AIR IMPACT ASSESSMENT OPERATION DUE CET IŞALNIŢA

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ABSTRACT: The paper is based on a case study on the effects on air due arerii fossil fuel plant composition CET Işalniţa. În energy between two groups of 315 MW. Necessary steam turbine is produced in two manufacturing steam generators MAN-Germany, each with nominal flow rate of 510 t / h Experimental measurements were performed exhaust emission flue gas analyzer TESTO 350 XL.Hărţile poluanţilorau dispersion was achieved with the software Empol.

KEY WORDS: fossil fuel, experimental measurements.

1. INTRODUCTION

Thermal power plant Isan part of Oltenia Energy Complex and consists of two 315 MW power units operated cărbune.Fiecare 315MW energy group , is equipped with two identical steam boilers manufactured by MAN - Germany turbine Rate - Schneider and Alstom generator .
Benson boiler is of the type with a single forced crossing point of evaporation varies with the Π -shaped construction , with the following heat exchange surfaces :
- 2 savers , ECO ECO 1 and 2 ;
- 4 vaporizers VAP 1-4 ;
- 7 IP superheater , S 1-7 ;
- 2 MP superheater , and 1-2 ;
- 4 IP steam heat exchangers - steam MP ;
- 2 air preheater rotary type Rothemühle , PAR1 , PAR2 .

The boiler currently operates the following sorts of fuels :
- Maximum 90% coal and 10% natural gas.

The boiler is equipped with gas burners at a rate of 3500 Nm3 / h each mounted on two levels: 4-burner in the burning rate 10 m and 10 m at the rate of 18 Preparation of 6-mill coal is N -type fan 150 supplied Redler belt with variable speed and adjustable to the thickness of the coal . Combustion air is provided by two air fans , axial , which draws air from the atmosphere and escapes to the boiler by two PAR 's.The boiler is equipped with gas burners at a rate of 3500 Nm3 / h each mounted on two levels: 4-burner in the burning rate 10 m and 10 m at the rate of 18 Preparation of 6- mill coal is N -type fan 150 supplied Redler belt with variable speed and adjustable to the thickness of the coal . Combustion air is provided by two air fans , axial , which draws air from the atmosphere and escapes to the boiler by two PAR 's.
Evacuate gases from the combustion is provided by two gas fans , axial aspiring flue gases from the boiler and it escapes to the chimney . [1]
Discharge of slag and ash from the bottom of the furnace is covered by slag scraper conveyor with variable speed .
Separation of ash from flue gases is provided by four electrostatic cell powered variable voltage to 110-120 kV, shaking periodically transmitting and receiving electrodes . Disposal of ashes is pneumatic and hydraulic boiler is equipped with 3 fans (blowers) for transporting ash on gutters, March 30 kW compressors , rotary , for the transportation of ash hoppers under the RIP 's and 2 compressors of 75 kW, rotary for

transporting ash to dry ash hopper. Transportation ash basins is 4 Bagger pumps ejected ash ash ejectorii water being provided by four raw water pumps for all four boilers , two in function and two in reserve and river transport hidroamestecului of Bagger pumps deposits ash and slag is 4 Bagger for two boiler pumps by 2-wire hidroamestec with 2 pumps based , one per thread , the other two being in reserve. [9]

A section through the boiler, is shown in Figure 1.

