FAULT DIAGNOSIS IN OIL-FILLED EQUIPMENT BASED ON THE GAS PERCENTAGE USING THE DISSOLVED GAS ANALYSIS

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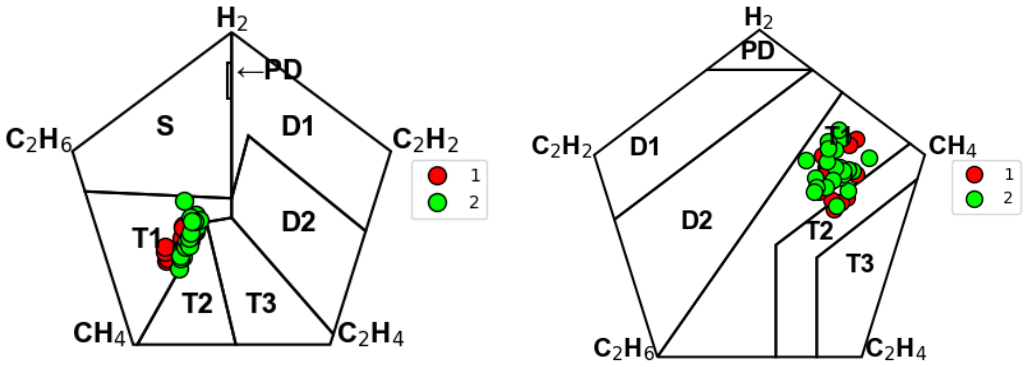
Nowadays, quite a large number of different recognition methods have been developed to recognise the fault type, which use various diagnostic criteria [1]. One such criterion is the gas percentage. However, the use of only this diagnostic criterion does not always allow to correctly identify the fault type. For example, the gas percentage for low-temperature thermal faults (T1) passing into partial discharges (PD) [2] may coincide with the values for pure T1 faults [3]. Accordingly, when using methods that use the value of the gas percentage as a diagnostic criterion (e.g., Duval and Mansour pentagons, Fig. 1), such defects may be misinterpreted. This leads to the need to either develop new methods or to use gas ratios and gas patterns (fault nomograms) to more accurately diagnose such faults.



a *b*

Figure 1 – Diagnosing T1 and T1 passing into PD using Duval (a) and Mansour (b) pentagons: 1 – T1 faults; 2 – T1 passing into PD

References:

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3. Shutenko O., Kulyk O. Recognition of low-temperature overheating in power transformers by dissolved gas analysis. *Electrical Engineering*. 2022. Vol. 104, no. 4. P. 2109–2121. DOI: https://doi.org/10.1007/s00202-021-01465-5.