



**High Temperature VWARD Calculation for HSF HIU on behalf of Flamco**

Primary flow temperature = 70°C, DHW set point = 55°C, Space heating temperatures = 60°C/40°C

Test carried out by RISE in June 2018, Test Reference 8P04823

Manufacturer: HSF; Model: Meibes A2RXE; Serial number: AI-10920.400H30; Year of manufacture: 2018

VWARD calculation prepared by Freddie Valletta of FairHeat Ltd on 3 August 2018

	VWARD (°C)	Volume (m <sup>3</sup> )
DHW	13.7	22.99
Keep warm	38.8	48.93
Space heating	40.1	43.92

VWARD with keep warm active		
Period	VWARD (°C)	% Time
No heating	30.8	93%
Heating	39.1	7%
<b>Overall</b>	<b>31.4</b>	

VWARD with keep warm inactive *		
Period	VWARD (°C)	% Time
No heating	13.7	93%
Heating	39.1	7%
<b>Overall</b>	<b>15.6</b>	

\* HIU has ability to deactivate keep warm function

	DHW draw test results			Post DHW draw (60 seconds)	
	Power (W)	Primary flow (m <sup>3</sup> /hr)	Return temp (°C)	Primary flow (m <sup>3</sup> /hr)	Return temp (°C)
Low	11052	0.169	13.1	0.002	12.6
Medium	18155	0.286	14.0	0.001	13.6
High	23993	0.376	14.6	0.001	14.4

DHW draw volumes per annum		
Energy (kWh)	Time (hours)	Volume (m <sup>3</sup> )
729	65.96	11.156
297	16.36	4.682
444	18.51	6.962

Post DHW draw volumes per annum		
Events	Avg duration (seconds)	Volume (m <sup>3</sup> )
10000	30	0.171
660	75	0.008
300	145	0.008

Keep warm test results	
Primary flow (m <sup>3</sup> /hr)	Return temp (°C)
0.006	38.8

Keep warm volumes per annum	
Time (hours)	Volume (m <sup>3</sup> )
8027	48.927

	Space heating test results		
	Power (W)	Primary flow (m <sup>3</sup> /hr)	Return temp (°C)
1 kW	1195	0.037	39.8
2 kW	1929	0.059	40.0
4 kW	3982	0.120	40.2

Space heating volumes per annum		
Energy (kWh)	Time (hours)	Volume (m <sup>3</sup> )
98	81.98	2.998
787	407.91	23.939
565	141.90	16.980