electro-pin welding on of protective straps on raw glue with development of recommendations in relation to technology of proceeding in resource.

Block-crankcase, head of cylinders, mode, electro-pin welding, technical state, renewal, resource.

UDC 62-83: 621,313,333

Results of experimental studies AUTONOMOUS electromechanical KOMPLEKSUIZ offset asynchronous generator

SS Makarevich, RM Chuyenko, Ph.D.

Presented and analyzed experimental results of independent electrical complex consisting compensated asynchronous generator - induction motor of comparable power.

Electric Heater complex compensated asynchronous generator oscillogram.

Problem. The development of farms causes increased demand for autonomous power supply modes are characterized rizkozminnym load and require the use of specialized equipment. This is especially true when an independent source of supply should be straight start asynchronous motors of comparable power.

Analysis of recent research. Traditional election inflated self-contained power supply sources, ensuring the successful launch of induction motors, will inevitably lead to an increase in overall dimensions, excess capital costs and operating costs [1, 2].

One of the research directions to solve this problem is to use internal capacitive reactive power compensation of induction machines [3].

The purpose of research is the analysis of experimental studies of autonomous electromechanical complex, which consists of

compensated asynchronous induction motor and generator power comparable conducted to study the qualitative picture of the physical processes in action compensated asynchronous generator obtaining actual quantitative indicators on a real physical model, verify previously obtained results of numerical experiments and confirm the benefits of added asynchronous generator of basic analog.

Results. In the offline as complex electromechanical drive motor used DC motor with separate excitation type P41 with the possibility of a

wide and smooth speed control (Fig. 1). Compensated induction generator (KAH) is based on asynchronous motor with squirrel cage AYR71V2 nominal capacity of 1.1 kW.

