L 1045.1

TEST REPORT
39-17758/T

Product:	Outdoor Air/Water Heat pump - monobloc
Type designation:	**TAHMV12S A**
Customer:	Guangdong Tongyi Heat Pump Science and Technology Corp. Room 2001-2010, 20/F, No.159 Middle Qiaozhong Road 510163 Liwan District, Guangzhou CHINA
Manufacturer:	Guangdong Tongyi Heat Pump Science and Technology Corp. Room 2001-2010, 20/F, No.159 Middle Qiaozhong Road 510163 Liwan District, Guangzhou CHINA
Report issue date:	2024-07-18
Distribution list:	1 copy to the Customer 1 copy to the Engineering Test Institute

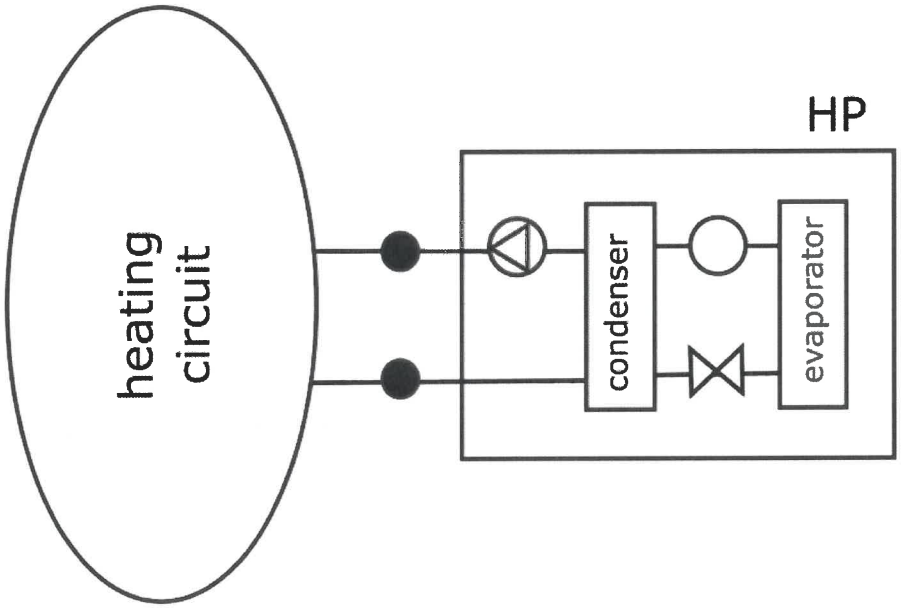
I. Description of product tested

The Heat pump **TAHMV12S A** supplied by the company **Guangdong Tongyi Heat Pump Science and Technology Corp.** is structurally adapted to operate in air/water system. Device is designed as monobloc placed outdoor. Refrigerant R32 is used with charge 2.2 kg. Power supply is a three-phase. Heat pump is able to work in heating and cooling mode. Heat pump is working with fixed flow rate.

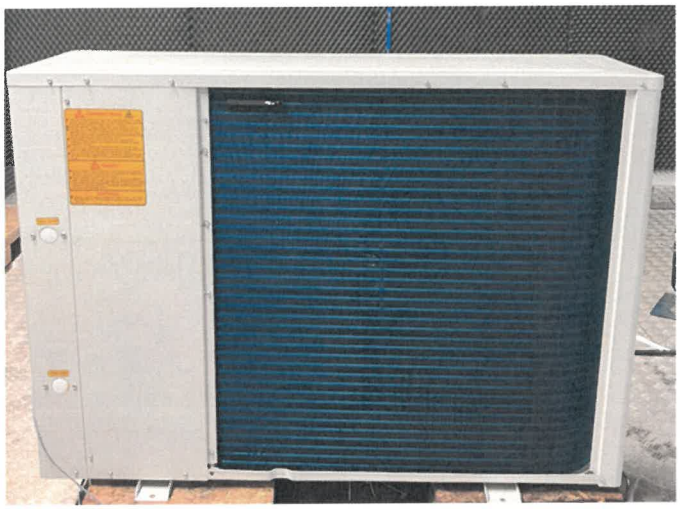
Main components of the outdoor unit **TAHMV12S A**:

- Serial number NETAHMV12SBWY12SX000288
- Cuboid shape with dimensions 1260 × 425 × 865 mm (W × D × H)
- Frame and casing made of varnished steel sheets
- L-shaped evaporator, 3 rows, dimensions 840 × 20 × 1140 mm (W × D × H), spacing 2 mm
- Plate condenser, dimensions 70 × 30 × 310 mm (W × D × H) including insulation
- Plate condenser, dimensions 140 × 140 × 340 mm (W × D × H) including insulation
- Compressor Panasonic 9KD420ZAA2J
- Refrigerant R32 (2.2 kg)
- Refrigerant accumulator
- Axial fan Ø560 mm
- DC motor ZSFN-310-8-85F
- Circulation pump SHIMGE
- Paddle flow switch ACOL
- Expansion tank 2L ACOL
- Pressure sensors
- Temperature sensors
- Refrigerant pipes

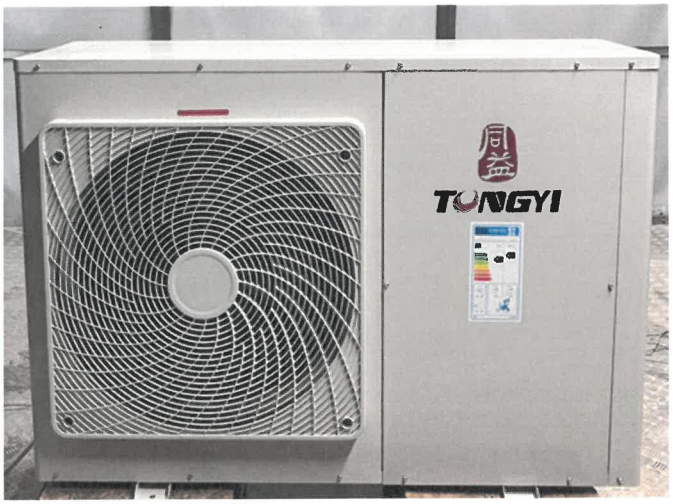
Scheme:



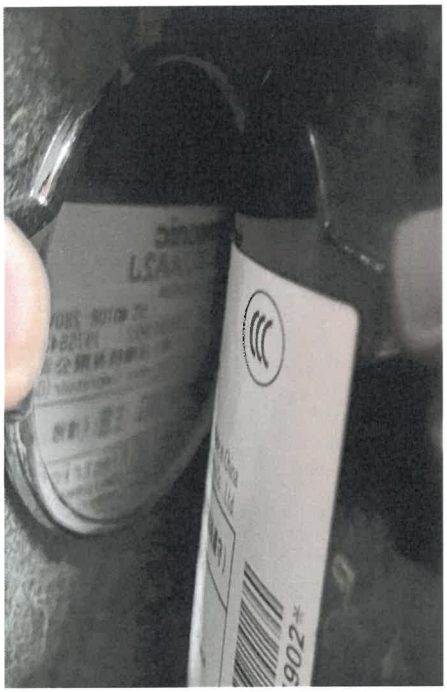
Photodocumentation:



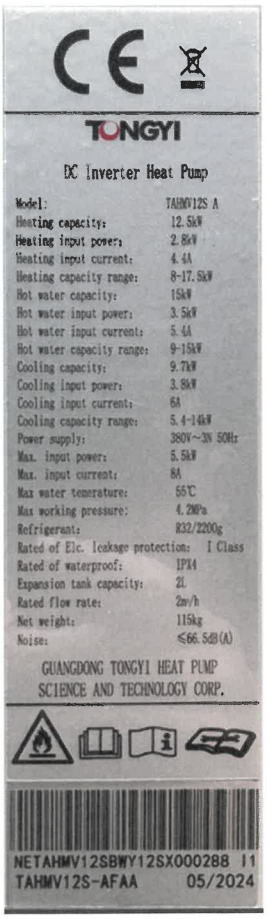
Heat pump TAHMV12S A – outdoor unit
– Front view –



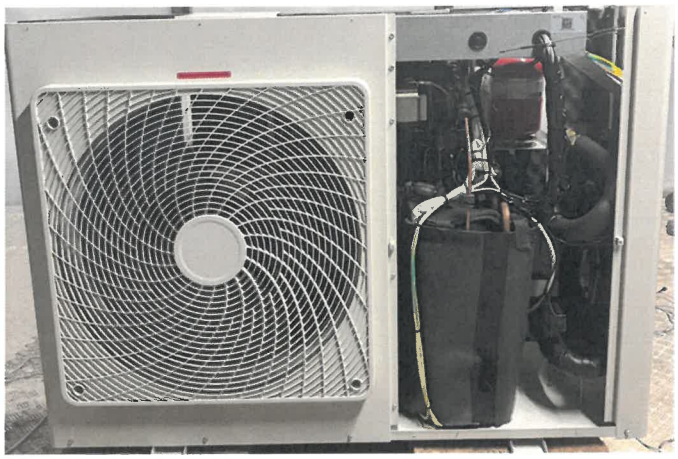
Heat pump TAHMV12S A – outdoor unit
– Back view –



Heat pump TAHMV12S A – outdoor unit
– Compressor label –



Heat pump TAHMV12S A – outdoor unit
– Label –



Heat pump TAHMV12S A – outdoor unit
– Without cover –

II. Sample tested

SZU reg. no.	Product name	Date of submission
1212.24.40194.001	TAHMV12S	2024-06-19

The visual inspection, tests and verification were carried out by Ing. Alexandr Jordanov and Ing. Dominik Šedivý, Ph.D. at the test station of SZU.
The tests were performed using measuring and testing equipment with valid calibration.

III. Measuring and test equipment:

No.	Description	Inventory number
1.	Electrical energy meter	022370/1
2.	Digital watt meter	MaR01/EM01
3.	Flow meter Krohne Optiflux	022370/5
4.	Barometer	022370/7
5.	Differential pressure gauge	MaR01_TI
6.	Temperature-humidity meter HC2-IC305	022370/10
7.	Temperature-humidity meter HC2-IC305	022370/11 022370/12
8.	Thermometers	022370/13

IV. Methods, results of tests and verifications

No.	Test objective	Requirement	Method of test	Documentation	Test evaluation/ verification *
1.	Rating conditions	–	ČSN EN 14511-2:2023 ČSN EN 14511-3:2023	Page No. 6	x
2.	Seasonal performance tests and SCOP calculation – Low temperature application	–	ČSN EN 14511-3:2023 ČSN EN 14825:2023	Page No. 7-13	x
3.	Seasonal performance tests and SCOP calculation – Medium temperature application	–	ČSN EN 14511-3:2023 ČSN EN 14825:2023	Page No. 14-20	x
*) **Evaluation / statement of conformity:** +..... Requirement fulfilled -..... Requirement not fulfilled 0 .....Not applicable x .....Not evaluated					

Note:
The stated extended measurement uncertainties are calculated as a factor of the measurement uncertainty and the extension coefficient k=2, corresponding to the coverage certainty of 95% as regards standard classification.

If a statement of conformity is provided, the decision rule pursuant to ILAC-G8:09/2019, Art. 4.2.1 - binary statement for the simple acceptance rule shall apply.

Test objective:	Rating conditions
Exact name of the test procedure:	**1.37 - Tests of leakage, pressure resistance, thermal and technical parameters, combustion efficiency, safety functions**
Test method:	ČSN EN 14511-2:2023, ČSN EN 14511-3:2023
Sample tested:	Heat pump TAHMV12S A
Measuring equipment used:	see Chapter III

Specification of the assessment condition		**A7/W35**	**A7/W55**
Date of testing		**2024-07-09**	**2024-07-09**
Transient test procedure	YES / NO	NO	NO
Average defrost time of 1 cycle	[min]	–	–
Average time of 1 cycle	[min]	–	–
Calculation time	[min]	70.0	70.0
Output heating water – temperature calculation	[°C]	34.98	55.03
Input heating water – temperature calculation	[°C]	29.93	46.98
Output heating water temperature	[°C]	34.98	55.03
Input heating water temperature	[°C]	29.93	46.98
Air temperature – dry bulb temperature	[°C]	6.89	6.93
Air temperature – wet bulb temperature	[°C]	5.83	5.88
Relative humidity	[%]	86.03	86.06
Barometric pressure	[kPa]	98.782	98.627
Ambient temperature	[°C]	7.14	7.23
Secondary circuit pressure difference	[kPa]	98.425	98.374
Efficiency of the secondary liquid pump	[–]	0.441	0.437
Volume flow rate of heating water	$[m^3 \cdot h^{-1}]$	2.0634	1.2744
Density of heating water	$[kg \cdot m^{-3}]$	994.0	985.8
Specific heat capacity of heating water	$[kJ \cdot kg^{-1} \cdot K^{-1}]$	4.175	4.179
Voltage	[V]	399.41	398.99
Total current	[A]	12.76	17.94
Overall power input	[kW]	2.542	3.759
Capacity correction of sec. liquid pump	[W]	62.61	58.17
Power input correction of sec. liquid pump	[W]	95.51	87.45
Heating capacity – heating water	[kW]	11.996	11.779
Corrected heating capacity – heating water	**[kW]**	**11.933**	**11.721**
Uncertainty of corrected heating capacity	[kW]	± 0.203	± 0.126
Effective electric power input	**[kW]**	**2.446**	**3.672**
COP	**[–]**	**4.878**	**3.192**
Uncertainty of COP	[–]	± 0.085	± 0.035
Control settings	**[Hz]**	**45**	**42**
Circulation pump settings – heating water	[%]	100	100

Test objective:	Seasonal performance tests and SCOP calculation – Low temperature application
Exact name of the test procedure:	**1.37 - Tests of leakage, pressure resistance, thermal and technical parameters, combustion efficiency, safety functions**
Test method:	ČSN EN 14511-3:2023, ČSN EN 14825:2023
Sample tested:	Heat pump TAHMV12S A
Measuring equipment used:	see Chapter III

Design					Air / water – monobloc	
Conditions specification according to ČSN EN 14825:2023	Temperature application				**Low** (reference water temperature 35 °C)	
	Reference heating season				**Average**	
	Outlet water temperature - indoor heat exchanger				Variable	
	Compressor speed control				Variable	
	Water flow rate – primary circuit				–	
	Water flow rate – secondary circuit				Fixed	
Seasonal space heating energy efficiency	Heating	Average	η_s		**183.2**	%
		Warmer	η_s		–	%
		Colder	η_s		–	%
Seasonal efficiency according to ČSN EN 14825:2023	Heating	Average	**SCOP**		**4.66**	–
		Warmer	SCOP		–	–
		Colder	SCOP		–	–
Function	Cooling				Yes	
	Heating	Yes	Reference heating season	Average	Yes	
				Warmer	–	
				Colder	–	
Full heating load	Cooling		$P_{designc}$		–	kW
	Heating	Average	$P_{designh}$		10.20	kW
		Warmer	$P_{designh}$		–	kW
		Colder	$P_{designh}$		–	kW
Bivalent temperatures	Heating	Average	$T_{bivalent}$		-7	°C
		Warmer	$T_{bivalent}$		–	°C
		Colder	$T_{bivalent}$		–	°C
Operation limit temperatures	Heating	Average	TOL		-10	°C
		Warmer	TOL		–	°C
		Colder	TOL		–	°C
Seasonal power consumption according to ČSN EN 14825:2023	Cooling		Q_{CE}		–	kWh
	Heating	Average	Q_{HE}		4524	kWh
		Warmer	Q_{HE}		–	kWh
		Colder	Q_{HE}		–	kWh
Modes other than „active mode“	Off mode			P_{OFF}	52.4	W
	Thermostat off mode			P_{TO}	53.7	W
	Standby mode			P_{SB}	52.4	W
	Crankcase heater mode			P_{CK}	0.0	W

Calculation of SCOP according to ČSN EN 14825:2023:

Number of hours used for calculation of reference SCOP (Annex B – Table B. 2, B. 3)
- For reversible heat pumps and reference heating season „A" = average

H_{HE}	2066	[h]
H_{TO}	178	[h]
H_{SB}	0	[h]
H_{CK}	178	[h]
H_{OFF}	0	[h]

Measured data:

P_{TO}	0.0537	[kW]
P_{SB}	0.0524	[kW]
P_{CK}	0.0000	[kW]
P_{OFF}	0.0524	[kW]
$P_{designh}$	10.20	[kW]
$SCOP_{ON}$	4.67	[–]

Coefficient and correction:

F(1)	3	[%]
F(2)	0	[%]
CC	2.5	[–]

Calculation of SCOP:

7.3 Calculation of the reference annual heating demand (Q_H)

$Q_H = P_{designh} \cdot H_{HE}$ [kWh]

$Q_H = 10.20 \cdot 2066 =$ **21065** [kWh]

7.4 Calculation of the annual electricity consumption (Q_{HE})

$Q_{HE} = Q_H / SCOP_{on} + H_{TO} \cdot P_{TO} + H_{SB} \cdot P_{SB} + H_{CK} \cdot P_{CK} + H_{OFF} \cdot P_{OFF}$ [kWh]

$Q_{HE} = 21065 / 4.67 + 178 \cdot 0.0537 + 0 \cdot 0.0524 + 178 \cdot 0 + 0 \cdot 0.0524 =$ **4524** [kWh]

7.2 General formula for calculation of reference SCOP

$SCOP = Q_H / Q_{HE}$ [–]

$SCOP = 21065 / 4524 =$ **4.66** [–]

7.1 Calculation of the seasonal space heating efficiency η_s

$\Sigma F(i) = F(1) + F(2)$ [–]

$\Sigma F = 0.03 + 0 = 0.03$ [–]

$\eta_s = 1 / CC \cdot SCOP - \Sigma F(i)$ [–]

$\eta_s (A) = (1 / 2.5) \cdot 4.66 – 0.03 =$ **1.832** [–]

Temperature level		Low (reference water temperature 35 °C)		
Reference heating season		„A" = average ($T_{designh}$ = -10 °C)		
Assessment condition		**B**	**C**	**D**
Specification of the assessment condition		**A2/W30**	**A7/W28.24**	**A12/W26.48**
Date of testing		**2024-07-10**	**2024-07-10**	**2024-07-16**
Transient test procedure	YES / NO	NO	NO	NO
Average defrost time of 1 cycle	[min]	–	–	–
Average time of 1 cycle	[min]	–	–	–
Calculation time	[min]	70.0	70.0	70.0
Output heating water – temperature calculation	[°C]	29.97	28.25	26.48
Input heating water – temperature calculation	[°C]	27.57	25.49	23.30
Output heating water temperature	[°C]	29.97	28.25	26.48
Input heating water temperature	[°C]	27.57	25.49	23.30
Air temperature – dry bulb temperature	[°C]	2.05	7.03	11.89
Air temperature – wet bulb temperature	[°C]	1.00	5.95	10.82
Relative humidity	[%]	83.06	85.77	88.12
Barometric pressure	[kPa]	98.441	98.306	98.147
Ambient temperature	[°C]	1.93	7.09	11.98
Secondary circuit pressure difference	[kPa]	60.236	59.882	57.087
Efficiency of the secondary liquid pump	[–]	0.348	0.348	0.344
Volume flow rate of heating water	$[m^3 \cdot h^{-1}]$	2.0551	2.0603	2.0550
Density of heating water	$[kg \cdot m^{-3}]$	995.5	996.0	996.5
Specific heat capacity of heating water	$[kJ \cdot kg^{-1} \cdot K^{-1}]$	4.176	4.176	4.177
Voltage	[V]	399.72	399.93	399.65
Total current	[A]	6.99	6.78	5.90
Overall power input	[kW]	1.297	1.194	1.064
Capacity correction of sec. liquid pump	[W]	64.425	64.284	62.219
Power input correction of sec. liquid pump	[W]	98.81	98.55	94.81
Heating capacity – heating water	[kW]	5.685	6.554	7.552
Corrected heating capacity – heating water	**[kW]**	**5.620**	**6.489**	**7.490**
Uncertainty of corrected heating capacity	[kW]	± 0.202	± 0.202	± 0.202
Effective electric power input	**[kW]**	**1.198**	**1.095**	**0.969**
COP	**[–]**	**4.692**	**5.925**	**7.727**
Uncertainty of COP	[–]	± 0.169	± 0.186	± 0.210
Control settings	**[Hz]**	**25**	**25**	**25**
Circulation pump settings – heating water	[%]	100	100	100

Temperature level		Low (reference water temperature 35 °C)	
Reference heating season		„A" = average ($T_{designh}$ = -10 °C)	
Assessment condition		**TOL(E)**	**A, Tbiv(F)**
Specification of the assessment condition		**A-10/W35**	**A-7/W34**
Date of testing		**2024-07-16**	**2024-07-10**
Transient test procedure	YES / NO	NO	YES
Average defrost time of 1 cycle	[min]	–	5.6
Average time of 1 cycle	[min]	–	105.3
Calculation time	[min]	70.0	105.3
Output heating water – temperature calculation	[°C]	35.01	33.19
Input heating water – temperature calculation	[°C]	30.93	29.36
Output heating water temperature	[°C]	35.01	34.03
Input heating water temperature	[°C]	30.93	29.64
Air temperature – dry bulb temperature	[°C]	-9.98	-7.15
Air temperature – wet bulb temperature	[°C]	-10.96	-8.15
Relative humidity	[%]	68.99	73.73
Barometric pressure	[kPa]	98.078	98.551
Ambient temperature	[°C]	-10.26	-6.85
Secondary circuit pressure difference	[kPa]	57.777	60.427
Efficiency of the secondary liquid pump	[–]	0.345	0.348
Volume flow rate of heating water	$[m^3 \cdot h^{-1}]$	2.0544	2.0536
Density of heating water	$[kg \cdot m^{-3}]$	994.0	994.5
Specific heat capacity of heating water	$[kJ \cdot kg^{-1} \cdot K^{-1}]$	4.175	4.175
Voltage	[V]	399.05	399.05
Total current	[A]	15.31	15.01
Overall power input	[kW]	3.162	3.090
Capacity correction of sec. liquid pump	[W]	62.691	64.530
Power input correction of sec. liquid pump	[W]	95.66	99.00
Heating capacity – heating water	[kW]	9.651	9.084
Corrected heating capacity – heating water	**[kW]**	**9.589**	**9.020**
Uncertainty of corrected heating capacity	[kW]	± 0.202	± 0.202
Effective electric power input	**[kW]**	**3.067**	**2.991**
COP	**[–]**	**3.127**	**3.015**
Uncertainty of COP	[–]	± 0.066	± 0.068
Control settings	**[Hz]**	**56**	**56**
Circulation pump settings – heating water	[%]	100	100

Data for SCOP calculation

- Low temperature application (reference water temperature 35 °C)
- Reference heating season „A“ – average

