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Dynamic Design of the Foundation of Reciprocating Machines for Offshore Installations in Persian Gulf

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Abstract: - The installation of large and heavy reciprocating machines on offshore constructions demands specific requirements in the design of the foundation with respect to vibrations. Because the use of those piston engines implies high dynamic loads at the substructure of offshore systems, special measures are required.

This paper shows how problems can be avoided by applying a detailed vibration engineering design. An offshore project in the Persian Gulf involving the installation of three heavy reciprocating mud pumps is taken as an example. It is demonstrated how vibration engineering aspects can be considered within a project at the very beginning. The developed installation concept and its specific technical implementation at the construction are part of this paper.

Keywords: Persian Gulf, dynamic loads, vibration, installation

On the Acoustic Auxetic Nanopanel

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Abstract: - This paper presents an investigation of the acoustic suppression by auxetic nanopanel. Materials with negative Poisson's ratio are termed auxetics. Instead of getting thinner like an elongated elastic band when stretched, an auxetic material gains volume, expanding laterally. The purpose of the paper is to study the influence of the auxetic components on the acoustic reduction and the width of the

frequency band of the reduction. The acoustic attenuation results show that the auxetic core has a significant impact on the acoustic attenuation performance of the panel. The results is a clear improvement of the noise suppression for the high frequencies (>3500Hz) with a corresponding reduction in suppression at lower frequencies (<2500Hz).

Keywords: - Auxetic materials, Acoustic nanopanel, Noise suppression, Acoustic attenuation

Systemic Parametrical Analysis of the Innovative Isolation Solutions against Seismic Shocks

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Abstract: - This paper deals with new vibration isolation systems intended for vibrations characterized by low tuning eigen frequency. The damping as well as the elastic characteristics are presented both for the whole system and its components. Thus, three passive isolation solutions where the viscoelastic elements consist on antivibrating rubber designated to attain appropriate performances in vibration isolation intended for equipment inside buildings (e.g. electric generator, air ventilation-conditioning systems) are presented.

Keywords: seismic shocks, passive isolation, elastic system

Analysis of the Sound Field in Enclosures

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Abstract: - Steady-state sound field in closed spaces may be calculated as a series of normal modes of oscilatings. Experimental results are not explained completely by this theory and for these differences should be an additional term representing the direct spherical radiation at the reverberant field. In the paper it is shown that the sound field contains the direct wave as well as the standing waves. In addition the paper shows the calculation particularity of the acoustic field in low frequencies.

Keywords: standing wave in enclosure, normal modes, direct radiation

Researches Regarding the Effect of Nitinol Vibration Damper Applied to Infrastructures

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Abstract: - Many of the performed researches all around the world aim to develop advanced technologies in order to enhance the performances of the infrastructure systems, different from the actual ones, fact which involves multidisciplinary research (IT, sensing, electronics, smart materials and others), aiming to assist engineers in realizing full benefits of structural health monitoring. The paper presents a preliminary feasibility study of a system that can be used for damping of structural vibrations. Thus, shape memory alloys (SMA) components can affect through two mechanisms the structure's vibrations. The stresses from a SMA element that realize phase transformations, as a result of vibrations, have an effect on the frequency-amplitude characteristics. In addition, a dissipation of energy due to hysteresis in a SMA element can reduce the natural frequency and affect forced vibrations)

Keywords: vibration, dampers, shape memory alloys, infrastructures, frequency

On the Vibrations with Seismic Excitation of the Rigid Elastically Hanged

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Abstract: - Consider the rigid solid elastically hanged with large arrows to balance. Rigid matrix is established, which in this case depends on the values of the arrows to balance. In the case of seismic excitation (through basis) the expression of the excitation force is being established which, based how it is shown, depends on the rigid solid movement of the base and a numerical application is solved.

Keywords: vibration, model, elastic supports

Noise Measurements in Urban Environment

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Abstract: This paper presents some results obtained on diminishing the noise generated by transportation means in urban environment, with application to Timișoara City. Starting from the results of measurements, noise abatement methods were established concerning the noise in urban environment. After the implementation of these methods, new measurements were performed. A comparison study was developed based on the results of the measurements.

Keywords: noise, transportation, measurement, urban, environment, Timisoara city

The Prevalence of Hand-arm Vibration Syndrome on Three Types of Powered Vibratory Tools Users

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Abstract: - This paper studies the relations between cumulative exposures to hand-transmitted vibration (taking into account the vibration magnitude, lifetime exposure duration, and frequency of vibration) and the development of hand-arm diseases. The studies were made on a group of 16 users of powered vibratory tools: grinder, dockyard painters, and machinists. The estimated total operating duration in hours was thus obtained for each subject, for each tool, and for all tools combined. In this case, dose measures with high powers of acceleration ($m > 1$) faired less well than measures in which the weighted or unweighted acceleration, and lifetime exposure duration, were given equal weight ($m = 1$). The dose determined solely by the lifetime exposure duration (without considering the vibration magnitude) gave better predictions than measures made with m greater than unity. All measures of dose calculated from the unweighted acceleration gave better predictions than the equivalent dose measures obtained using acceleration frequency-weighted according to current standards.

Keywords: hand-arm vibration syndromes; vibration frequency; magnitude; exposure duration

The Influences upon the Quality of the Mineral Aggregates Induced by Technological Vibrations During the Sorting Process

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Abstract: - The paper present the results of dynamic analyses concerning the inertial vibratory sieve correlated with kinetic parameters with pits kinetic parameters in order to obtain an efficient sieving process of granularly materials.

Keywords: sieving, technological vibration, granularly materials

The Effect of the Internal Dissipation of the Energy in the Supports of Composite Neoprene used for the Basis Isolation under the Seismic Action

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Abstract: - This work continues the researches who want to note the dissipated energy inside the viscoelastic materials harmonical excited. In this case we analyze the effect of the internal energy dissipation for the composite materials based on neoprene.

Keywords: - composite neoprene, energy internal dissipation, isolation, seismic, base isolation

Behaviour Response of Earthmoving Machine in a Loading Process

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Abstract: - This paper present a conclusive remarks about the dynamic analysis and simulations, regarding the behaviour of an earthmoving machine in direct evolution under the basic technological process. Thus, one of the major phenomenon that involve overload into drive system machine is represented by the bucket - soil interaction. It was supposed a loader bucket, but it was supplied a very large area of damage and unbalanced charging situations. A computer program performed by software MATLAB/Simulink 7 has been developed for simulation of earthmoving behaviour.

Keywords: earthmoving machine, loading process, simulation

The Sound Distribution Uniformity Throughout the Multifunctional Hall „EUTHERPE”

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Abstract: In order to perform a full estimation of acoustic characteristics of public auditoriums there were defined „acoustic criteria” such as reverberation time, clearness index, intelligibility percent, uniformity index etc. The spatial acoustic uniformity of an auditorium shows the sound distribution and emphasizes the sound level decrease as a function of the distance between the sound source and the auditory position. The paper presents acoustic measurements performed inside „Eutherpe” multifunctional hall of „Spiru Haret” University that is used both as conference hall (universitary courses, talk-shows, conference or symposium meetings) and for musical shows performed by small instrumental groups with or without vocal soloists.

Keywords: sound distribution, hall, uniformity characteristics