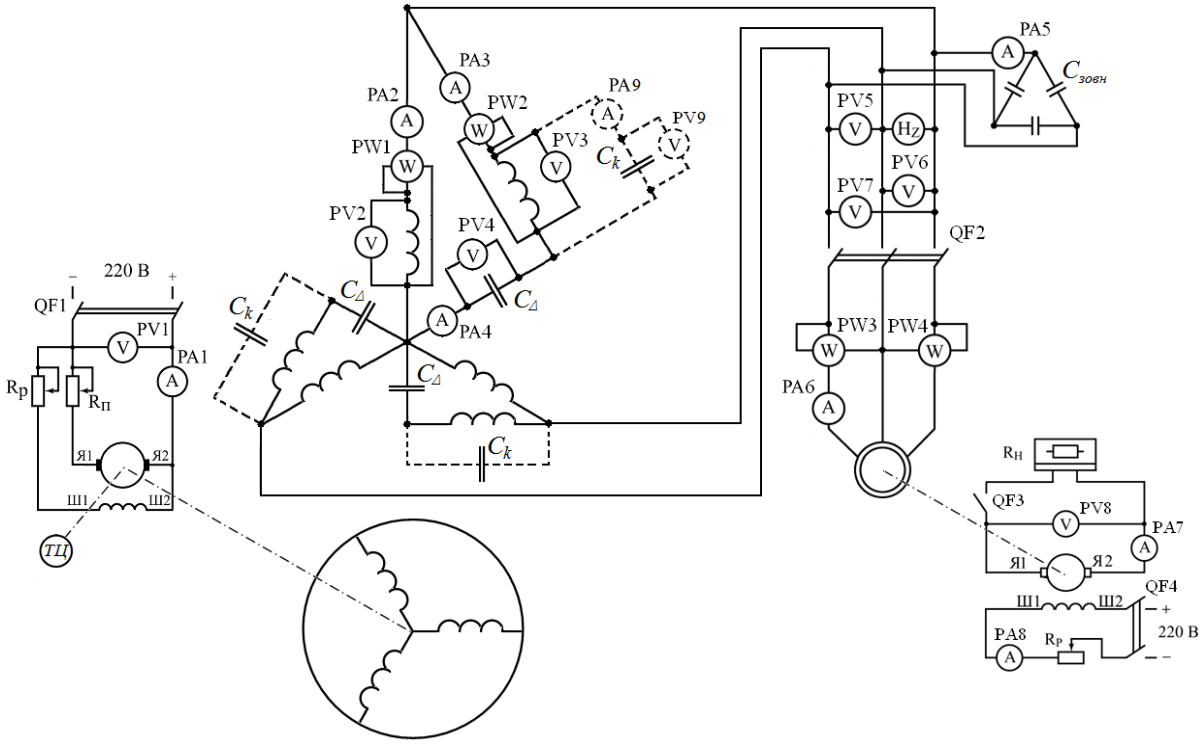

Fig. 1. The electrical circuit laboratory pilot plant.

Torque curve efficiency and mechanical characteristics of the drive motor, tachometer on its shaft can determine the point on the generator shaft speed when working on loading. Measurement of electrical quantities (voltage, current, power, frequency) in the stator winding branches in the common circle and compensated phase asynchronous generator with fixed capacities and different values of external (C, x_c), Internal (C_Δ, $x_{c\Delta}$) And additional domestic (C_k, x_{ck}) Compensation given the opportunity to withdraw experimental performance of the generator to experiment with direct load (Fig. 1 - Fig. 3). Full details of raising enerhnoefektyvnosti compensated autonomous asynchronous generators reflected external characteristics (voltage dependence of the generator load current $U = f(I_н)$ at variable load resistance, $Z_н = \text{var}$, $\cos\varphi_н = const$, $\omega = const$) And various permanent containers and their relationships. Obtained experimentally external characteristics of autonomous asynchronous generator with external capacitive compensation (AAH), internal (KAAH) capacitive compensation and additional internal capacitive compensation (UKAAH) were compared with calculated. The deviation between the calculated and experimental data was set based on the absolute and relative errors. External characteristics taken the calculated and experimentally varying severity

due to the size and schemes include compensating capacitance (Fig. 2 - Fig. 4).

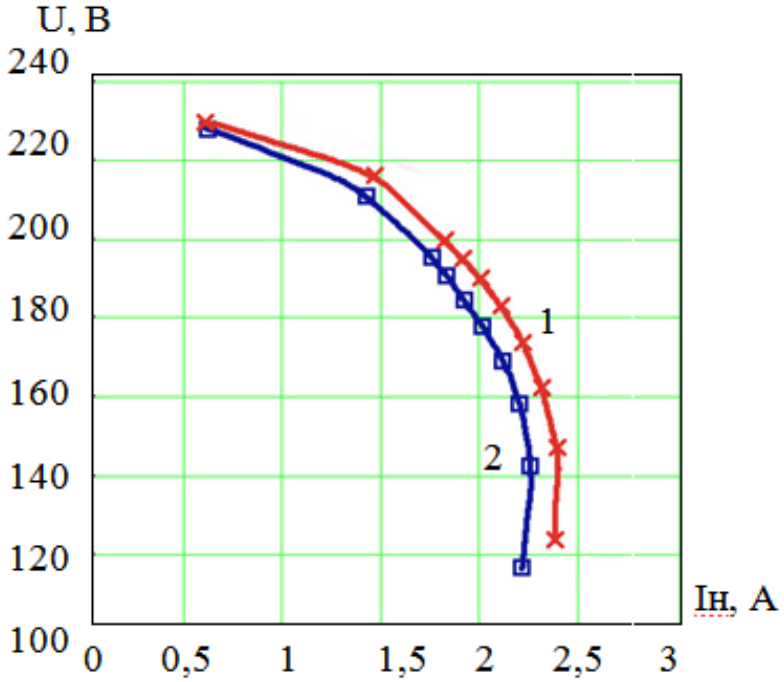

Fig. 2. The external characteristics of AAH external capacitive compensation at x_c = 76 ohms 1 - estimates 2 - experimental data.

