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电力电子与电力传动

双Buck双向交流斩波器

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摘要： 提出一种新颖的双降压式交流斩波器。传统交流斩波器换流时必须遵循严格的换流次序，存在换流时器件电压尖峰过高的问题；一般采用等占空比调制，对交流系统已有的谐波畸变没有任何抑制能力。双降压式交流斩波器可实现AC/AC直接降压变换，或反方向的AC/AC直接升压变换。采用电流单向开关和半周工作方式，结构简单、所需器件较少；由于电路结构的内在特点，无桥臂直通的可能，功率器件可同时导通，从根本上消除了换流电压尖峰；采用滞环电流控制方案的双降压交流斩波器具有良好迅速的输出电能瞬态调节能力，可得到高质量的输出电压波形。试验验证了以上分析的正确性。

关键词： 交-交变换 斩波器 双向

Bi-directional Dual Buck AC Chopper

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Abstract: A novel bi-directional dual Buck AC chopper is presented in this paper. A very big peak voltage will occur when current convert form one switch to another in traditional direct AC/AC converter due to bi-directional switches are employed. Because duty cycle is remained constant in most traditional direct AC/AC converter, the output voltage is always follow input voltage and it's waveform can not be adjusted. Bi-direction dual Buck AC chopper is composed of two Buck converter and can achieve voltage drop AC/AC converter in forward direction or voltage Boost AC/AC converter in reverse direction. Only current unidirectional switches are employed in this converter and those switches can turn on at the same time, so the current can converter naturally and there is no peak voltage problem at all. The output voltage can be adjusted rapidly and good waveform can be gotten when the hysteresis current control scheme is adopt. Experiment verifies those analysis.

Keywords: AC/AC chopper bi-direction

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