

DISCUSSION BY F. NOVOA M. (I)

to the Paper N° 19, "On the response Analysis of the Structure System Subjected to Multi-seismic Motions ", by J. Sato and K. Suzuki.

I wish to refer to the statements by the authors in page 3. It is shown there that there is a possibility to analyse a system "building-machine" by considering it as formed by 2 simpler separate oscillators, and determine the "machine oscillator" response as the one of this oscillator submitted, by ex., to 2 floor responses as a 2-input excitation. As the applicability of this method is limited, it is then analysed the system "building-machine" as regards its response to definite earthquake accelerations (fig. 4).

I am directly interested in the system "building-machine", as it can be made represent, by ex., a system "column insulator-bracing insulator" in the high voltage electrical equipment of 400 kV or more. But I think there is another possibility, appart from the analysis made by the authors. This should be that the transfer function for the whole system is first determined, combining the transfer functions of the different single oscillators by the rules of filter network analysis, to arrive at a response function of the whole system and its parts; and only then, is this function submitted to a definite earthquake excitation, as defined by the power density which could be derived from a smoothed maximum expected response spectrum for the single oscillator.

The principal consequences would be:

- 1st.- To separate a so distinct problem as the determination of the response function of a definite structural system, from the problem of determining the maximum expected earthquake action at a place.
- 2nd.- To make more clearly appear the influence, in the response function, of each variation in a single oscillator, before obscuring it under the influence of the chosen earthquake. This is particularly important when the structure system must be composed of rather standard oscillator components, as would be the case for the high voltage electrical equipment and many others.

The method described here has been implied in the conclusions to (1).

Reference

- (1) F. Novoa M.: Earthquake Analysis and Specification of the HV Electrical Equipment, 5 WCEE, paper N° 69.

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