

Report- No.		K13762014T1			
TÜV- order- No.		21226023			
Expert		Alberto Boschiero			
Manufacturer		Finbreda S.r.l.			
Address		Via Margherita Gonzaga, 11 46018 Sabbioneta (MI)			
Construction Type		Room heater for wood pellets with internal fuel hopper and flue gas fan without water parts combustion air is taken from the room			
Special properties		room air dependent			
Max. working pressure	bar	0.0			
Max. working temperature	°C	0.0			
Fuel spigot/socket diameter	kg	245			
Type of fuel charging	mm	80			
		automatic load			
Model name		<b>Hottyma</b>			
Information of data plate					
<b>Dimensions:</b>					
Height	mm	1110			
Width	mm	550			
Depth	mm	620			
Weight	kg	245			
Test place		Thiene		Thiene	
Test date		03/06/2015		04/06/2015	
Type of test		Test at nominal load		Test at reduced load	
		DIN EN 14785:10.2006, Correction 1: 10.2007			
		1. test	2. test	Average	1. test
Time		10:45-13:45	13:45-16:45		12:00-18:00
<b>Ambient:</b>					
Barometric pressure	mbar	1010	1010	1010	1020
Temperature of combustion air	°C	29,1	32,1	31	26,9
Ambient rel. humidity	%	68	68	68	60
Ambient temperature (room)	°C	29,1	32,1	31	26,9
<b>Fuel:</b>		0		0	
Type of fuel		Ø 6mm, Lmax 30 mm, max humidity 5.6%, Pfeifer		Ø 6mm, Lmax 30 mm, max humidity 5.6%, Pfeifer	
Number of fuel loadings		1	1	1	1
Total weight of appliance at start	kg	290,40	283,16	286,78	270,98
Weight of additional loads	kg	283,16	275,50	279,33	266,58
Total weight of appliance at end	kg	0,00	0,00	0,00	0,00
Fuel consumption, calculated of the difference	kg	7,24	7,66	7,45	4,40
Test duration	sec	10800	10800	10800	21600,00
Fuel consumption "B"	kg/h	2,413	2,553	2,483	0,733
Combustible constituents in material passing through the grate "b", analyse	Gew. %	0,0	0,0	0,0	0,0
Residue passing through the grate, measurement	kg	0,000	0,000	0,000	0,000
Residue passing through the grate "R"	Gew. %	0,000	0,000	0,000	0,000
Carbon content of the residue passing through the grate "Cr" depending of 1 kg fuel	Gew. %	0,104	0,104	0,104	0,104
<b>Water part (average values)</b>					
flow temperature	°C	0,0	0,0	0,0	0,0
return temperature	°C	0,0	0,0	0,0	0,0
delta-T	K	0,0	0,0	0,0	0,0
Cold water flow	kg/h	0,0	0,0	0,0	0,0
Additional energy of the pump	kW	0,000	0,000	0,000	0,000
<b>Flue, average</b>					
Flue gas temperature	°C	173,1	181,7	177,4	112,2
Flue gas draught	Pa	10,0	10,0	10,0	10,0
O <sub>2</sub> - concentration, calculated	Vol.-%	12,38	11,25	11,81	16,90
CO <sub>2</sub> - concentration (measurement)	Vol.-%	8,13	9,19	8,66	3,87
lambda value, λ	-	2,414	2,137	2,275	5,056
CO - concentration (measurement)	ppm	62,2	135,4	98,8	167,0
CO - concentration (measurement)	Vol.-%	0,006	0,014	0,010	0,017
CO - concentration (measurement)	mg/m <sup>3</sup>	77,8	169,2	123,5	208,7
CO - concentr. (at reference - O <sub>2</sub> )	Vol.-%	0,006	0,011	0,008	0,033
CO - concentr. (at reference - O <sub>2</sub> )	mg/m <sup>3</sup>	72,1	138,9	105,5	407,0
CO - concentration rel. to fuel input	mg/kWh	171,4	330,0	250,7	967,0
CO - concentration rel. to fuel input	mg/MJ	47,6	91,7	69,6	268,6
NOx - concentration (measurement)	ppm	55,1	63,7	59,4	45,2
NOx - concentration (measurement)	mg/m <sup>3</sup>	112,9	130,5	121,7	92,8
NOx - concentr. (at reference - O <sub>2</sub> )	mg/m <sup>3</sup>	104,7	107,1	105,9	180,8
NOx - concentration rel. to fuel input	mg/kWh	248,9	254,5	251,7	429,7
NOx - concentration rel. to fuel input	mg/MJ	69,1	70,7	69,9	119,4
CrHm - concentration (measurement)	ppm	1,6	1,3	1,5	2,0
CrHm concentr. (at reference - O <sub>2</sub> )	mg/m <sup>3</sup>	2,4	1,8	2,1	6,3
CrHm - concentration (total C) rel. to fuel input	mg/kWh	5,7	4,2	4,9	15,0
CrHm - concentration (total C) rel. to fuel input	mg/MJ	1,6	1,2	1,4	4,2
Dust (measurement*)	mg	7,7	7,7	7,7	6,0
Dust concentration*	mg/m <sup>3</sup>	26,4	26,4	26,4	19,4
Dust (at reference - O <sub>2</sub> )*	mg/m <sup>3</sup>	23,1	23,1	23,1	36,0
Dust* rel. to fuel input	mg/kWh	54,9	54,9	54,9	85,5
Dust* rel. to fuel input	mg/MJ	15,2	15,2	15,2	23,8
PME concentration (at reference - O <sub>2</sub> )*	mg/m <sup>3</sup>	23,9	23,9	23,9	38,0
<b>Electrical consumption</b>					
Elmax	W			0,0	
Elmin	W				40,0
PSTB	W			0,0	



