RESEARCH NOISE LEVELS FROM ROAD TRAFFIC IN TARGU - JIU

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ABSTRACT: The paper describes the results of monitoring noise levels measured in the busiest intersections in Targu Jiu and comparing the results with the maximum limits established by STAS 10009/88

KEY WORDS: noise, monitoring, Targu - Jiu, car traffic

1. INTRODUCTION

Increased engine power of motor vehicles and their speed of travel has led recently to increased noise generated by them.

Study and combat the problem of vehicle noise is complex and covers a number of issues:

1) The study physical appearance of noise occurrence, detection of noise and noise spectrum analysis;
2) Quality study noise levels generated by the different regimes in different units of the vehicle speed and load;
3) Establishment of a comprehensive solution to tackle noise at source or stumbling to its spread in the environment;
4) The design and implementation of efficient silencers acoustically;
5) Development of unique methods for measuring vehicle noise and acoustic levels are limited.

Another important issue is that of shock and vibration motor and travel and transport conditions for passengers and goods.

The harmful effects of shock and vibration in vehicles can be divided into three broad categories:

1) Effects on vehicle performance due to damage or malfunction of equipment or accessories of the motor;
2) Effects on the driver and the passengers;
3) Effects on transported goods.

Particular attention should be paid conformabilities vehicles characterized by the ability to travel long operating speeds, without the passengers and driver have unpleasant sensations or tired quickly and also without the goods transported to be damaged.

If studying the influence of vibration on the human body, it must be borne in mind that generally the driver and passengers of a vehicle sitting on chairs upholstered suspension and damping. The "chair-man" differs from the "man" through greater elasticity due to the presence of the seat and therefore the resonance first system will be less than 5 Hz frequency at which it is considered that the human body has maximum impedance.

For the theoretical study of a vehicle vibrations arising due to external excitation, usually road irregularities, it is replaced by an equivalent oscillating system.

The main attribute of road traffic noise is that it is composed of mixtures of sounds or sounds discordant strong that impress the hard way hearing.

The most important sources of noise and vibration that occur while driving a truck are the propulsion engine, transmission organs, and vehicle and air resistance to advance its turnover.

Body noise problem is related to installation thereof. Generally this problem

can be solved by using paints (fillers) soundproofing the surface coating of tin and vibroisulation body to the chassis and engine in some cases, to prevent ingress engine noise in the cabin or vehicle body, a decisive role it system has seal holes pedal, rods and wires for the electrical installation.

To reduce the noise floor and the roof body, bonnet and cap trunks panels of doors and panels condensation (splash) are covered with materials acoustic like putty or paint antiphonal, felt bituminous, fiberglass or polyurethane foam. Research with good results, have been performed in the country and on improving acoustic comfort inside buses capital repaired, Romanian manufacturing.

2. MATERIALS AND METHODS

Monitoring noise in Targu -Jiu was Bruel & Kjaer sound level meter used 2250L. It is a tool that is designed to measure sound levels in a standardized way. Bruel & Kjaer sound level meter 2250L consists of a processor, a reading unit, microphone and preamplifier (Fig. 1).

Fig. 1. Bruel & Kjaer 2250 sound level meter

The microphone converts the sound signal into a signal equivalent electrically.

Processing includes certain aspects of the weighting in accordance with international standards such as IEC 61672-1. Weighting adjusts frequency response at different frequencies sound meter. Adjustment is necessary because the human ear is more sensitive to certain frequencies than others.

The weighting used is the type that simulates the response of the human ear at frequencies environments. Weighting is required for almost all noise measurements made in the environment and workplace.

Measurements was carried out by going through the following methodology:
1. Started the machine by pressing the On / Off and was assured that the project Sound Level Meter is selected.
2. It checked the path displayed at the top of the screen so as to display the correct project.
3. The measurement was set by pressing the Menu key.
4. It has pressed the Start / Pause and then watched indicator status.
5. Were used buttons Start / Pause, Continue, Back Erase and Reset to control measurement.
6. When the measurement was done was pressed Save.

According to SR ISO 1996-2: 2008, the meter was placed at a distance of 1,5 m from the ground (Fig. 2) and the microphone toward the sound source.

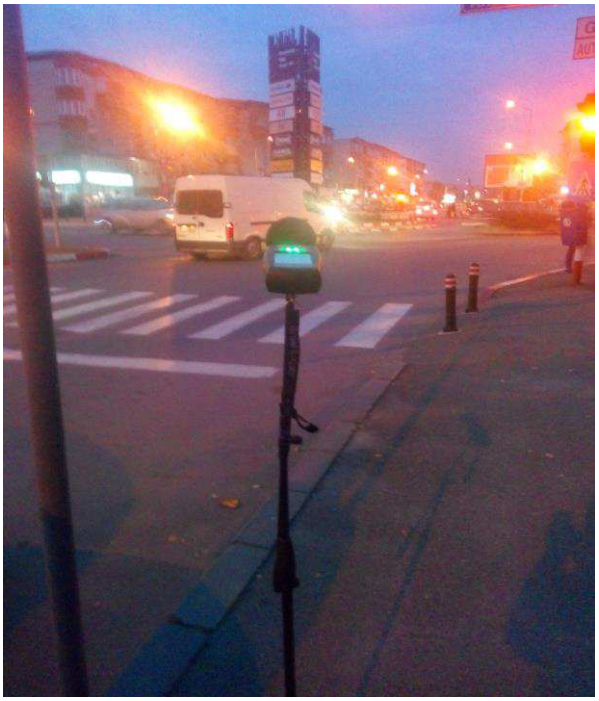

Fig. 2. Location sound meter according to SR ISO 1996-2: 2008

3. RESULTS AND INTERPRETATIONS

Monitoring noise generated by road traffic in Targu - Jiu was conducted in six monitoring points according to Figure 3, a period of six months.

