starting and arc stabilization. At a section with constant power current through chopper transistors is broken, that means transistor commutation is without current, wastage is minimal, and that allows increasing frequency and decreasing SPS sizes. Technologically necessary quantity of steps of power may be achieved by two-three capacitors of different volume with a step switch without any close ADS. Not operating chopper- a chopper without PWM or any other way of strain regulation allows solving a problem of galvanic separation of chopper power transistors with the help of a tiny isolation transformer at self-excited oscillator output. There's no need in expensive power units with composite transistors and optoelectronic isolation [2]. Defense from through currents in "non-operating" choppers may be achieved by small-size triple wound choke [3] and current limitation by the diode-thyristor block action upon the operating system.

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NEW SYSTEM OF SEMI-BRIDGE TRANSISTOR CHOPPER OPERATING

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Transistor choppers, both single and two cycle, have found a use in different secondary power supply sources [1]. Transistor chopper operating systems are devised on typical microcontroller level [2]. This system is used to operate any two cycle chopper and may differ only by the quantity of output channels (for one bridge- four channels, for semi-bridge- two channels). The operating system generates impulse signals at operating inputs of chopper's transistors, on-off time of which determines the duration of transistor's on-mode. In semi-bridge chopper the necessary transistors' on-mode duration decreases by the stress growth. That means the necessary transistors' on-mode duration may be much less than the duration of gating impulses from the operating system's output. That leads to outrageous wastage in transistors.

The suggested operating system of semi-bridge transistor chopper [3] is shown at fig.1 and consists of semi-bridge transistor chopper 1, operating system 2, and automatic regulator 3. The chopper includes two capacitors 4 and 5, successively connected, two transistors 6 and 7, also successively connected, and two bypass diodes 8 and 9, shunting in backward direction transistors 6 and 7. Vertex of capacitors 4 and 5 and transistors 6 and 7 make an alternate current diagonal, which includes load 10.

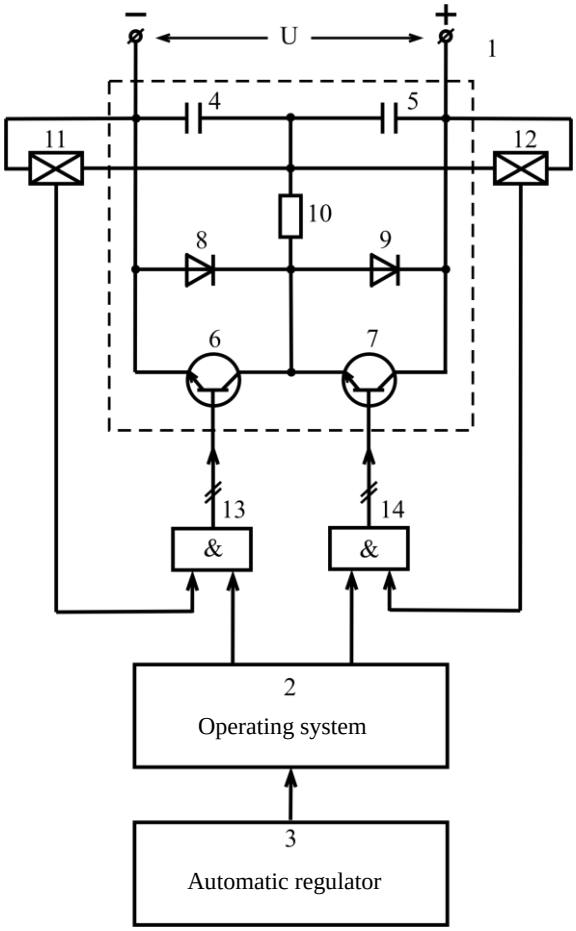

Figure 1

Capacitors' 4 and 5 and transistor's 6, 7 exposed ends are combined and respectively connected to direct-current voltage source.

Thus, block 1 represents semi-bridge transistor chopper identical to known prototypes.

Block 2 contains typical operating system of semi-bridge transistor chopper, built on the principle of pulse-width modulation which has two outputs (by the chopper's transistors). Detailed scheme of block 2 is presented in [1]. Automatic regulator 3 is connected to input of block 2, which is also a typical unit, usually presented as analog comparator. Additional elements of scheme pic.1 are two voltage sensors 11 and 12 and two logical two-input elements "I"13 and 14. Voltage sensors 11 is turned on by input in parallel with capacitor 4, and voltage sensors 12 is turned on by input in parallel with capacitor 11.

