

# EVALUATING THE INTEGRATED MANAGEMENT SYSTEMS INTO BITOLA'S REGION WITH A SPECIAL ACCENT ON INJURIES SPOTTED IN LARGER INDUSTRIAL CAPACITIES

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**Abstract** - The main object of the paper is to represent a complete research conducted into larger industrial entities from Bitola, which is conducted in the time frame January 2014 - February 2015, with a starting aim to research the implemented [1] Integrated Management Systems in the companies. To be more precise the main aim of the research was to see how the implemented [10], [11], [12], [13], [9] ISO 9001, ISO 14001 and OSHAS 18001 systems were used in larger companies in Bitola's region, R. Macedonia, and to see are there any injuries in the companies that were under research. Actually the paper represents only a small segment from the conducted research in which a detail analyzes considering the spotted injuries in Bitola's region is done. For that purpose three relevant sources of information were used, such as: the companies where the injury was spotted, the local inspectors for health and safety and the local health fund (the last two as relevant government institutions). At the end of the paper a detail review of the spotted injuries in two larger industrial capacities is presented, considering the time frame for monitoring since January 2014 till January 2015. The companies represented into the paper are chosen because both are the largest ones from the companies in Bitola's region and also among the largest in R. Macedonia, considering the number of employees and considering the annual productions and profits (the first one from the tobacco industry and the second from the electricity production sector). Considering the analyses [6] several key criteria were used, such as: the gender of the injured employee, total numbers of injured people, the age of the injured persons, qualifications, the day of the week when the injury is spotted, the time frame, number of lost work days as a result of the injury etc.

**Key words** - QMS, Integrated Management Systems, ISO9001, ISO14001, OSHAS 18001, injury, Bitola's region.

## INTRODUCTION

Speaking about the research that will be presented the same one was conducted in the period January 2014 – February 2015 in which all of the industrial systems that are working in Bitola's region and government institutions were a main subject of the research. The research was separated into three different parts: gathering the data, putting the data into a special computer program and analyzing the data considering the spotted injuries, than analyzing the implemented integrated management system into companies that has the same one (considering the practical usage of the same one and the benefits from it), as well as considering the potentials for future improvements and also practical usage of problem solving techniques that will give better results from the practical usage of the integrated management systems. With the research a larger specter of industrial capacities were considered with a special accent on industrials entities from the milk production industry, tobacco industry, power plants, automotive industry, production of electricity cables, as companies with larger number of employees and financial profits that are one of the largest ones in R. Macedonia.

In addition, only small part of the results from the conducted research is represented considering the spotted injuries into Bitola's region into the year 2014 and the same ones are analyzed having in mind several key criteria such as: the gender of the injured person, total numbers of injured people, the age of the injured persons, qualifications and work experience, the day of the week when the injury is spotted, the time frame and also the total lost working days as a result of the injury. On the other hand, two of the largest companies from Bitola's region are represented considering the injuries and the previous mentioned criteria. Those are A.D. ELEM – REK Bitola (the largest company from the electricity production business) and SOCOTAB Bitola (one of the largest companies from the tobacco business in Macedonia). Both of the companies are also the largest ones considering the total number of employees in Bitola.

## PRESENTING THE INJURIES INTO BITOLA'S REGION

Considering the results from the research, this part of the papers represents the spotted and analyzed injuries into industrial capacities that gravitates Bitola region. In this point it is more than important to say that all of the data represented in addition are official data from three different sources (the companies, the local health and safety branch office as a government institution and the health fund). Considering the way of gathering the data almost all of the injuries that happened in industrial entities were spotted and took a part in the analyzes that are represented in addition. This corresponds to the starting hypothesis, which says that not every injury that happened is spotted by the companies itself and the local health and safety inspectors, although it is a legal obligation for the companies and the employees according to Macedonian laws. Seeing the results, considering the information from previous years, communicating with employees and inspectors, there are some injuries that aren't spotted such as small cuttings and other small injuries, which aren't spotted from the employees, and that is the main reason why these injuries aren't a part of the researched and presented injuries from the industrial systems. In a non formal communication with the employees, there are more the 300 such injuries in only one year, so this could be a starting point for further research and a point of view for future education and training with an aim all of the injuries to be spotted and to avoid such injuries in future. From the communication there were such employees which said that these kinds of injuries were reasons for more serious injuries in the near future.

