Cables/Generators/Capacitors Testing with Partial-Core Variable Frequency Resonant Transformers

Andrei Marinescu*, Senior Member,IEEE, Gheorghe Opran†

* ICMET Craiova, Romania, amarin@icmet.ro
† ICMET Craiova, Romania

Abstract— One of the most expensive AC tests, in terms of the necessary equipment, is the test of cables and generators insulation with high own capacity, both in the factory and on site after repair or for a prophylactic purpose. That is why in practice there are used either some very low frequency (0.1 Hz) even DC voltage or AC resonant and impulse testing facilities. For the last the capacity of the object under test is just the capacity of the circuit generating the test voltage, but in this case the got frequency may be much different from the mains frequency. In this paper it is presented a test method using as high voltage source an air core or open core transformer in which single resonant or double resonance circuits are achieved and the resonance frequency is within the limits required by the standards in force around the mains frequency, by using some variable frequency static sources. It is shown that this solution assures dimensions and weights much lower than in case of usual closed core transformers. There are presented the requirements of the standards in which, unlike certain preconceived opinions, limited deviations from the 50 Hz frequency are allowed, the calculation and measurement of the parameters of air/open core transformers, the experiments performed and the energy efficiency of the new method, which lead to a wide practical application of the method.