9/16/2011		Oil Performance Data																					
PT2-75-O-2011		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
% Burner output		0%	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%	
1	Heat input	MMBtu/hr	7.5	10.9	14.3	17.6	21.0	24.4	27.8	31.1	34.5	37.9	41.3	44.6	48.0	51.4	54.8	58.1	61.5	64.9	68.3	71.6	75.00	1
2	Oil Flow	GPM	0.9	1.3	1.7	2.1	2.5	2.9	3.3	3.7	4.0	4.4	4.8	5.2	5.6	6.0	6.4	6.8	7.2	7.6	8.0	8.4	8.8	2
3		LPM	3.3	4.8	6.3	7.8	9.3	10.8	12.3	13.8	15.3	16.8	18.3	19.8	21.3	22.8	24.3	25.8	27.3	28.8	30.3	31.8	33.3	3
4	Oil Control Valve Percentage		0.0	4.5	22.3	28.7	32.2	36.4	38.1	40.5	43.5	45.0	47.4	49.4	51.0	51.4	54.8	57.0	57.3	61.3	66.7	70.6	100.0	4
5	Oil Control Valve Position		0.00	0.30	2.30	3.00	3.50	3.80	4.00	4.20	4.50	4.80	5.00	5.10	5.30	5.50	5.80	6.00	6.20	6.50	7.00	7.50	9.80	5
6	Oil Pressure at Train Inlet	PSI	90	90	90	90	90	89	89	88	88	88	87	87	86	86	85	84	84	84	83	82	82	6
7		kPa	621	621	621	621	621	614	614	607	607	607	600	600	593	593	586	579	579	579	572	565	565	7
8	Oil Pressure at Nozzle	PSI	24	25	28	29	31	34	35	38	39	40	42	44	46	46	48	50	51	53	55	56	58	8
9		kPa	165	172	193	200	214	234	241	262	269	276	290	303	317	317	331	345	352	365	379	386	400	9
10	Compressed air Pressure	PSI	72	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	10
11		kPa	496	483	483	483	483	483	483	483	483	483	483	483	483	483	483	483	483	483	483	483	483	11
12	Blower Output	%	0.0	9.0	15.0	18.8	23.8	27.8	29.7	30.8	37.0	40.0	47.0	49.0	57.0	60.0	65.0	73.0	79.0	80.0	89.0	95.0	100.0	12
13	Blower Speed	Hz	8.3	11.5	13.7	15.0	16.8	18.2	18.7	18.9	21.4	22.4	24.9	25.6	28.3	29.4	31.1	33.9	36.0	36.4	39.5	41.6	43.0	13
14	Blower Power	HP	0.6	0.7	1.4	1.3	1.9	2.4	2.5	2.9	4.2	4.4	5.9	6.6	8.9	10.1	11.8	15.0	17.3	18.4	23.1	27.1	31.4	14
15		KW	0.4	0.5	1.0	1.0	1.4	1.8	1.9	2.2	3.1	3.3	4.4	4.9	6.6	7.5	8.8	11.2	12.9	13.7	17.2	20.2	23.4	15
16	Blower Current	A	24.4	11.8	14.8	15.0	16	17.1	17.7	18.4	21.6	22.2	24.4	25.8	28.2	29.8	30.4	33.9	36.4	39.4	41.7	44.7	47.5	16
17	Blower Body Pressure	i.w.c.	0.40	0.60	0.90	1.10	1.30	1.40	1.50	1.60	2.10	2.30	2.80	3.00	3.80	4.00	4.50	5.50	6.10	6.10	7.30	8.20	9.00	17
18		Pa	99.63	149.45	224.17	273.99	323.81	348.71	373.62	398.53	523.07	572.89	697.43	747.25	946.51	996.33	1120.87	1369.95	1519.40	1519.40	1818.30	2042.47	2241.74	18
19	Main Air Flow	SCFH	240,000	265,166	290,332	315,498	340,664	365,830	390,996	416,162	441,327	466,493	491,659	531,886	572,113	612,339	652,566	692,793	733,019	773,245	813,472	853,699	893,926	19
20		M^3	6,796	7,509	8,221	8,934	9,647	10,359	11,072	11,784	12,497	13,210	13,922	15,061	16,200	17,340	18,479	19,618	20,757	21,896	23,035	24,174	25,313	20
21	Flame Diameter	Feet	2	2	2	2.5	3	3	3.5	4	4	4.5	4.5	4.5	4.5	5	5	5	5	5	5	5	5	21
22	Flame Length	Feet	3.0	4.0	6.0	6.0	6.0	7.0	6.0	7.0	7.0	6.5	6.5	6.5	6.5	7.0	7.0	7.0	7.0	8.0	8.0	8.0	8.0	22
23	Excess air (Calculated)	%	236%	156%	114%	88%	70%	57%	48%	40%	34%	29%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	23

Combustion Air VFD Setup		
Min Ref	Hz	8.3
Max Ref	Hz	43.0
Ramp Up Time	Sec	40
Ramp Down Time	Sec	40
Nominal Motor Speed	rpm	1780
Motor Current	A	47.5
Motor Frequency	Hz	60
Motor Voltage	V	480
Motor Power	kW	22.8

Limit Switch Setup		
Blower Proof of Running	-0.2	in H_2O
Blower Proof of High Fire	6.25	in H_2O
Blower Proof of Low Fire	0.55	in H_2O
Low Oil Pressure	30	PSI
High Oil Pressure	150	PSI
Pilot Low Fuel Pressure	N/A	PSI

Oil Valve Hauck GL-1-29

Required Oil Properties			
Viscosity	90 SSU @220 F	SSU	Max
Particulate	0.04	in	Max
Sulfer Content	0.5	% (Mass)	Max
H2SO4	0	PPM	Max
H20	5	% (Mass)	Max

Assumed
BTU CONTENT 142000 BTU/gal

All data collected as the burner firing rate was decreasing.

Burner Fuel / Air Profile Setup

Match oil flow rate (GPM) with blower body pressure. The chart below shows this graphically. To use it, find the fuel flow on the horizontal axis, then move vertically to the curve and then horizontally to the left to find the required blower body pressure. Increase or decrease the fan speed or the fuel flow as needed to match the values. The low fire position for oil should be 0 and the high fire position should be 100. Every other oil position will have to be determined by reading the fuel flow meter. All "light off" positions must be 0. Fine tuning must be done using a flue gas analyzer.