Indoor Model	Vitocal 222-A AWOT-M-E 221.A08
Outdoor Model	Vitocal 200-A AWO-M-E 201.A08
Air-to-water heat pump	yes
Water-to-water heat pump	no
Brine-to-water heat pump	no
Low-temperature heat pump	no
Equipped with a supplementary heater	yes
Heat pump combination heater	ves



Application	Low temperature
Climate conditions	Average

Rated heat output	Prated	6	kW
Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature Ti	-		
T <sub>j</sub> = - 7 °C	Pdh	6.0	kW
T <sub>j</sub> = + 2 °C	Pdh	3.7	kW
T <sub>i</sub> = + 7 °C	Pdh	4.4	kW
T <sub>i</sub> = + 12 °C	Pdh	4.2	kW
T <sub>j</sub> = bivalent temperature	Pdh	6.0	kW
T <sub>i</sub> = operation limit temperature	Pdh	5.4	kW
T <sub>i</sub> = - 15 °C (if TOL < -20 °C)	Pdh		kW
Bivalent temperature	$T_{biv}$	-7	°C
Cycling interval capacity for heating	Pcych		kW
Degradation coefficient	Cdh	0.98	
Power consumption in modes other than active mode			
Off mode	P <sub>OFF</sub>	0.017	kW
Thermostat-off mode	PTO	0.000	kW
Standby mode	P <sub>SB</sub>	0.016	kW
Crankcase heater mode	PCK	0.000	kW
Other items			
Capacity control		variable	
Sound power level, indoors/outdoors	L <sub>WA</sub>	39/55	dB
Annual energy consumption	Q <sub>HE</sub>	3001	kWh

Seasonal space heating energy efficiency	$\eta_{\rm s}$	175	%
Declared coefficient of performance for part			
load at indoor temperature 20 °C and			
outdoor temperature Ti			
T <sub>j</sub> = - 7 °C	COP <sub>d</sub>	3.1	
T <sub>j</sub> = + 2 °C	COP <sub>d</sub>	4.3	
T <sub>i</sub> = + 7 °C	COP <sub>d</sub>	5.7	
T <sub>i</sub> = + 12 °C	COP <sub>d</sub>	7.2	
T <sub>i</sub> = bivalent temperature	COP <sub>d</sub>	3.1	
T <sub>i</sub> = operation limit temperature	COPd	2.7	
T <sub>i</sub> = - 15 °C (if TOL < -20 °C)	COPd		
Operation limit temperature	TOL	-10	°C
Cycling interval efficiency	COPcyc		
Heating water operating limit temperature	WTOL	60	°C
Supplementary heater			
Rated heat output	Psup	9.0	kW
Type of energy input		Electric	
Rated air flow rate, outdoors		2600	m <sup>3</sup> /h
Water heating energy efficiency	$\eta_{wh}$	119	%

	L	
Q elec	4.153	kWh
AEC	886	kWh
	1104	Wh/day
		AEC 886

Application

Water heating energy efficiency	$\eta_{\text{wh}}$	119	
Daily fuel consumption	Q fuel		k
Annual fuel consumption	AFC		k
Reference hot water temperature		52.5	
DHW volume accounted for in test		290	

Climate conditions	Average			
Rated heat output		Prated	7	kW
Declared capacity for heating for part load				
at indoor temperature 20 °C and outdoor				
temperature Tj				
1				

