

METHOD FOR SEISMIC CAPABILITY ASSESSMENT OF THE HIGH VOLTAGE CIRCUIT BREAKERS

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Abstract. *The international norms recommend verification of the circuit breakers seismic capability by tests on seismic platform, but accept assessment through experimental and theoretical combined analysis, too. The paper presents a methodology for seismic capability assessment of the high voltage electric equipments using combined analysis through experimental modal analysis methods. The methodology was applied on some representative types of circuit breakers and disconnecting switchers situated in the working place.*

The same methodology was applied on a circuit breaker type IO 220 kV/2500A, situated on seismic platform from SC EUROTEST SA Bucharest, after finishing the tests with vibratory signals applied to the base. The equipment, in the same mounting conditions, was tested by means of the present methodology. Were determined the frequency response functions, modal parameters, and theoretical response of some representative points to theoretical vibratory motions applied to base, the same as applied during the direct experimental tests.

At the end of paper it is effectuated the comparative analyses of the results obtained through the two methods: direct tests on seismic platform and combined analysis by modal analysis methods.

Keywords: modal analysis, seismic capability assessment

1. Introduction

The good operation of the power system must be assured in both normal and limit working conditions as well as in case of seism or short-circuit events. From this point of view, special problems appear at the switching equipment with column type construction such as high voltage circuit breakers. At this type of equipment, due to their characteristic construction and their specific tasks to carry out, depending on the network location, network topology and type of switching events the mechanical stress can vary over a very wide range. All these events have cumulative effects and are leading to weariness of structure and a seism or short-circuits, due to their violent actions, can have destructive effects on circuit breaker mechanical structure. Consequently, with a view to ensure a high reliability, it is a good idea that each main switching equipment should be submitted to some experimental tests in order to assess the structural resistance state and their capability to stand out to future severe events.

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