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TO 50-YEAR ANNIVERSARY OF PULSE METHOD: FROM A STORM IMPULSE TO THE ONE-STAGE ON-LINE REGIME

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This paper is devoted to further development of pulsed method for transformer winding diagnostics. Power transformers are key components of any electrical power systems. A big amount of the power transformer population all over the world being in service at the moment, have been reached an age of 30 –40 years and more. Timely state control of transformer winding is necessary step to provide a stability of electric energy system. Experimental results of winding state control on real transformer have been given. Ways of sensitivity increasing have been determined. "Classical"diagnostics, which means two stages - probing pulse input and response signal control - could be improved by using short probing pulse. It is shown that, sensitivity of state control is increased with smaller pulse duration (up to 25 ns) and more rapid front pulse (no more than 5 ns). Combination of places of giving of the probing impulse and a response signal measurement is also important. Depending on when a fail is –high or low voltage winding –combination of diagnostics signal influences to sensitivity.

Other approach is "one-step"state control. To check a winding state just one probe pulse is used and investigated. It is established that, winding fault could be revealed by just probe pulse analyzed. An efficiency of "one-step"diagnostics increases at reduction of probing pulse duration. It is promising way for winding state control at on-line regime and lead pulsed method to new level. This is especially important so as pulsed method has its 50-year Anniversary in this year.

Authors: Dr MYTNIKOV, Alexey (Tomsk Polytechnical University); Prof. LAVRINOVICH, Valeriy (Tomsk Polytechnical University)

Presenter: Dr MYTNIKOV, Alexey (Tomsk Polytechnical University)

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