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METHODS FOR DETERMINING ELECTRICITY CONSUMPTION

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A B S T R A C T

Electricity networks play a special role in the transmission and distribution of electricity. Almost all electricity is generated from the electricity grid. The main function of the power system is to supply electricity to consumers, that is, to transfer electricity from the place where it is generated to the place of its use. An improved understanding of the transmission and distribution of energy is the power system. The power system is a collection of power plants that are interconnected by these transmission lines and together provide electricity to consumers, the research results are presented [1].

K E Y W O R D S

electricity, current, power dissipation, control, voltage.

Introduction

To heat the waste of electricity, a principled electrical scheme is used [2]. Normally, the hbee supply center in this mode is the installation points, the type of reactors, the brand, the cutting surface and the length of the cable and havo lines tarmoq and subscriber transformer nimstans. At the transformer station, the cache name, the data of power transformers, and the data of the switch siya apparatus should die. At the center of the taste and at the ta qsimulation points, the name of the line for simulating and supplying the name of the section should be specified in these sections [3].

In addition,in the q bee scattering scheme, the electrical grid is equipped with token separators in accordance with it in normal operating mode. The calculation of the waste of electricity used the exact values obtained from the automated control and computing system, and if there is no system, the results of the monitoring measurements in the computing period is calculated .

10(6) Determination of electricity waste in power transformers with a power of 0.4 **kV**.

Initial information for calculating electricity waste in power transformers [4]:

Information on deletion of transformers during the calculation period of transformer type, power, nominal token, salt performance and short circuit waste (based on passport data);

The average maximum working day-to-day loading graph of the control period is the transformer

$$I_{\breve{y}p} = \frac{I_a + I_b + I_c}{3} \text{; A} \qquad (1)$$

The number of active energy in power transformers is the number of active energy that comes to subscriber transformers in the W_{T8} computing period W $_{Tp}$ (kBt. c)

With a power transformer,the annual electricity waste on MountR issuddenly reduced.

$$W_{mpi} = \Delta P_{c.ui} t + \Delta P_{\kappa.mi} \tau K_3^2 \text{ ; kVt.s (2)}$$

bthere is the number of transformer working hours in the t-h heating period;

τ - maximum isroflaar meal [5].

$P_{c.u.i} t, P_{\kappa.m.i}$ – salt ishlash va kiska tutashuvni quvvat isrofi. kVt

K_{is} the effitness to load a transformer in the maximum period of 3 years.

$$K_э = \frac{I_{\breve{y}p.мак}}{I_{нi}} \qquad (3)$$

bu erda I_{ni} - your nominal transformers tok,

$I_{rt.max}$- average maximum token from daily graphics in the control measurement period

τ We will find the goodness of those in the house of Q.

$$\tau = \left(0{,}124 + \frac{T}{10^4}\right)^2 \cdot 8760, c \qquad (4)$$

b thenumber of hours T-maximum loading usage there.

The maximum number of hours used in the load is found in the formula orformula in q house.

$$\tau = \frac{W_{mp}}{\sqrt{3} \cdot U_{mp.н.} \sum_{i=1}^{n} I_{\breve{y}p.макс}} \text{, s} \qquad (5)$$

bthere $U_{tr.\ n}$. the nominal line voltage on the bottom of the transformer. τ and based on T values, you $\tau = f(T)$ can build a dependency graph.

Annual electricity waste from all transformers is found using the following formula [6].

$$\Delta W_{mp} = \sum_{i=1}^{n} \Delta W_{mp.i} \text{ kVt (6)}$$

bthere n- the number of transformers on the electrical grid

Kuch transformatorlaridagi elektr energiya isrofini nisbiy kiymati

$$\Delta W_{mp}\% = \frac{\Delta W_{mp} \cdot 100\%}{W_{mp}} \qquad (7)$$

W_{tr} here is the number of electricity coming into the power transformer

$$W_{mp} = W_n - W_c - W_{mp.a} \text{ kV t.s}$$

Calculation of electricity waste in power plants

The *35* kV-powered electrical extension presented in Figure 1 requires an annual energy waste calculation at the given load graph (4.10-rasm) and maximum waste time. τ

The length of the power transmission line is *15 km*, the comparative parameters *are* $r_0=0.28$ *Om/km*, $x_0=0.43$ *Om/km*. The nominal power of each transformer is *6300 kVA* ($R{\cdot}\Delta_s=9.2$ *kVt*, $R\Delta_k=46.5$ *kVt*). $\cos\varphi=0.9$.

