TEST REPORT

Report no.:
300-KLAB-24-007

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File no.: 226012
Enclosures: 1

Customer:
Company: GD MIDEA HEATING & VENTILATING EQUIPMENT CO., LTD.
Address: Penglai Industry Road, Beijiao
City: Shunde, Foshan, Guangdong, 528311, China
Tel.: +86 13902810522

Component:
Brand: Midea
Type: Air to water heat pump (mono block)
Model: MHC-V16WD2N7
Series no.: 541140007733A18010002Z
Prod. Year:
Outdoor unit: N/A

Dates:
Component tested: January – February 2024

Procedure:
See objective (page 2) for list of standards.

Remarks:
The unit was delivered by the customer. The installation and test settings were done according to the manufacturer's instructions. Between each test condition, Midea has been changing various parameters like compressor speed, expansion valve, fan speed, pump speed, defrost time, heating time.

Terms:
This test was conducted under accreditation in accordance with international requirements (ISO/IEC 17025:2017) and in accordance with the General Terms and Conditions of Danish Technological Institute. The test results solely apply to the tested item. This test report may be quoted in extract only if Danish Technological Institute has granted its written consent.

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Division/Centre:
Danish Technological Institute
Energy and Climate
Heat Pump Laboratory, Aarhus

Date: 2024.06.06

Signature:
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Co-reader:
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B.Sc. Engineer

DIGITALLY SIGNED DOCUMENT
5 June 2024
DANISH TECHNOLOGICAL INSTITUTE

ilac-MRA DANAK
Test Reg. nr. 300

Heat pumps of identical design

According to GD MIDEA HEATING & VENTILATING EQUIPMENT CO. LTD., the heat pumps listed in the table below are considered identical with the tested unit. They have identical:

a. heating capacity
b. refrigerant cycle (incl. refrigerant mass)
c. heat source and sink medium
d. main components / operating principle and control strategy
e. same outdoor casing

Midea	MHC-V16WD2N7
Midea	MHC-V16WD2N7-E30
Midea	MHC-V16WD2N7-ER60
Midea	MHC-V16WD2N7-ER90

Objective

The objective of this report is to document the following:

The Seasonal Coefficient of Performance (SCOP) at low and medium temperature application for average climate according to EN 14825:2022.

In order to calculate the SCOP, tests were carried out at the part load conditions stated in the tables on page 5 and 6.

SCOP part load test in condition $SCOP_{B/F}$ at low temperature application for warmer climate according to EN 14825:2022.

SCOP part load test conditions $SCOP_{A}$ and $SCOP_{F/G}$ at low temperature application for colder climate according to EN 14825:2022.

COP test standard rating conditions A7/W35 and A7/W55 according to EN 14511:2022.

Operating requirements according to EN 14511-4:2022
- 4.2.1 Starting and operating tests
- 4.5 Shutting of the heat transfer medium flows
- 4.6 Complete power supply failure

Sound power measurements according to EN 12102-1:2022.

Contents:

Test conditions

SCOP test conditions for low temperature – EN 14825

Part load conditions for reference SCOP and reference SCOPon calculation of air to water units for low temperature application for the reference heating season;
"A" = average, "W" = warmer, and "C" = colder.

	Part load ratio in %				Outdoor heat exchanger		Indoor heat exchanger			
					Dry (wet) bulb temperature °C		Fixed outlet °C	Variable outlet[d] °C		
	Formula	Average	Warmer	Colder	Outdoor air	Exhaust air	All climates	Average	Warmer	Colder
A	$(-7 - 16) / (T_{designh} - 16)$	88,46	n.a.	60,53	−7(−8)	20(12)	[a] / 35	[a] / 34	n.a.	[a] / 30
B	$(+2 - 16) / (T_{designh} - 16)$	53,85	100,00	36,84	2(1)	20(12)	[a] / 35	[a] / 30	[a] / 35	[a] / 27
C	$(+7 - 16) / (T_{designh} - 16)$	34,62	64,29	23,68	7(6)	20(12)	[a] / 35	[a] / 27	[a] / 31	[a] / 25
D	$(+12 - 16) / (T_{designh} - 16)$	15,38	28,57	10,53	12(11)	20(12)	[a] / 35	[a] / 24	[a] / 26	[a] / 24
E	$(TOL^{e} - 16) / (T_{designh} - 16)$				TOL^{e}	20(12)	[a] / 35	[a] / [b]	[a] / [b]	[a] / [b]
F	$(T_{biv} - 16) / (T_{designh} - 16)$				T_{biv}	20(12)	[a] / 35	[a] / [c]	[a] / [c]	[a] / [c]
G	$(-15 - 16) / (T_{designh} - 16)$	n.a.	n.a.	81,58	−15	20(12)	[a] / 35	n.a.	n.a.	[a] / 32

Additional information

Climate	$T_{designh}$ [°C]	$T_{bivalent}$ [°C]	TOL [°C]	Outlet temperature	Flow rate
Average	-10	-7	-10	Variable	Variable
Warmer	2	7	2	Variable	Variable
Colder	-22	-15	-22	Variable	Variable

SCOP test conditions for medium temperature – EN 14825

Part load conditions for reference SCOP and reference SCOPon calculation of air to water units for medium temperature application for the reference heating season;
"A" = average, "W" = warmer, and "C" = colder.

	Part load ratio in %				Outdoor heat exchanger		Indoor heat exchanger			
					Dry (wet) bulb temperature °C		Fixed outlet °C	Variable outlet[d] °C		
	Formula	Average	Warmer	Colder	Outdoor air	Exhaust air	All climates	Average	Warmer	Colder
A	$(-7 - 16) / (T_{designh} - 16)$	88,46	n.a.	60,53	−7(−8)	20(12)	[a] / 55	[a] / 52	n.a.	[a] / 44
B	$(+2 - 16) / (T_{designh} - 16)$	53,85	100	36,84	2(1)	20(12)	[a] / 55	[a] / 42	[a] / 55	[a] / 37
C	$(+7 - 16) / (T_{designh} - 16)$	34,62	64,29	23,68	7(6)	20(12)	[a] / 55	[a] / 36	[a] / 46	[a] / 32
D	$(+12 - 16) / (T_{designh} - 16)$	15,38	28,57	10,53	12(11)	20(12)	[a] / 55	[a] / 30	[a] / 34	[a] / 28
E	$(TOL^{e} - 16) / (T_{designh} - 16)$				TOL^{e}	20(12)	[a] / 55	[a] / [b]	[a] / [b]	[a] / [b]
F	$(T_{biv} - 16) / (T_{designh} - 16)$				T_{biv}	20(12)	[a] / 55	[a] / [c]	[a] / [c]	[a] / [c]
G	$(-15 - 16) / (T_{designh} - 16)$	n.a.	n.a.	81,58	−15	20(12)	[a] / 55	n.a.	n.a.	[a] / 49

Additional information

Climate	$T_{designh}$ [°C]	$T_{bivalent}$ [°C]	TOL [°C]	Outlet temperature	Flow rate
Average	-10	-7	-10	Variable	Variable

COP test conditions - low temperature – EN 14511

N#	Heat source		Heat sink		Heat pump settings
	Inlet dry bulb temperature (°C)	Inlet wet bulb temperature (°C)	Inlet temperature (°C)	Outlet temperature (°C)	
1S	7	6	30	35	

S: Standard rating condition

COP test conditions - medium temperature – EN 14511

N#	Heat source		Heat sink		Heat pump settings
	Inlet dry bulb temperature (°C)	Inlet wet bulb temperature (°C)	Inlet temperature (°C)	Outlet temperature (°C)	
1S	7	6	47	55	

S: Standard rating condition

Test conditions for operating requirements – EN 14511-4

N#	Heat source		Heat sink	Water flow rate at indoor heat exchanger	Test
	Inlet dry bulb temperature (°C)	Inlet wet bulb temperature (°C)	Inlet temperature (°C)		
1	-25	-	12	600 L/h	Starting
2	-25	-	48	600 L/h	Operating

Test conditions for shutting off the heat transfer medium – EN 14511-4

N#	Heat source		Heat sink		Heat exchanger
	Inlet dry bulb temperature (°C)	Inlet wet bulb temperature (°C)	Inlet temperature (°C)	Outlet temperature (°C)	
1	7	6	47	55	Indoor
2	7	6	47	55	Outdoor

Test conditions for complete power supply failure – EN 14511-4

N#	Heat source		Heat sink	
	Inlet dry bulb temperature (°C)	Inlet wet bulb temperature (°C)	Inlet temperature (°C)	Outlet temperature (°C)
1	7	6	47	55

Test conditions for sound power measurements – EN 12102-1

N#	Test condition		Heat pump setting			
	Outdoor heat exchanger (dry bulb/ wet bulb) (°C)	Indoor heat exchanger (inlet/ outlet) (°C)	Compressor speed (Hz)	Fan speed outdoor (rpm)	Heating capacity (kW)	Power input (kW)
1[E]	7/6	47/55	29	400	4.69	1.61
2[S]	7/6	47/55	86	730	15.73	5.28

E) ErP labelling
S) Standard rating condition

Test results

Test results of SCOP test at low temperature - heating season average – EN 14825

Model (Outdoor)	MHC-V16WD2N7
Air-to-water heat pump mono bloc	Y
Low-temperature heat pump	N
Equipped with supplementary heater	N
Heat pump combination heater	N
Reversible	Y

Rated heat output[1)]	P_{rated}	**14.7** [kW]
Seasonal space heating energy efficiency	η_s	**182.6** [%]
	SCOP	**4.64** [-]

Measured capacity for heating for part load at outdoor temperature Tj	Average Climate - Low temperature application	Tj=-15 °C	Pdh	- [kW]
		Tj=-7 °C	Pdh	13.10 [kW]
		Tj=2 °C	Pdh	7.83 [kW]
		Tj=7 °C	Pdh	5.01 [kW]
		Tj=12 °C	Pdh	5.62 [kW]
		Tj=bivalent temperature	Pdh	13.10 [kW]
		Tj=operation limit	Pdh	11.96 [kW]

Measured coefficient of performance at outdoor temperature Tj	Average Climate - Low temperature application	Tj=-15 °C	COPd	- [-]
		Tj=-7 °C	COPd	2.57 [-]
		Tj=2 °C	COPd	4.40 [-]
		Tj=7 °C	COPd	7.06 [-]
		Tj=12 °C	COPd	8.36 [-]
		Tj=bivalent temperature	COPd	2.57 [-]
		Tj=operation limit	COPd	2.35 [-]

Bivalent temperature	Tbivalent	-7 [°C]
Operation limit	TOL	-10 [°C]
temperatures	WTOL	- [°C]
Degradation coefficient	Cdh	0.99 [-]

Power consumption in modes other than active mode	Off mode	P_{OFF}	0.010 [kW]
	Thermostat-off mode	P_{TO}	0.010 [kW]
	Standby mode	P_{SB}	0.010 [kW]
	Crankcase heater mode	P_{CK}	0.010 [kW]
Supplementary heater[1)]	Rated heat output	P_{SUP}	2.74 [kW]
	Type of energy input		Electrical

Other items	Capacity control		Variable
	Water flow control		Variable
	Water flow rate		-
	Annual energy consumption	Q_{HE}	6545 [kWh]

[1)] For heat pump space heaters and heat pump combination heaters, the rated heat output, Prated, is equal to the design load for heating, Pdesignh, and the rated heat output of a supplementary heater, Psup, is equal to the supplementary capacity for heating, sup(Tj).

