

OŚWIADCZENIE

Producent KOLTON SPÓŁKA KOMANDYTOWA oświadcza, iż pompy ciepła

1) AIRADAPT 3-12

Oznaczenie/typ/identyfikator modelu

2) AIRADAPT 4-16

Oznaczenie/typ/identyfikator modelu

3) AIRADAPT 4-20

Oznaczenie/typ/identyfikator modelu

4)

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.

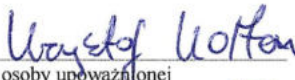
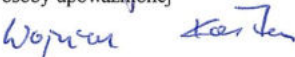


KOLTON spółka komandytowa
ul. Sosnowa 2, 34-480 Jabłonka

NIP 735 274 90 54 REGON 120755317 KRS 0000987297

Jabłonka, dn. 10.04.2024 r.

Miejscowość, data


Podpis osoby upoważnionej




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

Page 1 of 15



TEST REPORT

39-17801/H

Product: Outdoor Air/Water Heat pump - monobloc

Type designation: AirAdapt 4-20

Customer: Kolton Spółka komandytowa
ul. Sosnowa 2
34-480 Jabłonka
POLAND

Manufacturer: Kolton Spółka komandytowa
ul. Sosnowa 2
34-480 Jabłonka
POLAND

Report issue date: 2024-06-18

Distribution list: 1 copy to the Customer
1 copy to the Engineering Test Institute

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SP-2021-000012_1_12

I. Description of product tested

The Heat pump **Airadapt 4-20** supplied by the company **Kořton Spółka komandytowa** is structurally adapted to operate in air/water system. Device is designed as monobloc placed outdoor. Refrigerant R290 is used with charge 2.5 kg. Power supply is a three-phase. Heat pump is able to work in heating and cooling mode. Heat pump is working with variable flow rate.

Main components of the outdoor unit **Airadapt 4-20**:

- Serial number 23PI20010010001
- Cuboid shape with dimensions 1400 × 590 × 1375 mm (W × D × H)
- Frame and casing made of varnished steel sheets
- Cuboid shaped evaporator, 4 rows, dimensions 1000 × 100 × 1275 mm (W × D × H), spacing 2.5 mm
- Plate condenser, dimensions 170 × 235 × 550 mm (W × D × H) including insulation
- Compressor Emerson YHV072RG-4X9
- Refrigerant R290 (2.5 kg)
- Electric expansion valve
- 4-way reversing valve Sanhua SHF-20D-47-02
- Axial fan ZIEHL-ABEGG ZN063-6IL.BD.V5P8
- Pressure sensors
- Temperature sensors
- Refrigerant pipes
- Air vent

Scheme:

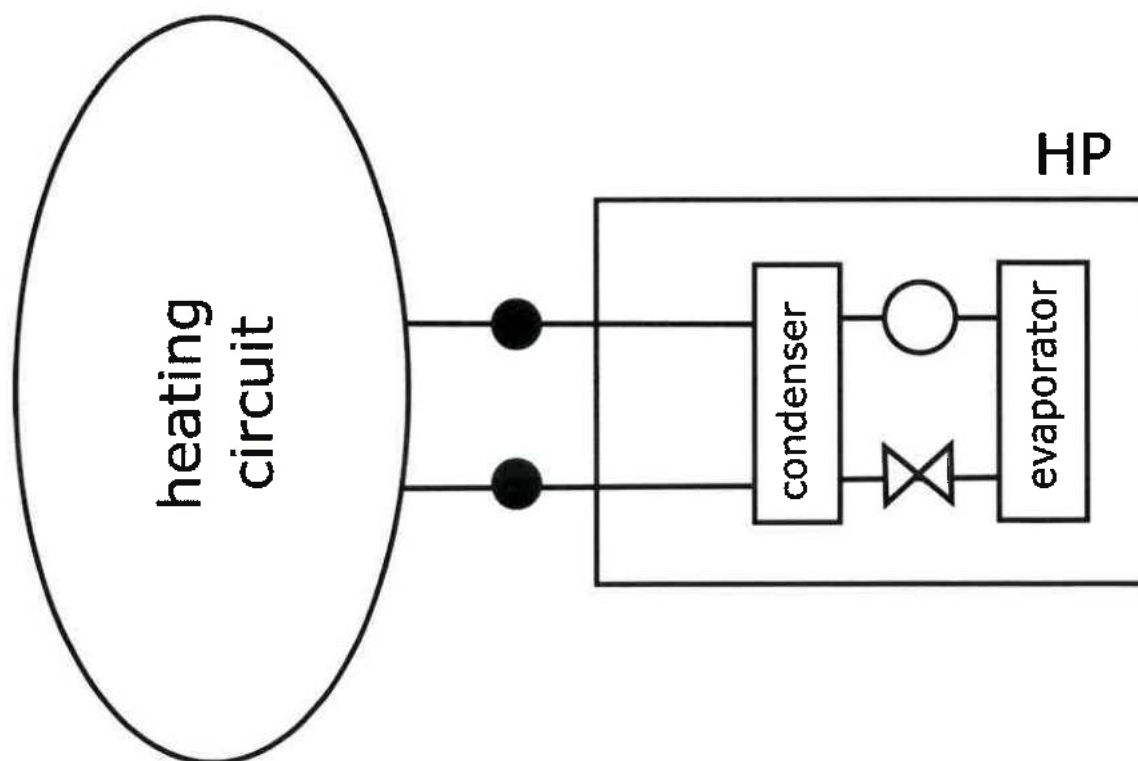


Photo documentation:



Heat pump **Airadapt 4-20** - outdoor unit
– Front view –



Heat pump **Airadapt 4-20** - outdoor unit
– Back view –



Heat pump **Airadapt 4-20** - outdoor unit
– Compressor label –



Heat pump **Airadapt 4-20** - outdoor unit
– Compressor label –



Heat pump **Airadapt 4-20** - outdoor unit
– Without cover –



Heat pump **Airadapt 4-20** - outdoor unit
– Without cover –

KOLTON	
Kolton spol. s r.o. Karcandýkova ul. 8. únova 2 624 00 Jablonka www.kolton.pl	
Kontakt 15 764 29 07 800 222 886, 576 090 801 33 875 92 80	
Typ Model/Model	
AIRADAPT 4-20	
Rok výroby/Production year/Jahrgang	
2023	
Numer fabrikace/Seria number/Fabrikationsnummer	
23P120010010001	
Zásilání elektrické/Power supply/Elektrische Versorgung	
400 V_I 3 ~ 50 Hz	
Maximální proud práce/Max. operation current/Maximaler Arbeitsstrom	
21,2 A	
Stupeň ochrany IP/IP code/IP-Bewertung	
IP 24	
Hlas v pomístnosti/na zewnątrz/Noise in room/outside	
- / 59,5 dB	
Moc grzewcza (A7/W35)/Heating capacity/Heizleistung	
9,41 kW	
Moc elektrická (A7/W35)/Rated power/elektrische Leistungsaufnahme	
1,71 kW	
COP A7/W35	
5,51	
Chladicí látka/Refrigerant/Kühlmittel	
R290 / 2,50 kg	
Max. tlak pracovního oběhu chladicího látky/Max. working pressure of refrigerant/Max. Kältemitteldruck	
32 bar	
Max. tlak pracovního oběhu grzewczego/Max. working pressure/Max. Arheitsdruck	
2,5 bar	
Max. temp. zásilání/Max. water temperature/Max. Wassertemperatur	
75°C	
Pojemnost vodní/Heat pump capacity/Wärmepumpenvolumen	
4 l	
Hmotnost/Weight/Gewicht	
215 kg	
UWAGA! Serwis tylko dla wykwalifikowanego personelu! WARNING! Service only for qualified in hydrocarbon refrigerant (HC) staff! ACHTUNG! Service nur für qualifizierte Mitarbeiter mit Kohlenwasserstoffkältemittel (HC)!	

Heat pump **Airadapt 4-20** - outdoor unit
– Label –

II. Sample tested

SZU reg. no.	Product name	Date of submission
1212.24.39878.001	AirAdapt 4-20	2024-04-17

The visual inspection, tests and verification were carried out by Ing. Ondřej 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	E3.1
2.	Digital watt meter	1.2.3 ENERGIE ANALYZATOR_3
3.	Flow meter Krohne Optiflux	8.1.7 TECH_K3_V_DN80_PRIM
4.	Barometer	2.4 MAR18_1_PB
5.	Differential pressure gauge	14.2.2 MAR18_3_dP_2
6.	Thermometers	14.4 MAR18_T
7.	Thermo-hydro meter 608-H1	117043
8.	Tape measure	ME 475
9.	Multi-analyser SINUS SoundBook MK2	000-000-000-875/1
10.	Microphone pair G.R.A.S. 40 AK, wind deflector	000-000-000-875/2
11.	Calibrator G.R.A.S. 42AG	000-000-000-875/3

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. 8-14	+
2.	Acoustic measurements – Sound power level	Art. 8	ČSN EN 12102-1:2023	Page No. 7-14	+

*) Evaluation / statement of conformity:

+ Requirement fulfilled
0 Not applicable

- Requirement not fulfilled
x Not evaluated

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.

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 AirAdapt 4-20
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]	$\pm 0.15 \text{ K}$	fulfilled
- temperature inlet/outlet	[°C]	$\pm 0.15 \text{ K}$	fulfilled
- volume flow	[m³/s]	$\pm 1 \%$	fulfilled
- static pressure difference	[kPa]	$\pm 1 \text{ kPa}$ ($\Delta p \leq 20 \text{ kPa}$) or $\pm 5 \%$ ($\Delta p > 20 \text{ kPa}$)	fulfilled
Air			
- dry bulb temperature	[°C]	$\pm 0.2 \text{ K}$	fulfilled
- wet bulb temperature	[°C]	$\pm 0.4 \text{ K}$	fulfilled
- volume flow	[m³/s]	$\pm 5 \%$	not applied
- static pressure difference	[Pa]	$\pm 5 \text{ Pa}$ ($\Delta p \leq 100 \text{ Pa}$) or $\pm 5 \%$ ($\Delta p > 100 \text{ Pa}$)	not applied
Refrigerant			
- pressure at compressor outlet	[kPa]	$\pm 1 \%$	not applied
- temperature	[°C]	$\pm 0.5 \text{ K}$	not applied
Concentration (in volume)			
- heat transfer medium	[%]	± 2	not applied
Electrical quantities			
- electric power	[W]	$\pm 1 \%$	fulfilled
- voltage	[V]	$\pm 0.5 \%$	fulfilled
- current	[A]	$\pm 0.5 \%$	fulfilled
- electric energy	[kWh]	$\pm 1 \%$	not applied
Compressor rotational speed	[min⁻¹]	$\pm 0.5 \%$	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)

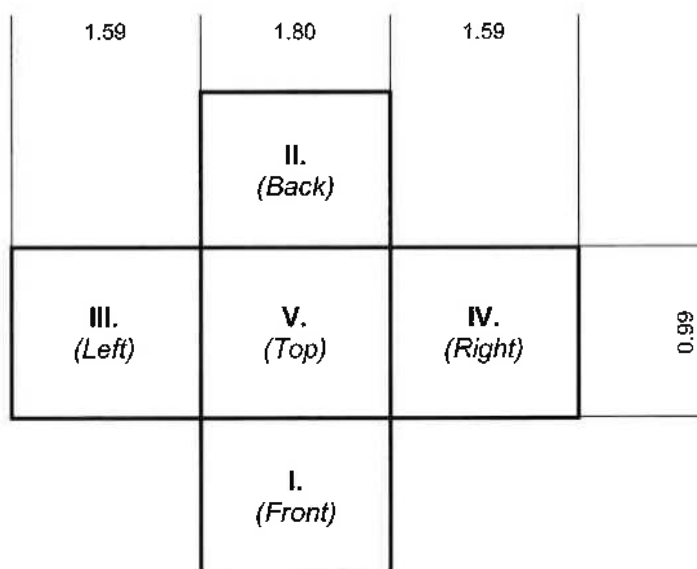
a) Measurement surface

Tested samples were surrounded by a cuboid-shape measuring surface set at the distance d [m].

Test Sample: Air/Water Heat pump AirAdapt 4-20			
Distance from the test sample	d	[m]	0.20
Height of measurement surface	h	[m]	1.59
Width of measurement surface	w	[m]	1.80
Depth of measurement surface	l	[m]	0.99
Total measurement surface area	S	[m ²]	10.65
Minimal measuring time per surface	t_M	[s]	90.00

Sketch of measurement surface (not to scale):

Air/Water Heat pump **AirAdapt 4-20**
– 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 compliant with ČSN EN ISO 3745:2012 requirements for hemi-anechoic chambers. 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 $5 \pm 10^\circ$. Care was taken to ensure low air flow at the measurement surface by varying the measurement distance and positions.

Climate-acoustic chamber <i>(corresponds to free field over a reflecting plane)</i>			
Width of testing room	l_1	[m]	6.95
Length of testing room	l_2	[m]	4.50
Height of testing room	l_3	[m]	3.60

c) Measured and calculated data – General overview:

Test sample			Air/Water Heat pump AirAdapt 4-20
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			1100 rpm
Fan speed settings			AUTO
Date of testing (YYYY-MM-DD)			2024-06-07
Reference air temperature	t_{amb}	[°C]	7.0
Relative humidity of air	RH	[%]	87.0
Ambient pressure	p_{amb}	[hPa]	984.9
Overall sound power level (linear)	L_W	[dB]	64.7 ± 1.5
Overall A-weighted sound power level	L_{WA}	[dB(A)]	54.5 ± 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 AirAdapt 4-20 Outdoor unit at A7/W55; Compressor at 1100 rpm; 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}	$L_d > F_{pl}$	$F_{+/-}$	$F_{+/-} \leq 3$	$L_{W(1)} - L_{W(2)} \leq 5$		[dB]	[dB(A)]	[dB]	
125	27.6	7.4	YES	0.3	YES	YES	YES	61.4	44.4	± 3.0	passed
250	27.5	3.9	YES	0.0	YES	YES	YES	54.8	46.0	± 2.0	passed
500	28.4	4.0	YES	0.0	YES	YES	YES	54.1	50.4	± 1.5	passed
1000	27.3	3.9	YES	0.0	YES	YES	YES	49.1	48.8	± 1.5	passed
2000	27.4	4.2	YES	0.0	YES	YES	YES	42.4	43.5	± 1.5	passed
4000	27.2	7.9	YES	0.1	YES	YES	YES	33.1	34.2	± 1.5	c
8000 ^{*)}	27.5	24.1	YES	2.4	YES	NO	NO	9.4	9.3	± 2.5	nc
Total								64.7	54.5	± 1.5	

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

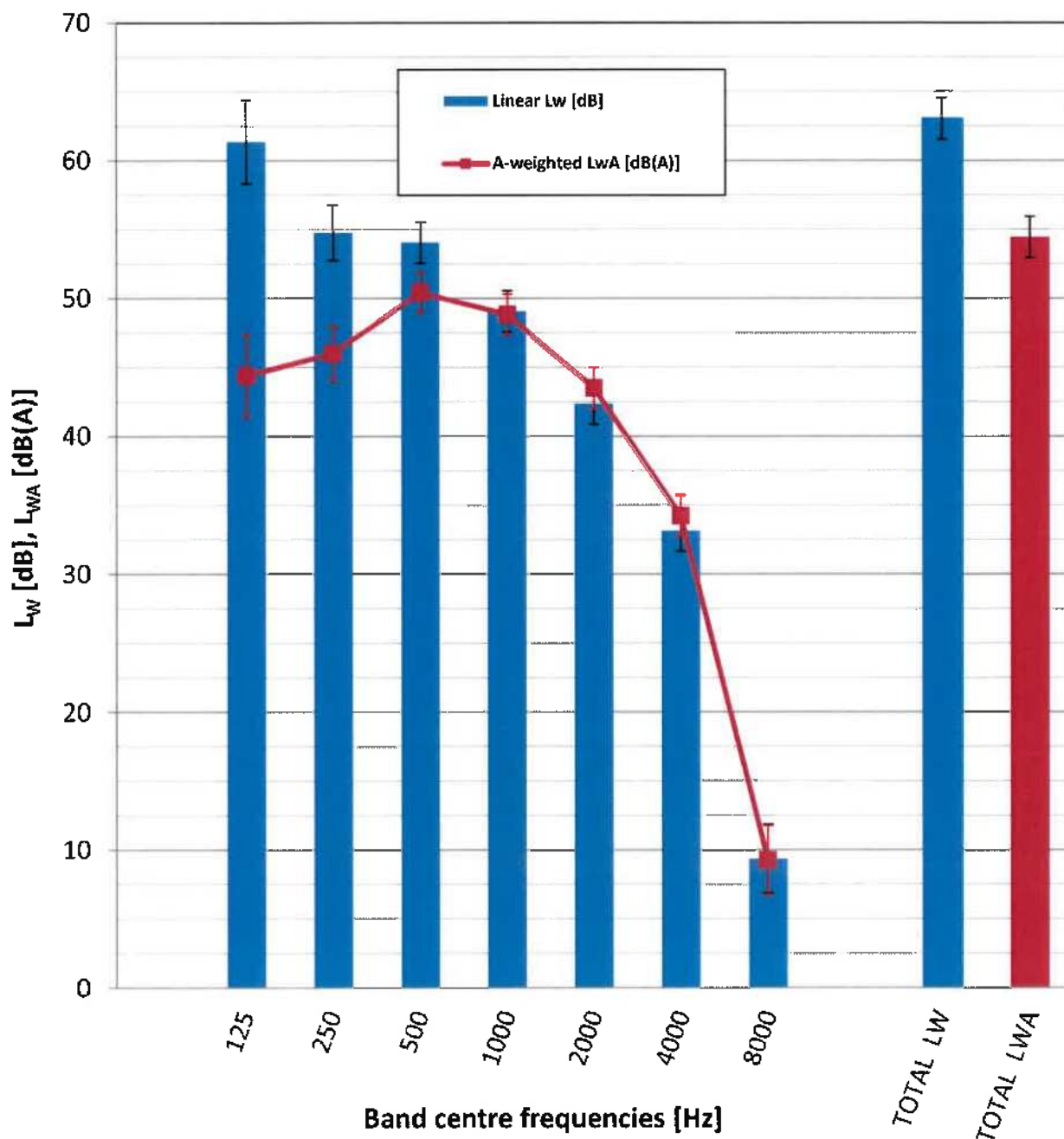
Legend:

<i>passed</i>	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.
<i>not passed</i>	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.
<i>c</i>	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} .
<i>nc</i>	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 **AirAdapt 4-20**
Outdoor unit at A7/W55; Compressor at 1100 rpm; Fan at AUTO

**Engineering
(Grade 2)**



1B) Measurement results – one-third octave bands

Air/Water Heat pump AirAdapt 4-20 Outdoor unit at A7/W55; Compressor at 1100 rpm; Fan at AUTO	Engineering (Grade 2)
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f_m [Hz]	Criterion 1			Criterion 2		Criterion 3	All criteria passed?	L_w [dB]	L_{WA} [dB(A)]	U [dB]	Evaluation
	L_d	F_{pl}	$L_d > F_{pl}$	$F_{+/-}$	$F_{+/-} \leq 3$	$L_{w(1)} - L_{w(2)} \leq 5$					
100	28.7	5.6	YES	0.3	YES	YES	YES	58.9	39.8	± 3.0	passed
125	27.6	7.4	YES	0.3	YES	YES	YES	56.4	40.3	± 3.0	passed
160	27.3	5.3	YES	0.3	YES	YES	YES	52.0	38.6	± 3.0	passed
200	27.4	3.5	YES	0.0	YES	YES	YES	51.0	40.1	± 2.0	passed
250	27.5	3.9	YES	0.0	YES	YES	YES	50.3	41.7	± 2.0	passed
315	28.0	4.2	YES	0.0	YES	YES	YES	48.3	41.7	± 2.0	passed
400	28.2	3.9	YES	0.0	YES	YES	YES	51.6	46.8	± 1.5	passed
500	28.4	4.0	YES	0.0	YES	YES	YES	47.5	44.3	± 1.5	passed
630	28.6	3.5	YES	0.0	YES	YES	YES	47.4	45.5	± 1.5	passed
800	29.3	3.7	YES	0.0	YES	YES	YES	46.0	45.2	± 1.5	passed
1000	27.3	3.9	YES	0.0	YES	YES	YES	43.9	43.9	± 1.5	passed
1250	28.1	4.2	YES	0.0	YES	YES	YES	42.1	42.7	± 1.5	passed
1600	28.6	4.0	YES	0.0	YES	YES	YES	39.6	40.6	± 1.5	passed
2000	27.4	4.2	YES	0.0	YES	YES	YES	37.2	38.4	± 1.5	passed
2500	26.8	4.1	YES	0.0	YES	YES	YES	34.8	36.1	± 1.5	c
3150	27.2	4.4	YES	0.0	YES	YES	YES	30.6	31.8	± 1.5	c
4000	27.2	7.9	YES	0.1	YES	YES	YES	28.8	29.8	± 1.5	c
5000	27.0	8.5	YES	0.4	YES	YES	YES	22.3	22.8	± 1.5	c
6300	27.5	24.1	YES	2.4	YES	NO	NO	4.6	4.5	± 2.5	c
Total								64.7	54.5	± 1.5	

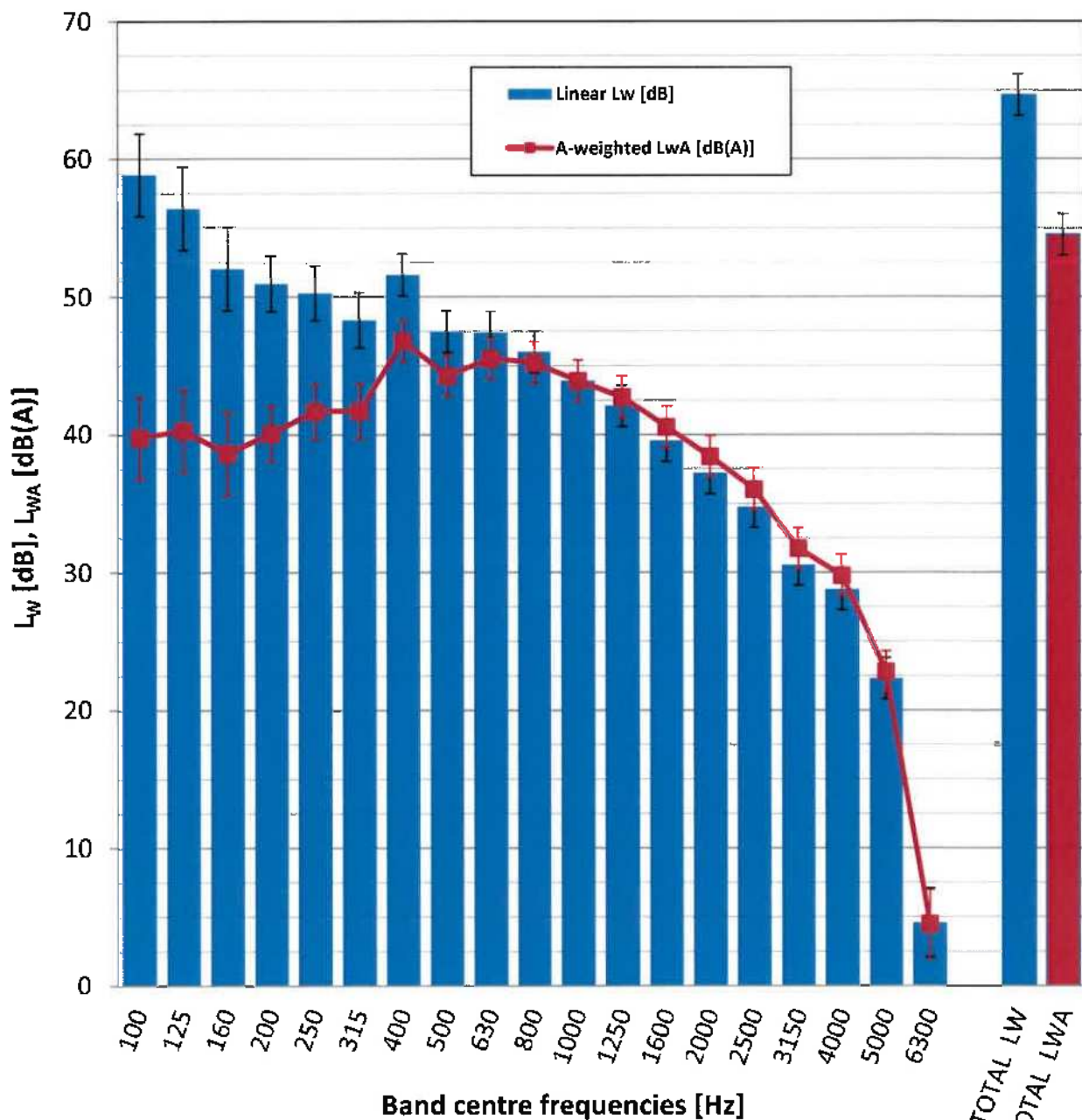
Legend:

- 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 **AirAdapt 4-20**
Outdoor unit at A7/W55; Compressor at 1100 rpm; Fan at AUTO

**Engineering
(Grade 2)**



Tested by: Ing. Ondrej Bilkovič

Date: 2024-06-18

Signed: 

Reviewed and approved by: Ing. Antonín Kolbábek, Ph.D.

Date: 2024-06-18

Signed: 

V. A list of referenced documents

- Order of 2024-06-04 (Order reg. no. B-82392, received on 2024-06-05)
- Contract B-82392/39
- 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 scanning
- 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. 39-17801
- Record measurement file 39-17801-H.zip

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



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

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TEST REPORT

39-16823/T

Product: Outdoor Air/Water Heat Pumps – monobloc

Type designation: Kolton Airadapt 4-20

Customer: Kolton Spółka komandytowa
ul. Sosnowa 2
34-480 Jabłonka
POLAND

Manufacturer: Kolton Spółka komandytowa
ul. Sosnowa 2
34-480 Jabłonka
POLAND

Employee responsible: Ing. Mario Jankola

Report issue date: 2023-06-21

Distribution list: 1 copy to the Customer
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I. Description of product tested

The Heat pump **Kolton Airadapt 4-20** supplied by the company **Kolton Spółka komandytowa** is structurally adapted to operate in air/water system. Device is designed as monobloc placed outdoor. Refrigerant R290 is used with charge 2.5 kg. Power supply is a three-phase. Heat pump is able to work in heating and cooling mode. Heat pump is working with variable flow rate.

Main components of the outdoor unit **Kolton Airadapt 4-20**:

- Serial number 23PI20010010001
- Cuboid shape with dimensions 1400 × 590 × 1375 mm (W × D × H)
- Frame and casing made of varnished steel sheets
- Cuboid shaped evaporator, 4 rows, dimensions 1000 × 100 × 1275 mm (W × D × H), spacing 2.5 mm
- Plate condenser, dimensions 170 × 235 × 550 mm (W × D × H) including insulation
- Compressor Emerson YHV072RG-4X9
- Refrigerant R290 (2.5 kg)
- Electric expansion valve
- 4-way reversing valve Sanhua SHF-20D-47-02
- Axial fan ZIEHL-ABEGG ZN063-6IL.BD.V5P8
- Pressure sensors
- Temperature sensors
- Refrigerant pipes
- Air vent

Scheme:

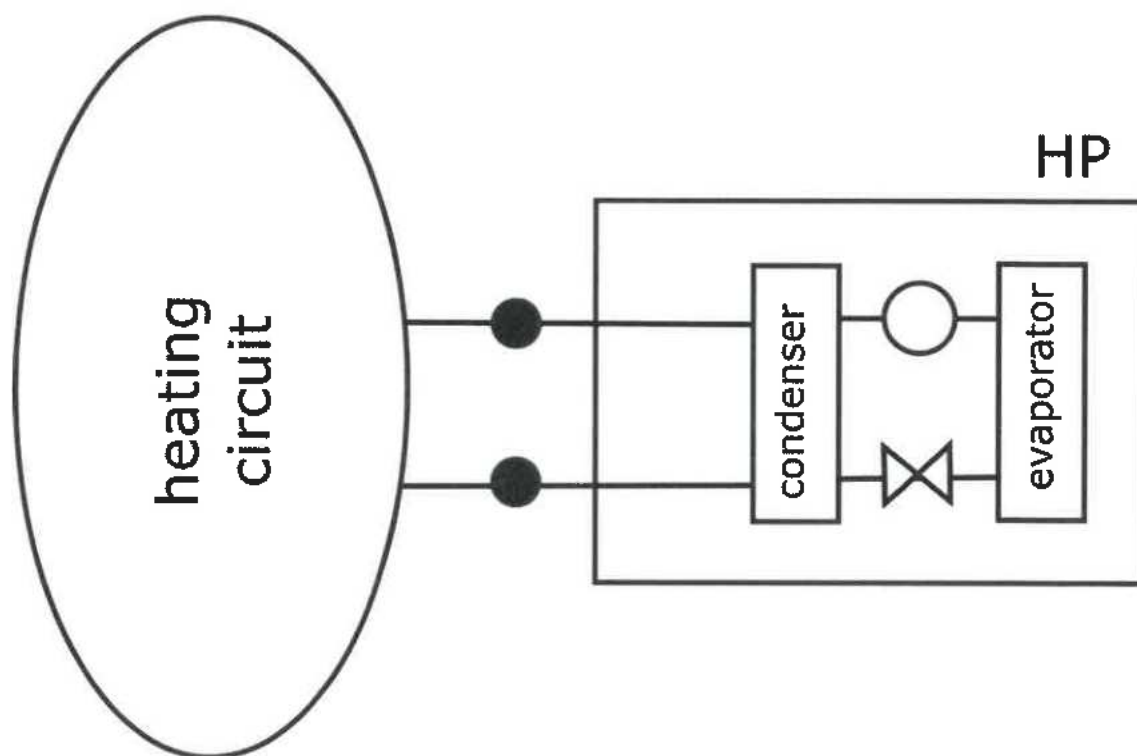


Photo documentation:



Heat pump **Kolton Airadapt 4-20** - outdoor unit
– Front view –



Heat pump **Kolton Airadapt 4-20** - outdoor unit
– Back view –



Heat pump **Kolton Airadapt 4-20** - outdoor unit
– Compressor label –



Heat pump **Kolton Airadapt 4-20** - outdoor unit
– Compressor label –



Heat pump **Kolton Airadapt 4-20** - outdoor unit
– Without cover –



Heat pump **Kolton Airadapt 4-20** - outdoor unit
– Without cover –

KOLTON 	
0090	
Kolton s.p. s.r.o. Jarmantýkova ul. S osadova 2 34-480 Jablonek www.kolton.pl	Biznis Serwis pomp ciepła Serwis sterownika
Kontakt 18 264 38 67 086 432 886, 576 085 801 33 673 53 88	
Typ Model/typ	AIRADAPT 4-20
Rok produkcji / Production year/Jahr	2023
Numer fabryczny Serial number/Identifikationsnummer	23PI20010010001
Zasilanie elektryczne Power supply/ Elektrische Versorgung	400 V_L 3 ~ 50 Hz
Maksymalny prąd pracy Max. operation current/ Maximaler Arbeitsstrom	21,2 A
Stopień ochrony IP IP code/ F-Schutzart	IP 24
Głośność w pomieszczeniu /na zewnątrz	- / 59,5 dB
Moc grzewcza (A7/W35) Heating capacity/Heizleistung	9,41 kW
Moc elektryczna (A7/W35) Rated power electrical/Leistungsaufnahme	1,71 kW
COP A7/W35	5,51
Czynnik chłodniczy/Ilość Refrigerant/Menge	R290 / 2,50 kg
Max. ciśnienie robocze obiegu chłodniczego Max. working pressure of refrigerant/Max. Kältemitteldruck	32 bar
Max. ciśnienie robocze obiegu grzewczego Max. working pressure/Max. Arbeitsdruck	2,5 bar
Max. temp. zasilania Max. water temperature/Max. Wassertemperatur	75°C
Pojemność wodna Heat pump capacity/Wärmepumpenvolumen	4 L
Masa Weight/Gewicht	215 kg
UWAGA! Service only for qualified in hydrocarbon refrigerant (HC) staff! WARNUNG! Service nur für qualifizierte Mitarbeiter mit Kohlenwasserstoffkältemittel (HC)!	

