CALCULATION OF THE NUMBER AND CAPACITY OF TRANSFORMERS THROUGH THE LOAD FACTOR

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Abstract. *This article analyzes the number and capacity of transformers to be installed in order to reduce power losses and improve efficiency in the event of a plant's need for electricity.*

Key words: *load factor, transformer substation, total power.*

Аннотация. *В данной статье анализируется количество и мощность трансформаторов, которые необходимо установить для снижения потерь мощности и повышения эффективности в случае возникновения потребности завода в электроэнергии.*

Ключевые слова: *коэффициент нагрузки, трансформаторная подстанция, общая мощность.*

Annotatsiya. *Ushbu maqolada zavodning elektr energiyaga bo’lgan extiyojidan kelib chiqgan holatda elektr energiya isrofini kamaytirish hamda samaradorlik ko’rsatkichini yaxshilash maqsadida o’rnatiladigan transformatorlarning soni va quvvati taxlil qilinga*n.

Kalit so’zlar: *yuklanish koeffitsiyenti, transformator podstansiyasi, to‘la quvvat.*

Industry of enterprises electricity supply in creating transformers the number and power choose big important [1]. That's right selected transformer the number and power electricity energy of supply continuity provides.

Transformers the number when being selected the first in line their electricity supply reliability according to to categories to separate attention is given In this case, consumers of the 1st and 2nd categories two transformer from the substation, 3rd category consumers one transformer from the substation provided.

Transformers to consumers installation too to the category looking done is increased. If one transformer substation using one how many consumers group being provided if, the first in line transformer 1st and 2nd category consumers is located to sex is installed.

Transformers power choose the following two method according to done is increased [2-4]:

1. Load factor method. This method according to transformer power when choosing loading of the coefficient categories in the section permission done the following to the values looking is determined.

Loading of the coefficient categories in the section permission done values [5]:

Category I - from 0.6 to 0.7;

Category II - from 0.7 to 0.75. Some in cases up to 0.85;

Category III - from 0.85 to 0.95.

Transformer of the substation loading coefficient the following expression using defined as:

$$K_{yu} = \frac{S_{ist}}{n \cdot S_{tr}}$$

this here:

S_{ist} - transformer being installed consumers is located have sex full capacity, kVA;

n - electricity supply reliability according to to be installed transformers number (1- and 2-category consumers for n=2, category 3 consumers to n=1 for equal);

S_{tr} – to sex installation planned transformer capacity, kVA.

In general when normal operation of transformers in the situation loading should be 70-75% need These are the requirements only when done transformer his passport information according to intended in term performance possible [6].

2. Normal and accident modes check method. This is the method according to of transformers power when selected, selected transformer power the following conditions perform should:

a) Normal the work in the mode: $n \cdot S_{tr} \geq S_{ist}$

b) Accident the work in mode: $1.4 \cdot S_{tr} \geq S_{ist}$

Accident mode expressed 1.4 accident mode during switch the transformer to 40% download possible characterizes. Transformer accident mode very download for transformer normal operation mode maximum 93% load with worked to be it is necessary Transformer too download one up to 6 hours a day permission it is done condition from 5 days not to exceed necessary [7].

Above seeing developed second method to 2nd and 3rd category consumers have to the shops transformer while installing is used. Sex consumers electricity with 2 and 3 standard in provision powerful transformers choose to the goal is appropriate [8-13].

An example to TP as an example transformer the number and power is selected. of TP common capacity S_{TP} =1500 kVA equal to Electric supply reliability according to TP 2-category consumer is considered That's why for this to TP two transformer substation is selected. This is for TP 2 transformers with a capacity of 1000 kVA is

selected and loading to the coefficient are investigated.

$$K = \frac{1500}{2 * 1000} = 0{,}75$$

Above account results based on analysis to do maybe loading the coefficient is 0.75 equal, moreover this the result loading coefficient II- category calculated for, the loading was 75% at the expense of transformer his own passport information according to intended more than the deadline work provides So it's branded 2x TM - 1000/10/0.4 for TP transformer is selected.

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