[2)] For SCOP calculation the value PCK - PSB is used. See section "SCOP - detailed calculation"

Test results of SCOP test at medium temperature - heating season average – EN 14825

Model (Outdoor)	MHC-V16WD2N7
Air-to-water heat pump mono bloc	Y
Low-temperature heat pump	N
Equipped with supplementary heater	N
Heat pump combination heater	N
Reversible	Y

Rated heat output[1)]	P_{rated}	**14.4** [kW]
Seasonal space heating energy efficiency	η_s	**141.6** [%]
	SCOP	**3.62** [-]

Measured capacity for heating for part load at outdoor temperature Tj	Average Climate - Medium temperature application	Tj=-15 °C	Pdh	- [kW]
		Tj=-7 °C	Pdh	12.57 [kW]
		Tj=2 °C	Pdh	8.00 [kW]
		Tj=7 °C	Pdh	4.67 [kW]
		Tj=12 °C	Pdh	5.34 [kW]
		Tj=bivalent temperature	Pdh	12.57 [kW]
		Tj=operation limit	Pdh	11.77 [kW]

Measured coefficient of performance at outdoor temperature Tj	Average Climate - Medium temperature application	Tj=-15 °C	COPd	- [-]
		Tj=-7 °C	COPd	2.01 [-]
		Tj=2 °C	COPd	3.55 [-]
		Tj=7 °C	COPd	5.02 [-]
		Tj=12 °C	COPd	6.28 [-]
		Tj=bivalent temperature	COPd	2.01 [-]
		Tj=operation limit	COPd	1.90 [-]

Bivalent temperature	Tbivalent	-7 [°C]
Operation limit	TOL	-10 [°C]
temperatures	WTOL	- [°C]
Degradation coefficient	Cdh	0.99 [-]

Power consumption in modes other than active mode	Off mode	P_{OFF}	0.010 [kW]
	Thermostat-off mode	P_{TO}	0.010 [kW]
	Standby mode	P_{SB}	0.010 [kW]
	Crankcase heater mode[2)]	P_{CK}	0.010 [kW]
Supplementary heater	Rated heat output	P_{SUP}	2.63 [kW]
	Type of energy input		Electrical

Other items	Capacity control		Variable
	Water flow control		Variable
	Water flow rate		-
	Annual energy consumption	Q_{HE}	8228 [kWh]

[1)] For heat pump space heaters and heat pump combination heaters, the rated heat output, Prated, is equal to the design load for heating, Pdesignh, and the rated heat output of a supplementary heater, Psup, is equal to the supplementary capacity for heating, sup(Tj).

[2)] For SCOP calculation the value PCK - PSB is used. See section "SCOP - detailed calculation"

Test results for warmer climate, low temperature according to EN14825

N°	Test condition	Heating capacity [kW]	COP
1	E&B	14.029	3.079

Test results for colder climate, low temperature according to EN14825

N°	Test condition	Heating capacity [kW]	COP
1	A	8.779	3.190
2	F/G	11.867	2.379

COP test results - low temperature – EN 14511

N#	Test conditions	Heating capacity [kW]	COP
1	A7/W35	14.940	4.392

COP test results - medium temperature – EN 14511

N#	Test conditions	Heating capacity [kW]	COP
1	A7/W55	15.730	2.976

Test results for starting and operating test - EN 14511-4

N#	Test conditions air/water inlet [°C]	Test validation
Starting	A-25/W12	Passed
Operating	A-25/W48	Passed

Test results for shutting off the heat transfer medium – EN 14511-4

N#	Heat exchanger	Test validation
1	Indoor	Passed
2	Outdoor	Passed

Test results for complete power supply failure – EN 14511-4

N#	Test validation
1	Passed

Test results of sound power measurements – EN 12102-1

N#	Test conditions	Sound power level LW(A) [dB re 1pW]	Uncertainty σ_{tot} [dB]
1^{E}	A7/W55	55.0	1.6
2^{S}	A7/W55	66.9	1.6

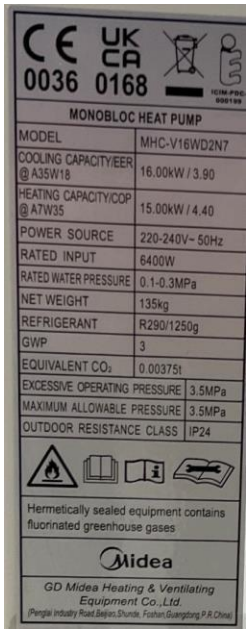
E) ErP labelling
S) Standard rating condition

The A-weighted total sound power level is determined for the measured frequency range from 100 Hz to 10 kHz. For the calculation of uncertainty, see appendix 1.

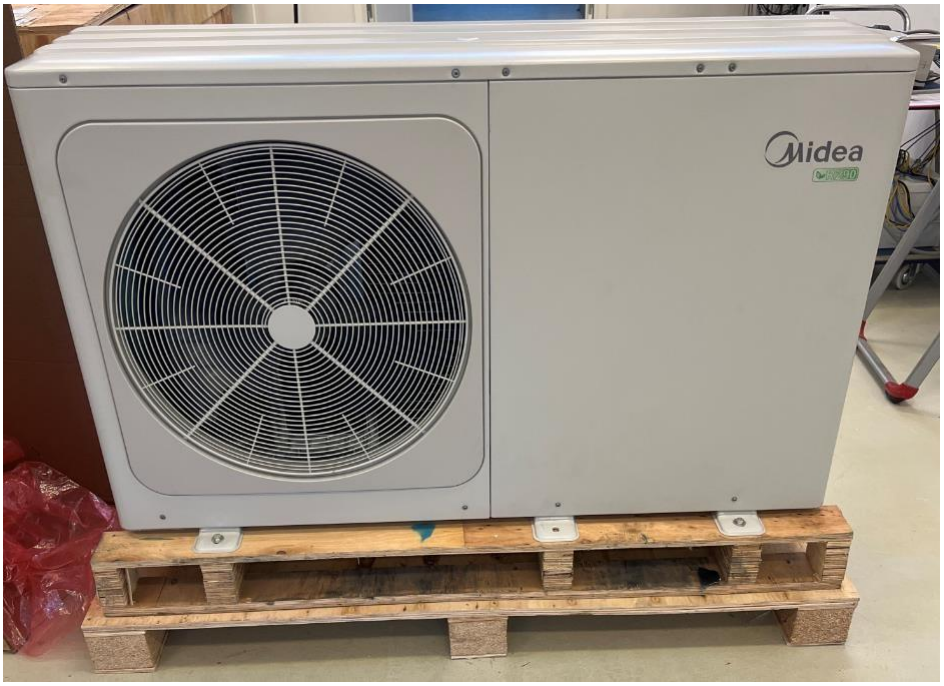
The sound power measurements are carried out by Kamalathasan Arumugam (KAMA) and co-read by Patrick Glibert (PGL), Danish Technological Institute.

Photos

Rating plate



Outdoor unit



SCOP - detailed calculation

Detailed SCOP calculation of low temperature and average climate conditions – EN 14825

Calculation of reference SCOP

$$SCOP = \frac{P_{designh} \times H_{he}}{\frac{P_{designh} \times H_{he}}{SCOP_{on}} + H_{TO} \times P_{TO} + H_{SB} \times P_{SB} + H_{CK} \times P_{CK} + H_{OFF} \times P_{OFF}}$$

Where

P_{design} = Heating load of the building at design temperature, kW

H_{he} = Number of equivalent heating hours, 2066 h

H_{TO}, H_{SB}, H_{CK}, H_{OFF} = Number of hours for which the unit is considered to work in thermostat off mode, standby mode, crankcase heater mode and off mode, h, respectively

P_{TO}, P_{SB}, P_{CK}, P_{OFF} = Electricity consumption during thermostat off mode, standby mode, crankcase heater mode and off mode, kW, respectively

Data for SCOP

	Outdoor temperature [°C]	Part load ratio [%]	Part load [kW]	Declared capacity [kW]	Declared COP [-]	cdh [-]	CR [-]	COPbin [-]
A	-7	88	13.00	13.10	2.57	1.00	1.00	2.57
B	2	54	7.92	7.83	4.40	0.99	1.00	4.40
C	7	35	5.09	5.01	7.06	0.99	1.00	7.06
D	12	15	2.26	5.62	8.36	0.99	0.40	8.18
E	-10	100	14.70	11.96	2.35	1.00	1.00	2.35
F - BIV	-7	88	13.00	13.10	2.57	1.00	1.00	2.57

Energy consumption for thermostat off, standby, off mode, crankcase heater mode

	Hours [h]	Power input [kW]	Applied to SCOP calculation [kW]	Energy consumption [kWh]
Off mode	0	0.01	0.01	0
Thermostat off	178	0.01	0.01	1.78
Standby	0	0.01	0.01	0
Crankcase heater	178	0.01	0	0

Calculation Bin for SCOPon

	Bin [-]	Outdoor temperature [°C]	Hours [h]	Heat load [kW]	Heat load covered by heat pump [kW]	Electrical back up heater [kW]	Annual backup heater energy input [kWh]	COPbin [-]	Annual heating demand [kWh]	Annual energy input [kWh]	Net annual heating capacity [kWh]	Net annual power input [kWh]
E	21	-10	1	14.70	11.96	2.74	2.74	2.35	14.70	7.83	11.96	5.09
	22	-9	25	14.13	12.31	1.83	45.67	2.42	353.37	172.67	307.70	127.01
	23	-8	23	13.57	12.66	0.91	21.01	2.50	312.09	137.66	291.09	116.65
A / F - BIV	24	-7	24	13.00	13.00	0.00	0.00	2.57	312.09	121.53	312.09	121.53
	25	-6	27	12.44	12.43	0.00	0.00	2.77	335.84	121.16	335.84	121.16
	26	-5	68	11.87	11.85	0.00	0.00	2.98	807.37	271.33	807.37	271.33
	27	-4	91	11.31	11.28	0.00	0.00	3.18	1029.00	323.65	1029.00	323.65
	28	-3	89	10.74	10.71	0.00	0.00	3.38	956.07	282.60	956.07	282.60
	29	-2	165	10.18	10.13	0.00	0.00	3.59	1679.19	468.15	1679.19	468.15
	30	-1	173	9.61	9.56	0.00	0.00	3.79	1662.80	438.66	1662.80	438.66
	31	0	240	9.05	8.98	0.00	0.00	3.99	2171.08	543.52	2171.08	543.52
	32	1	280	8.48	8.41	0.00	0.00	4.20	2374.62	565.62	2374.62	565.62
B	33	2	320	7.92	7.83	0.00	0.00	4.40	2532.92	575.40	2532.92	575.40
	34	3	357	7.35	7.27	0.00	0.00	4.93	2623.95	531.96	2623.95	531.96
	35	4	356	6.78	6.71	0.00	0.00	5.46	2415.32	442.11	2415.32	442.11
	36	5	303	6.22	6.14	0.00	0.00	5.99	1884.43	314.40	1884.43	314.40
	37	6	330	5.65	5.58	0.00	0.00	6.52	1865.77	285.97	1865.77	285.97
C	38	7	326	5.09	5.01	0.00	0.00	7.06	1658.84	235.13	1658.84	235.13
	39	8	348	4.52	4.46	0.00	0.00	7.28	1574.03	216.19	1574.03	216.19
	40	9	335	3.96	3.91	0.00	0.00	7.51	1325.83	176.63	1325.83	176.63
	41	10	315	3.39	3.36	0.00	0.00	7.73	1068.58	138.20	1068.58	138.20
	42	11	215	2.83	2.81	0.00	0.00	7.96	607.79	76.38	607.79	76.38
D	43	12	169	2.26	2.26	0.00	0.00	8.18	382.20	46.71	382.20	46.71
	44	13	151	1.70	1.71	0.00	0.00	8.41	256.12	30.46	256.12	30.46
	45	14	105	1.13	1.16	0.00	0.00	8.63	118.73	13.75	118.73	13.75
	46	15	74	0.57	0.61	0.00	0.00	8.86	41.84	4.72	41.84	4.72

