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CONCEPTS ON THE ASSESSMENT OF SOUND POLLUTION

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Abstract: *The paper presents some aspects regarding noise pollution assessment. The study is a part of the complex activity made in the Bistrita municipality for the limit of the noise pollution inside the city. This paper wants to be a signal that the pollution needs to diminish any ware there are the people subjected to noise pollution.*
Key words: *noise, assessment of noise pollution, integrated system for the monitoring.*

1. INTRODUCTION

The noise becomes a pollutant factor of life, environment, and work, permanently, in order, unwanted, which adversely affect the level of professional performance, and many times cause fatigue, the worst of the drop or quantitative and/or qualitative in the level of activities provided. Assessment and measurement of the sound level is carried out in accordance with the standards of correlated with legislation in force.

Continuous monitoring of the noise in the cities shall be: • Industrial areas; • Sites in construction; • Main streets; • Major railways; • Stadiums, the exposition areas and concerts.

Continuous monitoring can give indications of a tendency of the sound level and can help create noise maps.

Global acoustical or strategic planning attempts to prevent the problems that may arise; they need to optimize the use of scarce resources through mapping and managing the environment acoustic of a large area such as a city or an airport.

2. NOISE POLLUTION ASSESSMENT

Measurement of noise makes an integral part of the program for the protection of the environment against noise. Standards and regulations relating to this area lay down the parameters which determine the level of noise also describing and the equipment, methods, and conditions of measurement (parameters weather). Modern appliances measured in continuous mode the level of noise equivalent ($\mathbf{L_{eq}}$). This size appreciates the best average value of the intensity noise, is supported on a worldwide level. L_{eq} is determined on the field or at the place where it is desirable to know the noise level, with the aid of an appliance called sound level meter. In essence a sound level meter consists of a microphone, an amplifier, a block electronically and a system to display the value measured. Person who performs measuring ambient noise must be empowered to carry out this type of determination by the competent authorities; Noise measurement may be carried out in accordance with the conditions specified in the standards and laws in function.

Level meter are the instruments for the measurement sound or acoustic pressure, the measurement noise level. As a rule level meter has available two curves of the sound pressure, noted "A" or "C".

The curve "A" is used in standard determinations of the sound pressure, which corresponds to the pressure acoustics reported in human ear, or, in other words sound level compensated. For the measurement of low frequency sounds should be used the curve type "C".

A sound level meter can have functions of MAX or MIN by which displays the values maximum or minimum in a time period [1].

For continuous monitoring is used sound level meter with data storage as they are able to data transfer the on the computer.

Level Meter is intended for noise measurements in civil and industrial sector, occupational hygiene, labor protection, for statistical analysis and for verification of compliance with legislation relating to noise pollution etc.

Level Meter is the simplest portable device for the noise measurement. The appliance actually measures the level of the sound pressure expressed in dB. Level Meter is a device that has an answer approximately in the same way as human ear and which allows determinations noise level objective and reproducible.

