

FLUE GAS ANALYSIS

A sample of flue gas was taken from hot water boiler nr. 1 at:

Edible Oil Mfg. Co Ltd
Mgiceret Road,
Matara.

On the 23-04-09

Fuel - heavy fuel oil

The instrument used was

Testo S/N: 01467106/D

Findings:

Flue gas was checked on low and high flame. On high flame mode the mixture was found very rich and high CO. No adjustment could be made to main air dampers as these were fully open. Refer to top readings: low and high flame respectively. High flame nozzle was replaced from 9.0 to 4.5 gal/hr capacity. This resulted in good air to fuel ratio on high flame and a sharp decrease in CO content as shown in lower printouts. On low flame the mixture left rather lean due to high flue gas temperature.

WITH 4.5 NOZZLE LOW FLAME

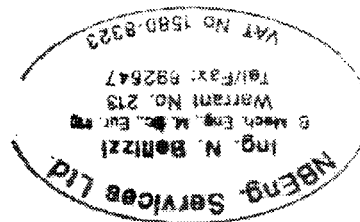
HIGH FLAME

Fuel: heavy oil	Fuel: heavy oil
23.04.09 09:26:05	23.04.09 09:30:10
edible oil	edible oil
WITH 4.5 NOZZLE LOW FLAME	HIGH FLAME
10.54 % Oxygen	0.12 % Oxygen
36.2 ppm CO	5479.1 ppm CO
7.92 % CO2	15.61 % CO2
6.3 m/s Speed	6.7 m/s Speed
5711 m ³ /h Volume flow	5002 m ³ /h Volume flow
23.6 % qh	14.0 % qh
2.01 Lambda	1.01 Lambda
17.8 °C Rmb. temp.	17.7 °C Rmb. temp.
324.9 °C Flue temp.	381.4 °C Flue temp.
5 ppm H2	0 ppm H2
0.12 mbar ap	0.12 mbar ap
-0.12 mbar drgh	-0.12 mbar drgh
76.4 % Eta	86.0 % Eta
144.3 ppm NO	287.9 ppm NO
0.0 ppm NO2	0.0 ppm NO2
194.3 ppm NOX	287.9 ppm NOX

WITH 9.0 NOZZLE LOW FLAME

HIGH FLAME

Fuel: heavy oil	Fuel: heavy oil
23.04.09 09:26:05	23.04.09 09:30:10
edible oil	edible oil
WITH 4.5 NOZZLE LOW FLAME	HIGH FLAME
10.54 % Oxygen	0.12 % Oxygen
36.2 ppm CO	5479.1 ppm CO
7.92 % CO2	15.61 % CO2
6.3 m/s Speed	6.7 m/s Speed
5711 m ³ /h Volume flow	5002 m ³ /h Volume flow
23.6 % qh	14.0 % qh
2.01 Lambda	1.01 Lambda
17.8 °C Rmb. temp.	17.7 °C Rmb. temp.
324.9 °C Flue temp.	381.4 °C Flue temp.
5 ppm H2	0 ppm H2
0.12 mbar ap	0.12 mbar ap
-0.12 mbar drgh	-0.12 mbar drgh
76.4 % Eta	86.0 % Eta
144.3 ppm NO	287.9 ppm NO
0.0 ppm NO2	0.0 ppm NO2
194.3 ppm NOX	287.9 ppm NOX



Ing. Nicholas Bellizzi
Managing Director

Fuel: heavy oil	Fuel: heavy oil
23.04.09 10:47:43	23.04.09 10:47:43
edible oil	edible oil
WITH 4.5 NOZZLE LOW FLAME	HIGH FLAME
9.59 % Oxygen	4.75 % Oxygen
18.4 ppm CO	25.0 ppm CO
8.42 % CO2	12.31 % CO2
5.3 m/s Speed	5.1 m/s Speed
4748 m ³ /h Volume flow	4565 m ³ /h Volume flow
24.3 % qh	18.7 % qh
1.69 Lambda	1.29 Lambda
22.0 °C Rmb. temp.	22.0 °C Rmb. temp.
356.8 °C Flue temp.	399.7 °C Flue temp.
0 ppm H2	0 ppm H2
0.08 mbar ap	0.07 mbar ap
-0.08 mbar drgh	-0.07 mbar drgh
75.7 % Eta	81.3 % Eta
219.0 ppm NO	316.2 ppm NO
0.0 ppm NO2	0.0 ppm NO2
219.0 ppm NOX	316.2 ppm NOX

Fuel: heavy oil	Fuel: heavy oil
23.04.09 10:39:02	23.04.09 10:39:02
edible oil	edible oil
WITH 4.5 NOZZLE LOW FLAME	HIGH FLAME
9.59 % Oxygen	4.75 % Oxygen
18.4 ppm CO	25.0 ppm CO
8.42 % CO2	12.31 % CO2
5.3 m/s Speed	5.1 m/s Speed
4748 m ³ /h Volume flow	4565 m ³ /h Volume flow
24.3 % qh	18.7 % qh
1.69 Lambda	1.29 Lambda
22.0 °C Rmb. temp.	22.0 °C Rmb. temp.
356.8 °C Flue temp.	399.7 °C Flue temp.
0 ppm H2	0 ppm H2
0.08 mbar ap	0.07 mbar ap
-0.08 mbar drgh	-0.07 mbar drgh
75.7 % Eta	81.3 % Eta
219.0 ppm NO	316.2 ppm NO
0.0 ppm NO2	0.0 ppm NO2
219.0 ppm NOX	316.2 ppm NOX

ICIM Milano CE 0425
Authorised Inspector for

PASCAL Milano CE 1115
Dipartimento Nazionale

Date: 23-04-2009

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4005 71 05 2100

Mr. Nicholas Bellizzi
Managing Director

20. 5/1/73

O_2 level too high +
efficiency has dropped
To reduce oxygen levels

Index

FORM OF POLYMERIZED SPAC FILM

1-002 01621

The most important of these

50071 91 DO

A sample of the gas was taken at Edinburg Oil Ltd., where
From Quack Steam Generator - Dual flame setting burner high flame

FLUE GAS EMISSION ANALYSIS

NRE Engineering Services Ltd
Flat 1, Block 4 Ting Jui Industrial
Zephyr Mall
/118/244
Tel: 00356 21807020 Mob: 00654728
Fax: 00356 21808174

3-8 1 and 2

M. J. Bell

INGEN. SERVICE LTD.
ING. N. B. BILIZI
WARREN NO. 218
TAFELA 412047
LOT NO 1910-432

70-4484 100

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Page 2

From Quick Steam Generator - Dual flame setting burner - (100%)

The instrument used was

600% in passenger speed with cells fabricated in 2009

Very efficient or low flame
for an HHO burner.

02532

WAT 180880-14A