



Contribution ID: 897

Type: Oral

Characterization of Nano-second Pulsed Power Generator Synchronizing Double Inductive Energy Storage Circuits with Semiconductor Opening Switch

Tuesday 25 June 2019 11:15 (15 minutes)

As a new method to enhance nanosecond pulsed power, aiming improvement of cold plasma applications, we designed a type of circuit that is amplified by synchronization of double simple inductive energy storage (IES) circuits with a semiconductor opening switch (SOS) diode. Secondary circuits of simple IES circuits which consist of capacitors, a pulse transformer, MOS-gated thyristors, and a SOS, were connected in parallel and in series, and power amplification has been succeeded at low repetition rate by synchronization of reverse currents through the SOS diodes in two circuits. However, there are some problems, e.g., synchronization deviation by variation of load and repletion rate, difficulty of circuit adjustment for synchronization, and low efficiency. Aiming to those improvement, characterization of the pulsed power generator was carried out by spice simulation and experimental circuit estimation. Our presentation details current and energy transfer path in the circuit including parasitic components, which were obtained from the circuit characterization.

Author: SUGAI, Taichi (Nagaoka University of Technology)

Co-authors: Mr YAWATA, Kosuke (Nagaoka University of Technology); Mr YANG, Yiwen (Nagaoka University of Technology); Mr TOKUCHI, Akira (Pulsed Power Japan Laboratory Ltd.); JIANG, Weihua (Nagaoka University of Technology)

Presenter: SUGAI, Taichi (Nagaoka University of Technology)

Session Classification: 7.2 High Current and High Power Pulsers I

Track Classification: 7.2 High Current/High Power Pulsers