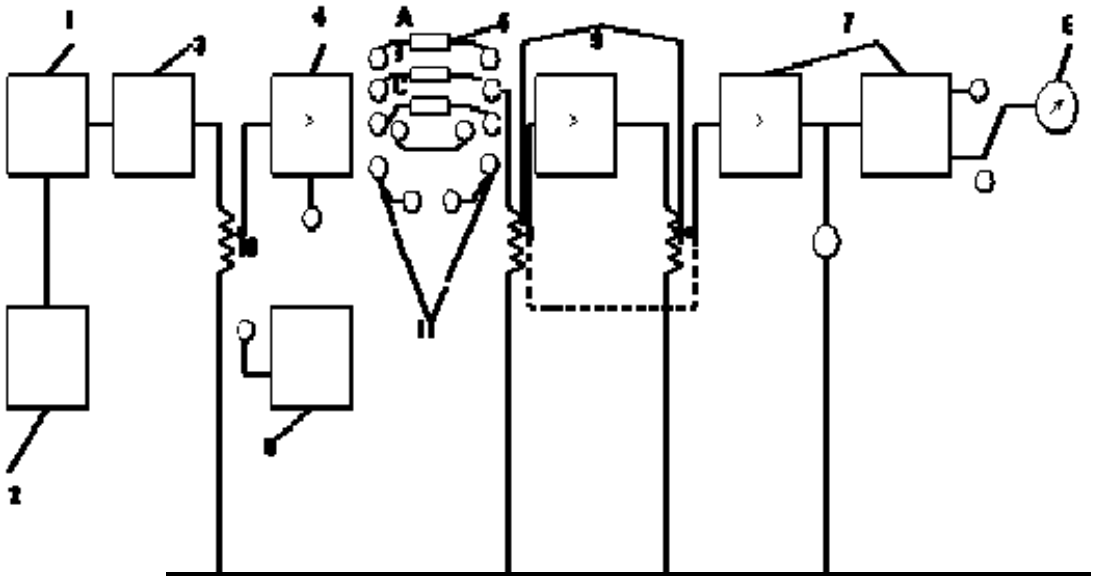

Fig.1. Schematic diagram of the general type of a sound level meter 2203:
1 - Microphones; 2 - Source stable power supply; 3 - Attenuator; 4 - Pre-outs; 5 - The circuitry weighting A, B, and C; 6 - Reference voltage; 7 - Amplifiers; 8 - Device to read; 9 - Buttons transparent; 10 - BUTTON black. 11 - Connecting the filter outside.

Audible signal is converted into an electrical signal identical by means of a high-quality microphone. The best microphones from the accuracy view point are those of type condenser. A schematic diagram of the general a microphone-type condenser, is represented in figure 2.

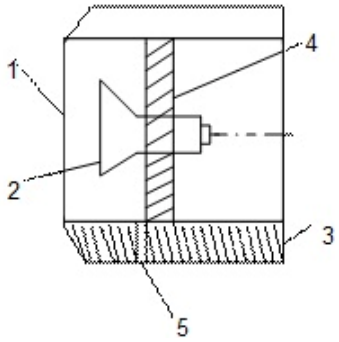

Fig. 2. A schematic diagram of the general a microphone-type condenser: 1 - Aperture; Plate 2 rear; 3 - The body microphone; 4 - An insulator; 5 - Opening for pressure equalization static.

The beep being of low level, be amplified prior to being able to read him on the instrument. After the first amplifier, the signal must be passed through the network circuits of the weighting (A, B, C, or D) or through a filter of octave or one-third-octave, which can be connected from the outside of the apparatus.

3. DURATION OF MEASUREMENTS

The duration of measurements varies from a few minutes to a few weeks depending on the characteristics of the sound source. Determinations of long duration are useful when requesting information about the time course of the noise (monitor the level inner noise when he or she shall be imposed on an upper limit), but these measurements are expensive and difficult to do. Because of this, they shall be made only when there is no other

solution. Assessing the level of noise is based on several occasions on a representative sample taken in several short intervals and then it assembles in a single report.

In assessing the level of noise in the environment, is the most important parameter is L_{eq} or better LA_{eq} (continuous measurement of the curve weighted in frequency A). For determining the level of noise, the different tones (compressors, high-pressure pipes, air-conditioning systems, saw) shall be made special measurements of the spectrum of tone because negative effects produced by them may not be highlighted at the L_{eq}.

Timetable of determinations will be chosen in such a way as to capture variations in the intensity of noise, and in different time [2].

For mobile sources of the road traffic:

- The period of day to choose between 7 - 19;
- The period during the evening hours to choose between 19 - 23;
- The period during the night hours to choose between 22 - 6.
- L_{day} Indicator (indicator of the noise for the day) is associated with discomfort from during the day;
- The indicator $L_{evening}$ (noise indicator for evening) is associated with discomfort from the time series;
- The indicator L_{night} (noise indicator for the night) is associated with discomfort during the night, where it can cause disturbance in sleep;
- The indicator L_{den} (noise indicator for the day-evening-night) is associated discomfort generally, for duration of 24 hours.

These indicators of noise are determined for all the periods of day, evening and night during the calendar year

4. MICROPHONE PLACEMENT

Microphone placement in order to determine the noise level in the different sources is standardized; For example at the premises or at the limit of property specific, taking into account the panel buildings, the obstacles, wind direction, etc. International Standards give the location microphone at a height of 1.2 -1.5 m to the ground and 2-3 m from the front panel buildings, but that is not on the path of travel of the vehicles [3].