SUM	30364.55	6542.41	30295.13	6472.99
SCOPon		4.64	**SCOPnet**	4.68

Detailed SCOP calculation of medium temperature and average climate conditions – EN 14825

Calculation of reference SCOP

$$SCOP = \frac{P_{designh} \times H_{he}}{\frac{P_{designh} \times H_{he}}{SCOP_{on}} + H_{TO} \times P_{TO} + H_{SB} \times P_{SB} + H_{CK} \times P_{CK} + H_{OFF} \times P_{OFF}}$$

Where

P_{design} = Heating load of the building at design temperature, kW

H_{he} = Number of equivalent heating hours, 2066 h

H_{TO}, H_{SB}, H_{CK}, H_{OFF} = Number of hours for which the unit is considered to work in thermostat off mode, standby mode, crankcase heater mode and off mode, h, respectivel

P_{TO}, P_{SB}, P_{CK}, P_{OFF} = Electricity consumption during thermostat off mode, standby mode, crankcase heater mode and off mode, kW, respectively

Data for SCOP

	Outdoor temperature [°C]	Part load ratio [%]	Part load [kW]	Declared capacity [kW]	Declared COP [-]	cdh [-]	CR [-]	COPbin [-]
A	-7	88	12.74	12.57	2.01	1.00	1.00	2.01
B	2	54	7.75	8.00	3.55	1.00	1.00	3.55
C	7	35	4.98	4.67	5.02	0.99	1.00	5.02
D	12	15	2.22	5.34	6.28	0.99	0.42	6.17
E	-10	100	14.40	11.77	1.90	1.00	1.00	1.90
F - BIV	-7	88	12.74	12.57	2.01	1.00	1.00	2.01

Energy consumption for thermostat off, standby, off mode, crankcase heater mode

	Hours [h]	Power input [kW]	Applied to SCOP calculation [kW]	Energy consumption [kWh]
Off mode	0	0.01	0.01	0
Thermostat off	178	0.01	0.01	1.78
Standby	0	0.01	0.01	0
Crankcase heater	178	0.01	0	0

Calculation Bin for SCOPon

	Bin [-]	Outdoor temperature [°C]	Hours [h]	Heat load [kW]	Heat load covered by heat pump [kW]	Electrical back up heater [kW]	backup heater energy input [kWh]	COPbin [-]	Annual heating demand [kWh]	Annual energy input [kWh]	Net annual heating capacity [kWh]	Net annual power input [kWh]
E	21	-10	1	14.40	11.77	2.63	2.63	1.90	14.40	8.82	11.77	6.19
	22	-9	25	13.85	12.03	1.81	45.28	1.94	346.15	200.42	300.87	155.14
	23	-8	23	13.29	12.30	0.99	22.78	1.98	305.72	165.96	282.94	143.18
A / F - BIV	24	-7	24	12.74	12.57	0.00	0.00	2.01	305.72	151.87	305.72	151.87
	25	-6	27	12.18	12.03	0.00	0.00	2.18	328.98	150.65	328.98	150.65
	26	-5	68	11.63	11.50	0.00	0.00	2.35	790.89	335.90	790.89	335.90
	27	-4	91	11.08	10.96	0.00	0.00	2.53	1008.00	399.16	1008.00	399.16
	28	-3	89	10.52	10.43	0.00	0.00	2.70	936.55	347.37	936.55	347.37
	29	-2	165	9.97	9.89	0.00	0.00	2.87	1644.92	573.77	1644.92	573.77
	30	-1	173	9.42	9.36	0.00	0.00	3.04	1628.86	536.22	1628.86	536.22
	31	0	240	8.86	8.82	0.00	0.00	3.21	2126.77	662.87	2126.77	662.87
	32	1	280	8.31	8.29	0.00	0.00	3.38	2326.15	688.37	2326.15	688.37
B	33	2	320	7.75	7.75	0.00	0.00	3.55	2481.23	698.94	2481.23	698.94
	34	3	357	7.20	7.14	0.00	0.00	3.84	2570.40	668.68	2570.40	668.68
	35	4	356	6.65	6.52	0.00	0.00	4.14	2366.03	571.78	2366.03	571.78
	36	5	303	6.09	5.91	0.00	0.00	4.43	1845.97	416.51	1845.97	416.51
	37	6	330	5.54	5.29	0.00	0.00	4.73	1827.69	386.73	1827.69	386.73
C	38	7	326	4.98	4.67	0.00	0.00	5.02	1624.98	323.70	1624.98	323.70
	39	8	348	4.43	4.18	0.00	0.00	5.25	1541.91	293.67	1541.91	293.67
	40	9	335	3.88	3.69	0.00	0.00	5.48	1298.77	236.95	1298.77	236.95
	41	10	315	3.32	3.20	0.00	0.00	5.71	1046.77	183.27	1046.77	183.27
	42	11	215	2.77	2.71	0.00	0.00	5.94	595.38	100.20	595.38	100.20
D	43	12	169	2.22	2.22	0.00	0.00	6.17	374.40	60.65	374.40	60.65
	44	13	151	1.66	1.72	0.00	0.00	6.40	250.89	39.18	250.89	39.18
	45	14	105	1.11	1.23	0.00	0.00	6.63	116.31	17.53	116.31	17.53
	46	15	74	0.55	0.74	0.00	0.00	6.86	40.98	5.97	40.98	5.97

SUM	29744.86	8225.13	29674.17	8154.44
SCOPon		3.62	**SCOPnet**	3.64

Detailed test results

Detailed SCOP part load test results - low temperature application - average climate – EN 14825

Detailed result for 'EN14825:2022' Average Low (A and F) A -7 /W34		
Tested according to:	EN14511:2022 and	EN14825:2022
Climate zone:		Average
Temperature application:		Low
Condition name:		A and F
Condition temperature:	°C	-7
Part load:	%	88%
Chosen Tbivalent	°C	-7
Tdesign	°C	-10
Pdesign	kW	14.70
Heating demand:	kW	13.00
CR:	-	1.0
Minimum flow reached:	-	No
Measurement type:		Transient
Integrated circulation pump:		Yes
Included corrections (Final result)		
Heating capacity	kW	**13.102**
COP	-	**2.568**
Power consumption	kW	**5.103**
Measured		
Heating capacity	kW	13.123
COP	-	2.560
Power consumption	kW	5.127
During heating		
Air temperature dry bulb	°C	-7.03
Air temperature wet bulb	°C	-8.04
Inlet temperature	°C	29.08
Outlet temperature	°C	34.20
Outlet temperature (Time averaged)	°C	**34.20**
Circulation pump		
Measured: Static differential pressure, liquid pump	Pa	5819
Calculated Hydraulic power	W	4
Calculated global efficiency	η	0.16
Calculated Capacity correction	W	20
Calculated Power correction	W	24
Water Flow	m^3/s	0.000683

Detailed result for 'EN14825:2022' Average Low (B) A 2 /W30		
Tested according to:		EN14511:2022 and EN14825:2022
Climate zone:		Average
Temperature application:		Low
Condition name:		B
Condition temperature:	°C	2
Part load:	%	54%
Chosen Tbivalent	°C	-7
Tdesign	°C	-10
Pdesign	kW	14.70
Heating demand:	kW	7.92
CR:	-	1.0
Minimum flow reached:	-	No
Measurement type:		Transient
Integrated circulation pump:		Yes
Included corrections (Final result)		
Heating capacity	kW	**7.833**
COP	-	**4.402**
Power consumption	kW	**1.779**
Measured		
Heating capacity	kW	7.838
COP	-	4.392
Power consumption	kW	1.784
During heating		
Air temperature dry bulb	°C	1.91
Air temperature wet bulb	°C	0.92
Inlet temperature	°C	25.08
Outlet temperature	°C	30.05
Outlet temperature (Time averaged)	°C	**30.05**
Circulation pump		
Measured: Static differential pressure, liquid pump	Pa	1489
Calculated Hydraulic power	W	1
Calculated global efficiency	η	0.12
Calculated Capacity correction	W	4
Calculated Power correction	W	5
Water Flow	m^3/s	0.000408

Detailed result for 'EN14825:2022' Average Low (C) A 7 /W27		
Tested according to:	EN14511:2022 and	EN14825:2022
Climate zone:		Average
Temperature application:		Low
Condition name:		C
Condition temperature:	°C	7
Part load:	%	35%
Chosen Tbivalent	°C	-7
Tdesign	°C	-10
Pdesign	kW	14.70
Heating demand:	kW	5.09
CR:	-	1.0
Minimum flow reached:	-	No
Measurement type:		Steady State
Integrated circulation pump:		Yes
Included corrections (Final result)		
Heating capacity	kW	**5.013**
COP	-	**7.055**
Power consumption	kW	**0.711**
Measured		
Heating capacity	kW	5.036
COP	-	6.820
Power consumption	kW	0.738
During heating		
Air temperature dry bulb	°C	6.96
Air temperature wet bulb	°C	6.02
Inlet temperature	°C	22.00
Outlet temperature	°C	26.78
Outlet temperature (Time averaged)	°C	**26.78**
Circulation pump		
Measured: Static differential pressure, liquid pump	Pa	19088
Calculated Hydraulic power	W	5
Calculated global efficiency	η	0.17
Calculated Capacity correction	W	23
Calculated Power correction	W	28
Water Flow	m^3/s	0.000253

