

STEAM PRODUCTION EFFICIENCY TEST

Description of a comparison test in a NN Steam Boiler Plant in Guatemala, conducted July 2009, showing the fuel efficiency effect of FEROX on steam production:



STEAM BOILER METERS

- measured cubic meters per hour of steam generated
- totalized count cubic meters of steam produced



400HP Cleaver Brooks Steam Boiler

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ASSUMPTIONS:

For the sake of this study, the boiler worked 24/7 a total of 8 days, trying to perform the same processes and maintain the same production for the same workload throughout the study. We removed the injection nozzle for picturing after the test run.

STANDARD BUNKER CONSUMPTION AND STEAM PRODUCTION

Date	USG Bunker	Meter Reading	m3 Steam Generated	m3 Steam / USG	USG / m3 Steam
06/07/2009	1189	7,842.25	5,192.86	4.37	0.229
07/07/2009	1255	13,035.11	5,274.31	4.20	0.238
08/07/2009	1306	18,309.42	5,439.63	4.17	0.240
09/07/2009	1329	23,749.05	5,778.16	4.35	0.230
10/07/2009	1216	29,527.21	5,246.21	4.31	0.232
11/07/2009	1181	34,733.42	5,075.73	4.30	0.233
12/07/2009	1209	39,849.15	4,939.54	4.09	0.245
13/07/2009	1344	44,788.69	5,755.02	4.28	0.234
TOTAL	10,029		42,701.46		
AVERAGE	1253		5,337.68	4.26	0.235

WORK FLOW EXPLANATION:

The same boiler was given an adaptation period of 7 days with the additive and then the monitoring of the consumption started for another 8 days of 24/7 continuous working, trying to simulate and maintain the same conditions as the previous study.

We subsequently removed again the injection nozzle and a photo was taken, observing how clean the nozzle was.

Not reported, but observed anecdotally was decrease in exhaust temperature of the chimney.

BUNKER CONSUMPTION AND STEAM PRODUCTION WITH FEROX

Date	USG Bunker	Meter Reading	m3 Steam Generated	m3 Steam / USG	USG / m3 Steam
21/07/2009	1226	89,384.91	6,317.70	5.15	0.194
22/07/2009	1217	95,702.61	6,878.54	5.66	0.177
23/07/2009	1149	102,581.15	5,917.35	5.14	0.193
24/07/2009	1240	108,498.50	6,829.96	5.51	0.182
25/07/2009	1238	115,328.46	6,739.45	5.44	0.184
26/07/2009	1180	122,067.91	6,175.74	5.23	0.191
27/07/2009	1249	128,243.65	6,943.24	5.56	0.18
28/07/2009	1085	135,186.89	6,249.60	5.76	0.174
TOTAL	9,584		52,051.58		
AVERAGE	1198		6,506.44	5.43	0.184

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CONDITION OF THE FUEL NOZZLE & INJECTION KIT



13/07/2009, before the FEROX treatment started

THE INJECTION NOZZLE 15 DAYS LATER



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ECONOMICAL ANALYSES

Yield Comparison	Consumed Untreated Bunker	Consumed Ferox Treated Bunker	Difference	Value
USG Consumed	10,029	9,584	-445	-\$578.50
m3 Steam	42,701.46	52,051.58	9,350.12	21.90%
m3 Steam /USG	4.260	5.430	1.175	
USG/ m3 Steam	0.230	0.184	-0.051	
Cost per m3 Steam	\$0.305	\$0.204	-\$0.066	-\$615.03
TOTAL GROSS SAVING DURING THE TRIAL				- \$1,193.53

CONCLUSION:

There is in this situation a savings of \$.1193.53 and 445 gallons of fuel saving. The client found 21.90% increase of steam produced per gallon of consumed bunker. The HFO price at the time of the report was \$ 1.30 per US gallon of 3.78 liters.

COST OF APPLICATION:

One sachet FEROX FUEL ADDITIVE for 5,000 USG treated bunker oil is being retailed in many markets for \$.495 (depending on customs duties – excluding VAT – no quantum discounts considered). In other words: 9.25c FEROX per gallon HFO.



In this report there was reported a consumption of 9.584 USG, which requires an application of \$948 worth of FEROX. The net saved amount (reduced fuel consumption + increased steam production) is \$248, which represents **20% RETURN ON INVESTMENT** (under the detailed conditions).

When using FEROX 230 (liquid in 55 USG drums – 80 drums per 20”FCL) the cost-efficiency will be even much larger because of economies of scale.

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NOTE FROM THE TRANSLATOR:

This plant is a current buying customer. The South American FEROX reseller who initiated this test is also distributor for the flow meters as pictured. With his expertise this and many other clients have been able to much better manage their business process but at the same time drastically reduce their fuel costs as consequence of the massive increase in cubic meter steam produced with each gallon of fuel.

Secondly the down time for maintenance is also much less since the soot formation and carbon deposits on all surfaces and especially the injectors are reduced to zero.

Thirdly major point is that by including FEROX in the process, potential investments in increased capacity by adding additional boilers can be postponed, since FEROX generates within the week an increased steam volume of 20+%. This Capital Expense factor is huge and in itself a very important factor for governments in countries with struggling (HFO fired) public grid connected power plants.

More information on:

www.FEROXFUEL TABS.com

www.POWEREDBYFEROX.com

www.FEROXLA.com

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