

Three Phase CLLC Resonant Converter

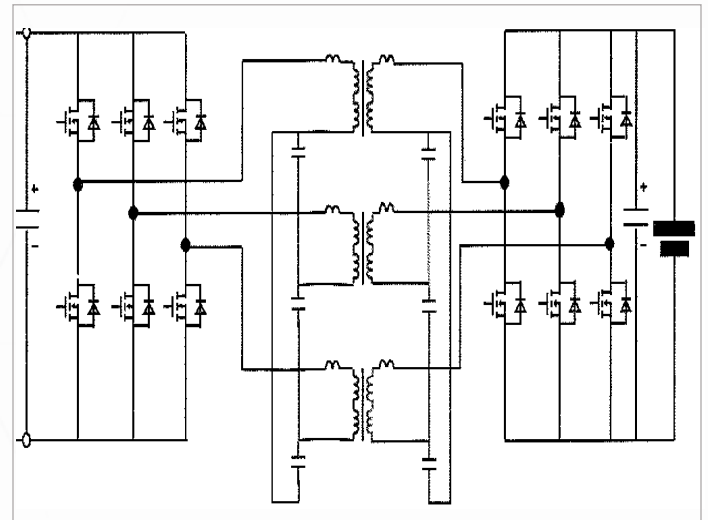
VTIP 19-022: “Three Phase Interleaved Bi-directional CLLC Resonant Converter”

THE CHALLENGE

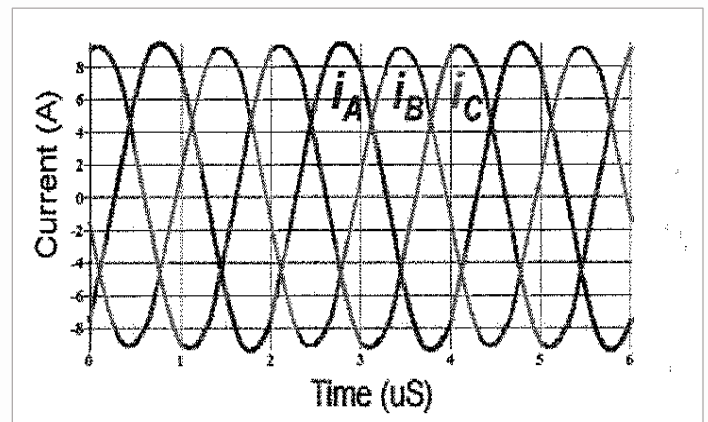
There is a need for three-phase DC/DC converters and designs have been created to attempt to meet this need. However, existing designs do not allow for bi-directional function due to the lack of resonant components on the secondary side of the converter, resulting in asymmetry.

OUR SOLUTION

The proposed design features a completely symmetrical from the primary to the secondary sides. This symmetric design lets the converter achieve identical gain characteristics and also reduces issues of core and winding loss that are present in other approaches. Additionally, the design features bi-directional power conversion by establishing the same converter operation for both forward and reverse operation.



Proposed bi-directional three-phase CLLC Resonant DC/DC Converter.



Automatic current balancing among three phases.



CONTACT:

Grant Brewer
grantb76@vt.edu
 540-231-6648