



FairHeat

High Temperature VVART Calculation for Frese HIU

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

Test carried out by RISE between February 2017 and March 2017, Test Reference 7P01636

Manufacturer: Fortes Import Installatie Agenturen B.V.; Model: Arctic Twin Plate 420; Serial number: A727-20174-20194; Year of manufacture: 2017

VVART calculation prepared by Tom Naughton of FairHeat Ltd on 25 April 2017

	VVART (°C)	Volume (m ³)
DHW	19.8	26.27
Keep warm	42.9	37.70
Space heating	41.2	46.25

VVART with keep warm active		
Period	VVART (°C)	% Time
No heating	33.4	93%
Heating	40.5	7%
Overall	34.0	

VVART with keep warm inactive *		
Period	VVART (°C)	% Time
No heating	19.8	93%
Heating	40.3	7%
Overall	21.3	

* 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	11023	0.178	18.66	0.011	18.3
Medium	15072	0.255	19.53	0.020	18.9
High	23568	0.417	21.74	0.038	22.0

DHW draw volumes per annum		
Energy (kWh)	Time (hours)	Volume (m ³)
729	66.13	11.752
297	19.71	5.031
444	18.84	7.854

Post DHW draw volumes per annum		
Events	Avg duration (seconds)	Volume (m ³)
10000	30	0.888
660	75	0.277
300	145	0.465

Keep warm test results	
Primary flow (m ³ /hr)	Return temp (°C)
0.005	42.9

Keep warm volumes per annum	
Time (hours)	Volume (m ³)
8009	37.705

	Space heating test results		
	Power (W)	Primary flow (m ³ /hr)	Return temp (°C)
1 kW	987	0.033	41.3
2 kW	1966	0.063	40.9
4 kW	3839	0.121	41.5

Space heating volumes per annum		
Energy (kWh)	Time (hours)	Volume (m ³)
98	99.30	3.325
787	400.30	25.113
565	147.19	17.812