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TITLE

Power Quality in a Tactical Application for the Efficiency of Warfighter: Choosing the Right Continuous Power System for Marine Applications

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ABSTRACT

It is generally accepted that power quality is critical to the reliability and efficiency of operational warfighting capability, especially the shipboard environment. However, relatively little is understood about the relationship and interaction of modern combat capability and the electrical systems they are dependent on. The failure of power and systems engineering to understand this relationship has resulted in increased cost and decreased capability throughout life cycle of the defense system or equipment on board a ship.

In recent years there has been significant R&D investments made in advanced battery chemistries, technologies and renewable energy sources for the warfighter. With the anticipation these new technologies bring, the concern for clean, conditioned power, or “Power Quality”, must remain as part of the discussion.

We will present the most common power anomalies, or Power Quality issues experienced by shipboard applications, and the catastrophic results these anomalies can cause with mission critical systems when they are not addressed. Potential solutions will also be discussed. Achieving consistent power quality across the micro electrical grid on board a ship is critical to reducing the cost of operations and maximizing warfighting capability.

When choosing an uninterruptible power supply, power conditioner, battery backup or power distribution system for military applications or other harsh settings, it’s crucial that reliability and survivability in all operating environments be considered in the context of the true life cycle costs of the purchasing decision. The UPS with the lowest initial investment may cost much more over the life of the system when replacement, sparing, logistics and downtime costs are considered.