Heat pump **Kolton Airadapt 4-20** - outdoor unit
– Label –

II. Sample tested

SZU reg. no.	Product name	Date of submission
0213.23.37825.001	Kolton Airadapt 4-20	2023-01-30

The visual inspection, tests and verification were carried out by Ing. Tomáš Rešiliáno 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 14511-2:2019 ČSN EN 14511-3:2019	Page No. 7	x
2.	Seasonal performance tests and SCOP calculation – Low temperature application	–	ČSN EN 14511-3:2019 ČSN EN 14825:2020	Page No. 8-15	x
3.	Seasonal performance tests and SCOP calculation – Medium temperature application	–	ČSN EN 14511-3:2019 ČSN EN 14825:2020	Page No. 16-23	x
4.	Safety tests	Art. 4.2.1.2 Art. 4.2.1.3 Art. 4.5 sect. a) Art. 4.5 sect. b) Art. 4.6	ČSN EN 14511-4:2019	Page No. 24-26	+
7.	Out of accredited tests – SCOP calculations	–	ČSN EN 14511-3:2019 ČSN EN 14825:2020	Page No. 27-38	x
*) Evaluation / statement of conformity: + Requirement fulfilled - Requirement not fulfilled					
				0 Not applicable x Not evaluated	

Measured quantity	Unit	Uncertainty measurement of	Evaluation
Liquid			
- temperature difference (dT)	[K]	$\pm 0.15 \text{ K}$	fulfilled
- temperature inlet/outlet	[°C]	$\pm 0.15 \text{ K}$	fulfilled
- volume flow	[m ³ /s]	$\pm 1 \%$	fulfilled
- static pressure difference	[kPa]	$\pm 1 \text{ kPa}$ ($\Delta p \leq 20 \text{ kPa}$) or $\pm 5 \%$ ($\Delta p > 20 \text{ kPa}$)	fulfilled
Air			
- dry bulb temperature	[°C]	$\pm 0.2 \text{ K}$	fulfilled
- wet bulb temperature	[°C]	$\pm 0.4 \text{ K}$	fulfilled
- volume flow	[m ³ /s]	$\pm 5 \%$	not applied
- static pressure difference	[Pa]	$\pm 5 \text{ Pa}$ ($\Delta p \leq 100 \text{ Pa}$) or $\pm 5 \%$ ($\Delta p > 100 \text{ Pa}$)	not applied
Refrigerant			
- pressure at compressor outlet	[kPa]	$\pm 1 \%$	not applied
- temperature	[°C]	$\pm 0.5 \text{ K}$	not applied
Concentration (in volume)			
- heat transfer medium	[%]	± 2	not related
Electrical quantities			
- electric power	[W]	$\pm 1 \%$	fulfilled
- voltage	[V]	$\pm 0.5 \%$	fulfilled
- current	[A]	$\pm 0.5 \%$	fulfilled
- electric energy	[kWh]	$\pm 1 \%$	not applied
Compressor rotational speed	[min ⁻¹]	$\pm 0.5 \%$	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:

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.

Comment to abbreviated marking: e.g. A7/W35

A (air) 7 (input air, dry-bulb temperature in °C) / W (water), 35 (output heating water temperature in °C)

Test objective:	Rating conditions
Exact name of the test procedure:	T 037* - Tests of leakage, pressure resistance, thermal and technical parameters, combustion efficiency, safety functions
Test method:	ČSN EN 14511-2:2019, ČSN EN 14511-3:2019, EHPA Testing regulation
Sample tested:	Heat pump Kolton Airadapt 4-20
Measuring equipment used:	see Chapter III

Specification of the assessment condition*		A7/W35	A7/W55
Date of testing		2023-02-06	2023-02-07
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]	35.02	54.99
Input heating water – temperature calculation	[°C]	30.03	46.98
Output heating water temperature	[°C]	35.02	54.99
Input heating water temperature	[°C]	30.03	46.98
Air temperature – dry bulb temperature	[°C]	7.00	6.97
Air temperature – wet bulb temperature	[°C]	6.08	6.05
Relative humidity	[%]	87.71	87.72
Barometric pressure	[kPa]	100.432	100.755
Ambient temperature	[°C]	15.90	15.38
Secondary circuit pressure difference	[kPa]	-4.205	-1.832
Efficiency of the secondary liquid pump	[-]	0.137	0.119
Volume flow rate of heating water	[m ³ ·h ⁻¹]	1.6304	1.0420
Density of heating water	[kg·m ⁻³]	993.9	985.8
Specific heat capacity of heating water	[kJ·kg ⁻¹ ·K ⁻¹]	4.180	4.180
Voltage	[V]	399.79	398.56
Total current	[A]	8.05	12.10
Overall power input	[kW]	1.693	2.663
Capacity correction of sec. liquid pump	[W]	-12.02	-3.93
Power input correction of sec. liquid pump	[W]	-13.92	-4.46
Heating capacity – heating water	[kW]	9.394	9.535
Corrected heating capacity – heating water	[kW]	9.406	9.539
Uncertainty of corrected heating capacity	[kW]	± 0.161	± 0.106
Effective electric power input	[kW]	1.707	2.668
COP	[-]	5.511	3.576
Uncertainty of COP	[-]	± 0.095	± 0.040
Control settings	[rpm]	2200	2400
Circulation pump settings – heating water	[%]	-	-
Fan settings	[%]	-	-

Test objective:	Seasonal performance tests and SCOP calculation – Low temperature application
Exact name of the test procedure:	T 037* - Tests of leakage, pressure resistance, thermal and technical parameters, combustion efficiency, safety functions
Test method:	ČSN EN 14511-3:2019, ČSN EN 14825:2020
Sample tested:	Heat pump Kolton Airadapt 4-20
Measuring equipment used:	see Chapter III

Design		Air / water – monobloc				
Conditions specification according to ČSN 14825:2020	to EN	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			Variable	
Seasonal space heating efficiency	Heating	Average	η_s		183.5	%
		Warmer	η_s		250.7	(Not tested) %
		Colder	η_s		169.0	(Not tested) %
Seasonal efficiency according to ČSN 14825:2020	Heating	Average	SCOP		4.66	–
		Warmer	SCOP		6.34	(Not tested) –
		Colder	SCOP		4.30	(Not tested) –
Function	Cooling					Yes
	Heating	Yes	Reference heating season	Average	Yes	
				Warmer	Yes	
				Colder	Yes	
Full heating load	Cooling		$P_{designc}$		–	kW
	Heating	Average	$P_{designh}$		13.85	kW
		Warmer	$P_{designh}$		16.05	kW
		Colder	$P_{designh}$		14.42	kW
Bivalent temperatures	Heating	Average	$T_{bivalent}$		-7	°C
		Warmer	$T_{bivalent}$		2	°C
		Colder	$T_{bivalent}$		-15	°C
Operation temperatures limit	Heating	Average	TOL		-10	°C
		Warmer	TOL		2	°C
		Colder	TOL		-20	°C
Seasonal power consumption according to ČSN EN 14825:2020	Cooling		Q_{CE}		–	kWh
	Heating	Average	Q_{HE}		6135	kWh
		Warmer	Q_{HE}		3380	(Not tested) kWh
		Colder	Q_{HE}		8267	(Not tested) kWh
Modes other than „active mode“		Off mode		P_{OFF}	17.6	W
		Thermostat off mode		P_{TO}	22.0	W
		Standby mode		P_{SB}	17.6	W
		Crankcase heater mode		P_{CK}	0.0	W

(Not tested): The technical data were declared by the Manufacturer and were not tested by the Testing Laboratory

Calculation of SCOP according to ČSN EN 14825:2020:

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}	0.0220	[kW]
P _{SB}	0.0176	[kW]
P _{CK}	0.0000	[kW]
P _{OFF}	0.0176	[kW]
P _{designh}	13.85	[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)

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

$$Q_H = 13.85 \cdot 2066 = 28605 \quad [kWh]$$

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

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

$$Q_{HE} = 28605 / 4.67 + 178 \cdot 0.022 + 0 \cdot 0.0176 + 178 \cdot 0 + 0 \cdot 0.0176 = 6135 \quad [kWh]$$

7.2 General formula for calculation of reference SCOP

$$SCOP = Q_H / Q_{HE} \quad [-]$$

$$SCOP = 28605 / 6135 = 4.66 \quad [-]$$

7.1 Calculation of the seasonal space heating efficiency η_s

$$\Sigma F(i) = F(1) + F(2) \quad [-]$$

$$\Sigma F = 0.03 + 0 = 0.03 \quad [-]$$

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

$$\eta_s / A = (1 / 2.5) \cdot 4.66 - 0.03 = \underline{\underline{1.835}} \quad [-]$$

Temperature level		Low (reference water temperature 35 °C)		
Reference heating season		„A” = average ($T_{designh} = -10\text{ °C}$)		
Assessment condition		Tbiv (A, F)	B	C
Specification of the assessment condition*		A-7/W34	A2/W30	A7/W27
Date of testing		2023-02-02	2023-02-03	2023-02-06
Transient test procedure	YES / NO	YES	YES	NO
Average defrost time of 1 cycle	[min]	4.1	4.4	–
Average time of 1 cycle	[min]	90.3	121.5	–
Calculation time	[min]	90.3	121.5	70.0
Output heating water – temperature calculation	[°C]	33.42	29.62	27.00
Input heating water – temperature calculation	[°C]	28.94	25.00	22.84
Output heating water temperature	[°C]	33.99	30.08	27.00
Input heating water temperature	[°C]	29.03	25.04	22.84
Air temperature – dry bulb temperature	[°C]	-6.91	2.00	7.02
Air temperature – wet bulb temperature	[°C]	-7.96	1.05	6.08
Relative humidity	[%]	74.06	84.64	87.49
Barometric pressure	[kPa]	98.534	98.739	100.600
Ambient temperature	[°C]	15.96	16.52	15.08
Secondary circuit pressure difference	[kPa]	-8.512	-2.909	-1.664
Efficiency of the secondary liquid pump	[-]	0.183	0.126	0.118
Volume flow rate of heating water	[m ³ ·h ⁻¹]	2.3601	1.3485	1.0008
Density of heating water	[kg·m ⁻³]	994.5	995.6	996.4
Specific heat capacity of heating water	[kJ·kg ⁻¹ ·K ⁻¹]	4.176	4.180	4.180
Voltage	[V]	399.19	399.72	399.92
Total current	[A]	20.01	7.64	3.85
Overall power input	[kW]	4.484	1.595	0.745
Capacity correction of sec. liquid pump	[W]	-24.910	-7.548	-3.448
Power input correction of sec. liquid pump	[W]	-30.50	-8.64	-3.91
Heating capacity – heating water	[kW]	12.223	7.271	4.810
Corrected heating capacity – heating water	[kW]	12.248	7.278	4.813
Uncertainty of corrected heating capacity	[kW]	± 0.232	± 0.134	± 0.100
Effective electric power input	[kW]	4.514	1.603	0.749
COP	[-]	2.713	4.539	6.423
Uncertainty of COP	[-]	± 0.051	± 0.084	± 0.133
Control settings	[rpm]	5500	2200	1100
Circulation pump settings – heating water	[%]	-	-	-
Fan settings	[%]	-	-	-

Temperature level		Low (reference water temperature 35 °C)		
Reference heating season		„A“ = average ($T_{\text{designh}} = -10\text{ °C}$)		„W“ = warmer ($T_{\text{designh}} = 2\text{ °C}$)
Assessment condition		D	TOL (E)	Tbiv, TOL (E, F)
Specification of the assessment condition*		A12/W27.1	A-10/W35	A2/W35
Date of testing		2023-02-03	2023-02-02	2023-02-06
Transient test procedure	YES / NO	NO	YES	YES
Average defrost time of 1 cycle	[min]	–	5.3	4.9
Average time of 1 cycle	[min]	–	119.7	63.2
Calculation time	[min]	70.0	119.7	126.3
Output heating water – temperature calculation	[°C]	27.10	34.57	34.20
Input heating water – temperature calculation	[°C]	22.29	29.95	29.87
Output heating water temperature	[°C]	27.10	35.10	35.08
Input heating water temperature	[°C]	22.29	30.05	30.05
Air temperature – dry bulb temperature	[°C]	12.00	-10.00	2.00
Air temperature – wet bulb temperature	[°C]	10.97	-10.99	1.06
Relative humidity	[%]	88.67	70.14	84.63
Barometric pressure	[kPa]	98.289	98.308	100.501
Ambient temperature	[°C]	17.22	16.14	14.36
Secondary circuit pressure difference	[kPa]	-1.650	-7.297	-16.547
Efficiency of the secondary liquid pump	[-]	0.118	0.172	0.269
Volume flow rate of heating water	[m ³ ·h ⁻¹]	1.0009	2.3125	3.2034
Density of heating water	[kg·m ⁻³]	996.3	994.1	994.2
Specific heat capacity of heating water	[kJ·kg ⁻¹ ·K ⁻¹]	4.178	4.180	4.180
Voltage	[V]	400.17	399.49	399.14
Total current	[A]	3.67	20.30	20.96
Overall power input	[kW]	0.700	4.561	4.680
Capacity correction of sec. liquid pump	[W]	-3.424	-22.551	-40.051
Power input correction of sec. liquid pump	[W]	-3.88	-27.24	-54.79
Heating capacity – heating water	[kW]	5.565	12.376	16.009
Corrected heating capacity – heating water	[kW]	5.568	12.399	16.049
Uncertainty of corrected heating capacity	[kW]	± 0.100	± 0.228	± 0.315
Effective electric power input	[kW]	0.704	4.589	4.735
COP	[-]	7.906	2.702	3.390
Uncertainty of COP	[-]	± 0.143	± 0.050	± 0.067
Control settings	[rpm]	1100	5500	5500
Circulation pump settings – heating water	[%]	-	-	-
Fan settings	[%]	-	-	-

Temperature level		Low (reference water temperature 35 °C)	
Reference heating season		C" = colder (T _{designh} = -22 °C)	
Assessment condition		C	Tbiv (F, G)
Specification of the assessment condition*		A7/W26.45	A-15/W32
Date of testing		2023-02-08	2023-02-08
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]	26.45	32.07
Input heating water – temperature calculation	[°C]	22.29	27.05
Output heating water temperature	[°C]	26.45	32.07
Input heating water temperature	[°C]	22.29	27.05
Air temperature – dry bulb temperature	[°C]	6.98	-14.94
Air temperature – wet bulb temperature	[°C]	6.04	-15.92
Relative humidity	[%]	87.49	57.32
Barometric pressure	[kPa]	100.897	100.997
Ambient temperature	[°C]	14.82	15.97
Secondary circuit pressure difference	[kPa]	-1.810	-7.155
Efficiency of the secondary liquid pump	[-]	0.119	0.164
Volume flow rate of heating water	[m ³ ·h ⁻¹]	1.0021	2.0291
Density of heating water	[kg·m ⁻³]	996.5	994.9
Specific heat capacity of heating water	[kJ·kg ⁻¹ ·K ⁻¹]	4.180	4.180
Voltage	[V]	399.85	398.95
Total current	[A]	3.83	19.05
Overall power input	[kW]	0.735	4.279
Capacity correction of sec. liquid pump	[W]	-3.744	-20.568
Power input correction of sec. liquid pump	[W]	-4.25	-24.60
Heating capacity – heating water	[kW]	4.823	11.747
Corrected heating capacity – heating water	[kW]	4.827	11.767
Uncertainty of corrected heating capacity	[kW]	± 0.100	± 0.200
Effective electric power input	[kW]	0.739	4.303
COP	[-]	6.530	2.734
Uncertainty of COP	[-]	± 0.135	± 0.047
Control settings	[rpm]	1100	5500
Circulation pump settings – heating water	[%]	-	-
Fan settings	[%]	-	-

Data for SCOP calculation

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

	Outdoor heat exchanger	Indoor heat exchanger	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
	Outdoor air inlet	Outlet water temperature								
	[°C]	[°C]	[%]	[kW]	[kW]	[-]	[-]	[-]	[-]	[kW]
A	-7	34.00	88.46	12.25	12.248	2.713	0.900	1.00	2.713	–
B	2	30.00	53.85	7.46	7.278	4.539	0.900	1.00	4.539	–
C	7	27.00	34.62	4.79	4.813	6.423	0.900	1.00	6.423	–
D	12	27.09	15.38	2.13	5.568	7.906	0.969	0.38	7.527	0.0220
TOL (E)	-10	35.00	100.00	13.85	12.399	2.702	0.900	1.00	2.702	–
Tbiv (F)	-7	34.00	88.46	12.25	12.248	2.713	0.900	1.00	2.713	–

Adaption of water temperature – according to ČSN EN 14825:2020, Annex F

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

General formulas and derivation:

$$\begin{aligned}
 t_{\text{outlet, average}} &= t_{\text{inlet, capacity test}} + (t_{\text{outlet, capacity test}} - t_{\text{inlet, capacity test}}) \cdot CR & [^{\circ}\text{C}] \\
 t_{\text{outlet, average}} &= t_{\text{inlet, capacity test}} + (\Delta t) \cdot CR & [^{\circ}\text{C}] \\
 t_{\text{outlet, average}} &= t_{\text{outlet, capacity test}} - \Delta t + \Delta t \cdot CR & [^{\circ}\text{C}] \\
 t_{\text{outlet, capacity test}} &= t_{\text{outlet, average}} + \Delta t - \Delta t \cdot CR & [^{\circ}\text{C}]
 \end{aligned}$$

For variable flow:

$$\Delta t = 5$$

$$CR \cdot \Delta t = \text{Part load} / \text{Declared capacity} \cdot 5$$

$$t_{\text{outlet, capacity test, variable flow}} = t_{\text{outlet, average}} + 5 - \text{Part load} / \text{Declared capacity} \cdot 5$$

Measured data:

$t_{\text{outlet, average}}$	24.00	[°C]
Declared capacity	5.568	[kW]
Declared capacity standard rating condition A7/W35	-	[kW]
Part load	2.13	[kW]

Calculation of water temperature

$$t_{\text{outlet, capacity test, variable flow}} = 24 + 5 - 2.13 / 5.568 \cdot 5 = \underline{\underline{27.09}} \quad [^{\circ}\text{C}]$$

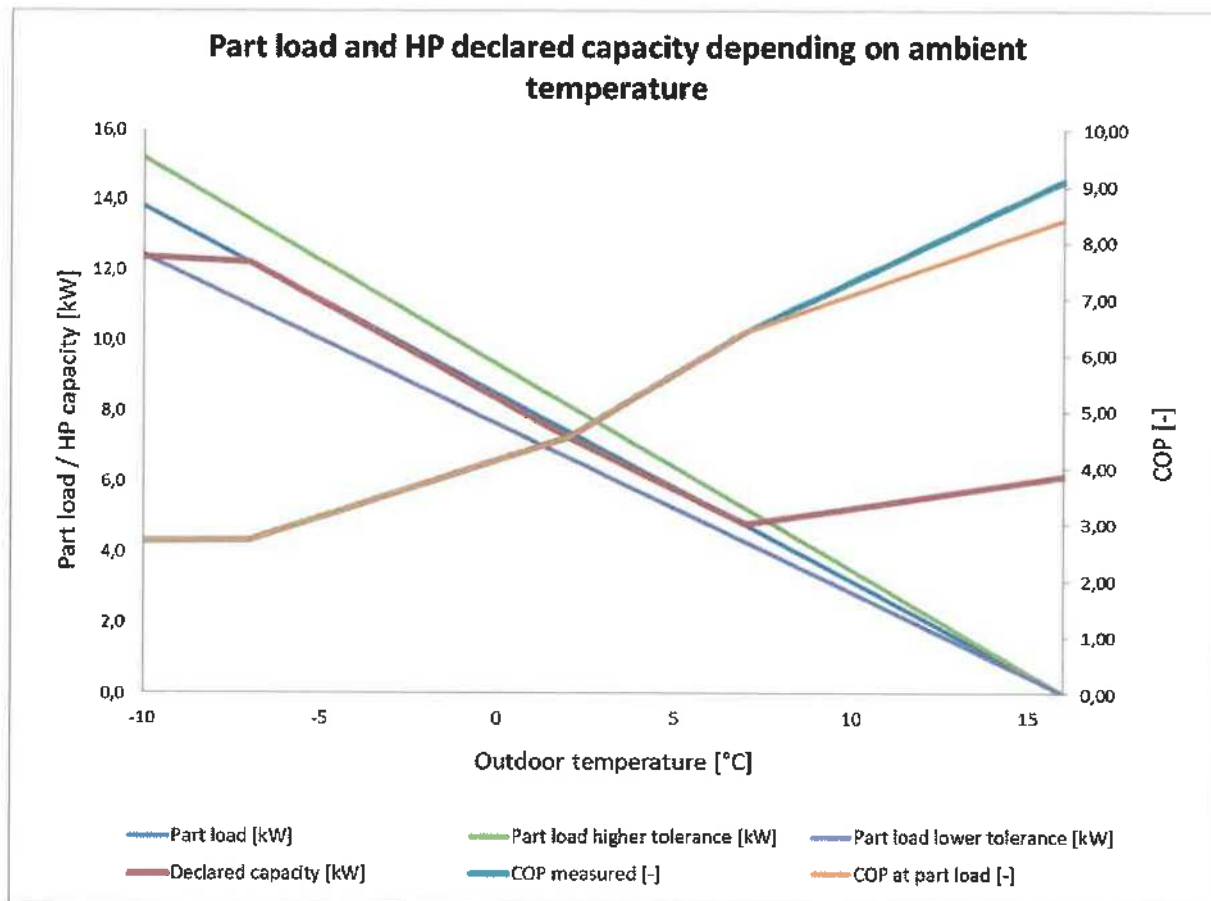
Calculation SCOP, SCOP_{on}, SCOP_{net}

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

	Bin	Outdoor temp. (dry bulb)	Hours	Part load ratio	Heat load	Capacity of HP	Heat load covered by heat pump	Resistive heat elbu (Tj)	Annual resistive heat	COPbin (Tj)	Annual heating demand	Annual power input including electric back up heating	Net annual heating capacity	Net annual power input without electric back up heating	
	J	Tj	hj		Ph(Tj)			elbu(Tj)	hj x elbu(Tj)	COPb in (Tj)	hj x P h(Tj)		hj x (P h(Tj) - elbu(Tj))		
	[-]	[°C]	[h]	[%]	[kW]	[kW]	[kW]	[kW]	[kWh]	[-]	[kWh]	[kWh]	[kWh]	[kWh]	
TOL(E)	21	-10	1	100.00	13.85	12.40	12.40	1.45	1.45	2.70	14	6	12	5	
	22	-9	25	96.15	13.31	12.35	12.35	0.96	24.11	2.71	333	138	309	114	
	23	-8	23	92.31	12.78	12.30	12.30	0.48	11.09	2.71	294	115	283	104	
A. Tbtv(F)	24	-7	24	88.46	12.25	12.25	12.25	0.00	0.00	2.71	294	108	294	108	
	25	-6	27	84.62	11.72	11.70	11.70	0.00	0.00	2.92	316	108	316	108	
	26	-5	68	80.77	11.18	11.14	11.14	0.00	0.00	3.12	760	244	760	244	
	27	-4	91	76.92	10.65	10.59	10.59	0.00	0.00	3.32	969	292	969	292	
	28	-3	89	73.08	10.12	10.04	10.04	0.00	0.00	3.52	900	255	900	255	
	29	-2	165	69.23	9.59	9.49	9.49	0.00	0.00	3.73	1582	424	1582	424	
	30	-1	173	65.38	9.05	8.93	8.93	0.00	0.00	3.93	1566	398	1566	398	
	31	0	240	61.54	8.52	8.38	8.38	0.00	0.00	4.13	2045	495	2045	495	
	32	1	280	57.69	7.99	7.83	7.83	0.00	0.00	4.34	2237	516	2237	516	
B	33	2	320	53.85	7.46	7.28	7.28	0.00	0.00	4.54	2386	526	2386	526	
	34	3	357	50.00	6.92	6.79	6.79	0.00	0.00	4.92	2471	503	2471	503	
	35	4	356	46.15	6.39	6.29	6.29	0.00	0.00	5.29	2275	430	2275	430	
	36	5	303	42.31	5.86	5.80	5.80	0.00	0.00	5.67	1775	313	1775	313	
	37	6	330	38.46	5.33	5.31	5.31	0.00	0.00	6.05	1757	291	1757	291	
C	38	7	326	34.62	4.79	4.81	4.79	0.00	0.00	6.42	1562	243	1562	243	
	39	8	348	30.77	4.26	4.96	4.26	0.00	0.00	6.64	1483	223	1483	223	
	40	9	335	26.92	3.73	5.12	3.73	0.00	0.00	6.86	1249	182	1249	182	
	41	10	315	23.08	3.20	5.27	3.20	0.00	0.00	7.09	1006	142	1006	142	
	42	11	215	19.23	2.66	5.42	2.66	0.00	0.00	7.31	572	78	572	78	
D	43	12	169	15.38	2.13	5.57	2.13	0.00	0.00	7.53	360	48	360	48	
	44	13	151	11.54	1.60	5.72	1.60	0.00	0.00	7.75	241	31	241	31	
	45	14	105	7.69	1.07	5.87	1.07	0.00	0.00	7.97	112	14	112	14	
	46	15	74	3.85	0.53	6.02	0.53	0.00	0.00	8.19	39	5	39	5	
		Σ	4910							Σ	28600	6129	28563	6093	
												SCOPon	4.67	SCOPnet	4.69
														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:	T 037* - Tests of leakage, pressure resistance, thermal and technical parameters, combustion efficiency, safety functions
Test method:	ČSN EN 14511-3:2019, ČSN EN 14825:2020
Sample tested:	Heat pump Kolton Airadapt 4-20
Measuring equipment used:	see Chapter III

Design		Air / water – monobloc					
Conditions specification according to ČSN 14825:2020	to EN	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			Variable		
Seasonal space heating efficiency	Heating	Average	η_s		154.1	%	
		Warmer	η_s		180.8	(Not tested) %	
		Colder	η_s		140.8	(Not tested) %	
Seasonal efficiency according to ČSN 14825:2020	Heating	Average	SCOP		3.93	–	
		Warmer	SCOP		4.59	(Not tested) –	
		Colder	SCOP		3.60	(Not tested) –	
Function	Cooling					Yes	
	Heating	Yes	Reference heating season	Average	Yes		
				Warmer	Yes		
				Colder	Yes		
Full heating load	Cooling		$P_{designc}$		–	kW	
	Heating	Average	$P_{designh}$		12.30	kW	
		Warmer	$P_{designh}$		16.01	kW	
		Colder	$P_{designh}$		14.20	kW	
Bivalent temperatures	Heating	Average	$T_{bivalent}$		-10	°C	
		Warmer	$T_{bivalent}$		2	°C	
		Colder	$T_{bivalent}$		-15	°C	
Operation temperatures limit	Heating	Average	TOL		-10	°C	
		Warmer	TOL		2	°C	
		Colder	TOL		-20	°C	
Seasonal consumption according to ČSN EN 14825:2020	power to	Cooling		Q_{CE}		–	kWh
		Heating	Average	Q_{HE}		6471	kWh
			Warmer	Q_{HE}		4655	(Not tested) kWh
			Colder	Q_{HE}		9734	(Not tested) kWh
Modes other than „active mode“		Off mode			P_{OFF}	17.6	W
		Thermostat off mode			P_{TO}	21.7	W
		Standby mode			P_{SB}	17.6	W
		Crankcase heater mode			P_{CK}	0.0	W

(Not tested): The technical data were declared by the Manufacturer and were not tested by the Testing Laboratory.

Calculation of SCOP according to ČSN EN 14825:2020:

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}	0.0217	[kW]
P _{SB}	0.0176	[kW]
P _{CK}	0.0000	[kW]
P _{OFF}	0.0176	[kW]
P _{designh}	12.30	[kW]
SCOP _{ON}	3.93	[-]

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)

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

$$Q_H = 12.3 \cdot 2066 = 25418 \quad [kWh]$$

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

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

$$Q_{HE} = 25418 / 3.93 + 178 \cdot 0.0217 + 0 \cdot 0.0176 + 178 \cdot 0 + 0 \cdot 0.0176 = 6471 \quad [kWh]$$

7.2 General formula for calculation of reference SCOP

$$SCOP = Q_H / Q_{HE} \quad [-]$$

$$SCOP = 25418 / 6471 = 3.93 \quad [-]$$

7.1 Calculation of the seasonal space heating efficiency η_s

$$\Sigma F(i) = F(1) + F(2) \quad [-]$$

$$\Sigma F = 0.03 + 0 = 0.03 \quad [-]$$

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

$$\eta_s / A = (1 / 2.5) \cdot 3.93 - 0.03 = \underline{\underline{1.541}} \quad [-]$$

Temperature level		Medium (reference water temperature 55 °C)		
Reference heating season		„A“ = average ($T_{designh} = -10\text{ °C}$)		
Assessment condition		A	B	C
Specification of the assessment condition*		A-7/W52	A2/W42	A7/W36
Date of testing		2023-02-01	2023-02-13	2023-02-01
Transient test procedure	YES / NO	YES	NO	NO
Average defrost time of 1 cycle	[min]	3.3	–	–
Average time of 1 cycle	[min]	122.7	–	–
Calculation time	[min]	122.7	70.0	70.0
Output heating water – temperature calculation	[°C]	51.30	41.99	36.00
Input heating water – temperature calculation	[°C]	43.87	36.49	32.02
Output heating water temperature	[°C]	51.98	41.99	36.00
Input heating water temperature	[°C]	44.00	36.49	32.02
Air temperature – dry bulb temperature	[°C]	-7.06	2.01	7.01
Air temperature – wet bulb temperature	[°C]	-8.05	1.07	6.03
Relative humidity	[%]	74.84	84.50	87.04
Barometric pressure	[kPa]	98.221	100.573	98.202
Ambient temperature	[°C]	16.20	16.51	15.07
Secondary circuit pressure difference	[kPa]	-1.897	-1.867	-1.345
Efficiency of the secondary liquid pump	[-]	0.120	0.119	0.117
Volume flow rate of heating water	[m ³ ·h ⁻¹]	1.2022	1.0057	1.0015
Density of heating water	[kg·m ⁻³]	987.5	991.4	993.6
Specific heat capacity of heating water	[kJ·kg ⁻¹ ·K ⁻¹]	4.177	4.180	4.175
Voltage	[V]	399.32	399.78	400.21
Total current	[A]	18.51	7.83	4.66
Overall power input	[kW]	4.162	1.633	0.928
Capacity correction of sec. liquid pump	[W]	-4.633	-3.860	-2.823
Power input correction of sec. liquid pump	[W]	-5.27	-4.39	-3.20
Heating capacity – heating water	[kW]	10.351	6.364	4.596
Corrected heating capacity – heating water	[kW]	10.356	6.368	4.599
Uncertainty of corrected heating capacity	[kW]	± 0.121	± 0.101	± 0.099
Effective electric power input	[kW]	4.167	1.637	0.931
COP	[-]	2.485	3.889	4.940
Uncertainty of COP	[-]	± 0.029	± 0.062	± 0.107
Control settings	[rpm]	4150	1800	1100
Circulation pump settings – heating water	[%]	-	-	-
Fan settings	[%]	-	-	-

Temperature level		Medium (reference water temperature 55 °C)		
Reference heating season		„A“ = average ($T_{\text{designh}} = -10\text{ °C}$)		„W“ = warmer ($T_{\text{designh}} = 2\text{ °C}$)
Assessment condition		D	Tbiv, TOL(E, F)	Tbiv (E, F)
Specification of the assessment condition*		A12/W35.2	A-10/W55	A2/W55
Date of testing		2023-02-01	2023-01-30	2023-02-07
Transient test procedure	YES / NO	NO	YES	YES
Average defrost time of 1 cycle	[min]	–	3.8	4.0
Average time of 1 cycle	[min]	–	130.8	81.8
Calculation time	[min]	70.0	130.8	163.6
Output heating water – temperature calculation	[°C]	35.23	54.33	53.88
Input heating water – temperature calculation	[°C]	30.55	46.88	46.77
Output heating water temperature	[°C]	35.23	55.01	54.99
Input heating water temperature	[°C]	30.55	47.01	47.01
Air temperature – dry bulb temperature	[°C]	11.94	-9.93	2.06
Air temperature – wet bulb temperature	[°C]	11.01	-10.95	1.12
Relative humidity	[%]	89.67	69.36	84.52
Barometric pressure	[kPa]	98.091	97.883	100.801
Ambient temperature	[°C]	14.93	14.72	15.84
Secondary circuit pressure difference	[kPa]	-1.371	-4.550	-6.404
Efficiency of the secondary liquid pump	[-]	0.117	0.438	0.157
Volume flow rate of heating water	[m ³ ·h ⁻¹]	1.0017	1.4242	1.9564
Density of heating water	[kg·m ⁻³]	993.9	986.1	986.3
Specific heat capacity of heating water	[kJ·kg ⁻¹ ·K ⁻¹]	4.180	4.178	4.180
Voltage	[V]	400.20	398.91	398.99
Total current	[A]	4.46	25.42	27.67
Overall power input	[kW]	0.882	5.646	6.084
Capacity correction of sec. liquid pump	[W]	-2.879	-10.346	-18.688
Power input correction of sec. liquid pump	[W]	-3.26	-12.09	-22.17
Heating capacity – heating water	[kW]	5.404	12.292	15.990
Corrected heating capacity – heating water	[kW]	5.407	12.303	16.009
Uncertainty of corrected heating capacity	[kW]	± 0.100	± 0.143	± 0.193
Effective electric power input	[kW]	0.885	5.658	6.106
COP	[-]	6.109	2.174	2.622
Uncertainty of COP	[-]	± 0.113	± 0.026	± 0.032
Control settings	[rpm]	1100	5500	5500
Circulation pump settings – heating water	[%]	–	–	–
Fan settings	[%]	–	–	–