Found that to compensate reactive component of the load AAH (made on the basis 4A71V2 AD) (Fig. 4) and provide nominal operation mode in which $U_н = 230B$, $I_н = 2{,}3A$ resistance capacitance value x_c is 76 ohms.

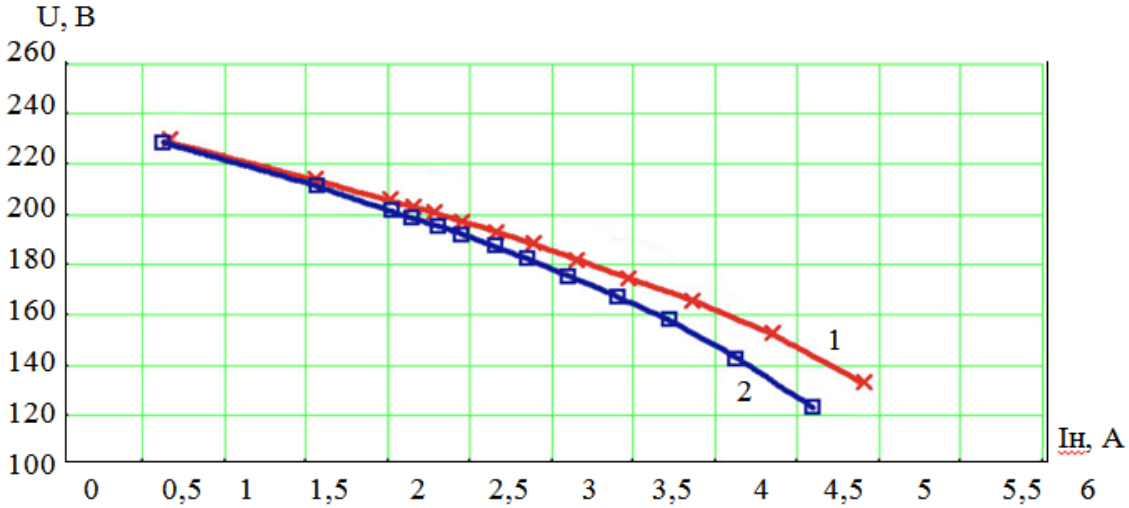

Fig. 3. External characteristics KAAH mixed capacitive compensation at x_c = 102 ohms, $x_{c\Delta}$ = 60 ohms, $k = 5...0.75$ 1 - estimates 2 - experimental data.

