

## **Modeling ferroresonance phenomena on voltage transformer (VT)**

### **ABSTRACT**

Ferroresonance in electromagnetic voltage transformers, fed through circuit breaker grading capacitance, is studied using nonlinear dynamics methods. The magnetising characteristic of a typical 100VA voltage transformer is represented by a single-valued two-term polynomial of the order seven. The system exhibits three types of ferroresonance: fundamental frequency ferroresonance, subharmonic ferroresonance and chaotic ferroresonance, similar to high capacity power transformers fed through capacitive coupling from neighbouring lines or phases. Results also show that while fundamental frequency and subharmonic ferroresonance can occur under commonplace operating conditions, chaotic states are unlikely in practice.

**Keyword:** Ferroresonance; Voltage transformer; ATP; Overvoltage; Transient analysis