Temperature level		Medium (reference water temperature 55 °C)	
Reference heating season		C° = colder (T _{designh} = -22 °C)	
Assessment condition		C	Tbiv (F, G)
Specification of the assessment condition*		A7/W34.22	A-15/W49
Date of testing		2023-02-09	2023-02-08
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]	34.15	48.99
Input heating water – temperature calculation	[°C]	30.13	41.00
Output heating water temperature	[°C]	34.15	48.99
Input heating water temperature	[°C]	30.13	41.00
Air temperature – dry bulb temperature	[°C]	6.94	-15.02
Air temperature – wet bulb temperature	[°C]	6.02	-15.96
Relative humidity	[%]	87.63	58.94
Barometric pressure	[kPa]	100.693	100.998
Ambient temperature	[°C]	15.49	15.71
Secondary circuit pressure difference	[kPa]	-1.768	-2.714
Efficiency of the secondary liquid pump	[–]	0.119	0.124
Volume flow rate of heating water	[m ³ ·h ⁻¹]	1.0023	1.2619
Density of heating water	[kg·m ⁻³]	994.2	988.5
Specific heat capacity of heating water	[kJ·kg ⁻¹ ·K ⁻¹]	4.180	4.180
Voltage	[V]	399.83	398.80
Total current	[A]	4.49	23.44
Overall power input	[kW]	0.890	5.237
Capacity correction of sec. liquid pump	[W]	-3.663	-6.697
Power input correction of sec. liquid pump	[W]	-4.16	-7.65
Heating capacity – heating water	[kW]	4.653	11.575
Corrected heating capacity – heating water	[kW]	4.657	11.582
Uncertainty of corrected heating capacity	[kW]	± 0.099	± 0.128
Effective electric power input	[kW]	0.894	5.245
COP	[–]	5.209	2.208
Uncertainty of COP	[–]	± 0.111	± 0.024
Control settings	[rpm]	1100	5500
Circulation pump settings – heating water	[%]	–	–
Fan settings	[%]	–	–

Data for SCOP calculation

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

	Outdoor heat exchanger	Indoor heat exchanger	Part load ratio	Part load	DC Declared capacity	COP _d at declared capacity	C _{dh} degradation coefficient	CR	COP _{bin} (T _j)	Eff. power input of compressor off state
	Outdoor air inlet	Outlet water temperature								
	[°C]	[°C]	[%]	[kW]	[kW]	[-]	[-]	[-]	[-]	[kW]
A	-7	52.00	88.46	10.88	10.356	2.485	0.900	1.00	2.485	–
B	2	42.00	53.85	6.62	6.368	3.889	0.900	1.00	3.889	–
C	7	36.00	34.62	4.26	4.599	4.940	0.900	1.00	4.940	–
D	12	35.20	15.38	1.89	5.407	6.109	0.975	0.35	5.843	0.0217
TOL (E)	-10	55.00	100.00	12.30	12.303	2.174	0.900	1.00	2.174	–
T_{biv} (F)	-10	55.00	100.00	12.30	12.303	2.174	0.900	1.00	2.174	–

Adaption of water temperature – according to ČSN EN 14825:2020, Annex F

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

General formulas and derivation:

$$\begin{aligned}
 t_{\text{outlet, average}} &= t_{\text{inlet, capacity test}} + (t_{\text{outlet, capacity test}} - t_{\text{inlet, capacity test}}) \cdot CR & [^{\circ}\text{C}] \\
 t_{\text{outlet, average}} &= t_{\text{inlet, capacity test}} + (\Delta t) \cdot CR & [^{\circ}\text{C}] \\
 t_{\text{outlet, average}} &= t_{\text{outlet, capacity test}} - \Delta t + \Delta t \cdot CR & [^{\circ}\text{C}] \\
 t_{\text{outlet, capacity test}} &= t_{\text{outlet, average}} + \Delta t - \Delta t \cdot CR & [^{\circ}\text{C}]
 \end{aligned}$$

For variable flow:

$$\Delta t = 8$$

$$CR \cdot \Delta t = \text{Part load} / \text{Declared capacity} \cdot 8$$

$$t_{\text{outlet, capacity test, variable flow}} = t_{\text{outlet, average}} + 8 - \text{Part load} / \text{Declared capacity} \cdot 8$$

Measured data:

$t_{\text{outlet, average}}$	30.00	[°C]
Declared capacity	5.407	[kW]
Declared capacity standard rating condition A7/W55	–	[kW]
Part load	1.89	[kW]

Calculation of water temperature

$$t_{\text{outlet, capacity test, variable flow}} = 30 + 8 - 1.89 / 5.407 \cdot 8 = \underline{\underline{35.2}} \quad [^{\circ}\text{C}]$$

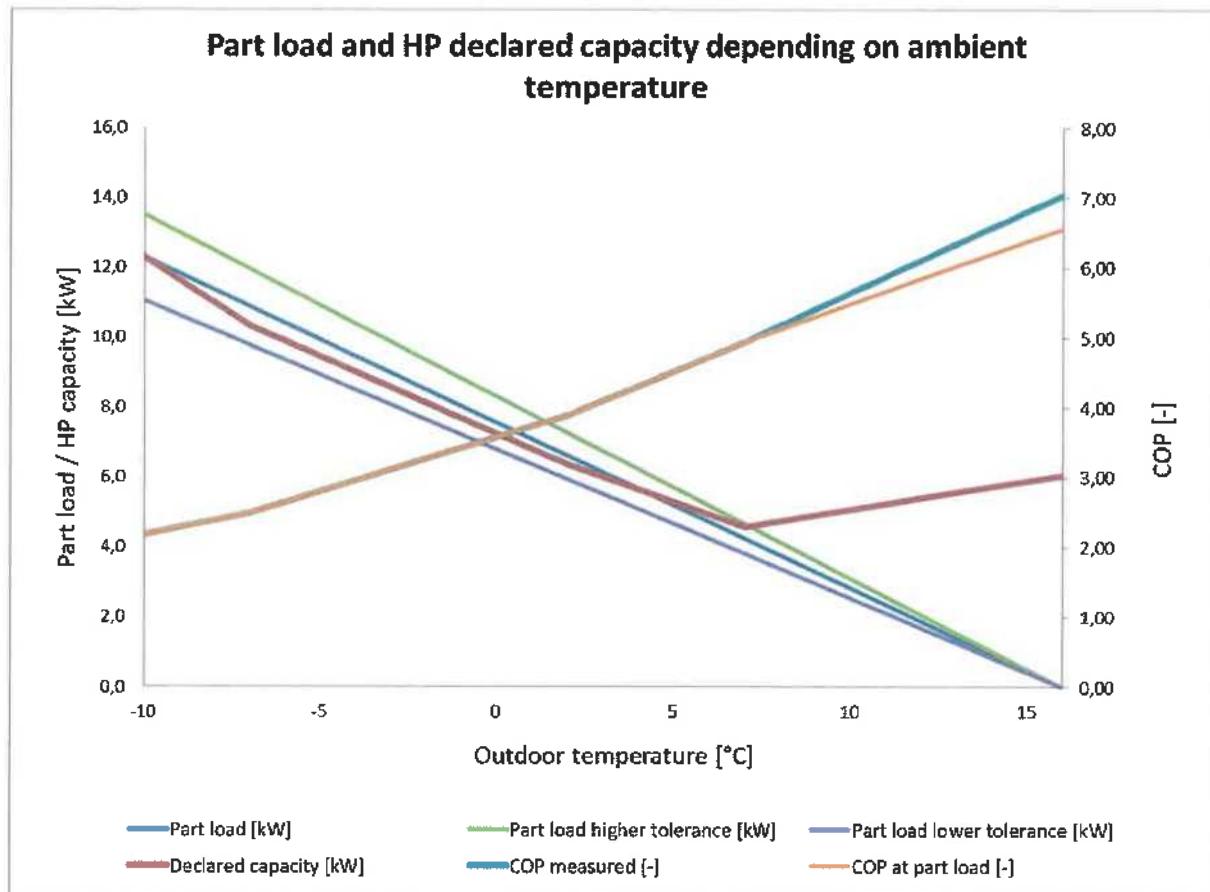
Calculation SCOP, SCOP_{on}, SCOP_{net}

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

	Bin	Outdoor temp. (dry bulb)	Hours	Part load ratio	Heat load	Capacity of HP	Heat load covered by heat pump	Resistive heat elbu (Tj)	Annual resistive heat	COPbin (Tj)	Annual heating demand	Annual power input including electric back up heating	Net annual heating capacity	Net annual power input without electric back up heating	
	j	Tj	hj		Ph(Tj)			elbu(Tj)	hj x elbu(Tj)	COPb In (Tj)	hj x P h(Tj)		hj x (P h(Tj) - elbu(Tj))		
	[-]	[°C]	[h]	[%]	[kW]	[kW]	[kW]	[kW]	[kWh]	[-]	[kWh]	[kWh]	[kWh]	[kWh]	
TOL(E), Tbiv(F)	21	-10	1	100.00	12.30	12.30	12.30	0.00	0.00	2.17	12	6	12	6	
	22	-9	25	96.15	11.83	11.65	11.65	0.00	0.00	2.28	296	130	296	130	
	23	-8	23	92.31	11.36	11.00	11.00	0.00	0.00	2.38	261	110	261	110	
A	24	-7	24	88.46	10.88	10.36	10.36	0.00	0.00	2.49	261	105	261	105	
	25	-6	27	84.62	10.41	9.91	9.91	0.00	0.00	2.64	281	108	281	106	
	26	-5	68	80.77	9.94	9.47	9.47	0.00	0.00	2.80	676	242	676	242	
	27	-4	91	76.92	9.46	9.03	9.03	0.00	0.00	2.95	861	292	861	292	
	28	-3	89	73.08	8.99	8.58	8.58	0.00	0.00	3.11	800	257	800	257	
	29	-2	165	69.23	8.52	8.14	8.14	0.00	0.00	3.27	1405	430	1405	430	
	30	-1	173	65.38	8.04	7.70	7.70	0.00	0.00	3.42	1392	407	1392	407	
	31	0	240	61.54	7.57	7.25	7.25	0.00	0.00	3.58	1817	508	1817	508	
	32	1	280	57.69	7.10	6.81	6.81	0.00	0.00	3.73	1987	532	1987	532	
B	33	2	320	53.85	6.62	6.37	6.37	0.00	0.00	3.89	2120	545	2120	545	
	34	3	357	50.00	6.15	6.01	6.01	0.00	0.00	4.10	2196	536	2196	536	
	35	4	356	46.15	5.68	5.66	5.66	0.00	0.00	4.31	2021	469	2021	469	
	36	5	303	42.31	5.21	5.31	5.21	0.00	0.00	4.52	1577	349	1577	349	
	37	6	330	38.46	4.73	4.95	4.73	0.00	0.00	4.73	1562	330	1562	330	
C	38	7	326	34.62	4.26	4.60	4.26	0.00	0.00	4.94	1388	281	1388	281	
	39	8	348	30.77	3.79	4.76	3.79	0.00	0.00	5.12	1317	257	1317	257	
	40	9	335	26.92	3.31	4.92	3.31	0.00	0.00	5.30	1110	209	1110	209	
	41	10	315	23.08	2.84	5.08	2.84	0.00	0.00	5.48	894	163	894	163	
	42	11	215	19.23	2.37	5.25	2.37	0.00	0.00	5.66	509	90	509	90	
D	43	12	169	15.38	1.89	5.41	1.89	0.00	0.00	5.84	320	55	320	55	
	44	13	151	11.54	1.42	5.57	1.42	0.00	0.00	6.02	214	36	214	36	
	45	14	105	7.69	0.95	5.73	0.95	0.00	0.00	6.20	99	16	99	16	
	46	15	74	3.85	0.47	5.89	0.47	0.00	0.00	6.38	35	5	35	5	
		Σ	4910								Σ	25413	6466	25413	6466
											SCOPon	3.93	SCOPnet	3.93	
													SCOP	3.93	

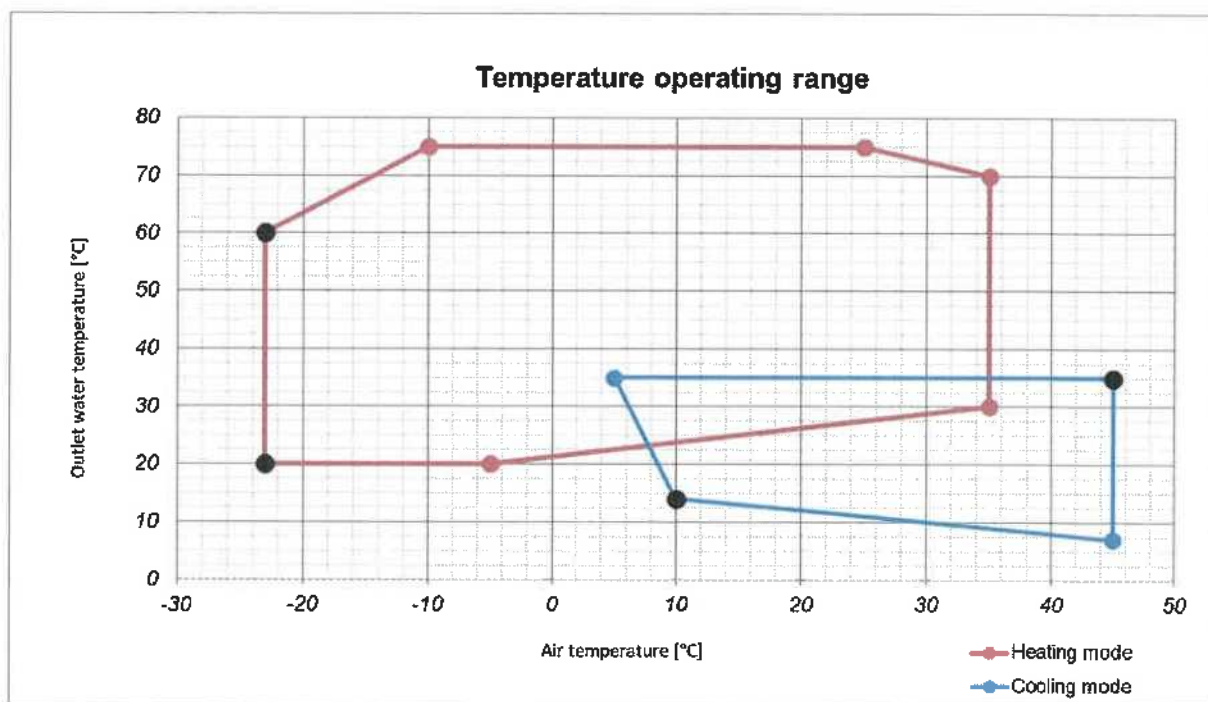
Part load performance diagram

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



Test objective:	Safety tests
Exact name of the test procedure:	T 037* - Tests of leakage, pressure resistance, thermal and technical parameters, combustion efficiency, safety functions
Test method:	ČSN EN 14511-4:2019
Sample tested:	Heat pump Kolton Airadapt 4-20
Measuring equipment used:	see Chapter III

1) Temperature operating range



Test point	Inlet air dry bulb temperature [°C]		Outlet heating water temperature [°C]		Water flow rate in condenser [m³/h]	Note
Heating mode						
1.	A	-23	W	20	Minimum	Minimum water flow rate: 1.000 m³·h⁻¹ Maximum water flow rate: 3.200 m³·h⁻¹
2.	A	-23	W	60	Minimum	
Cooling mode						
1.	A	10	W	14	Minimum	Minimum water flow rate: 1.000 m³·h⁻¹ Maximum water flow rate: 3.200 m³·h⁻¹
2.	A	45	W	35	Maximum	

Heat pump Kolton Airadapt 4-20 is fully operational in the temperature operating range.

Starting and operating tests (heating mode)

Test according to Article 4.2.1.2 of ČSN EN 14511-4:2019

Operational requirements conditions for air-to-water units					
Test point	Inlet temperature at outdoor heat exchanger (°C)	Inlet temperature at indoor heat exchanger (°C)	Water flow rate at indoor heat exchanger	Voltage (V)	Test result
1 (starting)	Lower limit of use	Lower limit of use	minimum	Rated voltage	+
2 (operating)	Lower limit of use	Upper limit of use	minimum	Rated voltage	+

Evaluation: +... For a starting test, the unit shall start and operate during 15 min, for an operating test, the unit shall be able to operate during 1 h, without tripping of the motor overload protective devices.

-... The unit did not fulfill test requirements.

0... The requirement does not apply to the product concerned.

x... Test was not required.

Starting and operating tests (cooling mode)

Test according to Article 4.2.1.3 of ČSN EN 14511-4:2019

Operational requirements conditions for air-to-water units					
Test point	Inlet temperature at outdoor heat exchanger (°C)	Inlet temperature at indoor heat exchanger (°C)	Water flow rate at indoor heat exchanger	Voltage (V)	Test result
1 (starting)	Lower limit of use	Lower limit of use	minimum	Rated voltage	+
2 (starting)	Upper limit of use	Upper limit of use	maximum	Rated voltage	+

Evaluation: +... For a starting test, the unit shall start and operate during 15 min, without tripping of the motor overload protective devices.

-... The unit did not fulfill test requirements.

0... The requirement does not apply to the product concerned.

x... Test was not required.

1) Outside the operating range

Requirements for outside the operating range	Requirement specification	Test result	Note
If operating outside the temperature range can cause damage to the unit, it shall be provided with safety devices which ensure that the unit suffers no damage when the operating limits of use indicated by the manufacturer are exceeded and remains capable of operating when coming back within these limits. A safety device that does not automatically reset may trip provided that a warning device is fitted. The manufacturer shall indicate any safety devices provided and their operating conditions according to 7.2.3.	ČSN EN 14511-4:2019 Art. 4.3	x	x

Evaluation: +... The unit fulfills test requirements.

-... The unit did not fulfill test requirements.

0... The requirement does not apply to the product concerned.

x... Test was not required.

2) Freeze-up test in cooling mode

Air-to-air and water(brine)-to-air units

Required operating conditions	Test result	Note
Test according to Article 4.4 of ČSN EN 14511-4:2019	0	–
Evaluation: +...	After the unit has operated for 6 hours or after the last freeze up cycle has been completed after these 6 h, the following requirements shall be fulfilled: - no ice shall have accumulated on the evaporator; - no ice shall drip from the unit; - no water shall drip or be blown off the unit into the room.	
–...	The unit did not fulfill test requirements.	
0...	The requirement does not apply to the product concerned.	
x...	Test was not required.	

3) Shutting off the heat transfer medium flows

Required operating conditions	Test result	Note
Test for section a) Art. 4.5 ČSN EN 14511-4:2019 – heating	+	koperta TE niska
Test for section a) Art. 4.5 ČSN EN 14511-4:2019 – cooling	+	koperta TE niska
Test for section b) Art. 4.5 ČSN EN 14511-4:2019 – heating	+	koperta TE niska
Test for section b) Art. 4.5 ČSN EN 14511-4:2019 – cooling	+	Niskie ciśnienie
Test for section c) Art. 4.5 ČSN EN 14511-4:2019	0	–
Evaluation: +...	The unit shall remain capable of operating after restoration of the flow rates for 30 min once the compressor has restarted.	
–...	The unit did not fulfill test requirements.	
0...	The requirement does not apply to the product concerned.	
x...	Test was not required.	

4) Complete power supply failure

Required operating conditions	Test result	Note
Test according to Article 4.6 of ČSN EN 14511-4:2019	+	–
Evaluation: +...	The unit has to restart automatically within 30 min. When manufacturer states that the unit does not automatically restart, fault detection is necessary. The unit is checked for any damage sustained during the test and if any safety devices have operated during the test.	
–...	The unit did not fulfill test requirements.	
0...	The requirement does not apply to the product concerned.	
x...	Test was not required.	

5) Condensate draining and enclosure sweat test

Air-to-air and water(brine)-to-air units

Required operating conditions	Test result	Note
Test according to Article 4.7 of ČSN EN 14511-4:2019	0	–
Evaluation: +...	During the test of 4 hours no condensed water shall drip, run or blow off the unit except through the drain. For indoor units, drain holes shall be provided with suitable pipe connection, the minimum diameter of which shall be 12 mm.	
–...	The unit did not fulfill test requirements.	
0...	The requirement does not apply to the product concerned.	
x...	Test was not required.	

Tested by: Ing. Tomáš Rešiliáno

Date: 2023-06-21

Signed:

Reviewed and approved by: Ing. Mario Jankola

Date: 2023-06-21

Signed:

Test objective:	Out of accredited tests – SCOP calculations
Exact name of the test procedure:	SCOP calculations – based on values provided by the customer
Test method:	ČSN EN 14825:2020
Sample tested:	Heat pump Kolton Airadapt 4-20

Data for SCOP calculation

- Low temperature application (reference water temperature 35 °C)
- Reference heating season „W” – warmer

	Outdoor heat exchanger	Indoor heat exchanger	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
	Outdoor air inlet	Outlet water temperature								
	[°C]	[°C]	[%]	[kW]	[kW]	[-]	[-]	[-]	[-]	[kW]
A	–	–	–	–	–	–	–	–	–	–
B	2	35.00	100.00	16.05	16.049	3.390	0.900	1.00	3.390	–
C	7	31.00	64.29	10.32	10.550	5.730	0.900	1.00	5.730	–
D	12	26.92	28.57	4.59	5.620	7.750	0.970	0.82	7.697	0.0220
TOL (E)	2	35.00	100.00	16.05	16.049	3.390	0.900	1.00	3.390	–
Tbiv (F)	2	35.00	100.00	16.05	16.049	3.390	0.900	1.00	3.390	–

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

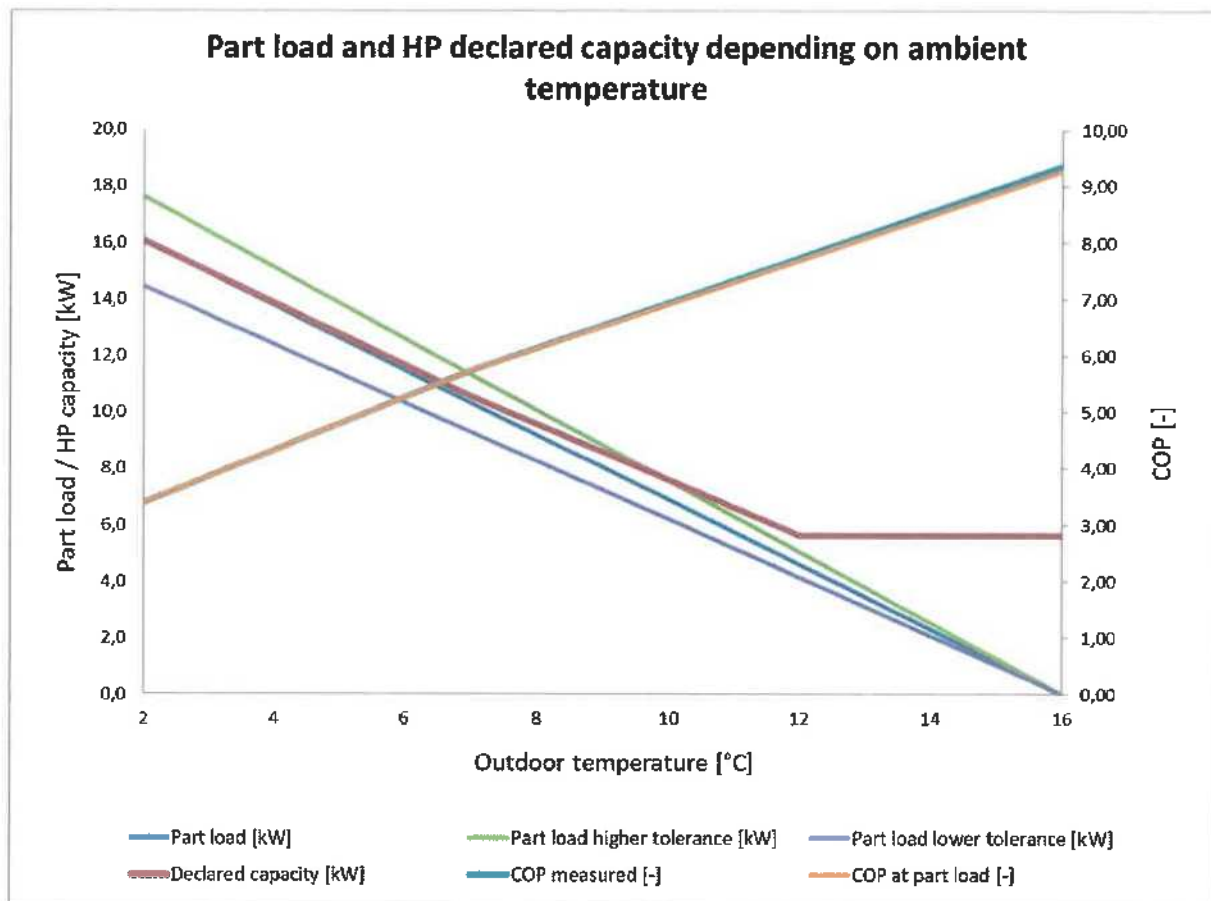
- Low temperature application (reference water temperature 35 °C)
- Reference heating season „W“ – warmer

	Bin	Outdoor temp. (dry bulb)	Hours	Part load ratio	Heat load	Capacity of HP	Heat load covered by heat pump	Resistive heat elbu (Tj)	Annual resistive heat	COPbin (Tj)	Annual heating demand	Annual power input including electric back up heating	Net annual heating capacity	Net annual power input without electric back up heating
	j	Tj	hj		P _{h(η)}			elbu _(η)	h _j x elbu _(η)	COP bin (Tj)	h _j x P _{h(η)}		h _j x (P _{h(η)} - elbu _(η))	
	[-]	[°C]	[h]	[%]	[kW]	[kW]	[kW]	[kW]	[kWh]	[-]	[kWh]	[kWh]	[kWh]	[kWh]
B, TOL(E), Tbi(F)	33	2	3	100.00	16.05	16.05	16.05	0.00	0.00	3.39	48	14	48	14
	34	3	22	92.86	14.90	14.95	14.90	0.00	0.00	3.86	328	85	328	85
	35	4	63	85.71	13.76	13.85	13.76	0.00	0.00	4.33	867	200	867	200
	36	5	63	78.57	12.61	12.75	12.61	0.00	0.00	4.79	794	166	794	166
	37	6	175	71.43	11.46	11.65	11.46	0.00	0.00	5.26	2006	381	2006	381
C	38	7	162	64.29	10.32	10.55	10.32	0.00	0.00	5.73	1671	292	1671	292
	39	8	259	57.14	9.17	9.56	9.17	0.00	0.00	6.12	2375	388	2375	388
	40	9	360	50.00	8.02	8.58	8.02	0.00	0.00	6.52	2889	443	2889	443
	41	10	426	42.86	6.88	7.59	6.88	0.00	0.00	6.91	2944	426	2944	426
	42	11	430	35.71	5.73	6.61	5.73	0.00	0.00	7.30	2465	337	2465	337
D	43	12	503	28.57	4.59	5.62	4.59	0.00	0.00	7.70	2306	300	2306	300
	44	13	444	21.43	3.44	4.63	3.44	0.00	0.00	8.09	1527	189	1527	189
	45	14	384	14.29	2.29	3.65	2.29	0.00	0.00	8.48	880	104	880	104
	46	15	294	7.14	1.15	2.66	1.15	0.00	0.00	8.88	337	38	337	38
	Σ		3590							Σ	21438	3363	21438	3363

SCOP _{on}	6.37	SCOP _{net}	6.37
		SCOP	6.34

Part load performance diagram

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



Data for SCOP calculation

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

	Outdoor heat exchanger	Indoor heat exchanger	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
	Outdoor air inlet	Outlet water temperature								
	[°C]	[°C]	[%]	[kW]	[kW]	[-]	[-]	[-]	[-]	[kW]
A	-7	30.00	60.53	8.73	8.850	4.020	0.900	1.00	4.020	–
B	2	27.00	36.84	5.31	5.350	4.780	0.900	1.00	4.780	–
C	7	26.46	23.68	3.42	4.827	6.530	0.970	0.71	6.451	0.0220
D	12	27.64	10.53	1.52	5.590	7.820	0.969	0.27	7.224	0.0220
TOL (E)	-20	34.14	94.74	13.67	10.020	2.510	0.900	1.00	2.510	–
Tbiv (F)	-15	32.00	81.58	11.77	11.767	2.734	0.900	1.00	2.734	–
G	-15	32.00	81.58	11.77	11.767	2.734	0.900	1.00	2.734	–