Detailed result for 'EN14825:2022' Average Low (D) A 12 /W24		
Tested according to:	EN14511:2022 and	EN14825:2022
Climate zone:		Average
Temperature application:		Low
Condition name:		D
Condition temperature:	°C	12
Part load:	%	15%
Chosen Tbivalent	°C	-7
Tdesign	°C	-10
Pdesign	kW	14.70
Heating demand:	kW	2.26
CR:	-	0.4
Minimum flow reached:	-	No
Measurement type:		Steady State
Integrated circulation pump:		Yes
Included corrections (Final result)		
Heating capacity	kW	**5.623**
COP	-	**8.364**
Power consumption	kW	**0.672**
Measured		
Heating capacity	kW	5.646
COP	-	8.062
Power consumption	kW	0.700
During heating		
Air temperature dry bulb	°C	12.01
Air temperature wet bulb	°C	11.00
Inlet temperature	°C	22.00
Outlet temperature	°C	27.25
Outlet temperature (Time averaged)	°C	**24.11**
Circulation pump		
Measured: Static differential pressure, liquid pump	Pa	18920
Calculated Hydraulic power	W	5
Calculated global efficiency	η	0.17
Calculated Capacity correction	W	23
Calculated Power correction	W	28
Water Flow	m^3/s	0.000258

Detailed result for 'EN14825:2022' Average Low (E) A -10 /W35		
Tested according to:	EN14511:2022 and	EN14825:2022
Climate zone:		Average
Temperature application:		Low
Condition name:		E
Condition temperature:	°C	-10
Part load:	%	100%
Chosen Tbivalent	°C	-7
Tdesign	°C	-10
Pdesign	kW	14.70
Heating demand:	kW	14.70
CR:	-	1.0
Minimum flow reached:	-	No
Measurement type:		Transient
Integrated circulation pump:		Yes
Included corrections (Final result)		
Heating capacity	kW	**11.960**
COP	-	**2.350**
Power consumption	kW	**5.090**
Measured		
Heating capacity	kW	11.981
COP	-	2.343
Power consumption	kW	5.114
During heating		
Air temperature dry bulb	°C	-10.02
Air temperature wet bulb	°C	-11.02
Inlet temperature	°C	30.03
Outlet temperature	°C	34.83
Outlet temperature (Time averaged)	°C	**34.83**
Circulation pump		
Measured: Static differential pressure, liquid pump	Pa	6276
Calculated Hydraulic power	W	4
Calculated global efficiency	η	0.16
Calculated Capacity correction	W	21
Calculated Power correction	W	25
Water Flow	m^3/s	0.000639

Detailed SCOP part load test results - medium temperature application - average climate – EN 14825

Detailed result for 'EN14825:2022' Average Medium (A and F) A -7 /W52		
Tested according to:	EN14511:2022 and	EN14825:2022
Climate zone:		Average
Temperature application:		Medium
Condition name:		A and F
Condition temperature:	°C	-7
Part load:	%	88%
Chosen Tbivalent	°C	-7
Tdesign	°C	-10
Pdesign	kW	14.40
Heating demand:	kW	12.74
CR:	-	1.0
Minimum flow reached:	-	No
Measurement type:		Transient
Integrated circulation pump:		Yes
Included corrections (Final result)		
Heating capacity	kW	**12.569**
COP	-	**2.013**
Power consumption	kW	**6.243**
Measured		
Heating capacity	kW	12.574
COP	-	2.012
Power consumption	kW	6.249
During heating		
Air temperature dry bulb	°C	-7.05
Air temperature wet bulb	°C	-8.05
Inlet temperature	°C	44.05
Outlet temperature	°C	52.12
Outlet temperature (Time averaged)	°C	**52.12**
Circulation pump		
Measured: Static differential pressure, liquid pump	Pa	1837
Calculated Hydraulic power	W	1
Calculated global efficiency	η	0.12
Calculated Capacity correction	W	5
Calculated Power correction	W	6
Water Flow	m^3/s	0.000403

Detailed result for 'EN14825:2022' Average Medium (B) A 2 /W42		
Tested according to:	EN14511:2022 and	EN14825:2022
Climate zone:		Average
Temperature application:		Medium
Condition name:		B
Condition temperature:	°C	2
Part load:	%	54%
Chosen Tbivalent	°C	-7
Tdesign	°C	-10
Pdesign	kW	14.70
Heating demand:	kW	7.92
CR:	-	1.0
Minimum flow reached:	-	No
Measurement type:		Transient
Integrated circulation pump:		Yes
Included corrections (Final result)		
Heating capacity	kW	**7.995**
COP	-	**3.550**
Power consumption	kW	**2.252**
Measured		
Heating capacity	kW	7.997
COP	-	3.547
Power consumption	kW	2.255
During heating		
Air temperature dry bulb	°C	1.97
Air temperature wet bulb	°C	0.97
Inlet temperature	°C	34.04
Outlet temperature	°C	41.91
Outlet temperature (Time averaged)	°C	**41.91**
Circulation pump		
Measured: Static differential pressure, liquid pump	Pa	943
Calculated Hydraulic power	W	0
Calculated global efficiency	η	0.12
Calculated Capacity correction	W	2
Calculated Power correction	W	2
Water Flow	m^3/s	0.000263

Detailed result for 'EN14825:2022' Average Medium (C) A 7 /W36		
Tested according to:		EN14511:2022 and EN14825:2022
Climate zone:		Average
Temperature application:		Medium
Condition name:		C
Condition temperature:	°C	7
Part load:	%	35%
Chosen Tbivalent	°C	-7
Tdesign	°C	-10
Pdesign	kW	14.40
Heating demand:	kW	4.98
CR:	-	1.0
Minimum flow reached:	-	Yes
Measurement type:		Steady State
Integrated circulation pump:		Yes
Included corrections (Final result)		
Heating capacity	kW	**4.673**
COP	-	**5.020**
Power consumption	kW	**0.931**
Measured		
Heating capacity	kW	4.676
COP	-	5.007
Power consumption	kW	0.934
During heating		
Air temperature dry bulb	°C	6.99
Air temperature wet bulb	°C	6.02
Inlet temperature	°C	29.91
Outlet temperature	°C	35.70
Outlet temperature (Time averaged)	°C	**35.70**
Circulation pump		
Measured: Static differential pressure, liquid pump	Pa	1814
Calculated Hydraulic power	W	0
Calculated global efficiency	η	0.12
Calculated Capacity correction	W	3
Calculated Power correction	W	3
Water Flow	m^3/s	0.000195

Detailed result for 'EN14825:2022' Average Medium (D) A 12 /W30		
Tested according to:		EN14511:2022 and EN14825:2022
Climate zone:		Average
Temperature application:		Medium
Condition name:		D
Condition temperature:	°C	12
Part load:	%	15%
Chosen Tbivalent	°C	-7
Tdesign	°C	-10
Pdesign	kW	14.40
Heating demand:	kW	2.22
CR:	-	0.4
Minimum flow reached:	-	Yes
Measurement type:		Steady State
Integrated circulation pump:		Yes
Included corrections (Final result)		
Heating capacity	kW	**5.337**
COP	-	**6.275**
Power consumption	kW	**0.851**
Measured		
Heating capacity	kW	5.340
COP	-	6.253
Power consumption	kW	0.854
During heating		
Air temperature dry bulb	°C	12.01
Air temperature wet bulb	°C	10.99
Inlet temperature	°C	27.31
Outlet temperature	°C	33.91
Outlet temperature (Time averaged)	°C	**30.05**
Circulation pump		
Measured: Static differential pressure, liquid pump	Pa	2046
Calculated Hydraulic power	W	0
Calculated global efficiency	η	0.12
Calculated Capacity correction	W	3
Calculated Power correction	W	3
Water Flow	m^3/s	0.000195

Detailed result for 'EN14825:2022' Average Medium (E) A -10 /W55		
Tested according to:		EN14511:2022 and EN14825:2022
Climate zone:		Average
Temperature application:		Medium
Condition name:		E
Condition temperature:	°C	-10
Part load:	%	100%
Chosen Tbivalent	°C	-7
Tdesign	°C	-10
Pdesign	kW	14.40
Heating demand:	kW	14.40
CR:	-	1.0
Minimum flow reached:	-	No
Measurement type:		Steady State
Integrated circulation pump:		Yes
Included corrections (Final result)		
Heating capacity	kW	**11.768**
COP	-	**1.903**
Power consumption	kW	**6.185**
Measured		
Heating capacity	kW	11.827
COP	-	1.885
Power consumption	kW	6.274
During heating		
Air temperature dry bulb	°C	-9.97
Air temperature wet bulb	°C	-11.01
Inlet temperature	°C	46.97
Outlet temperature	°C	54.94
Outlet temperature (Time averaged)	°C	**54.94**
Circulation pump		
Measured: Static differential pressure, liquid pump	Pa	82233
Calculated Hydraulic power	W	30
Calculated global efficiency	η	0.34
Calculated Capacity correction	W	59
Calculated Power correction	W	88
Water Flow	m^3/s	0.000360

Detailed SCOP part load test results - low temperature application - warmer climate – EN 14825

Detailed result for 'EN14825:2022' Warmer Low (B) A 2 /W35		
Tested according to:	EN14511:2022 and	EN14825:2022
Climate zone:		Warmer
Temperature application:		Low
Condition name:		B
Condition temperature:	°C	2
Part load:	%	100%
Chosen Tbivalent	°C	7
Tdesign	°C	2
Pdesign	kW	14.30
Heating demand:	kW	14.30
CR:	-	1.0
Minimum flow reached:	-	No
Measurement type:		Transient
Integrated circulation pump:		Yes
Included corrections (Final result)		
Heating capacity	kW	**14.029**
COP	-	**3.079**
Power consumption	kW	**4.556**
Measured		
Heating capacity	kW	14.061
COP	-	3.058
Power consumption	kW	4.597
During heating		
Air temperature dry bulb	°C	2.21
Air temperature wet bulb	°C	0.86
Inlet temperature	°C	30.11
Outlet temperature	°C	35.10
Outlet temperature (Time averaged)	°C	**35.10**
Circulation pump		
Measured: Static differential pressure, liquid pump	Pa	11699
Calculated Hydraulic power	W	9
Calculated global efficiency	η	0.22
Calculated Capacity correction	W	32
Calculated Power correction	W	41
Water Flow	m^3/s	0.000778

Detailed SCOP part load test results - low temperature application - colder climate – EN 14825

Detailed result for 'EN14825:2022' Colder Low (A) A -7 /W30		
Tested according to:	EN14511:2022 and	EN14825:2022
Climate zone:		Colder
Temperature application:		Low
Condition name:		A
Condition temperature:	°C	-7
Part load:	%	61%
Chosen Tbivalent	°C	-15
Tdesign	°C	-22
Pdesign	kW	14.60
Heating demand:	kW	8.84
CR:	-	1.0
Minimum flow reached:	-	No
Measurement type:		Transient
Integrated circulation pump:		Yes
Included corrections (Final result)		
Heating capacity	kW	**8.779**
COP	-	**3.190**
Power consumption	kW	**2.752**
Measured		
Heating capacity	kW	8.789
COP	-	3.180
Power consumption	kW	2.764
During heating		
Air temperature dry bulb	°C	-7.07
Air temperature wet bulb	°C	-8.04
Inlet temperature	°C	25.01
Outlet temperature	°C	30.14
Outlet temperature (Time averaged)	°C	**30.14**
Circulation pump		
Measured: Static differential pressure, liquid pump	Pa	3598
Calculated Hydraulic power	W	2
Calculated global efficiency	η	0.13
Calculated Capacity correction	W	10
Calculated Power correction	W	12
Water Flow	m^3/s	0.000439

