

Measuring Noise in the Printing System

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ABSTRACT: *In the printing process noise is a regular issue which needs to be addressed. In the printing process, normally the paper is a medium which is the core in this process. Noise however makes printing more difficult and influence the printing process. In this paper, we have measured the two kinds of printing so as to receive the inferences about controlling noise.*

Keywords: Printing, Paper Damage, Microclimate, Noise

Received: 15 March 2020, Revised 2 August 2020, Accepted 28 August 2020

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DOI: 10.6025/jcl/2020/11/4/121-127

1. Introduction

During the printing process, the impact of the microclimate is importance for the reduction of the paper damage. In the microclimate we will look at internal and external temperature, brightness and humidity [1].

Traditional printing processes can be inherently very noisy [2]. Although modernization has introduced quieter processes into the industry, high noise levels and noise exposures remain a health risk; 93% of print workers assessed in this study had noise exposure estimates above the 80 dB.

Another factor that has great impact in printing process is noise. The noise is a mixture of various sounds with different number of flashes at a certain time and can be defined as an occurrence that causes negative environmental impacts. Exposure to a person under the influence of sound presents a danger to his health, both from the sounds of less intensity than from the bullies. The research showed that the noise in the man causes the trembling of the bloodstream of the middle ear, the function of the official organs decreases, with the partially or periodically shifting of the probability of probability that can lead to full-blown. The disease negatively affects both the nervous and the cardiovascular system (the blood pressure rises, it reduces the work of the heart, the lying of the pulses and the elderly creases, destroys the work of the nasal cavity, and to nonsense and tediousness and the like).

The arousal of a man can also affect the psychological state, a neurosis occurs, depression, aggression prevents him in the artificial formation, interrupts the rest - it disturbs the son and the like. Therefore, the company should be more concerned with the exposure of noise to employees to improve their work obligations. The highest source of noise in the furnaces is the

machines with the mechanical parts which, when rotating, discharge various sounds, compressors, motors, the movement of paper through the machine, the air conditioning systems and ventilation and the like.

Daily exposure in hours	Noise level in (db)
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
1/2	110
1/4	115

Table 1. Marginal time of exposure in relation to the level of noise

2. Noise in Printing Process

In the printing houses there are many sources of noise from the installation of the machines and from the ventilation and air conditioning systems. We will do the measurements and will ask for the answer as to how the noise works in increasing the quality of printing process [2].

The measurements are made with a digital measuring sound instrument Digital Sound Level Meter IEC651, the principle of which is based on OM meter and measurement resistance. It receives the volume of the sound through a graphite microphone whose resistance is changed in the presence of sound or higher sound exposure contributes to the convergence of the graphite beads into the microphone that gives greater resistance, which then turns out to be digital display.

Specifications:

- Measuring range (30 - 130) db



Figure 1. Four-shot offset machine KBA Rapida 72

- Power supply 9 batteries
- Working temperature (0 - 40) °C
- The ability to display the maximum value
- Measure two times a second
- Dimensions (57 x 26 x 149) mm
- The weight is 144 grams

Machines on which the measurement is carried out are:

- Four-shot offset machine KBA Rapida 72 [5]
- Unique offset machine Adast dominant 816 [5]



Figure 2. Unique offset machine Adast dominant 816

3. Results of Measurements on Four-shot Offset Machine KBA Rapida 72

The measurements are made on four-shot offset machine KBA Rapida 72 for lowest and largest value of noise. The results give an answer how the noise works in increasing the card.

Noise level in (db)	Paper damage (%)
80.5	1.78
80.7	0.8
80.7	0.93
80.8	0.73
81	0.279
81.05	2.14
81.06	0.22
81.1	1.45
81.13	0.67
81.2	0.58
81.22	0.83

Table 2. Measured noise is consistent with the card at KBA Rapida 72 (lowest values)

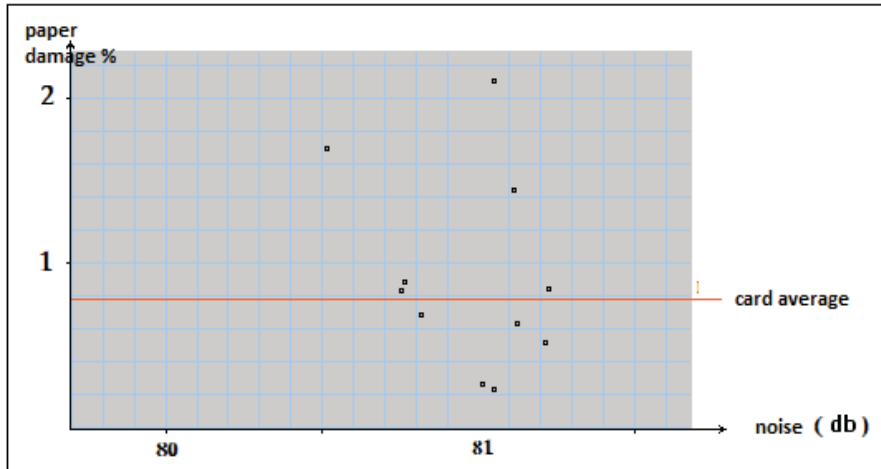


Figure 3. The graphic representation of the relation of noise from noise was the lowest value

From the measured values presented on the graph, it can be concluded that the increased measured points are located around the average line up and down and has values that are higher than the average and lower below the average, so they can not to bring to some conclusion that the lower humiliation should result in a palliation, even though we expect it.