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

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

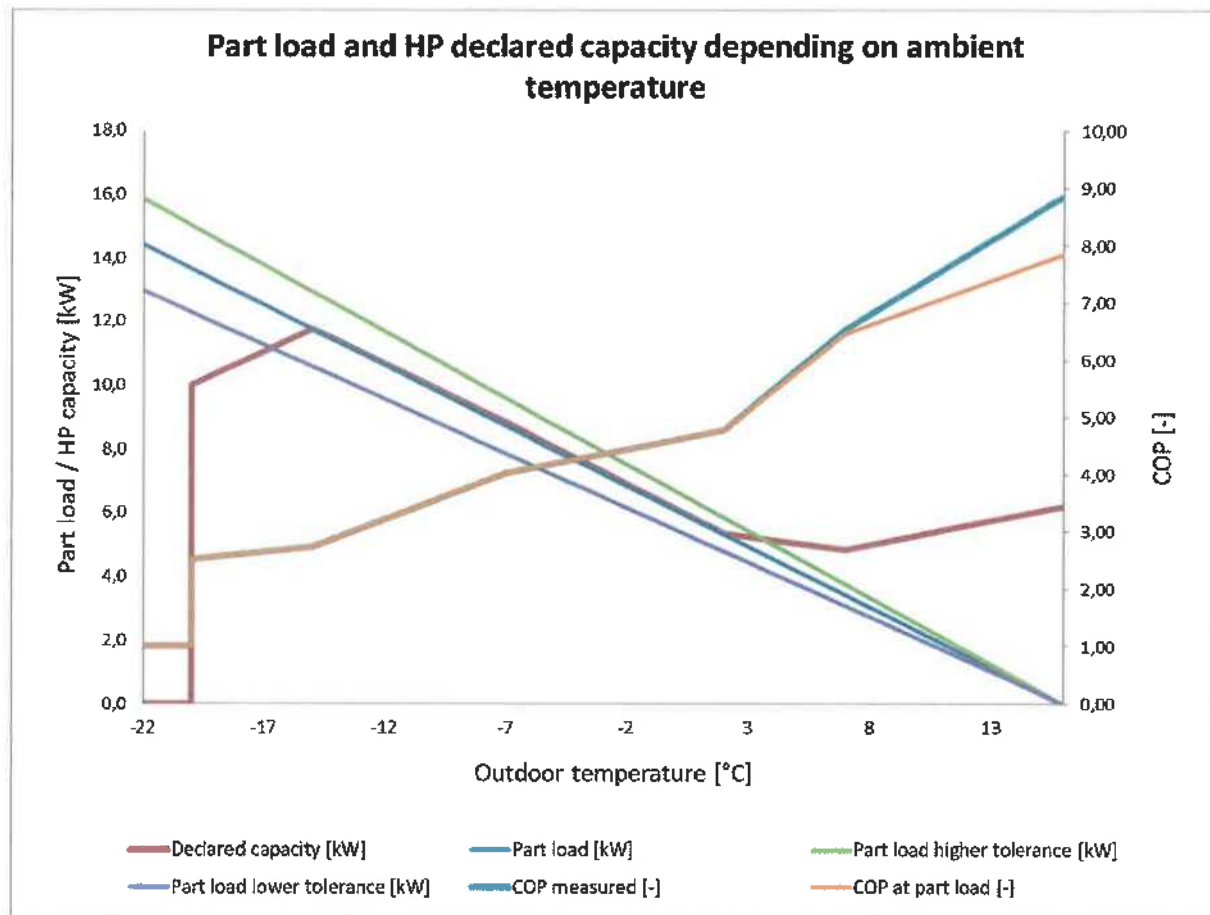
Bin	Outdoor temp. (dry bulb)	Hours	Part load ratio	Heat load	Capacity of HP	Heat load covered by heat pump	Resistive heat elbu (Tj)	Annual resistive heat	COPbin (Tj)	Annual heating demand	Annual power input including electric back up heating	Net annual heating capacity	Net annual power input without electric back up heating
J	Tj	h _j		P _{h(Tj)}			elbu _(Tj)	h _j × elbu _(Tj)	COP bin (Tj)	h _j × P _{h(Tj)}		h _j × (P _{h(Tj)} - elbu _(Tj))	
[-]	[°C]	[h]	[%]	[kW]	[kW]	[kW]	[kW]	[kWh]	[-]	[kWh]	[kWh]	[kWh]	[kWh]
9	-22	1	100.00	14.42	0.00	0.00	14.42	14.42	1.00	14	14	0	0
10	-21	6	97.37	14.04	0.00	0.00	14.04	84.27	1.00	84	84	0	0
TOL(E)	-20	13	94.74	13.67	10.02	10.02	3.65	47.39	2.51	178	99	130	52
12	-19	17	92.11	13.29	10.37	10.37	2.92	49.57	2.55	226	119	176	69
13	-18	19	89.47	12.91	10.72	10.72	2.19	41.55	2.60	245	120	204	78
14	-17	26	86.84	12.53	11.07	11.07	1.46	37.91	2.64	326	147	288	109
15	-16	39	84.21	12.15	11.42	11.42	0.73	28.43	2.69	474	194	445	166
G, Tbiv(F)	-15	41	81.58	11.77	11.77	11.77	0.00	0.00	2.73	482	176	482	176
17	-14	35	78.95	11.39	11.40	11.39	0.00	0.00	2.90	399	138	399	138
18	-13	52	76.32	11.01	11.04	11.01	0.00	0.00	3.06	572	187	572	187
19	-12	37	73.68	10.63	10.67	10.63	0.00	0.00	3.22	393	122	393	122
20	-11	41	71.05	10.25	10.31	10.25	0.00	0.00	3.38	420	124	420	124

	21	-10	43	68.42	9.87	9.94	9.87	0.00	0.00	3.54	424	120	424	120
	22	-9	54	65.79	9.49	9.58	9.49	0.00	0.00	3.70	512	139	512	139
	23	-8	90	63.16	9.11	9.21	9.11	0.00	0.00	3.86	820	212	820	212
A	24	-7	125	60.53	8.73	8.85	8.73	0.00	0.00	4.02	1091	271	1091	271
	25	-6	169	57.89	8.35	8.46	8.35	0.00	0.00	4.10	1411	344	1411	344
	26	-5	195	55.26	7.97	8.07	7.97	0.00	0.00	4.19	1554	371	1554	371
	27	-4	278	52.63	7.59	7.68	7.59	0.00	0.00	4.27	2111	494	2111	494
	28	-3	306	50.00	7.21	7.29	7.21	0.00	0.00	4.36	2207	506	2207	506
	29	-2	454	47.37	6.83	6.91	6.83	0.00	0.00	4.44	3102	698	3102	698
	30	-1	385	44.74	6.45	6.52	6.45	0.00	0.00	4.53	2484	549	2484	549
	31	0	490	42.11	6.07	6.13	6.07	0.00	0.00	4.61	2976	645	2976	645
	32	1	533	39.47	5.69	5.74	5.69	0.00	0.00	4.70	3035	646	3035	646
B	33	2	380	36.84	5.31	5.35	5.31	0.00	0.00	4.78	2019	422	2019	422
	34	3	228	34.21	4.93	5.25	4.93	0.00	0.00	5.11	1125	220	1125	220
	35	4	261	31.58	4.56	5.14	4.56	0.00	0.00	5.45	1189	218	1189	218
	36	5	279	28.95	4.18	5.04	4.18	0.00	0.00	5.78	1165	201	1165	201
	37	6	229	26.32	3.80	4.93	3.80	0.00	0.00	6.12	869	142	869	142
C	38	7	269	23.68	3.42	4.83	3.42	0.00	0.00	6.45	919	142	919	142
	39	8	233	21.05	3.04	4.96	3.04	0.00	0.00	6.61	708	107	708	107
	40	9	230	18.42	2.66	5.13	2.66	0.00	0.00	6.76	611	90	611	90
	41	10	243	15.79	2.28	5.28	2.28	0.00	0.00	6.91	553	80	553	80
	42	11	191	13.16	1.90	5.44	1.90	0.00	0.00	7.07	363	51	363	51
D	43	12	146	10.53	1.52	5.59	1.52	0.00	0.00	7.22	222	31	222	31
	44	13	150	7.89	1.14	5.74	1.14	0.00	0.00	7.38	171	23	171	23
	45	14	97	5.26	0.76	5.90	0.76	0.00	0.00	7.53	74	10	74	10
	46	15	61	2.63	0.38	6.05	0.38	0.00	0.00	7.69	23	3	23	3
Σ		6446								Σ	35553	8264	35249	7960

SCOPon	4.30	SCOPnet	4.43
		SCOP	4.30

Part load performance diagram

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



Data for SCOP calculation

- Medium temperature application (reference water temperature 55 °C)
- Reference heating season „W” – warmer

	Outdoor heat exchanger	Indoor heat exchanger	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
	Outdoor air inlet	Outlet water temperature								
	[°C]	[°C]								
A	–	–	–	–	–	–	–	–	–	–
B	2	55.00	100.00	16.01	16.009	2.622	0.900	1.00	2.622	–
C	7	46.00	64.29	10.29	10.420	3.960	0.900	1.00	3.960	–
D	12	35.40	28.57	4.57	5.540	5.780	0.977	0.83	5.752	0.0217
TOL (E)	2	55.00	100.00	16.01	16.009	2.622	0.900	1.00	2.622	–
Tbiv (F)	2	55.00	100.00	16.01	16.009	2.622	0.900	1.00	2.622	–

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

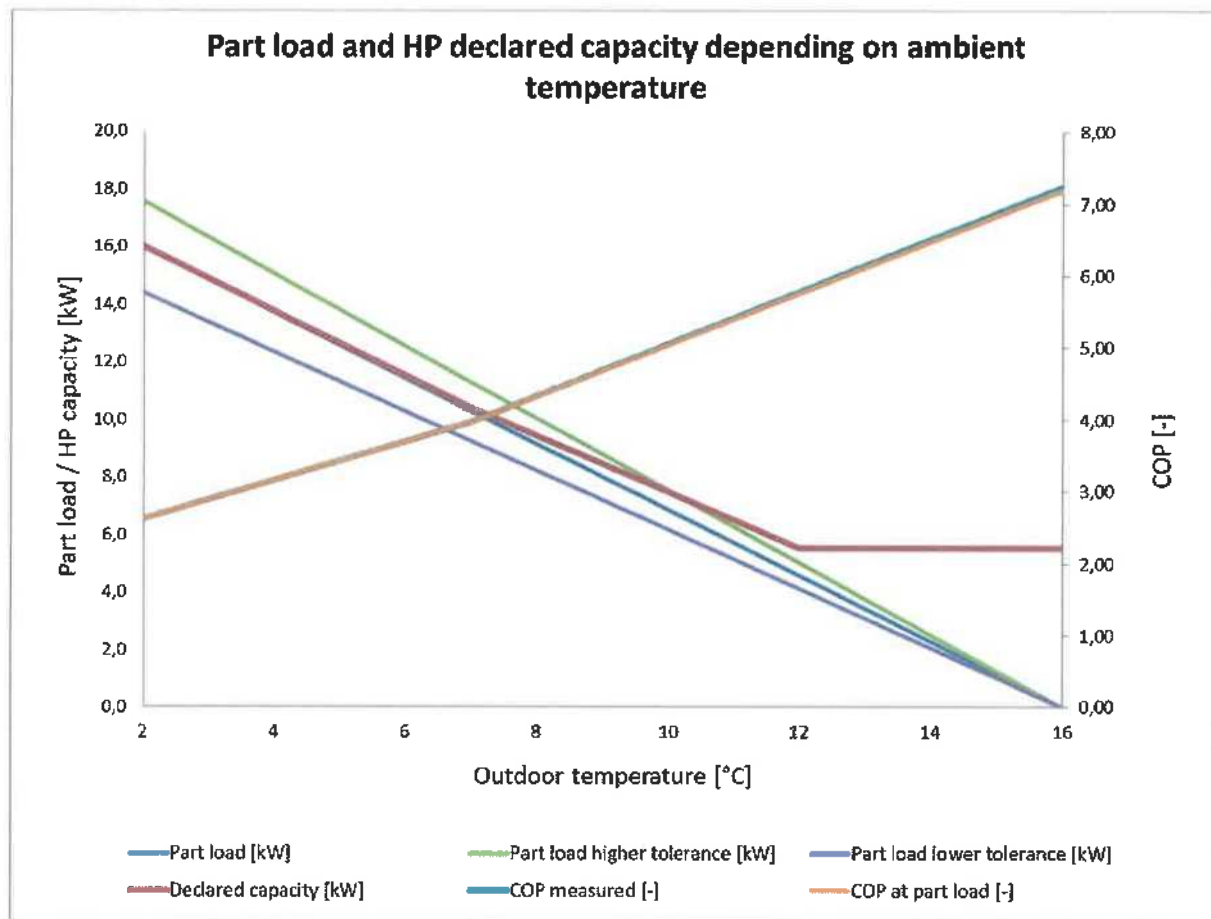
- Medium temperature application (reference water temperature 55 °C)
- Reference heating season „W” – warmer

	Bin	Outdoor temp. (dry bulb)	Hours	Part load ratio	Heat load	Capacity of HP	Heat load covered by heat pump	Resistive heat elbu (Tj)	Annual resistive heat	COPbin (Tj)	Annual heating demand	Annual power input including electric back up heating	Net annual heating capacity	Net annual power input without electric back up heating
	j	Tj	h _j		P _{h(η)}			elbu(η)	h _j x elbu(η)	COP bin (Tj)	h _j x P _{h(η)}		h _j x (P _{h(η)} - elbu(η))	
	[-]	[°C]	[h]	[%]	[kW]	[kW]	[kW]	[kW]	[kWh]	[-]	[kWh]	[kWh]	[kWh]	[kWh]
B, TOL(E), Tbiv(F)	33	2	3	100.00	16.01	16.01	16.01	0.00	0.00	2.62	48	18	48	18
	34	3	22	92.86	14.87	14.89	14.87	0.00	0.00	2.89	327	113	327	113
	35	4	63	85.71	13.72	13.77	13.72	0.00	0.00	3.16	864	274	864	274
	36	5	63	78.57	12.58	12.66	12.58	0.00	0.00	3.42	792	231	792	231
	37	6	175	71.43	11.43	11.54	11.43	0.00	0.00	3.69	2001	542	2001	542
C	38	7	162	64.29	10.29	10.42	10.29	0.00	0.00	3.96	1667	421	1667	421
	39	8	259	57.14	9.15	9.44	9.15	0.00	0.00	4.32	2369	549	2369	549
	40	9	360	50.00	8.00	8.47	8.00	0.00	0.00	4.68	2882	616	2882	616
	41	10	428	42.86	6.86	7.49	6.86	0.00	0.00	5.04	2936	583	2936	583
	42	11	430	35.71	5.72	6.52	5.72	0.00	0.00	5.39	2458	456	2458	456
D	43	12	503	28.57	4.57	5.54	4.57	0.00	0.00	5.75	2301	400	2301	400
	44	13	444	21.43	3.43	4.56	3.43	0.00	0.00	6.11	1523	249	1523	249
	45	14	384	14.29	2.29	3.59	2.29	0.00	0.00	6.47	878	136	878	136
	46	15	294	7.14	1.14	2.61	1.14	0.00	0.00	6.83	336	49	336	49
	Σ		3590							Σ	21384	4638	21384	4638

SCOP _{on}	4.61	SCOP _{net}	4.61
		SCOP	4.59

Part load performance diagram

- Medium temperature application (reference water temperature 55 °C)
- Reference heating season „W” – warmer



Data for SCOP calculation

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

	Outdoor heat exchanger	Indoor heat exchanger	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
	Outdoor air inlet	Outlet water temperature								
	[°C]	[°C]	[%]	[kW]	[kW]	[-]	[-]	[-]	[-]	[kW]
A	-7	44.00	60.53	8.59	8.850	3.080	0.900	1.00	3.080	–
B	2	37.00	36.84	5.23	5.450	4.320	0.900	1.00	4.320	–
C	7	34.22	23.68	3.36	4.657	5.209	0.976	0.72	5.161	0.0217
D	12	33.84	10.53	1.49	5.540	7.060	0.972	0.27	6.568	0.0217
TOL (E)	-20	53.29	94.74	13.45	9.850	1.810	0.900	1.00	1.810	–
Tbiv (F)	-15	49.00	81.58	11.58	11.582	2.208	0.900	1.00	2.208	–
G	-15	49.00	81.58	11.58	11.582	2.208	0.900	1.00	2.208	–

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

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

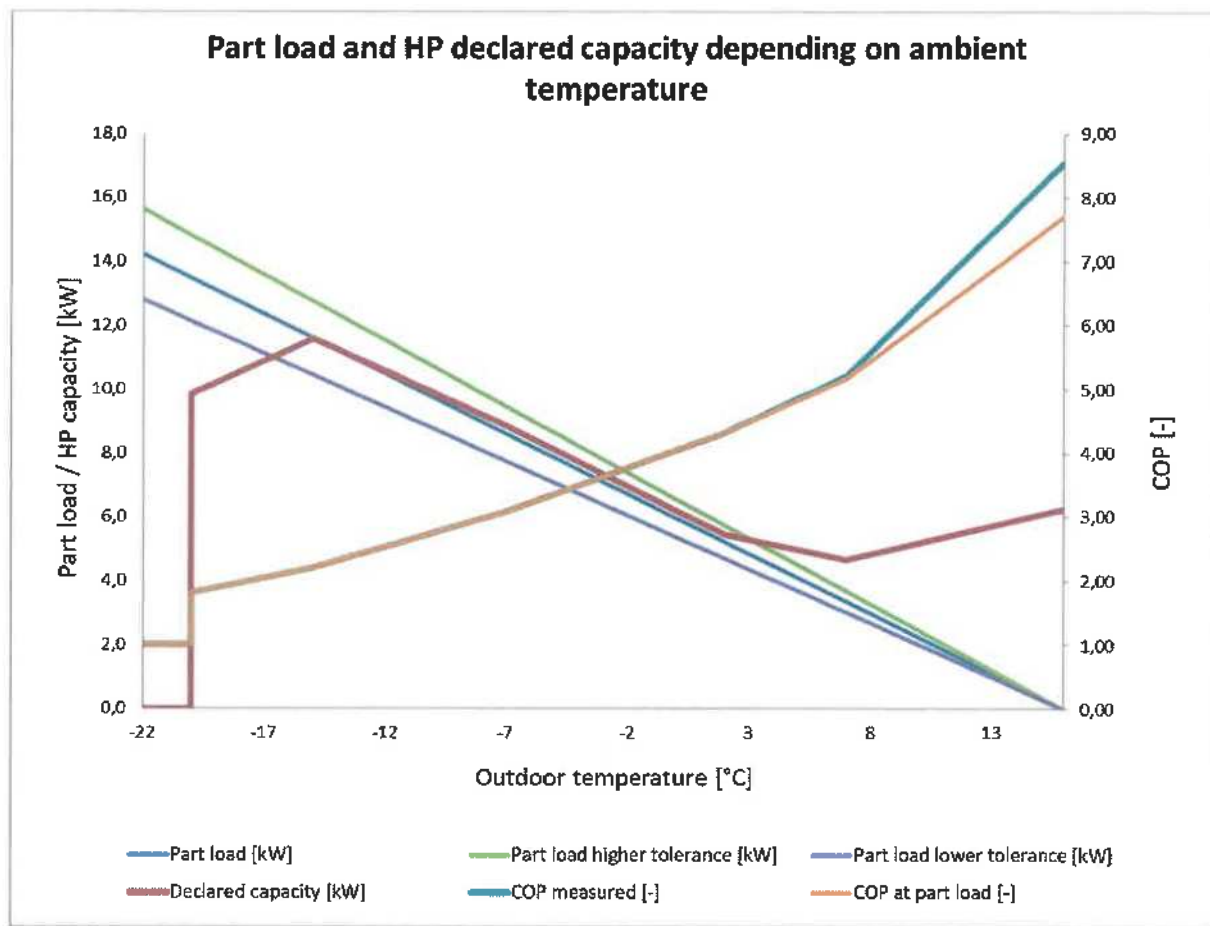
	Bin	Outdoor temp. (dry bulb)	Hours	Part load ratio	Heat load	Capacity of HP	Heat load covered by heat pump	Resistive heat elbu (Tj)	Annual resistive heat	COPbin (Tj)	Annual heating demand	Annual power input including electric back up heating	Net annual heating capacity	Net annual power input without electric back up heating
	j	T _i	h _j		P _{h(Tj)}			elbu _(Tj)	h _j x elbu _(Tj)	COP bin (Tj)	h _j x P _{h(Tj)}		h _j x (P _{h(Tj)} - elbu _(Tj))	
	[-]	[°C]	[h]	[%]	[kW]	[kW]	[kW]	[kW]	[kWh]	[-]	[kWh]	[kWh]	[kWh]	[kWh]
	9	-22	1	100.00	14.20	0.00	0.00	14.20	14.20	1.00	14	14	0	0
	10	-21	6	97.37	13.82	0.00	0.00	13.82	82.94	1.00	83	83	0	0
TOL(E)	11	-20	13	94.74	13.45	9.85	9.85	3.60	46.80	1.81	175	118	128	71
	12	-19	17	92.11	13.08	10.20	10.20	2.88	48.96	1.89	222	141	173	92
	13	-18	19	89.47	12.70	10.54	10.54	2.16	41.04	1.97	241	143	200	102
	14	-17	26	86.84	12.33	10.89	10.89	1.44	37.44	2.05	321	176	283	138
	15	-16	39	84.21	11.96	11.24	11.24	0.72	28.08	2.13	466	234	438	206
G, Tbiv(F)	16	-15	41	81.58	11.58	11.58	11.58	0.00	0.00	2.21	475	215	475	215
	17	-14	35	78.95	11.21	11.24	11.21	0.00	0.00	2.32	392	169	392	169
	18	-13	52	76.32	10.83	10.90	10.83	0.00	0.00	2.43	563	232	563	232
	19	-12	37	73.68	10.46	10.56	10.46	0.00	0.00	2.54	387	153	387	153
	20	-11	41	71.05	10.09	10.22	10.09	0.00	0.00	2.64	414	156	414	156

	21	-10	43	68.42	9.71	9.87	9.71	0.00	0.00	2.75	418	152	418	152
	22	-9	54	65.79	9.34	9.53	9.34	0.00	0.00	2.86	504	176	504	176
	23	-8	90	63.16	8.97	9.19	8.97	0.00	0.00	2.97	807	272	807	272
A	24	-7	125	60.53	8.59	8.85	8.59	0.00	0.00	3.08	1074	349	1074	349
	25	-6	169	57.89	8.22	8.47	8.22	0.00	0.00	3.22	1389	432	1389	432
	26	-5	195	55.26	7.85	8.09	7.85	0.00	0.00	3.36	1530	456	1530	456
	27	-4	278	52.63	7.47	7.72	7.47	0.00	0.00	3.49	2077	595	2077	595
	28	-3	306	50.00	7.10	7.34	7.10	0.00	0.00	3.63	2172	598	2172	598
	29	-2	454	47.37	6.72	6.96	6.72	0.00	0.00	3.77	3053	810	3053	810
	30	-1	385	44.74	6.35	6.58	6.35	0.00	0.00	3.91	2445	626	2445	626
	31	0	490	42.11	5.98	6.21	5.98	0.00	0.00	4.04	2929	724	2929	724
	32	1	533	39.47	5.60	5.83	5.60	0.00	0.00	4.18	2987	714	2987	714
B	33	2	380	36.84	5.23	5.45	5.23	0.00	0.00	4.32	1988	460	1988	460
	34	3	228	34.21	4.86	5.29	4.86	0.00	0.00	4.49	1107	247	1107	247
	35	4	261	31.58	4.48	5.13	4.48	0.00	0.00	4.66	1170	251	1170	251
	36	5	279	28.95	4.11	4.97	4.11	0.00	0.00	4.82	1147	238	1147	238
	37	6	229	26.32	3.74	4.82	3.74	0.00	0.00	4.99	856	171	856	171
C	38	7	269	23.68	3.36	4.66	3.36	0.00	0.00	5.16	904	175	904	175
	39	8	233	21.05	2.99	4.83	2.99	0.00	0.00	5.44	696	128	696	128
	40	9	230	18.42	2.62	5.01	2.62	0.00	0.00	5.72	601	105	601	105
	41	10	243	15.79	2.24	5.19	2.24	0.00	0.00	6.01	545	91	545	91
	42	11	191	13.16	1.87	5.36	1.87	0.00	0.00	6.29	357	57	357	57
D	43	12	146	10.53	1.49	5.54	1.49	0.00	0.00	6.57	218	33	218	33
	44	13	150	7.89	1.12	5.72	1.12	0.00	0.00	6.85	168	25	168	25
	45	14	97	5.26	0.75	5.89	0.75	0.00	0.00	7.13	72	10	72	10
	46	15	61	2.63	0.37	6.07	0.37	0.00	0.00	7.41	23	3	23	3
	Σ		6446							Σ	34992	9730	34692	9431

SCOP _{on}	3.60	SCOP _{net}	3.68
		SCOP	3.60

Part load performance diagram

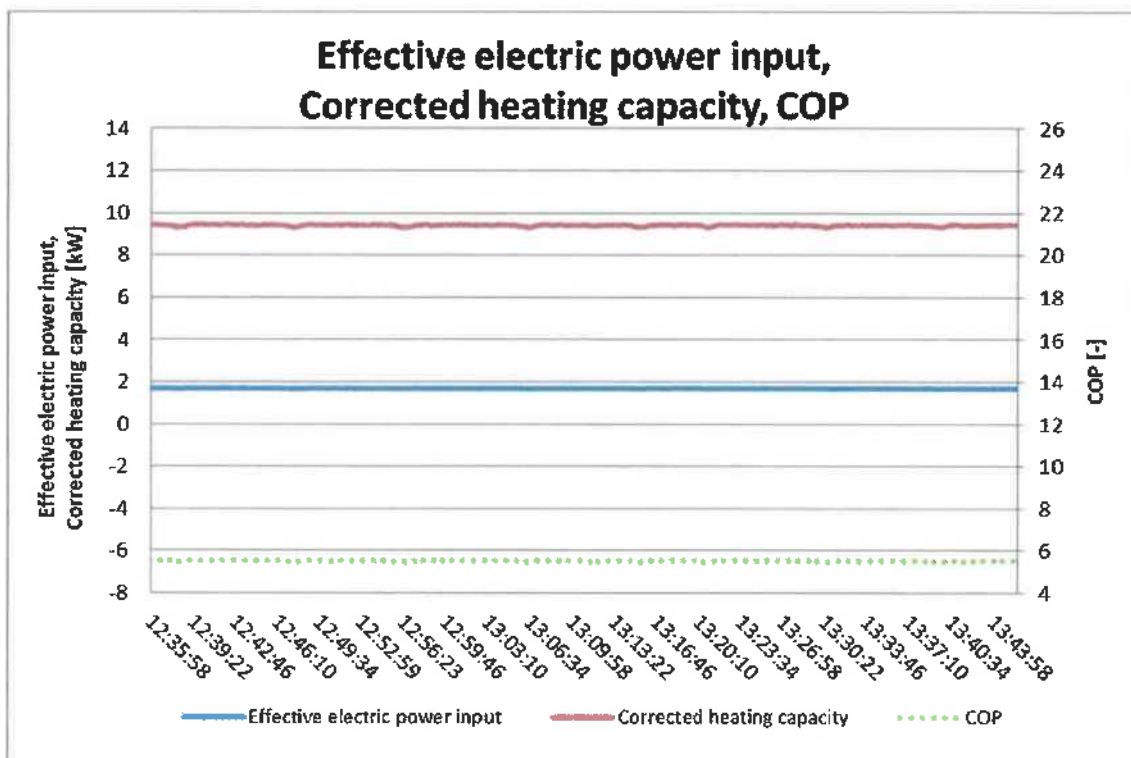
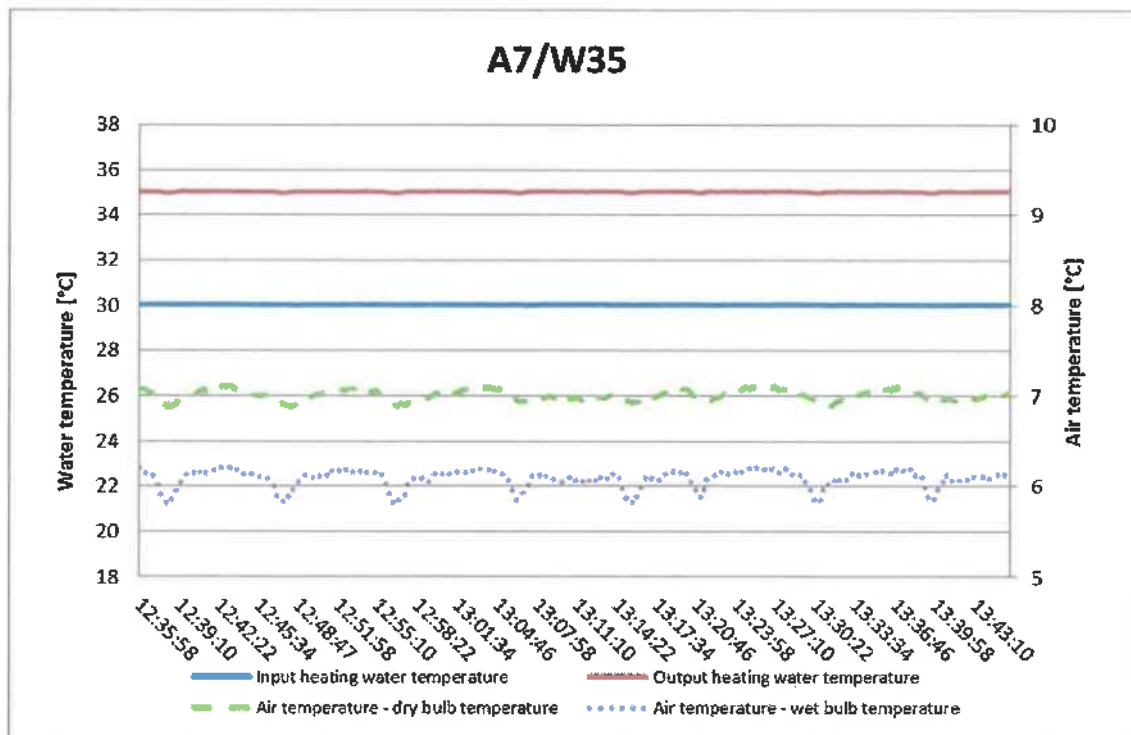
- Medium temperature application (reference water temperature 55 °C)
- Reference heating season „C“ – colder



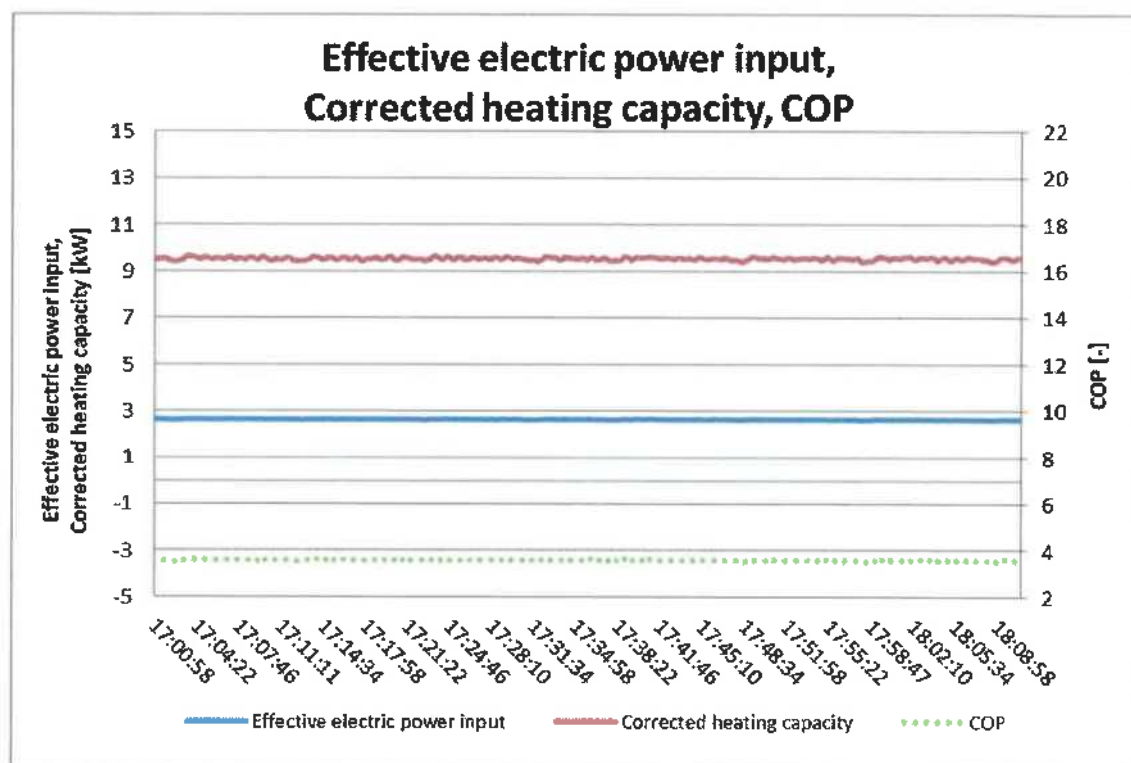
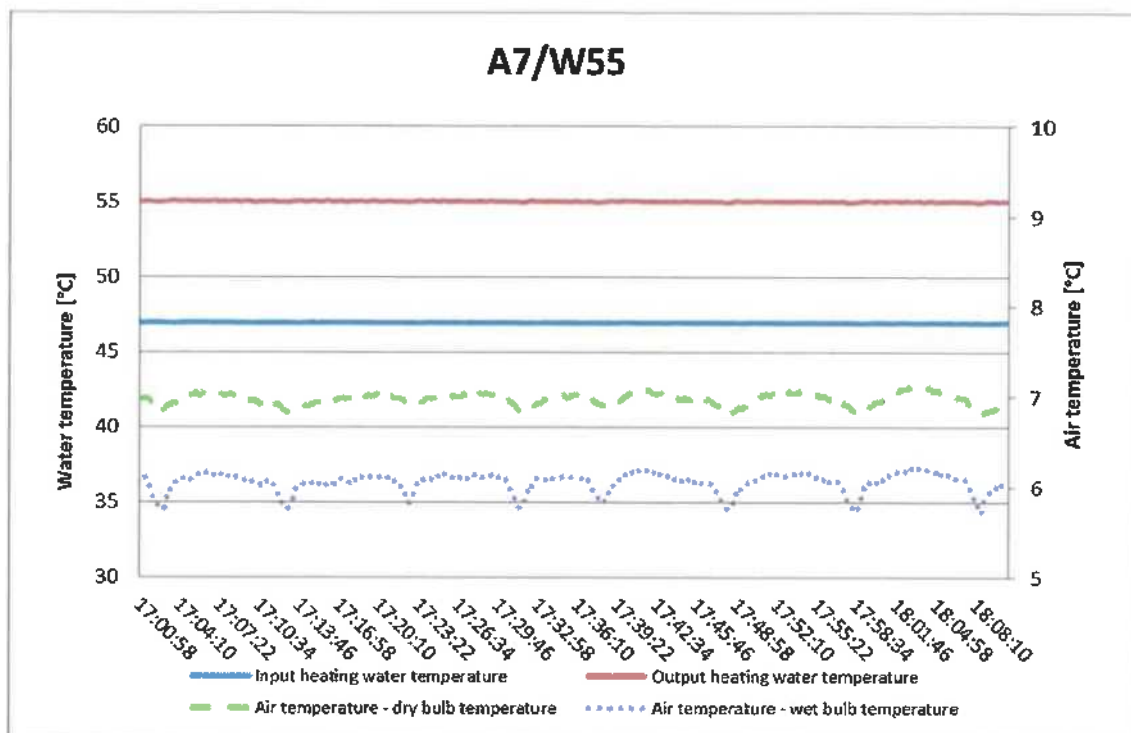
V. Graphs

