MONITORING NOISE IN THE INDUSTRIAL AREA OF ROVINARI

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ABSTRACT: The paper describes the results of monitoring noise levels measured in the industrial area of Rovinari and comparing the results with the maximum limits established by STAS 10009/88

KEY WORDS: noise, monitoring, Rovinari, industrial area

1. INTRODUCTION

Knowing the source of noise system - medium - receiver noise types and characteristics of sound sources provides the possibility of finding solutions to reduce noise, specific production sources.

For presenting aspects of noise from machinery equipment and facilities of composition, to consider the following levels of observation, which account its own characteristics:

- noise at source;
- noise near field;
- far-field noise.

The study of noise is performed in the following steps:

• identification of noise sources;
• knowledge of the effects of noise on human health;
• studying and implementing solutions to reduce noise levels to acceptable limits.

The main equipment that produces noise during operation of the bucket-wheel excavator are:

- gear wheel bucket hoist lifting arm bands, arm rotation mechanism and the moving mechanism;
- engines that drive up groups of mechanisms and transformers on the machine.

Equipment causing noise during operation dump machine are:

- gear mechanisms for rotating and lifting the strip of teaching;
- gear drive belts on the machine;
- gear shift mechanisms;
- transformers on the machine;
- engines drive the composition of the groups.

Noises from the two types of machines from coal deposits - the deposit (AsG) and loading the stacks (KsS) are generally similar to those produced by dump machine, but less intense.

Equipment generating noise during operation conveyors mounted on the steps of work and career are limited:

- drive groups;
- drums and rollers to support the rubber mat;
- rubber carpet.

2. MATERIALS AND METHODS

Monitoring noise in Rovinari area 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 industrial activities in Rovinari was conducted in 4 monitoring points according to Figure 3, a period of six months.

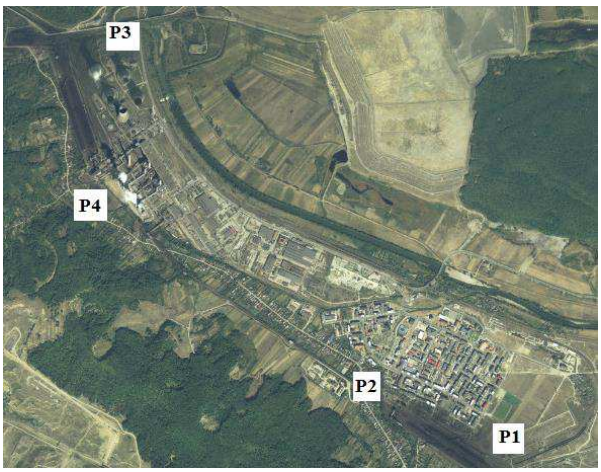
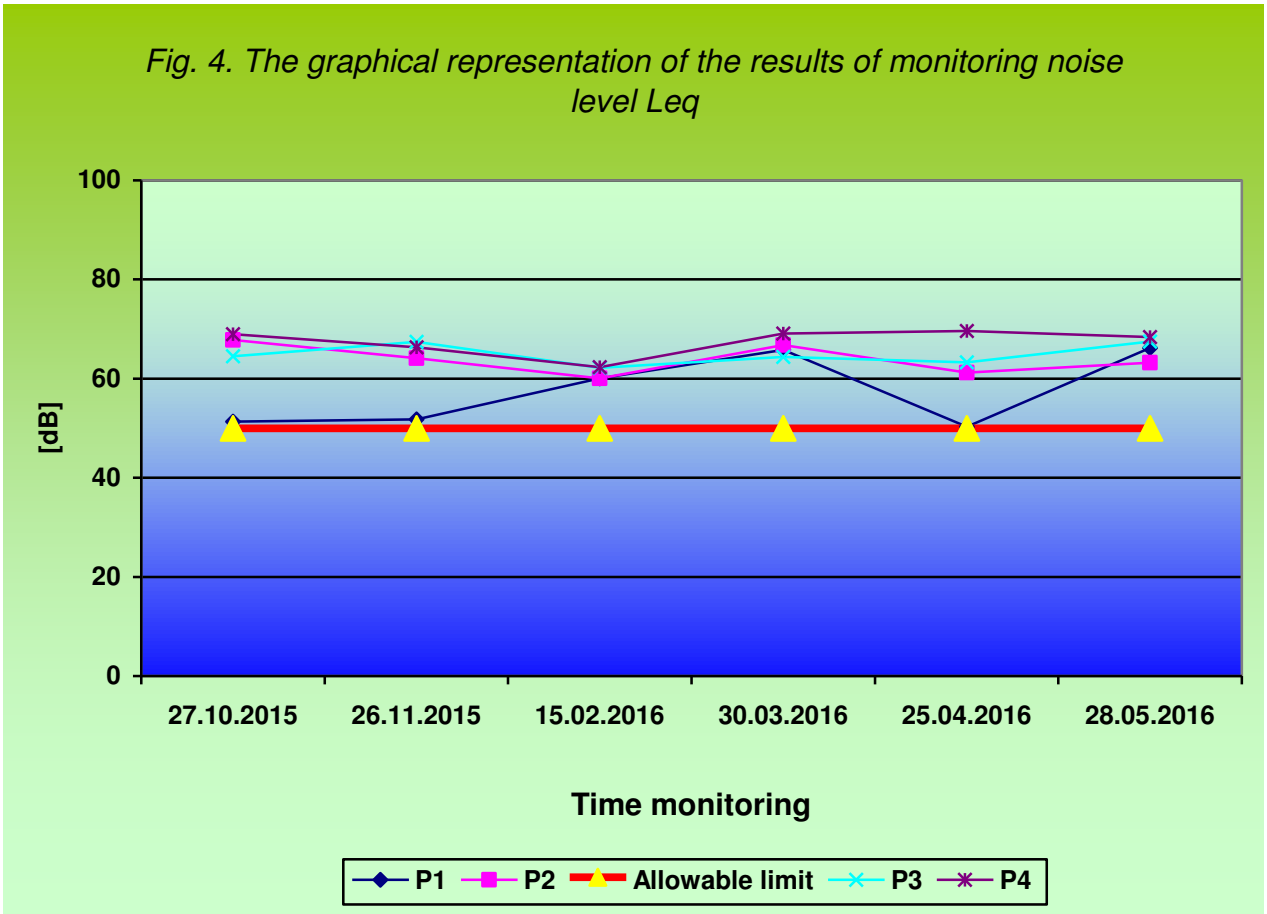