Measurement of noise produced by road traffic can be carried out at the level of the vehicle or full flow by road.

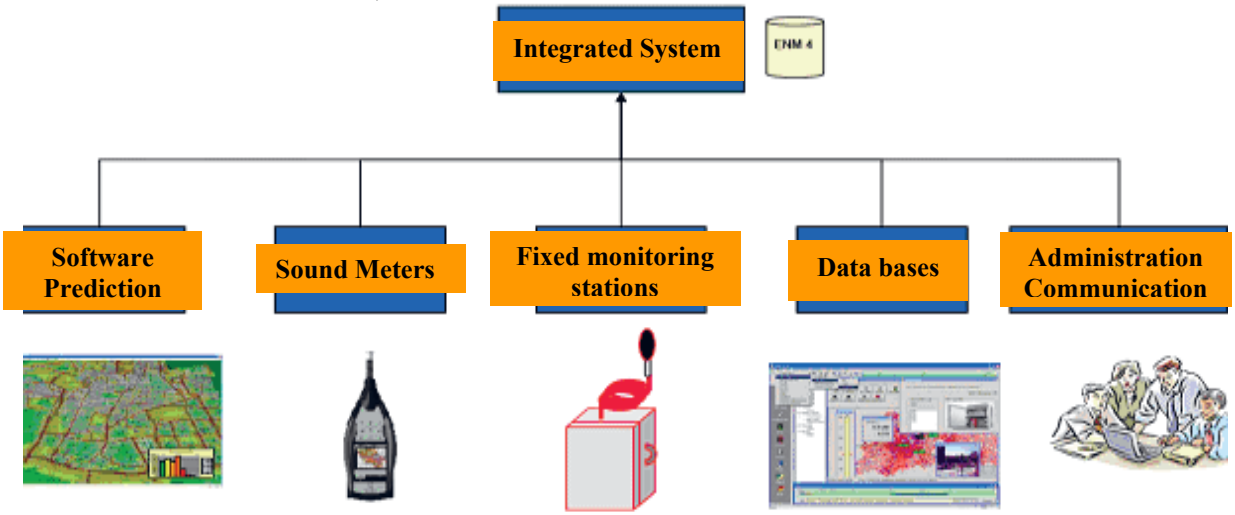

Fig. 3. The concept of integrated system ENM 4 [4].

The apparatus for the measurement of noise has been set to determine the level of the sound pressure continuous weighted for intervals of 1 minute. Record values have been carried out in the memory weighting for which have been drawn up tables and have made graphic representations with program Deaf Defier. Sound level measurement was

made at accost of the street from a height of 1.5m to the ground.

For an agglomeration of 1 million inhabitants, a complete system includes the following components:
- Measuring points permanent;
- Mobile units (sound meters);
- Temporary systems;
- Management software - database;
- Software for the evaluation of the noise in accordance with the legislation;
- Software of prediction and mapping.

The concept of integrated system - ENM 4 comprises (Fig. 3):
- Mapping of accuracy;
- Monitoring;
- Measurement;
- Administration, communication.

5. Conclusions

Measurement of noise produced by road traffic can be carried out at the level of the vehicle or full flow by road.

An integrated system for the monitoring and evaluation can meet tasks for the resolution of complaints concerning exceeding a noise level of range, with the requirements of making the noise maps, continuous monitoring, calculation of parameters and evaluation of the impact. Such a system can perform reporting and information to the public whiles all information and data are archived.

4. REFERENCES

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[2] ORDINUL nr. 536/1997 pentru aprobarea Normelor de igienă şi a recomandărilor privind mediul de viaţă al populaţiei, Monitorul Oficial al României, Partea I, nr. 140 din 3 iunie 1997
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[4] www.agir.ro/buletine/963.pdf

CONCEPTE PRIVIND EVALUAREA POLUĂRII SONORE

Rezumat: Lucrarea prezintă câteva aspecte privind evaluarea poluării sonore. Studiul face parte dintr-o complexă activitate asupra poluării sonore în municipiul Bistriţa, care reprezintă un semnal de alarmă prin care se atrage atenţia supra faptului că poluarea sonoră trebuie să fie diminuată oriunde afectează populaţia.

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