

PECULIARITIES OF USING THE INDUCTANCE IN THE TRIGGERING CIRCUIT OF THE LTD SWITCH

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Fast LTD stages with oil insulation contain a number of parallel bricks, each brick including two storage capacitors, that are charged to peak voltage of ± 100 kV, and the bipolar spark gap LTD switch. To protect the trigger cable of this switch, it contacts the switch trigger electrode via a series trigger resistor. The tests of such single brick with a liquid trigger resistor have shown [Kim A.A., Mazarakis M. G., Sinebryukhov V.A., et al. *Lifetime of the HCEI spark gap switch for linear transformer drivers // IEEE International Pulsed Power Conference 2015, Austin, 31 May-4 June 2015.*, Kim A.A., Sinebryukhov V.A., Alexeenko V.M., et al. *Jitter of the LTD spark gap switches // Russian Physics Journal. – 2015. – V. 58. – №. 9/2. – pp. 156–160.*], that the lifetime of the brick is determined by the lifetime of the trigger resistor because of gas bubbles that appear in such resistor after $\sim 8 \times 10^3$ shots, and increase the resistance of the resistor and the time delay between the trigger pulse and the load voltage. In this paper, we describe the tests of the LTD brick including instead of the trigger resistor the trigger inductance which is designed as an elastic spiral produced of stainless steel wire.

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Keywords: LTD stage, gas switch, trigger resistor, trigger inductance.