	Outdoor heat exchanger / Outdoor air inlet	Indoor heat exchanger / Outlet water temperature	Part load ratio	Part load	DC Declared capacity	COPd at declared capacity	Cdh degradation coefficient	CR	COPbin (Tj)	Eff. power input of compressor off state
	[°C]	[°C]	[%]	[kW]	[kW]	[–]	[–]	[–]	[–]	[kW]
A	-7	34.00	88.46	9.02	9.020	3.015	0.900	1.00	3.015	–
B	2	30.00	53.85	5.49	5.620	4.692	0.900	1.00	4.692	–
C	7	28.24	34.62	3.53	6.496	5.925	0.951	0.45	5.690	0.0537
D	12	26.48	15.38	1.57	7.490	7.727	0.945	0.21	6.391	0.0537
TOL (E)	-10	35.00	100.00	10.20	9.589	3.127	0.900	1.00	3.127	–
Tbiv (F)	-7	34.00	88.46	9.02	9.020	3.015	0.900	1.00	3.015	–

Adaption of water temperature – according to ČSN EN 14825:2023, Annex E

- Low temperature application (reference water temperature 35 °C)
- Reference season „A“– average
- Condition D
- Fixed water flow rate – secondary circuit

General formulas and derivation:

$t_{outlet,\,average} = t_{inlet,\,capacity\,test} + (t_{outlet,\,capacity\,test} - t_{inlet,\,capacity\,test}) \cdot CR$ [°C]

$t_{outlet,\,average} = t_{inlet,\,capacity\,test} + (\Delta t) \cdot CR$ [°C]

$t_{outlet,\,average} = t_{outlet,\,capacity\,test} - \Delta t + \Delta t \cdot CR$ [°C]

$t_{outlet,\,capacity\,test} = t_{outlet,\,average} + \Delta t - \Delta t \cdot CR$ [°C]

For fixed flow:

Δt = Declared capacity / Declared capacity $_{standard\ rating\ conditions\ A7W35} \cdot 5$

$CR \cdot \Delta t$ = Part load / Declared capacity · Declared capacity / Declared capacity$_{standard\ rating\ conditions\ A7W35} \cdot 5$

$CR \cdot \Delta t$ = Part load / Declared capacity $_{standard\ rating\ conditions\ A7W35} \cdot 5$

$t_{outlet,\,capacity\,test,\,fixed\,flow}$ = $t_{outlet,\,average}$ + Declared capacity / Declared capacity$_{standard\ rating\ conditions\ A7W35} \cdot 5$ - Part load / Declared capacity $_{standard\ rating\ conditions\ A7W35} \cdot 5$

$t_{outlet,\,capacity\,test,\,fixed\,flow}$ = $t_{outlet,\,average}$ + 5 / Declared capacity$_{standard\ rating\ conditions\ A7W35}$ · (Declared capacity - Part load)

Measured data:

$t_{outlet,\,average}$	24.00	[°C]
Declared capacity	7.490	[kW]
Declared capacity $_{standard\ rating\ condition\ A7/W35}$	11.933	[kW]
Part load	1.57	[kW]

Calculation of water temperature

$t_{outlet,\ capacity\ test,\ fixed\ flow} = 24 + 5 / 11.933 \cdot (7.490 - 1.570) = \mathbf{26.48}$ [°C]

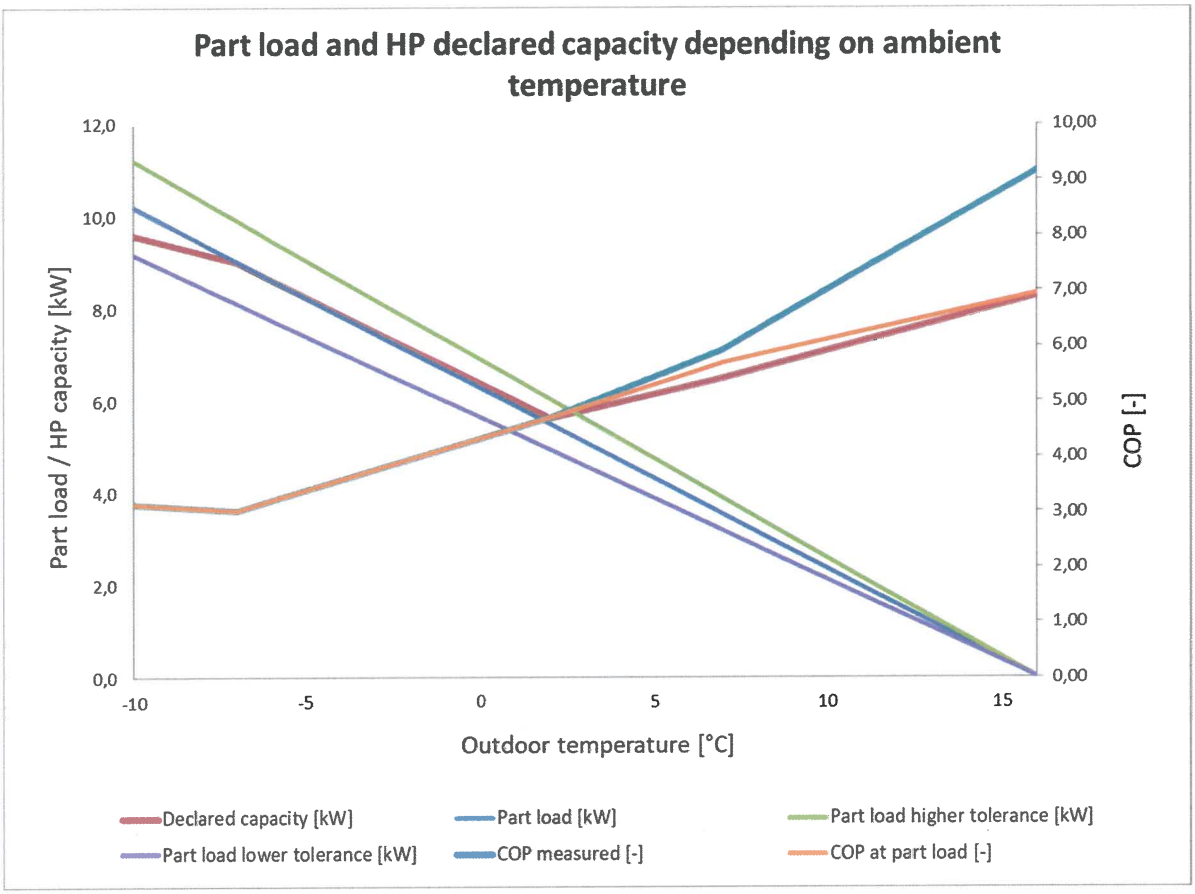
Calculation SCOP, $SCOP_{on}$, $SCOP_{net}$

- Low temperature application (reference water temperature 35 °C)
- Reference heating season „A" – average

	Bin j [–]	Outdoor temp. (dry bulb) Tj [°C]	Hours hj [h]	Part load ratio [%]	Heat load Ph(Tj) [kW]	Capacity of HP [kW]	Heat load covered by heat pump [kW]	Resistive heat elbu (Tj) elbu(Tj) [kW]	Annual resistive heat hj x elbu(Tj) [kWh]	COPbin (Tj) COPbin (Tj) [–]	Annual heating demand hj x Ph(Tj) [kWh]	Annual power input including electric back up heating [kWh]	Net annual heating capacity hj × (P h(Tj) - elbu(Tj)) [kWh]	Net annual power input without electric back up heating [kWh]
TOL(E)	**21**	**-10**	**1**	**100.00**	**10.20**	**9.59**	**9.59**	**0.61**	**0.61**	**3.13**	**10**	**4**	**10**	**3**
	22	-9	25	96.15	9.80	9.40	9.40	0.40	10.12	3.09	245	86	235	76
	23	-8	23	92.31	9.41	9.21	9.21	0.20	4.66	3.05	216	74	212	69
A, Tbiv (F)	**24**	**-7**	**24**	**88.46**	**9.02**	**9.02**	**9.02**	**0.00**	**0.00**	**3.02**	**216**	**72**	**216**	**72**
	25	-6	27	84.62	8.63	8.64	8.63	0.00	0.00	3.20	233	73	233	73
	26	-5	68	80.77	8.24	8.26	8.24	0.00	0.00	3.39	560	165	560	165
	27	-4	91	76.92	7.84	7.89	7.84	0.00	0.00	3.57	714	200	714	200
	28	-3	89	73.08	7.45	7.51	7.45	0.00	0.00	3.76	663	176	663	176
	29	-2	165	69.23	7.06	7.13	7.06	0.00	0.00	3.95	1165	295	1165	295
	30	-1	173	65.38	6.67	6.75	6.67	0.00	0.00	4.13	1153	279	1153	279
	31	0	240	61.54	6.27	6.38	6.27	0.00	0.00	4.32	1506	349	1506	349
	32	1	280	57.69	5.88	6.00	5.88	0.00	0.00	4.51	1647	366	1647	366
B	**33**	**2**	**320**	**53.85**	**5.49**	**5.62**	**5.49**	**0.00**	**0.00**	**4.69**	**1757**	**374**	**1757**	**374**
	34	3	357	50.00	5.10	5.80	5.10	0.00	0.00	4.89	1820	372	1820	372
	35	4	356	46.15	4.71	5.97	4.71	0.00	0.00	5.09	1675	329	1675	329
	36	5	303	42.31	4.31	6.15	4.31	0.00	0.00	5.29	1307	247	1307	247
	37	6	330	38.46	3.92	6.32	3.92	0.00	0.00	5.49	1294	236	1294	236
C	**38**	**7**	**326**	**34.62**	**3.53**	**6.50**	**3.53**	**0.00**	**0.00**	**5.69**	**1151**	**202**	**1151**	**202**
	39	8	348	30.77	3.14	6.70	3.14	0.00	0.00	5.83	1092	187	1092	187
	40	9	335	26.92	2.75	6.89	2.75	0.00	0.00	5.97	920	154	920	154
	41	10	315	23.08	2.35	7.09	2.35	0.00	0.00	6.11	741	121	741	121
	42	11	215	19.23	1.96	7.29	1.96	0.00	0.00	6.25	422	67	422	67
D	**43**	**12**	**169**	**15.38**	**1.57**	**7.49**	**1.57**	**0.00**	**0.00**	**6.39**	**265**	**41**	**265**	**41**
	44	13	151	11.54	1.18	7.69	1.18	0.00	0.00	6.53	178	27	178	27
	45	14	105	7.69	0.78	7.89	0.78	0.00	0.00	6.67	82	12	82	12
	46	15	74	3.85	0.39	8.09	0.39	0.00	0.00	6.81	29	4	29	4
		Σ	4910							Σ	21061	4514	21046	4498

SCOPon	4.67	SCOPnet	4.68
		SCOP	**4.66**

Part load performance diagram
- Low temperature application (reference water temperature 35 °C)
- Reference heating season „A“ – average



Test objective:	Seasonal performance tests and SCOP calculation – Medium temperature application
Exact name of the test procedure:	**1.37 - Tests of leakage, pressure resistance, thermal and technical parameters, combustion efficiency, safety functions**
Test method:	ČSN EN 14511-3:2023, ČSN EN 14825:2023
Sample tested:	Heat pump TAHMV12S A
Measuring equipment used:	see Chapter III

Design					Air / water – monobloc		
Conditions specification according to ČSN EN 14825:2023	Temperature application				**Medium** (reference water temperature 55 °C)		
	Reference heating season				**Average**		
	Outlet water temperature - indoor heat exchanger				Variable		
	Compressor speed control				Variable		
	Water flow rate – primary circuit				–		
	Water flow rate – secondary circuit				Fixed		
Seasonal space heating energy efficiency	Heating	Average	η_s		**138.6**	%	
		Warmer	η_s		–	%	
		Colder	η_s		–	%	
Seasonal efficiency according to ČSN EN 14825:2023	Heating	Average	**SCOP**		**3.54**	–	
		Warmer	SCOP		–	–	
		Colder	SCOP		–	–	
Function	Cooling				Yes		
	Heating	Yes	Reference heating season	Average	Yes		
				Warmer	–		
				Colder	–		
Full heating load	Cooling		$P_{designc}$		–	kW	
	Heating	Average	$P_{designh}$		10.96	kW	
		Warmer	$P_{designh}$		–	kW	
		Colder	$P_{designh}$		–	kW	
Bivalent temperatures	Heating	Average	$T_{bivalent}$		-7	°C	
		Warmer	$T_{bivalent}$		–	°C	
		Colder	$T_{bivalent}$		–	°C	
Operation limit temperatures	Heating	Average	TOL		-10	°C	
		Warmer	TOL		–	°C	
		Colder	TOL		–	°C	
Seasonal power consumption according to ČSN EN 14825:2023	Cooling		Q_{CE}		–	kWh	
	Heating	Average	Q_{HE}		6406	kWh	
		Warmer	Q_{HE}		–	kWh	
		Colder	Q_{HE}		–	kWh	
Modes other than „active mode“	Off mode			P_{OFF}	52.4	W	
	Thermostat off mode			P_{TO}	54.0	W	
	Standby mode			P_{SB}	52.4	W	
	Crankcase heater mode			P_{CK}	0.0	W	

Calculation of SCOP according to ČSN EN 14825:2023:

Number of hours used for calculation of reference SCOP (Annex B – Table B. 2, B. 3)
- For reversible heat pumps and reference heating season „A“ = average

H_{HE}	2066	[h]
H_{TO}	178	[h]
H_{SB}	0	[h]
H_{CK}	178	[h]
H_{OFF}	0	[h]

Measured data:

P_{TO}	0.0540	[kW]
P_{SB}	0.0524	[kW]
P_{CK}	0.0000	[kW]
P_{OFF}	0.0524	[kW]
$P_{designh}$	10.96	[kW]
$SCOP_{ON}$	3.54	[–]

Coefficient and correction:

F(1)	3	[%]
F(2)	0	[%]
CC	2.5	[–]

Calculation of SCOP:

7.3 Calculation of the reference annual heating demand (Q_H)

$Q_H = P_{designh} \cdot H_{HE}$ [kWh]

$Q_H = 10.96 \cdot 2066 =$ **22643** [kWh]

7.4 Calculation of the annual electricity consumption (Q_{HE})

$Q_{HE} = Q_H / SCOP_{on} + H_{TO} \cdot P_{TO} + H_{SB} \cdot P_{SB} + H_{CK} \cdot P_{CK} + H_{OFF} \cdot P_{OFF}$ [kWh]

$Q_{HE} = 22643 / 3.54 + 178 \cdot 0.0540 + 0 \cdot 0.0524 + 178 \cdot 0 + 0 \cdot 0.0524 =$ **6406** [kWh]

7.2 General formula for calculation of reference SCOP

$SCOP = Q_H / Q_{HE}$ [–]

$SCOP = 22643 / 6406 =$ **3.54** [–]

7.1 Calculation of the seasonal space heating efficiency η_s

$\Sigma F(i) = F(1) + F(2)$ [–]

$\Sigma F = 0.03 + 0 = 0.03$ [–]

$\eta_s = 1 / CC \cdot SCOP - \Sigma F(i)$ [–]

$\eta_s (A) = (1 / 2.5) \cdot 3.54 – 0.03 =$ **1.386** [–]

Temperature level		Medium (reference water temperature 55 °C)		
Reference heating season		„A" = average ($T_{designh}$ = -10 °C)		
Assessment condition		**B**	**C**	**D**
Specification of the assessment condition		**A2/W42**	**A7/W37.68**	**A12/W33.30**
Date of testing		**2024-07-11**	**2024-07-11**	**2024-07-11**
Transient test procedure	YES / NO	NO	NO	NO
Average defrost time of 1 cycle	[min]	–	–	–
Average time of 1 cycle	[min]	–	–	–
Calculation time	[min]	70.0	70.0	70.0
Output heating water – temperature calculation	[°C]	42.00	37.70	33.30
Input heating water – temperature calculation	[°C]	37.76	33.40	28.82
Output heating water temperature	[°C]	42.00	37.70	33.30
Input heating water temperature	[°C]	37.76	33.40	28.82
Air temperature – dry bulb temperature	[°C]	2.06	6.93	11.86
Air temperature – wet bulb temperature	[°C]	0.98	5.85	10.78
Relative humidity	[%]	82.70	85.85	88.08
Barometric pressure	[kPa]	98.513	98.442	98.433
Ambient temperature	[°C]	1.91	6.88	11.87
Secondary circuit pressure difference	[kPa]	86.992	87.161	87.380
Efficiency of the secondary liquid pump	[–]	0.339	0.340	0.340
Volume flow rate of heating water	$[m^3 \cdot h^{-1}]$	1.2702	1.2788	1.2772
Density of heating water	$[kg \cdot m^{-3}]$	991.5	993.1	994.5
Specific heat capacity of heating water	$[kJ \cdot kg^{-1} \cdot K^{-1}]$	4.175	4.175	4.175
Voltage	[V]	399.23	399.76	399.91
Total current	[A]	9.68	7.96	7.40
Overall power input	[kW]	1.837	1.478	1.285
Capacity correction of sec. liquid pump	[W]	59.898	60.223	60.275
Power input correction of sec. liquid pump	[W]	90.59	91.18	91.28
Heating capacity – heating water	[kW]	6.202	6.332	6.583
Corrected heating capacity – heating water	**[kW]**	**6.142**	**6.271**	**6.523**
Uncertainty of corrected heating capacity	[kW]	± 0.125	± 0.126	± 0.126
Effective electric power input	**[kW]**	**1.746**	**1.386**	**1.193**
COP	**[–]**	**3.518**	**4.523**	**5.466**
Uncertainty of COP	[–]	± 0.072	± 0.092	± 0.107
Control settings	**[Hz]**	**25**	**25**	**25**
Circulation pump settings – heating water	[%]	100	100	100

Temperature level		Medium (reference water temperature 55 °C)	
Reference heating season		„A" = average ($T_{designh}$ = -10 °C)	
Assessment condition		**TOL(E)**	**A, Tbiv(F)**
Specification of the assessment condition		**A-10/W55**	**A-7/W52**
Date of testing		**2024-07-12**	**2024-07-11**
Transient test procedure	YES / NO	YES	YES
Average defrost time of 1 cycle	[min]	4.4	4.8
Average time of 1 cycle	[min]	120.7	122.8
Calculation time	[min]	120.7	122.8
Output heating water – temperature calculation	[°C]	54.27	51.26
Input heating water – temperature calculation	[°C]	48.10	44.59
Output heating water temperature	[°C]	54.99	52.01
Input heating water temperature	[°C]	48.22	44.68
Air temperature – dry bulb temperature	[°C]	-10.16	-7.00
Air temperature – wet bulb temperature	[°C]	-11.16	-8.04
Relative humidity	[%]	69.56	73.91
Barometric pressure	[kPa]	98.256	98.622
Ambient temperature	[°C]	-10.31	-7.09
Secondary circuit pressure difference	[kPa]	83.253	86.512
Efficiency of the secondary liquid pump	[–]	0.335	0.338
Volume flow rate of heating water	[$m^3 \cdot h^{-1}$]	1.2719	1.2701
Density of heating water	[$kg \cdot m^{-3}$]	986.2	987.6
Specific heat capacity of heating water	[$kJ \cdot kg^{-1} \cdot K^{-1}$]	4.179	4.178
Voltage	[V]	399.23	399.01
Total current	[A]	20.25	19.78
Overall power input	[kW]	4.333	4.180
Capacity correction of sec. liquid pump	[W]	58.324	59.684
Power input correction of sec. liquid pump	[W]	87.74	90.21
Heating capacity – heating water	[kW]	9.028	9.757
Corrected heating capacity – heating water	**[kW]**	**8.969**	**9.697**
Uncertainty of corrected heating capacity	[kW]	± 0.125	± 0.125
Effective electric power input	**[kW]**	**4.245**	**4.089**
COP	**[–]**	**2.113**	**2.371**
Uncertainty of COP	[–]	± 0.030	± 0.031
Control settings	**[Hz]**	**56**	**56**
Circulation pump settings – heating water	[%]	100	100

Data for SCOP calculation

- Medium temperature application (reference water temperature 55 °C)
- Reference heating season „A“ – average

	Outdoor heat exchanger Outdoor air inlet	Indoor heat exchanger Outlet water temperature	Part load ratio	Part load	DC Declared capacity	COPd at declared capacity	Cdh degradation coefficient	CR	COPbin (Tj)	Eff. power input of compressor off state
	[°C]	[°C]	[%]	[kW]	[kW]	[–]	[–]	[–]	[–]	[kW]
A	-7	52.00	88.46	9.70	9.697	2.371	0.900	1.00	2.371	–
B	2	42.00	53.85	5.90	6.142	3.518	0.900	1.00	3.518	–
C	7	37.68	34.62	3.79	6.252	4.523	0.961	0.61	4.412	0.0540
D	12	33.30	15.38	1.69	6.523	5.466	0.955	0.26	4.838	0.0540
TOL (E)	-10	55.00	100.00	10.96	8.969	2.113	0.900	1.00	2.113	–
Tbiv (F)	-7	52.00	88.46	9.70	9.697	2.371	0.900	1.00	2.371	–

Adaption of water temperature – according to ČSN EN 14825:2023, Annex E

- Medium temperature application (reference water temperature 55 °C)
- Reference season „A“– average
- Condition D
- Fixed water flow rate – secondary circuit

General formulas and derivation:

$t_{outlet,\,average} = t_{inlet,\,capacity\,test} + (t_{outlet,\,capacity\,test} - t_{inlet,\,capacity\,test}) \cdot CR$ [°C]

$t_{outlet,\,average} = t_{inlet,\,capacity\,test} + (\Delta t) \cdot CR$ [°C]

$t_{outlet,\,average} = t_{outlet,\,capacity\,test} - \Delta t + \Delta t \cdot CR$ [°C]

$t_{outlet,\,capacity\,test} = t_{outlet,\,average} + \Delta t - \Delta t \cdot CR$ [°C]

For fixed flow:

Δt = Declared capacity / Declared capacity $_{standard\ rating\ conditions\ A7W55} \cdot 8$

$CR \cdot \Delta t$ = Part load / Declared capacity · Declared capacity / Declared capacity$_{standard\ rating\ conditions\ A7W55} \cdot 8$

$CR \cdot \Delta t$ = Part load / Declared capacity $_{standard\ rating\ conditions\ A7W55} \cdot 8$

$t_{outlet,\,capacity\,test,\,fixed\,flow} = t_{outlet,\,average}$ + Declared capacity / Declared capacity$_{standard\ rating\ conditions\ A7W55} \cdot 8$ - Part load / Declared capacity $_{standard\ rating\ conditions\ A7W55} \cdot 8$

$t_{outlet,\,capacity\,test,\,fixed\,flow} = t_{outlet,\,average} + 8$ / Declared capacity$_{standard\ rating\ conditions\ A7W55}$ · (Declared capacity - Part load)

Measured data:

$t_{outlet,\,average}$	30.00	[°C]
Declared capacity	6.523	[kW]
Declared capacity $_{standard\ rating\ condition\ A7/W55}$	11.721	[kW]
Part load	1.69	[kW]

Calculation of water temperature

$t_{outlet,\ capacity\ test,\ fixed\ flow} = 30 + 8 / 11.721 \cdot (6.523 - 1.690) = \underline{\mathbf{33.30}}$ [°C]

