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Some Environment Aspects Regarding The Fly Ash Dump Monitoring

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Abstract: Big quantities of fly ash and slag (industrial waste materials) are stored in enormous dumps causing serious environmental concerns like: heavy metals contamination of lands and water, occupy of vastest lands (ha), fly ash dispersing by wind blowing (with great discomfort for people) …. On the other hand, these deposits of fly ash are made in a big dump which represents a big construction. These construction needs to be monitored to settling-displacement, water infiltration, environment protection etc.

This paper presents some environment aspects regarding the fly ash dam settlements.

Keywords: fly ash, slag, environment protection, industrial waste, fly ash dam settlements

1. INTRODUCTION

In this moment the Timişoara Power Plant from Romania produce (only in the cold time) the dense slurry which is a mixture between fly ash and water with masses ratio = 1:1 (figure 1). This residual material has a usually density of 1.36 kg/dm^3 and is pneumatic pumped to Utvin ash dump. The old transport technology which has it the power plant consist of a dense slurry which was a mixture between fly ash and water with masses ratio = 1:10. That dense slurry produced many environment problems.

In Timisoara Power Plant the fly ash is produced by burning of pulverized coal into a fired boiler and is collected from the flue gas by electrostatic devices as cyclones.

Fig. 1 The transportation of dense slurry into fly ash dump

The retiontion dam elements are obtained from base dam on border and division dam (in interior).

With storage capacity finish of slag and fly ash from base dam were necessary to banking the dam (on border and division dump). **From this reason of dam banking is possible to appear some problems regarding the stability of dam**.

There are made site measurements of benchmark dam.

2. SITE MESUREMENTS

The defining parameters of fly ash dam are:
- settlement;
- environment protection.

The settlement dam is the parameter which shows us the construction response during the exploitation live under different loads and factors.

The environment protection is parameter which shows us the protection of people live against blowing of micro particle of fly ash.

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The environment protection is realized by using modern technical solution to produce dense slurry.

The settlement dam was observed from 1997 (benchmark).

Into table 1 there are presented the absolute altitude from 2006 to 2008 compared with 1997 which correspond to first dam banking.

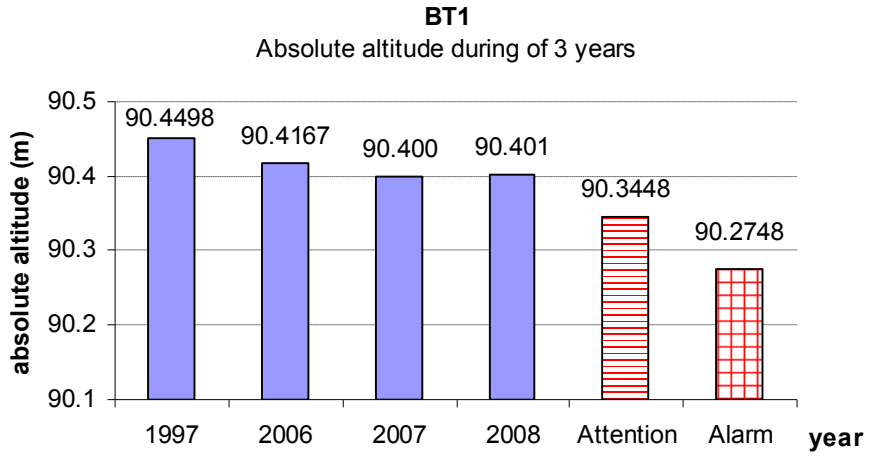
The table 2 presented the settlements from 2006 to 2008 compared with 1997.