1. Rating conditions

A7/W35

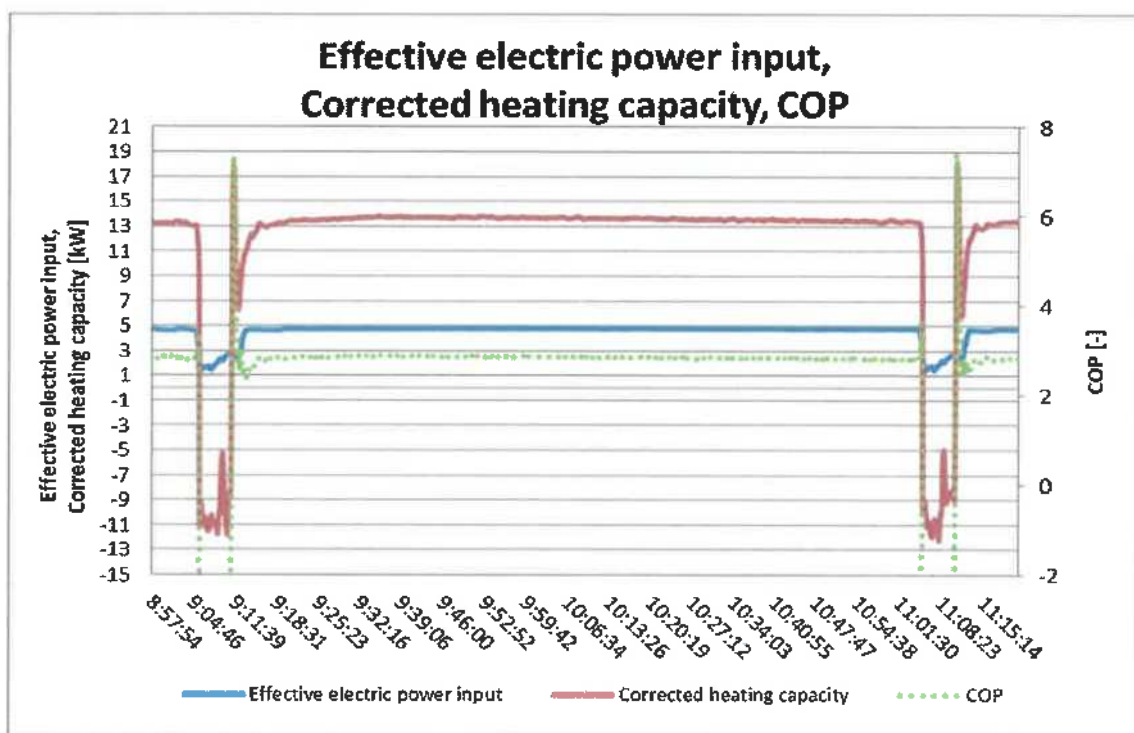
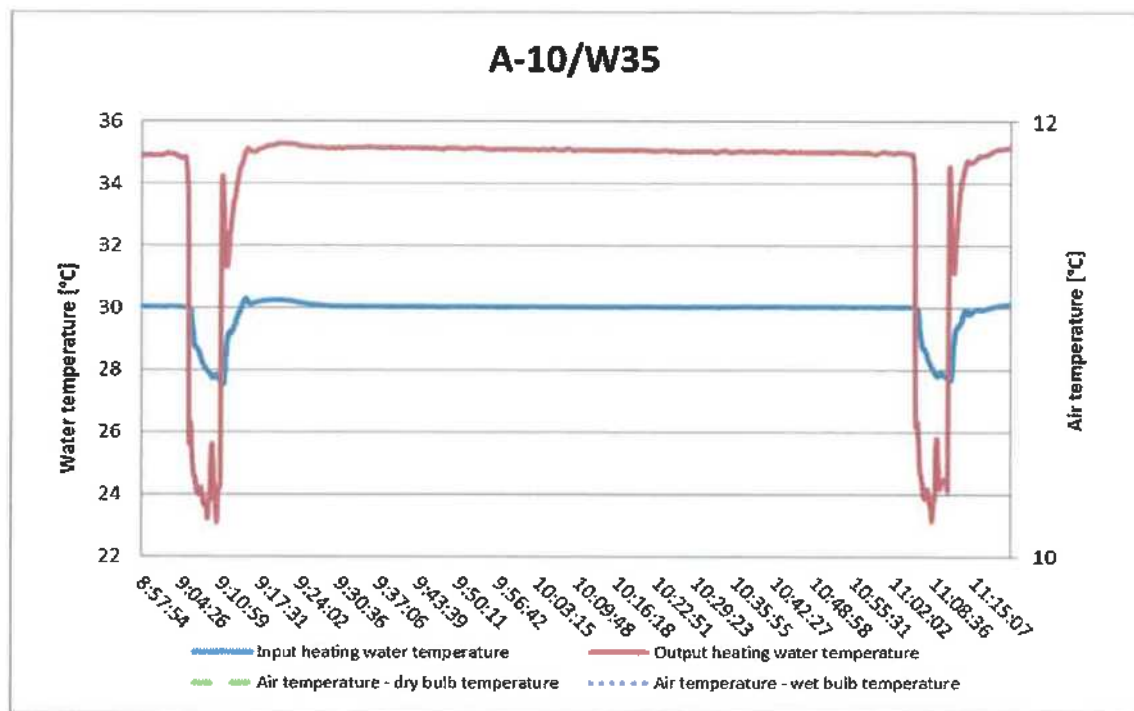


A7/W55

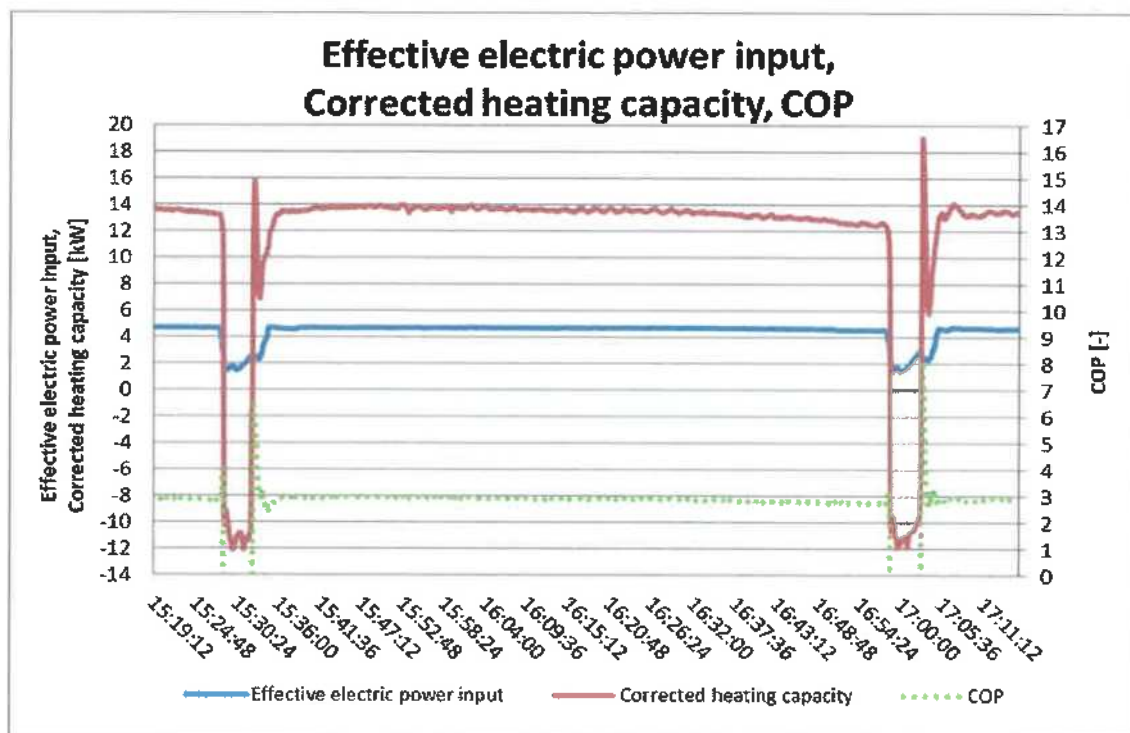
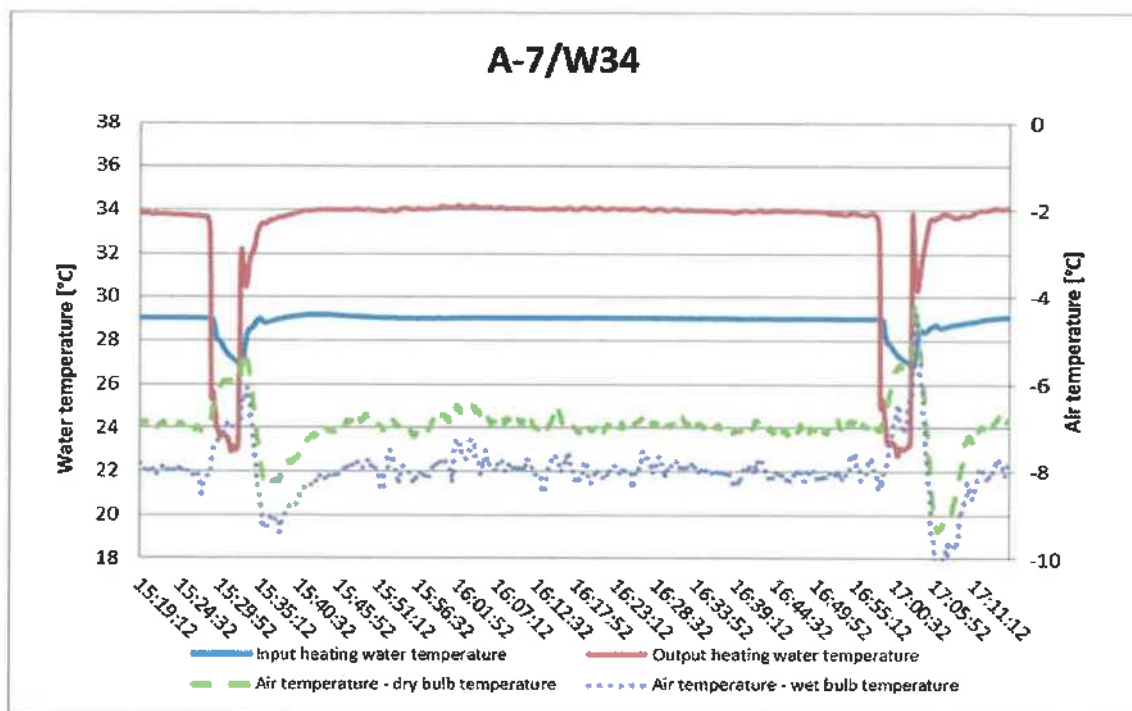


2. Seasonal performance tests and SCOP calculation – Low temperature application

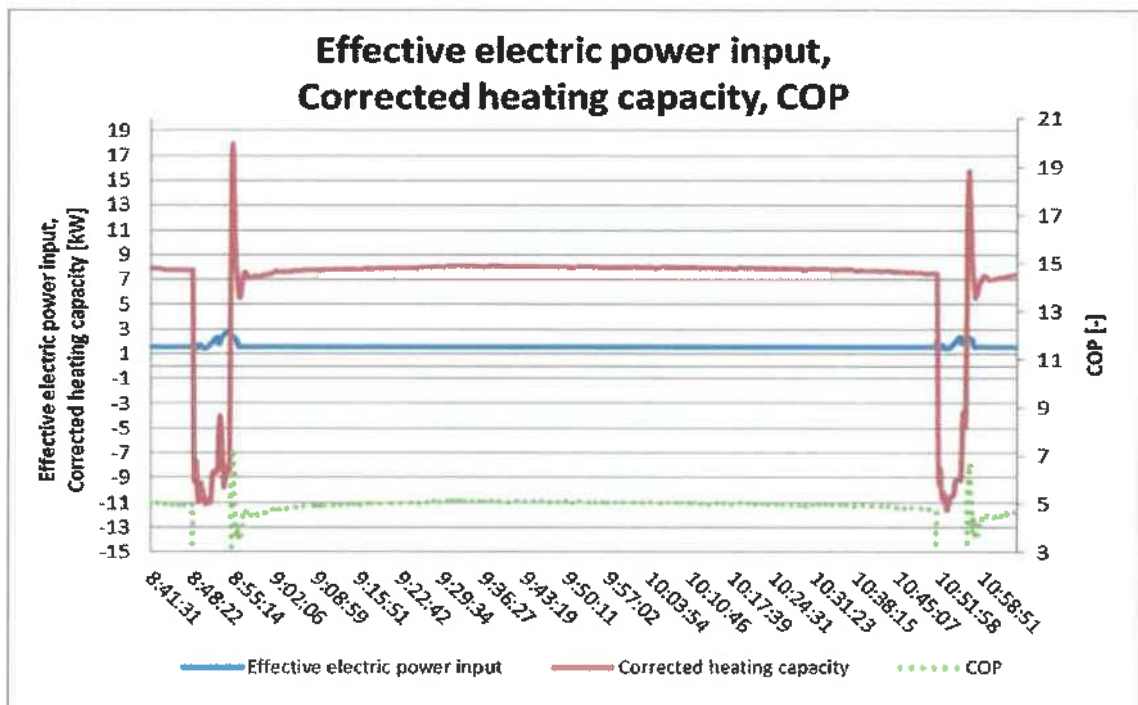
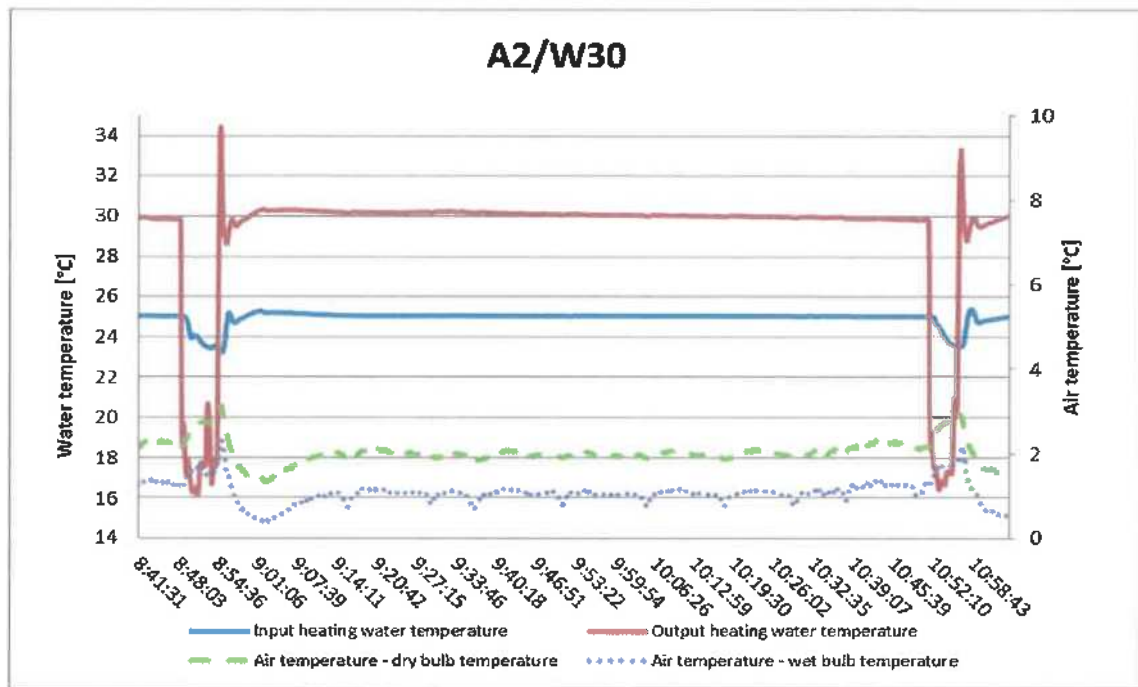
A-10/W35



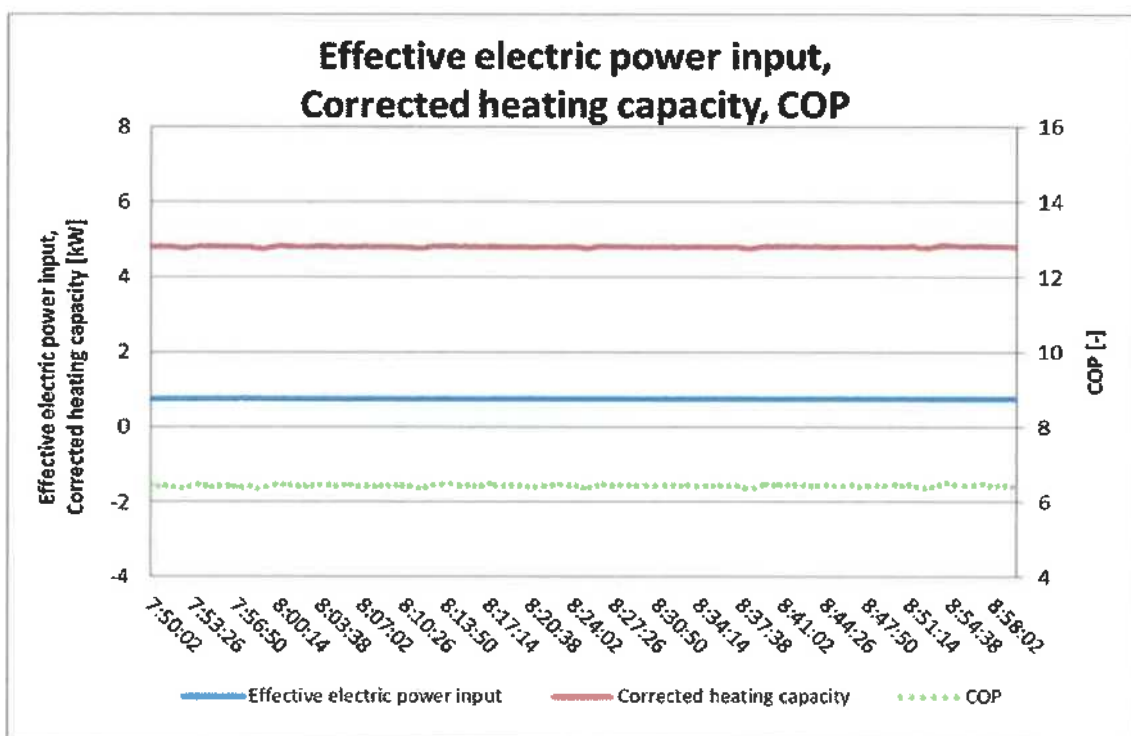
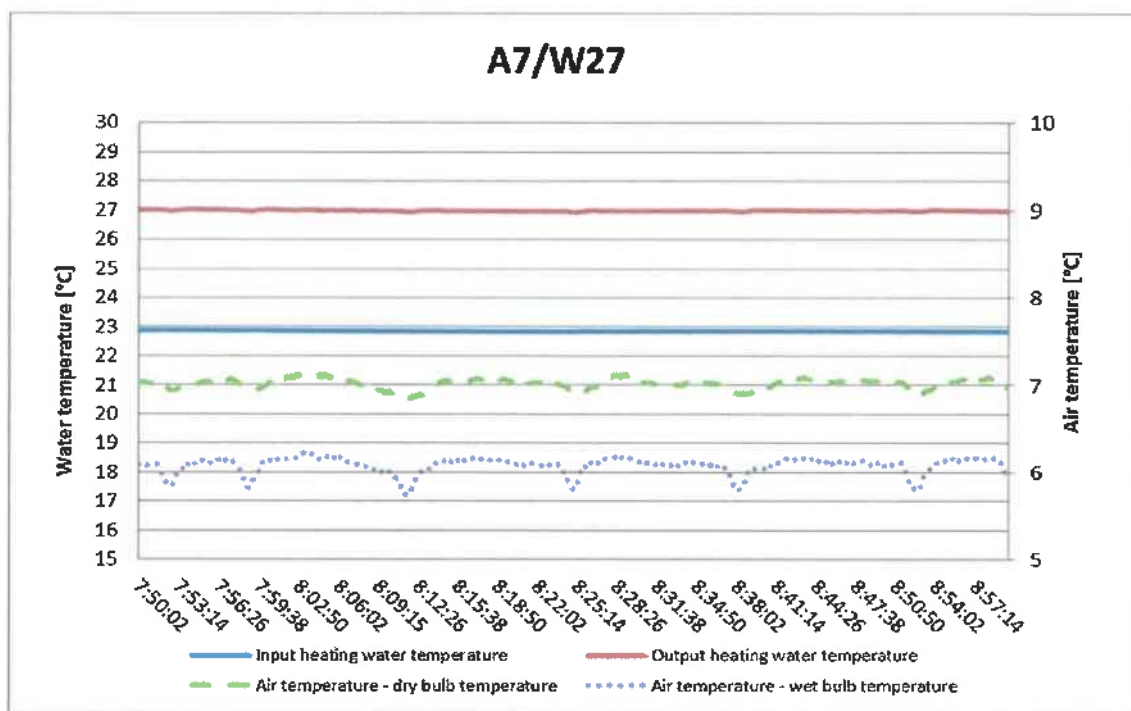
A-7/W34



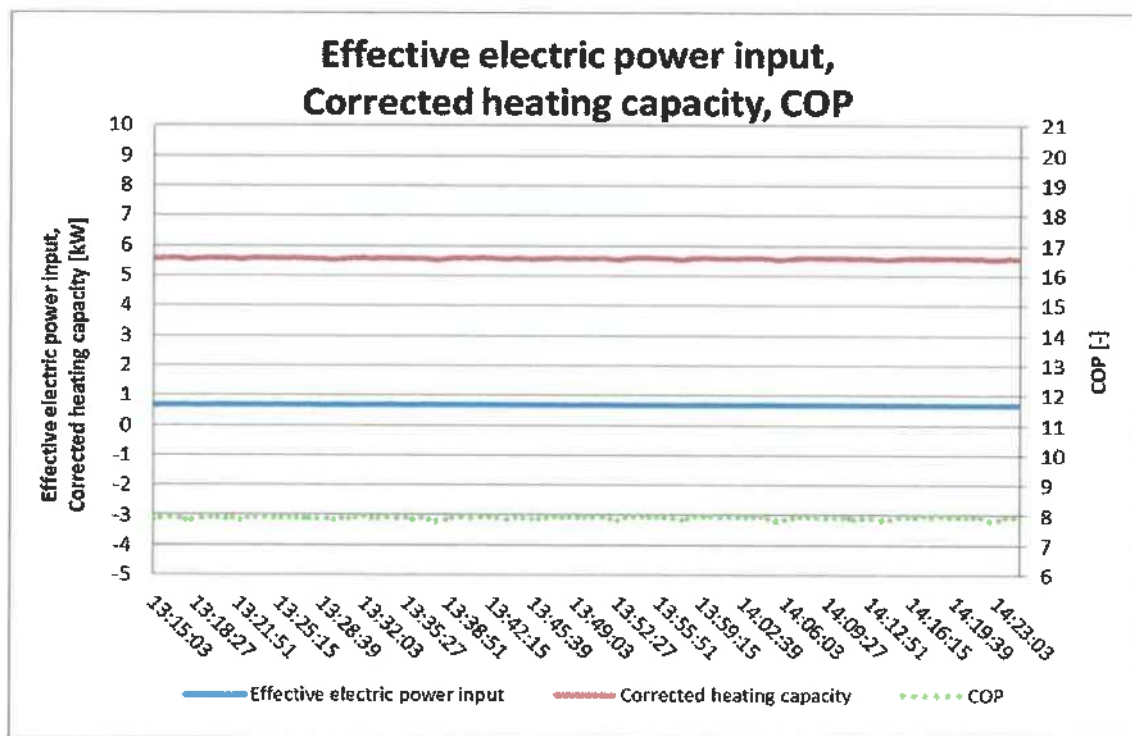
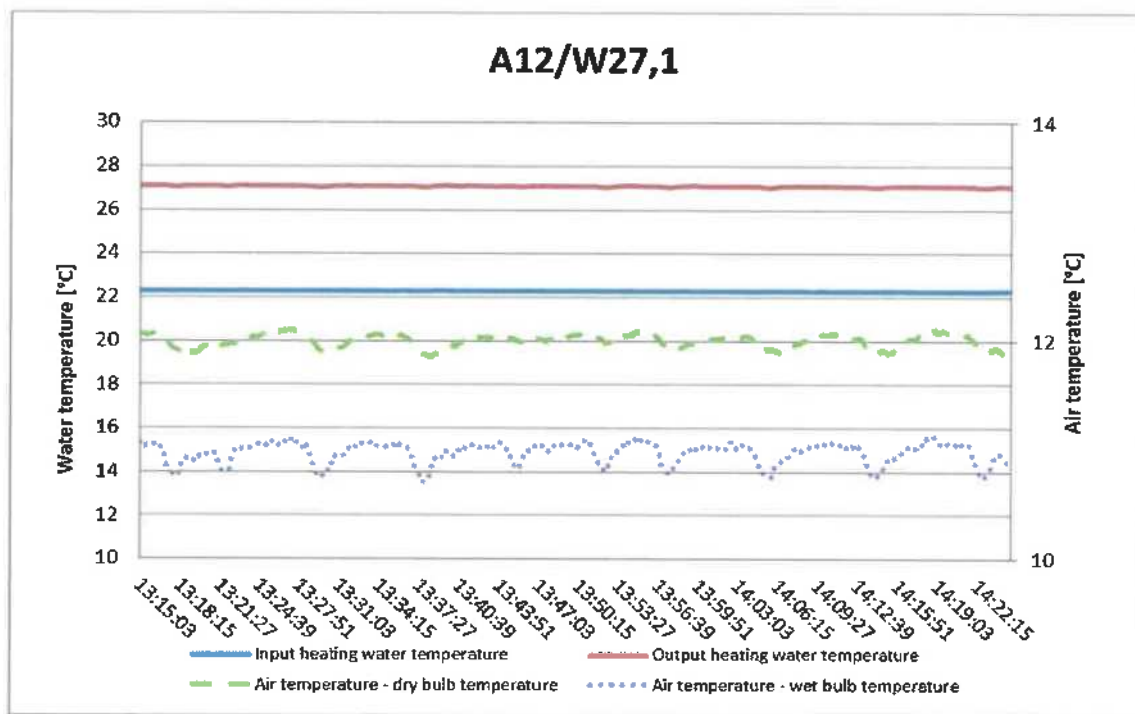
A2/W30



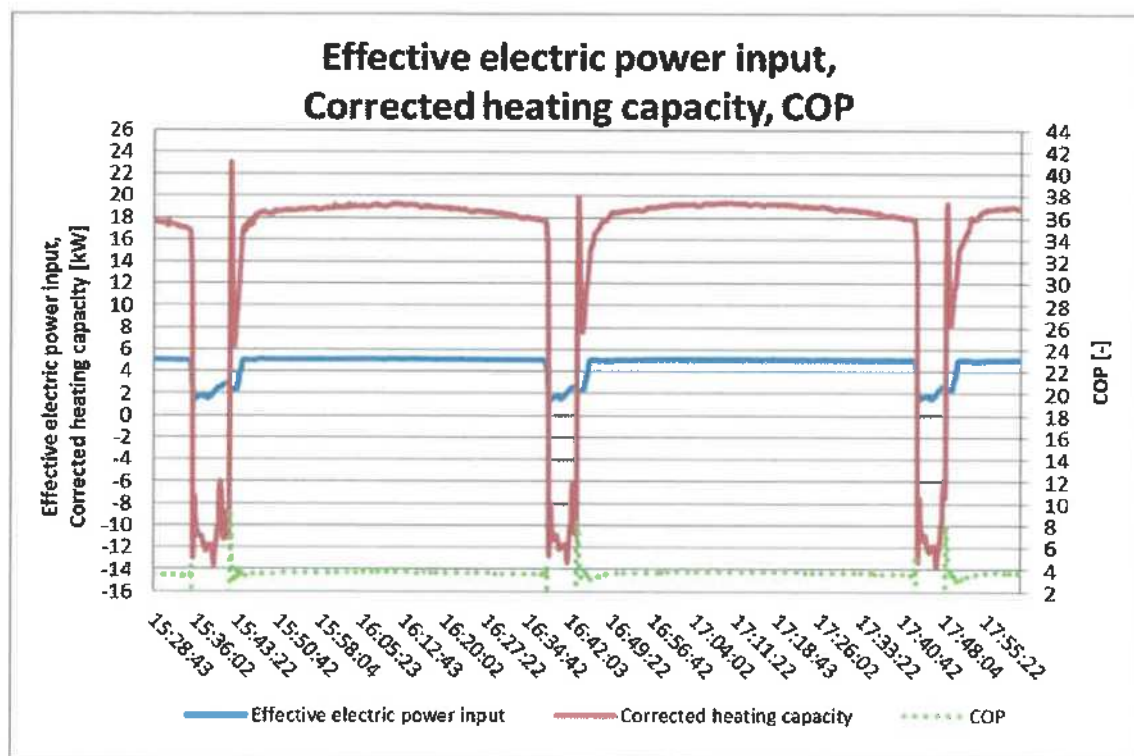
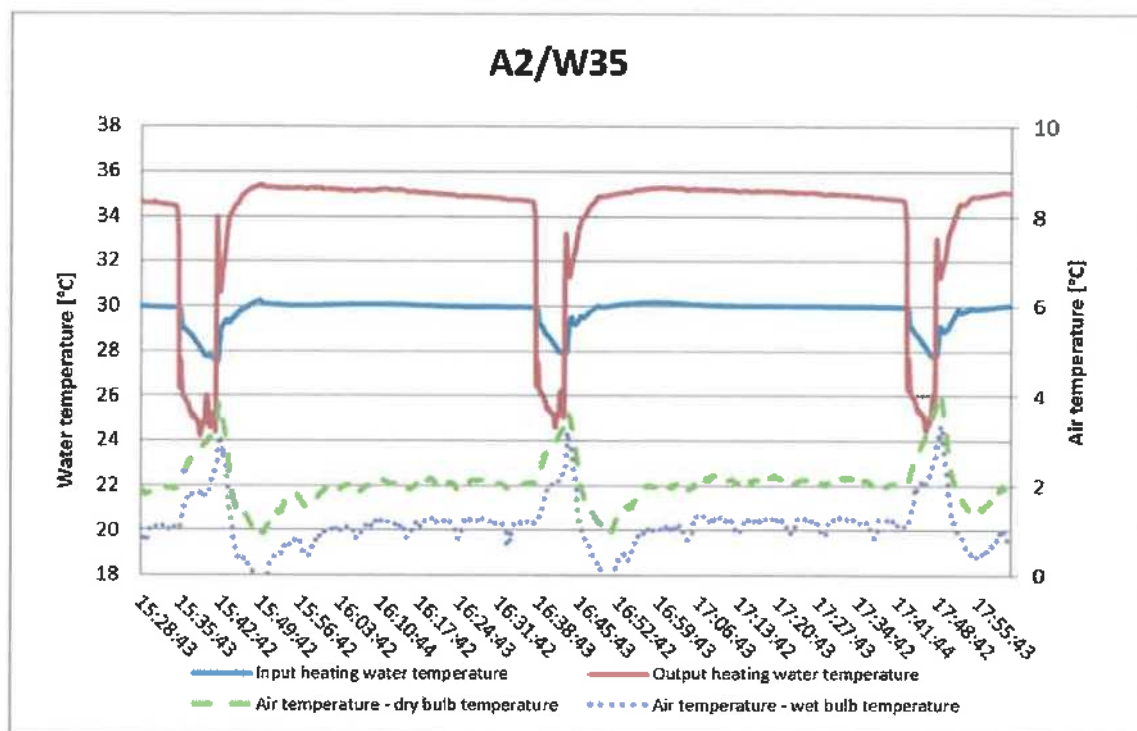
A7/W27