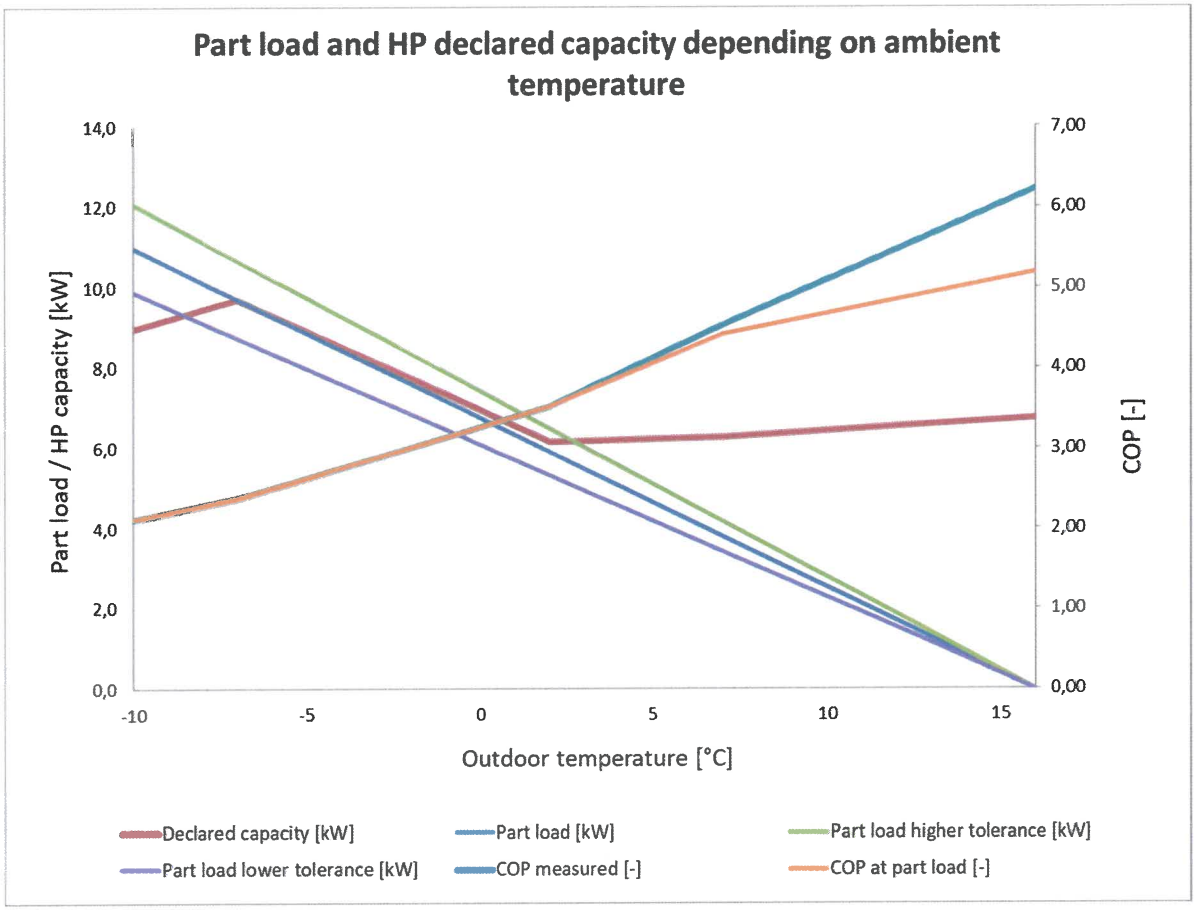
Calculation SCOP, $SCOP_{on}$, $SCOP_{net}$

- Medium temperature application (reference water temperature 55 °C)
- Reference heating season „A" – average

	Bin j [–]	Outdoor temp. (dry bulb) Tj [°C]	Hours hj [h]	Part load ratio [%]	Heat load Ph(Tj) [kW]	Capacity of HP [kW]	Heat load covered by heat pump [kW]	Resistive heat elbu (Tj) elbu(Tj) [kW]	Annual resistive heat hj x elbu(Tj) [kWh]	COPbin (Tj) COPb in (Tj) [–]	Annual heating demand hj x P h(Tj) [kWh]	Annual power input including electric back up heating [kWh]	Net annual heating capacity hj × (P h(Tj) - elbu(Tj)) [kWh]	Net annual power input without electric back up heating [kWh]
TOL(E)	**21**	**-10**	**1**	**100.00**	**10.96**	**8.97**	**8.97**	**1.99**	**1.99**	**2.11**	**11**	**6**	**9**	**4**
	22	-9	25	96.15	10.54	9.21	9.21	1.33	33.22	2.20	264	138	230	105
	23	-8	23	92.31	10.12	9.45	9.45	0.66	15.28	2.29	233	110	217	95
A. Tbiv(F)	**24**	**-7**	**24**	**88.46**	**9.70**	**9.70**	**9.70**	**0.00**	**0.00**	**2.37**	**233**	**98**	**233**	**98**
	25	-6	27	84.62	9.28	9.30	9.28	0.00	0.00	2.50	250	100	250	100
	26	-5	68	80.77	8.85	8.91	8.85	0.00	0.00	2.63	602	229	602	229
	27	-4	91	76.92	8.43	8.51	8.43	0.00	0.00	2.75	767	279	767	279
	28	-3	89	73.08	8.01	8.12	8.01	0.00	0.00	2.88	713	247	713	247
	29	-2	165	69.23	7.59	7.72	7.59	0.00	0.00	3.01	1252	416	1252	416
	30	-1	173	65.38	7.17	7.33	7.17	0.00	0.00	3.14	1240	395	1240	395
	31	0	240	61.54	6.75	6.93	6.75	0.00	0.00	3.26	1619	496	1619	496
	32	1	280	57.69	6.32	6.54	6.32	0.00	0.00	3.39	1771	522	1771	522
B	**33**	**2**	**320**	**53.85**	**5.90**	**6.14**	**5.90**	**0.00**	**0.00**	**3.52**	**1889**	**537**	**1889**	**537**
	34	3	357	50.00	5.48	6.16	5.48	0.00	0.00	3.70	1957	529	1957	529
	35	4	356	46.15	5.06	6.19	5.06	0.00	0.00	3.88	1801	465	1801	465
	36	5	303	42.31	4.64	6.21	4.64	0.00	0.00	4.05	1405	347	1405	347
	37	6	330	38.46	4.22	6.23	4.22	0.00	0.00	4.23	1391	329	1391	329
C	**38**	**7**	**326**	**34.62**	**3.79**	**6.25**	**3.79**	**0.00**	**0.00**	**4.41**	**1237**	**280**	**1237**	**280**
	39	8	348	30.77	3.37	6.31	3.37	0.00	0.00	4.50	1174	261	1174	261
	40	9	335	26.92	2.95	6.36	2.95	0.00	0.00	4.58	989	216	989	216
	41	10	315	23.08	2.53	6.41	2.53	0.00	0.00	4.67	797	171	797	171
	42	11	215	19.23	2.11	6.47	2.11	0.00	0.00	4.75	453	95	453	95
D	**43**	**12**	**169**	**15.38**	**1.69**	**6.52**	**1.69**	**0.00**	**0.00**	**4.84**	**285**	**59**	**285**	**59**
	44	13	151	11.54	1.26	6.58	1.26	0.00	0.00	4.92	191	39	191	39
	45	14	105	7.69	0.84	6.63	0.84	0.00	0.00	5.01	89	18	89	18
	46	15	74	3.85	0.42	6.69	0.42	0.00	0.00	5.09	31	6	31	6
		Σ	4910							Σ	22643	6390	22593	6339

SCOPon	3.54	SCOPnet	3.56
		SCOP	**3.54**

Part load performance diagram
- Medium temperature application (reference water temperature 55 °C)
- Reference heating season „A“ – average

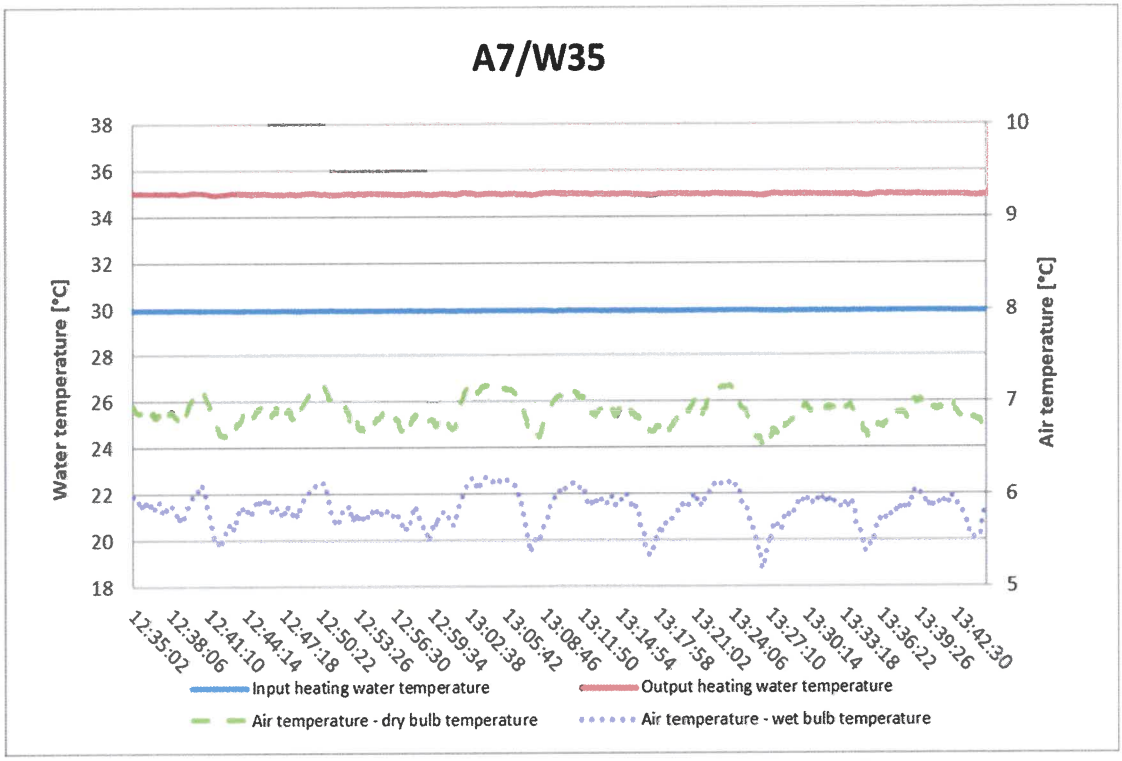


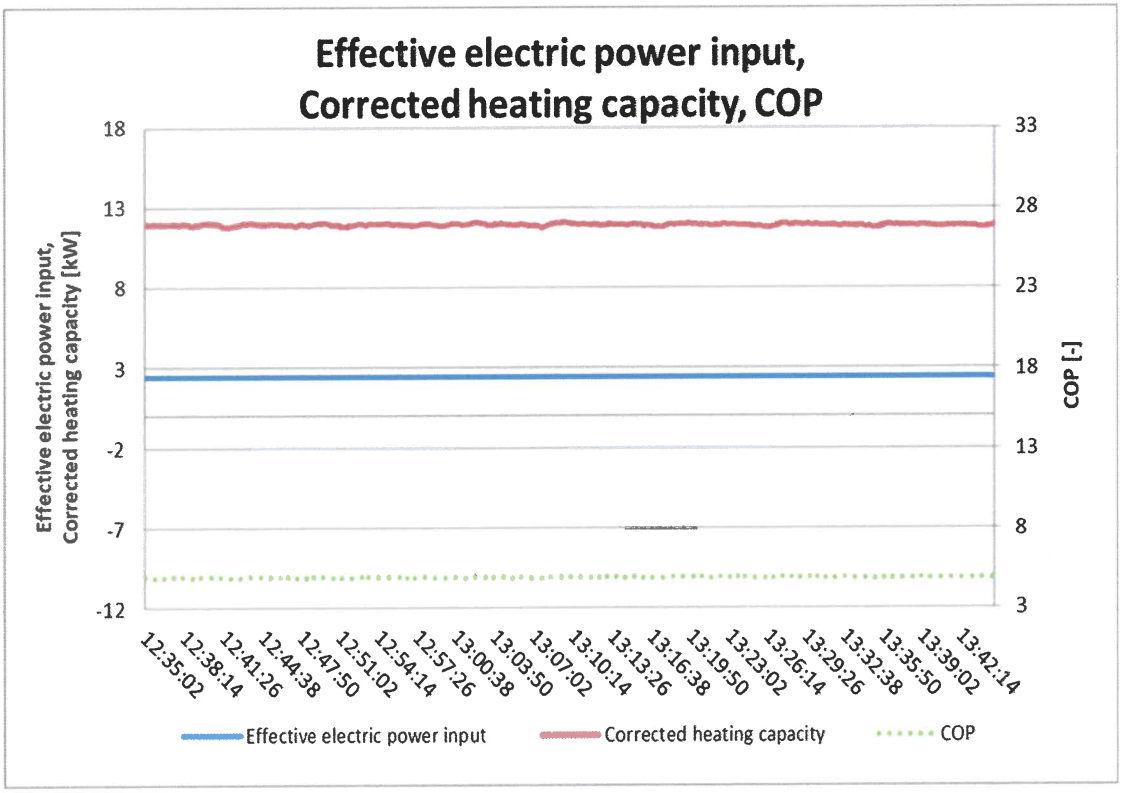
Tested by:	Ing. Alexandr Jordanov	Date:	2024-08-18	Signed:	
Reviewed and approved by:	Ing. Dominik Šedivý, Ph.D.	Date:	2024-08-18	Signed:	

V. Graphs

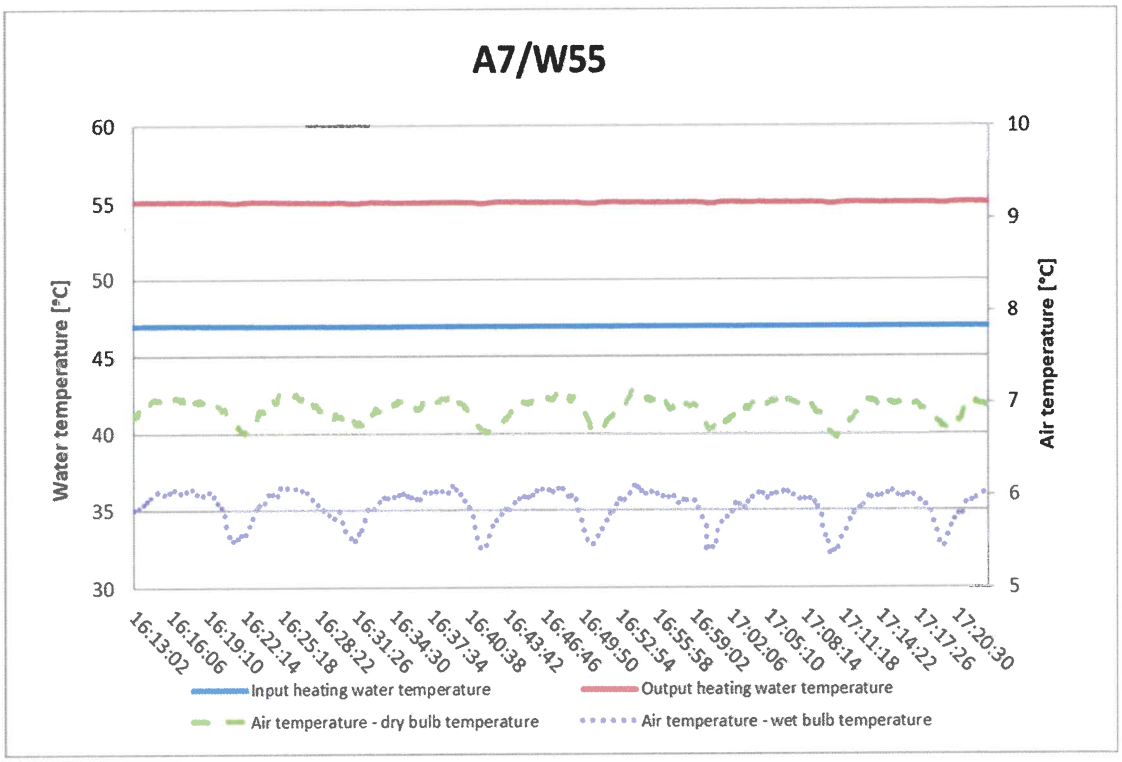
1. Rating conditions

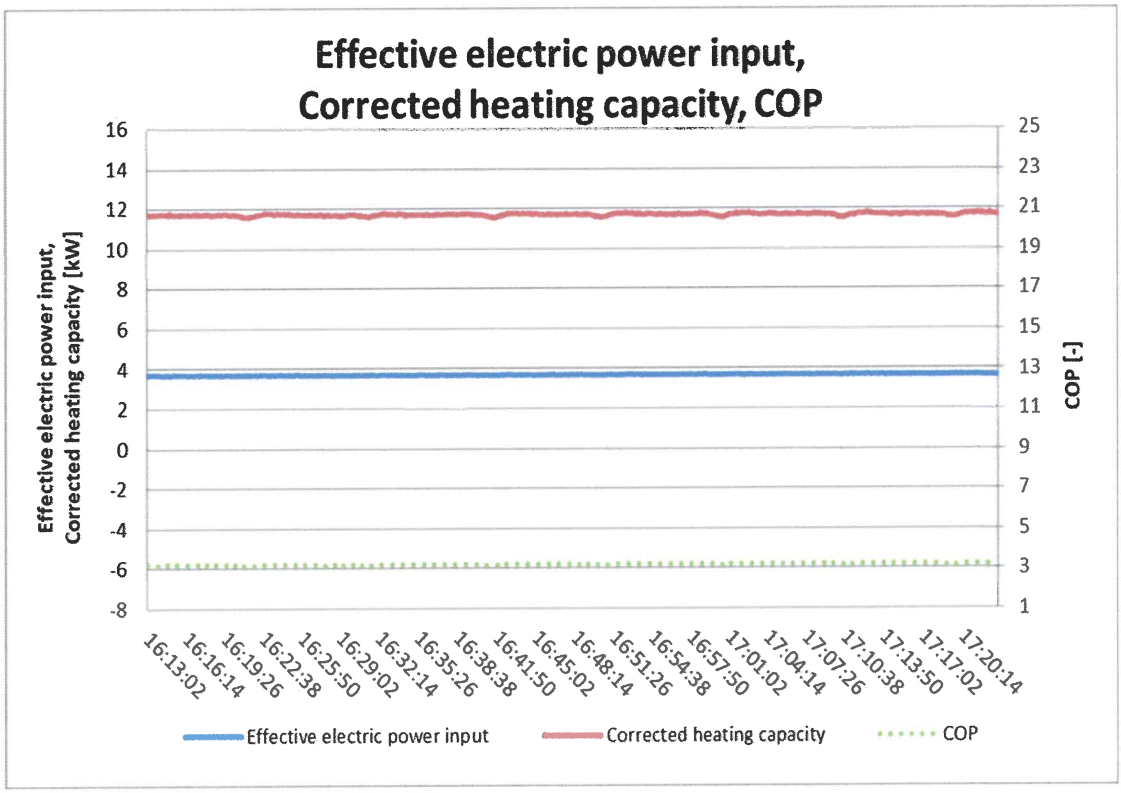
A7W35 (45 Hz, cp 100%)





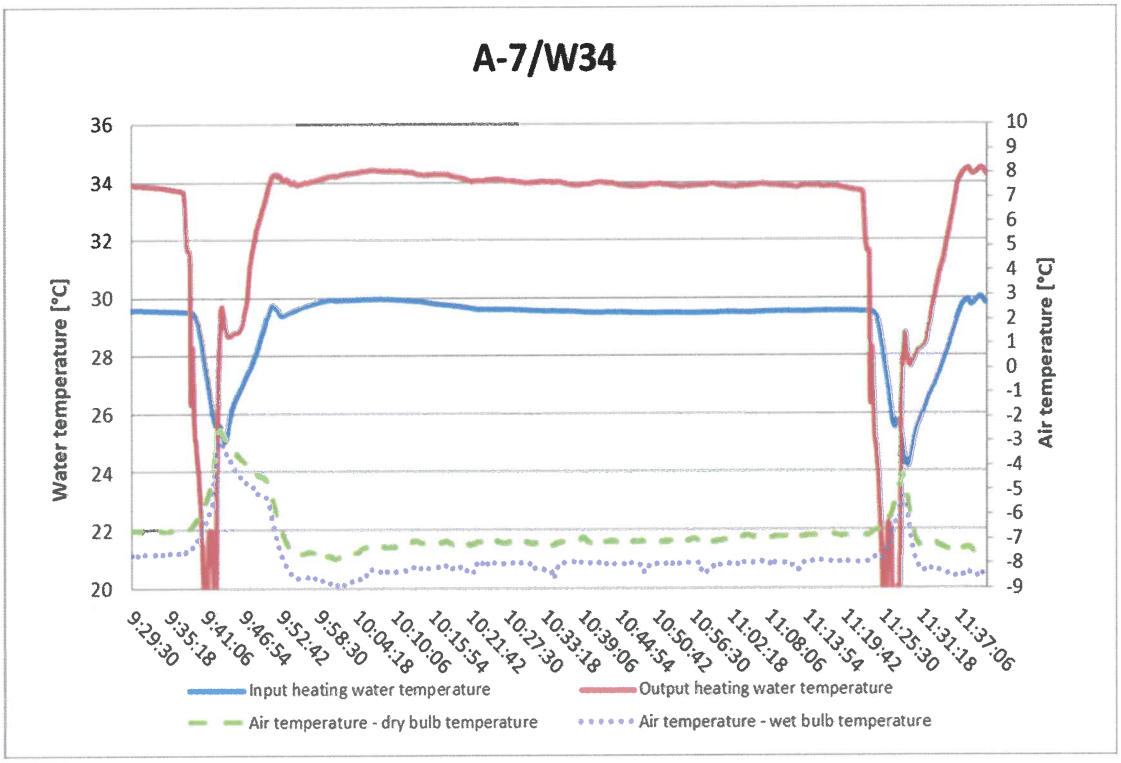
A7W55 (42 Hz, cp 100%)

