

RADIO FREQUENCIES MCG

V.A. Soshenko, O.V. Sytnik

*Institute of Radiophysics and Electronics of Ukraine
National Academy of Sciences, st. Ak. Proscura 12, Kharkov, 61085 Ukraine.
Tel.: (+38 057) 7203395; e-mail: sva@kharkov.com*

The requirement for creation of powerful electromagnetic fields has caused development of the mobile generators, which easily delivered to a given point of space. Example of a similar type of devices, are magnetic flux compression generators (MCG) which principle of work based on fast change (by explosion) inductivity when the initial current leaks in generator coil. For formation of high-frequency signals in MCG, a number of various technical decisions offered in a literature. Nevertheless, the detailed theoretical analysis of it shows the presence of serious lacks of constructions, and divergence between the declared descriptions and data of our experimental researches.

The purpose of the present work is research MCG, working in an oscillatory mode for finding - out of the major factors influencing the characteristics of signals and search of ways of increase of efficiency radio-frequency RF MCG.

The RF MCG investigation based on differential equations systems. The results of that investigation shown, that presence of the liner practically on the order reduces amplitude of a current.

Thus, results of the theoretical analysis shown that for reception of a wide spectrum in RF MCG, it is necessary to use the exponential law of reduction of inductance and the maximal width of spectrum RF MCG is limited to a strip of the oscillatory systems executed on concentrated elements. It is shown also that for construction RF MCG, it is necessary to use the designs essentially reducing losses in oscillatory systems and presence of inductance or active resistance included in parallel capacities considerably reduces an overall performance of the device.