

Abstract Submitted  
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**Application of electric double layer capacitor to sec-order DC power supply for plasma confinement experiments TS-3 and UTST** K. ABE, M. INOMOTO, T. YAMADA, A. KUWAHATA, S. KAMIO, M. SAKUMURA, Q.H. CAO, T. WATANABE, N. SUZUKI, R. IMAZAWA, Y. ONO — Electric double layer capacitor (EDLC) is an electrochemical capacitor which has much higher energy density and larger capacity compared with conventional capacitors and applied as energy-storage devices in electric vehicles and so on. In this research, we developed a new application of the EDLC to a sec-order quasi-DC power supply like flying-wheel motor-generators. We employed an EDLC with capacity of 29.4 F and the voltage and current ratings of 100 V and 100 A, respectively and constructed an EDLC power supply for equilibrium coils of magnetically confined plasma experiments. This EDLC-type DC power supply is about one-order cheaper than the conventional flying-wheel motor-generators. We demonstrated its initial operation with peak current of 100 A and duration time of 3 s. We applied the EDLC power supply for the TS-3 device and confirmed the plasma discharge operation. The EF coil current waveform has flat top duration of about 1 s, which is much longer than TS-3 and other fusion plasma experiments.

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