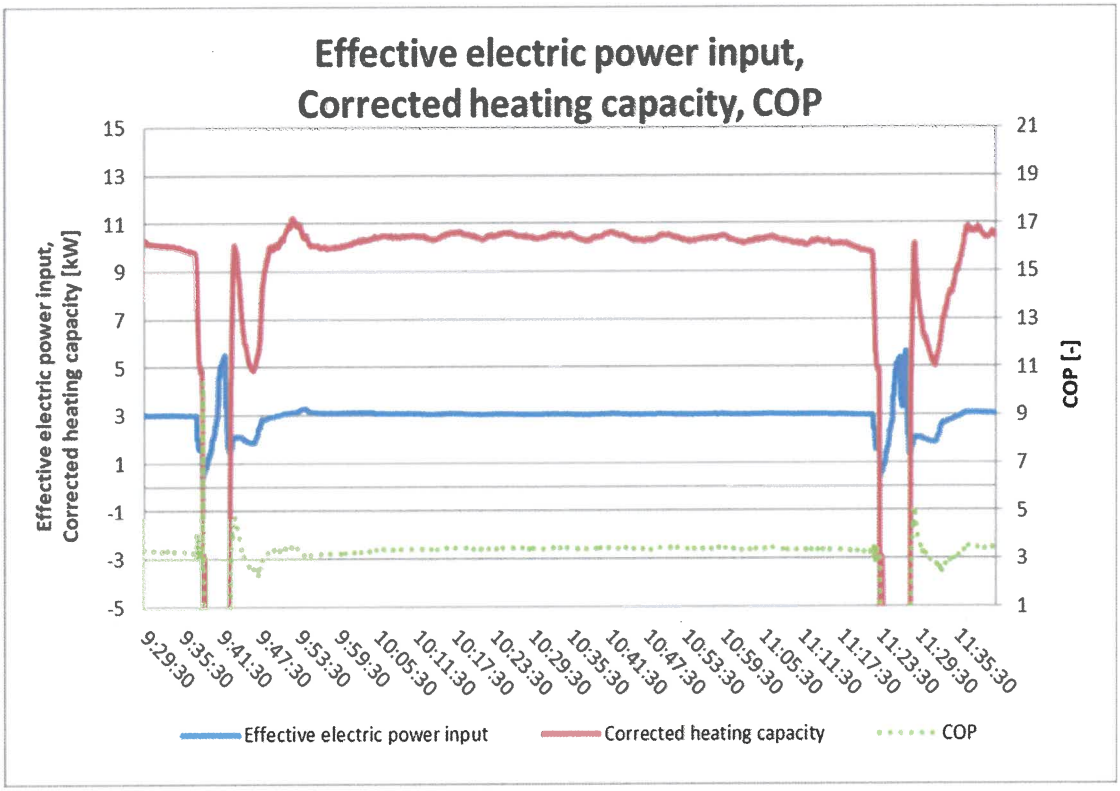




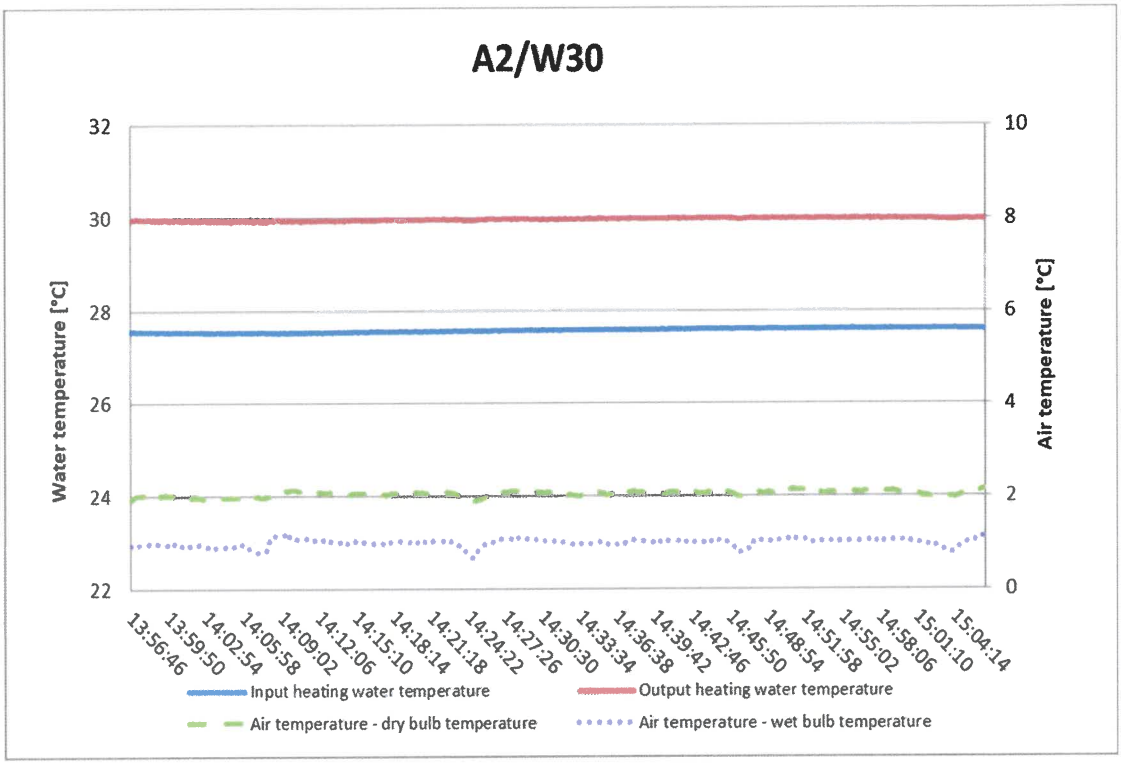
2. Seasonal performance tests and SCOP calculation – Low temperature application

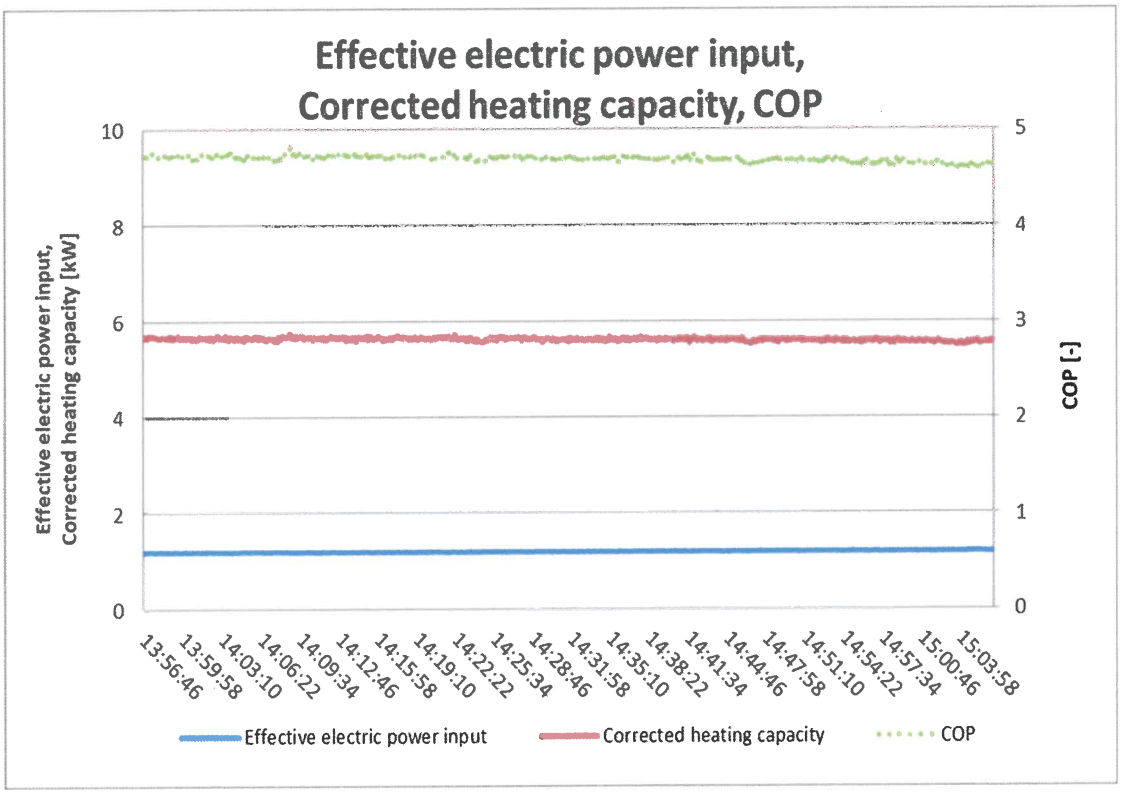
A-7W34 (56 Hz, cp 100%)



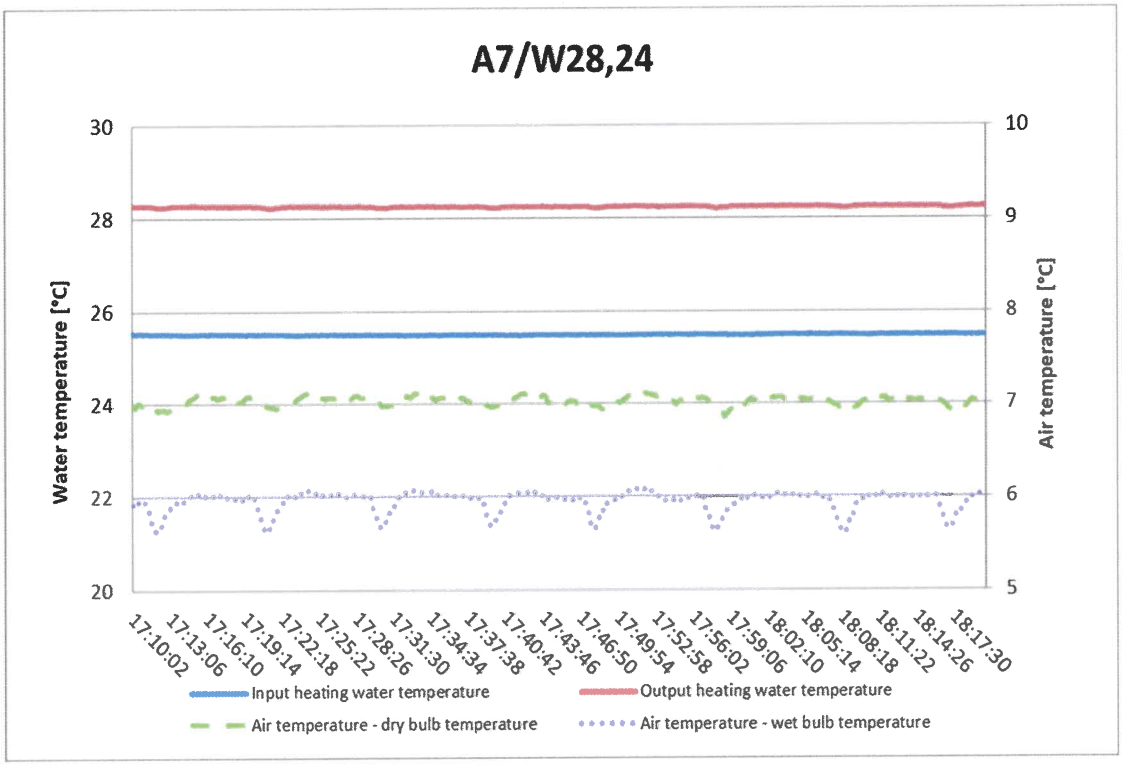


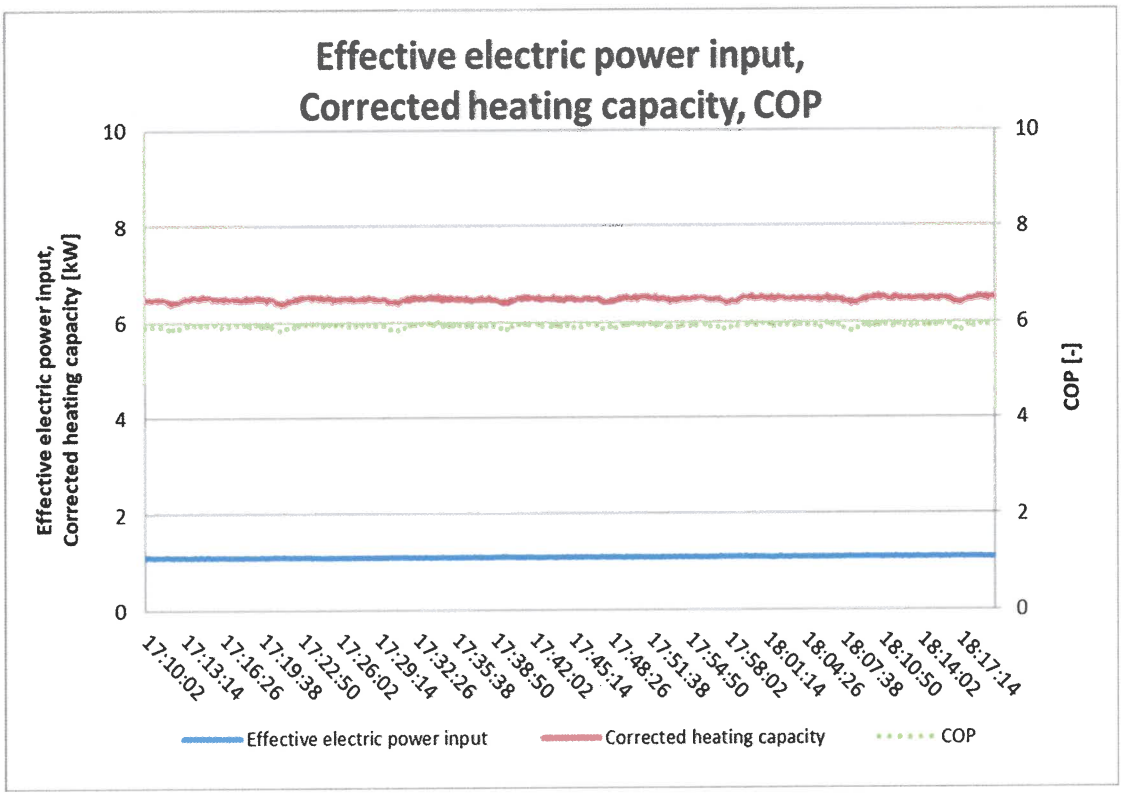
A2W30 (25 Hz, cp 100%)



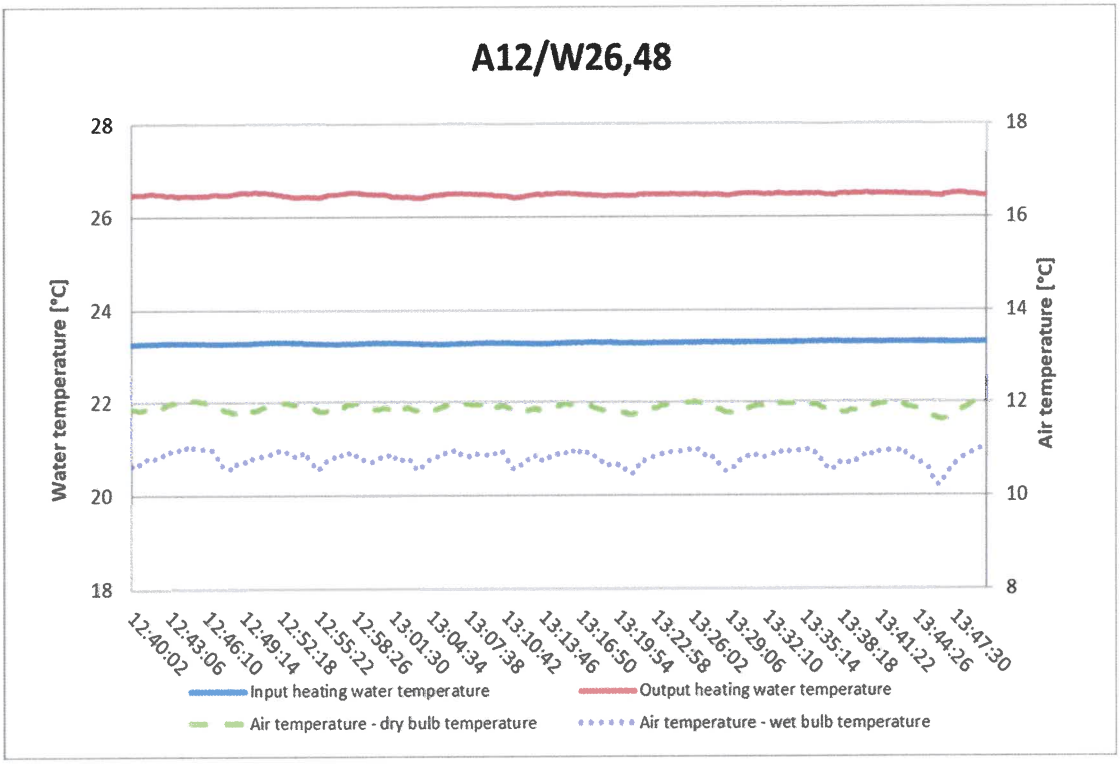


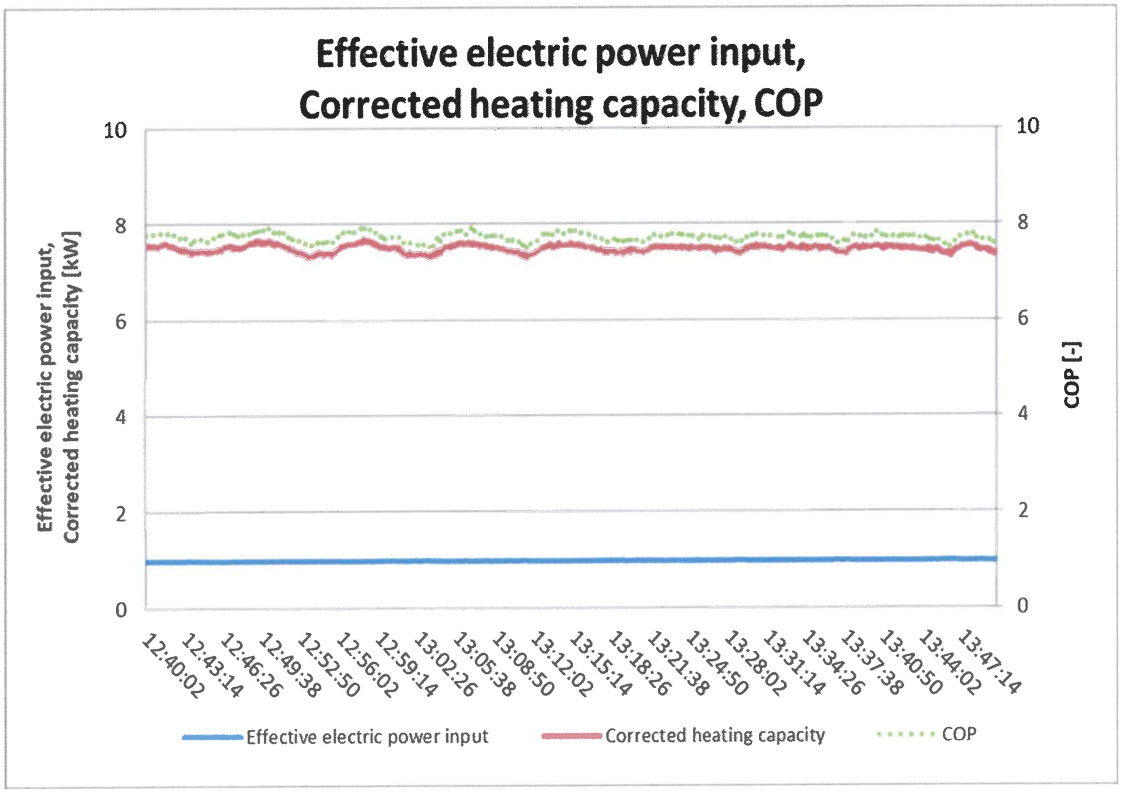
A7W28.24 (25 Hz, cp 100%)



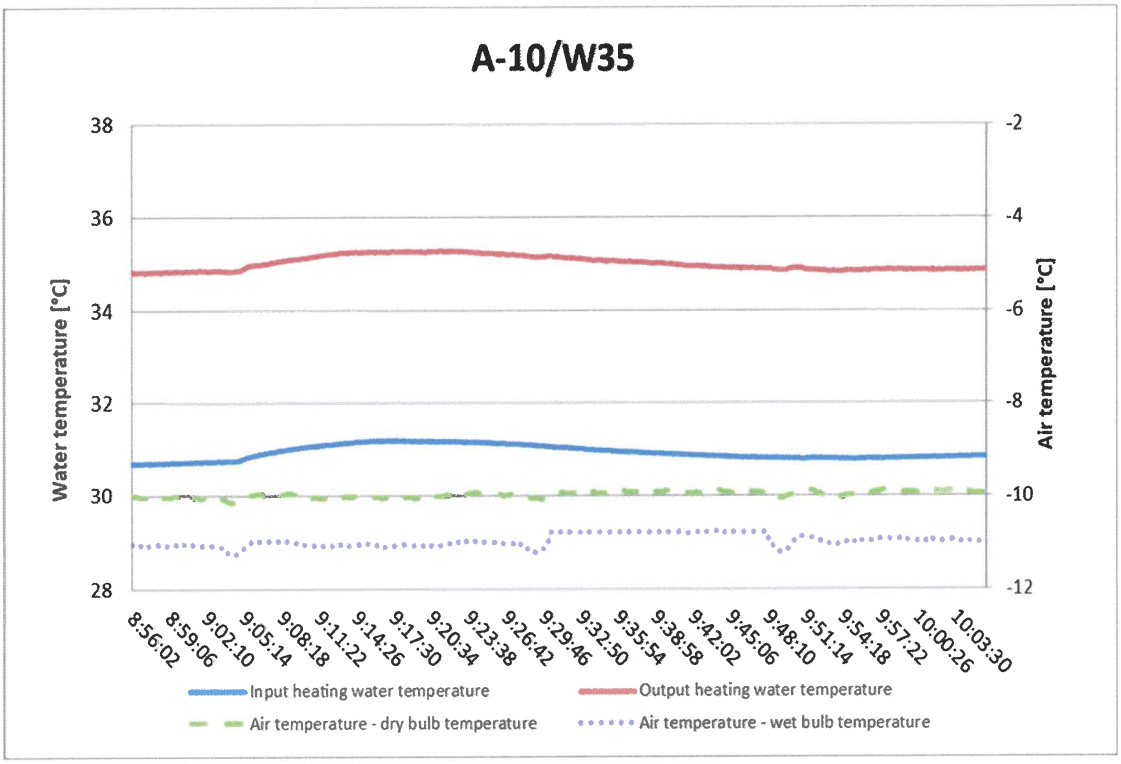


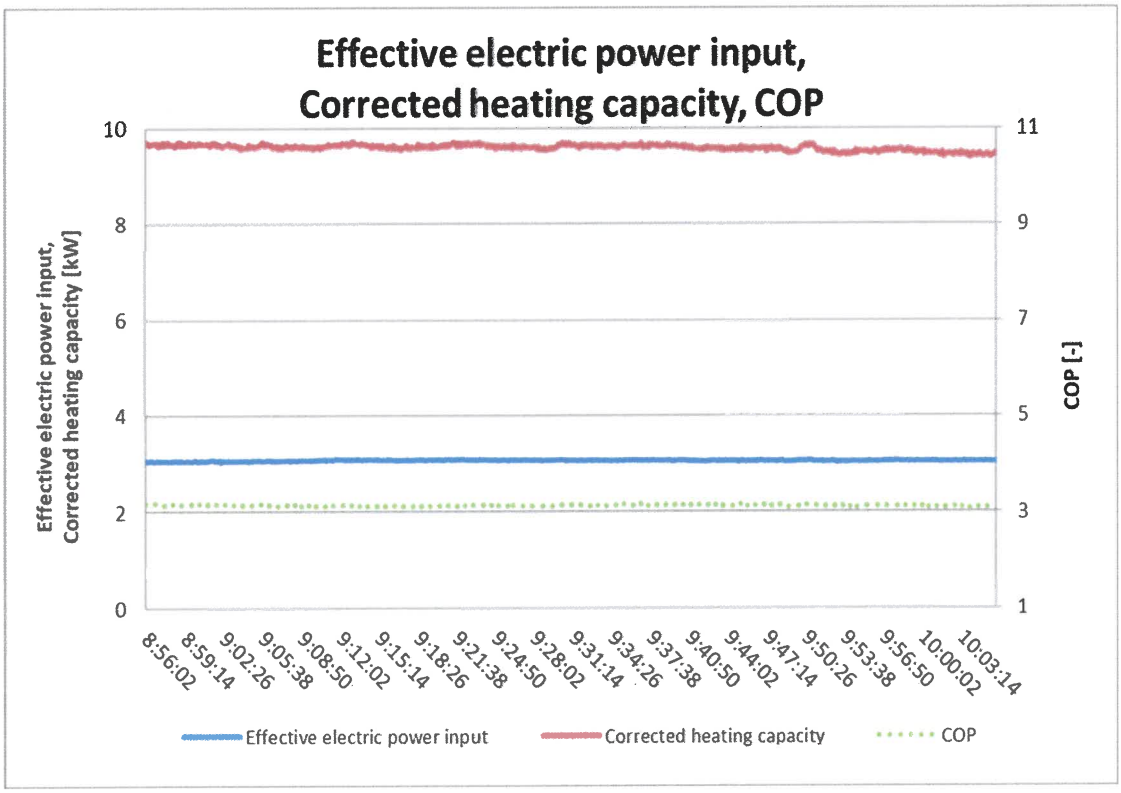
A12W26.48 (25 Hz, cp 100%)