Sensor's 11 output is connected to one of the inputs of logical two-input element "I"13, and voltage sensor's 12 output is connected to one of the inputs of logical two-input element 14. Exposed inputs of logical two-input element "I" 13 and 14 are connected with respective outputs of operating system 2, and outputs of logical two-input element "I" 13 and 14 are connected with respective inputs of transistors 6 and 7. To simplify, buffer circuit of galvanic separation

and formation of signals from the detector element are not shown at pic.1.

As soon as strain at the capacitor, for example 4, reaches 0, “unit’ disappears at output of logical two-input element “I” 13, transistor 6 will close, and accumulated electromagnetic power in load 10 will discharge circuitally: load 10 – diode 9 – capacitor 5 – load 10. Besides, the discharge current will go through energy supply’s output capacity.

Wastage in transistor 6 at this interval is excluded, and accumulated electromagnetic power in the load partially goes to capacitor 5, partially returns to energy supply. Apparently, the efficiency of the suggested mechanism is higher, when load current is more, for example, while using a chopper for power supply through an electric arc’s reducing transformer in a welding set.

Reference

1. «Invertec V-130-S-Linkoln» - USA, catalogue, 1998-1999.

2. V.A.Pryanishnikov. “Electronics”, Saint Petersburg, 1988, 400 p.

3. System of semi-bridge transisitor chopper operating. License of Russian Federation # 2311719 from 27.11.2007. Author Magazinnik L.T.

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IDENTIFICATION AND FALSIFICATION FORMULARY OF STRUCTURE MEAT PRODUCTS BY MEANS OF THE PCR-ANALYSIS

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The problem of healthy nutrition of the population has the important social and economic importance. Background production of food products from animal raw materials is determined by the strategy to encourage a healthy lifestyle and nutrition of the population in accordance with the concept of public policy in this area.

The priority is the establishment of meat processing industry resource saving technologies of safe meat products of new generation with high nutritional and biological value for the different social and age groups, the relevant requirements of the Federal Law «On the Quality and food safety».

Important steps in addressing the problem of obtaining safe products of assured quality is the development, exploration and development of systems of integral control of food commodities and food products using highly effective methods of analysis. At the stage of development and introduction of GMOs are products with enhanced nutritional value, have a long shelf life, improved organoleptic, lack of allergens and other properties. Considering the use of genetic engineering in the production of meat products as very promising direction should take into account the potential for inadvertent or deliberate creation of products from GMOs may have negative effects on the human body in an uncontrolled genetic engineering. This causes the need for multilevel control of meat products with genetically-modified analogues, including the State Sanitary and industrial control with mandatory implementation of laboratory research.

In addition, based on international practice for the control of products for compliance with scientifically based formulations and determination of the commodity composition of finished meat products for compliance with the requirements of regulatory documents are often marked to comply with these requirements. However, not always and not in full can be detected in the finished meat products various not meat components, such as soy additives, starch, carrageenan, gums. Chemical methods do not provide adequate information, time-consuming and often expensive. At the same time, market conditions dictate the trend to use rapid methods for the study, among which should be allocated GOST R 52723 - 2007 «Products for food and animal feed. Rapid method of determining the commodity composition of food products by polymerase chain reaction (PCR)». The method has high sensitivity and specificity, the lack of contamination of PCR product (analysis is in a closed test tube, there is no stage of electrophoresis), significant savings of laboratory space and a shorter duration of analysis. Specificity is defined nucleotide sequence of primers, which excludes the possibility of obtaining false results. The peculiarity of this method is the determination of PCR products directly in the course of the reaction.

In connection with the foregoing, on the basis of an accredited Innovation Research Center, Orel State Agrarian University (accreditation certificate number ROSS.RU.0001.21PTS26) conducted monitoring studies of meat products for the maintenance of GMOs and carried out the identification of raw meat. The objects of investigation were more than 50 samples of meat products manufactured according to GOST and sold in the markets of the Oryol region.

Quantitative analysis of presence / absence of recombinant DNA viewer 35S in the test samples is shown that the species-specific gene found in quantities no greater than established by the Resolution of the Chief Sanitary Doctor of Russia № 42 from 25.06.2007, the Analysis of mitochondrial DNA genome of ruminant animals and the mitochondrial genome of pigs and poultry in the test material by polymerase chain reaction (PCR), in the form EPh - with electrophoretic detection of amplification products in agarose gel showed that in the first test sample contained tissue of chickens and pigs, whereas on the packaging as the ingredients are declared pork and