

How do you protect sensitive electronic equipment from the devastating effects of transient voltage surges? These are events where the magnitude of the voltage increases significantly for a relatively short period of time. The cause may be from heavy loads turning on and off, from lightning events, and/or from operational failure of fuses or circuit breakers; all phenomena which occur frequently onboard commercial ships. Electrical system failures from overvoltages create financial and operational challenges for large commercial vessel operators. At the same time, extensive electrification of new ship building has become the trend over recent years. Most of the ships critical systems are now controlled by sensitive electronic components. The digital servo unit of the main engine and the boiler PLC are just two examples of such critical systems, vulnerable to power surges. Failure of these systems could have serious implications in the operation of the vessel. If for any reason a replacement part cannot be sourced immediately, the vessel may need to remain in the harbor until the replacement arrives. In such cases the operator would incur even heavier losses. For example the cost of an empty idle oil tanker ranges between 10,000 and 25,000 euros per day.

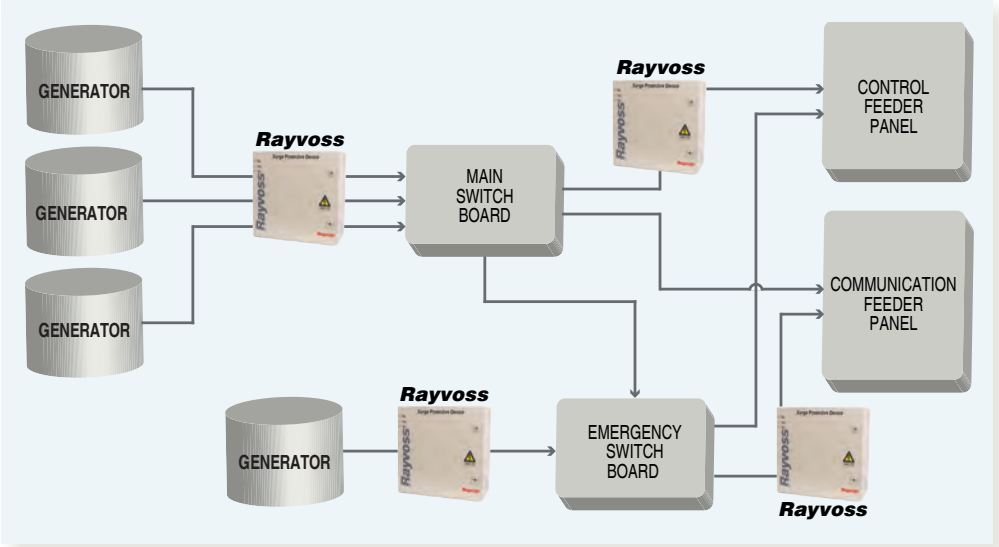


*Figure 1: Block diagram of an electrical protection installation for a typical vessel electrical layout.*

### Solution

Raycap can provide a stable electrical environment and virtually eliminate the losses caused by electrical overvoltages. The protection units are installed in two main areas: central distribution points, main and emergency panels, and dedicated feeder panels such as the bridge N1 panel. Once installed, Rayvoss® SPDs featuring Strikesorb® technology can effectively protect mission-critical systems powered by bridge, cargo, engine and control feeder panels; and the steering control electronics, among others.

### Conclusion

From installations aboard US Navy guided missile destroyers, to LNG carriers, oil tankers and container vessels, Raycap solutions are the most effective way to protect critical shipboard equipment from catastrophic failure and ensure the reliability and availability of all mandatory functions.

*"Rayvoss surge protection systems provide the ultimate electrical protection to marine, shipboard applications and military infrastructure. Strikesorb, the surge suppression module found at the core of Rayvoss systems, is a high surge capacity protection element able to efficiently manage high-energy transient currents. Rayvoss systems offer maintenance-free protection and are perfectly suited for mission-critical applications in rugged environments."*


*Figure 2: Rayvoss M surge protective device installation on the inert gas control panel.*


*Figure 3: Rayvoss M systems strategically placed at the Emergency Switch Board (ESB) of the vessel provides vital protection to critical shipboard functions.*


***Strikesorb 40***

### Strikesorb Benefits

- Maintenance-free operation
- Safe operation: No smoke, fire or explosion
- Unique capability to withstand multiple high-energy transients
- Low let-through voltage, therefore providing excellent protection compared with competitive SPD products
- Class I/Class II compliant SPD per IEC 61643-11
- Global standards compliance: UL 1449 5th Edition, IEC, IEEE, NEMA
- Approved by major class societies
- 10 year global product warranty

***Raycap is a trusted partner, providing maintenance-free electrical protection solutions for mission-critical applications in hundreds of thousands of installations worldwide. For a detailed presentation on how Raycap's Strikesorb-based solutions can protect your on-board operations, contact us today.***

**Raycap**

**www.raycap.com**