Models, Simulations and the Reality of the Temperature Rise in Oil-Filled Transformers

Peter Bokes[1,2 a)]

[1]*Institute of Nuclear and Physics Engineering, Faculty of Electrical Engineering and Information Technology, Slovak Technical University, Ilkovičova 3, 812 19 Bratislava, Slovakia.*
[2]*FyzTech, s.r.o., Vetvárska 34, 821 06 Bratislava, Slovakia*

[a)]Corresponding author: peter.bokes@stuba.sk

Abstract. We present a description of the heat transfer mechanism in an oil-filled transformer that incorporates two main bottlenecks for the heat flow. The first one, the transfer from the windings into the oil, is simulated using realistic 3D model and finite element method. The second, the transfer from the wall into environment is described with a robust analytical model. The combination of the two gives an accuracy of the prediction of critical temperatures better than 2ºC. The study was done in collaboration with BEZ Transformatory, a.s.