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<b>Calculation</b>					
"Qa" loss free heating flue gas	kJ/kg	2245,2	2088,3	2166,7	2628,3
"qa" loss flue gas	%	12,88	11,98	12,43	15,07
"Qb" loss fix heating in flue gas	kJ/kg	8,4	16,2	12,3	47,5
"qb" loss fix heating in flue gas	%	0,048	0,093	0,071	0,272
"Qr" losses due to combustible constituents in the residue passing through the grate	kJ/kg	0,0	0,0	0,0	0,0
"qr" losses due to combustible constituents in the residue passing through the grate	%	0,200	0,200	0,200	0,200
"m" flue gas mass flow	g/s	9,9	9,3	9,6	6,1
cpm, acc. DIN 4702-2, version 03.90 for dry flue gas	kJ/(m³K)	1,34	1,35	1,35	1,32
cpm-H <sub>2</sub> O	kJ/(m³K)	1,52	1,52	1,52	1,51
"eta" Efficiency (direct), to consider only water heating output Pw	%	entfällt	entfällt	0,00	entfällt
"eta" Efficiency (indirect)	%	86,87	87,73	87,30	84,45
Heating input	kW	11,69	12,37	12,03	3,55
"Pr" heating output, total	kW	10,15	10,85	10,50	3,00
"Pw" water heating output	kW	0,00	0,00	0,00	0,00
Space heating output: P <sub>STR</sub> = P - Pw	kW	10,15	10,85	10,50	3,00
Space heating output, relating to heat input	%	86,87	87,73	87,30	84,45
Water heating output, relating to heat input	%	0,00	0,00	0,00	0,00
<b>Settings (you can change order)</b>					
Ambient motor	%	97	97		40
Fuel motor	%	35,00%	35,00%		11,00%
Cleaning time	sec	15 sec every 40 min	15 sec every 40 min		15 sec every 40 min
Fire door	Open / closed	closed	closed		closed
Flue gas motor	rpm	1700	1700		600

\*) Average of 3 samples, based on separate calculation