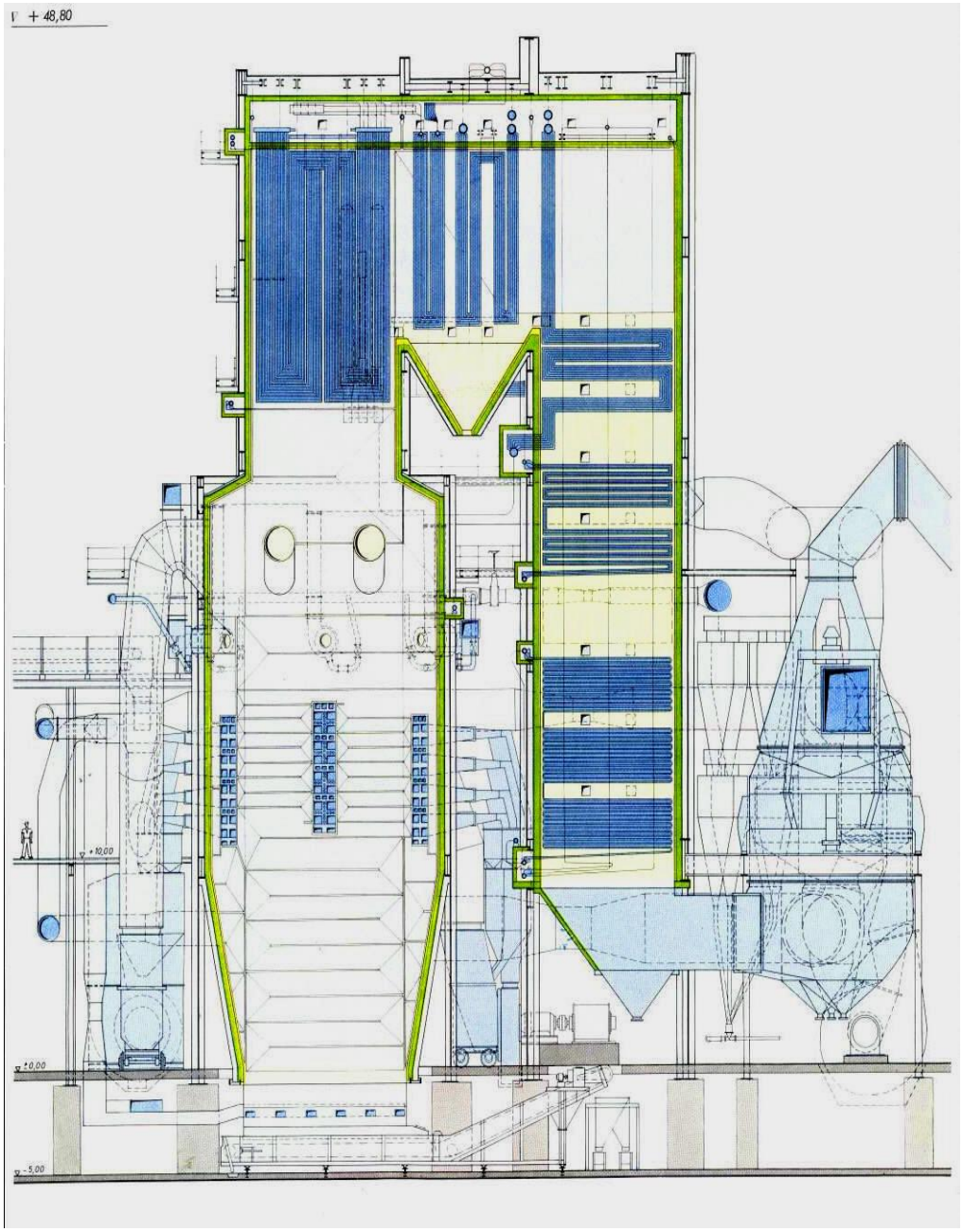

Figure 1. Section through Benson boiler of 510 t / h

Boiler parameters Bensonde 510 t / h [2]**:**

- IP steam flow produced 510 t / h
- Maximum pressure 215 bar steam IP
- Nominal pressure 196 bar steam IP
- Temperature 540oC steam boiler output IP
- Pressure Boiler feed water inlet 235 bar
- Input power boiler water temperature 264oC
- Maximum pressure 60 bar steam MP
- Nominal pressure 48 bar steam boiler input MP
- Nominal pressure 45 bar steam boiler output MP
- Temperature Input MP steam boiler 345oC
- Temperature 540oC steam boiler output MP

2. RESULTS OF EXPERIMENTAL MEASUREMENTS

In Tables 1 and 2 are presented the maximum concentration the total suspended particle and its spatial distrubutor and their comparison with limit values and alert thresholds on 01.01.2012. [3]

Table 1 Maximum concentration the different averaging intervals, intervals shorter / medium to 01.01.2012

Pollutant	**For mediation**	**The maximum concentration**			**Comments**
		C_{max} ($\mu g/m^3$)	**Alert threshold (PA) ($\mu g/m^3$)**	**The limit value (VL) ($\mu g/m^3$)**	
Total Suspended Particulates TSP	1h	27,7	350	500	<VL<PA
	24h	2,69	105	150	<VL<PA

Table 2. Maximum concentration the different averaging intervals, long intervals of annual mean 01.01.2012

Pollutant	**The maximum concentration**			**Comments**
	C_{max} ($\mu g/m^3$)	**Alert threshold (PA) ($\mu g/m^3$)**	**The limit value (VL) ($\mu g/m^3$)**	
Total Suspended Particulates TSP	0,165	52,5	75	<VL

Table 3 presents the results of measurements of emissions of a 315 MW energy group for 2010-2012.