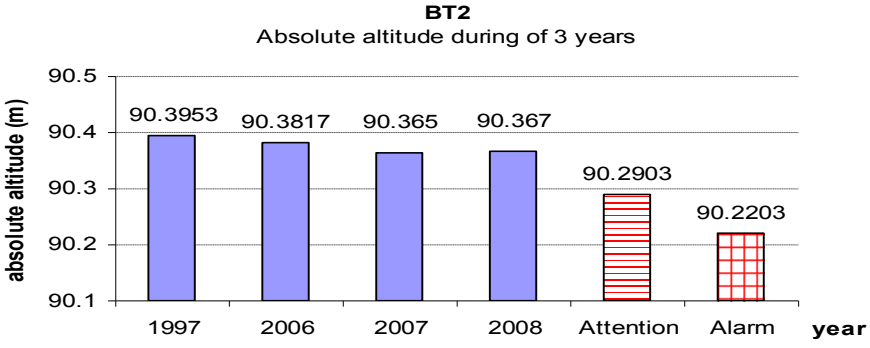
Table 1
The benchmark of fly ash dam

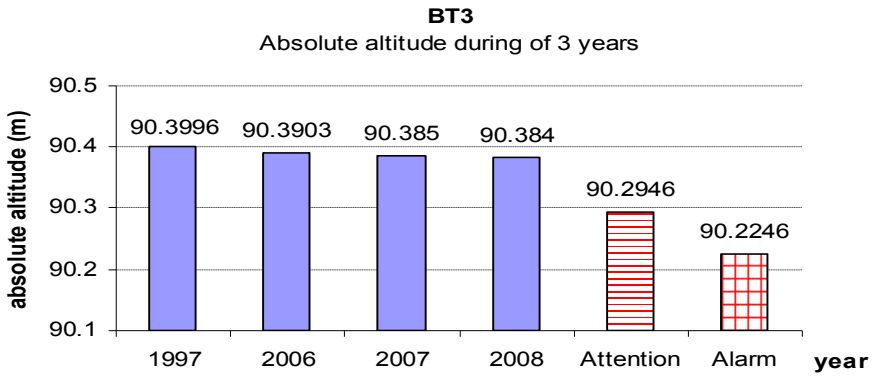
Point	1997	2006 altitude	2007 altitude	2008 altitude	Attention altitude	Alarm altitude
BT1	90.4498	90.4167	90.4000	90.4010	**90.3448**	**90.2748**
BT2	90.3953	90.3817	90.3650	90.3670	**90.2903**	**90.2203**
BT3	90.3996	90.3903	90.3850	90.3840	**90.2946**	**90.2246**
BT4	90.6927	90.6696	90.6650	90.6610	**90.5877**	**90.5177**

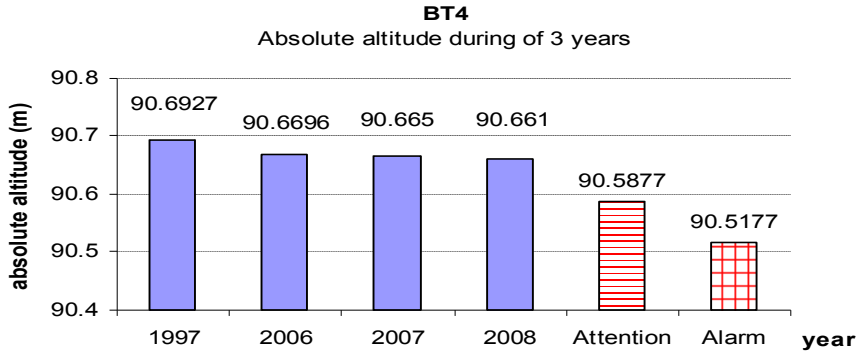
Table 2
The settlement of fly ash dam

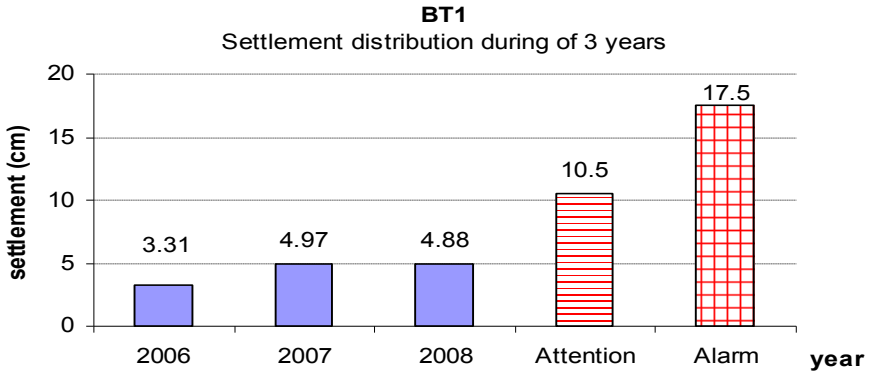
Point	2006 settlement	2007 settlement	2008 settlement	Attention settlement	Alarm settlement
BT1	3.31	4.97	4.88	**10.5**	**17.5**
BT2	1.36	3.03	2.83	**10.5**	**17.5**
BT3	0.93	1.46	1.56	**10.5**	**17.5**
BT4	2.31	2.77	3.17	**10.5**	**17.5**

