High Temperature VWART Calculation for I.V.A.R S.p.A 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 June 2020, Test Reference 101858/1

Manufacturer: I.V.A.R S.p.A; Model: IVAR-ESAT Dual; Serial number: 500429C; Year of manufacture: 2019

VWART calculation prepared by Colin Judd of BSRIA Ltd. on 01 July 2020

	VWART (°C)	Volume (m^3)
DHW	15	23.8
Keep Warm	39	24.5
Space Heating	42	47.6

	VWART with keep warm active	
Period	VWART (°C)	% Time
No Heating	27	92%
Heating	41	8%
Overall	28	

	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	10992	0.167	14.1	0.006	13.64
Medium	18435	0.293	14.8	0.015	14.63
High	23885	0.381	15.7	0.015	15.30

DHW draw volumes per annum		
Energy (kWh)	Time (hours)	Volume (m^3)
729	66.32	11.058
297	16.11	4.721
444	18.59	7.091

Post DHW draw volumes per annum		
Events	Avg duration (seconds)	Volume (m^3)
10000	30	0.536
660	75	0.212
300	145	0.177

Keep warm test results	
Primary flow (m^3/hr)	Return temp (°C)
0.0031	38.6

Keep warm volumes per annum	
Time (hours)	Volume (m^3)
8002	24.492

	Space heating test results		
	Power (W)	Primary flow (m^3/hr)	Return temp (°C)
1kW	995	0.032	40.9
2kW	1890	0.061	41.6
4kW	3973	0.133	43.3

Space heating volumes per annum		
Energy (kWh)	Time (hours)	Volume (m^3)
98	98.53	3.193
787	416.40	25.484
565	142.22	18.943