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The Electronics Design of Error Field Feedback Control System in KTX

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KTX (Keda Tours eXperiment) is a new RFP (reversed field pinch) device at the University of Science and Technology of China. The unique double-C design of the KTX makes modifications and investigations of power and particle control easy, but the error field of slit zone in the new design should not be neglected. The objective of this paper is to introduce a new active feedback control system which can change the voltage between the unique double-C structures to make the toroidal field better. FPGA is the central part of the whole system to control all the process, because it can manipulate and transmit the data from coils in real time. There are 2 high-speed 8-channels ADCs in the system to convert the analog signal from 16 Rogowski coils which can detect dynamic eddy current of copper shells near the vertical gap. FPGA also control the external power amplifier to change the voltage between the unique double-C structures by commanding 16 high-speed DACs to give the RFP device a feedback. Result indicated that the error field in KTX device was reduced, and the system could successfully achieve fast matrix calculation with lower delay.

Minioral

Yes

Description

feed-back control

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