Table 3. Concentrations of pollutants in flue gases discharged to cart

Year	CO (mg/m^3_N)	CO_2 (mg/m^3_N)	O_2 (%)	NOx (mg/m^3_N)	SO_2 (mg/m^3_N)	Air excess λ	Tga (^{0} C)
2010	109,22	5,1	14,12	342,4	4324,8	6,12	128,2
2011	42,34	7,12	12,22	398,63	4042,5	4,37	130,6
2012	73,12	8,87	10,11	404,5	4605,2	2,15	129,2

Full dispersion of the powder are shown in Figures 2, 3 and 4.

Dispersion maps show how long-distance spread of dust from the emission source (stack) and highlight areas where their concentration is highest values.

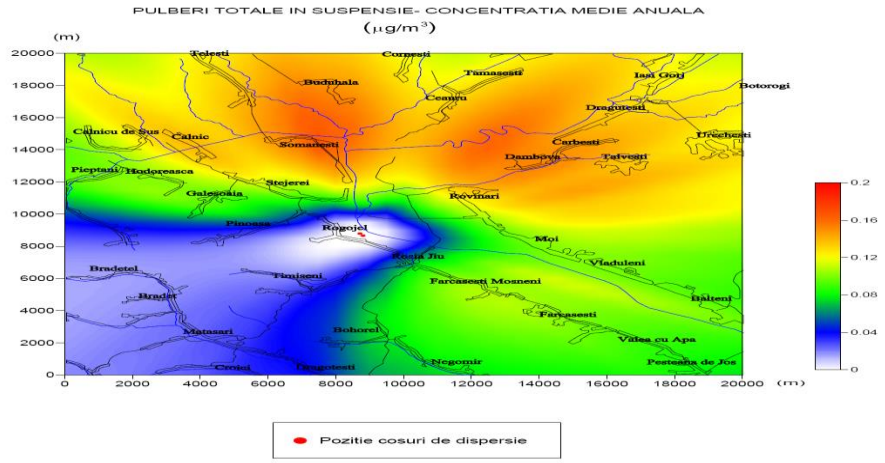

Figure 2 Powder dispersion map - annual average concentration

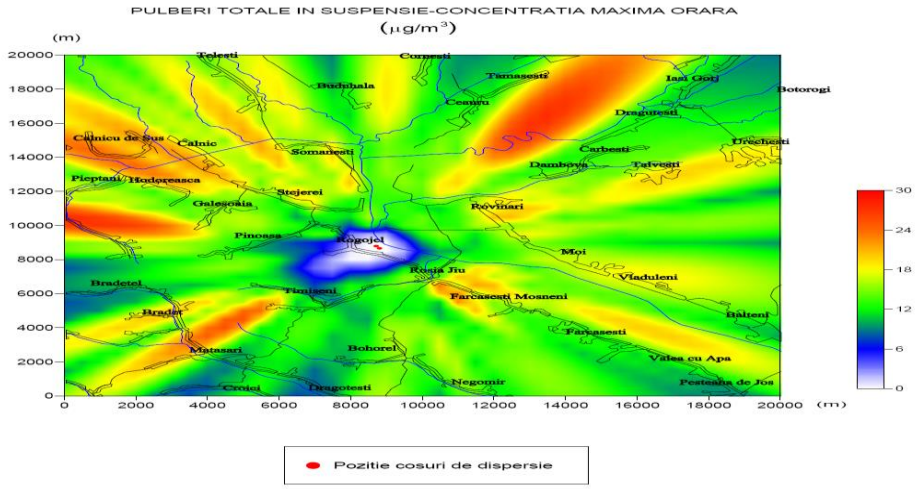

Figure 3 . Powder dispersion map - maximum concentration

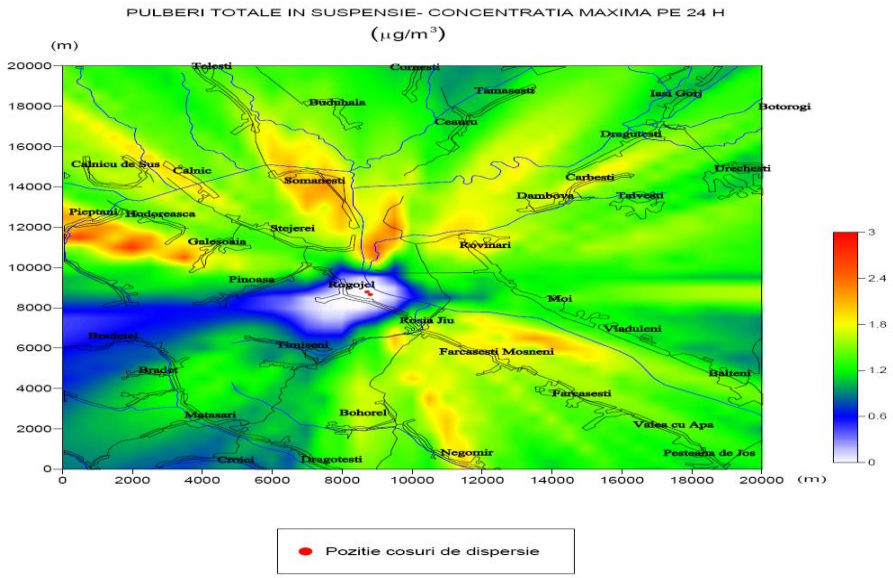

Figure 4 . Powder dispersion map - maximum per 24 h

3. CONCLUSION

It is noted that CO emissions ranged from a minimum of 42.34 mg/Nm3 2011 mg/Nm3 and a maximum of 109.22 in 2012.

The emission of CO is high, leading to high power consumption . [4]

It is noted that CO2 emissions ranged from a minimum of 5.1 mg/Nm3 in 2010 and a maximum of 8.87 mg/Nm3 in 2012.

CO2 emission is a function of the carbon content of the coal .

At start-up the CO2 is lower and the CO and O2 is large .

O2 emission varies between a minimum of 10.11% in 2012 and a maximum of 14.12 % in 2010.Pentru reducing the amount of O2 emission will be reduced to the minimum excess air .

It is noted that the NOx emission ranged from a minimum of 342.4 mg/Nm3 2010 mg/Nm3 and a maximum of 404.5 in 2012.

NOx emission persistently mari.Ele still fall within the limits (below 600 mg/Nm3) due to measures taken during the

The excess air is high , the probability of formation of pollutants is much higher, as a result of reduction should be made false air ingress into the furnace through its tight seal . [7]

Gas temperature varies restricted lowest being 128.2 ° C in 2012 and the highest 130.6 oC in 2011. It is not recommended operation temperature of the flue gas chimney of less than 120 ° C , since there is a danger of corrosion of the heat exchanger of the boiler . [8]