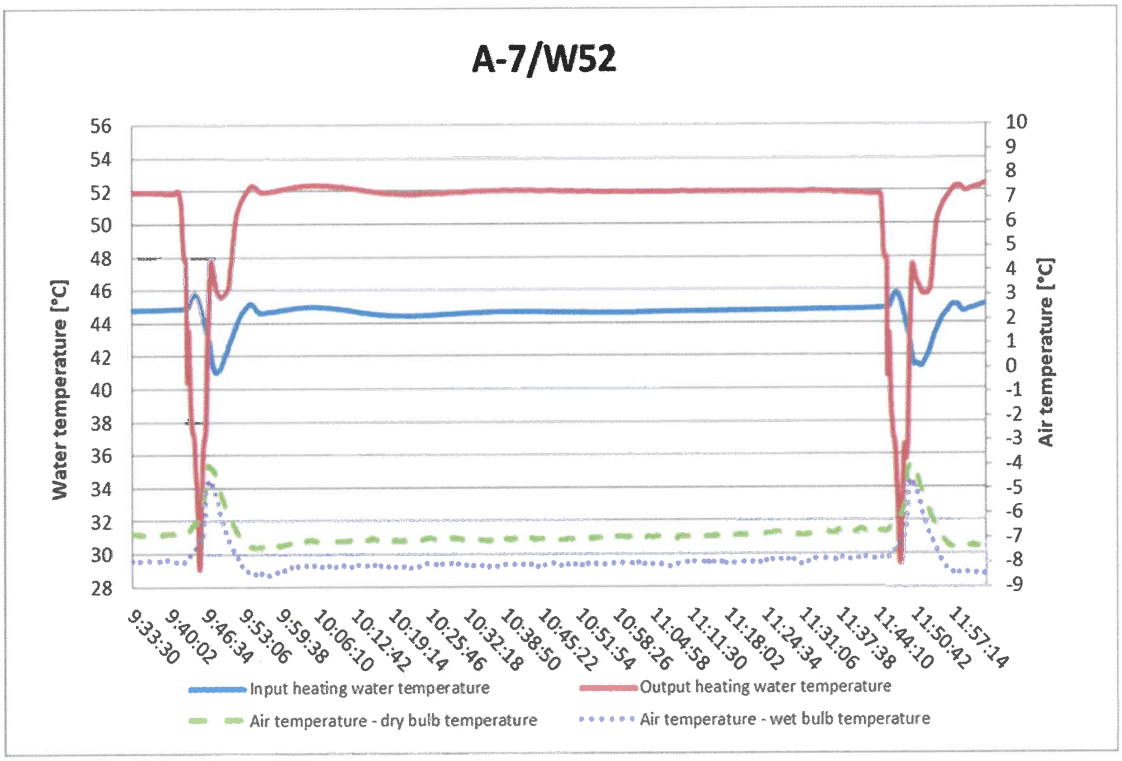
A-10W35 (56 Hz, cp 100%)

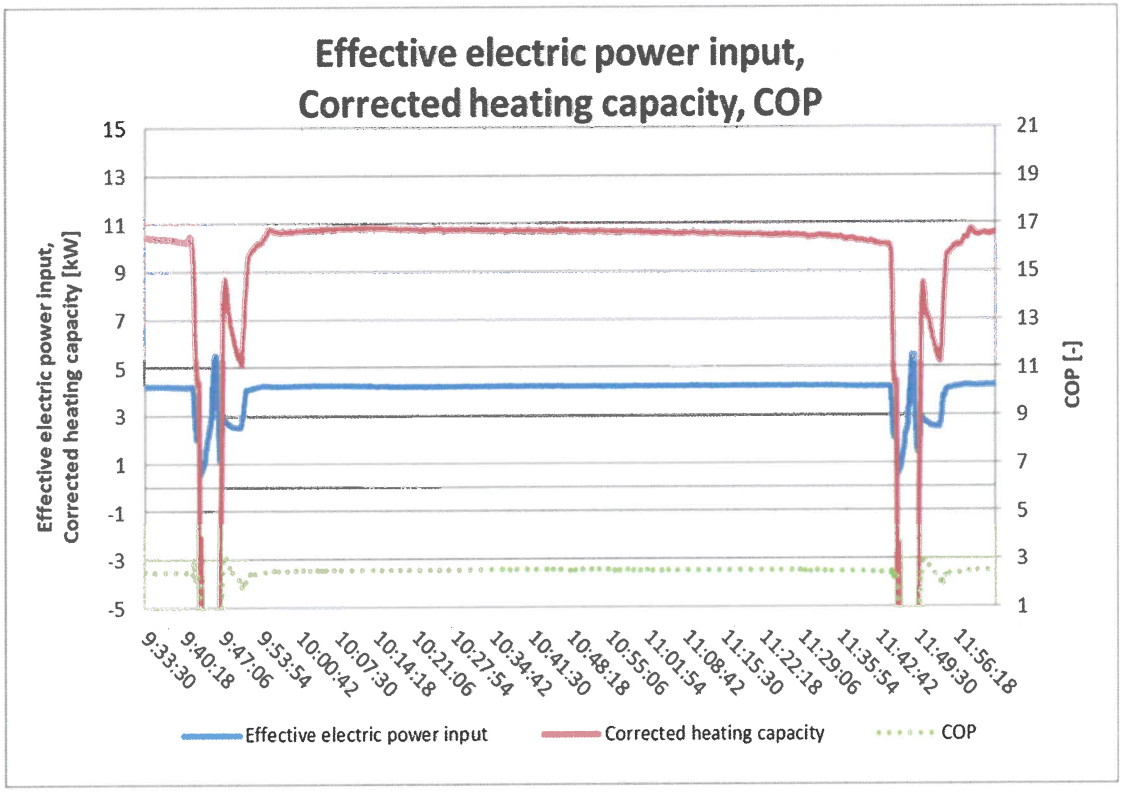




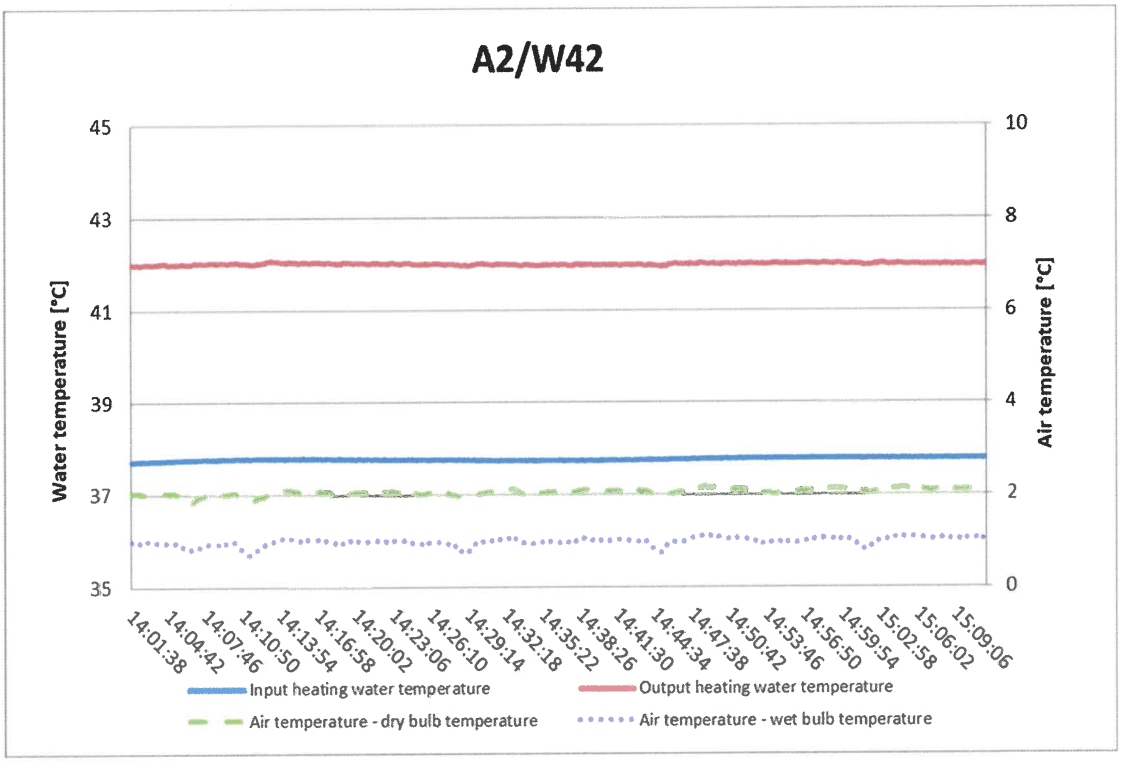
3. Seasonal performance tests and SCOP calculation – Medium temperature application

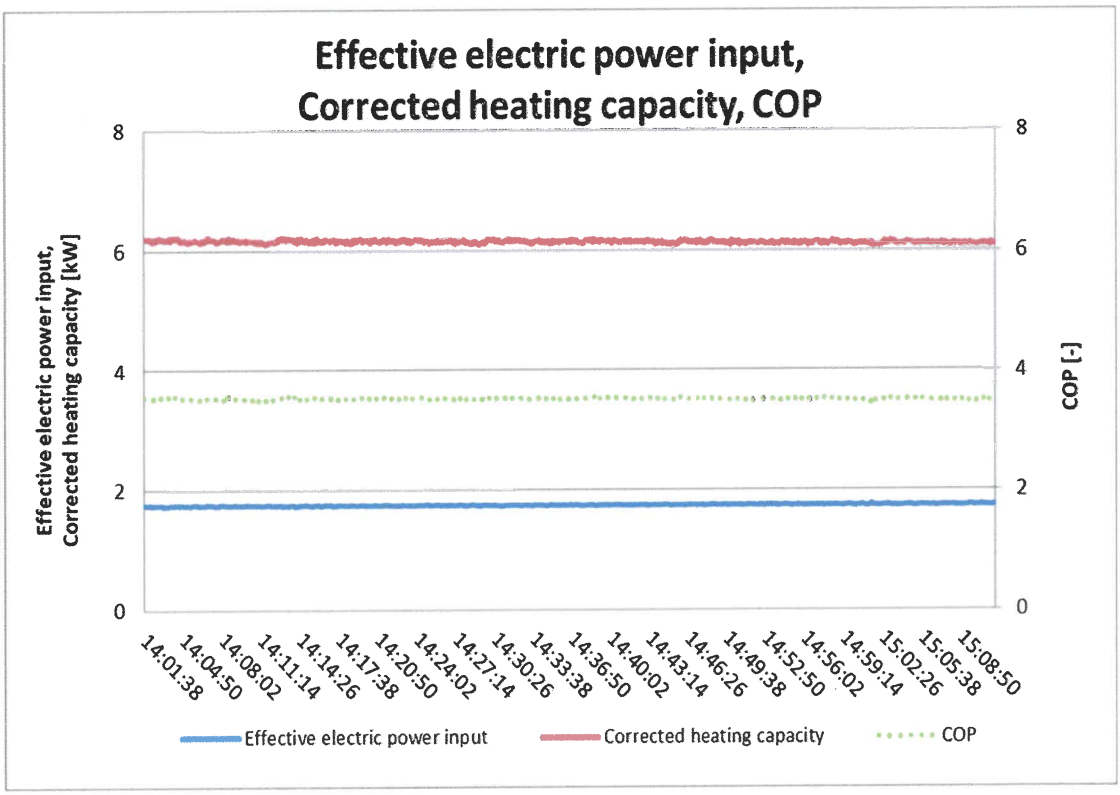
A-7W52 (56 Hz, cp 100%)



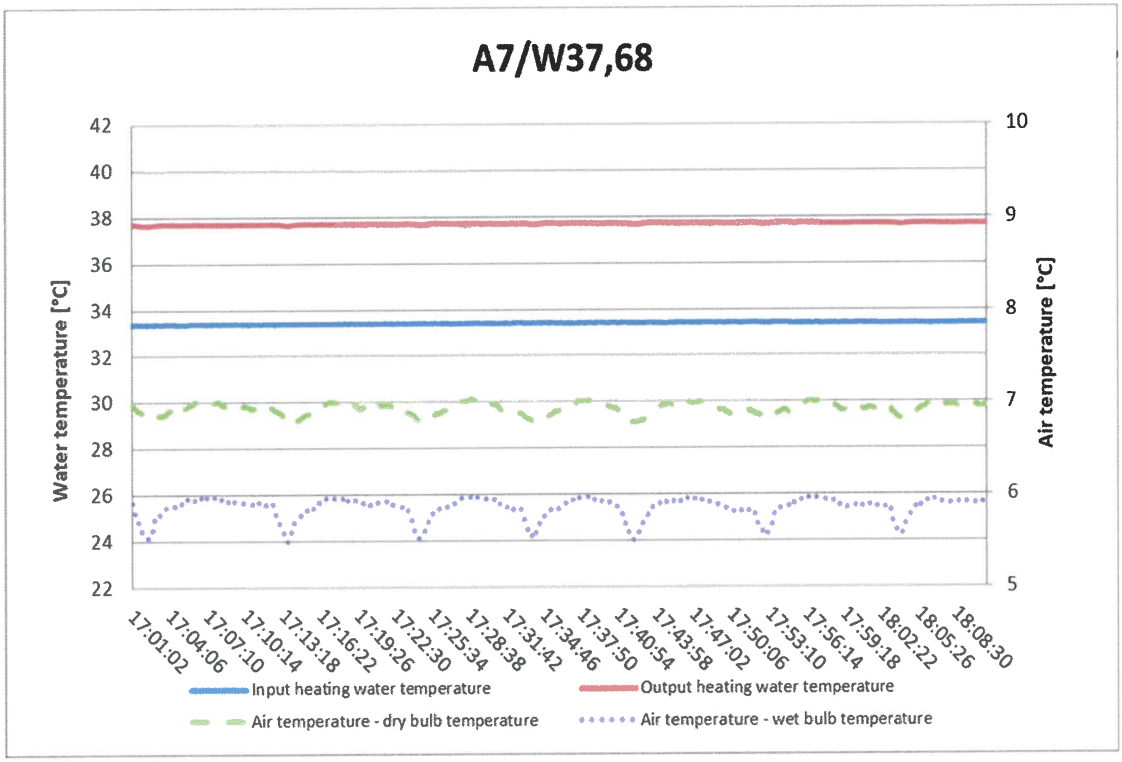


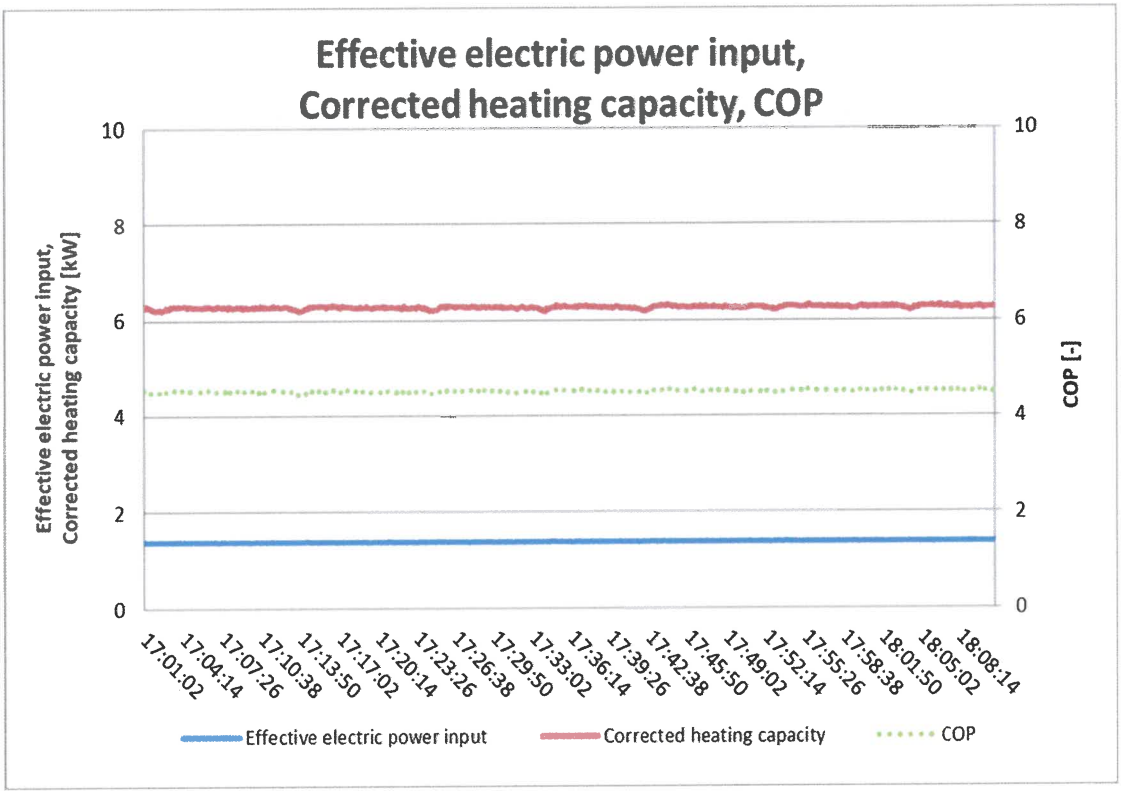
A2W42 (25 Hz, cp 100%)



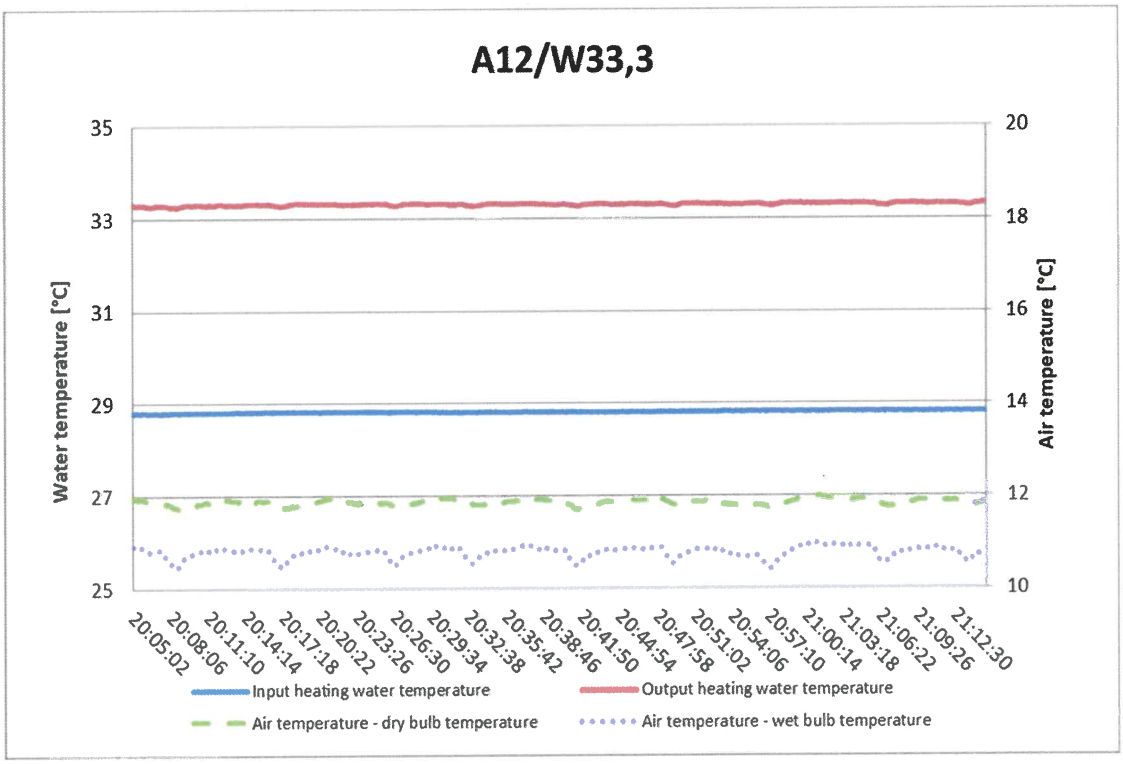


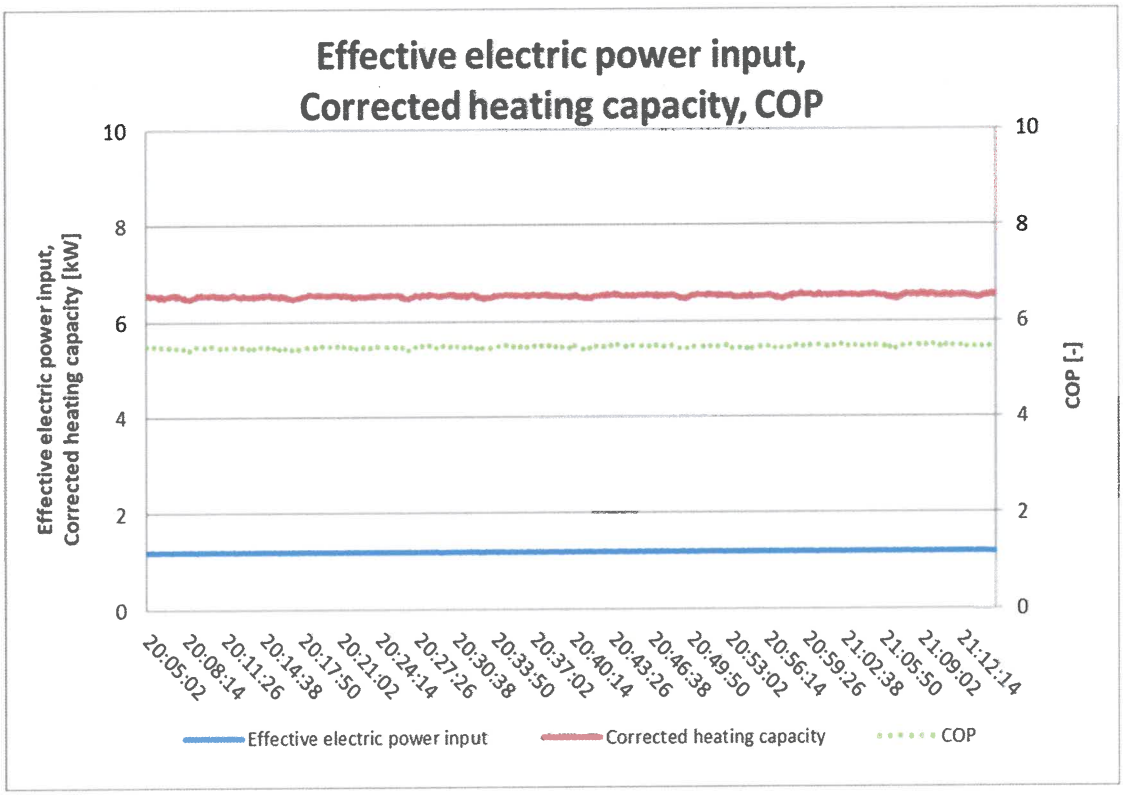
A7W37.68 (25 Hz, cp 100%)