Detailed result for 'EN14825:2022' Colder Low (F and G) A -15 /W32		
Tested according to:		EN14511:2022 and EN14825:2022
Climate zone:		Colder
Temperature application:		Low
Condition name:		F and G
Condition temperature:	°C	-15
Part load:	%	82%
Chosen Tbivalent	°C	-15
Tdesign	°C	-22
Pdesign	kW	14.60
Heating demand:	kW	11.91
CR:	-	1.0
Minimum flow reached:	-	No
Measurement type:		Steady State
Integrated circulation pump:		Yes
Included corrections (Final result)		
Heating capacity	kW	**11.867**
COP	-	**2.379**
Power consumption	kW	**4.988**
Measured		
Heating capacity	kW	11.890
COP	-	2.370
Power consumption	kW	5.017
During heating		
Air temperature dry bulb	°C	-15.01
Air temperature wet bulb	°C	NA.
Inlet temperature	°C	27.00
Outlet temperature	°C	32.03
Outlet temperature (Time averaged)	°C	**32.03**
Circulation pump		
Measured: Static differential pressure, liquid pump	Pa	8866
Calculated Hydraulic power	W	5
Calculated global efficiency	η	0.18
Calculated Capacity correction	W	24
Calculated Power correction	W	29
Water Flow	m^3/s	0.000569

Detailed COP test results - low temperature – EN 14511

Detailed result for 'EN14511:2022' A7/W35		
Tested according to:		EN14511:2022
Minimum flow reached:		No
Measurement type:		Steady State
Integrated circulation pump:		Yes
Included corrections (Final result)		
Heating capacity	kW	**14.940**
COP	-	**4.392**
Power consumption	kW	**3.402**
Measured		
Heating capacity	kW	14.959
COP	-	4.369
Power consumption	kW	3.424
During heating		
Air temperature dry bulb	°C	6.99
Air temperature wet bulb	°C	6.00
Inlet temperature	°C	29.98
Outlet temperature	°C	35.00
Circulation pump		
Measured: Static differential pressure, liquid pump	Pa	4752
Calculated Hydraulic power	W	3
Calculated global efficiency	η	0.16
Calculated Capacity correction	W	18
Calculated Power correction	W	22
Water Flow	m^3/s	0.000717

Detailed COP test results - medium temperature – EN 14511

Detailed result for 'EN14511:2022' A7/W55		
Tested according to:		EN14511:2022
Minimum flow reached:		No
Measurement type:		Steady State
Integrated liquid pump:		Yes
Integrated liquid pump able to generate a positve ext. static pressure difference:		Yes
Included corrections (Final result)		
Heating capacity	kW	**15.730**
COP	-	**2.976**
Power consumption	kW	**5.286**
Measured		
Heating capacity	kW	15.741
COP	-	2.971
Power consumption	kW	5.299
During heating		
Air_inlet temperature dry bulb	°C	7.00
Air temperature wet bulb	°C	6.01
Water_inlet temperature	°C	47.00
water_outlet temperature	°C	54.96
Circulation pump		
Measured external static pressure difference, liquid pump	Pa	3520
Calculated Hydraulic power	W	2
Calculated global efficiency	η	0.13
Calculated Capacity correction	W	11
Calculated Power correction	W	13
Water Flow	m^3/s	0.000480

Detailed result for 'EN14511:2018' A7/W55		
Tested according to:		EN14511:2018
Minimum flow reached:		No
Measurement type:		Steady State
Integrated liquid pump:		Yes
Integrated liquid pump able to generate a positve ext. static pressure difference:		Yes
Included corrections (Final result)		
Heating capacity	kW	**15.730**
COP	-	**2.976**
Power consumption	kW	**5.286**
Measured		
Heating capacity	kW	15.741
COP	-	2.971
Power consumption	kW	5.299
During heating		
Air_inlet temperature dry bulb	°C	7.00
Air temperature wet bulb	°C	6.01
Water_inlet temperature	°C	47.00
water_outlet temperature	°C	54.96
Circulation pump		
Measured external static pressure difference, liquid pump	Pa	3520
Calculated Hydraulic power	W	2
Calculated global efficiency	η	0.13
Calculated Capacity correction	W	11
Calculated Power correction	W	13
Water Flow	m^3/s	0.000480

Detailed test results of sound power measurement – Test N#1

Sound power levels according to ISO 3743-1:2010

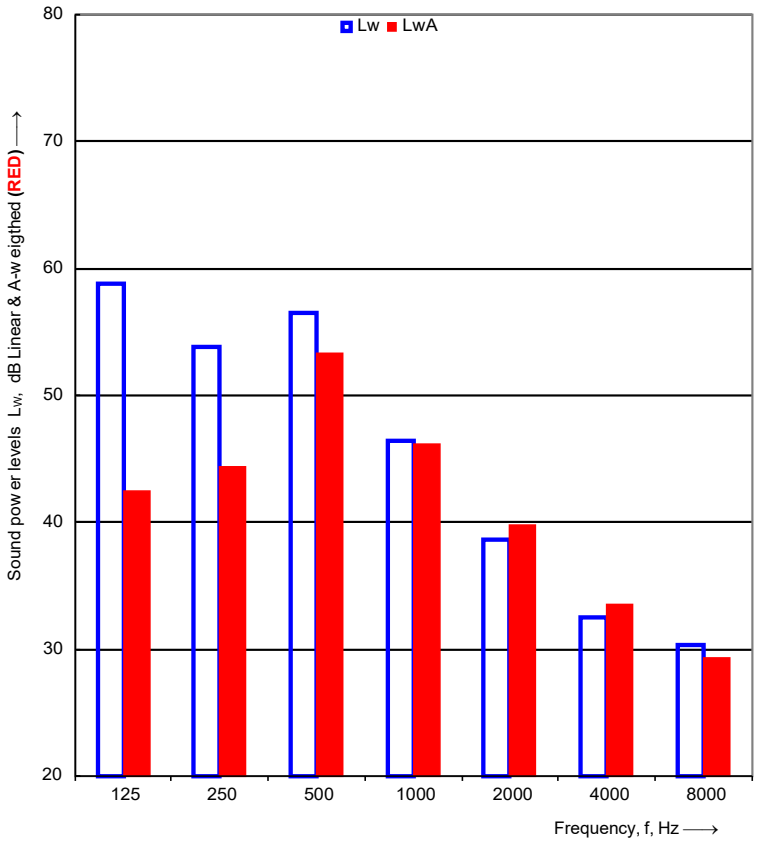
TEKNOLOGISK INSTITUT

Engineering method for small, movable sources in reverberant fields - Comparison method for hard-walled test rooms

Client:	Midea	Date of test:	17-04-2024
Object:	Type: Mono air to water heat pump, Model: MHC-V16WD2N7		
Mounting conditions:	The outdoor unit is mounted on the supporting metal support frame using six pieces of spring mounts vibration isolators and placed on four pieces of concrete tiles (20x20x2.5 cm). All of these are placed in a water drop dray on two pieces of heavy concrete tiles (90x90x10cm) laying on a vibration damping mat on the floor. The noise radiated by the outdoor unit has been measured in Test room 2.		
Operating conditions:	A7/W55, Compressor speed: 29[Hz], Fan speed: 400[rpm], Pump speed: 30[%], EXV1:95[%] , Heating capacity: 4.69 [kW], Power_input: 1.61 [kW], Water flow rate: 700 [l/h] and dP_water: 34 [mbar]		
Static pressure:	1007 hPa	Reference box:	
Air temperature:	7.0 °C	L1:	1.4 m
Relative air humidity:	84.0 %	L2:	0.4 m
Test room volume:	102.8 m³ Room: Room 2	L3:	0.9 m
Area, S, of test room:	138.9 m²	Volume:	0.5 m³

Frequency f [Hz]	L_W 1/3 octave [dB]	1/1 oct [dB]
100	55.0	
125	54.6	58.8
160	51.7	
200	51.9	
250	46.3	53.8
315	46.1	
400	46.7	
500	55.3	56.5
630	47.6	
800	43.4	
1000	41.4	46.4
1250	38.9	
1600	35.7	
2000	33.4	38.6
2500	31.3	
3150	28.5	
4000	28.2	32.5
5000	26.0	
6300	27.1	
8000	23.4	30.3 [2]
10000	25.3	

[2] Correction



Sound power level $L_W(A)$: **55.0 dB [re 1pW]** **Uncertainty σ_{tot}: 1.6 dB**

Name of test institute: DTI Date: 17-04-2024

No. of test report: 300-KLAB-24-007

Measurements are in full conformity with ISO 3743-1

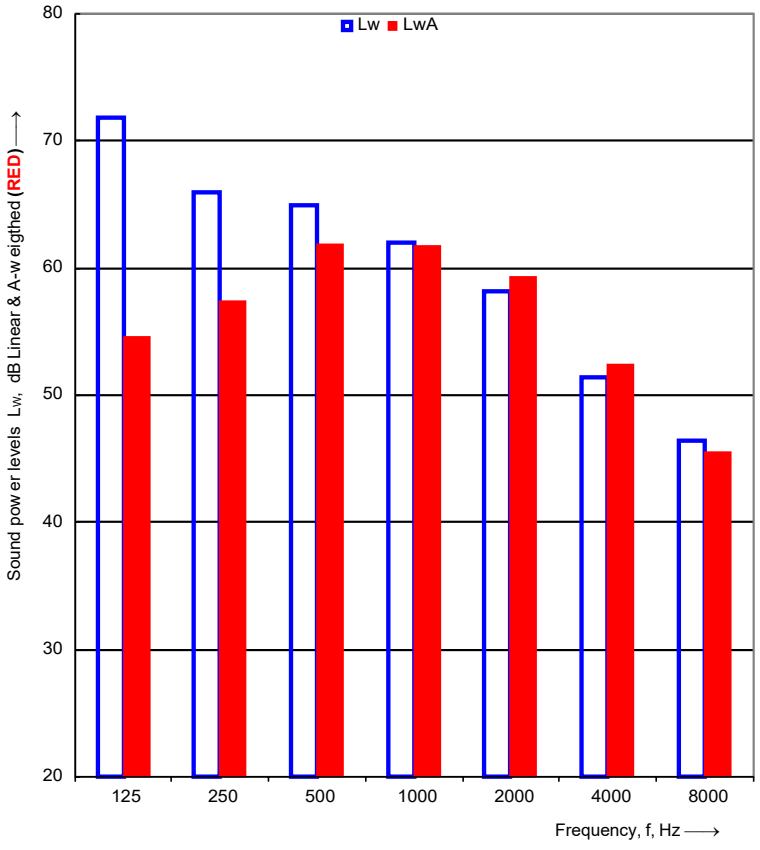
Detailed test results of sound power measurement – Test N#2

Sound power levels according to ISO 3743-1:2010

Engineering method for small, movable sources in reverberant fields - Comparison method for hard-walled test rooms

