CDE CORNELL DUBILIER
ENERGIZING IDEAS

Ultra Low-Inductance Capacitor for High-Efficiency Renewable Energy Inverter

The Situation

Renewable energy (wind and solar) has finally begun to fulfill its promise as a legitimate mainstream power generation alternative to fossil fuel sources. There has been a tremendous growth in the number of suppliers for both home-based and larger commercial units. In order for these systems to succeed, the power conversion assemblies must provide a combination of high efficiency, high reliability, and competitive cost.

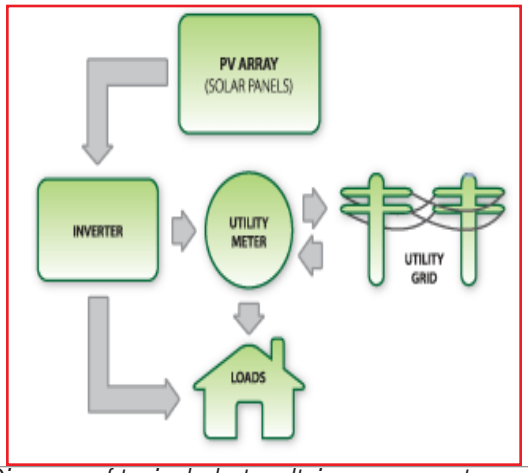

Diagram of typical photovoltaic energy system. The power inverter feeds electricity to both the utility grid and directly to residential customers.

The Problem

A company engaged in the design and manufacture of photovoltaic grid tie-in systems was struggling with ways to boost their conversion efficiency and improve the reliability of their IGBTs, which were failing at an unacceptably high rate. After trying an number of different options, they came to CDE for help.

The Solution

CDE was able to design a capacitor that met their electical performance requirements (1200V, 75 µF) and improve reliability and efficiency. The packaging enabled direct mounting to four IGBTs and top posts for DC input and monitoring.

The rated inductance on this capacitor is less than **1.5 nH** with a current rating of **150 Amps rms @ 50 kHz ripple frequency at 55°C.**

This capacitor is now the standard DC link for all their systems.