

VIBRATIONS IN SYSTEMS OF PIPES WITH DIFFERENT EXCITATION IN ITS ENDS

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ABSTRACT. *In this document, a new method of dynamic analysis to systems of pipes with different movements in the ends sets out taking the phantom from answer corresponding to each one of the supports and to compare it with the method of simple answer that it uses a surrounding one in the phantoms of answer of the different supports is the classic one, in this last one, they are not preservative, as it is possible to be noticed in the table of results of the considered problem. Therefore, the usual practice to consider the surrounding one of phantoms will not be a recommendable solution. Also the use of the consistent masses sets out or distributed and discreet or concentrated them as normally it is made and in addition, it is not become attached but to the reality.*

Keywords: Matrix of influence, Modal analysis, Spectral analysis, Characteristic values and vectors, Factor of modal participation, Spectral acceleration and vector of normal coordinates principles

1. Introduction. In the design of industrial and nuclear facilities, the study of its seismic-dynamic behavior constitutes a fundamental stage within its design, since the probability that exists excitations by seismic effects appear during the life utility of these plants, and the damage caused by these effects can get to be predominant enters the diverse requesting to consider for its design. It obvious will be agent chief executive in those facilities that are located in zones of median to high seismicity, as it happens in several parts of the world.

Among the various industrial or nuclear plants, is often confronted with systems that provide structural support or multiple carriers at different elevations and/or are wide-spread in the plant. This implies that the seismic excitation are different in their support, either because the excitation equipment at high elevations are generally higher than low elevations, either in structural systems at the plant is very long relative movements presented supports its effect the propagation of seismic waves through the soil [1-4].

Piping systems Industrial and Nuclear Plant, is a typical example of those systems that provide structural support or multiple carriers, which in turn interconnect various sensitive equipment, which are supported directly on floor or special structures [5-7].

Thus the common practice of dynamic seismic analysis, which is usually considered a single move in one direction by acting simultaneously on all their support and only the structures that lie on the ground, trying as “appendages” to rely on them, will not be a reliable and should be considered in their different excitations support [5,8,9].