Client:	Midea	Date of test:	17-04-2024
Object:	Type: Mono air to water heat pump, Model: MHC-V16WD2N7		
Mounting conditions:	The outdoor unit is mounted on the supporting metal support frame using six pieces of spring mounts vibration isolators and placed on four pieces of concrete tiles (20x20x2.5 cm). All of these are placed in a water drop dray on two pieces of heavy concrete tiles (90x90x10cm) laying on a vibration damping mat on the floor. The noise radiated by the outdoor unit has been measured in Test room 2.		
Operating conditions:	A7/W55, Compressor speed: 86[Hz], Fan speed: 730[rpm], Pump speed: 43[%], EXV1: 160[%] , Heating capacity: 15.73[kW], Power_input: 5.28 [kW], Water flow rate: 1728 [l/h] and dP_water: 34 [mbar]		
Static pressure:	1007 hPa	Reference box:	
Air temperature:	7.0 °C	L1:	1.4 m
Relative air humidity:	84.0 %	L2:	0.4 m
Test room volume:	102.8 m³ Room: Room 2	L3:	0.9 m
Area, S, of test room:	138.9 m²	Volume:	0.5 m³

Frequency f [Hz]	L_W 1/3 octave [dB]	1/1 oct [dB]
100	70.3	
125	63.0	71.7
160	63.5	
200	61.6	
250	61.3	65.9
315	60.4	
400	58.8	
500	61.4	64.9
630	59.7	
800	59.0	
1000	56.9	62.0
1250	54.7	
1600	54.9	
2000	53.7	58.2
2500	50.6	
3150	48.3	
4000	46.6	51.3
5000	43.5	
6300	43.1	
8000	41.0	46.4
10000	40.2	



Sound power level $L_W(A)$: **66.9** dB [re 1pW] **Uncertainty** σ_{tot}: **1.6** dB

Name of test institute:	DTI	Date:	17-04-2024
No. of test report:	300-KLAB-24-007		

Measurements are in full conformity with ISO 3743-1

Appendix 1

Unit specification

Type of unit: Mono air to water heat pump
Manufacturer: Midea
Size of the heat pump: 0.4 x 0.9 x 1.4m (W x L x H)
Year of production: n/a.

Operating conditions and environment

The operating conditions of the unit under test fulfill the requirements for Class A.

The acoustic test chamber is a hard wall reverberant room (103 m^3) and equipped with relevant sound diffusing reflector panels. The acoustical test chamber fulfils the requirements of ISO3743-1 accuracy grade 2 (engineering grade).

The measurements of the average sound pressure levels in 1/3 octave frequency bands are carried out using three microphones in the test chamber. During the measurements, the microphones are traversed up and down for one meter in the arc of a quarter circle.

The picture below shows the installation of the unit during test, position of microphones, sound diffusing reflector panels, and the reference sound source.

Measurement instruments

Id nr.	Manufacturer	Description	Calibration company
100864	GRAS	Gras 40AE_26CA, ½" free field microphone, Room 1	Norsonic A/S, Norway
100865	GRAS	Gras 40AE_26CA, ½" free field microphone, Room 1	Norsonic A/S, Norway
100866	GRAS	Gras 40AE_26CA, ½" free field microphone, Room 1	Norsonic A/S, Norway
100867*	GRAS	Gras 40AE_26CA, ½" free field microphone, Room 2	Norsonic A/S, Norway
100868*	GRAS	Gras 40AE_26CA, ½" free field microphone, Room 2	Norsonic A/S, Norway
100869*	GRAS	Gras 40AE_26CA, ½" free field microphone, Room 2	Norsonic A/S, Norway
100870	GRAS	Gras 40AE_26CA, ½" free field microphone, Roof monitor	Norsonic A/S, Norway
100873*	Brüel & Kjær	Acoustical calibrator, Brüel & Kjær 4231	Element Metech, Denmark
100859	Norsonic	Reference sound source, Norsonic Nor278 Room 1	RISE, Sweden
100872*	Norsonic	Reference sound source, Norsonic Nor278 Room 2	RISE, Sweden
100620*	Norsonic	Multi-channel measurement system Nor850	Norsonic A/S, Norway

*Instruments are used for the actual measurements for the calculation of the test results.

The other instruments are used for control measurements.
All microphones are equipped with windshields.

Test Procedure

The measurements of the emitted sound power level from the heat pump are carried out according to the following standard:

- DS/EN 14511:2022
- EN 12102-1:2022
- ISO/EN 3743-1:2010

The basic acoustic measurement standard DS/EN 3743-1 is a comparison method using a calibrated reference sound source. Two series of sound pressure measurements are made under exactly the same acoustic conditions, e.g., the same microphone positions, temperature and air humidity. The calibrated sound power levels are known for the reference sound source at each frequency band, and they are used in the estimation of the acoustical correction factor for the calculation of the sound power emitted from the unit under test. The background noise levels are measured and used for relevant corrections.

The final total A-weighted sound power level is based on measurements and calculations in 1/3-octave levels, which then are summed into 1/1-octave levels. The A-weighted total sound power level is determined for the measured frequency range from 100 Hz to 10 kHz.

The actual microphone positions and correction values are saved in data files linked to the complete project documentation according to the DANAK-accreditation.

The complete measurement system is documented and regularly calibrated according to DANAK.

The detailed description of the measurement method is given in Danish in the quality database system "QA Web" at Danish Technological Institute, which is accessible by DANAK.

Measurement uncertainty

The uncertainty of sound power level in decibel is determined in accordance with ISO 3743-1, equation 22 $\sigma_{tot} = \sqrt{\sigma_{RO}^2 + \sigma_{omc}^2}$ where:

- σ_{RO} is the standard deviation of the reproducibility of the method
- σ_{omc} is the standard deviation describing the uncertainty associated with the instability of the operating and mounting conditions for the particular noise source during test.

σ_{RO} expresses the uncertainty in test results delivered by the different accredited test laboratories due to different instrumentation and implementation of measurement procedure as well different radiation characteristics of the noise source during test.

σ_{omc} expresses the uncertainty associated with the instability of the operating and mounting conditions for the particular noise source during test. The mounting and installation conditions in two DTI acoustical test chambers are well defined in the test procedure. Possible instability of the operating conditions is monitored and assessed prior to each noise test.

The test uncertainty σ_{omc} is calculated according to ISO3743-1 Annex C formula C.1 and is typically below 1.0dB. However, the uncertainty is rounded up to the nearest 0.5 or 1.0dB increment in the report. As pr. Table C.1 (accuracy grade 2), the uncertainty σ_{RO} is set to 1.5.

The expanded uncertainty U is calculated according to ISO 3743-1 equation 23:
 = where k = 2 for 95% confidence.

EXAMPLE: σ_{tot}: $\sqrt{1.5^2 + 0.5^2} = 1.6\ dB$ and $U(95\%) = 3.2\ dB$

Note: The expanded uncertainty does not include the standard deviation of production which is used in ISO4871 for the purpose of making noise declaration for batches of machines.

RAPORT Z TESTU

[logo]
Duński Instytut Technologiczny

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+45 72 20 20 00
Info@teknologisk.dk
www.teknologisk.dk

Nr raportu:
300-KLAB-24-007

Nazwa: RTHI/KAMA
Nr pliku: 226012
Załączniki: 1

Klient:
Firma: GD MIDEA HEATING & VENTILATING EQUIPMENT CO., LTD.
Adres: Penglai Industry Road, Beijiao
Miasto: Shunde, Foshan, Guangdong, 528311, Chiny
Tel: +86 13902810522

Podzespół:
Marka: Midea
Typ: Pompa ciepła powietrze-woda (monoblok)
Model: MHC-V16WD2N7
Nr serii: 541140007733A18010002Z
Rok prod: -/-
Jednostka zewnętrzna: NIE DOTYCZY

Daty: Testowany podzespół: styczeń - luty 2024 r.

Procedury Patrz cel (strona 2), aby zapoznać się z listą norm.

Uwagi: Urządzenie zostało dostarczone przez klienta. Montaż i ustawienia testowe zostały wykonane zgodnie z instrukcjami klienta. Pomiędzy każdym testem klient zmieniał różne parametry, takie jak prędkość sprężarki, zawór rozprężny, prędkość wentylatora, prędkość pompy, czas odszraniania, czas ogrzewania..

Warunki: Niniejszy test został przeprowadzony w ramach akredytacji zgodnie z międzynarodowymi wymogami (ISO/IEC 17025:2017) oraz zgodnie z Ogólnymi Warunkami Duńskiego Instytutu Technologicznego. Wyniki testu odnoszą się wyłącznie do testowanego elementu. Niniejszy raport z testów może być cytowany we fragmentach wyłącznie za pisemną Duńskiego Instytutu Technologicznego.

Klient nie może wspominać ani odnosić się do Duńskiego Instytutu Technologicznego lub pracowników Instytutu Technologicznego w celach reklamowych lub marketingowych, chyba że Duński Instytut Technologiczny udzielił pisemnej zgody w każdym przypadku.

Dział/Centrum: Duński Instytut Technologiczny
Energia i klimat
Laboratorium pomp ciepła, Aarhus

Data: 2024.06.06

Podpis:
Rasmus Thisgaard
B.TecMan i MarEng

Współczytelnik:
Kamathasan Arumugam
B.TecMan i MarEng

[znak graficzny]
DOKUMENT PODPISANY CYFROWO
5 czerwca 2024 r.
DUŃSKI INSTYTUT TECHNOLOGICZNY