Noise level in (db)	Paper damage (%)
83.02	0.88
83.06	0.35
83.06	0.38
83.08	0.65
83.17	0.42
83.38	0.6
83.46	0.51
83.5 0.	189
83.68	0.33

Table 3. Measured noise is consistent with the card at KBA Rapida 72(largest values)

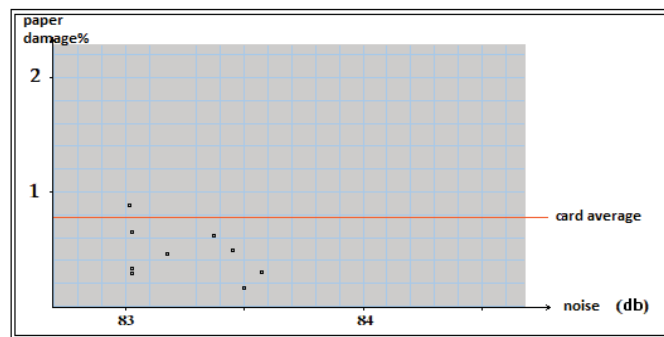


Figure 4. The graphic representation of the relation of noise from noise was the largest value

Table 3 shows the measured points at the highest noise level and the card moves below the average card, which in one way is contradictory, since we do not have high noise when waiting for a high card this is not confirmed in this case. Comparing the figure 3 and figure 4, we cannot conclude that the high noise does not carry high cards, perhaps because the noise in the magazine and in the smaller ones and in the larger values still go within the permitted limits for an average working time of 8 hours as shown in Table 1.

4. Results of Measurements on Unique Offset Machine Adast Dominant 816

The measurements are made on unique offset machine Adast dominant 816 for lowest and largest value of noise.

Noise level in (db)	Paper damage (%)
79.08	2.96
79.86	10.28
80.02	5.6
80.1	4.07
80.15	3.6
80.38	3.06
81.37	7.2
81.45	4.06
81.55	4.31
81.57	7.75
81.67	4.05

Table 4. Measured noise is consistent with the card at Adast dominant 816(lowest values)

Noise level in (db)	Paper damage (%)
82.01	4.98
82.06	6.19
82.17	2.82
82.3	1.57
82.31	6.57
82.37	4.68
82.4	1.6
82.425	6.02
82.77	4.07
82.81	4.73
82.9	5.14
83.16	4.95

Table 5. Measured noise is consistent with the card at Adast dominant 816(largest values)

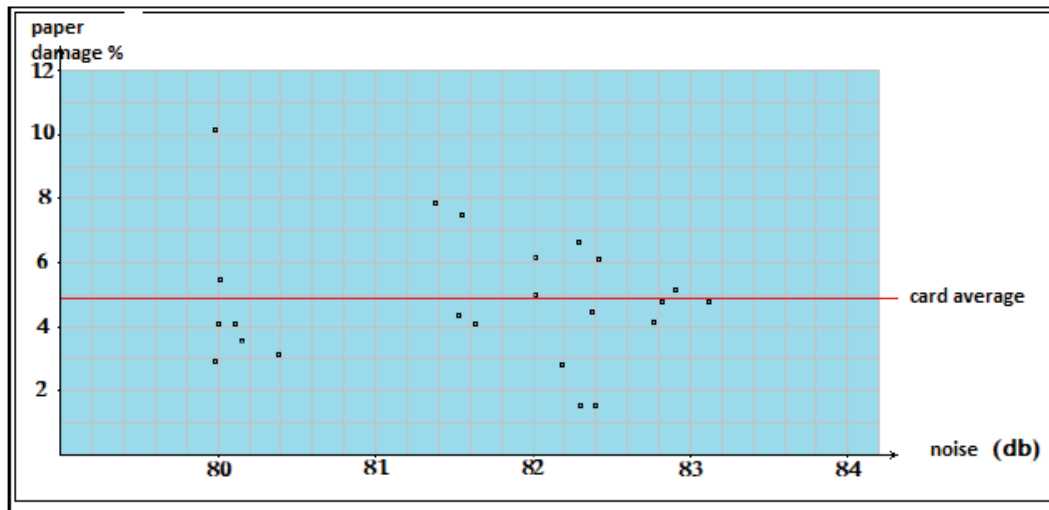


Figure 5. The graphic representation of the relation of noise from noise on Adast dominant 816

From the measurement of the noise of the Adast Dominant 816 in figure 5, we cannot conclude that the card is smaller in smaller noise than it is larger because the points in the measurements are found, due to the unexpected positions may be due to the lower noise values and the increased permissibility within the permitted limits for an average working time of 8 hours shown in Table 1.

5. Use of Hearing Protection

The printing industry is a high noise industry and it is likely that hearing protection will be needed [6]. At more modern printing houses, where technical and organisational means of reducing noise were already in place, hearing protection use was only required for activities identified as noisy, meaning it was only used when necessary. At printing houses where older machinery and technology was in use, hearing protection was relied on as the primary control measure. Using hearing protection in this way is not acceptable as a longterm solution and must not be used an alternative to controlling noise by technical and organisational means. For hearing protection to be effective it must be worn all of the time when in the noisy environment. At some printing houses it was evident that routine use of hearing protection was an accepted and integral part of the safety culture. At other printing houses, it was less clear if the safety culture supported and managed the use of hearing protection or if it was left to workers to decide if they wanted or needed hearing protection.

6. Conclusion

Noise is one of factor that has a huge impact in printing processes. In both cases on different printing machines we cannot define the lowest values of noise. But we can recommended usage of hearing protection. The inherently noisy nature of the industry, even in more modern print works where quieter machinery is used, means that there is likely to be an ongoing requirement for the use of hearing protection. Although hearing protection was observed to be widely provided and used, failure to correctly fit plug-type protection was commonly observed.

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