

An Overview of Always On Marine-Classified Uninterruptible Power Systems



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Electricity has been used on board ships for over one hundred years, with the initial introduction in 1880 being used to power lighting on the passenger ship SS Columbia. Since that introduction of electricity on board, the use has continuously increased and has become a critical component in the running of safety and navigation equipment. These onboard power systems have grown in complexity and quality over the years, leading to stricter reliability requirements throughout the industry.

This document gives a brief overview of a few big questions surrounding uninterruptible power system application in marine-based electrical systems.

- ♦ How are electrical systems on board a ship different than the ones on land?
- ♦ What are some of the common problems caused by the systems used in marine applications?
- ♦ How are Always On uninterruptible power systems designed to work with these problems?
- ♦ Why do we choose to have our systems ABS certified instead of certified by other similar certification companies?

The answers to these questions should give you a basic understanding of the nature of ship board electricity and why marine-classed uninterruptible power systems are such an essential component in the use and maintenance of shipboard electricity.

On Land vs. On the Water



How are electrical systems on board a ship different than the ones on land?

Electrical power on board a ship has always been complicated in comparison to power on land because it includes DC and AC subsystems of several operational frequencies and voltage levels, particularly in more complex tech-forward ship builds. On land we use grounded AC power systems that serve to prevent shocks or electrocution; however, if we were to use grounded AC power systems onboard, the possible ground current may give rise to serious electrolytic corrosion and damage to the system, as well as shock or electrocution risk to onboard personnel/passengers.

Where on land systems are generally more conformal due to their flexibility with size and application, the basic design considerations of electrical system on board a ship are stricter. The focus is on providing high power with minimal space demands. These requirements can be challenging to maneuver, and they apply in the smallest boats with the least intricate requirements just as much as they do to the largest vessels with the requirements of whole floating cities.

Marine Power Problems

What are some of the common problems caused by systems used in marine application?

Marine based systems have all of the same problems that systems on land have. There is risk of harmonic distortion, power surges, switching transients, power sags, line noise, high voltage spikes, frequency variations, brown outs, and power failures. The difference between those problems occurring on land vs onboard a ship is the end result.

The effect of power outages is the most concerning of the problem end results. On land, with a grounded neutral being used, any ground fault that occurs will cause breaker to trip or fuses to open and leave the power off. Though generally manageable in most circumstances on land, for the critical systems on board a ship a power outage like this could be a catastrophic safety risk.

Harmonic distortion, power surges, switching transients, power sags, line noise, high voltage spikes, frequency variations, and brown outs all commit the end result of causing interruption in power. Interruptions in power cause unnecessary, preventable stress and wear on a ship's electrical systems. They can also cause unnecessary, preventable stress and wear on a ship's personnel.

Always On Marine Classed UPSs solve ALL of your common power problems!

Harmonic Distortion



Power Surges



High Voltage Spikes



Switching Transients



Power Sags



Line Noise



Brown Outs



Frequency Variations



Power Outages



We've got you covered!

How are Always On marine-classed uninterruptible power systems designed to work with these problems?

According to ABS standards, an off-line UPS unit, a line-interactive UPS unit, or an on-line UPS unit can be used as needed for your power backup needs; however, **it is ONLY an on-line UPS unit that will solve ALL of the problems mentioned above.** All of our Always On Marine-Classed UPSs are **on-line dual conversion design**.

Additionally, on all of our marine classed systems we use a **high grade conformal coating on all circuit boards, and a NEMA grade enclosure to ensure the most rugged design.** Our Marine UPSs have options for customization and are designed with your requirements completely fulfilled and your expectations exceeded.

An Isolation Transformer at the input and output, as well as in the optional external bypass!

All of our marine classed UPSs come with an **isolation transformer** both at the input and output, and in the optional external bypass. This effectively

- ♦ **avoids any fatal ground faults on the AC power systems on a boat if any UPS downstream ground fault happens.**
- ♦ **eliminates high frequency noises and provides a better quality of power supply.**
- ♦ **Ensures compatibility with voltage and frequency requirements anywhere within the onboard electrical system.**

When things are running smoothly on board, money and time are saved.



images not to scale

ABS Certification Excellence

Why do we chose to have our systems ABS certified instead of certified by other similar certification companies?



Always On is an ABS Product Design Assessment Approval Manufacturer with more than 10 years of experience and positive reputation within the industry. We design our Marine UPSs to meet the highest standards for quality and safety in the market.

ABS is the most thorough of the marine certifications available . Our safety values align and our rigorous quality goals for the future of marine applied systems agree. This shared dedication gives us confidence that we are doing our absolute best to meet the highest industry standards.

Because ABS certification is internationally recognized, with an extensive worldwide network of tradespeople and support staff, you can be sure when choosing an Always On Marine Classified UPS System, you're secure, safe and meeting requirements throughout the world.



Contact Us!

We'd love to hear from you! Please give us a call or send us an email!

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