



High Temperature VVART Calculation for Essco Controls Ltd. HIU

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

Test carried out by BSRIA Ltd. in May 2020, Test Reference 101281/1

Manufacturer: Essco Controls Ltd.; Model: Smart Twin; Serial number: ESS100010434; Year of manufacture: 2019

VVART calculation prepared by Colin Judd of BSRIA Ltd. on 27 May 2020

	VVART (°C)	Volume (m ³)
DHW	22	27.2
Keep warm	41	34.1
Space heating	44	49.6

VVART with keep warm active		
Period	VVART (°C)	% Time
No heating	33	92%
Heating	43	8%
Overall	33	

	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	11823	0.196	21.4	0.010	17.97
Medium	18807	0.340	21.8	0.025	22.18
High	24319	0.445	23.2	0.031	24.05

DHW draw volumes per annum		
Energy (kWh)	Time (hours)	Volume (m ³)
729	61.66	12.110
297	15.79	5.376
444	18.26	8.121

Post DHW draw volumes per annum		
Events	Avg duration (seconds)	Volume (m ³)
10000	30	0.870
660	75	0.342
300	145	0.370

Keep warm test results	
Primary flow (m ³ /hr)	Return temp (°C)
0.0043	41.2

Keep warm volumes per annum	
Time (hours)	Volume (m ³)
8007	34.110

	Space heating test results		
	Power (W)	Primary flow (m ³ /hr)	Return temp (°C)
1 kW	998	0.036	42.8
2 kW	1883	0.063	43.3
4 kW	4001	0.140	45.4

Space heating volumes per annum		
Energy (kWh)	Time (hours)	Volume (m ³)
98	98.20	3.516
787	417.95	26.279
565	141.23	19.829