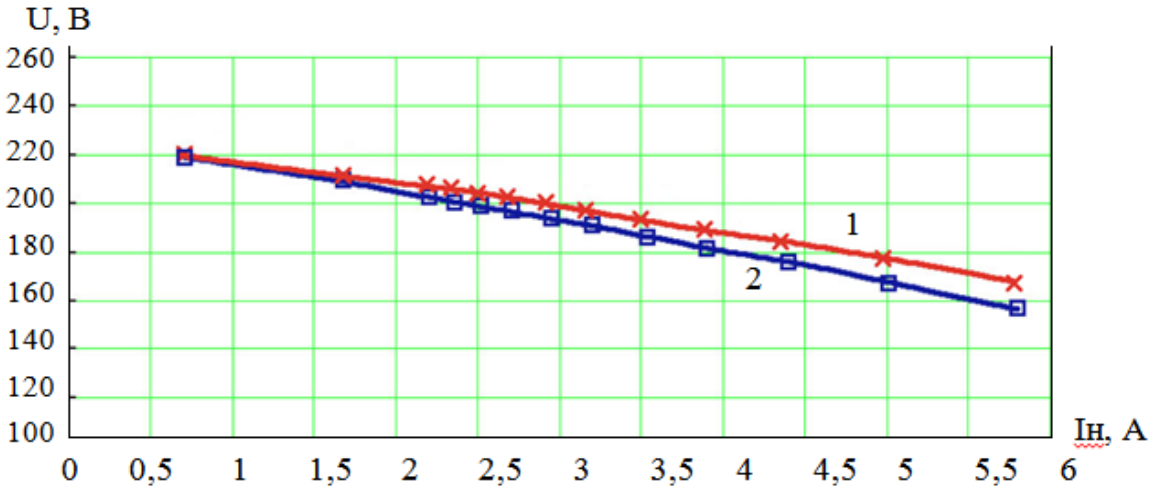

Fig. 4. Foreign characteristics UKAAH mixed and additional capacitive compensation at x_c = 116 ohms, $x_{c\Delta}$ = 100 ohms, x_{ck} = 500 ohms, $k = 5...0.75$ 1 - estimates 2 - experimental data.

For KAAH optimal values of stator resistance vessels is at $x_c = 102$ Ohm, $x_{c\Delta} = 60$ Ohms. Under these conditions, currents I_1 and I_Δ additional stator windings are equal and have the same thermal state. Availability of capacity C_Δ in one of the windings KAAH with increasing load results in an increase of the current I_Δ and reduced magnetic degaussing. External characteristics become more stringent (Fig. 3) decreases the value of external capacitance C required to achieve the nominal values of voltage and current.

In UKAAH used dual internal capacitive compensation for forcing capacitive excitation in the case nakydu load. Determined that running AD on UKAAH necessary to apply such relationships containers x_c = 116 ohms, $x_{c\Delta}$ = 100 ohms, x_{ck} = 500 ohms. The use of containers C_k increases the magnitude and phase changes the current primary winding of the generator I_Δ. The increase in current active increases the stiffness characteristics of foreign UKAAH (Fig. 4).

Comparative analysis of the external characteristics obtained calculated and experimentally shown that the maximum voltage deviation between them AAH $\Delta U_{макс}$ was - in 5 (3.52%) in KAAH $\Delta U_{макс}$ - 10 V (6.42%) in UKAAH $\Delta U_{макс}$ - 8 in (3.75%). Obtained with a digital oscilloscope Metrix-3252 form line voltage and current (Fig. 5, Fig. 6) independent complex electromechanical compensated asynchronous induction motor and generator power commensurate confirm the results of analytical calculations. Selected hardest mode AEK, namely the launch of serial blood pressure based on production of AM 4A71A2 KAAH based AM 4A71V2 commensurate capacity (respectively 0.75 / 1.1 kW). To ensure a successful start-up of BP AG applied external,

internal and additional capacitance values of which are C = 30 uF, C_{Δ} = 28 uF, C_k = 10 uF respectively support x_c = 106 ohms, $x_{c\Delta}$ = 114 ohms, x_{ck} = 320 ohms.

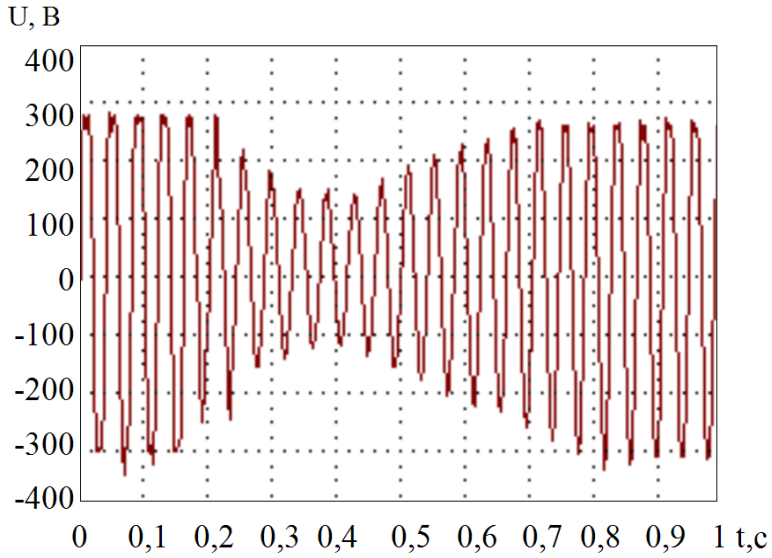

Fig. 5. Form line voltage to the stator KAAH.