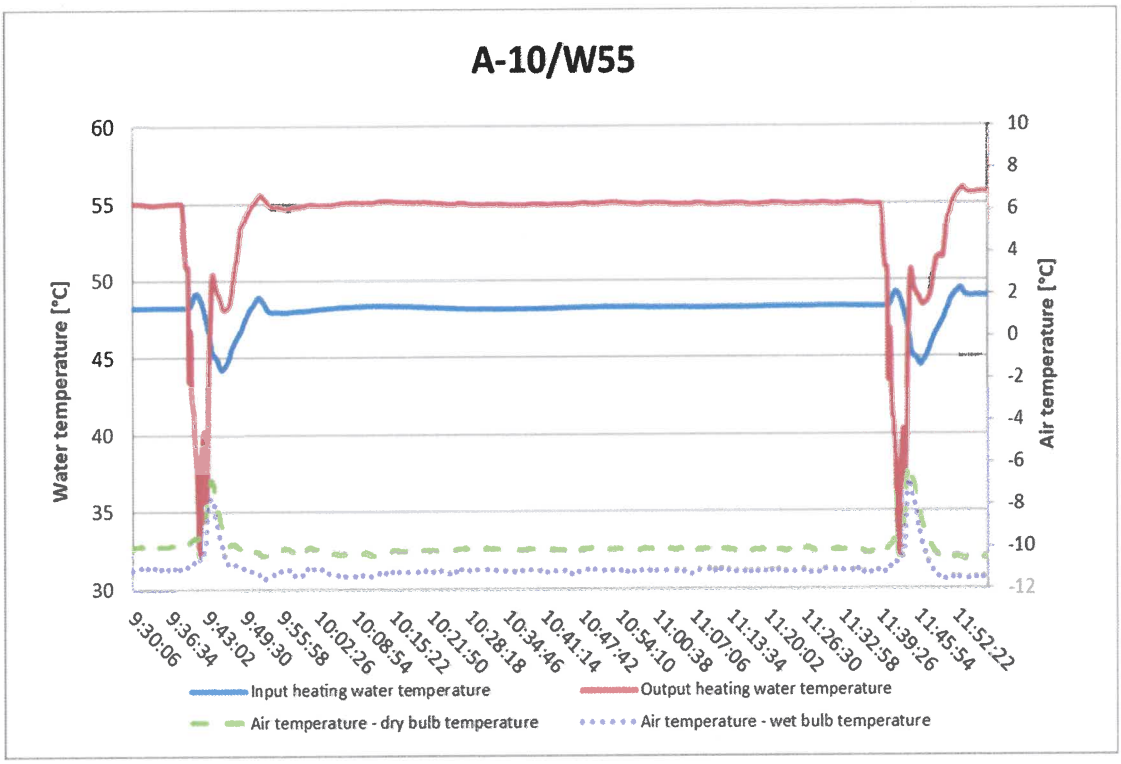


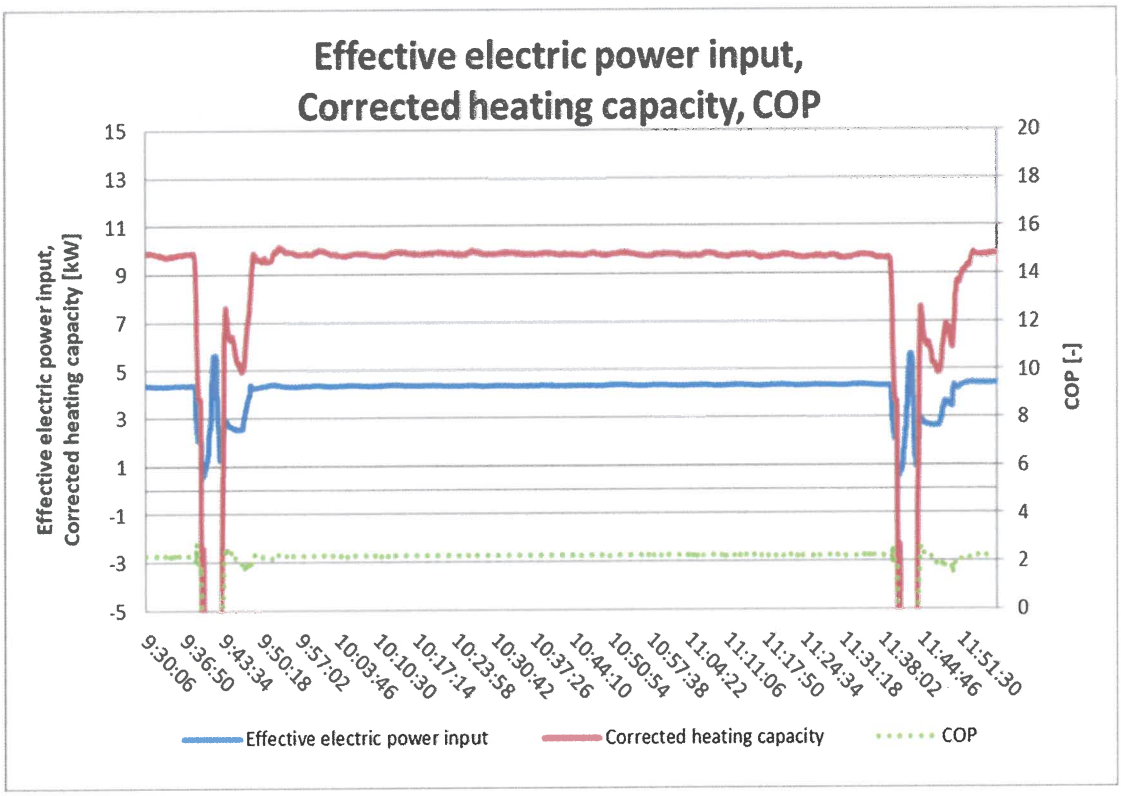
A12W33.30 (25 Hz, cp 100%)





A-10W55 (56 Hz, cp 100%)





VI. A list of referenced documents

- Order of 2024-05-16 (Order reg. no. B-82250, received on 2024-05-16)
- Contract B-82250/39
- ČSN EN 14511-2:2023 - Air conditioners, liquid chilling packages and heat pumps for space heating and cooling and process chillers, with electrically driven compressors - Part 2: Test conditions
- ČSN EN 14511-3:2023 - Air conditioners, liquid chilling packages and heat pumps for space heating and cooling and process chillers, with electrically driven compressors - Part 3: Test methods
- ČSN EN 14825:2023 - Air conditioners, liquid chilling packages and heat pumps, with electrically driven compressors, for space heating and cooling, commercial and process cooling - Testing and rating at part load conditions and calculation of seasonal performance

Test Report compiled by: Ing. Alexandr Jordanov

Test Report approved by: Ing. Mario Jankola
Heating Equipment and Construction Products Manager

– End of Test Report –

Testing Laboratory 1045.1 accredited by the Czech Accreditation Institute pursuant to
ČSN EN ISO/IEC 17025:2018
Strojírenský zkušební ústav, s.p. Zkušební laboratoř
(Engineering Test Institute, Public Enterprise, Testing Laboratory)
Hudcova 424/56b, Medlánky, 621 00 Brno

L 1045.1

TEST REPORT
39-17758/H

Product:	Outdoor Air/Water Heat pump - monobloc
Type designation:	**TAHMV12S A**
Customer:	Guangdong Tongyi Heat Pump Science and Technology Corp. Room 2001-2010, 20/F, No.159 Middle Qiaozhong Road 510163 Liwan District, Guangzhou CHINA
Manufacturer:	Guangdong Tongyi Heat Pump Science and Technology Corp. Room 2001-2010, 20/F, No.159 Middle Qiaozhong Road 510163 Liwan District, Guangzhou CHINA
Report issue date:	2024-07-17
Distribution list:	1 copy to the Customer 1 copy to the Engineering Test Institute

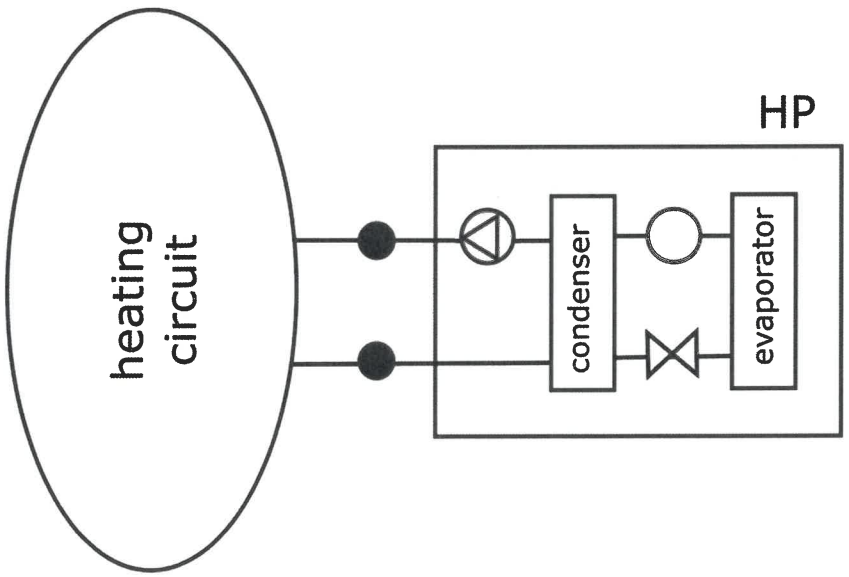
I. Description of product tested

The Heat pump **TAHMV12S A** supplied by the company **Guangdong Tongyi Heat Pump Science and Technology Corp** is structurally adapted to operate in air/water system. Device is designed as monobloc placed outdoor. Refrigerant R32 is used with charge 2.2 kg. Power supply is a three-phase. Heat pump is able to work in heating and cooling mode. Heat pump is working with fixed flow rate.

Main components of the outdoor unit **TAHMV12S A:**

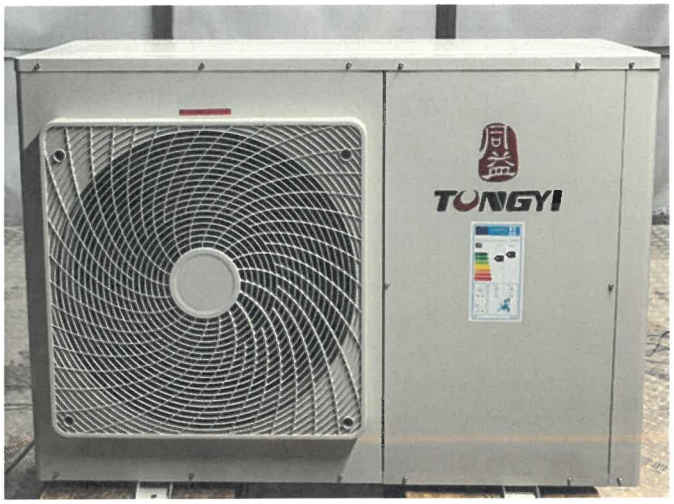
- Serial number NETAHMV12SBWY12SX000288
- Cuboid shape with dimensions 1260 × 425 × 865 mm (W × D × H)
- Frame and casing made of varnished steel sheets
- L-shaped evaporator, 3 rows, dimensions 840 × 20 × 1140 mm (W × D × H), spacing 2 mm
- Plate condenser, dimensions 70 × 30 × 310 mm (W × D × H) including insulation
- Plate condenser, dimensions 140 × 140 × 340 mm (W × D × H) including insulation
- Compressor Panasonic 9KD420ZAA2J
- Refrigerant R32 (2.2 kg)
- Refrigerant accumulator
- Axial fan Ø560 mm
- DC motor ZSFN-310-8-85F
- Circulation pump SHIMGE
- Paddle flow switch ACOL
- Expansion tank 2L ACOL
- Pressure sensors
- Temperature sensors
- Refrigerant pipes

Scheme:



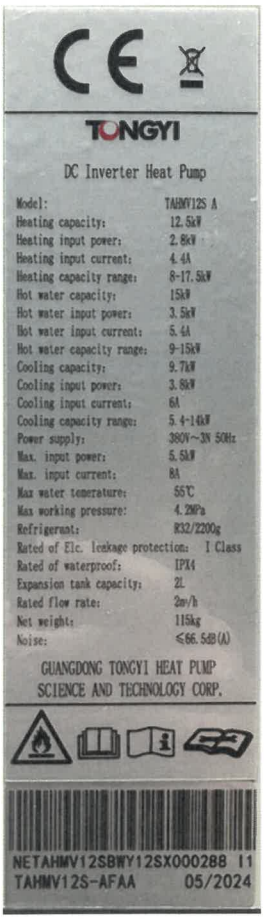
Photodocumentation:

Heat pump **TAHMV12S A** – outdoor unit
– Front view –



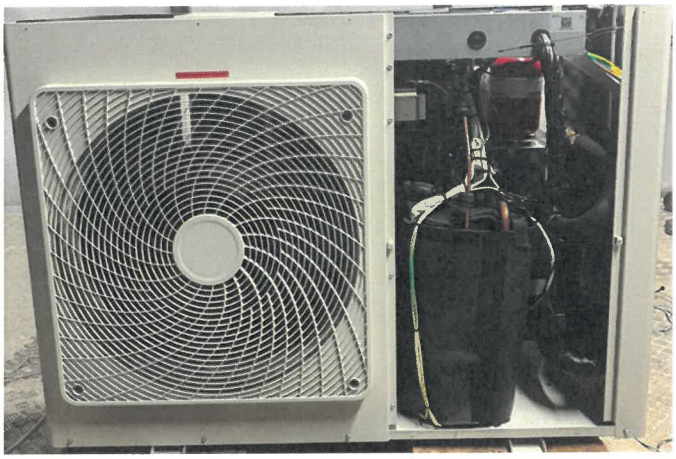
Heat pump **TAHMV12S A** – outdoor unit
– Back view –

not recognised



Heat pump **TAHMV12S A** – outdoor unit
– Compressor label –

Heat pump **TAHMV12S A** – outdoor unit
– Label –



Heat pump **TAHMV12S A** – outdoor unit
– Without cover –

II. Sample tested

SZU reg. no.	Product name	Date of submission
1212.24.40194.001	**TAHMV12S A**	2024-06-19

The visual inspection, tests and verification were carried out by Ing. Ondrej Bilkovič at the test station of SZU. The tests were performed using measuring and testing equipment with valid calibration.

III. Measuring and test equipment:

No.	Description	Inventory number
1.	Electrical energy meter	022370/1
2.	Flow meter Krohne Optiflux	022370/5
3.	Flow meter Krohne Optiflux	022370/4
4.	Barometer	022370/7
5.	Differential pressure gauge	MaR01_TI
6.	Temperature-humidity meter HC2-IC305	022370/10
7.	Temperature-humidity meter HC2-IC305	022370/11
8.	Thermometers	022370/13
9.	Tape measure	ME 475
10.	Multi-analyser SINUS SoundBook MK2	000-000-000-875/1
11.	Microphone pair G.R.A.S. 40 AK, wind deflector	000-000-000-875/2
12.	Calibrator G.R.A.S. 42AG	000-000-000-875/3

IV. Methods, results of tests and verifications

No.	Test objective	Requirement	Method of test	Documentation	Test evaluation/ verification *
1.	Calculation of sound power level	Art. 9	**ČSN ISO 9614-2:1997**	Page No. 7-13	+
2.	Acoustic measurements – Sound power level	Art. 8	**ČSN EN 12102-1:2023**	Page No. 6-13	+
*) **Evaluation / statement of conformity:** +..... Requirement fulfilled -..... Requirement not fulfilled 0 .....Not applicable x .....Not evaluated					

Note:
The stated extended measurement uncertainties are calculated as a factor of the measurement uncertainty and the extension coefficient k=2, corresponding to the coverage certainty of 95% as regards standard classification.

If a statement of conformity is provided, the decision rule pursuant to ILAC-G8:09/2019, Art. 4.2.1 – binary statement for the simple acceptance rule shall apply.

Test objective:	Heating and cooling equipment
Exact name of the test procedure:	**2.136*** - Measurement of noise characteristics
Test method:	**ČSN EN 12102-1:2023**; **ČSN ISO 9614-2:1997**
Sample tested:	Air/Water Heat pump **TAHMV12S A**
Measuring equipment used:	see Chapter III
Place of test:	Engineering Test Institute, Hudcova 424/56b, 621 00 Brno, CZ

Measurement uncertainty:

Measured quantity	Unit	Uncertainty of measurement	Evaluation
Liquid			
- temperature difference (dT)	[K]	± 0.15 K	fulfilled
- temperature inlet/outlet	[°C]	± 0.15 K	fulfilled
- volume flow	[m^3/s]	± 1 %	fulfilled
- static pressure difference	[kPa]	± 1 kPa ($\Delta p \leq 20$ kPa) or ± 5 % ($\Delta p > 20$ kPa)	fulfilled
Air			
- dry bulb temperature	[°C]	± 0.2 K	fulfilled
- wet bulb temperature	[°C]	± 0.4 K	fulfilled
- volume flow	[m^3/s]	± 5 %	not applied
- static pressure difference	[Pa]	± 5 Pa ($\Delta p \leq 100$ Pa) or ± 5 % ($\Delta p > 100$ Pa)	not applied
Refrigerant			
- pressure at compressor outlet	[kPa]	± 1 %	not applied
- temperature	[°C]	± 0.5 K	not applied
Concentration (in volume)			
- heat transfer medium	[%]	± 2	not applied
Electrical quantities			
- electric power	[W]	± 1 %	fulfilled
- voltage	[V]	± 0.5 %	fulfilled
- current	[A]	± 0.5 %	fulfilled
- electric energy	[kWh]	± 1 %	not applied
Compressor rotational speed	[min^{-1}]	± 0.5 %	not applied
The heating or cooling capacities measured on the liquid side shall be determined within a maximum uncertainty of 5 % independent of the individual uncertainties of measurement including the uncertainties on the properties of fluids.			fulfilled

Note:
Comment to abbreviated marking: e.g. A7/W55
A (air) 7 (input source air temperature in °C) / W (water), 55 (output heating water temperature in °C)

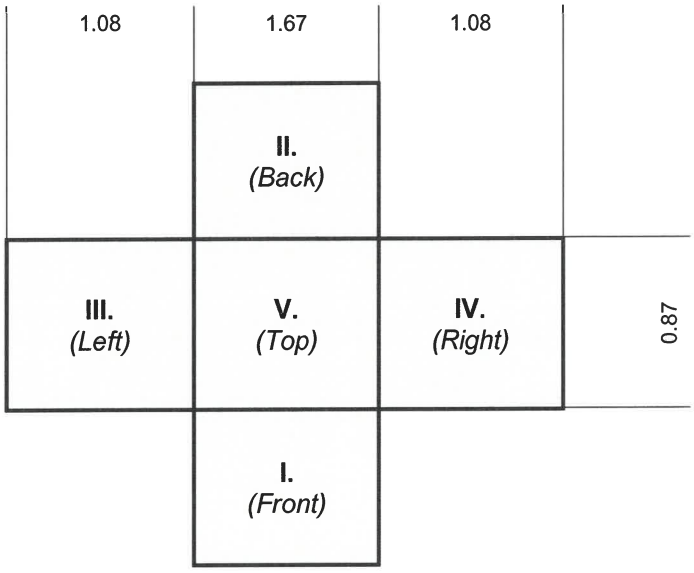
a) Measurement surface

Tested samples were surrounded by a cuboid-shaped measurement surface set at the distance *d* [m].

Test Sample: Air/Water Heat pump **TAHMV12S A**			
Distance from the test sample	*d*	[m]	0.20
Height of measurement surface	*h*	[m]	1.08
Width of measurement surface	*w*	[m]	1.67
Depth of measurement surface	*l*	[m]	0.87
Total measurement surface area	*S*	[m^2]	6.91
Minimal measuring time per surface	t_M	[s]	90.00

Sketch of measurement surface (not to scale):

Air/Water Heat pump **TAHMV12S A**
– Outdoor unit –



b) Acoustic environment

The device under test was placed inside a climate chamber (dimensions shown below). The chamber was acoustically treated to be minimise room reverberation. The background noise was stable with the main noise source being the air conditioning of the climate chamber which was set to lower power or momentarily turned off for sufficient signal to noise ratio. The device under test was placed in a position offset from the middle of the chamber, at a sufficient distance from the surrounding walls, and was rotated by about 5÷10 °. Care was taken to ensure low air flow at the measurement surface by adjusting the measurement distance and positions.

