

# Examples of ferroresonance in a high voltage power system

The aim of this paper is to evaluate the effectiveness of ferroresonance damping in auxiliary power systems of high-voltage substations by selected damping devices. Laboratory experiments, the results of which ...

Ferroresonance in a High Voltage Power System" IEEE . Power Engineering Society General Meeting, 2003:1206-1212. [8] ... Examples of Ferroresonance in a High Voltage Power System.

Jacobson DAN (2003) Examples of ferroresonance in a high voltage power system. In: Power engineering society general meeting. IEEE. Milicevic K, Vinko D, Vulin D (2014) Experimental investigation of impact of remnant flux on the ferroresonance initiation. Electr Power Energy Syst 61:346-354. Article Google Scholar

ferroresonant configurations that may take place in power systems, highlighting some of the most relevant aspects of each configuration. Key words Ferroresonance, Power Transformers, Voltage Transformers, Overvoltage, Overcurrent. 1. Introduction Ferroresonance is a special case of disturbance that involves high levels of overvoltage and ...

Inductive voltage transformers are the basic components of the switchgear equipment or electrical substations. This article presents problems related to their operation. Inductive voltage transformers were exposed to specific working conditions in the form of ferroresonance oscillations with the participation of measurement and protective transformers. ...

Ferroresonance and subsynchronous resonance can arise in power system circuits when capacitance is connected in series (and less commonly when connected in parallel) with non-linear inductive circuits such as transformers and reactors and when the voltage is sufficient to drive the non-linear inductance to near the knee point of the B-H curve. As the inductance falls ...

A six most common examples are explained below: Voltage transformer energized through grading capacitance of one (or more) open CB(s) ... Figure 6 - Equivalent diagram of unloaded power transformer supplied by a capacitive system. This parallel ferroresonance (capacitance parallel-connected on the transformer's magnetizing inductance) is ...

Ferroresonance. Let us consider a power system consisting of a source and a transformer. The Transformer is connected to the source by mean of high capacitance Cable. ... But it shall be noted that at voltage higher than 15 kV, these capacitance become significant enough to be considered. ... Ferroresonance take place at power frequency.

Catastrophic equipment failures continue to occur today due to ferroresonance even though this phenomenon has been extensively studied over the past ninety years. This paper is concerned with describing practical examples of ferroresonance in a high voltage transmission system. Methods of mitigating ferroresonance are

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discussed.

Configuration #2 - Transformer accidentally energized. To prevent ferroresonance occurring on a transformer accidentally energized in only one or two phases (see figure 3), practical solutions consist of: Lowering the value of the capacitance between the circuit breaker and transformer below its critical value by using, for example, a circuit breaker cubicle closer ...

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This paper presents a case study of three-phase ferroresonance in a low-voltage power factor correction system and investigates the influence of harmonic distortion on the occurrence of ... Expand 8

High Voltage - Free download as PDF File (.pdf), Text File (.txt) or read online for free. This document describes examples of ferroresonance occurring in high voltage power systems. It discusses two case studies in detail: 1) A potential transformer failure caused by ferroresonance initiated when a de-energized bus was connected to an energized bus through the grading ...

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F ERRORESONANCE PHENOMENA IN POWER SYSTEMS. &#248;SMAIL T EMIZ, N ESRIN T ARKAN 2 ISSN O NLINE 2669-1116 state caused by ferroresonance, which can be characterized by a high level of voltage and ...

This thesis is concerned with the tasks of defining where ferroresonance problems can exist in a high voltage power system, of determining methods for displaying safety margins between ...

1 Introduction. The occurrence of ferroresonance phenomena in distribution power systems has been observed during the last century [] and works dealing with the phenomenon analysis dated from the 1950s and 1960s [2, 3].The electrical power systems have evolved enormously since those early days and the decentralisation of power generation, e.g. ...

An idle or lightly loaded transformer also constitutes a risk factor, because the damping of the system then is comparatively low. Based on the conclusions of this study the following guidelines can be stated regarding how to prevent the ferroresonance phenomenon. Reduce the nonlinear feature of the involved inductance.

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by high sustained overvoltages and overcurrents with maintained levels of current and voltage waveform distortion, producing extremely dangerous consequences. Nevertheless, the ferroresonance phenomenon depends on many other factors and conditions such as initial conditions of the system, transformer iron core saturation

The study of the ferroresonance phenomenon presented has been carried out for three years as a part of a research project oriented to improve the automation of the MV distribution networks. The study uses the information collected in some ferroresonance events occurred around a certain substation in the MV distribution system.

This paper presents a case study of three-phase ferroresonance in a low-voltage power factor correction system and investigates the influence of harmonic distortion on the occurrence of ferroresonance. ... D.A. Examples of ferroresonance in a high voltage power system. In Proceedings of the 2003 IEEE Power Engineering Society General Meeting ...

The practical cases include examples of power and voltage transformer ferroresonance as well as ferroresonance with traction transformers from a number of different countries and hence power ...

A two-term polynomial of order 11 is used to accurately represent the magnetisation characteristic of a typical high-voltage power transformer in the ferroresonance region. The derived closed-form solutions permit construction of a map defining the boundaries between safe and ferroresonant regions as a function of the system parameters.

Urquijo s/n, 48013 Bilbao (Spain) Tel.:+34 946014172, Fax:+34 946014200 e-mail: 1 victor.valverde@ehu.es, 2 javier.mazon@ehu.es Abstract example of this would be voltage transformers, which are very lightly loaded, as it feeds voltage measuring devices, Power quality and power disturbances have become an becoming prone to ferroresonance ...

1 Introduction. The occurrence of ferroresonance phenomena in distribution power systems has been observed during the last century [] and works dealing with the phenomenon analysis dated from the 1950s and 1960s ...

In the high voltage transmission line, the system may oscillate due to the stored energy in the magnetic field of the transformer inductance on the disabled line and the electric field of the line ...

Ferroresonance. DEFINITION: term used to describe any unusual oscillations observed in a circuit which contains a nonlinear inductor and a capacitor. Oscillations can be periodic (period ...

Ferroresonance in power networks is a dangerous phenomenon, which may result in overcurrents and overvoltages, causing damage to power equipment and the faulty operation of protection systems.

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University - Intro/Overview of Ferroresonance o David Jacobson, Manitoba Hydro, Canada - Useful References & Examples of Ferroresonance in a High-Voltage Power System o Roger Dugan, Electrotek Concepts - Examples of Ferroresonance in Distribution Systems o B. Tanggawelu, TNB Research, Malaysia - Ferroresonance Studies in Malaysian Utility"s

The four main modes of ferroresonance are identified, along with the criteria for their classification. Finally, the paper discusses the effects that ferroresonance can have on the power system. ...

1.1. Examination of ferroresonance phenomenon in energy transmission power system by graphical method. In order to examine the ferroresonance phenomenon in the high voltage energy transmission system, considering the equivalent circuit in Fig. 1 of one phase of a long energy transmission line with an idle-operating power transformer at the end, the system ...

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