From the analyzed data, there were total 323 spotted injuries in companies into Bitola's region in 2014, from which one injury is fatal. Considering the fact that similar research was conducted also in the year 2014 considering the injuries into Bitola's region in 2013 (from which 351 were spotted in the year 2013), we could say that a small reducing of the spotted injuries is present. To be more precise there are 8.49% less injuries in the year 2014 than the ones from 2013. On the other hand considering the law regulations, the larger education for the employees and the management into the companies considering health and safety issues, but also the larger safety measures and usage of PPE (Personal Protective Equipment) equipment into direct work places, these results were more than expected.

In addition of the paper several tabular views are presented considering the analyzes with usage of the previous mentioned criteria: the gender of the injured persons, total numbers of injured people, the age of the injured employee, the day of the week when the injury was spotted, time frame and also the number of the lost days as a result of the injury.

*Tabular view 1: Analyzing the injuries using the criteria – Gender of the injured person*

<b>Criteria – The gender of the injured person</b>			
<b>Professional disease</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
0	249	74	323
In percents	77%	23%	100%

*Tabular view 2: Analyzing the injuries using the criteria – What kind of a injury*

<b>Criteria – What kind of a injury</b>			
<b>Light</b>	<b>Heavy</b>	<b>Death</b>	<b>Total</b>
281	41	1	323
87%	12.7%	0.3%	100%

*Tabular view 3: Analyzing the injuries considering the criteria – Age of the injured person*

<b>Criteria – Age of the injured person</b>			
<b>18-25</b>	<b>25-35</b>	<b>35-45</b>	<b>45-65</b>
7	64	95	157

2.1%	19.8%	29.4%	48.7%
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*Tabular view 4: Analyzing the injuries considering the criteria – Day in the week*

<b>Criteria – Day in the week when the injury is spotted</b>		
<b>Day</b>	<b>Spotted injuries</b>	<b>In percents</b>
Monday	52	16.1 %
Tuesday	53	16.4 %
Wednesday	48	14.86 %
Thursday	58	17.95 %
Friday	54	16.7 %
Saturday	39	12.07 %
Sunday	17	5.26 %
There wasn't an exact day when the injury was spotted	2	0.66 %
<b>TOTAL</b>	<b>323</b>	<b>100%</b>

*Tabular view 5: Analyzing the injuries considering key criteria – Time frame*

<b>Criteria – Time frame</b>		
<b>Time frame</b>	<b>Spotted injuries</b>	<b>In percents</b>
00-04	12	3.70 %
04-08	42	13.00 %
08-12	109	33.75 %
12-16	93	28.79 %
16-20	44	13.60 %
20-24	19	5.88 %
There wasn't a time frame into the data for the spotted injuries	4	1.28 %
<b>TOTAL</b>	<b>323</b>	<b>100%</b>

Seeing the data presented into the tabular views above, we could say that the tabular views number 4 and 5 are the most interesting. Seeing from this perspective I could say that although there was an excellent cooperation with the industrial entities and a special reports were given to the companies in which they could spot every injury, some of the injuries were spotted without any additional data (such as the day when the injury was spotted and also the time frame). Seeing these mistakes, an effort was made for the spotted injuries to get an additional data from the branch office for health and safety in Bitola and also from the health fund but also there wasn't any kind of data (only the injuries were spotted without any further information). These conclusions were a starting point for software which could be used to evidence the injuries, that was specially made and could be used in the following period and for further research. The software that was made could be modified according to the legal requirements and according to the research, but the same one could avoid this kind of mistakes and could reduce the time needed for analyzing the data.