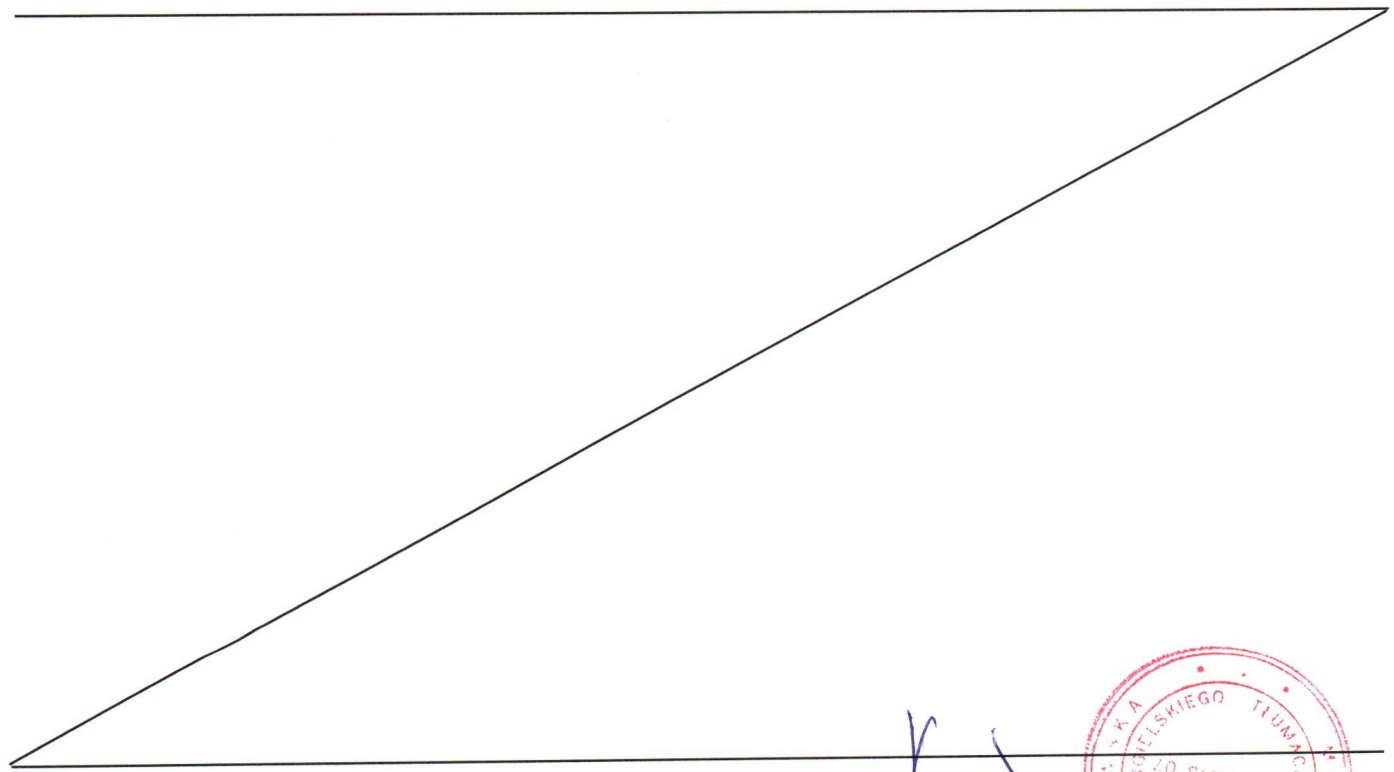
[logotypy]
Test nr rej. 300

Pompy ciepła o identycznej konstrukcji

Według GD MIDEA HEATING & VENTILATING EQUIPMENT CO. LTD., pompy ciepła wymienione w poniższej tabeli są uznawane za identyczne z testowanym urządzeniem. Mają one identyczną

a. wydajność grzewczą
b. obieg czynnika chłodniczego (w tym masę czynnika chłodniczego)
c. źródło ciepła i czynnik pochłaniający
d. główne komponenty / zasadę działania i strategię sterowania
e. taką samą obudowę zewnętrzną

Midea	MHC-V16WD2N7
Midea	MHC-V16WD2N7-E30
Midea	MHC-V16WD2N7-ER60
Midea	MHC-V16WD2N7-ER90



Cel

Celem niniejszego raportu jest udokumentowanie następujących kwestii:

Sezonowy współczynnik wydajności (SCOP) przy zastosowaniu w niskiej i średniej temperaturze dla klimatu umiarkowanego zgodnie z normą EN 14825:2022.

W celu obliczenia SCOP przeprowadzono testy w warunkach obciążenia częściowego podanych w tabelach na stronie 5 i 6.

Test obciążenia częściowego SCOP w warunkach $SCOP_{B/F}$ w zastosowaniu niskotemperaturowym dla cieplejszego klimatu zgodnie z EN 14825:2022.

Warunki testu obciążenia częściowego SCOP dla $SCOP_A$ i $SCOP_{F/G}$ w niskiej temperaturze dla chłodniejszego klimatu zgodnie z EN 14825:2022.

Standardowe warunki znamionowe testu COP A7/W35 i A7/W55 zgodnie z normą EN 14511:2022.

Wymagania eksploatacyjne zgodnie z normą EN 14511-4:2022
- 4.2.1 Testy rozruchowe i eksploatacyjne
- 4.5 Odcięcie przepływu nośnika ciepła
- 4.6 Całkowita awaria zasilania

Pomiary mocy akustycznej zgodnie z normą EN 12102-1:2022.

Warunki testu

Warunki testowe SCOP dla niskich temperatur - EN 14825

Warunki obciążenia częściowego dla referencyjnego SCOP i referencyjnego SCOPon do obliczeń jednostek powietrze-woda do zastosowań niskotemperaturowych dla referencyjnego sezonu grzewczego;
„A" = umiarkowany, „W" = cieplejszy, a „C" = zimniejszy klimat.

	Współczynnik obciążenia częściowego w %				Zewnętrzny wymiennik ciepła Temperatura termometru suchego (mokrego) °C		Wewnętrzny wymiennik ciepła			
							Stały wylot °C	Zmienny wylot [d] °C		
	Wzór	Umiarkowany klimat	Cieplejszy klimat	Zimniejszy klimat	Powietrze zewnętrzne	Powietrze wylotowe	Wszystkie klimaty	Umiarkowany klimat	Cieplejszy klimat	Zimniejszy klimat
A	(-7-16)/ (Tdesignh – 16)	88,46	nie dotyczy	60,53	-7(-8)	20(12)	a / 35	a / 34	nie dotyczy	a / 30
B	(+2 -16) / (Tdesignh – 16)	53,85	100,00	36,84	2(1)	20(12)	a / 35	a / 30	a / 35	a /27
C	(+7-16)/ (Tdesignh – 16)	34,62	64,29	23,68	7(6)	20(12)	a / 35	a / 27	a / 31	a/25
D	(+12- 16) / (Tdesignh – 16)	15,38	28,57	10,53	12(11)	20(12)	a / 35	a / 24	a / 26	a /24
E	*(TOLe* - 16) / (Tdesignh – 16)				*TOLe*	20(12]	a / 35	a/b	a/b	a/b
F	*(Tbiv* - 16) / (Tdesignh – 16)				*Tbiv*	20(12]	a / 35	a/c	a/c	a/c
G	(-15-16) / (Tdesignh – 16)	nie dotyczy	nie dotyczy	81,58	-15	20(12)	a / 35	nie dotyczy	nie dotyczy	a/32

Dodatkowe informacje

Klimat	Tdesignh [°C]	Tbivalent [°C]	TOL [°C]	Temperatura na wylocie	Natężenie przepływu
Umiarkowany	-10	-7	-10	Zmienna	Zmienne
Cieplejszy	2	7	2	Zmienna	Zmienne
Zimniejszy	-22	-15	-22	Zmienna	Zmienne

[logotypy]
Test nr rej. 300

Warunki testowe SCOP dla umiarkowanych temperatur - EN 14825

Warunki obciążenia częściowego dla referencyjnego SCOP i referencyjnego SCOPon do obliczeń jednostek powietrze-woda do zastosowań w temperaturach umiarkowanych dla referencyjnego sezonu grzewczego;
„A" = umiarkowany, „W" = cieplejszy, a „C" = zimniejszy klimat.

	Współczynnik obciążenia częściowego w %				Zewnętrzny wymiennik ciepła Temperatura termometru suchego (mokrego) °C		Wewnętrzny wymiennik ciepła			
							Stały wylot °C	Zmienny wylot[d] °C		
	Wzór	Umiarkowany klimat	Cieplejszy klimat	Zimniejszy klimat	Powietrze zewnętrzne	Powietrze wylotowe	Wszystkie klimaty	Umiarkowany klimat	Cieplejszy klimat	Zimniejszy klimat
A	(-7-16)/ (Tdesignh – 16)	88,46	nie dotyczy	60,53	-7(-8)	20(12)	a / 55	a / 52	nie dotyczy	a / 44
B	(+2 -16) / (Tdesignh – 16)	53,85	100,00	36,84	2(1)	20(12)	a / 55	a / 42	a / 55	a /37
C	(+7-16)/ (Tdesignh – 16)	34,62	64,29	23,68	7(6)	20(12)	a / 55	a / 36	a / 46	a/32
D	(+12- 16) / (Tdesignh – 16)	15,38	28,57	10,53	12(11)	20(12)	a / 55	a / 30	a / 34	a /28
E	*(TOLe-* 16) / (Tdesignh – 16)				*TOLe*	20(12)	a / 55	a/b	a/b	a/b
F	*(Tbiv-* 16) / (Tdesignh – 16)				*Tbiv*	20(12)	a / 55	a/c	a/c	a/c
G	(-15-16) / (Tdesignh – 16)	nie dotyczy	nie dotyczy	81,58	-15	20(12)	a / 55	nie dotyczy	nie dotyczy	a/49

Dodatkowe informacje

Klimat	Tdesignh [°C]	Tbivalent [°C]	TOL [°C]	Temperatura na wylocie	Natężenie przepływu
Umiarkowany	-10	-7	-10	Zmienna	Zmienna

Tłumaczka przysięgła języka angielskiego

Warunki testu COP - niska temperatura - EN 14511

Nr	Źródło ciepła		Radiator		Ustawienia pompy ciepła
	Temperatura termometru suchego na wlocie (°C)	Temperatura termometru mokrego na wlocie (°C)	Temperatura na wlocie (°C)	Temperatura na wylocie (°C)	
1S	7	6	30	35	

S: Standardowy warunek oceny

Warunki testu COP - umiarkowana temperatura - EN 14511

Nr	Źródło ciepła		Radiator		Ustawienia pompy ciepła
	Temperatura termometru suchego na wlocie (°C)	Temperatura termometru mokrego na wlocie (°C)	Temperatura na wlocie (°C)	Temperatura na wylocie (°C)	
1S	7	6	47	55	

S: Standardowy warunek oceny

Warunki testowe dla wymagań eksploatacyjnych - EN 14511-4

Nr	Źródło ciepła		Radiator	Natężenie przepływu wody w wewnętrznym wymienniku ciepła	Test
	Temperatura termometru suchego na wlocie (°C)	Temperatura termometru mokrego na wlocie (°C)	Temperatura na wlocie (°C)		
1	-25	-	12	600 L/h	Rozruch
2	-25	-	48	600 L/h	Działanie

[logotypy]
Test nr rej. 300

Warunki testowe odcięcia nośnika ciepła - EN 14511-4

Nr	Źródło ciepła		Radiator		Wymiennik ciepła
	Temperatura termometru suchego na wlocie (°C)	Temperatura termometru mokrego na wlocie (°C)	Temperatura na wlocie (°C)	Temperatura na wylocie (°C)	
1	7	6	47	55	Wewnętrzny
2	7	6	47	55	Zewnętrzny

Warunki testu dla całkowitej awarii zasilania - EN 14511-4

Nr	Źródło ciepła		Radiator	
	Temperatura termometru suchego na wlocie (°C)	Temperatura termometru mokrego na wlocie (°C)	Temperatura na wlocie (°C)	Temperatura na wylocie (°C)
1	7	6	47	55

Warunki testowe dla pomiarów mocy akustycznej - EN 12102-1

Nr	Warunki testu		Ustawienie pompy ciepła			
	Zewnętrzny wymiennik ciepła (termometr suchy/termometr mokry) (°C)	Wewnętrzny wymiennik ciepła (wlot/wylot) (°C)	Prędkość sprężarki (Hz)	Prędkość wentylatora na zewnątrz (obr./min)	Moc grzewcza (kW)	Moc wejściowa (kW)
1E	7/6	47/55	29	400	4,69	1.61
2S	7/6	47/55	86	730	15,73	5,28

E) Oznaczenie ErP
S) Standardowy warunek oceny

[logotypy]
Test nr rej. 300

Wyniki testu

Wyniki testu SCOP w niskiej temperaturze - średnia sezonu grzewczego - EN 14825

Model (zewnętrzny)	MHC-V16WD2N7
Monoblokowa pompa ciepła powietrze-woda	T
Niskotemperaturowa pompa ciepła	N
Wyposażony w dodatkową grzałkę	N
Kombinowany podgrzewacz z pompą ciepła	N
Odwracalny	T

