Modernisation technology of induction motors using internal capacitance reactive power compensation

Chuenko Roman

The modernisation technology of induction motors using internal capacitance reactive power compensation is offered

Key words: Induction motor, stator winding, phase zone, amount of poles, winding's data

Annually in the agroindustrial complex of Ukraine near 20% of asynchronous electric motors subject to major repairs, from that only a fifth part is repaired centralizely by the specialized repair plants, where repair comes true by a current-key method on modern, high enough level. Other 80% of induction motors repair in numerous repair workshops.

During realization of major repairs of asynchronous electric motors there is possibility to carry out their modernisation with the use of internal capacitanct reactive-power compensation with the aim of improvement motor's characteristics.

For realization of modernisation with the use of internal capacity indemnification of reactive-power recommended monolayer and double-layer обмотки is recommended. During realization of hand repair works an onedouble-layer puttee with the arbitrary amount of poles at successive connection of напівобмоток can be transferable double-layer with maintenance of cut of провода, amount of coils in the puttee of phase and equivalent step on slots.

The windings recommended for modernisation it is possible to divide into two equal parts with a leadingout on the terminal corymb of beginning and ends of semiwindings of stator's phases for the serve of three-phase feed and joining of condensers of internal capacity indemnification. The semiwindings are situated thus under unlike or different pairs of poles pole with displacement of the axes one in relation to other on a select corner.

Bipolar windings are most simple for internal capacitanct reactive-power compensation application. In case of parallel windings connection of stator phases of compensated induction motor always executed with two parallel branches.

For fourpoles motors monolayer windings are used. If a motor has an amount of slots in stator core Z_1 = 36, then for dividing of phase stator winding into two semiwindings necessary implementation double-layer with displacement of axes of semiwindings.

Stator windings of the six-poles compensated induction motors with the amount of stator slots core Z_1 = 36 executed by monolayer, in such case the amount of spools in the spool-type group of semiwindings of phases of stator by comparison to a base engine diminishes twice and a necessary change is provided between the axes of semiwindings.

For all motors modernized with using of internal capacitanct reactive-power compensation application for successive connection of напівобмоток of phases of статора, a cut, diameter and brand of wire, is kept ; amount of explorers in to the slot, amount of elementary explorers in one effective and amount of parallel branches of base puttee. If to the use parallel connection of stator semiwindings is select, then the amount of elementary explorers in one effective remains unchanging, amount of explorers in increases a slot twice, and the area of transversal cut of wire diminishes twice. Making of sections of winding comes true on a typical equipment after the generally accepted technologies.