

UPS Systems and Double Conversion Power Conditioners (DCPC) for Diagnostic Imaging, Radiation Therapy, and Hybrid OR Suites

For 30+ years, our corporate focus has been resolving power issues and providing UPS and power conditioning solutions to the medical equipment industry. More specifically, CPN Power supports Radiology, Cardiology, Oncology, Hybrid OR Suite, and Operating Room applications.



CPN Power has proven experience to recommend an approach toward power protection that offers dramatic cost and space savings.

The Story Behind the Cost Savings

A project at Charleston Area Medical Center (CAMC) tells the story best! The hospital was planning to purchase a new 256 Slice CT. The medical equipment vendor (*Company P*) offered a 225 kVA UPS to support the new 256 Slice CT. The consulting engineer on the project was aware of the Central UPS approach and suggested that the hospital review the project with CPN Power. Initially, CPN Power learned that there were plans to purchase a 2nd 256 Slice CT within the year. Secondly, CPN Power learned that there was an existing 1.5T MRI and a 16 Slice CT from a different medical equipment vendor (*Company S*) in the same department. The hospital was interested in offering protection for the 1.5T MRI and 16 Slice CT. In the end, there were (4) suites requiring protection. *Company P* suggested that they would provide a second 225 kVA UPS for the future 256 Slice CT when that system was ordered. However, *Company P* would not offer protection for the existing 1.5T MRI and 16 Slice CT provided by *Company S*. Our review of the planning documents resulted in engineering (1) 375 kVA UPS to support all (4) suites. The cost for the CPN Power 375 kVA UPS to support (4) major modalities was less than the cost of *Company P*'s 225 kVA UPS to support (1) modality. This CAMC story is typical of the cost savings offered by CPN Power for protection of Multi-Modality and Multi-Vendor applications.



For more than 30 years, CPN Power has functioned as national power consultants specific to the medical equipment industry. Our area of expertise is in Diagnostic Imaging, Radiation Therapy, and Hybrid OR Suite applications. Operating as national power consultants has allowed us to study the power profiles of the various medical equipment devices and to learn the many benefits from proper power protection. CPN Power also assures that all of the medical equipment power requirements are met or exceeded. For 10+ years, CPN Power has used that knowledge to apply Central UPS and Double Conversion Power Conditioners (DCPC) for Radiology, Cardiology, Oncology and Hybrid OR Suite applications. Through the years we have learned that providing great power conditioning is first-and-foremost. We recognized for more than a decade that power outages (in most parts of the country) do not happen that often, but bad power happens every day. In fact, most power outages are a result of the monthly generator and transfer switch testing required by code. By applying a great power conditioner, we resolve most of the problems associated with medical equipment applications. By adding backup power (Batteries or Flywheels) to a great power conditioner, we provide a package that will eliminate the anomalies that create phantom equipment problems and provide backup power during an outage. Those items combined, dramatically reduce accumulative component damage.

Glenwood Regional Medical Center provides another great example of the benefits offered by power conditioning and UPS protection. Seven (7) years ago, the hospital was having many service issues and downtime associated with a *Company G* CT, *Company S* CT, and a *Company S* MRI. CPN Power was asked to perform a power study and site audit of the power distribution. Upon completion of the study, it was determined that many power anomalies, including deep sags and very short duration outages were creating havoc with the diagnostic imaging equipment. It was determined that a 225 kVA UPS with power conditioning was the right solution for the power problems at this site. The CPN Power UPS was installed 6½ years ago.



After the first two years of operation, we received a phone call from the local medical equipment vendor service engineer. The Hospital Radiology Administrator noted to the service engineer that prior to installation of the UPS, both CT Scanners required new X-Ray tubes every 10-12 months. Since installing the new CPN Power UPS, Glenwood Regional had just passed two years without replacing the tube in either CT. These were older CT's that had a tube replacement cost of ~\$85,000 per tube. Today, most tubes have a much higher replacement cost for all diagnostic imaging equipment. The bottom line is that Glenwood Regional Medical Center saved \$85,000 x 2 CT's = \$170,000 by way of an extra year of tube life. At the three (3) year mark, we received another call noting that the tubes had survived yet another year without being replaced. The cost savings for this customer had now reached \$340,000 over three (3) years. We recognize that all sites will not experience the same savings, but this a great example of how power conditioning can help to minimize accumulative component damage and the resulting repair costs.

Besides the cost benefit of a longer tube life, the Medical Center also eliminated downtime associated with the past outages and reduced the many service calls that occurred prior to the UPS System installation. A Central UPS with power conditioning offers protection for all equipment, thereby reducing accumulative component damage for all of the equipment. The Central UPS approach also ensures fewer service calls and increases uptime for the equipment allowing for an **improved revenue stream**. The CPN Power approach provides complete protection for the entire suite.

**THE CPN POWER APPROACH
PROVIDES COMPLETE PROTECTION
FOR THE ENTIRE SUITE.**

Central UPS Benefits vs. Many Individual UPS Systems:

- Lower initial cost of power protection equipment and installation
- Reduced floor space requirements of power protection equipment
- Lower cost of air conditioning equipment and installation
- Lower cost of power protection equipment maintenance
- Lower cost of operation due to much higher energy efficiency
- Lower cost of battery replacement
- System sizing can allow for future modalities
- Protection is offered to the entire suite, not just partial protection of Fluoro mode or the CT table/gantry
- Lower medical equipment service costs due to complete protection from all power problems

Power Protection has emerged as a "MUST HAVE" requirement for Diagnostic Imaging:

- The high cost of medical equipment justifies the level of protection
- Short-term outages can result in longer-than-acceptable equipment downtime
- New applications are more sensitive to voltage sags and power outages
- Potential liability associated with power failures during invasive procedures
- National power grids are becoming less reliable due to de-regulation
- Summertime brownouts and electrical power grid switching create long-term nuisance medical equipment problems
- Power problems can adversely affect image quality
- Installing power protection ensures that - "Power disturbances will no longer be the basis of a service issue."
- Monthly generator testing impacts medical equipment reliability
- Multi-Modality & Multi-Vendor power protection is now available and affordable
- Improved equipment operation, less patient re-scheduling, and fewer service issues guarantee increased revenue

TYPICAL MODALITIES SUPPORTED

Cath Labs		EP Labs		MRI		CT Scanners		IR Labs	
PET/CT		Hybrid OR Suites		Vascular Labs		Intraoperative Suites		R&F Rooms	
Angio Labs		SPECT/CT		Digital Rad Rooms		LinAc		CT Simulator	
Mammography		Proton Therapy		Nuclear Medicine		Operating Rooms		PET/MRI	

July 2013