

Results and comparison of test run by Worcester Poly Institutions. Dated July 29th & 30th, 2009

Test Number	1	2	3	4	5	6	7	8	9
Nozzle Size	1.00	1.35	> 0.5	> 0.5	> 0.5	> 0.5	> 0.5	Voided due to power failure	> 0.5
Gallons of Oil used / hr.	1.08838	1.5031	0.66175	1.06593	1.07914	1.18745	1.34991		
Pressure (psi)	130	130	625	1,000	1,200	1,500	1,800		
Time (seconds)	300	180*	180*	180*	120*	120*	120*		
Total Heat Released (MJ/m ²) per 60 seconds	44.19	48.66	54.00	58.66	70.5	70.50	80.5		
Average HRR during 1st 60 seconds(kW/m ²)	752	871	945	989	1216	1277	1360		
Peak Heat of Combustion (kJ/g)	696	796	873	899	1054	1154	1243		
Average Heat Released per second (MJ/m ²)	0.73667	0.81111	0.97778	0.90000	1.17500	1.17500	1.34167		
Average Heat Released per ml of oil (MJ/m ²)	0.644	0.513	0.793	1.405	1.048	0.941	0.945		
Average CO (grams/minute)	0.300	0.360	0.180	0.120	0.058	0.057	0.057		
Burner Used for Test	2008 Becket AFG			THE BURNER BOOSTER					

Comparison based upon average heat released per second from 60 seconds after ignition to 90 seconds

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Nozzle Size	1.00	1.35	> 0.5	> 0.5	> 0.5	> 0.5	> 0.5	Voided	> 0.5
Pressure (psi)	130	130	625	1,000	1,200	1,500	1,800		
Average Heat Released per second (kJ)	6.533	7.190	8.232	8.807	10.305	11.132	11.851		
10 minute Test- oil used per second (ml)	1.1444444	1.5805556	0.8997450	1.0733100	1.1431350	1.2668250	1.3566000		
Heat per ml of oil kj/ml	5.71	4.55	8.21	9.15	9.01	8.79	8.74		
Gain over standard burner using 1.0 nozzle			43.74%	60.28%	57.92%	53.94%	53.03%		
Gain over standard burner using 1.35 nozzle			80.38%	101.13%	98.17%	93.17%	92.04%		
Burner Used for Test	2008 Becket AFG			THE BURNER BOOSTER					

Notes

- The average heat Released per ml of oil on the top of this page is based on ignition to flame out.
- The gain over standard burner are percentage improvements in the amount of heat released per ml of oil.
- The quantity of oil (in grams) used in the test on the top of this page may not have been accurate for the booster test due to varying amounts of oil in the accumulator. Thus the subsequent 12 or 10minute tests measured the amount of oil (in liters) exiting the nozzle without being ignited
- * Test 6,7 ,& 9 - the Test time was reduced as the heat output was melting the instrumentation hoses.