



High Power Density Switched-Capacitor Converter for Offshore Wind Energy Systems

Technology #11072

North Carolina State University is currently seeking an industry partner to further develop and commercialize the novel High Power Density Switched-Capacitor Converter.

Abstract

To tap the wind potential and to run the grid solely on HVDC, a DC-DC converter is used to convert the low voltage rectified output of the wind turbine to high voltages. This new family of step-up SC converter can significantly reduce the required filter capacitors in switched-capacitor converter, leading to high power density and reduced cost. It utilizes diodes instead of transistors in some

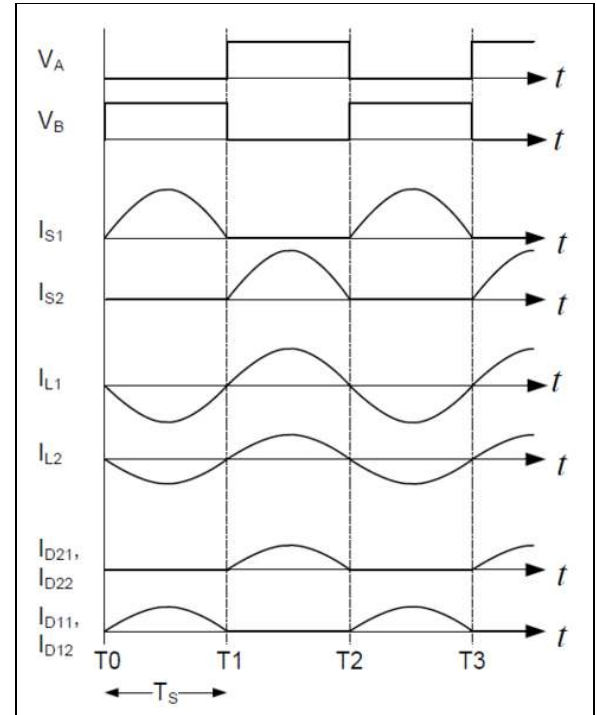
embodiments along with some design improvements to ensure superior performance over conventional DC-DC converter designs.

Advantages

- In comparison with existing switched capacitor converter, this invention requires less filter capacitor when they have the same output voltage ripple, resulting in high power density and reduced cost..
- It is promising for applications that require high step-up conversion ratio DC/DC converter.

About The Inventor

Dr. Alex Huang is Progress Energy Distinguished Professor of Electrical Engineering at North Carolina State University. He also director of the Advanced Transportation Energy Center (ATEC) as well as the director of the NSF Engineering Research Center, The FREEDM Systems Center at North Carolina State University. Dr. Huang is a fellow of IEEE. His research areas include Power Management Integrated Circuit, Power Semiconductor Devices, Advanced Power Electronics, Renewable Energy Integration and Smart Grid.



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