In addition of the paper also a detail representation of the spotted injuries using the previous mentioned criteria is presented, using the information from the largest industrial entities considering number of employees and financial profits in the past few years. The same ones are from the electricity production sector (A.D. ELEM REK Bitola) and from the tobacco industry (SOCOTAB Bitola).

## **PRESENTING THE RESULTS FROM TWO REPRESENTATIVE INDUSTRIAL ENTITIES FROM BITOLA'S REGION**

In this part of the paper, and as a part of the previous mentioned research conducted into Bitola's region, a detail review of the results from two largest industrial entities from the region is presented. Both companies are one of the largest entities in Republic Macedonia considering number of employees and also at the same time the largest ones in Bitola's region. Considering the number of employees we could say that SOCOTAB as a company from the tobacco industry has more than 1200 employees and A.D. ELEM REK Bitola as

an entity that works in the electricity production sector has more than 3600 employees. Both of the companies have also one of the largest financial profits among the industrial entities in Republic Macedonia.

On the other hand considering the injuries we could say that A.D. ELEM REK Bitola is also the most representative industrial system among Bitola's industrial entities with totally 127 spotted injuries, which considered the total number of spotted injuries into Bitola's region (323) is more than noticeable 39.32%.

In addition of the paper, several tabular views are given from which we could see the situation about the injuries in these industrial capacities considering the time frame January 2014 – January 2015.

*Tabular view 6: Analyzing the spotted injuries considering the criteria gender of the injured person*

<b>Criteria – Gender of the injured person</b>			
<b>Industrial entity</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
A.D. ELEM REK Bitola	115	12	127
SOCOTAB Bitola	3	4	7

*Tabular view 7: Analyzing the spotted injuries considering the criteria difficulty of the spotted injury*

<b>Criteria – Difficulty of the spotted injury</b>			
<b>Industrial entity</b>	<b>Light</b>	<b>Heavy</b>	<b>Death</b>
A.D. ELEM REK Bitola	118	9	0
SOCOTAB Bitola	5	2	0

*Tabular view 8: Analyzing the spotted injuries into the chosen industrial entities considering the criteria lost work days as a result of the injury*

<b>Criteria – Lost work days</b>			
<b>Industrial entity</b>	<b>Less than a month (30 days)</b>	<b>More than a month (more than 30 days)</b>	<b>Total</b>
A.D. ELEM REK Bitola	1607	521	2128
SOCOTAB Bitola	112	16	128

Seeing the presented results for the companies, we could conclude that exactly 11 injuries were with multiple injured body parts (heavy injuries) and all of the spotted injuries resulted with a total number of 2256 lost work days. Considering the fact that in one year there are approximately 260 work days (without holidays and weekend days) we could correspond this numbers to exactly 9 workers who will lose all of the working days in a period of a year. That is a fact that should be analyzed in an additional research.

Seeing the presented results we could conclude at this point that this is only a small part of the detailed research considering several key criteria, after which all of the results are presented to the management teams into the industrial capacities and several key steps for reducing the numbers of injured people are proposed to the same ones.

## CONCLUSION

The paper represents only a small part from a larger research conducted on business entities in Bitola's region, considering the integrated management systems and the spotted injuries in the same ones. Considering the spotted injuries in Bitola's region which is totally 323 persons (and having in mind the total number of employed people in Bitola which is something above 14.000), we could say that the numbers aren't such bad, but on the other hand considering the Macedonian laws regarding the health and safety issues we could conclude that this is a significant number. From the results presented into the paper we could say that something more than 1/3 of the total injured people are spotted in the both largest companies which are presented.

Also at this point we could say that starting points for future analyzes and a detail strategic plan for future reduce of the injuries are made and presented to the companies. On the other hand from the presented results for the chosen industrial entities, we could

consider future steps for avoiding the injuries, monitoring on direct work places with higher risks, additional research and finally presenting the gathered data in a completely new paper.

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