Given the need to comply with environmental rules adopted pursuant to join the Union of Romania's European energy boilers Işalniţa CET is necessary to adopt the following technical measures:

- Continuing the modernization of electro , to be placed in maximum permissible concentration of ash in the combustion gases discharged to the stack 50 mg/m3N ;
- Adoption of primary and secondary measures to reduce NOx emissions in order to comply with the maximum permissible concentration of nitrogen combustion process to reduce NOx emissions.

It is noted that the emission of SO2 ranged between a maximum of 4042.5 mg/Nm3 % in 2011 and a maximum of 4605.2 mg/Nm3 in 2012.

Following the annual values of SO2 content found not to be large differences which means that operating machinery or how it affects the emission of SO2 sulfur content of coal. [5] Reducing the sulfur content of the fuel is reduced and the emission of SO2 . Application desulfurization technologies to maintain within acceptable limits the emission of SO2 .

Excess air combustion boilers sprayed condition should be between 1.1 to 1.2 , and in fact the boiler reaches 6.12 in 2010 , the lowest value of 2.15 recorded in 2010.

High excess air increases the volume of exhaust gases and increasing heat loss due to exhaust gases to the basket. [6]

The result is that higher fuel consumption are obtained oxides in the flue gases discharged from the chimney of 200 mg/m3N .

- To reduce pollution caused by ash and slag transport and storage , the application of technology in dense fluid outlet .

With regard to pollutant dispersion is found , at least in the case of powders that big chimney height provides good dispersion of combustion products long distances from the source issuing so imii of pollutants do not exceed the limit or threshold alert .

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