High power switch mode linear amplifiers for flexible AC transmission system

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Abstract

The pulse width modulation (PWM) technique has been proposed for the force-commutated shunt and series VAr controllers and unified power flow controllers in flexible AC transmission systems. The PWM converters can be operated as linear amplifiers of constant gain so that linear control system theory can be brought to bear more easily when applying feedback controls. For example, pole-placement and active filtering have been successfully applied in laboratory models. This paper is written as a tutorial describing the stages of signal processing: modulation, amplification and demodulation, without reference to power electronics since the solid-state switches are modelled as ON-OFF switches

Keywords: PWM invertors; PWM power convertors; amplifiers; commutation; demodulation; feedback; flexible AC transmission systems; load flow; load regulation; power system control; reactive power control; signal processing; static VAr compensators; switching circuits