ALGORITHMIZATION OF CALCULATED PROCEDURES OF POWER TRANSFORMERS

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The calculation of power transformers has been conducted on different methodological guidance[1]. However, there is still no single algorithm for calculating the power transformers. All methods of calculation lead to the definition of power characteristics and contracture parameters of the main and auxiliary parts of the transformers[2].

Therefore, the purpose of the article is to present a universal algorithmic example for calculation of power transformers.

Definition of basic electrical value[3]:

1. Selection of the type of transformer and its main component parts
2. Selection of the type of transformer and its main component parts
3. Determination of the electrical parameters and mechanical strength of windings
4. Final calculation of the magnetic circuit: definition of the parameters of idling
5. Thermal design of the active part
6. Calculation of the cooling systems

For every basic parts of calculation are given blog – schemes of sequent calculation of elements transformer. For example, for second part of basic calculation we shall enter sequent calculation and base and constrictive characteristic [4]:

1. Tentative calculation of basic dimensions in the magnetic circuit

– choose the brand and thickness of the transformer sheet and its isolation

– choose induction in the core and yoke

– determine the number of steps and the diameter of the core

– define the size of basic insulation distances in the windings

– determine the estimated size of the magnetic circuit

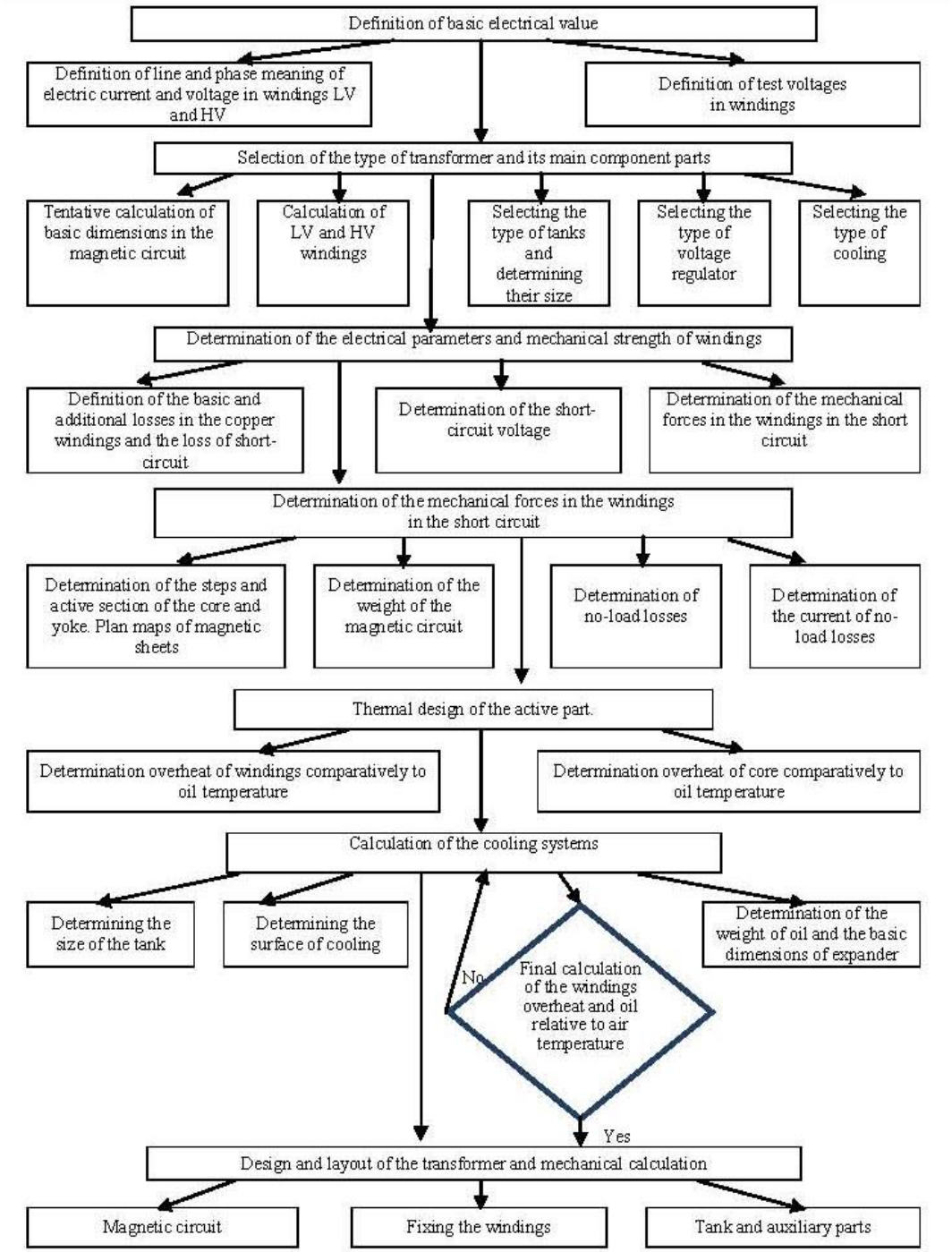
2. Calculation of LV and HV windings:

– select the type of LV and HV windings

– calculate the number of turns and winding dimensions LV and HV

3. Selecting the type of tanks and determining their size
4. Selecting the type of voltage regulator
5. Selecting the type of cooling

Blog – scheme algorithm of calculation of power transformer



Conclusions:

1. Algorithm for calculating power transformers

2. Algorithmic calculation of transformer causes an opportunity to create program for calculation on ECM and PC

References

1. Dig SILENT GmbH. Short-Circuit Method IEC 61363. October 2009.

2. Current Transformer Saturation Detection Using Gaussian Mixture Models M. Moghimi Haji, B. Vahidi, S. H. Hosseinian, Department of Electrical Engineering, Amirkabir University of Technology.

3. Theory and calculation of transformers. Hnikov A. B. Moscow 2004.

4. Nedev, A. Bakalova, M., Nenov, Hr., Kamberov, D. Dimov, Vl., Sezgin, S., Antonov, D. Detection and prediction of the state of energetic systems and engines. // Mechanical Engineering and Machine, ISSN 1312-8612, No. 10, book 1, 2010, SS 39-43.