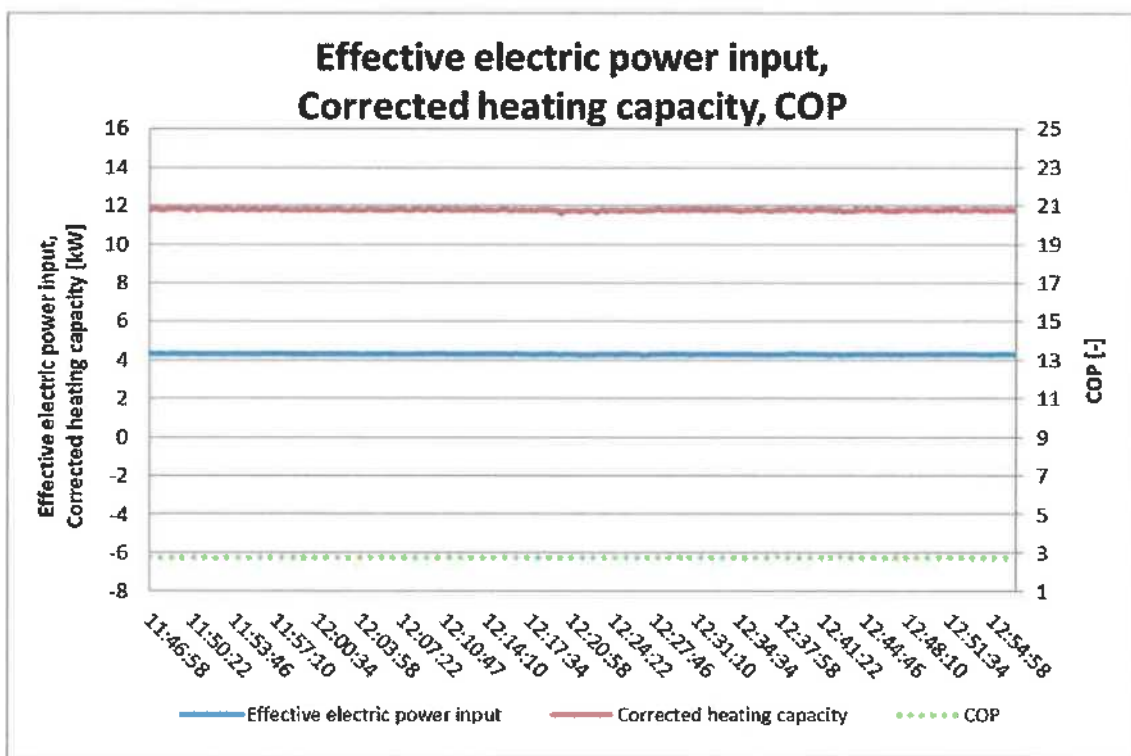
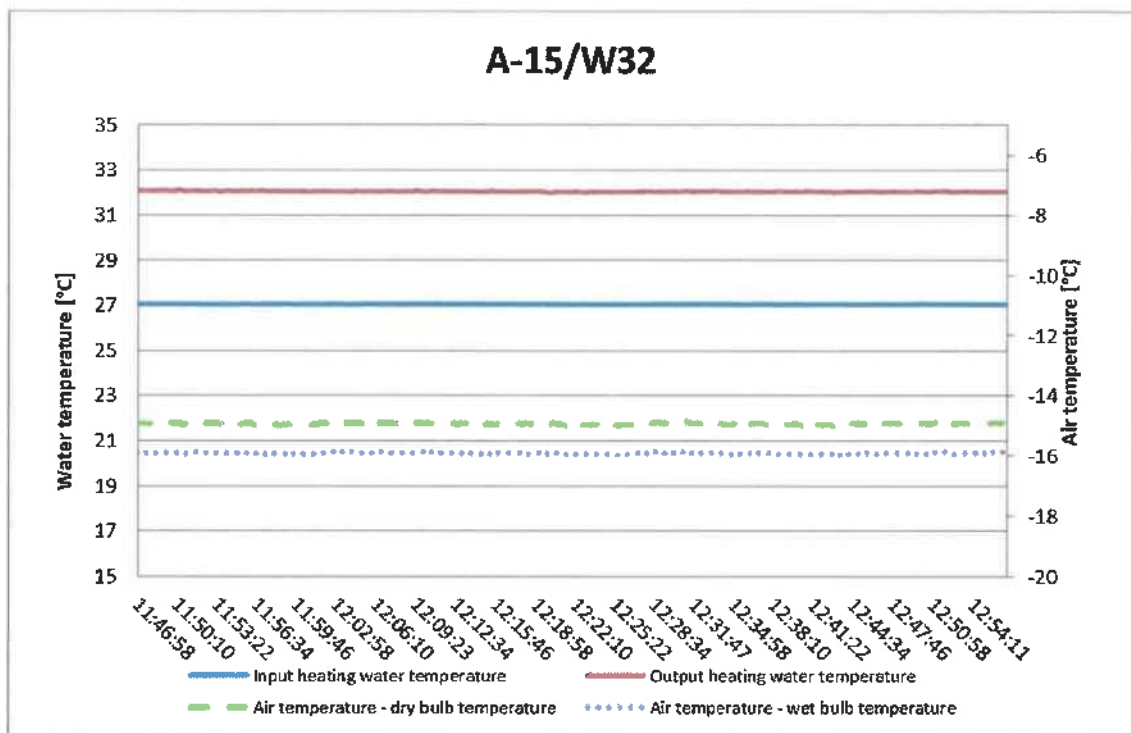
A12/W27.1



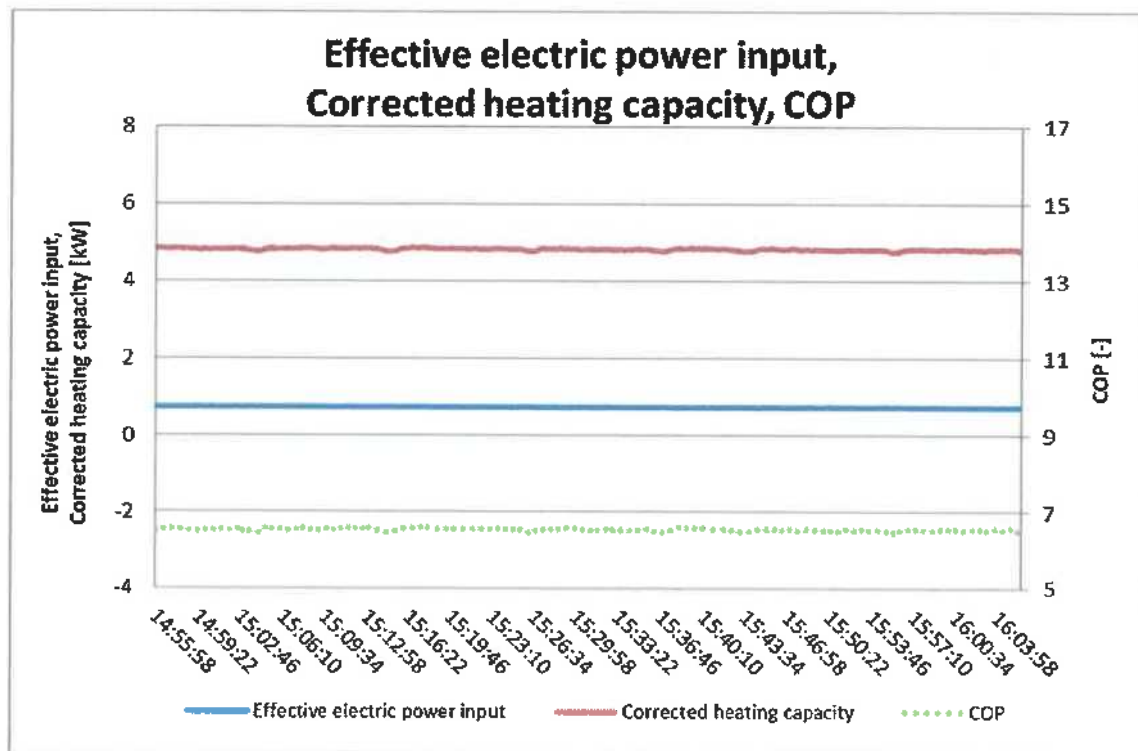
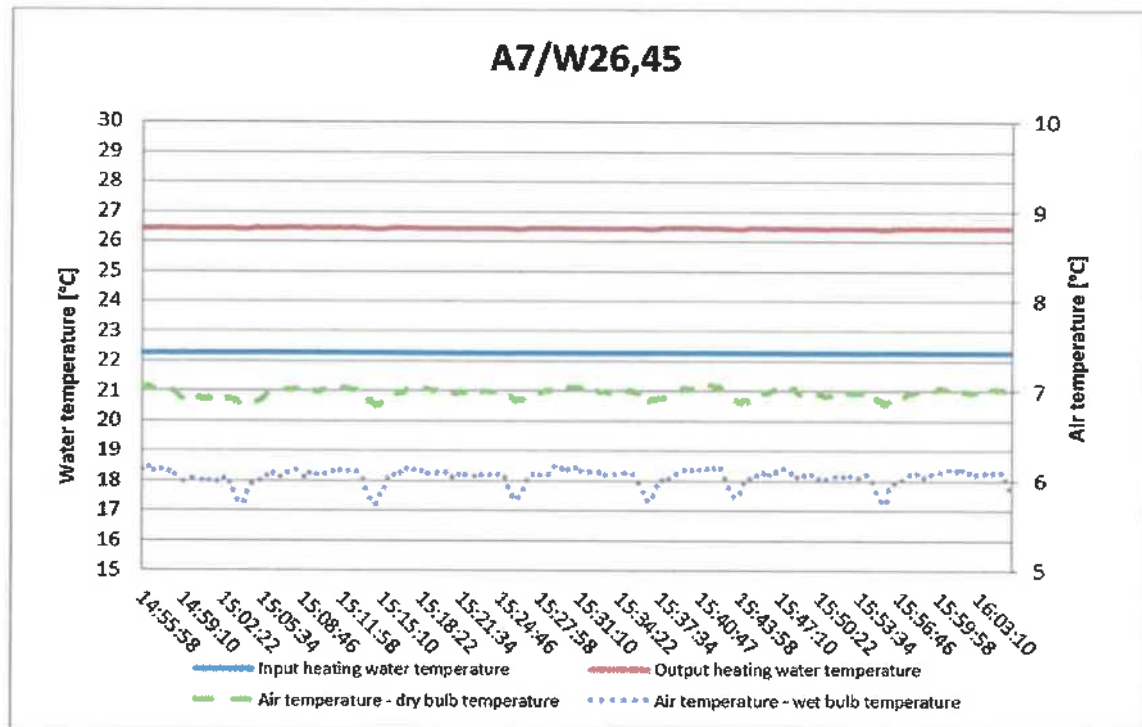
A2/W35



A-15/W32

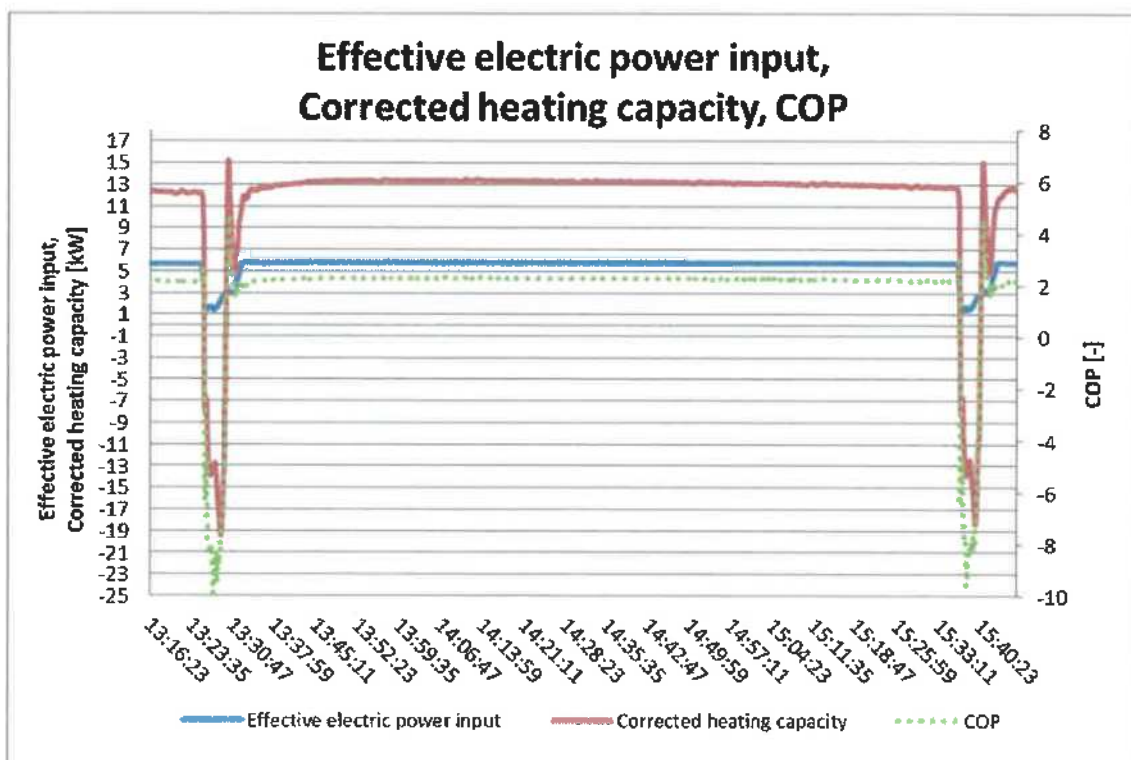
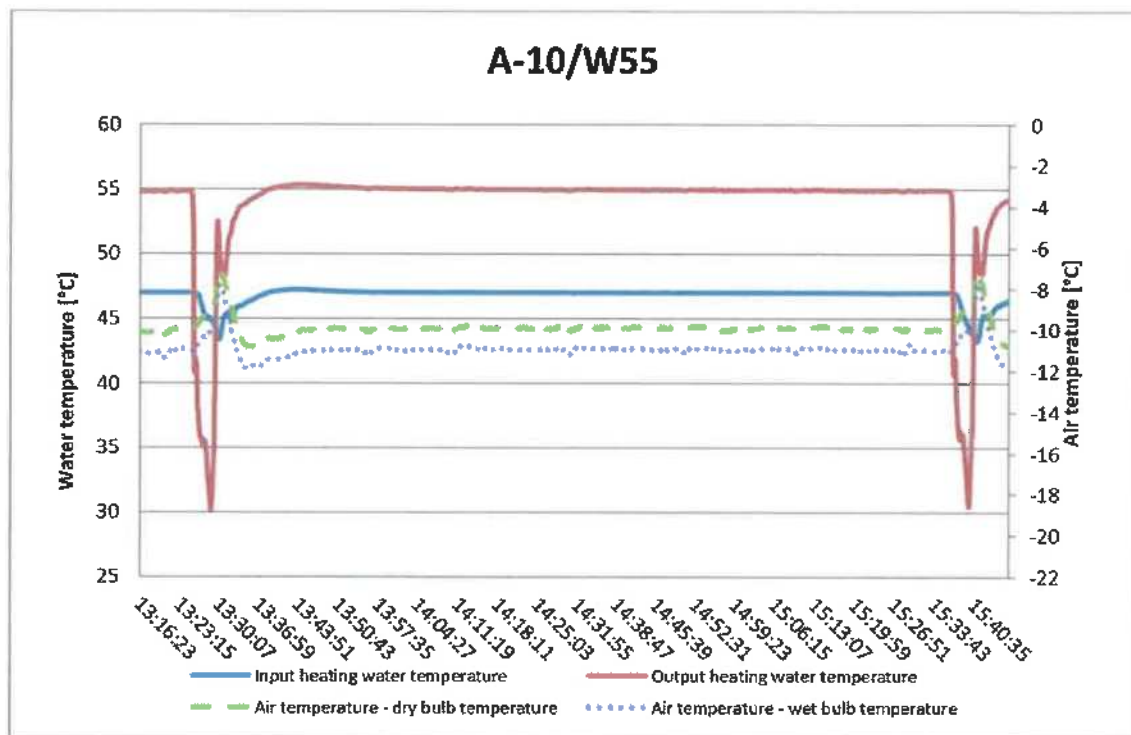


A7/W26.45

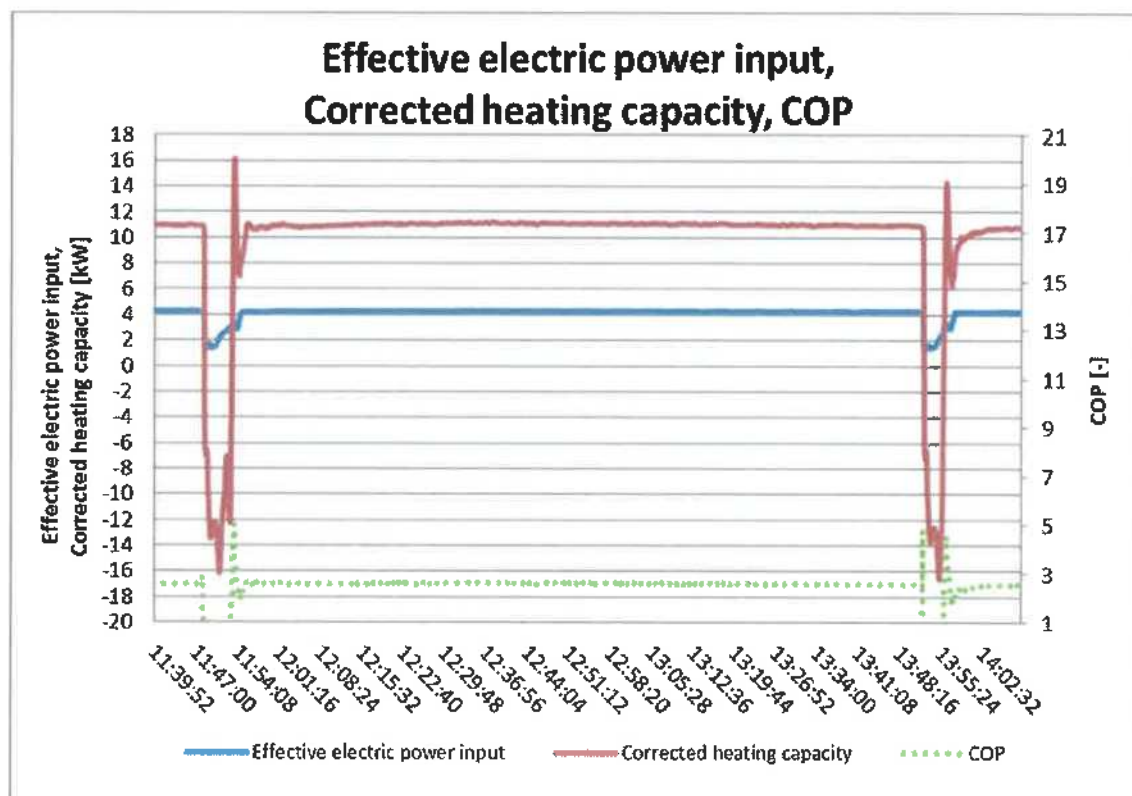
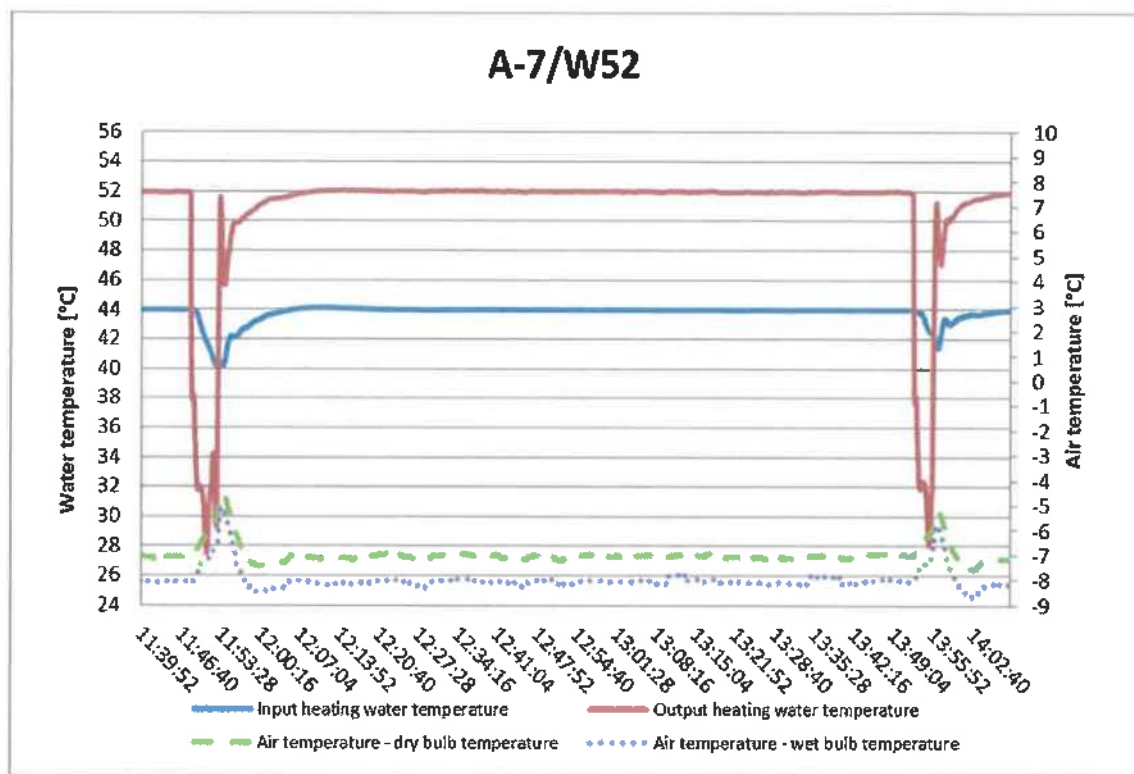


3. Seasonal performance tests and SCOP calculation – Medium temperature application

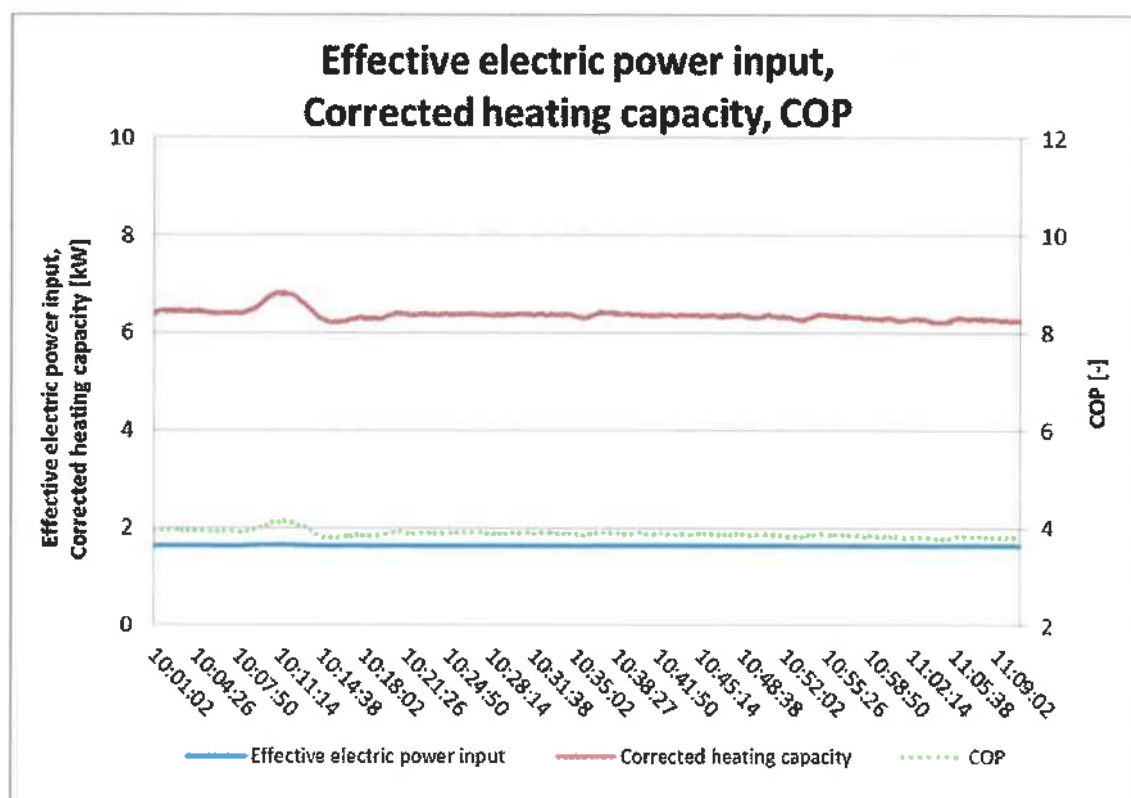
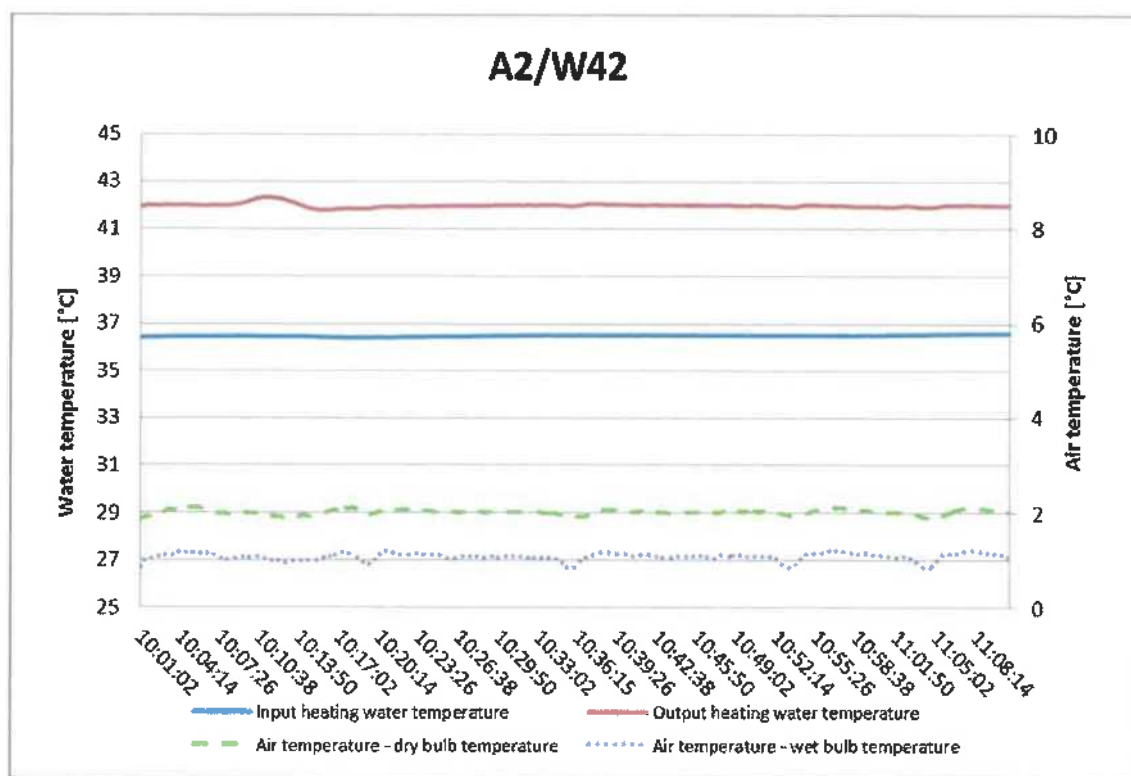
A-10/W55



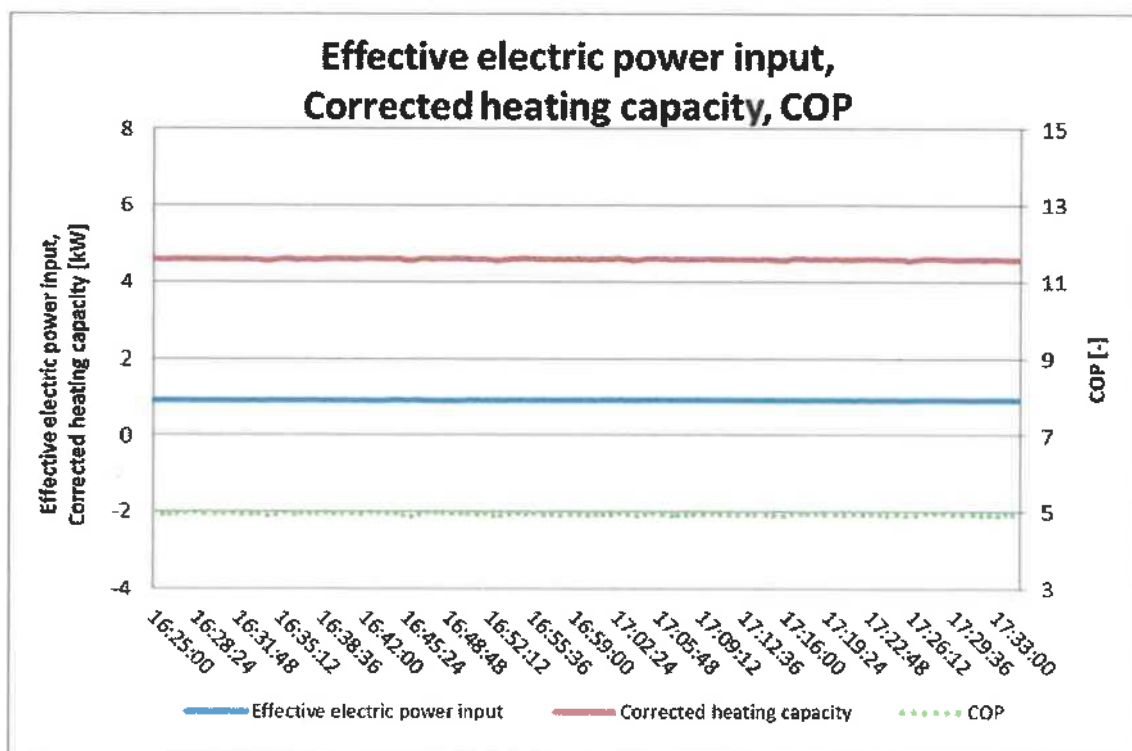
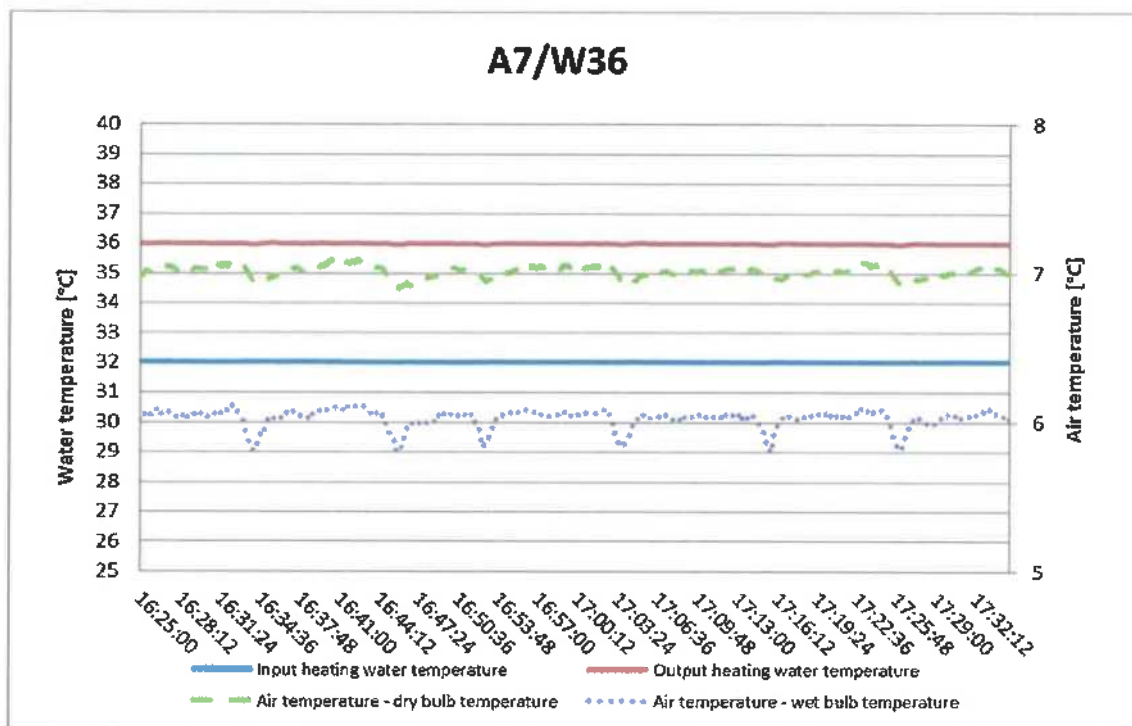
A-7/W52