Fig. 3. Location of the 4 points of measurement noise

The monitoring results were reported noise limit of 50 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 50 dB.
- In the 6 measurements at the point P2, the noise level has surpassed the maximum limit of 50 dB.
- Of the six measurements taken at P1, the highest equivalent noise level was recorded in May 2016 (66,2 dB), which is 32,4% above the maximum permissible 50 dB STAS 10009/88.
- Of the six measurements at the point P2, the highest equivalent noise level was recorded in October 2015 (67,8 dB), which is 35.6% with 50 dB above the maximum permissible STAS 10009 / 88.
- The lowest equivalent noise level measured at P1 was registered in April 2016 and namely 50.3 dB, which is 6% above the maximum permissible 50 dB STAS 10009/88.
- The lowest equivalent noise level measured point P2 was recorded in February 2016, namely 60.02 dB, which is 20% above the maximum permissible 50 dB STAS 10009/88.
- In the 6 measurements at point P3, the noise level has surpassed the maximum limit of 50 dB.
- In the 6 measurements at point P4, the noise level has surpassed the maximum limit of 50 dB.
- Of the six measurements at point P3, the highest noise level was recorded in the equivalent month in May 2016 (67,5 dB), which is 35% with 50 dB above the maximum permissible STAS 10009 / 88.
- Of the 6 measurements at point P4, the highest level equivalent noise was recorded in

April 2016 (the 69,6 dB), which is 39,2 % with 50 dB above the maximum permissible STAS 10009 / 88.
- The lowest equivalent noise level measured point P3 was recorded in February 2016, namely 62,2 dB hovering above the maximum permissible 50 dB STAS 10009/88.
- The lowest equivalent noise level measured at the point P4 was registered in April 2016 and 61.2 dB namely hovering above the maximum permissible 50 dB STAS 10009/88.

4. CONCLUSION

In industrial environments, an important source of noise pollution is the pipe through which gases, vapors or liquids, which are often a serious risk to the health and safety of workers.

- Other sources of noise pollution in the industrial environment are:
- Compressors and turbochargers;
- Fans and blowers;
- Ventilation installations;
- Pipes through which gas is circulated at high speed;
- Pumps and electric pumps;
- Power plants;
- Fans, generators of electricity, reciprocating compressors for supplying compressed air, steam boilers burners;
- Ovens (the most important source of noise is the burners, forced draft fans, control valves and blowers).

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