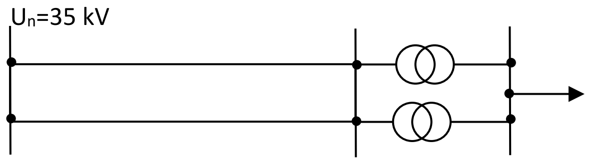
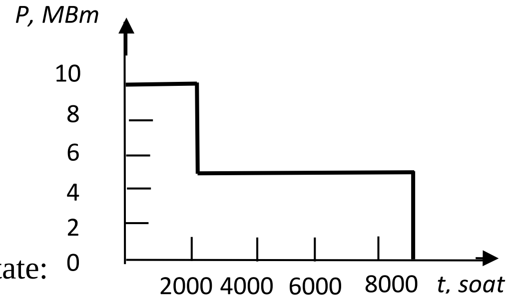


Figure 12



We calculate the waste of power in the maximum state:

$$\Delta P_T = 0{,}5\cdot\Delta P_к\cdot\left(\frac{P_{макс}}{S_н\cos\varphi}\right)^2 + 2\cdot\Delta P_c = 0{,}5\cdot 46{,}5\cdot\left(\frac{10}{6{,}3\cdot 0{,}9}\right)^2 + 2\cdot 9{,}2 = 72{,}17 + 18{,}4 = 90{,}57\ кВт;$$

$$\Delta P_Л = \frac{S^2_{макс}}{U^2_н}\cdot r_Л = \frac{\left(\frac{10}{0{,}9}\right)^2}{35^2}\cdot\frac{0{,}28\cdot 15}{2}\cdot 10^3 = 211\ кВт;$$

$$\Delta P_\Sigma = \Delta P_T + \Delta P_Л = 90{,}57 + 211 = 301{,}57\ кВт;$$

$$\underset{*}{\Delta P_\Sigma} = \frac{\Delta P_\Sigma}{P_н} = \frac{301{,}57\cdot 100}{10000} = 3\%.$$

Here ΔP_Σ, $\underset{*}{\Delta P_\Sigma}$ - the total asset power waste in the real and interest unit in the power grid.

1) We determine annual energy waste by loading graph:

*ΔW=(72,17+211)*2000+0,5 2(72,17+211)*6760+18,48760=·*

=120010·³ kVtsoat.·

Energy transmitted to the consumer throughout the year:

W=102000+56760=53.810··³ MVtsoat.·

We determine the ratio of annual energy waste to transmitted energy:

$$\underset{*}{\Delta W} = \frac{1200\cdot 10^3\cdot 100}{53800\cdot 10^3} = 2{,}23\%.$$

Thus in , this case , energy waste is 2.23% compared to transmitted energy [7].

2) We determine annual energy waste by maximum wasted time. τIn this case τ, we find its value in a simplified formula:

$$T_{макс} = \frac{W}{P_{макс}} = \frac{53{,}8 \cdot 10^3}{10} = 5380 \ \text{соат;}$$

$$\tau = \left(0{,}124 + \frac{T_{макс}}{10000}\right)^2 \cdot 8760 = \left(0{,}124 + \frac{5380}{10000}\right)^2 \cdot 8760 = 3840 \, \text{соат;}$$

$$\Delta W = (71{,}17 + 211)3840 + 18{,}4 \cdot 8760 = 1248 \cdot 10^3 \ кВт \cdot соат;$$

$$\Delta W_* = \frac{1248 \cdot 10^3 \cdot 100}{53800 \cdot 10^3} = 2{,}32\%.$$

3) The τ value of can also be found by typical curves. We are considering that the maximum load usage time is T_{max}*=5380 hours* and *=3650 hours*φ on these curves for a case with τ *cos=0.9* (from the manual). Otherwise, the annual energy waste amounts to the following amount:

*ΔW=(72,17+211)*3650+18,48760=119510·.³ kVtch,·*

$$\Delta W_* = \frac{1195 \cdot 10^3 \cdot 100}{53800 \cdot 10^3} = 2{,}22\%.$$

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