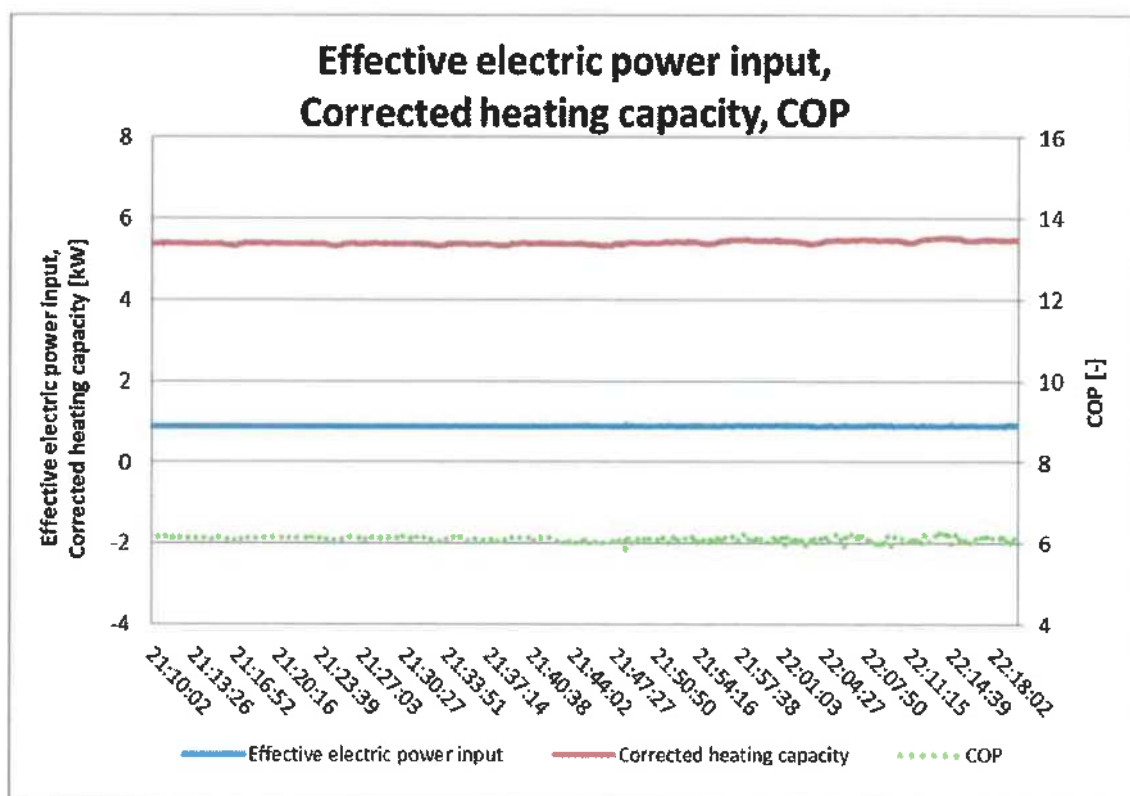
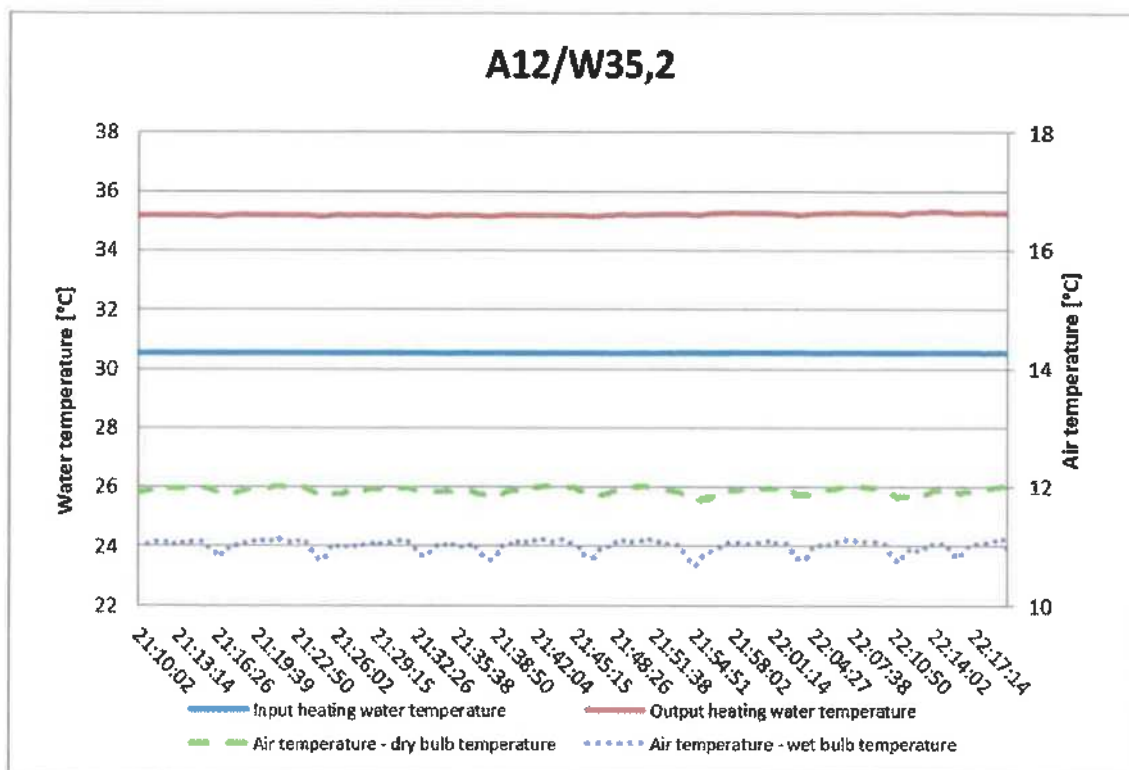
A2/W42



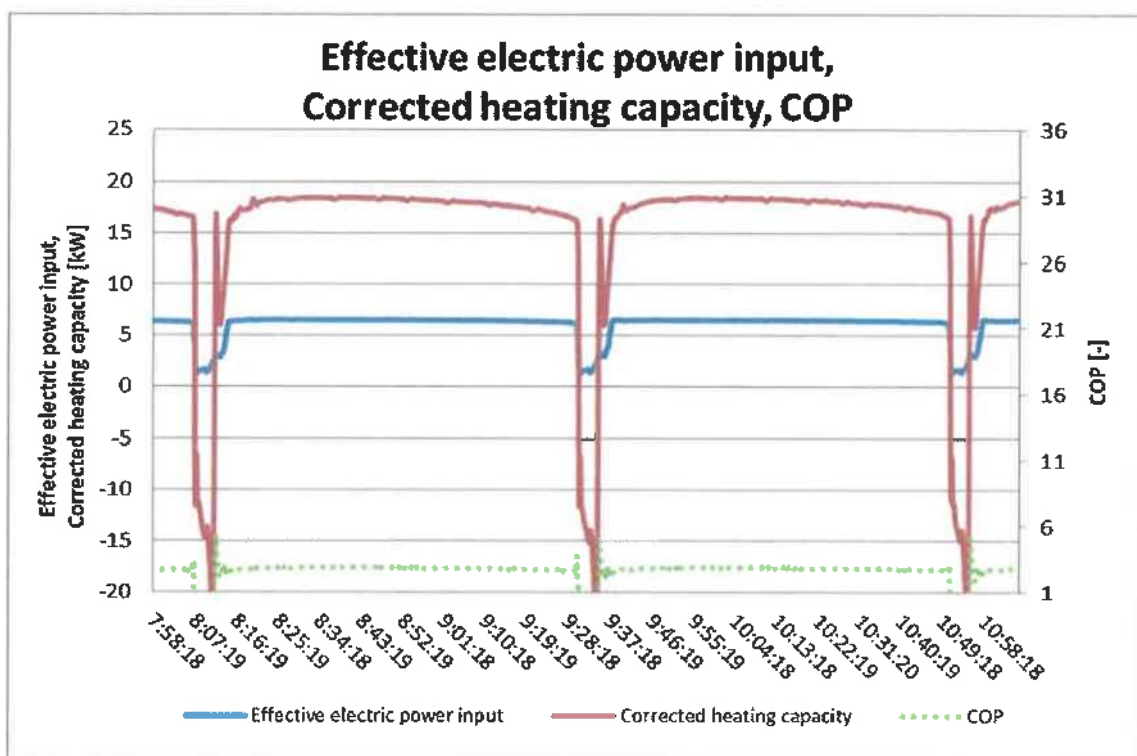
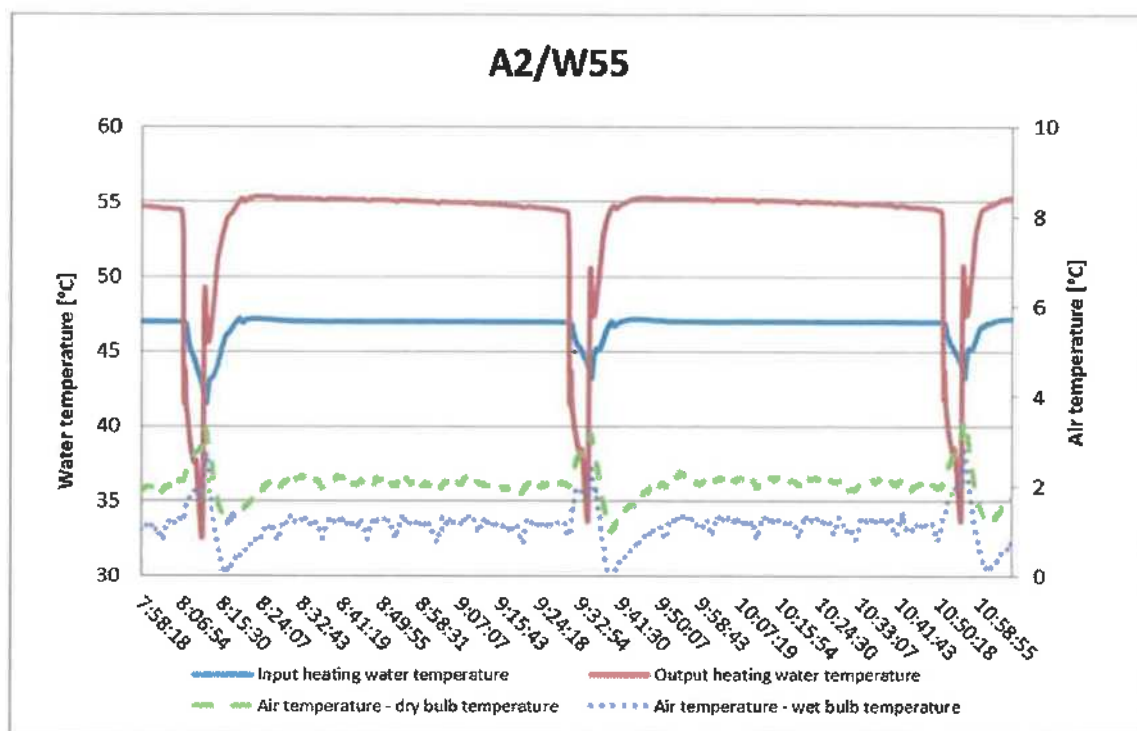
A7/W36



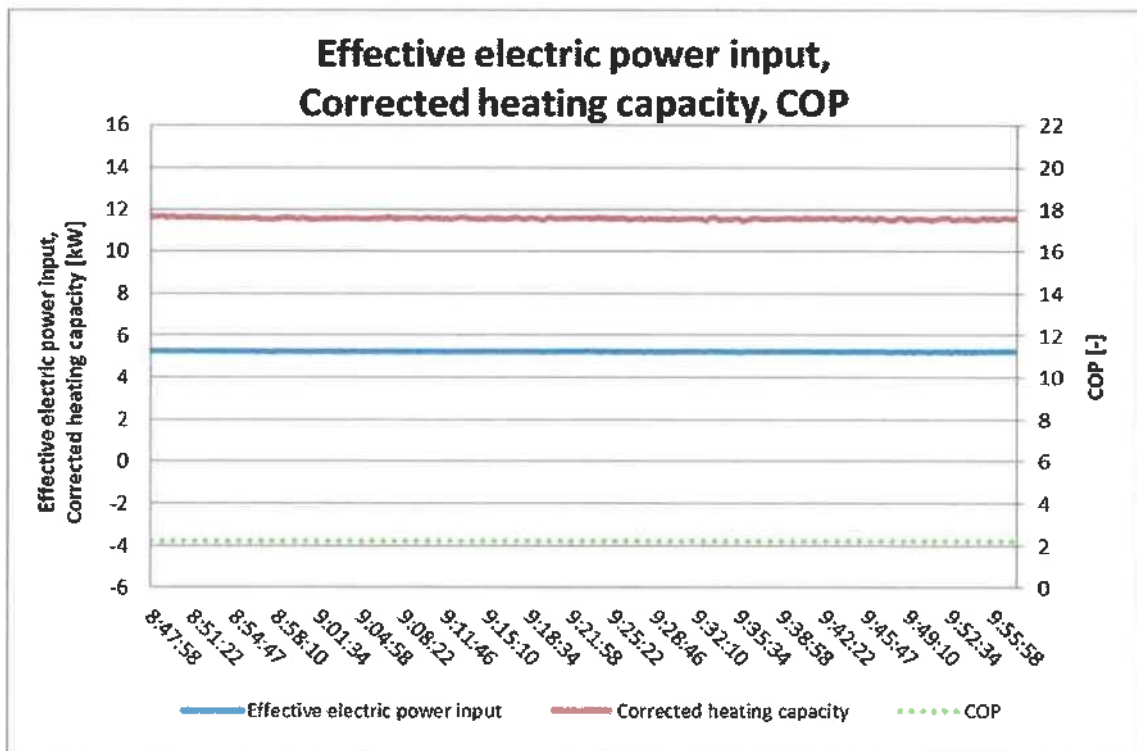
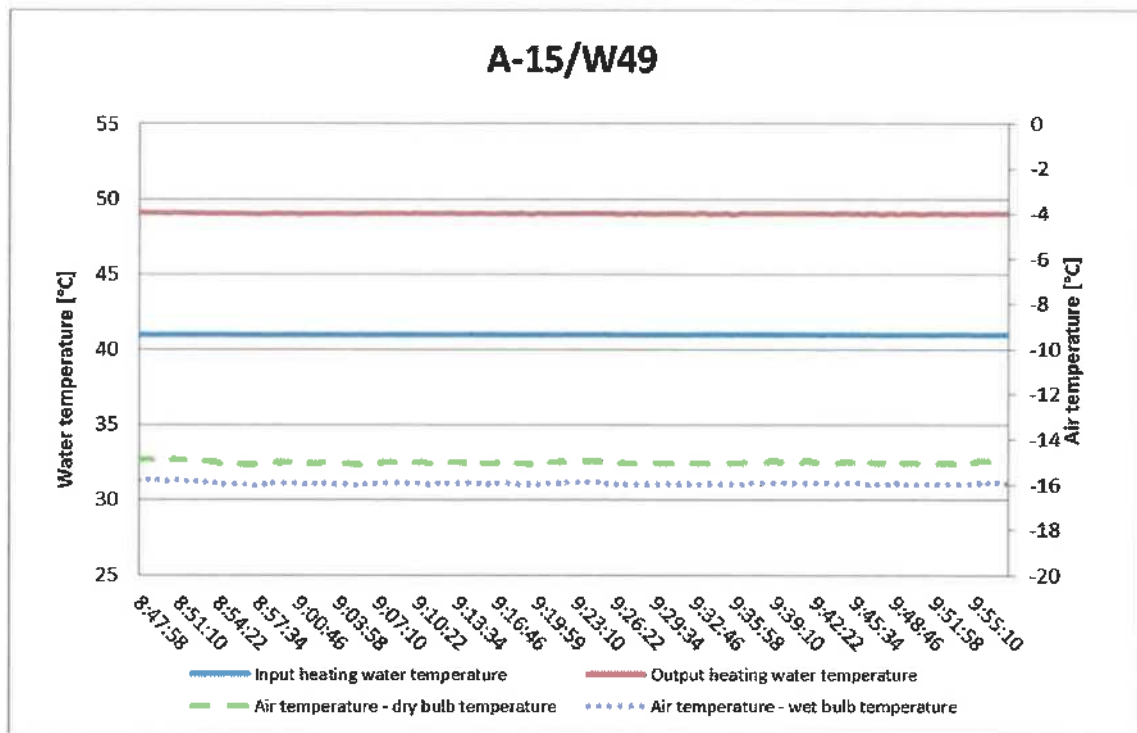
A12/W35.2



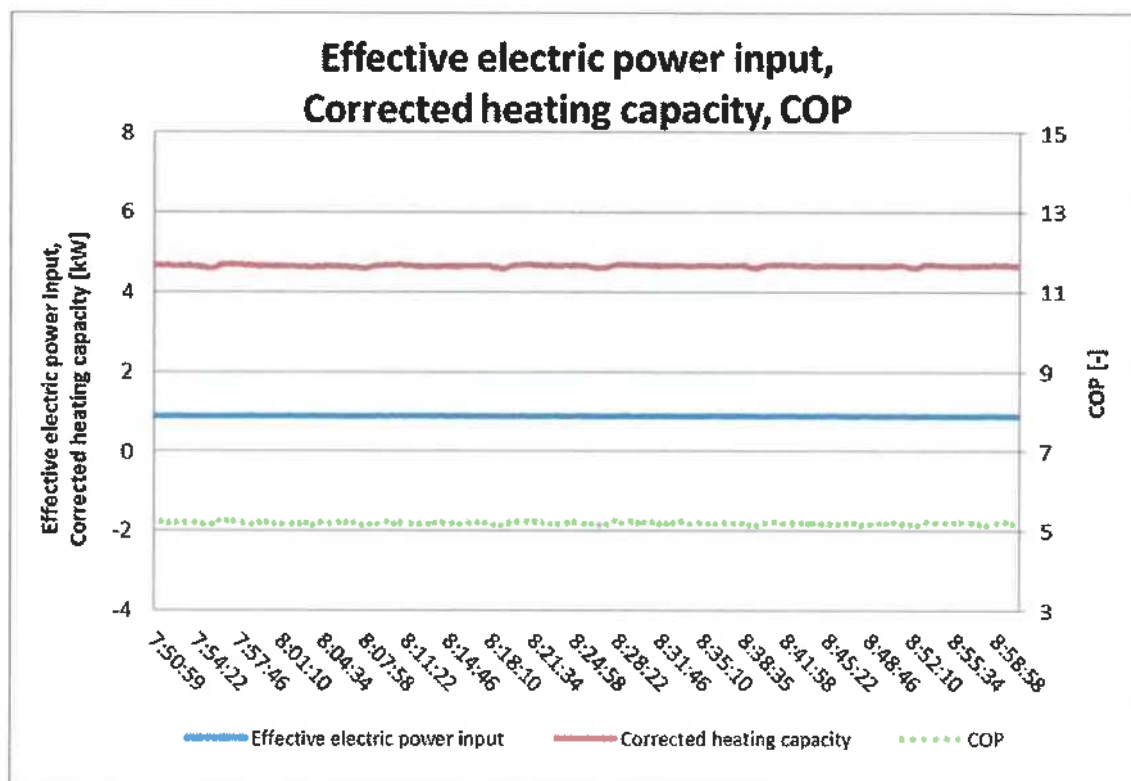
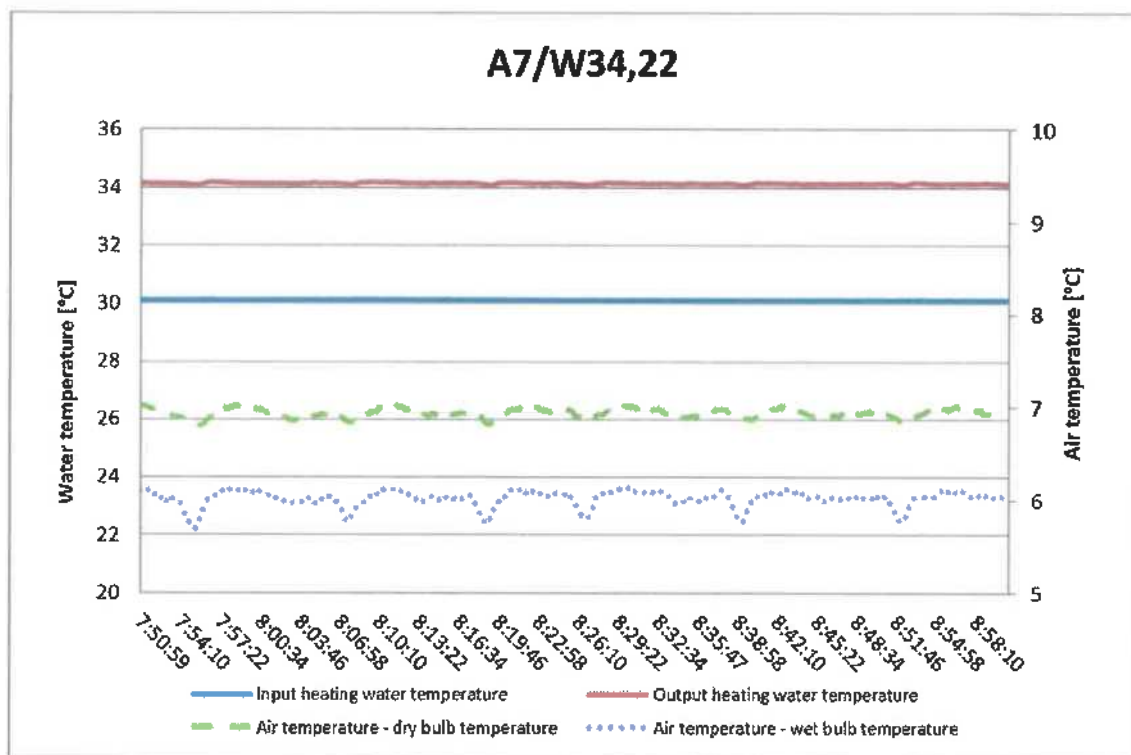
A2/W55



A-15/W49



A7/W34.22



VI. A list of referenced documents

- Order B-78131 of 2022-12-16 (Order reg. no. B-78131, received on 2022-12-09)
- Contract B-78131/39
- ČSN EN 14511-2:2019 - 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 14511-3:2019 - Air conditioners, liquid chilling packages and heat pumps for space heating and cooling a process chillers with electrically driven compressors - Part 3: Test methods
- ČSN EN 14511-4:2019 - 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 14825:2020 - Air conditioners, liquid chilling packages and heat pumps, with electrically driven compressors, for space heating and cooling - Testing and rating at part load conditions and calculation of seasonal performance
- EHPA Testing regulation AW v2.4a

Test Report compiled by:

Ing. Tomáš Rešiliáno

Test Report approved by:

Milan Holomek
Head of Heat and Environment-Friendly Equipment Test Station



– 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

Page 1 of 9



TEST REPORT

39-17801/T

Product: Outdoor Air/Water Heat pump - monobloc

Type designation: AirAdapt 4-20

Customer: Kořton Spółka komandytowa
ul. Sosnowa 2
34-480 Jabłonka
POLAND

Manufacturer: Kořton Spółka komandytowa
ul. Sosnowa 2
34-480 Jabłonka
POLAND

Report issue date: 2024-07-26

Distribution list: 1 copy to the Customer
1 copy to the Engineering Test Institute

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SP-2021-000012_1_12

I. Description of product tested

The Heat pump **AirAdapt 4-20** supplied by the company **Kolton Spółka komandytowa** is structurally adapted to operate in air/water system. Device is designed as monobloc placed outdoor. Refrigerant R290 is used with charge 2.5 kg. Power supply is a three-phase. Heat pump is able to work in heating and cooling mode. Heat pump is working with variable flow rate.

Main components of the outdoor unit **AirAdapt 4-20**:

- Serial number 23PI20010010001
- Cuboid shape with dimensions 1400 × 590 × 1375 mm (W × D × H)
- Frame and casing made of varnished steel sheets
- Cuboid shaped evaporator, 4 rows, dimensions 1000 × 100 × 1275 mm (W × D × H), spacing 2.5 mm
- Plate condenser, dimensions 170 × 235 × 550 mm (W × D × H) including insulation
- Compressor Emerson YHV072RG-4X9
- Refrigerant R290 (2.5 kg)
- Electric expansion valve
- 4-way reversing valve Sanhua SHF-20D-47-02
- Axial fan ZIEHL-ABEGG ZN063-6IL.BD.V5P8
- Pressure sensors
- Temperature sensors
- Refrigerant pipes
- Air vent

Scheme:

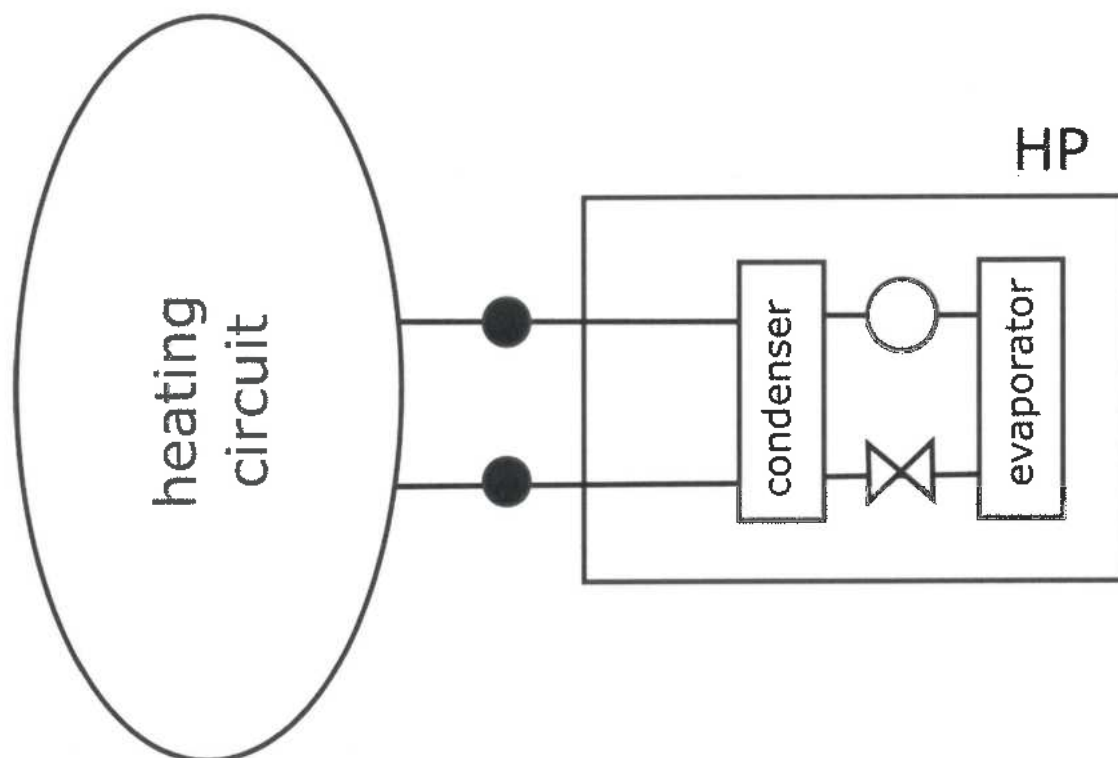


Photo documentation:



Heat pump **AirAdapt 4-20** - outdoor unit
– Front view –



Heat pump **AirAdapt 4-20** - outdoor unit
– Back view –



Heat pump **AirAdapt 4-20** - outdoor unit
– Compressor label –



Heat pump **AirAdapt 4-20** - outdoor unit
– Compressor label –



Heat pump **AirAdapt 4-20** - outdoor unit
– Without cover –



Heat pump **AirAdapt 4-20** - outdoor unit
– Without cover –

KOLTON CE 0090	
<small>Kolton sp. z o.o. komandytowa ul. 3 osnowa 2 24-480 Jablonka www.kolton.pl</small>	<small>Biurowo Serwis pomp ciepła Serwis sterownika</small>
<small>Kontakt 18 264 26 67 800 432 690, 578 080 201 23 875 30 95</small>	
Typ	AIRADAPT 4-20
Rok produkcji	2023
Numer fabryczny	23PI20016010001
Zasilanie elektryczne	400 V; 3 ~; 50 Hz
Maksymalny prąd pracy	21,2 A
Stopień ochrony IP	IP 24
Hałas w pomieszczeniu / na zewnątrz	- / 59,5 dB
Moc grzewcza (A7/W35)	9,41 kW
Moc elektryczna (A7/W35)	1,71 kW
COP A7/W35	5,51
Czynnik chłodniczy/ilość	R290 / 2,50 kg
Max. ciśnienie robocze obiegu chłodniczego	32 bar
Max. ciśnienie robocze obiegu grzewczego	2,8 bar
Max. temp. zasilania	75°C
Pojemność wodna	4 L
Masa	215 kg
<p style="text-align: center;"> UWAGA! Serwis tylko dla wykwalifikowanego personelu! WARNING! Service only for qualified in hydrocarbon refrigerant (HC) staff! ACHTUNG! Service nur für qualifizierte Mitarbeiter mit Kohlenwasserstoffkältemittel (HC)! </p>	

Heat pump **AirAdapt 4-20** - outdoor unit
– Label –

II. Sample tested

SZU reg. no.	Product name	Date of submission
1212.24.39878.001	AirAdapt 4-20	2024-04-17

The visual inspection, tests and verification were carried out by Ing. Tomáš Sedláček 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	E3.1
2.	Digital watt meter	1.2.3 ENERGIE ANALYZATOR_3
3.	Flow meter Krohne Optiflux	8.1.6 TECH_K3_V_DN50_SEK
4.	Barometer	2.4 MAR18_1_PB
5.	Differential pressure gauge	14.2.2 MAR18_3_dP_2
6.	Temperature-humidity meter HF532	14.1.1 K3_VLHKOST_1
7.	Temperature-humidity meter HF532	14.1.3 K3_VLHKOST_2
8.	Thermometers	14.4 MAR18_T

IV. Methods, results of tests and verifications

No.	Test objective	Requirement	Method of test	Documentation	Test evaluation/ verification *
1.	Safety tests	Art. 4.2.1.2 Art. 4.2.1.3	ČSN EN 14511-4:2023	Page No. 7-9	+
*) Evaluation / statement of conformity: + Requirement fulfilled - Requirement not fulfilled 0 Not applicable x Not evaluated					

Measured quantity	Unit	Uncertainty measurement	of Evaluation
Liquid			
- temperature difference (dT)	[K]	$\pm 0.15 \text{ K}$	fulfilled
- temperature inlet/outlet	[°C]	$\pm 0.15 \text{ K}$	fulfilled
- volume flow	[m ³ /s]	$\pm 1 \%$	fulfilled
- static pressure difference	[kPa]	$\pm 1 \text{ kPa}$ ($\Delta p \leq 20 \text{ kPa}$) or $\pm 5 \%$ ($\Delta p > 20 \text{ kPa}$)	fulfilled
Air			
- dry bulb temperature	[°C]	$\pm 0.2 \text{ K}$	fulfilled
- wet bulb temperature	[°C]	$\pm 0.4 \text{ K}$	fulfilled
- volume flow	[m ³ /s]	$\pm 5 \%$	not applied
- static pressure difference	[Pa]	$\pm 5 \text{ Pa}$ ($\Delta p \leq 100 \text{ Pa}$) or $\pm 5 \%$ ($\Delta p > 100 \text{ Pa}$)	not applied
Refrigerant			
- pressure at compressor outlet	[kPa]	$\pm 1 \%$	not applied
- temperature	[°C]	$\pm 0.5 \text{ K}$	not applied
Concentration (in volume)			
- heat transfer medium	[%]	± 2	not related
Electrical quantities			
- electric power	[W]	$\pm 1 \%$	fulfilled
- voltage	[V]	$\pm 0.5 \%$	fulfilled
- current	[A]	$\pm 0.5 \%$	fulfilled
- electric energy	[kWh]	$\pm 1 \%$	not applied
Compressor rotational speed	[min ⁻¹]	$\pm 0.5 \%$	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:

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.

