

Manufacturer	Thornhill		
Model	5 KW		
Date	Tuesday, June 04, 2019		
Claimed heat output	kW	5	
Boiler		n	

		Nominal heat output			
<i>Fuel:</i>		Charge 1	Charge 2	Charge 3	Average
Fuel		Beech	Beech	Beech	Beech
Moisture	wt%	13.4	13.8	14.0	13.7
		-	-	-	-
Total load	kg	1.00	0.96	0.93	0.96

	primary air		
	secondary air		
	tertiary air		
	combustion air		

Conditions:

Duration	h	0.80	0.80	0.76	0.79
Deviation	%	7.0	6.7	0.8	4.9
Fuel consumption	kg/h	1.25	1.20	1.23	1.23
Draught	Pa	12.1	12.1	12.1	12.1

Temperatures

Spigot	°C				
Flue	K	140	143	143	142
Flue gas temperature:	°C				167

Boiler

Water temperature	K				
Flow	ltr/min				

Emissions

CO ₂ , max	vol%	20.26	20.26	20.26	20.26
CO ₂ , average	vol%	12.54	13.05	13.14	12.90
CO	vol%	0.13	0.15	0.15	0.14
CO at 13% O ₂	vol%	0.08	0.09	0.09	0.08
CO at 13% O ₂	mg/Nm ³	970	1139	1072	1060
CO, per MJ	mg/MJ	632	743	700	692

NO _x , average	mg/Nm ³	155	128	136	140
NO _x , at 13% O ₂	mg/Nm ³	96	76	80	84
NO _x , per MJ	mg/MJ	62	50	52	55
CxHy, average	mg/Nm ³	114	122	139	125
CxHy, at 13% O ₂	mg/Nm ³	70	72	82	75
CxHy, per MJ	mg/MJ	46	47	53	49
CO ₂ dilution tunnel	vol%	13.79	14.74	14.50	14.34
CO ₂ during dust collection	vol%	13.79	14.74	14.50	14.34
Dilution ratio	-	1.0	1.0	1.0	1.0
Dust measured	mg/Nm ³	15	11	12	13
Dust in flue gas	mg/Nm ³	15	11	12	13
Dust at 13%O ₂	mg/Nm ³	9	6	6	7
Dust in flue gas	mg/MJ	6	4	4	5
Dust in flue gas	g/kg wood	0.1	0.1	0.1	0.1
		6.7	6.6	6.7	6.7

Energiebalans

Cp flue gas	kJ/(m ³ .K)	1.36	1.36	1.36	1.36
Cp water vapor	kJ/(m ³ .K)	1.52	1.52	1.52	1.52
Ash	% of fuel	0.70	0.69	0.69	0.69
Combustibles	% of ash	10	10	10	10
Thermal losses	%	8.5	8.4	8.4	8.4
Chemical losses	%	0.6	0.7	0.7	0.7
Loss by ash	%	0.5	0.5	0.5	0.5
Efficiency	%	90.4	90.3	90.4	90.4
Heat output (total)	kW	5.1	4.9	5.0	5.0
Deviation of average.	%	2.2	-2.3	0.1	-
Heat output room	kW				
Heat output water	kW				
Flue gas mass flow	g/s	3.2	2.9	3.0	3.0

Interpolation

Claimed heat output	kW	5.0	5.0	5.0	5.0
Calculated test period	h	0.81	0.78	0.75	0.78
Required test period	h	0.75	0.75	0.75	0.75
Calculated heat output	kW	5.4	5.2	5.0	5.2