Contribution ID: **281** Type: **Invited**

Pulsed-Power Generation and Application Enabled by Solid-State LTDs

Tuesday 5 June 2018 08:30 (1 hour)

Weihua Jiang, Akira Tokuchi, Taichi Sugai, Keita Inagawa, Takayuki Hangai, and Genta Sagisaka

Extreme Energy-Density Research Institute, Nagaoka University of Technology, Japan

Solid-state linear transformer driver (LTD) technology is being studied at Nagaoka University of Technology. It is a different approach to compact pulsed-power source development from that based on traditional magnetic pulse compression. Pulsed power generators based on the LTD scheme are characterized by modular structure and inductive output adding. These characteristics have brought higher flexibility and versatility to pulsed power generators, allowing more functional and more efficient applications in many industrial areas. Solid-state LTDs are in principle similar to the large, spark-gap switched LTDs, although they have been developed for very different purposes with totally separated operation parameters. Solid-state LTDs use power semiconductor devices as switches and the switching-off capability and the highly repetitive potential of the semiconductor devices have very much distinguished solid-state LTDs from the large ones.
It has been demonstrated that the LTD output adding can be utilized as a means of output waveform variation, by adequately controlling the relative timing of different modules. With all module switches controlled by binary signals generated by a logical circuit board, the solid-state LTD system is controlled electronically, allowing us to explore the possibility of “smart pulsed power” sources.
Solid-state LTDs are developed for industrial applications. Development projects are underway as our collaboration with different industrial partners. The advancement in pulsed power sources is being turned into that in performance and productivity.

Authors: JIANG, Weihua (Nagaoka University of Technology); Mr TOKUCHI, Akira (Pulsed Power Japan Laboratory Ltd., Nagaoka University of Technology); SUGAI, Taichi (Nagaoka University of Technology); INAGAWA, Keita (Nagaoka University of Technology); HANGAI, Takayuki (Nagaoka University of Technology); SAGISAKA, Genta (Nagaoka University of Technology)

Presenter: JIANG, Weihua (Nagaoka University of Technology)

Session Classification: Plenary 2 - Germeshausen Award