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UPS size matters for top reliability

01/03/2011

Piller Group GmbH UPS expert, Dip-Ing Frank Herbener has put together a fascinating article that poses the important question – when it comes to UPS units are fewer larger units more reliable than numerous smaller ones?

Using the reliability indices of Mean Time Between Failure (MTBF) and Mean Time to Repair (MTTR), Herr Herbener begins by showing conclusively that using components with less required maintenance can improve system reliability due to less frequent down-time, making the internal design of the UPS critical for unit reliability.

Acknowledging the importance of redundancy in system design, Herr Herbener nonetheless shows that the reliability of an individual UPS is still critical for system reliability. He supports this with a diagram showing the MTBF number of a system including different numbers of the parallel units plus 1 redundancy. Since it is obvious that a system with 1+1 redundancy has a better reliability than a system with 3+1 redundancy the graph clearly shows that reliability declines with the introduction of more parallel units.

Herr Herbener also demonstrates the importance of knowing a UPS system's operating logic before drawing a Reliability Block Diagram (RBD) to calculate the reliability indices of the UPS system, as well as the importance of using very reliable components for "single point of failure", which can bring down the whole system.

He then goes on to compare four redundant UPS configurations including a redundant-parallel, isolated-redundant, isolated-parallel and system-system redundant looking at system-MTBF for unit MTBF of 100,000 hours and system-MTBF for unit MTBF of 200,000 hours.

The results clearly show that for the last two configurations the MTBF numbers for the 200,000 hours are considerably better than for the first two configurations; proof positive that choosing a more reliable UPS unit in the same configuration has a very large and significant impact on system reliability.

Overall, Herr Herbener's article proves the importance of choosing the larger size UPS units as they are more reliable. The reliability of the individual UPS is still very important and this must be given enough attention in every design.

To view the entire article "The Reliability of the individual UPS, Still an issue?" by Dip-Ing Frank Herbener, Piller Group GmbH, contact info@piller.com

About Piller

Piller is a world leader in power protection technology, building systems for "mission critical" applications world wide. The company was founded in Osterode, near Hanover in Germany in 1909 by Anton Piller and acquired by the British engineering group Langley Holdings PLC (www.langleyholdings.com) in 2004. Today, the company is still headquartered in Osterode and employs approx. 750 people worldwide.