

CDM-Based Controller Design for High-Frequency Induction Heating System with LLC Tank

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Abstract : This paper presents the design of a polynomial controller with coefficient diagram method (CDM). This controller is used to control the output power of high frequency resonant inverter with LLC tank. One of the most important problems associated with the proposed inverter is achieving ZVS operating during the induction heating process. To overcome this problem, asymmetrical voltage cancellation (AVC) control technique is proposed. The phased lock loop (PLL) is used to track the natural frequency of the system. The small signal model of the system with the proposed control is obtained using extending describing function method (EDM). The validity of the proposed control is verified by simulation results.

Keywords : induction heating, AVC control, CDM, PLL, resonant inverter

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