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Analysis of Electromechanical Torsional Vibration in Large-Power AC Drive System Based on Virtual Inertia Control

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Abstract : A method based on virtual inertia for suppressing electromechanical torsional vibration of a large-power AC drive system is presented in this paper. The main drive system of the rolling mill is the research object, and a two-inertia elastic model is established to study the mechanism of electromechanical torsional vibration. The improvement is made based on the control of the load observer. The virtual inertia control ratio K is added to the speed forward channel, and the feedback loop adds 1-K to design virtual inertia control. The control method combines the advantages of the positive and negative feedback control of the load observer, can achieve the purpose of controlling the moment of inertia of the motor from the perspective of electrical control, and effectively suppress oscillation.

Keywords : electromechanical torsional vibration, large-power AC drive system, load observer, simulation design
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