Climate-acoustic chamber *(corresponds to free field over a reflecting plane)*			
Width of testing room	l_1	[m]	6.00
Length of testing room	l_2	[m]	4.00
Height of testing room	l_3	[m]	2.30

c) Measured and calculated data – General overview:

Test sample			Air/Water Heat pump **TAHMV12S A**
The measured values are in accordance with ČSN EN 12102-1:2023			YES
The measured values are in accordance with ČSN EN ISO 9614-2:1997			YES
Operation mode			Heating
Specification of the assessment condition			A7/W55*
Type of HP capacity regulation			Inverter
Compressor speed settings			25 Hz
Fan speed settings			AUTO
Date of testing (YYYY-MM-DD)			2024-07-12
Reference air temperature	t_{amb}	[°C]	7.2
Relative humidity of air	RH	[%]	86.7
Ambient pressure	p_{amb}	[hPa]	980.1
Overall sound power level (linear)	L_W	[dB]	67.1 ± 1.5
Overall A-weighted sound power level	L_{WA}	**[dB(A)]**	**56.6 ± 1.5**
Accuracy class			**Engineering** **(grade 2)**

*) *Comment to abbreviated marking: i.e. A7/W55*
A (water), 7 (input source liquid temperature in °C) / W (water), 55 (outlet heating water temperature in °C)

1A) **Measurement results** – octave bands

Air/Water Heat pump **TAHMV12S A** Outdoor unit at A7/W55; Compressor at 25 Hz; Fan at AUTO	**Engineering (Grade 2)**

f_m	Criterion 1			Criterion 2		Criterion 3	All criteria passed?	L_W	L_{WA}	U	Evaluation
[Hz]	L_d	F_{pl}	$L_d > F_{pl}$	$F_{+/-}$	$F_{+/-} \leq 3$	$L_{W(1)}-L_{W(2)} \leq s$		[dB]	[dB(A)]	[dB]	
125	26.7	3.9	YES	0.0	YES	YES	YES	65.6	48.7	± 3.0	c
250	27.5	4.2	YES	0.0	YES	YES	YES	58.6	50.1	± 2.0	passed
500	**22.8**	**3.7**	**YES**	**0.0**	**YES**	**YES**	**YES**	**53.8**	**50.9**	**± 1.5**	**passed**
1000	22.6	2.8	YES	0.0	YES	YES	YES	50.4	50.1	± 1.5	passed
2000	26.8	3.1	YES	0.0	YES	YES	YES	45.2	46.3	± 1.5	c
4000	21.0	3.8	YES	0.0	YES	YES	YES	39.2	40.2	± 1.5	passed
8000**)	20.9	4.1	YES	0.0	YES	YES	YES	35.5	35.4	± 2.5	c
Total								**66.8**	**56.6**	**± 1.5**	

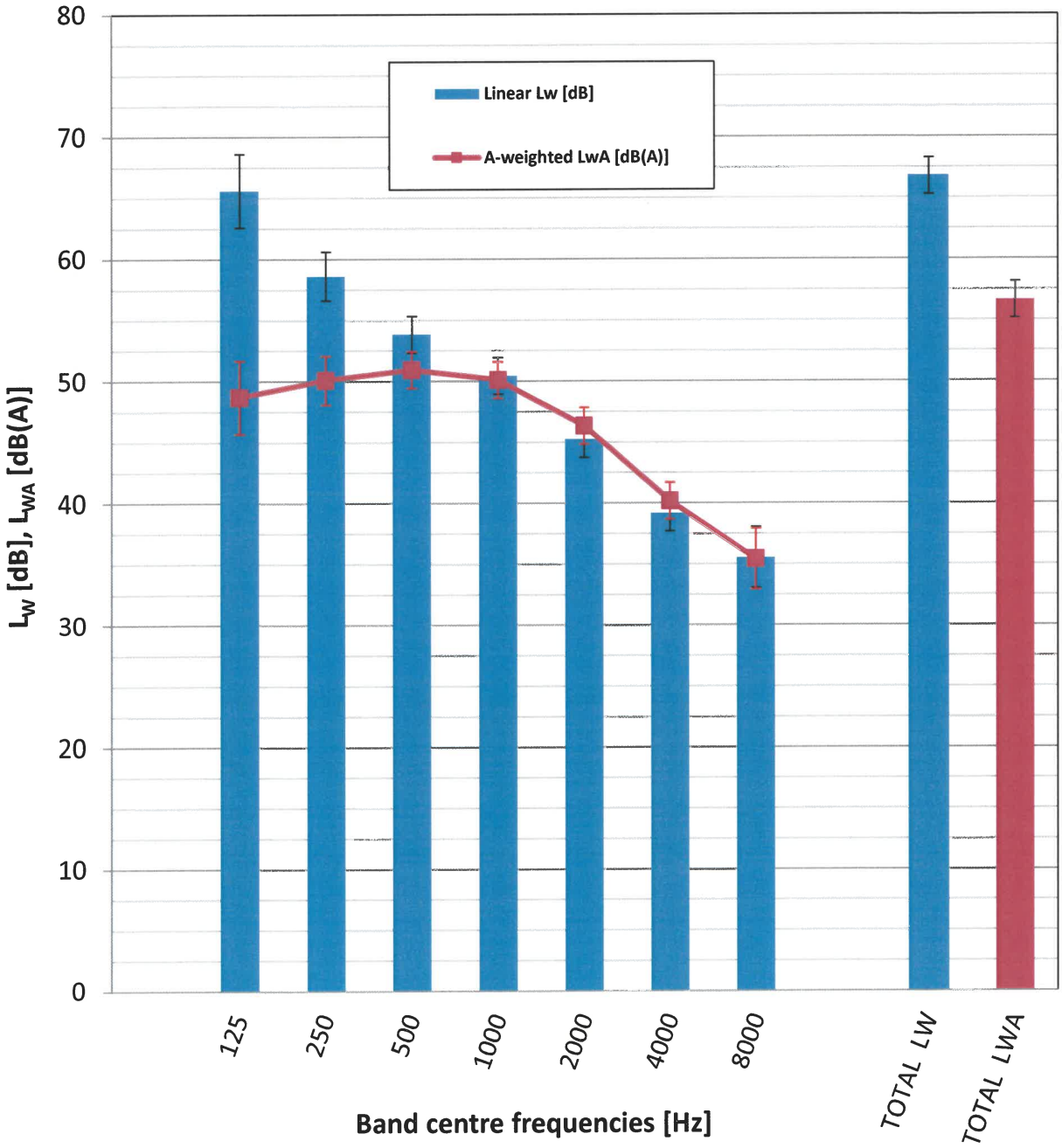
**) *Due to the sound intensity method limitations, the frequency of 6300 Hz was measured only.*

Legend:

passed	*Frequency bands with this description are significant for the calculation of A-weighted total sound power level L_{WA}. Required accuracy class is fulfilled in this band.*
not passed	*Frequency bands with this description are significant for the calculation of A-weighted total sound power level L_{WA}. Required accuracy class is not fulfilled in this band.*
c	*Frequency bands with this description are not significant for the calculation of A-weighted total sound power level L_{WA}. These bands are evaluated in the calculation of L_{WA}.*
nc	*Frequency bands with this description are not significant for the calculation of A-weighted total sound power level L_{WA}. These bands are not evaluated in the calculation of L_{WA}.*

Spectrum of Sound power level L_W – octave bands

Air/Water Heat pump **TAHMV12S A** Outdoor unit at A7/W55; Compressor at 25 Hz; Fan at AUTO	**Engineering** **(Grade 2)**



1B) **Measurement results** – one-third octave bands

Air/Water Heat pump **TAHMV12S A** Outdoor unit at A7/W55; Compressor at 25 Hz; Fan at AUTO	**Engineering (Grade 2)**

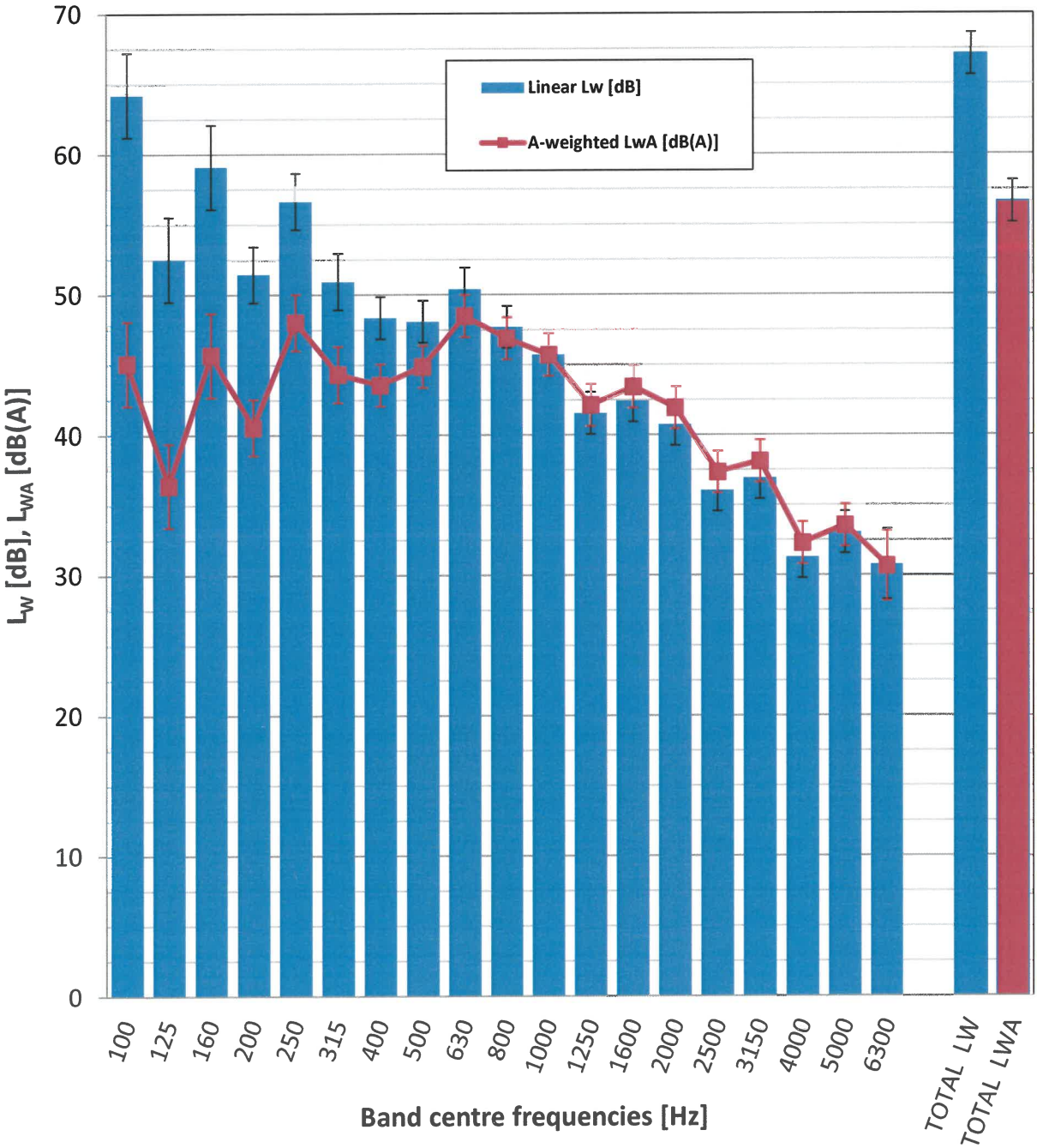
f_m	Criterion 1			Criterion 2		Criterion 3	All criteria passed?	L_W	L_{WA}	U	Evaluation
[Hz]	L_d	F_{pl}	$L_d > F_{pl}$	$F_{+/-}$	$F_{+/-} \leq 3$	$L_{W(1)}-L_{W(2)} \leq s$		[dB]	[dB(A)]	[dB]	
100	27.8	4.0	YES	0.0	YES	YES	YES	64.2	45.1	± 3.0	passed
125	26.7	3.9	YES	0.0	YES	YES	YES	52.5	36.4	± 3.0	passed
160	27.0	3.1	YES	0.0	YES	YES	YES	59.1	45.7	± 3.0	passed
200	27.2	5.9	YES	0.0	YES	YES	YES	51.5	40.6	± 2.0	passed
250	27.5	4.2	YES	0.0	YES	YES	YES	56.6	48.0	± 2.0	passed
315	27.8	4.3	YES	0.0	YES	YES	YES	50.9	44.3	± 2.0	passed
400	22.4	3.8	YES	0.0	YES	YES	YES	48.4	43.6	± 1.5	passed
500	22.8	3.7	YES	0.0	YES	YES	YES	48.1	44.9	± 1.5	passed
630	**22.6**	**3.7**	**YES**	**0.0**	**YES**	**YES**	**YES**	**50.4**	**48.5**	**± 1.5**	**passed**
800	23.9	3.0	YES	0.0	YES	YES	YES	47.7	46.9	± 1.5	passed
1000	22.6	2.8	YES	0.0	YES	YES	YES	45.7	45.7	± 1.5	passed
1250	22.7	3.9	YES	0.0	YES	YES	YES	41.5	42.1	± 1.5	passed
1600	27.6	3.4	YES	0.0	YES	YES	YES	42.4	43.4	± 1.5	passed
2000	26.8	3.1	YES	0.0	YES	YES	YES	40.7	41.9	± 1.5	passed
2500	21.2	3.1	YES	0.0	YES	YES	YES	36.1	37.4	± 1.5	c
3150	21.2	3.3	YES	0.0	YES	YES	YES	36.9	38.1	± 1.5	c
4000	21.0	3.8	YES	0.0	YES	YES	YES	31.3	32.3	± 1.5	c
5000	20.7	3.9	YES	0.0	YES	YES	YES	33.1	33.6	± 1.5	c
6300	20.9	4.1	YES	0.0	YES	YES	YES	30.8	30.7	± 2.5	c
Total								**67.1**	**56.6**	**± 1.5**	

Legend:

passed	*Frequency bands with this description are significant for the calculation of A-weighted total sound power level L_{WA}. Required accuracy class is fulfilled in this band.*
not passed	*Frequency bands with this description are significant for the calculation of A-weighted total sound power level L_{WA}. Required accuracy class is not fulfilled in this band.*
c	*Frequency bands with this description are not significant for the calculation of A-weighted total sound power level L_{WA}. These bands are evaluated in the calculation of L_{WA}.*
nc	*Frequency bands with this description are not significant for the calculation of A-weighted total sound power level L_{WA}. These bands are not evaluated in the calculation of L_{WA}.*

Spectrum of Sound power level L_W – one-third octave bands

Air/Water Heat pump **TAHMV12S A** Outdoor unit at A7/W55; Compressor at 25 Hz; Fan at AUTO	**Engineering** **(Grade 2)**



Tested by: Ing. Ondrej Bilkovič Date: 2024-07-17 Signed:

Reviewed and approved by: Ing. Antonín Kolbábek, Ph.D. Date: 2024-07-17 Signed:

V. A list of referenced documents

- Order of 2024-05-16 (Order reg. no. B-82250, received on 2024-05-16)
- Contract B-82250/39

- ČSN EN 12102-1:2023 - Air conditioners, liquid chilling packages, heat pumps, process chillers and dehumidifiers with electrically driven compressors - Determination of the sound power level - Part 1: Air conditioners, liquid chilling packages, heat pumps for space heating and cooling, dehumidifiers and process chillers
- ČSN ISO 9614-2:1997 - Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 2: Measurement by scannig

- ČSN EN 14511-2:2023 - Air conditioners, liquid chilling packages and heat pumps for space heating and cooling and process chillers, with electrically driven compressors - Part 2: Test conditions
- ČSN EN 14511-3:2023 - Air conditioners, liquid chilling packages and heat pumps for space heating and cooling and process chillers, with electrically driven compressors - Part 3: Test methods
- ČSN EN 14511-4:2023 - Air conditioners, liquid chilling packages and heat pumps for space heating and cooling and process chillers, with electrically driven compressors - Part 4: Requirements
- ČSN EN 14825:2023 - Air conditioners, liquid chilling packages and heat pumps, with electrically driven compressors, for space heating and cooling, commercial and process cooling - Testing and rating at part load conditions and calculation of seasonal performance

- Background of the SZU task no. 39-17758
- Record measurement file 39-17758-H.zip

Test Report compiled by: **Ing. Ondrej Bilkovič**
Test engineer

Test Report approved by: **Ing. Antonín Kolbábek, Ph.D.**
Hydraulic and Pressure Equipment Manager

– End of Test Report –

Strojírenský zkušební ústav, s.p., Brno, Česká republika
Engineering Test Institute, Public Enterprise, Brno, Czech Republic

TEST CERTIFICATE

Number **O-B-01796-24**

Customer	NORD HT AS Nypevegen 5 4056 Tananger NORWAY
Manufacturer	Guangdong Tongyi Heat Pump Science and Technology Corp. Room 2001-2010, 20/F, No.159 Middle Qiaozhong Road 510163 Liwan District, Guangzhou CHINA
Product	Air/water heat pump – monobloc
Type designation / Trademark	**EcoHeat MB 12.0 F**
Test methods	ČSN EN 14511-2:2023, ČSN EN 14511-3:2023, ČSN EN 14825:2023; ČSN EN 12102-1:2023
Basis of certificate	Test reports: 39-17758/T of 2024-07-18 39-17758/H of 2024-07-17 Technical documents of Guangdong Tongyi Heat Pump Science and Technology Corp.
Reference heating season	**„A" = average** (Reference design temperature $T_{designh}$ = -10 °C)

Results:

LOW TEMPERATURE (Reference water temperature 35 °C)		MEDIUM TEMPERATURE (Reference water temperature 55 °C)
10.20	**$P_{designh}$ [kW]** … Full load heating	**10.96**
4.66	**SCOP [–]** … Seasonal coefficient of performance	**3.54**

Outdoor temperature T_j [°C]	Heating declared capacity P_{dh} [kW]	Coefficient of performance at the declared capacity COP_d [–]	Outdoor temperature T_j [°C]	Heating declared capacity P_{dh} [kW]	Coefficient of performance at the declared capacity COP_d [–]
T_j = -7	9.020	3.015	T_j = -7	9.697	2.371
T_j = +2	5.620	4.692	T_j = +2	6.142	3.518
T_j = +7	6.496	5.925	T_j = +7	6.252	4.523
T_j = +12	7.490	7.727	T_j = +12	6.523	5.466
T_j = TOL = -10	9.589	3.127	T_j = TOL = -10	8.969	2.113
T_j = $T_{bivalent}$ = -7	9.020	3.015	T_j = $T_{bivalent}$ = -7	9.697	2.371

Strojírenský zkušební ústav, s.p., Hudcova 424/56b, 621 00 Brno, Česká republika
Engineering Test Institute, public enterprise, Hudcova 424/56b, 621 00 Brno, Czech Republic
www.szutest.cz

LOW TEMPERATURE (Reference water temperature 35 °C)				MEDIUM TEMPERATURE (Reference water temperature 55 °C)
Power consumption in modes other than „active mode“:				
52.4	Off mode	P_{OFF}	[W]	**52.4**
53.7	Thermostat off mode	P_{TO}	[W]	**54.0**
52.4	Standby mode	P_{SB}	[W]	**52.4**
0.0	Crankcase heater mode	P_{CK}	[W]	**0.0**
Annual electricity consumption for heating according to:				
4524	ČSN EN 14825:2023	Q_{HE}	[kWh]	**6406**
Seasonal Space heating energy efficiency				
183.2	ČSN EN 14825:2023	η_s	[%]	**138.6**
Liquid flow rate in outdoor heating exchanger:				
–	Source liquid	Min/Max	[m^3/h]	**–**
Liquid flow rate in indoor heating exchanger:				
2.0536 / 2.0603	Heating water	Min/Max	[m^3/h]	**1.2701 / 1.2788**

Sound power level at condition A7W55* (at 25 Hz):

EcoHeat MB 12.0 F – outdoor unit –	L_{WA}	56.6 ± 1.5	dB(A)	Accuracy class 2 (Engineering)

(*) Comment to abbreviated marking:
„A“ air, „7“ inlet temperature (dry-bulb temperature) in °C, „W“ water, „35“ outlet temperature in °C.

Specification of conditions:

Compressor speed control	**Variable**	Heating water volume flow rate (indoor heat exchanger)	**Fixed**
Outlet water temperature (indoor heat exchanger)	**Variable**	Source liquid volume flow rate (outdoor heat exchanger)	**–**
Function	**Reversible**		

Engineering Test Institute, Public Enterprise, confirms by this Test Certificate that the testing of the product in question was performed with the results as stated above. Engineering Test Institute, Public Enterprise, is an accredited Testing Laboratory 1045.1.

Brno, 2024-11-07

STROJÍRENSKÝ ZKUŠEBNÍ ÚSTAV, s.p. CZ 1

Ing. Mario Jankola
Heating Equipment and Construction Products Manager

– END OF TEST CERTIFICATE –

mgr Jerzy Podgórski
Tłumacz przysięgły języka angielskiego
ul. Łabiszyńska 17 m. 84, 03-397 Warszawa
Tel. (+48 22) 744 00 66 (biuro),
(+48) 501 211 100

TŁUMACZENIE Z JĘZYKA ANGIELSKIEGO

[*dokument sporządzono na papierze firmowym Engineering Test Institute*]
[*dokument posiada nagłówek w języku angielskim i innym języku obcym o następującej treści:*]

Strojírenský zkušební ústav; s.p., Brno, Česká republika
Instytut Badań Technicznych, Przedsiębiorstwo Państwowe, Brno, Republika Czeska

CERTYFIKAT BADAŃ
Numer **O-B-01796-24**

Klient	NORD HT AS Nypevegen 5, 4056 Tananger NORWEGIA
Producent	Guangdong Tongyi Heat Pump Science and Technology Corp. Room 2001-2010, 20/F, No. 159 Middle Qiaozhong Road 510163 Liwan District, Guangzhou CHINY
Produkt	Pompa ciepła powietrze/woda – monoblok
Oznaczenie typu / znak towarowy	**EcoHeat MB 12.0 F**
Metody testowe	ČSN EN 14511-2:2023, ČSN EN 14511-3:2023, ČSN EN 14825:2023; ČSN EN 12102-1:2023
Podstawa certyfikatu	Raporty z badań: 39-17758/T z 2024-07-18 39-17758/H z 2024-07-17 Dokumentacja techniczna Guangdong Tongyi Heat Pump Science and Technology Corp.
Referencyjny sezon grzewczy	**„A" = średnia** **(Temperatura projektowa odniesienia $T_{designh}$ = -10°C)**

Wyniki:

NISKA TEMPERATURA (Referencyjna temperatura wody 35°C)			**ŚREDNIA TEMPERATURA (Referencyjna temperatura wody 55°C)**		
10,20	**$P_{designh}$ [kW] ...Ogrzewanie przy pełnym obciążeniu**				**10,96**
4,66	**SCOP [–] ... Współczynnik efektywności sezonowej**				**3,54**
Temperatura zewnętrzna T_j [°C]	Deklarowana wydajność grzewcza P_{dh} [kW]	Współczynnik efektywności przy deklarowanej wydajności COP_d [–]	Temperatura zewnętrzna T_j [°C]	Deklarowana wydajność grzewcza P_{dh} [kW]	Współczynnik efektywności przy deklarowanej wydajności COP_d [–]
T_j = -7	9,020	3,015	T_j= -7	9,697	2,371
T_j = +2	5,620	4,692	T_j=+2	6,142	3,518
T_j=+7	6,496	5,925	T_j = +7	6,252	4,523
T_j = +12	7,490	7,727	T_j = +12	6,523	5,466
T_j = TOL = -10	9,589	3,127	T_j = TOL = -10	8,969	2,113
T_j = $T_{bivalent}$ = -7	9,020	3,015	T_j = $T_{bivalent}$ = -7	9,697	2,371

[*pieczęć okrągła w innym języku obcym o następującej treści:*] Strojírenský zkušební ústav, CZ 1

NISKA TEMPERATURA (Referencyjna temperatura wody 35°C)				**ŚREDNIA TEMPERATURA** (Referencyjna temperatura wody 55°C)
	Pobór mocy w trybach innych niż „tryb aktywny”:			
52,4	Tryb wył.	P_{OFF}	[W]	**52,4**
53,7	Tryb wył. termostatu	P_{TO}	[W]	**54,0**
52,4	Tryb czuwania	P_{SB}	[W]	**52,4**
0,0	Tryb podgrzewacza skrzyni korbowej	P_{CK}	[W]	**0,0**
	Roczne zużycie energii elektrycznej na ogrzewanie wg:			
4524	ČSN EN 14825:2023	Q_{HE}	[kWh]	**6406**
	Sezonowa efektywność energetyczna ogrzewania pomieszczeń			
183,2	ČSN EN 14825:2023	η_s	[%]	**138,6**
	Natężenie przepływu cieczy w zewnętrznym wymienniku ciepła:			
–	Ciecz źródłowa	Min/Max	[m³/h]	–
	Natężenie przepływu cieczy w wewnętrznym wymienniku ciepła:			
2,0536 / 2,0603	Woda grzewcza	Min/Max	[m³/h]	**1,2701 / 1,2788**

Poziom mocy akustycznej w warunkach A7W55* (przy 25 Hz):

EcoHeat MB 12,0 F - Jednostka zewnętrzna -	L_{WA}	56,6 ± 1,5	dB(A)	Klasa dokładności 2 (techniczna)

(*) Komentarz do skróconego oznaczenia:
„A” powietrze, „7” temperatura na wlocie (temperatura termometru suchego) w °C, „W” woda, „35” temperatura na wylocie w °C.

