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Abstract: This paper presents the Direct Power Control of Three-Phase Matrix Converters (DPC-MC) operating as Unified Power Flow Controllers (UPFC). Since matrix converters allow direct AC/AC power conversion without intermediate energy storage link, the resulting UPFC has reduced volume and cost, together with higher reliability. Theoretical principles of DPC-MC method are established based on an UPFC model, together with a new direct power control approach based on sliding mode control techniques. As a result, active and reactive power can be directly controlled by selection of an appropriate switching state of matrix converter. This new direct power control approach associated to matrix converters technology guarantees decoupled active and reactive power control, zero error tracking, fast response times and timely control actions. Simulation results show good performance of the proposed system.

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