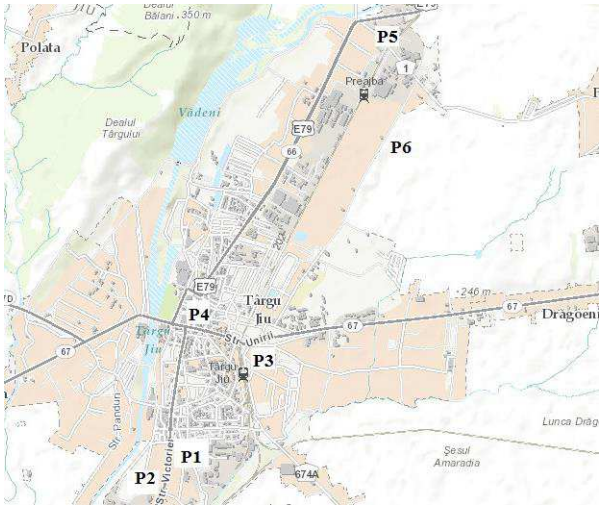

Fig. 3. Location of the six points of measurement noise
Where: P1 -9 Mai intersection, P2 - Mall intersection, P3 - The intersection of Tudor Vladimirescu, P4 - The intersection of Central Park, P4 - Vadeni intersection, P5 - The intersection Artego

The monitoring results were reported noise limit of 60 dB (residential) in accordance with STAS 10009/1988.

Noting the measured noise level equivalent shown in Figure 4 shows can be seen:

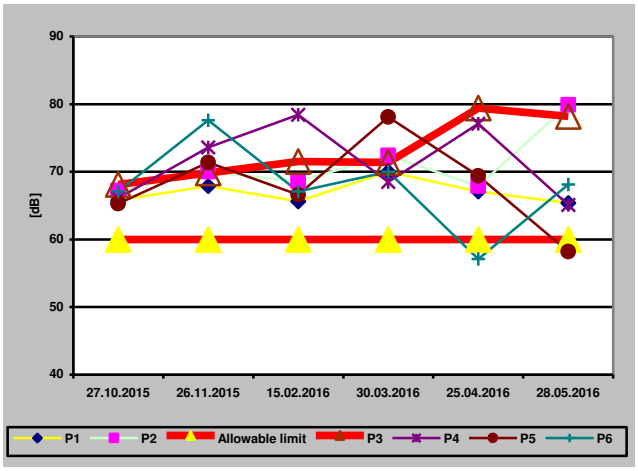

Fig. 4. The graphical representation of the results of monitoring noise level Leq

- In the 6 measurements taken at P1, the noise level has surpassed the maximum limit of 60 dB.
- In the 6 measurements at the point P2, the noise level has surpassed the maximum limit of 60 dB.
- Of the six measurements taken at P1, the highest equivalent noise level was recorded in March 2016 (70 dB), which is 16.6% above the maximum permissible 60 dB STAS 10009/88.
- Of the six measurements at the point P2, the highest equivalent noise level was recorded in May 2016 (79.9 dB), which is 33.16% with 60 dB above the maximum permissible STAS 10009 / 88.
- The lowest equivalent noise level measured at P1 was registered in May 2016 and namely 65.4 dB, which is 9% above the maximum permissible 60 dB STAS 10009/88.
- The lowest equivalent noise level measured point P2 was recorded in October 2015, namely 67.2 dB, which is 12% above the maximum permissible 60 dB STAS 10009/88.
- In the 6 measurements at point P3, the noise level has surpassed the maximum limit of 60 dB.
- In the 6 measurements at point P4, the noise level has surpassed the maximum limit of 60 dB.
- Of the six measurements at point P3, the highest noise level was recorded in the equivalent month in April 2016 (79.4 dB), which is 32.33% with 60 dB above the maximum permissible STAS 10009 / 88.
- Of the 6 measurements at point P4, the highest level equivalent noise was recorded in February 2016 (the 78.4 dB), which is 30.66% with 60 dB above the maximum permissible STAS 10009 / 88.
- The lowest equivalent noise level measured point P3 was recorded in October 2015, namely 68.1 dB hovering above the maximum permissible 60 dB STAS 10009/88.
- The lowest equivalent noise level measured at the point P4 was registered in April 2016 and 65.1 dB namely hovering above the maximum permissible 60 dB STAS 10009/88.
- In five of the six measurements at point P5,

the noise level surpassed the maximum limit of 60 dB.
- In five of the six measurements in the P6, the noise level surpassed the maximum limit of 60 dB.
- Of the six measurements taken at P5, the highest level equivalent noise was recorded in March 2016 (the 78.1 dB), which is 30.16% with 60 dB above the maximum permissible STAS 10009 / 88.
- Of the six measurements at the point P6, the highest noise level equivalent was registered in November 2015 (the 77.6 dB), which is 29.33% with 60 dB above the maximum permissible STAS 10009 / 88.

4. CONCLUSION

The main problem is the high incidence of intersections monitored noise especially in residential buildings situated near roads sectors analyzed.

In these areas the high level of noise makes it difficult to use for recreation space in front of buildings.

Also, high levels of noise on facades creates a high level of traffic noise inside the apartment with windows facing the road.

Noise measurements and analysis of the situation in the field of auto major junctions in Targu Jiu pointed out the following situations and problems:
• The need to reduce traffic volume and traffic volume especially hard, transit
• The need to reduce intake noise generation road surface in road traffic
• The need for traffic calming measures and reinforcing compliance with permissible velocity
• Need reversal noise propagation in certain sectors

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