Specyfikacja warunków:

Regulacja prędkości sprężarki	**Zmienna**	Objętościowe natężenie przepływu wody grzewczej (wewnętrzny wymiennik ciepła)	**Stałe**
Temperatura wody na wylocie (wewnętrzny wymiennik ciepła)	**Zmienna**	Natężenie przepływu objętościowego cieczy źródłowej (zewnętrzny wymiennik ciepła)	–
Funkcja	**Odwracalna**		

Instytut Badań Technicznych, Przedsiębiorstwo Publiczne, potwierdza niniejszym Certyfikatem Badań, że badanie danego produktu zostało przeprowadzone z uzyskanymi wynikami podanymi powyżej. Instytut Badań Technicznych, Przedsiębiorstwo Publiczne, jest akredytowanym Laboratorium Badawczym 1045.1.

Brno, 07.11.2024

[*pieczęć okrągła w innym języku obcym o następującej treści:*] Strojírenský zkušební ústav, CZ 1

[*nieczytelny podpis*]
Ing. Mario Jankola
Kierownik ds. urządzeń grzewczych i wyrobów budowlanych
- KONIEC CERTYFIKATU BADAŃ -

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Ja, Jerzy Podgórski, tłumacz przysięgły języka angielskiego wpisany na listę tłumaczy przysięgłych Ministra Sprawiedliwości RP pod numerem TP/800/05, zaświadczam zgodność powyższego tłumaczenia z oryginałem dokumentu sporządzonego w języku angielskim.

Warszawa, 19 listopada 2024 roku, Nr Rep. 874

Strojírenský zkušební ústav, s.p., Brno, Česká republika
Engineering Test Institute, Public Enterprise, Brno, Czech Republic

CONFIRMATION OF IDENTICITY

Customer	NORD HT AS Nypevegen 5 4056 Tanager Norway
Relevant documentation	Test reports: 39-17758/T of 2024-07-18 39-17758/H of 2024-07-17 Technical documents of Guangdong Tongyi Heat Pump Science and Technology Corp. Structural Identification from 2024-09-23

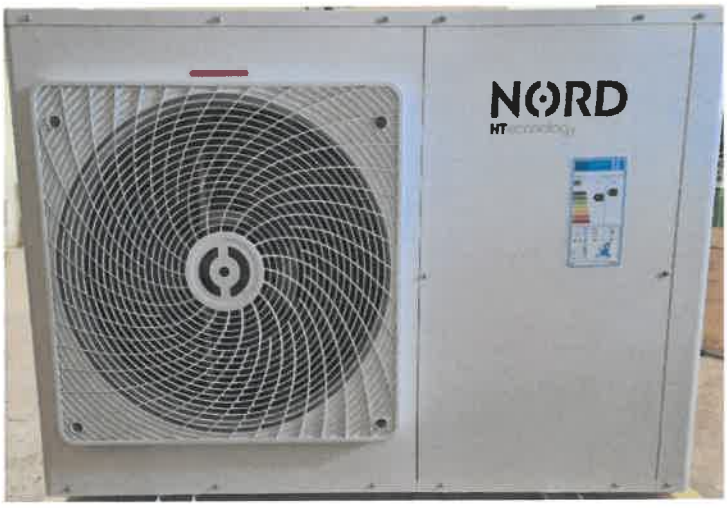
As per the written confirmation (Appendix A) from **Guangdong Tongyi Heat Pump Science and Technology Corp.** stating that the tested unit **TAHMV12S A** corresponds to the model according to the manufacturer's information with the following brand name written below. Meaning, the products in question shall be identical.

Company: **NORD HT AS**
Model: **EcoHeat MB 12.0 F**

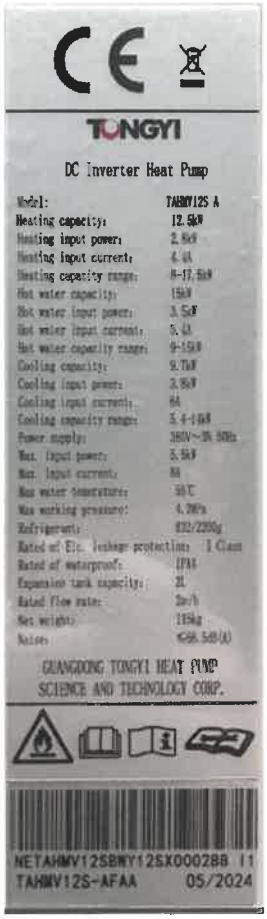
The validity of the unit's capabilities, beyond a physical inspection of the components on site, were not further evaluated by the test centre.

Photodocumentation:

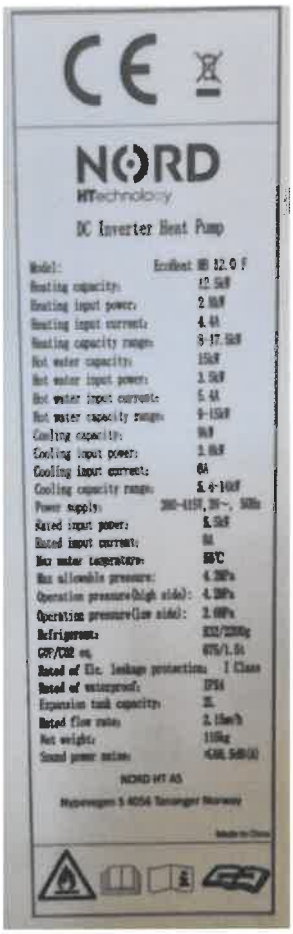
Front view
Company: Guangdong Tongyi Heat Pump Science and Technology Corp.



Front view
Company: NORD HT AS

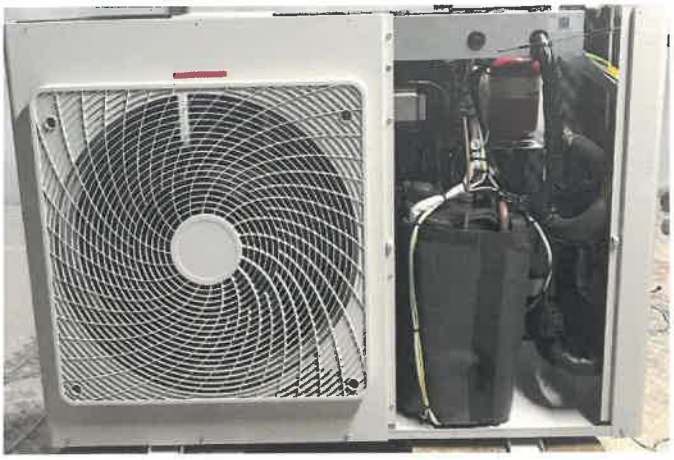


Label
Company: Guangdong Tongyi Heat Pump Science and Technology Corp.

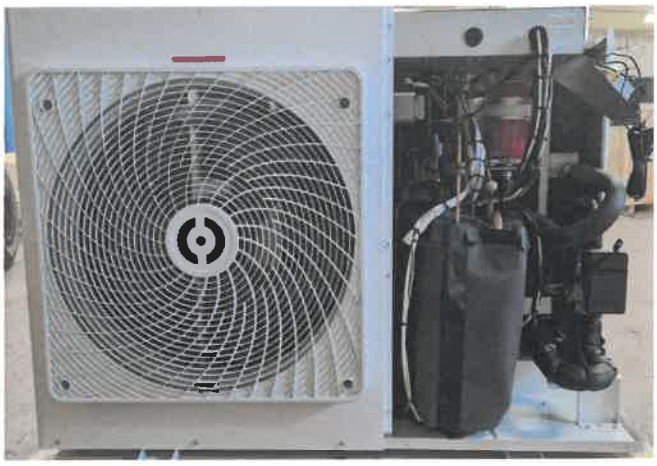


Label
Company: NORD HT AS

Customer	Guangdong Tongyi Heat Pump Science and Technology Corp. Room 2001-2010, 20/F, No.159 Middle Qiaozhong Road 510163 Liwan District, Guangzhou CHINA	NORD HT AS Nypevegen 5 4056 Tanager Norway
Product	Air/water heat pump – monobloc	Air/water heat pump – monobloc
Type designation / Trade mark	**TAHMV12S A**	**EcoHeat MB 12.0 F**
Serial number	NETAHMV12SBWY12SX000288	–



Without cover
Company: Guangdong Tongyi Heat Pump Science and Technology Corp.



Without cover
Company: NORD HT AS

Brno, 2025-01-30

STROJÍRENSKÝ ZKUŠEBNÍ ÚSTAV, s.p. 90

Ing. Mario Jankola
Heating Equipment and Construction Products Manager

– END OF CONFIRMATION OF IDENTICITY –

Integral part of this document is the inclusion of Appendix A: Structural Identification from 2024-09-23, which can be found on the following page.

Appendix A

Structural Identification

Importer:
Customers company name: NORD HT AS
Registered address: Nypevegen 5 4056 Tananger Norway
Tel: +48 732 632 532
Email:damian.samborski@gmail.com
Contact person:Damian Samborski

Product: Name: Air-to-Water Heat pump
Model: TAHMV9S A, TAHMV12S A, TAHMV14S A, TAHMV16S A,

Manufacturer: Guangdong Tongyi Heat Pump Science and Technology Corp.
Room 2001-2010, 20/F, No. 159 Middle Qiaozhong Road
Liwan District, Guangzhou, P.R.China

The following criteria were applied:
•ČSN EN 14511-2÷3:2023 [EN 14511-2÷3:2022]
•ČSN EN 14825:2023 [EN 14825:2022]
•ČSN EN 12102-1:2023 [EN 12102-1:2022]

Hereby confirm

TONGYI Model	Nord Model
TAHMV9S A	Ecoheat MB 9.0 F
TAHMV12S A	Ecoheat MB 12.0 F
TAHMV14S A	Ecoheat MB 14.0 F
TAHMV16S A	Ecoheat MB 16.0 F

These are the same products, so refer to the same test reports.

It is hereby confirmed that Nord has obtained the product from Tongyi and referred to the same test report. Nord may not use this test report with other manufacturers. Tongyi is solely responsible for the products it manufactures and assumes no liability if Nord commissions other manufacturers to produce its "EcoHeat MB 9.0 F, EcoHeat MB 12.0 F, EcoHeat MB 14.0 F, EcoHeat MB 16.0 F" series products.
The responsibility for this statement lies with the importer.

Tananger, 23.09.2024

NORD HT AS

Representative:Ingvar Sveinsvoll

Guangzhou, 23.09.2024

Guangdong Tongyi Heat Pump Science and Technology Corp.

Representative:Tang Xuchu

mgr Jerzy Podgórski
Tłumacz przysięgły języka angielskiego
ul. Łabiszyńska 17 m. 84, 03-397 Warszawa
Tel. (+48 22) 744 00 66 (biuro),
(+48) 501 211 100

TŁUMACZENIE Z JĘZYKA ANGIELSKIEGO

[*logo*]
[*nagłówek w języku angielskim i innym języku obcym*]
[*logo firmy w lewym górnym rogu dokumentu na stronach 2-5*]

Instytut Badań Technicznych, Przedsiębiorstwo Państwowe, Brno, Republika Czeska
POTWIERDZENIE TOŻSAMOŚCI

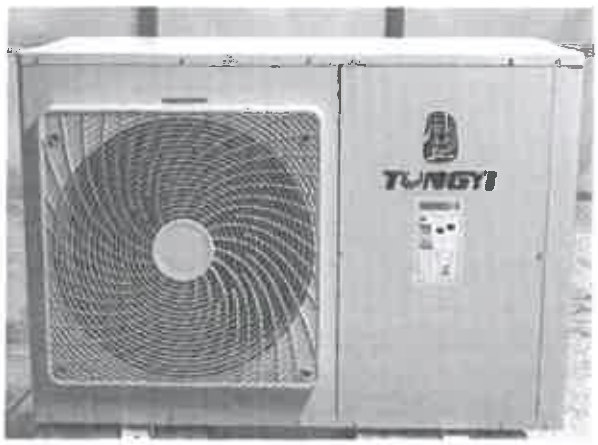
Klient	NORD HT AS Nypevegen 5 4056 Tanager Norway [*Norwegia*]
Odpowiednia dokumentacja	Raporty z badań: 39-17758/T z 2024-07-18 39-17758/H z 2024-07-17 Dokumenty techniczne Guangdong Tongyi Heat Pump Science and Technology Corp. Identyfikacja strukturalna z 2024-09-23

Zgodnie z pisemnym potwierdzeniem (Załącznik A) od **Guangdong Tongyi Heat Pump Science and Technology Corp.**, stwierdzającym, że testowana jednostka **TAHMV12S A** odpowiada modelowi zgodnie z informacjami producenta z następującą marką podaną poniżej. Oznacza to, że produkty są identyczne.

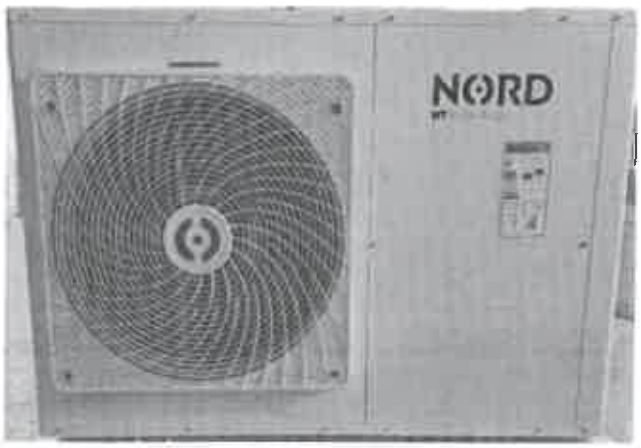
Spółka: **NORD HT AS**
Model: **EcoHeat MB 12.0 F**

Ważność funkcji jednostki, poza fizyczną inspekcją komponentów na miejscu, nie została dalej oceniona przez ośrodek badawczy.

Dokumentacja fotograficzna:

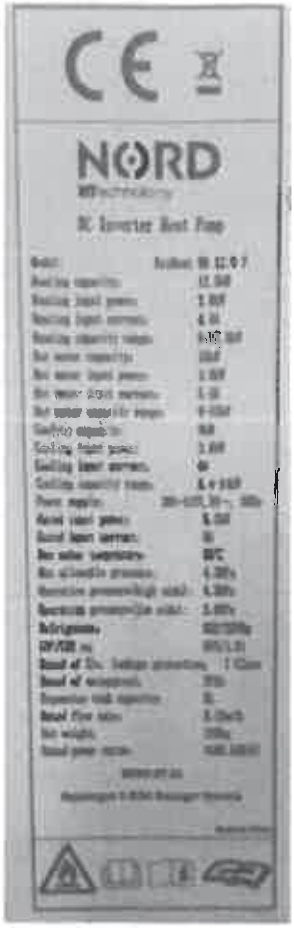


Widok z przodu
Spółka: Guangdong Tongyi Heat Pump Science and Technology Corp.



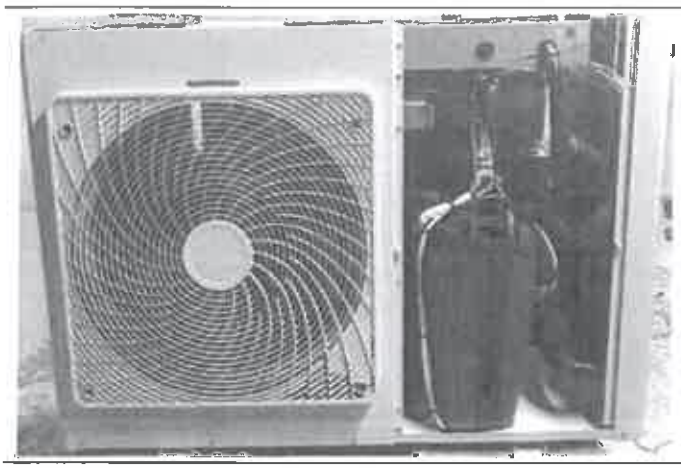
Widok z przodu
Spółka: NORD HT AS

Etykieta
Spółka: Guangdong Tongyi Heat Pump Science and Technology Corp.

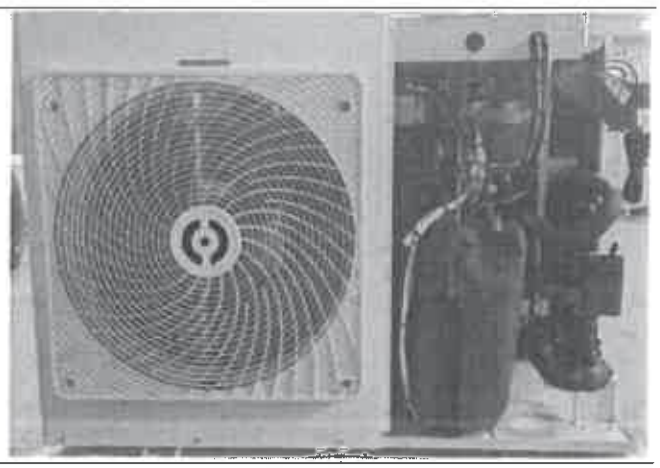


Etykieta
Spółka: NORD HT AS

Klient	Guangdong Tongyi Heat Pump Science and Technology Corp. Room 2001-2010, 20/F, No.159 Middle Qiaozhong Road 510163 Liwan District, Guangzhou CHINY	NORD HT AS Nypevegen 5 4056 Tanager Norway [*Norwegia*]
Produkt	Pompa ciepła powietrze/woda – monoblok	Pompa ciepła powietrze/woda – monoblok
Oznaczenie typu / znak towarowy	TAHMV12S A	EcoHeat MB 12.0 F
Numer seryjny	NETAHMV12SBWY12SX000288	–



Bez osłony
Spółka: Guangdong Tongyi Heat Pump Science and Technology Corp.



Bez osłony
Spółka: NORD HT AS

Brno, 30.01.2025 r.

[*nieczytelny podpis*] [*pieczęć okrągła w innym języku obcym*]

Ing. Mario Jankola
Kierownik ds. urządzeń grzewczych i wyrobów budowlanych

- KONIEC POTWIERDZENIA TOŻSAMOŚCI -

Integralną częścią tego dokumentu jest dołączenie Załącznika A: Identyfikacja strukturalna z 2024-09-23, którą można znaleźć na kolejnej stronie.

Załącznik A
Identyfikacja Strukturalna

Importer:
Nazwa firmy klienta: NORD HT AS
Adres siedziby: Nypevegen 5 4056 Tananger Norway [*Norwegia*]
Tel: +48 732 632 532
Adres e-mail: damian.samborski@gmail.com
Osoba kontaktowa: Damian Samborski

Produkt: Nazwa: Pompa ciepła powietrze-woda
Model: TAHMV9S A, TAHMV12S A, TAHMV14S A, TAHMVI6S A,

Wytwórca; Guangdong Tongyi Heat Pump Science and Technology Corp.
Room 2001-2010,20, 20/F, No.159 Middle Qiaozhong Road
Liwan District, Guangzhou, P.R. China [*Chińska Republika Ludowa*]

Zastosowano następujące kryteria:
▫ČSN EN 14511-2+3:2023 [EN 14511-2+3:2022]
•ČSN EN 14825:2023 [EN 14825:2022]
•ČSN EN 12102-1:2023 [EN 12102-1:2022]

Niniejszym potwierdzamy

Model TONGYI	Model Nord
TAHMV9S A	Ecoheat MB 9.0 F
TAHMV12S A	Ecoheat MB 12.0 F
TAHMVI4S A	Ecoheat MB 14.0 F
TAHMV16SA	Ecoheat MB 16.0 F

Są to te same produkty, więc odnoszą się do tych samych raportów z badań.

Strona 4 (5)

Niniejszym potwierdza się, że firma Nord uzyskała produkt od Tongyi i powołała się na ten sam raport z badań. Firma Nord nie może używać tego raportu z innymi producentami, Tongyi ponosi wyłączną odpowiedzialność za produkty, które wytwarza, i nie ponosi odpowiedzialności, jeśli Nord zleci innym producentom produkcję swoich produktów z serii „EcoHeat MB 9.0 F, EcoHeat MB 12,0 F, EcoHeat MB 14.0 F, EcoHeat MB 16.0 F".

Odpowiedzialność za to oświadczenie spoczywa na importerze.

Tananger, 23.09.2024 r.
NORD HT AS

Przedstawiciel: Ingvar Sveinsvoll
[*nieczytelny podpis*]

Guangzhou, 23.09.2024 r.
Guangdong Tongyi Heat Pump Science and Technology Corp.

Przedstawiciel - Tang Xuchu.
[*nieczytelny podpis*]

[*pieczęć okrągła w innym języku obcym*].

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Ja, Jerzy Podgórski, tłumacz przysięgły języka angielskiego wpisany na listę tłumaczy przysięgłych Ministra Sprawiedliwości RP pod numerem TP/800/05, zaświadczam zgodność powyższego tłumaczenia z oryginałem dokumentu sporządzonego w języku angielskim.

Warszawa, 7 lutego 2025 roku, Nr Rep.127

OŚWIADCZENIE

Producent NORD HT AS oświadcza, iż pompy ciepła

1) Ecolleat MB 9.0 F
Oznaczenie/typ/identyfikator modelu

2) Ecolleat MB 12.0 F
Oznaczenie/typ/identyfikator modelu

3) Ecolleat MB 14.0 F
Oznaczenie/typ/identyfikator modelu

4) Ecolleat MB 16.0 F
Oznaczenie/typ/identyfikator modelu

5) .....
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.

Miejscowość, data

Podpis osoby upoważnionej