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Analysis of the Switching Time in Contact Switches <i>Stanislaw J. Kulas</i>	1615
Power Oscillation Damping Using an Adaptive UPFC-based Stabilizer <i>D. Nazarpour, F. Rezaii-Tavana</i>	1621
Optimization of Excitation Control System Parameters <i>Jan Murgas, Ivan Sekaj, Eva Miklovicova, Martin Foltin</i>	1628
Fuzzy C-Means Clustering applied to direct Power System Coherency Identification <i>Shu-Chen Wang, Pei-Hwa Huang</i>	1634
Modeling and Optimization of High Currents Dismountable Contacts <i>Ioan C. Popa, Ioan Cautil, Dan Florica</i>	1641
The Results of RCM Methodology using to Optimizing of Maintenance Cycle <i>Jan Gala</i>	1647
Contribution to the Optimization of the Electrical Drives of the Pronounced Dynamic Regime Working Machines <i>Mihail-Florin Stan, Marcel Ionel, Octavian-Marcel Ionel</i>	1654
A Proposal Method for Partial Discharge Location in Power Transformers by using Apparent Charge Measurements <i>Hedio Tatizawa, Geraldo F. Burani</i>	1659
Possibilities of Diminishing the Distortions Introduced by Superior Harmonics of Electric Current <i>Marcel Ionel, Mihail-Florin Stan, Valentin Dogaru-Ulieru, Octavian Marcel Ionel</i>	1663

A proposal method for partial discharge location in power transformers by using apparent charge measurements

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Abstract: - The number of failures in high voltage power transformers caused by problems in bushing and winding insulation validate the studies and the development of a methodology for diagnosing incipient failures, making possible to avoid long unavailability periods, and its consequences which may become catastrophic. The aim of this work is to add in the detection and measurement procedures, mainly concerning the evaluation of position of partial discharge (PD) inside the transformer, in order to evaluate the degree of danger for the equipment. The methodology is based on the measurement of partial discharges from the transformer bushing, in a noninvasive manner. The position of the partial discharge source is estimated considering the transformer winding model, and the measurement and proper evaluation of the response to the partial discharge pulses. By means of a proper modeling and a well-conducted measurement and interpretation, the localization of the problem can be performed. For the measurements, the conventional detection technique proposed by IEC 60270 Standard was used, complemented by digitalization equipment.

Key-Words: - power transformers, partial discharges, IEC 60270