



Contribution ID: 66

Type: Poster

Pulsed Power Generators Based on Inductive Storage and Skin-Effect Opening Switches (Energy Correlation and Technical Applications)

Monday, 19 June 2017 13:30 (1h 30m)

References [1-3] studied contactless skin-effect opening switches (SEOS) in combination with semi-conductor opening switches (SOS) and plasma opening switches (POS). This paper proposes to review in greater detail one of these combinations: a SEOS and an SOS. This combination has several attractive properties: durable functioning of each component and a good ratio of charging time to energy output to the load $\sim 10^{-7} \div 10^{-8}$. The stability of both SEOS and the SOS ensures synchronization at the nanosecond level. These properties allow this switch combination to be used in pulsed power generators based on transformer inductive storage (TIS). As an example, they can be used in generators for transmitting consecutive series of pulses along water-insulated radial transmission lines. The TIS has a torodial configuration and both the TIS and the radial transmission lines have the same axial symmetry. The number of TIS is determined by the voltage necessary for the load. Balance of inductivity in the TIS is controlled by a compensating coil.

The proposed focus of this paper is:

- pulsed power generation efficiency, namely energy loss in SEOS at each of the following stages of pulse generation, -during energy storage collection in the TIS, -during current transformation from the first winding to the second one, -and during output of the energy to the load;
 - a possible variation of SEOS and SOS combination with goal of parallel function synchronization;
 - a design of a high power pulse generator for continuous wave pulses along a radial transmission line.
- Compactness of the design and efficient energy output to a resistive load are characteristics of an TIS that incorporates a combination of SEOS with other opening switches.

Reference

1. Egorov O.G. Proc. 5th EAPPC, Kumamoto, Japan, 2014.
2. Egorov O.G. Proc. PPC2015, Austin, Texas, USA, pp.288-282, 2015.
3. Egorov O.G. Proc. 6th EAPPC, Lisbon, Portugal, 2016.

Primary author: Mr EGOROV, Oleg (TRINITI)

Presenter: Mr EGOROV, Oleg (TRINITI)

Session Classification: Poster session I - Pulsed Power Physics and Technology, Components and HV Insulation

Track Classification: Pulsed Power Physics and Technology, Components and HV Insulation