



High Temperature VWARD Calculation for Essco HIU

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

Test carried out by RISE in May 2018, Test Reference 8P03903

Manufacturer: Essco Controls Ltd.; Model: HIU E 70/5; Serial number: 033313031145; Year of manufacture: 2017

VWARD calculation prepared by Freddie Valletta of FairHeat Ltd on 26 June 2018

	VWARD (°C)	Volume (m ³)
DHW	20.6	26.22
Keep warm	40.2	25.08
Space heating	41.7	45.99

VWARD with keep warm active		
Period	VWARD (°C)	% Time
No heating	30.2	93%
Heating	40.8	7%
Overall	30.9	

VWARD with keep warm inactive *		
Period	VWARD (°C)	% Time
No heating	20.6	93%
Heating	40.8	7%
Overall	22.1	

* HIU has ability to deactivate keep warm function

	DHW draw test results			Post DHW draw (60 seconds)	
	Power (W)	Primary flow (m ³ /hr)	Return temp (°C)	Primary flow (m ³ /hr)	Return temp (°C)
Low	10009	0.172	20.0	0.004	17.3
Medium	16733	0.298	20.4	0.001	19.0
High	22706	0.412	21.8	0.003	20.7

DHW draw volumes per annum		
Energy (kWh)	Time (hours)	Volume (m ³)
729	72.83	12.536
297	17.75	5.289
444	19.55	8.048

Post DHW draw volumes per annum		
Events	Avg duration (seconds)	Volume (m ³)
10000	30	0.306
660	75	0.008
300	145	0.037

Keep warm test results	
Primary flow (m ³ /hr)	Return temp (°C)
0.003	40.2

Keep warm volumes per annum	
Time (hours)	Volume (m ³)
8010	25.077

	Space heating test results		
	Power (W)	Primary flow (m ³ /hr)	Return temp (°C)
1 kW	979	0.037	45.5
2 kW	1996	0.062	41.1
4 kW	3895	0.122	41.7

Space heating volumes per annum		
Energy (kWh)	Time (hours)	Volume (m ³)
98	100.13	3.663
787	394.25	24.555
565	145.07	17.769