Investigation of the properties of aluminous porcelain samples of a long-rod insulator subjected to high DC voltage

Przemysław Ranachowski [1], Zbigniew Ranachowski [1], Adam Brodecki [1] and Krzysztof Wieczorek [2]
[1] Institute of Fundamental Technological Research Polish Academy of Sciences, Warsaw, Poland
[2] Wroclaw University of Science and Technology, Wroclaw, Poland
Author 1 pranach@ippt.pan.pl, Author 2 zranach@ippt.pan.pl, Author 3 abrodec@ippt.pan.pl, Author 4 krzysztof.wieczorek@pwr.edu.pl

Corresponding author: *Przemysław Ranachowski (pranach@ippt.pan.pl), Institute of Fundamental Technological Research Polish Academy of Sciences, Warsaw, Poland*

ABSTRACT

The objective of this examination was to test the aging resistance of the aluminous porcelain material C 130 type, when exposed to direct current (DC) high voltage. Long-term exposure to high DC voltages can potentially lead to various negative effects, in particular ionic current development in the porcelain material. This process may reduce the mechanical strength and, consequently, cause a failure. This problem has been noticed in the case of glass disc insulators. The samples were examined using the 3-point bending test, ultrasonic and microscopic analysis. No recordable degradation effects were found. Long-term impact of DC high voltage did not reduce the mechanical parameters or change the microstructure of the porcelain material.

BIOGRAPHY

PhD. hab. Przemysław Ranachowski is a graduate of the Faculty of Chemistry at the University of Warsaw. Since the beginning of his scientific career, he has been involved in the study of materials widely used in electrical engineering. Most of his research has focused on the relationship between technology, phase microstructure, parameters and degradation processes of electrical porcelain and composite materials. Using various methods, including acoustic, he studies the microstructure of different ceramic and composite materials, their performance parameters and resistance to ageing processes.

Dr. hab. Przemysław Ranachowski has moreover passion in history of architecture.

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- Skype: -
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