

## **CASE STUDY OF POWER TRANSFORMER NO-LOAD CURRENT HARMONICS BY MEASUREMENT AND SIMULATION**

*Nuran Yorukeren, Bora Alboyaci*  
*Department of Electrical Engineering*  
*Faculty of Engineering, The University of Kocaeli*  
*Veziroğlu Campus, 41100, Kocaeli/TURKEY*  
*Phone (+90) 262/3351148/1260, Fax (+90) 262/3352812*  
*E-mail: alboyaci@kou.edu.tr*

*Keywords:* power quality, harmonics; no-load current; power transformer

### **ABSTRACT**

The no-load losses and currents are affected by many factors of the harmonic contents of power transformers. These factors are the flux density, the degree of saturation, connection type and transformer power. 85 power transformers have been tested in this paper. The transformers' rated power varies from 12 MVA to 250 MVA; primary voltage varies from 33 kV to 400 kV over the three years period from 2000 to 2004. The model which is constructed with STRI simulation program for representation of three-phase transformers in an electrical power system model is intended for analysis of power flows, electromechanical and -magnetic transients, including effects of magnetic saturation e.g. inrush currents at energization and ferroresonance. The simulation results agree to a reasonable accuracy.