DEVELOPMENT OF A METHOD FOR RECOGNIZING THE TYPE OF FAULT BASED ON THE RESULTS OF DISSOLVED GAS ANALYSIS USING A SET OF DIAGNOSTIC CRITERIA

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The most commonly used non-destructive diagnostic method for high-voltage oil-filled equipment is the dissolved gases analysis (DGA). Over the nearly 50-year history of the development and use of the DGA method, about 20 different standards and methods have been created for interpreting DGA results, which use only one of the diagnostic criteria: either the gas ratios, or the gases percentage content, or the ratios of gases to the gas with the maximum content. By using one of these diagnostic criteria, most methods of interpreting DGA results can identify defects of electrical and thermal types, and some methods allow for the identification of combined type defects. However, the reliability of defect identification by different methods for the same data varies significantly [1, 2].

In [3], a method for identifying the type of fault based on a set of diagnostic criteria is proposed, specifically using the values of gas ratios, ratios of gases to the gas with the maximum content, and gases percentage content. This approach uses a 16-dimensional diagnostic space, in which the values of ratios of gases to the gas with the maximum content and gases percentage content are allocated 5 dimensions each, and the values of gas ratios are allocated 6 dimensions. The proposed method also includes an algorithm based on the joint use of the key gas method and the ratios of characteristic gases, which significantly minimizes the number of calculations. The proposed method allows for the complete elimination of contradictions in the diagnoses made when each of the criteria listed above is used separately.

References:

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