vosges di Moreno Beggio
Magnetic Catalyzer Department
Via Roma, 133
36040 - TORRI DI QUARTESOLO -
VICENZA - ITALY

ph. ++39-444-387119 r.a.
telefax ++39-444-264228
mail : estero@vosges-italia.it
http://www.vosges-italia.it

REPORT APAVE SUD

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apave
sud
SERVICE LABORATOIRE
BUREAU DE NICE
SERVICE THERMIQUE

VILLE DE NICE
DIRECTION DES BATIMENTS COMMUNAUX
SERVICE DES TECNIQUES SPECIALIZEES
SUBDIVISION CHAUFFAGE-CLIMATIZATION
69 Rue Beaumont 06364 NICE CEDEX 4

REPORT

ON VOSGES SUPER CATALYZER

REPORT NO. : 9758EN094-JPB/VS

BUILDING : SCHOLASTIC GROUP 2 "BON VOYAGE"

REALIZED BY : JP BEURGAUD

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1. SCOPE OF THE MISSION

The purpose of the visit to the mixed Scholastic Group 2 “BON VOYAGE”, was to verify the efficiency measurements made on a gas oil boiler after the installation of SUPER CATALYZER.

2. DESCRIPTION OF THE EQUIPMENT

The SUPER CATALYZER was installed on a boiler :
DE DIETRICH GT 409 of 350 Kw output.

The burner unit, MONARCK WERSHAUPT type LIZ B, was fitted with jets :

1st stage	3,5 U.S. gallons
2nd stage	4,0 U.S. gallons
pressure	8 bar
angle	60°

The SUPER CATALYZER was the TOP CALOR model.

A SCHLUMBERGER calorie meter type CF 100 was installed on 10 March 1997.
The gas oil meter installed on the burner indicated : 26.212,11 dm^3.

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Date	Gas oil meter Reading	Gas oil consumed excluding performance cumul. Kwh	Calorie counter Reading	Calories consumed cumul. Kwh	Efficiency 1^ stage	Efficiency 2^ stage	Efficiency in use	Observations
13.03.97	26.212,11		0,0		97,5 meaningless	94,3		Boiler output : 350 Kw – jets Ø 3,5 e 4,0 G.U.S. Water temp. 40°C
17.04.97	27.580,51	13.410,30	12,28	12,28	meaningless	95,3	0,915	Efficiency in use not calculated because water temp. is 40°C. Efficiency meaningless.
21.04.97 11h11	27.592,60	13.528,80	12,40	12,40	94,2	93,4	0,916	Water temp. 70°C
21.04.97 11h49	27.592,60		12,40		95,2	93,2		Jets 2 x 3 G.U.S. Boiler output 270 Kw. Water temp. 70°C
21.04.97 12h30	27.622,54		12,64	12,64	95,2	94,2		Installation of Super Catalyzer economizer. 1% gain in 2^ stage efficiency.
07.05.97	28.598,92	23.390,73	21,49	21,49	93,9	93,9	0,918	Poor performance since pressure too low.
15.05.97 9h15	28.645,76		21,91		95,6	94,1		
15.05.97 10h42	28.645,76		21,91		96,0	95,2		Jets cleaned – modification of combustion parameters. 1,8% gain in 1^ and 2^ stage efficiency.
21.05.97 17h00	29.733,50 detail 29.733,50 cumulative	10.659,85 34.509,622	32,10 32,10	10,19 32,10	96,7 96,7	95,7 95,7	0,955 0,93	GAIN : 2,5% in 1^ stage efficiency and 2,3% in 2^ stage efficiency.

3. CONCLUSIONS

From 13 March to 21 April 1997 the burner operated with jets of :
3.5 G.U.S. on the 1st stage
4.0 G.U.S. on the 2nd stage

Combustion efficiency was :
94,2% on the 1st stage
93,4% on the 2nd stage

Efficiency in use was :
(calorie meter consumption / gas oil meter consumption)
91,6%

On 21 May 1997 the burner operated with jets of :
3.0 G.U.S. on the 1st stage
3.0 G.U.S. on the 2nd stage

and it was equipped with SUPER CATALYZER model TOP CALOR.

Combustion efficiency was :
96,7% on the 1st stage
95,7% on the 2nd stage

Efficiency in use was :
(calorie meter consumption / gas oil meter consumption)
93%

We therefore observe :

- An improvement in efficiency of
  1st stage 2.5%
  2nd stage 2.3%
- A gain in employment efficiency of 1.4%
- An improvement of carbon dioxide (CO_2) percentage, changed from 12.7% to 15.1% with a CO rate nearly to 0 (zero).

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The installation of new jets and SUPER CATALYZER has permitted to point out an energy saving of 21.4%.

We observe that the combustion, after the installation of SUPER CATALYZER is near to ideal combustion:

% CO_2 theoretical	15.3
% CO_2 measured	15.1

Having a combustion near to the stoichiometric combustion it allows to respect the environment.

We may note that the boiler in the Scholastic Group had at the beginning an combustion output very satisfactory (93.4% on 2nd stage).

Following our experience, the combustion output usually obtained on gas oil boilers is about 88%.

Consequently the savings produced by the installation of new jets and SUPER CATALYZER are increased more and more.

N.B. :

The sole reduction of the jets diameters don't assure a steady combustion.
Really we may underline that the sole reduction of the jets capacity cause san output decrease, and therefore an increase of the energetic consumption.

JP BEURGAUD
Head, Heating and Steam Operations