

C H R O N I C L E

**36th Winter School on Vibroacoustical HazardsSuppressions
Wisła, Poland, February 25 – 29, 2008**

Dear Ladies and Gentlemens!

I invite you to acquaint with abstracts of selected lectures submitted to presentation in 36th Winter School on Vibroacoustical Hazards Suppressions. This national School, organized by Upper Silesian Division of the Polish Acoustical Society and Institute of Physics at Silesian University of Technology, is planned at end of the February 2008 in Wisła.

The conference is the forum for all environmental vibroacoustics fields. Particularly it concern to traffic noise, industry noise, vibroacoustics of machines, room acoustics, noise protection and similar problems. During the School the theoretical works, experimental, measuring, technical, applied and normative ones are presented.

The School lectures, and other conference materials, will be published in the “Materials of the XXXVI Winter School on Vibroacoustical Hazards Suppressions” (in Polish) edited by Dr. Mieczysław Roczniak (chairman of the conference). This publication is intend to participants of the School and for many libraries in Poland.

Other information about XXXVI WS on VHS you can find at address

<http://ogpta.polsl.pl/szzw>

In behalf of Organizers
Roman Bukowski
coordinator of the School

Abstracts

1. Nonparametric estimate of probability density function for long-term indicators of environmental noise risk

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The paper describes estimation problem of probability density function for indicators of environmental noise risk. For this purpose there were used the results of traffic noise monitoring, registered in 2004–2005 on Krasieńskiego Avenue in Kraków. There were appointed following indicators: day level L_D , evening level L_E , night level L_N and day-evening-night level L_{DEN} . On the basis of received data we made an attempt to estimate the probability density function a/m indicators of nonparametric estimate method, on the example of kernel estimate.

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2. Compilation of basic input data for traffic noise map of Warsaw.

Main problems and methodology

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Creation of reliable long-term volume of traffic for every street was the main problem faced during accomplishing the noise map for Warsaw. This 24-hours traffic volume should refer to seasonal and weekly fluctuations what result from obligations of Directive 2002/EU/49, so a propagation of long term sound level (L_{DWN} and L_N) was estimated.

The traffic distribution for the street's network was made on the basis of the model VISUM, which delivers a traffic volume for the rush hours. This distribution was validated by series of measurements. The other problem was, that these traffic volumes refer to main streets (road class G and GP). In order to reflect an acoustic influence of local and community streets (road class L and Z), measurements had to be performed. Two kinds of measurements: twenty – four hour (160 measurements) and sampled (about two thousand measurements) were conducted. Additionally, two institutions gave about two hundreds measurements of traffic volume, which contained variety during week.

On the base of these all measurements, computational formulas were elaborated. These formulas transfers rush hours traffic volume to long-term traffic volume. Furthermore, the calculated values of noise levels were compared with the noise measurements in well-defined conditions.

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3. Noise emission limits in a view of local land development plans

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The difficulties in determining noise emission limits on the bases of records from land development plans are discussed from the point of view of the EIA expert.

The difficulties arise from the inconsistencies in some laws and regulations. Some examples from specific local land development plans are quoted.

A proposal of a proper approach to the problem is put forward in view of new land development plans preparation, entailing the allocation of the symbols of particular areas to the categories stipulated in the Polish Environmental Protection Law in a separate point of the plan, irrespective of the basic division in accordance with the regulations to The Spatial Planning and Land Development Law.

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4. Acoustic map of the tall motorway Katowice–Kraków

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The aim of the research was to prepare the acoustic map of the tall motorway Katowice–Kraków on the area of two voivodeship in accordance with the regulations in the act about the environmental protection and with the law regulations.

It was claimed that the noise, connected with the motor traffic, on this particular part of A4 motorway exceeded, on the acoustically protected area, the permissible noise level defined as the indication L_{DWN} and L_N . It was also claimed that, according to the L_{DWN} indication, 22.5% of the area, that was taken into consideration, is endangered whereas, according to L_N indication, 42.0% of the above-mentioned area is endangered.

The equal-loudness contours' range of the permissible noise level, for the established motor conditions, depends firstly, on the lie of the surrounding land and secondly, on meteorological conditions, kind of land and number of acoustic reflections that are taken into consideration. Within the research, the analysis and the assessment of the protection for exceeding emission of noise into environment, that exists as well as protection that is planned, were prepared.

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5. Plate vibration representation using State–Space modeling

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The paper is presenting a new concept of modeling. This new approach is based on the concept of state-space. Paper shows basic definitions of state-space and its implementation to real dynamic model. A uniform, thin, simply supported plate made of steel is modeled using the transverse displacement equation. All simulations are made using MatLab environment. The displacement response of the plate from simulations was compared to real measurements made in reverberation room in AGH. Visualization and animation was also achieved dividing the plate and measuring displacement at 400 points.

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6. Application of MFC elements for active noise control

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Global active noise control with loudspeakers as secondary sources is rarely feasible. It is usually limited to small enclosures and very low noise frequencies. However, there is a group of applications where structural approach with vibrating plates can be used to overcome that problem. The plates are usually excited by exciters or piezoceramic actuators. In this paper Macro Fiber Composite (MFC) elements are considered. Both the structure and properties of the MFC elements, particularly useful for active control purposes are presented. The laboratory rig is also described and characteristics of the secondary path is identified and commented. The system performance is analysed in terms of tonal and multitonal noise control by the feedforward normalised FXLMS algorithm. Obtained results are promising. The MFC elements do exhibit properties advantageous for plate excitation. They allow for generating sound of high SPL values and successful control of the considered exemplary noises.

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7. 24-hour measurements of traffic noise

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In order to assess the danger of traffic noise in the environment it is recommended to carry out long-term acoustic measurements. The good measurements are thought to be the ones that last over 24 hours (or longer). However the measurements carried out by multiple sampling of noise level in determined time intervals in the measurement point are thought to be approximate ones.

In the article there are presented the results of the 24-hour measurements of traffic noise near A4 highway. There are also described the most common mistakes concerning traffic noise estimation on the basis of long-term measurements.

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