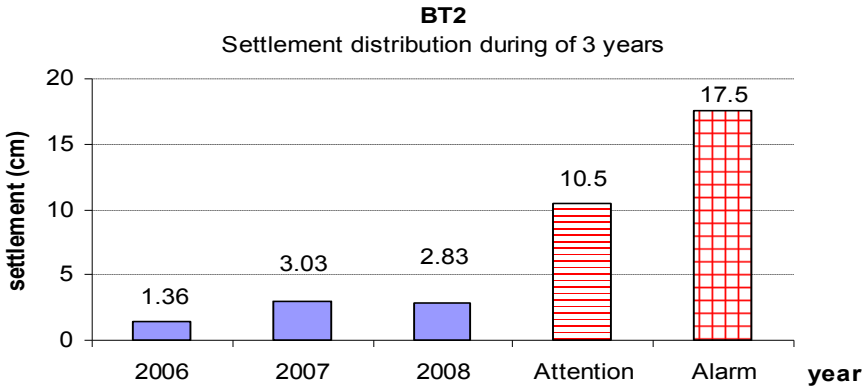


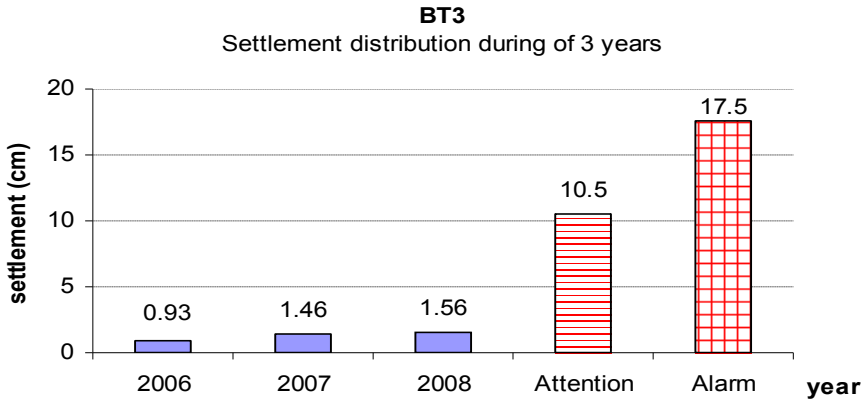


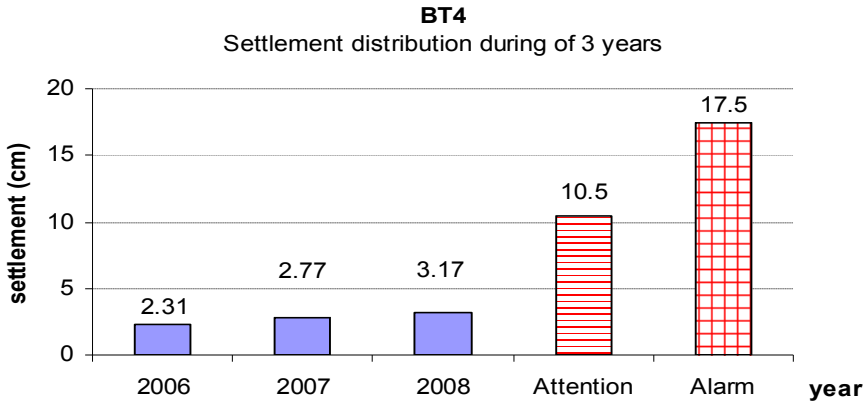

BT3
Absolute altitude during of 3 years
absolute altitude (m)
90.5
90.4
90.3
90.2
90.1
90.3996
90.3903
90.385
90.384
90.2946
90.2246
1997
2006
2007
2008
Attention
Alarm
year


BT4
Absolute altitude during of 3 years
absolute altitude (m)
90.8
90.7
90.6
90.5
90.4
90.6927
90.6696
90.665
90.661
90.5877
90.5177
1997
2006
2007
2008
Attention
Alarm
year


BT1
Settlement distribution during of 3 years
settlement (cm)
20
15
10
5
0
3.31
4.97
4.88
10.5
17.5
2006
2007
2008
Attention
Alarm
year







3. MCONCLUSIONS

The modern technical solution which produces dense slurry at Timisoara Power plant made a good protection of environment

The settlements dam for all checking points was lower compared with attention (10.5 cm) and alarm (17.5 cm) values.

The settlements dam was growing from 2006 to 2008 year.

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