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FUZZY BASED MODELING OF IPFC WITH-OUT COMMON DC LINK FOR POWER FLOW CONTROL IN 3-PHASE LINE

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Abstract

The IPFC (Interline Power Flow Controller) is among the FACTS devices aimed at simultaneously controlling the power flow in multiline systems. The Separated IPFC presented is a new concept for a FACTS device. The S-IPFC is an adapted version of the IPFC, which eliminates the common DC link of the IPFC and enable the separate installation of the converters. Without location constrain, more power lines can be equipped with the S-IPFC, which gives more control capability of the power flow control. Instead of the common dc link, the exchange active power between the converters is through the same ac transmission line at 3rd harmonic frequency. The 'master' converter can adjust the voltage magnitude, transmission angle, and line impedance. The 'slave' converter provides the active power for 'master' converter and at the same time adjusts its own line reactance. The fuzzy logic controller in the converter section is used to calculate the 3rd harmonic voltage. This paper presents the basis theory of the S-IPFC, primary control loop and the corresponding simulation results.

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