$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	at indoor temperature 20 °C and outdoor			
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	temperature Tj			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$				
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	,	Pdh	5.7	kW
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	T <sub>j</sub> = + 2 °C	Pdh	3.5	kW
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	T <sub>j</sub> = + 7 °C	Pdh	4.1	kW
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	T <sub>j</sub> = + 12 °C	Pdh	4.0	kW
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	T <sub>j</sub> = bivalent temperature	Pdh	5.7	kW
Bivalent temperature $T_{biv}$ $-7$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$ $0$	T <sub>j</sub> = operation limit temperature	Pdh	5.4	kW
Cycling interval capacity for heating Pcych Degradation coefficient $Cdh$ $0.98$ $Cdh$ $0.000$ $0.00$ $Cdh$ $0.000$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.00$ $0.$	T <sub>j</sub> = - 15 °C (if TOL < -20 °C)	Pdh		kW
Degradation coefficient $Cdh$ 0.98  Power consumption in modes other than active mode  Off mode $P_{OFF}$ 0.017 k  Thermostat-off mode $P_{TO}$ 0.000 k  Standby mode $P_{SB}$ 0.016 k  Crankcase heater mode $P_{CK}$ 0.000 k  Other items  Capacity control Sound power level, indoors/outdoors $P_{CK}$ 39/55 d	Bivalent temperature	T biv	-7	°C
Power consumption in modes other than active mode  Off mode $P_{OFF}$ Thermostat-off mode $P_{TO}$ 0.000  k  Standby mode $P_{SB}$ 0.016  k  Crankcase heater mode  Other items  Capacity control  Sound power level, indoors/outdoors $L_{WA}$ $Variable$ 39/55	Cycling interval capacity for heating	Pcych		kW
Off mode $P_{OFF}$ 0.017 k Thermostat-off mode $P_{TO}$ 0.000 k Standby mode $P_{SB}$ 0.016 k Crankcase heater mode $P_{CK}$ 0.000 k  Other items Capacity control $P_{CK}$ 0.000 variable Sound power level, indoors/outdoors $P_{CK}$ 0.001 d	Degradation coefficient	Cdh	0.98	
Off mode $P_{OFF}$ 0.017 k Thermostat-off mode $P_{TO}$ 0.000 k Standby mode $P_{SB}$ 0.016 k Crankcase heater mode $P_{CK}$ 0.000 k  Other items Capacity control $P_{CK}$ 0.000 variable Sound power level, indoors/outdoors $P_{CK}$ 0.001 c	Power consumption in modes other than active mode			
Standby mode $P_{SB}$ 0.016 k Crankcase heater mode $P_{CK}$ 0.000 k  Other items Capacity control $V_{CK}$ variable 39/55 d	•	P <sub>OFF</sub>	0.017	kW
Crankcase heater mode $P_{CK}$ 0.000 k  Other items  Capacity control variable 39/55 d	Thermostat-off mode	P <sub>TO</sub>	0.000	kW
Other items Capacity control Sound power level, indoors/outdoors $L_{WA} = \frac{\text{variable}}{39/55}$	Standby mode	PSB	0.016	kW
Capacity control $ \begin{array}{c c} \text{Variable} \\ \text{Sound power level, indoors/outdoors} & L_{\textit{WA}} & 39/55 \\ \end{array} $	Crankcase heater mode	Pck	0.000	kW
Sound power level, indoors/outdoors L <sub>WA</sub> 39/55 d	Other items			
Sound power level, indoors/outdoors L <sub>WA</sub> 39/55 d	Capacity control		variable	
l		L <sub>WA</sub>	39/55	dB
Annual energy consumption $Q_{HE}$ 4332 kV	Annual energy consumption	$Q_{\it HE}$	4332	kWh

Seasonal space heating energy efficiency	ηs	127	%
Declared coefficient of performance for part			
load at indoor temperature 20 °C and			
outdoor temperature Tj			
T <sub>j</sub> = - 7 °C	COPd	2.1	
T <sub>j</sub> = + 2 °C	COP <sub>d</sub>	3.1	
T <sub>j</sub> = + 7 °C	COP <sub>d</sub>	4.3	
T <sub>j</sub> = + 12 °C	COP <sub>d</sub>	5.7	
T <sub>j</sub> = bivalent temperature	COP <sub>d</sub>	2.1	
T <sub>j</sub> = operation limit temperature	COP <sub>d</sub>	2.0	
T <sub>j</sub> = - 15 °C (if TOL < -20 °C)	COP <sub>d</sub>		
Operation limit temperature	TOL	-10	°C
Cycling interval efficiency	COPcyc		
Heating water operating limit temperature	WTOL	60	°C
Supplementary heater			
Rated heat output	Psup	9.0	kW
Type of energy input		Electric	
Rated air flow rate, outdoors	-	2600	m <sup>3</sup> /h

For heat pump combination heater							
Declared load profile		L	]	Water heating energy efficiency	$\eta_{wh}$	119	%
Daily electric consumption	Q elec	4.153	kWh	Daily fuel consumption	Q <sub>fuel</sub>	- 110	kWh
Annual electricity consumption	AEC	886	kWh	Annual fuel consumption	AFC		kWh
Standby cylinder heat loss		1104	Wh/day	Reference hot water temperature		52.5	°C
				DHW volume accounted for in test		290	] [