TRANSFORMERS CHANGING THE NUMBER OF PHASES

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ABSTRACT

Analysis of the effect of moisture on the transformer windings, drying of transformer windings, drying standard, winding methods, requirements for post-drying transformer, purpose of transformer drying, technical means, the main factors affecting the drying effect of the transformer given.

Keywords: single-phase network, transformer, three-phase winding, drying, voltage, resistance, standard, humidity, breakdown voltage.

ANNOTATSIYA

Transformator sarg‘ishlariga namlikning ta’siri tahlili, transformator sargilarini quritish, quritish standarti, o‘rash usullari, quritishdan keyin transformatorga qo‘yiladigan talablar, transformatorni quritish maqsadi, texnik vositalar, transformatorning quritish ta’siriga ta’sir qiluvchi asosiy omillar berilgan.

Kalit so‘zlar: bir fazali tarmoq, transformator, uch fazali o‘rash, quritish, kuchlanish, qarshilik, standart, namlik, buzilish kuchlanishi.

АННОТАЦИЯ

Анализ влияния влаги на обмотки трансформатора, сушка обмоток трансформатора, норма сушки, способы намотки, требования к досушке трансформатора, назначение сушки трансформатора, технические средства, основные факторы, влияющие на эффект сушки трансформатора, приведены.

Ключевые слова: однофазная сеть, трансформатор, трехфазная обмотка, сушка, напряжение, сопротивление, стандарт, влажность, напряжение пробоя.сигнал на холостом ходу.

Even if the 3-phase voltage system is used in the industry, single-phase, two-phase, six-phase and multi-phase voltage systems are also used. The system of single-phase voltages is widely used in traction networks and electric furnaces and heating devices. The system of two-phase voltages is used in automatic control systems. The system of six-phase voltages is used in rectifier devices in order to reduce the pulsation of the rectified current.

Transformers that convert a three-phase voltage system into a two-phase system can be made by connecting two single-phase transformers as shown in Figure 6.1. The input part A, B, C receives supply from the three-phase system voltage[1].

The primary winding of the transformer b with the number of windings w_1 is connected to the network with line voltage $U_{CB}=U_{1l}$. Since the electric powers in the two halves of the coil VS are generated by the same magnetic flux F_b, the voltages U_{C0} and U_{0B} are the same. The voltage of transformer a in $\sqrt{3}w_1/2$ of the number of windings and the voltage between point O and point A in transformer b is equal to $\sqrt{3}U_{1l}/2$. Forms a two-phase symmetrical system with secondary voltages U_a and U_b, because the voltages U_{A0} and U_{CB} are the same in modulus and shifted in time by π/2

$$U_b = U_{CB}\frac{w_2}{w_1} = U_{1l}\frac{w_2}{w_1}$$

$$U_a = U_{AO}\frac{w_2}{w_1\sqrt{3}/2} = U_{1l}\frac{w_2}{w_1}$$

Ua=Ub, φab=900

The angle between the voltages U_{AO} and U_{CB} is 90^0. We find U_{AO} from the triangle AOS

$$U_{AO} = \sqrt{U_{1l}^2 - \left(\frac{U_{1l}}{2}\right)^2} = U_{1l}\frac{\sqrt{3}}{2}$$

In order to reduce the value of the current in the parallel branches of the stator winding, a six-phase winding is used in large-power turbogenerators. The system of six-phase voltages is changed to the system of three-phase voltages using a transformer located in the turbogenerator unit. Electrical diagram of a transformer that converts a three-phase system into a six-phase system. It is shown in Figure.[2]

A six-phase system is implemented through the middle point of the secondary winding of a three-pole transformer. [1]

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