# ANALYSIS OF ACETYLENE CONTENT IN THE OIL OF POWER TRANSFORMERS WITH ELECTRIC DISCHARGES

**Shutenko O.**

***National Technical University «Kharkiv Polytechnic Institute», Kharkiv***

The formation of acetylene in the oil of power transformers can indicate the presence of electrical discharges, and as shown in [1-2] the energy of these discharges can vary significantly. To establish the relationship between the energy of discharges and acetylene content, the percentage of acetylene content in 312 transformers in which discharges with different energy densities were detected was analysed. The results of the analysis were used to obtain histograms of the empirical distribution of the acetylene percentage in the analysed transformers (see Fig. 1).

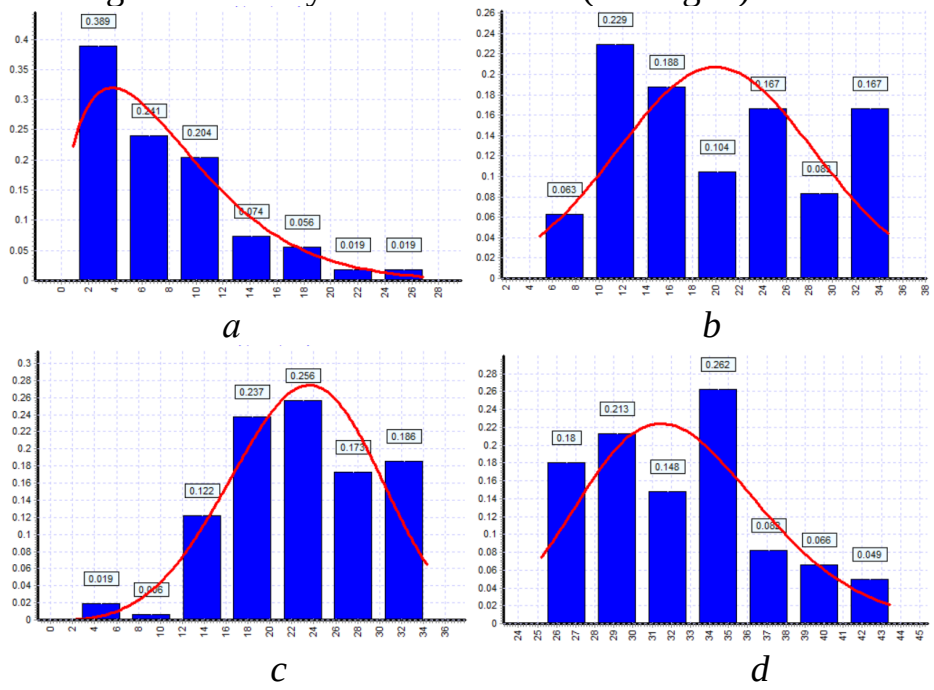


Figure 1 – Histograms of empirical distribution of acetylene percentage in power transformers with: spark discharges (a), low energy density discharges (b), high energy density discharges (c), arc discharges (d).

As can be seen from the figure, as the discharge energy increases, there is a shift of mathematical expectations to higher values of acetylene percentage. At the same time, the ranges of acetylene percentage values for discharges with different energy densities overlap, which may cause erroneous decisions.

**References:**

1. Shutenko O., Kulyk O. Analysis of gas content in oil-filled equipment with low energy density discharges. International Journal on Electrical Engineering and Informatics. 2020. Vol. 12, no. 2. P. 258–277. DOI: https://doi.org/10.15676/ijeei.2020.12.2.6.

2. Kulyk O. S., Shutenko O. V. Analysis of gas content in oil-filled equipment with spark discharges and discharges with high energy density. Transactions on Electrical and Electronic Materials. 2019. Vol. 20, no. 5. P. 437–447. DOI: https://doi.org/10.1007/s42341-019-00124-8.