Znamionowa moc cieplna 1)		**Prated** *[znamionowa]*		**14,7** [kW]
Sezonowa efektywność energetyczna ogrzewania pomieszczeń		n_s		**182,6 [%]**
		SCOP		**4,64 [-]**
Zmierzona wydajność ogrzewania dla częściowego obciążenia przy temperaturze zewnętrznej Tj	Umiarkowany klimat Zastosowanie w niskich temperaturach	Tj = -15 °C	Pdh	- [kW]
		Tj = -7 °C	Pdh	13,10 [kW]
		Tj = 2 °C	Pdh	7,83 [kW]
		Tj = 7 °C	Pdh	5,01 [kW]
		Tj = 12 °C	Pdh	5,62 [kW]
		Tj = temperatura dwuwartościowa	Pdh	13,10 [kW]
		Tj = granica działania	Pdh	11,96 [kW]
Zmierzony współczynnik wydajności w temperaturze zewnętrznej Tj	Umiarkowany klimat Zastosowanie w niskich temperaturach	Tj = - 15 °C	COPd	-[-]
		Tj = -7 °C	COPd	2,57 [-]
		Tj = 2 °C	COPd	4,40 [-]
		Tj = 7 °C	COPd	7,06 [-]
		Tj = 12 °C	COPd	8,36 [-]
		Tj = temperatura dwuwartościowa	COPd	2,57 [-]
		Tj = granica działania	COPd	2,35 [-]
Temperatura dwuwartościowa		Tbivalent		-7 [°C]
Limit działania		TOL		-10 [°C]
temperatury		WTOL		-[°C]
Współczynnik degradacji		Cdh		0,99 [-]
Pobór mocy w trybach innych niż tryb aktywny		Tryb wyłączenia	POFF	0,010 [kW]
		Tryb wyłączenia termostatu	PTO	0,010 [kW]
		Tryb gotowości	**Psa**	0,010 [kW]
		Tryb grzałki skrzyni korbowej 2)	PCK	0,010 [kW]
Dodatkowa nagrzewnica 1)		Znamionowa moc cieplna Rodzaj pobieranej energii	Psup	2,74 [kW] Elektryczny
Inne przedmioty		Kontrola wydajności		Zmienna
		Kontrola przepływu wody		Zmienna
		Natężenie przepływu wody		-
		Roczne zużycie energii	QHE	6545 [kWh]

1) W przypadku ogrzewaczy pomieszczeń z pompą ciepła i ogrzewaczy wielofunkcyjnych z pompą ciepła znamionowa moc cieplna, Prated, jest równa projektowemu obciążeniu grzewczemu, Pdesignh, a znamionowa moc grzewcza dodatkowego podgrzewacza, Psup, jest równa dodatkowej wydajności grzewczej, sup(Tj).

1) Do obliczenia SCOP używana jest wartość PCK - PSB. Patrz sekcja „SCOP – szczegółowe obliczenia"

[logotypy]

Wyniki testu SCOP w umiarkowanej temperaturze - średnia sezonu grzewczego - EN 14825

Model (zewnętrzny)	MHC-V16WD2N7
Monoblokowa pompa ciepła powietrze-woda	T
Niskotemperaturowa pompa ciepła	N
Wyposażony w dodatkową grzałkę	N
Kombinowany podgrzewacz z pompą ciepła	N
Odwracalny	T

Znamionowa moc cieplna 1)		**Prated**		**14,4** [kW]
Sezonowa efektywność energetyczna ogrzewania pomieszczeń		η_s		**141,6 [%]**
		SCOP		**3,62 [-]**
Zmierzona wydajność ogrzewania dla częściowego obciążenia przy temperaturze zewnętrznej Tj	Umiarkowany klimat Zastosowanie w umiarkowanych temperaturach	Tj = -15 °C	Pdh	- [kW]
		Tj = -7 °C	Pdh	12,57 [kW]
		Tj = 2 °C	Pdh	8,00 [kW]
		Tj = 7 °C	Pdh	4,67 [kW]
		Tj = 12 °C	Pdh	5,34 [kW]
		Tj = temperatura dwuwartościowa	Pdh	12,57 [kW]
		Tj = granica działania	Pdh	11,77 [kW]
Zmierzony współczynnik wydajności w temperaturze zewnętrznej Tj	Umiarkowany klimat Zastosowanie w umiarkowanych temperaturach	Tj = - 15 °C	COPd	-[-]
		Tj = -7 °C	COPd	2,01 [-]
		Tj = 2 °C	COPd	3,55 [-]
		Tj = 7 °C	COPd	5,02 [-]
		Tj = 12 °C	COPd6	6,28 [-]
		Tj = temperatura dwuwartościowa	COPd	2,01 [-]
		Tj = granica działania	COPd	1,90 [-]
Temperatura dwuwartościowa		Tbivalent		-7 [°C]
Limit działania		TOL		-10 [°C]
temperatury		WTOL		-[°C]
Współczynnik degradacji		Cdh		0,99 [-]
Pobór mocy w trybach innych niż tryb aktywny		Tryb wyłączenia	POFF	0,010 [kW]
		Tryb wyłączenia termostatu	PTO	0,010 [kW]
		Tryb gotowości	**Psa**	0,010 [kW]
		Tryb grzałki skrzyni korbowej 2)	PCK	0,010 [kW]
Dodatkowa nagrzewnica 1)		Znamionowa moc cieplna Rodzaj pobieranej energii	Psup	2,63 [kW] Elektryczny
Inne przedmioty		Kontrola wydajności		Zmienna
		Kontrola przepływu wody		Zmienna
		Natężenie przepływu wody		-
		Roczne zużycie energii	QHE	8228 [kWh]

1) W przypadku ogrzewaczy pomieszczeń z pompą ciepła i ogrzewaczy wielofunkcyjnych z pompą ciepła znamionowa moc cieplna. Prated, jest równa projektowemu obciążeniu grzewczemu, Pdesignh, a znamionowa moc grzewcza dodatkowego podgrzewacza, Psup, jest równa dodatkowej wydajności grzewczej, sup(Tj).

1) Do obliczenia SCOP używana jest wartość PCK - PSB. Patrz sekcja „SCOP – szczegółowe obliczenia"

[logotypy]
Test nr rej. 300

Wyniki testów dla cieplejszego klimatu, niska temperatura zgodnie z EN14825

Nr	Warunki testu	Moc grzewcza [kW]	COP
1	E i B	14,029	3,079

Wyniki testów dla chłodniejszego klimatu, niska temperatura zgodnie z EN14825

Nr	Warunki testu	Moc grzewcza [kW]	COP
1	A	8,779	3,190
2	F/G	11,867	2,379

Wyniki testu COP - niska temperatura - EN 14511

Nr	Warunki testu	Moc grzewcza [kW]	COP
1	A7/W35	14,940	4,392

Wyniki testu COP - umiarkowana temperatura - EN 14511

Nr	Warunki testu	Moc grzewcza [kW]	COP
1	A7/W55	15,730	2,976

Wyniki testu rozruchu i działania - EN 14511-4

Nr	Warunki testowe wlot powietrza/wody [°C]	Ocena testu
Rozruch	A-25/W12	Zaliczono
Działanie	A-25/W48	Zaliczono

Wyniki testu odcięcia nośnika ciepła - EN 14511-4

Nr	Wymiennik ciepła	Ocena testu
1	Wewnętrzny	Zaliczono
2	Zewnętrzny	Zaliczono

Wyniki testu dla całkowitej awarii zasilania - EN 14511-4

Nr	Ocena testu
1	Zaliczono

Wyniki pomiarów mocy akustycznej - EN 12102-1

Nr	Warunki testu	Poziom mocy akustycznej LW(A) [dB re 1pW]	Niepewność σ_{tot} [dB]
1E	A7/W55	55,0	1,6
2S	A7/W55	66,9	1,6

E) Oznaczenie ErP
S) Standardowy warunek oceny

[logotypy]
Test nr rej. 300

Ja, Małgorzata Kostrowska tłumacz przysięgły języka angielskiego (wpisana na listę tłumaczy przysięgłych Ministra Sprawiedliwości pod Nr TP/313/07), zaświadczam zgodność powyższego tłumaczenia z przedłożonym dokumentem sporządzonym w języku angielskim.
Nr rep.: 2013/2024
Data: 12.06.2024

OŚWIADCZENIE

Producent **GD Midea Heating & Ventilating Equipment Co. Ltd (Penglai industry road, Beijiao, Shunde, Foshan, Guangdong, P.R China)** oświadcza, iż pompy ciepła

1) MHC-V12W/D2RN7-E30
Oznaczenie/typ/identyfikator modelu

2) MHC-V14W/D2RN7-E30
Oznaczenie/typ/identyfikator modelu

3) MHC-V16W/D2RN7-E30
Oznaczenie/typ/identyfikator modelu

Należą do jednego podtypu w danym typoszeregu i spełniają łącznie następujące warunki:

- identyczna konstrukcja obiegu chłodniczego, ten sam czynnik chłodniczy/roboczy;
- ten sam producent, typ i liczba sprężarek;
- ten sam typ elementu rozprężnego;
- ten sam typ skraplacza;
- ten sam typ parownika;
- ten sam typ procesu odszraniania;
- ten sam sterownik i zasada sterowania wydajnością;
- ten sam producent, typ i liczba wentylatorów parownika (w przypadku powietrznych pomp ciepła) i zasada sterowania wydajnością (stała, zmienna lub stopniowana regulacja prędkości obrotowej);
- urządzenia z i bez zaworu czterodrogowego nie mogą być zaliczone do tego samego typoszeregu.

18.06.2024 KRAKÓW
Miejscowość, data

Podpis osoby upoważnionej

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NIP 524-27-12-474, KRS 0000359324

NABILATON / NOWOCZESNE ROZWIĄZANIA HVAC

Pismo nr:	**PN/2024/011/DP**		
To:	Zainteresowani	From:	Paweł Kula
Fax:		Pages:	1/1
Mobile:		Data:	2024-06-19
Dot.:	Nomenklatura pomp ciepła Midea M-Thermal R290	DW:	

Szanowni Państwo,

w związku z przedłożeniem raportu z testu pompy ciepła A/W Midea M-Themrmal Arctic R290 o modelu MHC-V16WD2N7 dla urządzenia o modelu MHC-V16WD2RN7-E30 znajdującego się w wykazie na liście ZUM, uprzejmie informuje, iż urządzenia są tożsame natomiast dodatkowe symbole w modelu urządzenia z listy ZUM kolejno oznaczają:

„R" - informuje, że dany model zasilany jest trójfazowo

"E30" - odnosi się do mocy szczytowego źródła ciepła, którym jest wbudowana grzałka elektryczna o mocy 3kW

Chciałbym również zaznaczyć, że różnice w zasilaniu (trójfazowe) oraz wyposażeniu urządzenia o szczytowe źródło ciepła (grzałka elektryczna 3kW) nie mają wpływu na wartości parametrów technicznych urządzenia, które zostało przetestowane i umieszczone w raporcie technicznym.

Z poważaniem
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