The resulting calculation external characteristics KAAH in collaboration with AD (Fig. 3) where abuse is reduced to 165 confirmed in experimental oscillogram (Fig. 5). Established that recovery voltage (Fig. 6) at start of AD KAAH is 0.5 sec. Stator current KAAH AD when working in the steady state is 2 A.

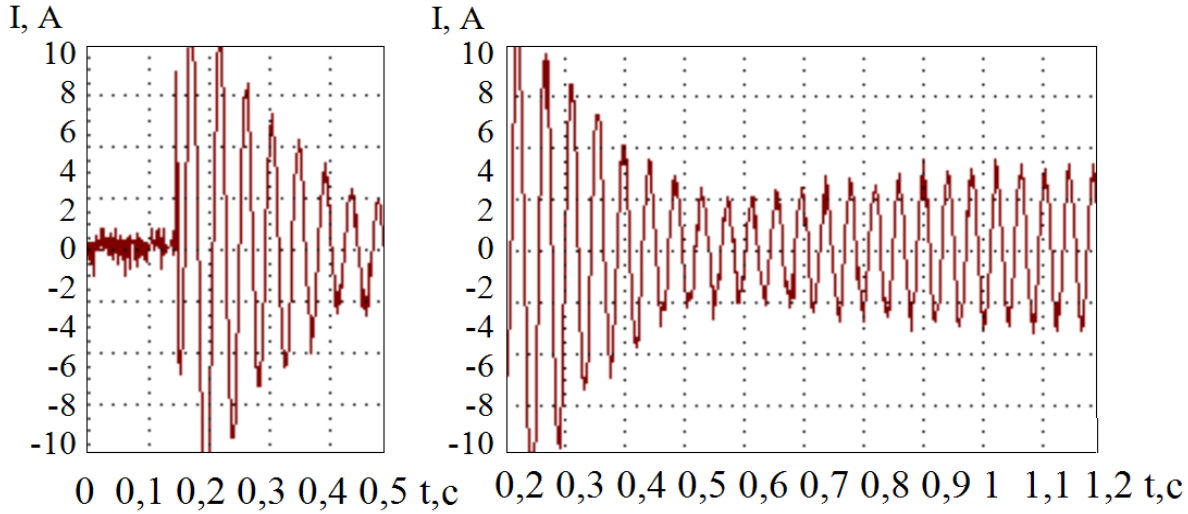

Fig. 6. Form a linear stator current KAAH.

Conclusions

1. Comparative analysis of calculated and experimental asynchronous generator external characteristics of different methods of

reactive power compensation shown that the maximum relative deviation in magnitude voltage not exceeding 7%, confirming the adequacy of the developed mathematical model of the experimental sample.

2. Established that the most difficult mode AEK start of the batch of AD compensated asynchronous generator carried forcing capacitive excitation KAAH, and the recovery voltage on the generator will occur in 0.5 seconds, and the value of external, internal and additional capacitive compensation pursuant up $C = 30$ uF, $C_{\Delta} = 28$ uF, $C_k = 10$ uF.

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Pryvedenы and proanalyzyrovanы Results of research эksperymentalnыh independent e`lektromehanicheskij complex in composition kompensyrovannыy asynhronnыy generator - asynhronnыy sopostavymoy engine capacity.

Avtonomnыy e`lektrotehnicheskij complex kompensyrovannыy asynhronnыy generator oscillograms.

There are provided experimental researches of an autonomous electromechanical complex which consists of compensated asynchronous generator and induction motor of comparable power.

Autonomous electrotechnical complex, compensated asynchronous generator, oscillogram.

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DEVELOPMENT Cleaner tops of sugar beet roots

AY Linnik, VP Chicken, Ph.D.

Presents a new constructive-technological scheme purifier heads of roots from the remnants tops of the vertical axis of rotation which effectively combines manufacturing operations cut tops and tops refining residues.