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SELF-TRIGGERING CIRCUIT FOR A PULSE THYRATRON SWITCH IN A PULSE VOLTAGE GENERATOR

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The paper describes the self-triggering circuit of the ТДИ4-200к/25СН thyratron [1], which operates as part of a pulse voltage generator based on a pulse transformer. Thyratrons of this series have a number of advantages. They allow one to switch pulsed currents up to 200 kA with a frequency of up to 300 pulses per second, do not require maintenance, are produced with an incandescent cathode and instant readiness. Also, if there are no strict requirements for the turn-on jitter, these thyratrons are not too demanding on the parameters of the trigger pulse.

The self-triggering circuit under consideration was initially developed for the EG350 pulse voltage generator [2], which used an eight-channel switch in a gas under pressure of the trigatron type as a main switch. We replaced the main switch with a thyratron and adapted the existing trigger circuit for it. The peculiarity of the proposed self-triggering circuit (Figure 1, (*STC*)) is its complete autonomy, automatic generation of a trigger pulse at the moment the maximum voltage value is reached on capacitor *C2*, as well as simplicity and reliability.

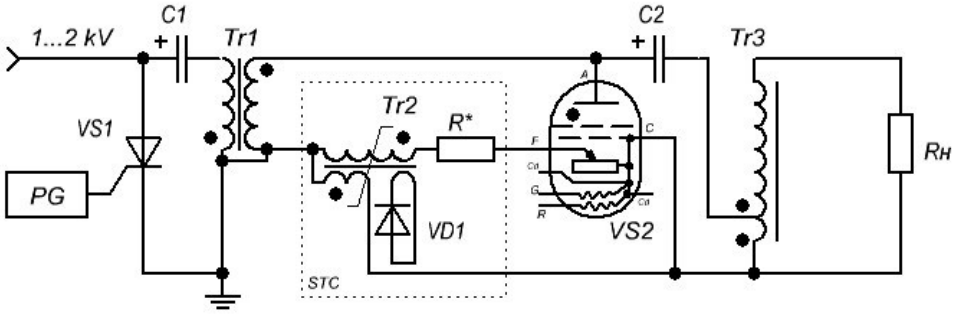

Fig.1. Schematic diagram of the pulse voltage generator: (*VS1*) ТБИ 253-1000-36 thyristor; (*VS2*) ТДИ4-200к/25СН thyratron; (*STC*) self-triggering circuit; (*Tr1*) pulse step-up transformer; (*Tr2*) peak transformer; (*Tr3*) pulse step-up autotransformer; (*VD1*) avalanche diode; (*R**) current limiting resistor; (*C1*) first stage capacitor; (*C2*) second stage capacitor.

REFERENCES

[1] http://pulsetech.ru

[2] Kanaev G. G., Kukhta V. R., Lopatin V. V., Nashlevsky A. V., Remnev G. E., Uemura K. High-voltage pulse generator for electric discharge technologies / Patent No. 2402873 dated October 27, 2010