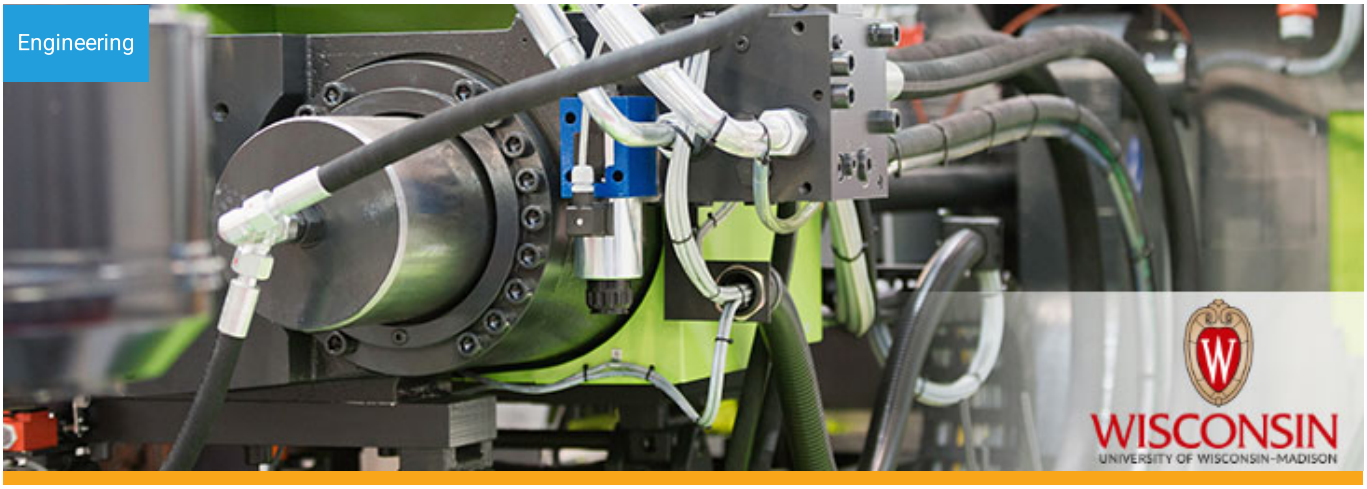
Engineering



TRANSFORMER CONNECTED BRIDGE POWER CONVERTERS LEAKAGE CURRENT CONTROL

WARF: P250222US01

Inventors: Mahima Gupta

The Invention

A UW-Madison researcher developed new power electronics conversion circuit designs and modulation and control techniques improve power levels, power density, and efficiency. For the circuit topologies, the key features include the presence of multi-port high-frequency transformers that will enable connection of multiple sources and loads at a single element for efficient power transfer. The transformers are smaller as it's designed to be a shared element, versus traditional designs that don't share the transformer and have to have it rated at maximum power (ie larger).

In terms of the modulation and control techniques, the key features include the circuit operation techniques that permit power transfer operation while ensuring that the leakage inductance of the transformer is absorbed in the modulation strategy itself making high frequency transformer-based topologies realistic and practical particularly at high power levels. The circuits can also be arranged in series to derive modular power electronic converters that serve various applications.

Tech Fields

- Engineering : Power electronics & control systems

For current licensing status, please contact Michael Carey at mcarey@warf.org or 608-960-9867