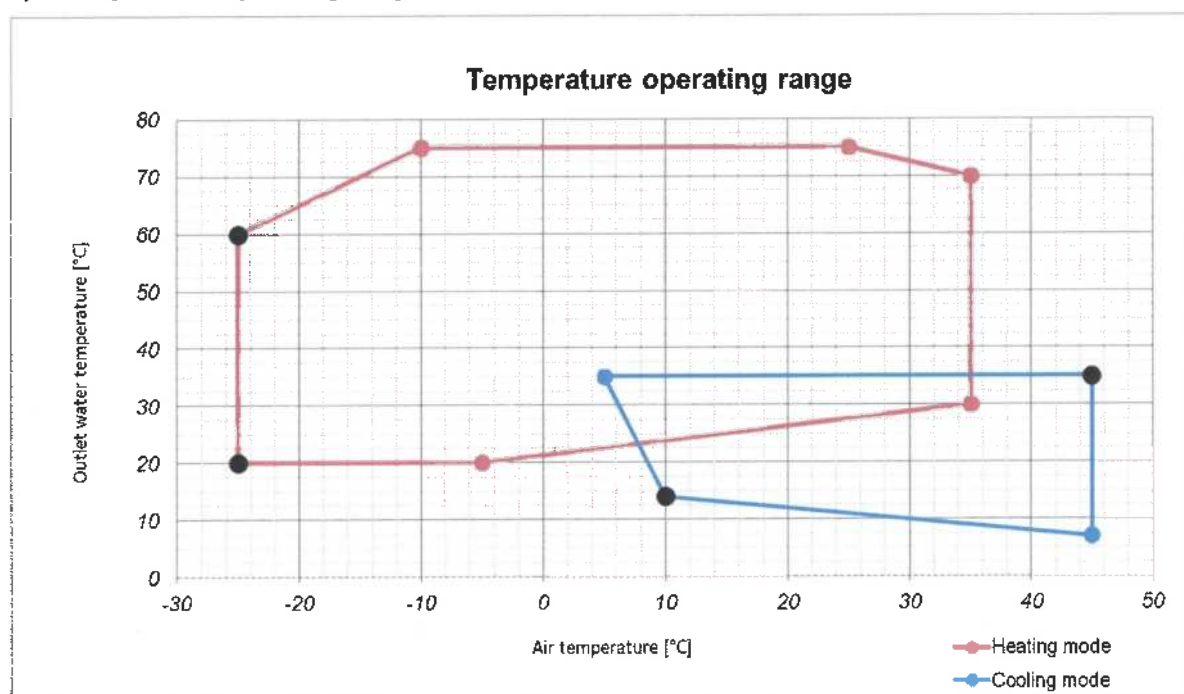
If a statement of conformity is provided, the decision rule pursuant to ILAC-G8:09/2019, Art. 4.2.1 - binary statement for the simple acceptance rule shall apply.

Comment to abbreviated marking: e.g. A7/W35

A (air) 7 (input air, dry-bulb temperature in °C) / W (water), 35 (output heating water temperature in °C)

Test objective:	Safety tests
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 14511-4:2023
Sample tested:	Heat pump AirAdapt 4-20
Measuring equipment used:	see Chapter III

1) Temperature operating range



Test point	Inlet air dry bulb temperature [°C]		Outlet heating water temperature [°C]		Water flow rate in condenser [m³/h]	Note
Heating mode						
1.	A	-25	W	20	Minimum	Minimum water flow rate: 1.000 m³·h⁻¹ Maximum water flow rate: 3.200 m³·h⁻¹
2.	A	-25	W	60	Minimum	
Cooling mode						
1.	A	10	W	14	Minimum	Minimum water flow rate: 1.000 m³·h⁻¹ Maximum water flow rate: 3.200 m³·h⁻¹
2.	A	45	W	35	Maximum	

Heat pump **AirAdapt 4-20** is fully operational in the temperature operating range.

Starting and operating tests (heating mode)

Test according to Article 4.2.1.2 of ČSN EN 14511-4:2023

Operational requirements conditions for air-to-water units					
Test point	Inlet temperature at outdoor heat exchanger (°C)	Inlet temperature at indoor heat exchanger (°C)	Water flow rate at indoor heat exchanger	Voltage (V)	Test result
1 (starting)	Lower limit of use	Lower limit of use	minimum	Rated voltage	+
2 (operating)	Lower limit of use	Upper limit of use	minimum	Rated voltage	+

Evaluation: +... For a starting test, the unit shall start and operate during 15 min, for an operating test, the unit shall be able to operate during 1 h, without tripping of the motor overload protective devices.

-... The unit did not fulfill test requirements.

0... The requirement does not apply to the product concerned.

x... Test was not required.

Starting and operating tests (cooling mode)

Test according to Article 4.2.1.3 of ČSN EN 14511-4:2023

Operational requirements conditions for air-to-water units					
Test point	Inlet temperature at outdoor heat exchanger (°C)	Inlet temperature at indoor heat exchanger (°C)	Water flow rate at indoor heat exchanger	Voltage (V)	Test result
1 (starting)	Lower limit of use	Lower limit of use	minimum	Rated voltage	x
2 (starting)	Upper limit of use	Upper limit of use	maximum	Rated voltage	x

Evaluation: +... For a starting test, the unit shall start and operate during 15 min, without tripping of the motor overload protective devices.

-... The unit did not fulfill test requirements.

0... The requirement does not apply to the product concerned.

x... Test was not required.

Tested by: Ing. Tomáš Sedláček

Date: 2024-07-26

Signed:

Reviewed and approved by: Ing. Michal Faltýnek

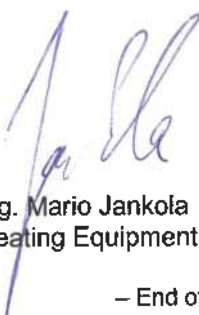
Date: 2024-07-26

Signed:

V. A list of referenced documents

- Order of 2024-06-04 (Order reg. no. B-82392, received on 2024-06-05)
- Contract B-82392/39
- 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

Test Report compiled by: Ing. Tomáš Sedláček



Test Report approved by: Ing. Mario Jankola
Heating Equipment and Construction Products 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-01398-24**

Customer

Kořton Spółka komandytowa
ul. Sosnowa 2
34-480 Jabłonka
POLAND

Product

Outdoor Air/Water Heat Pumps – monobloc

Type designation / Trade mark

Kořton Airadapt 4-20

Test methods

ČSN EN 14511-3:2019, ČSN EN 14825:2020, ČSN EN 12102-1:2023, EHPA Testing regulation – Testing of Air/Water Heat Pumps, version 2.4a

Basis of certificate

Test reports:
39-16823/T of 2023-06-21
39-17801/H of 2024-06-18
Technical documents of KOŘTON SPÓŁKA KOMANDYTOWA

Reference heating season

„A“ = average
(Reference design temperature $T_{designh} = -10\text{ °C}$)

Results:

LOW TEMPERATURE

(Reference water temperature 35 °C)

MEDIUM TEMPERATURE

(Reference water temperature 55 °C)

13.85	$P_{designh}$ [kW] ... Full load heating				12.30
4.66	SCOP [-] ... Seasonal coefficient of performance				3.93
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 [-]
$T_j = -7$	12.248	2.713	$T_j = -7$	10.356	2.485
$T_j = +2$	7.278	4.539	$T_j = +2$	6.368	3.889
$T_j = +7$	4.813	6.423	$T_j = +7$	4.599	4.940
$T_j = +12$	5.568	7.906	$T_j = +12$	5.407	6.109
$T_j = TOL = -10$	12.399	2.702	$T_j = TOL = -10$	12.303	2.174
$T_j = T_{bivalent} = -7$	12.248	2.713	$T_j = T_{bivalent} = -10$	12.303	2.174



LOW TEMPERATURE

(Reference water temperature 35 °C)

MEDIUM TEMPERATURE

(Reference water temperature 55 °C)

Power consumption in modes other than „active mode“:

17.6	Off mode	P _{OFF}	[W]	17.6
22.0	Thermostat off mode	P _{TO}	[W]	21.7
17.6	Standby mode	P _{SB}	[W]	17.6
0.0	Crankcase heater mode	P _{CK}	[W]	0.0

Annual electricity consumption for heating according to:

6135	ČSN EN 14825:2020	Q _{HE}	[kWh]	6471
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Seasonal Space heating energy efficiency

183.5	ČSN EN 14825:2020	η _s	[%]	154.1
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Liquid flow rate in outdoor heating exchanger:

-	Source liquid	Min/Max	[m³/h]	-
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Liquid flow rate in indoor heating exchanger:

1.000/3.200	Heating water	Min/Max	[m³/h]	1.000/3.200
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Sound power level at condition A7W55* (at 10 %):**Koifon Airadapt 4-20**

– outdoor unit –

L_{WA}

54.5 ± 1.5

dB(A)

Accuracy class 2 (Engineering)

(*) Comment to abbreviated marking:

„A“ air, „7“ inlet temperature (dry-bulb temperature) in °C, „W“ water, „55“ outlet temperature in °C.

Specification of conditions:

Compressor speed control	Variable	Heating water volume flow rate (indoor heat exchanger)	Variable
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, 2024-09-12

Ing. Mario Jankola

Heating Equipment and Construction Products Manager

– END OF TEST CERTIFICATE –





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

TEST CERTIFICATE

Number **O-B-01399-24**

Customer

Kolton Spółka komandytowa
ul. Sosnowa 2
34-480 Jablonka
POLAND

Product

Outdoor Air/Water Heat Pumps – monobloc

Type designation / Trade mark

Kolton Airadapt 4-20

Test methods

ČSN EN 14511-3:2019, ČSN EN 14825:2020, ČSN EN 12102-1:2023, EHPA Testing regulation – Testing of Air/Water Heat Pumps, version 2.4a

Basis of certificate

Test reports:
39-16823/T of 2023-06-21
39-17801/H of 2024-06-18
Technical documents of KOLTON SPÓŁKA KOMANDYTOWA

Reference heating season

„W“ = warmer
(Reference design temperature $T_{designh} = +2\text{ °C}$)

Results:

LOW TEMPERATURE

(Reference water temperature 35 °C)

MEDIUM TEMPERATURE

(Reference water temperature 55 °C)

16.05	$P_{designh}$ [kW] ... Full load heating				16.01
6.34 (a)	SCOP [-] ... Seasonal coefficient of performance				4.59 (a)
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 [-]
$T_j = -7$	–	–	$T_j = -7$	–	–
$T_j = +2$	16.049	3.390	$T_j = +2$	16.009	2.622
$T_j = +7^{(a)}$	10.550	5.730	$T_j = +7^{(a)}$	10.420	3.960
$T_j = +12^{(a)}$	5.620	7.750	$T_j = +12^{(a)}$	5.540	5.780
$T_j = TOL = +2$	16.049	3.390	$T_j = TOL = +2$	16.009	2.622
$T_j = T_{bivalent} = +2$	16.049	3.390	$T_j = T_{bivalent} = +2$	16.009	2.622

O-B-01399-24, page 1 (2)

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“:

17.6	Off mode	P _{OFF}	[W]	17.6
22.0	Thermostat off mode	P _{TO}	[W]	21.7
17.6	Standby mode	P _{SB}	[W]	17.6
0.0	Crankcase heater mode	P _{CK}	[W]	0.0

Annual electricity consumption for heating according to:

3380.0 ^(a)	ČSN EN 14825:2020	Q _{HE}	[kWh]	4655.0 ^(a)
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Seasonal Space heating energy efficiency

250.7 ^(a)	ČSN EN 14825:2020	η _s	[%]	180.8 ^(a)
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Liquid flow rate in outdoor heating exchanger:

–	Source liquid	Min/Max	[m ³ /h]	–
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Liquid flow rate in indoor heating exchanger:

1.000/3.200	Heating water	Min/Max	[m ³ /h]	1.000/3.200
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Sound power level at condition A7W55* (at 10 %):

Kolton Airadapt 4-20
– outdoor unit –

L _{WA}	54.5 ± 1.5	dB(A)
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Accuracy class 2 (Engineering)

(*) Comment to abbreviated marking:

„A“ air, „7“ inlet temperature (dry-bulb temperature) in °C, „W“ water, „55“ outlet temperature in °C.

^(a) The technical data were declared by the manufacturer or calculated of data declared by the manufacturer and were not tested by the Testing Laboratory.

Specification of conditions:

Compressor speed control	Variable	Heating water volume flow rate (indoor heat exchanger)	Variable
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, 2024-09-12

Ing. Mario Jankola

Heating Equipment and Construction Products Manager

– END OF TEST CERTIFICATE –





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

TEST CERTIFICATE

Number **O-B-01400-24**

Customer

Kolton Spółka komandytowa
ul. Sosnowa 2
34-480 Jabłonka
POLAND

Product

Outdoor Air/Water Heat Pumps – monobloc

Type designation / Trade mark

Kolton Airadapt 4-20

Test methods

ČSN EN 14511-3:2019, ČSN EN 14825:2020, ČSN EN 12102-1:2023, EHPA Testing regulation – Testing of Air/Water Heat Pumps, version 2.4a

Basis of certificate

Test reports:
39-16823/T of 2023-06-21
39-17801/H of 2024-06-18
Technical documents of KOLTON SPÓŁKA KOMANDYTOWA

Reference heating season

„C“ = colder
(Reference design temperature $T_{designh} = -22\text{ °C}$)

Results:

LOW TEMPERATURE

(Reference water temperature 35 °C)

MEDIUM TEMPERATURE

(Reference water temperature 55 °C)

14.42	$P_{designh}$ [kW] ... Full load heating				14.20
4.30 (a)	SCOP [-] ... Seasonal coefficient of performance				3.60 (a)
Outdoor temperature	Heating declared capacity	Coefficient of performance at the declared capacity	Outdoor temperature	Heating declared capacity	Coefficient of performance at the declared capacity
T_j [°C]	P_{dh} [kW]	COP_d [-]	T_j [°C]	P_{dh} [kW]	COP_d [-]
$T_j = -7^{(a)}$	8.850	4.020	$T_j = -7^{(a)}$	8.850	3.080
$T_j = +2^{(a)}$	5.350	4.780	$T_j = +2^{(a)}$	5.450	4.320
$T_j = +7$	4.827	6.530	$T_j = +7$	4.657	5.209
$T_j = +12^{(a)}$	5.590	7.820	$T_j = +12^{(a)}$	5.540	7.060
$T_j = TOL = -20^{(a)}$	10.020	2.510	$T_j = TOL = -20^{(a)}$	9.850	1.810
$T_j = T_{bivalent} = -15$	11.767	2.734	$T_j = T_{bivalent} = -15$	11.582	2.208
$T_j = -15$	11.767	2.734	$T_j = -15$	11.582	2.208

O-B-01400-24, page 1 (2)

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

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LOW TEMPERATURE

(Reference water temperature 35 °C)

MEDIUM TEMPERATURE

(Reference water temperature 55 °C)

Power consumption in modes other than „active mode“:

17.6	Off mode	P _{OFF}	[W]	17.6
22.0	Thermostat off mode	P _{TO}	[W]	21.7
17.6	Standby mode	P _{SB}	[W]	17.6
0.0	Crankcase heater mode	P _{CK}	[W]	0.0

Annual electricity consumption for heating according to:

8267.0 ^(a)	ČSN EN 14825:2020	Q _{HE}	[kWh]	9734.0 ^(a)
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Seasonal Space heating energy efficiency

169.0 ^(a)	ČSN EN 14825:2020	η _s	[%]	140.8 ^(a)
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Liquid flow rate in outdoor heating exchanger:

—	Source liquid	Min/Max	[m ³ /h]	—
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Liquid flow rate in indoor heating exchanger:

1.000/3.200	Heating water	Min/Max	[m ³ /h]	1.000/3.200
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Sound power level at condition A7W55* (at 10 %):

Kolton Airadapt 4-20
— outdoor unit —

LWA 54.5 ± 1.5 dB(A)

Accuracy class 2 (Engineering)

(*) Comment to abbreviated marking:

„A“ air, „7“ inlet temperature (dry-bulb temperature) in °C, „W“ water, „55“ outlet temperature in °C.

^(a) The technical data were declared by the manufacturer or calculated of data declared by the manufacturer and were not tested by the Testing Laboratory.

Specification of conditions:

Compressor speed control	Variable	Heating water volume flow rate (indoor heat exchanger)	Variable
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, 2024-09-12



Ing. Mario Jankola

Heating Equipment and Construction Products Manager

— END OF TEST CERTIFICATE —





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

TEST CERTIFICATE

Number **O-B-000925-24**

Customer

Kolton Spółka komandytowa
ul. Sosnowa 2
34-480 Jabłonna
POLAND

Product

Outdoor Air/Water Heat Pumps – monobloc

Type designation / Trade mark

Airadapt 3-12

Airadapt 4-16

Airadapt 4-20

Test methods

ČSN EN 14511-2:2019, ČSN EN 14511-3:2019,
ČSN EN 14511-4:2019, ČSN EN 12102-1:2023, EHPA Testing
regulation – Testing of Air/Water Heat Pumps, version 2.4a

Basis of certificate

Test reports:
39-16823/T of 2023-06-21
39-17801/H of 2024-06-18
Technical documents of KOLTON SPÓŁKA KOMANDYTOWA

Temperature application

LOW TEMPERATURE,
(Reference water temperature 35 °C)

MEDIUM TEMPERATURE
(Reference water temperature 55 °C)

Specification of conditions:

Compressor speed control	Variable	Heating water volume flow rate (indoor heat exchanger)	Variable
Outlet water temperature (indoor heat exchanger)	Variable	Source liquid volume flow rate (outdoor heat exch.)	-
Function	Reversible		



O-B-000925-24, page 1 (2)

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

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**Results:**

Model names		Kolton Airadapt 3-12	Kolton Airadapt 4-16	Kolton Airadapt 4-20
Temperature condition*		(Not Tested)	(Not tested)	(Tested)
A7/W35	Corrected heating capacity [kW]	6.460	9.192	9.406
	Effective power input [kW]	1.222	1.734	1.707
	Coefficient of performance [-]	5.286	5.301	5.511
	Control settings [-]	-	-	-
A7/W55	Corrected heating capacity [kW]	6.038	9.062	9.539
	Effective power input [kW]	1.895	2.705	2.668
	Coefficient of performance [-]	3.187	3.350	3.576
	Control settings [-]	-	-	-
Sound power level at condition A7/W55* (at 1100 rpm):				
LWA	Outdoor unit [dB(A)]	53.0 ± 1.5	54.0 ± 1.5	54.5 ± 1.5
Accuracy class	Outdoor unit		Engineering (2)	

(*) Comment to abbreviated marking e.g. A7W35:

„A“ air, „7“ inlet temperature (dry-bulb temperature) in °C, „W“ water, „35“ outlet temperature in °C.

(Tested) This test sample was tested at the Testing Laboratory.

(Not tested) The technical data were declared by the Manufacturer according to the model range specifications and were not tested by the Testing Laboratory.

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, 2024-06-25

Ing. Mario Jankola

Heating Equipment and Construction Products Manager

- END OF TEST CERTIFICATE -





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

TEST CERTIFICATE

Number **O-B-000926-24**

Customer Kolton Spółka komandytowa
ul. Sosnowa 2
34-480 Jabłonka
POLAND

Product Outdoor Air/Water Heat Pumps – monobloc

Type designation / Trademark **Airadapt 3-12**
Airadapt 4-16
Airadapt 4-20

Test methods ČSN EN 14511-2:2019, ČSN EN 14511-3:2019,
ČSN EN 14511-4:2019, ČSN EN 12102-1:2023, EHPA Testing
regulation – Testing of Air/Water Heat Pumps, version 2.4a

Basis of certificate Test reports:
39-16823/T of 2023-06-21
39-17801/H of 2024-06-18
Technical documents of KOŁTON SPÓŁKA KOMANDYTOWA

Temperature application **LOW TEMPERATURE**
(Reference water temperature 35 °C)

Reference heating season **„A“ = average / „W“ = warmer / „C“ = colder**
(Reference design conditions for heating $T_{designh} = -10\text{ °C} / +2\text{ °C} / -22\text{ °C}$)

Specification of conditions:

Compressor speed control	Variable	Heating water volume flow rate (indoor heat exchanger)	Variable
Outlet water temperature (indoor heat exchanger)	Variable	Source liquid volume flow rate (outdoor heat exch.)	-
Function	Reversible		



O-B-000926-24, page 1 (2)

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

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**Results:****Low temperature application**

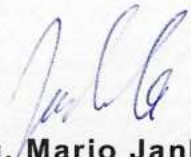
(Reference water temperature 35 °C)

Model names		Kolton Airadapt 3-12	Kolton Airadapt 4-16	Kolton Airadapt 4-20
		(Not tested)	(Not tested)	(Tested)
Full load heating	P_{designh} [kW]	A	8.98	13.85
		W	10.10	16.05
		C	9.49	14.42
Bivalent temperature	T_{bivalent} [°C]	A	-10	-7
		W	2	2
		C	-15	-15
Seasonal coefficient of performance	SCOP [-]	A	4.58	4.66
		W	6.31	6.34 (Not tested)
		C	4.26	4.30 (Not tested)
Seasonal Space heating energy efficiency	η_s [%]	A	180.2	183.5
		W	249.4	250.7 (Not tested)
		C	167.3	169.0 (Not tested)

*(Tested) This test sample was tested at the Testing Laboratory.**(Not tested) The technical data were declared by the Manufacturer according to the model range specifications and were not tested by the Testing Laboratory.*

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, 2024-06-25


Ing. Mario Jankola

Heating Equipment and Construction Products Manager

- END OF TEST CERTIFICATE -





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

TEST CERTIFICATE

Number **O-B-000927-24**

Customer
Kořton Spółka komandytowa
ul. Sosnowa 2
34-480 Jabłonka
POLAND

Product
Outdoor Air/Water Heat Pumps – monobloc

Type designation / Trademark
Airadapt 3-12
Airadapt 4-16
Airadapt 4-20

Test methods
ČSN EN 14511-2:2019, ČSN EN 14511-3:2019,
ČSN EN 14511-4:2019, ČSN EN 12102-1:2023, EHPA Testing
regulation – Testing of Air/Water Heat Pumps, version 2.4a

Basis of certificate
Test reports:
39-16823/T of 2023-06-21
39-17801/H of 2024-06-18
Technical documents of KOŁTON SPÓŁKA KOMANDYTOWA

Temperature application
MEDIUM TEMPERATURE
(Reference water temperature 55 °C)

Reference heating season
„A“ = average / „W“ = warmer / „C“ = colder
(Reference design conditions for heating $T_{designh} = -10\text{ °C} / +2\text{ °C} / -22\text{ °C}$)

Specification of conditions:

Compressor speed control	Variable	Heating water volume flow rate (indoor heat exchanger)	Variable
Outlet water temperature (indoor heat exchanger)	Variable	Source liquid volume flow rate (outdoor heat exch.)	-
Function	Reversible		





Results:

Medium temperature application

(Reference water temperature 55 °C)

Model names		Kolton Airadapt 3-12	Kolton Airadapt 4-16	Kolton Airadapt 4-20
		(Not tested)	(Not tested)	(Tested)
Full load heating	P_{designh} [kW]	A 8.15	10.02	12.30
		W 9.89	12.46	16.01
		C 9.54	11.41	14.20
Bivalent temperature	T_{bivalent} [°C]	A -10	-10	-10
		W 2	2	2
		C -15	-15	-15
Seasonal coefficient of performance	SCOP [-]	A 3.83	3.83	3.93
		W 4.67	4.56	4.59 (Not tested)
		C 3.55	3.51	3.60 (Not tested)
Seasonal Space heating energy efficiency	η_s [%]	A 150.1	150.2	154.1
		W 184.0	179.2	180.8 (Not tested)
		C 138.9	137.3	140.8 (Not tested)

(Tested) This test sample was tested at the Testing Laboratory.

(Not tested) The technical data were declared by the Manufacturer according to the model range specifications and were not tested by the Testing Laboratory.

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, 2024-06-25

Ing. Mario Jankola

Heating Equipment and Construction Products Manager

- END OF TEST CERTIFICATE -





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

TEST CERTIFICATE

Number **O-B-01287-24**

Customer Kolton Spółka komandytowa
ul. Sosnowa 2
34-480 Jablonka
POLAND

Product Outdoor Air/Water Heat pump - monobloc

Type designation / Trade mark **AirAdapt 4-20**

Test methods ČSN EN 14511-4:2023, ČSN EN 12102-1:2023

Basis of certificate
Test reports:
39-17801/T of 2024-07-26
39-17801/H of 2024-06-18
Technical documents of Kolton Spółka komandytowa

Temperature application **MEDIUM TEMPERATURE**
(Reference water temperature 55 °C)

Sound power level at temperature condition A7W55*:

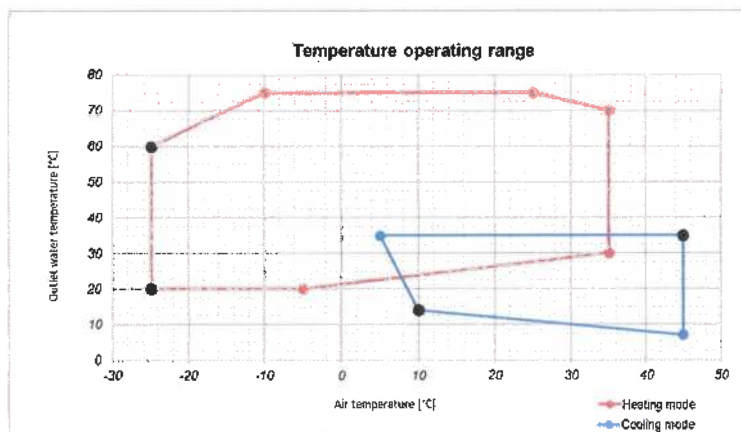
Outdoor Air/Water Heat pump - monobloc	AirAdapt 4-20 – outdoor unit –
Sound power level	LWA 54.5 ± 1.5 dB(A)
Accuracy class	Engineering (grade 2)

(*) Comment to abbreviated marking: e.g. A7/W55

A (air), 7 (input air – dry bulb temperature in °C) / W (water), 55 (output heating (cooling) water temperature in °C).



Temperature operating range:



Liquid flow rate in:

outdoor heating exchanger

Minimum 1.000 m³/h

Maximum 3.200 m³/h

indoor heating exchanger

Minimum 1.000 m³/h

Maximum 3.200 m³/h

Complies with
ČSN EN 14511-4:2023, articles:

4.2.1.2; 4.2.1.3

Specification of conditions:

Compressor speed control	Variable	Heating water volume flow rate (indoor heat exchanger)	Variable
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, 2024-07-30

Ing. Mario Jankola

Heating Equipment and Construction Products Manager

- END OF TEST CERTIFICATE -



Tłumaczenie przysięgę z jęz. angielskiego na jęz. polski

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne, Brno, Republika Czeska
CERTYFIKAT TESTÓW
Numer: O-B-01398-24

Klient **KOŁTON SPÓŁKA KOMANDYTOWA**
 ul. Sosnowa 2
 34-480 Jabłonka
 POLSKA

Produkt **Zewnętrzne pompy ciepła typu powietrze/woda – monoblok**

Oznaczenie typu/
 znak towarowy **Kolton Airadapt 4-20**

Metody testowe **ČSN EN 14511-3:2019, ČSN EN 14825:2020; ČSN EN 12102-1:2023,
 Przepisy dotyczące badań EHPA – Badanie pomp ciepła typu powietrze/woda, wersja
 2.4a**

Podstawa certyfikatu **Raporty z testów:
 39-16823/T z 2023-06-21
 39-17801/H z 2024-06-18
 Dokumentacja techniczna KOŁTON SPÓŁKA KOMANDYTOWA**

Referencyjny sezon
 grzewczy

„A” = umiarkowany
 (Referencyjna temperatura projektowa $T_{designh} = -10\text{ °C}$)

Wyniki:

NISKA TEMPERATURA

(Referencyjna temperatura wody 35 °C)

ŚREDNIA TEMPERATURA

(Referencyjna temperatura wody 55 °C)

13,85	$P_{designh}$ [kW] ... Znamionowa moc cieplna				12,30
4,66	SCOP [-] ... Sezonowy współczynnik efektywności				3,93
Temperatura zewnątrzna	Deklarowana wydajność grzewcza	Współczynnik efektywności przy deklarowanej wydajności	Temperatura zewnątrzna	Deklarowana wydajność grzewcza	Współczynnik efektywności przy deklarowanej wydajności
$T_j\text{ [°C]}$	$P_{dh}\text{ [kW]}$	$COP_d\text{ [-]}$	$T_j\text{ [°C]}$	$P_{dh}\text{ [kW]}$	$COP_d\text{ [-]}$
$T_j = -7$	12,248	2,713	$T_j = -7$	10,356	2,485
$T_j = +2$	7,278	4,539	$T_j = +2$	6,368	3,889
$T_j = +7$	4,813	6,423	$T_j = +7$	4,599	4,940
$T_j = +12$	5,568	7,906	$T_j = +12$	5,407	6,109
$T_j = TOL = -10$	12,399	2,702	$T_j = TOL = -10$	12,303	2,174
$T_j = T_{bivalent} = -7$	12,248	2,713	$T_j = T_{bivalent} = -10$	12,303	2,174

[okrągła pieczęć]

O-B-01398-24, strona 1 (2)

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne,
 Hudcova 424/56b, 621 00 Brno, Republika Czeska
www.szutest.cz



NISKA TEMPERATURA

(Referencyjna temperatura wody 35°C)

ŚREDNIA TEMPERATURA

(Referencyjna temperatura wody 55°C)

Pobór mocy w trybach innych niż „tryb aktywny”

17,6	Tryb wyłączony P_{OFF} [W]	17,6
22,0	Tryb wyłączonego termostatu P_{TO} [W]	21,7
17,6	Tryb czuwania P_{SB} [W]	17,6
0,00	Tryb grzałki karteru P_{CK} [W]	0,00

Roczne zużycie energii elektrycznej na ogrzewanie według:

6135	ČSN EN 14825:2020 Q_{HE} [kWh]	6471
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Sezonowa efektywność energetyczna ogrzewania pomieszczeń

183,5	ČSN EN 14825:2020 η_s [%]	154,1
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Natężenie przepływu cieczy w zewnętrznym wymienniku ciepła:

-	Źródło cieczy	Min./Maks. [m³/h]	-
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Natężenie przepływu cieczy w wewnętrznym wymienniku ciepła:

1,000/3,200	Woda grzewcza	Min./Maks. [m³/h]	1,000/3,200
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Poziom mocy akustycznej w warunku A7W55* (przy 10%):**Kolton Airadapt 4-20** L_{WA} 54,5±1,5 dB(A)

Klasa dokładności 2 (inżynieria)

-zewnątrzna jednostka-

(*) *Komentarz do skróconego oznaczenia:*

„A” powietrze, „7” = temperatura na wlocie (temperatura termometru suchego) w °C, „W” woda, „55” temperatura na wylocie w °C.

Specyfikacja warunków:

Sterowanie prędkością sprężarki	Zmienne	Przepływ objętościowy wody grzewczej (wewnętrzny wymiennik ciepła)	Zmienny
Temperatura wody na wylocie (wewnętrzny wymiennik ciepła)	Zmienna	Objętość przepływu cieczy źródłowej (zewnętrzny wymiennik ciepła)	-
Funkcja	Odwracalna		

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

Brno, 12.09.2024 r.

[nieczytelny podpis]

Ing. Mario Jankola

Kierownik ds. urządzeń grzewczych i produktów budowlanych

- KONIEC CERTYFIKATU TESTÓW -

[okrągła pieczęć]

O-B-01398-24, strona 2 (2)

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne,
Hudcova 424/56b, 621 00 Brno, Republika Czeska
www.szutest.cz

Nr rep. 2311/24

Stwierdzam zgodność powyższego przekładu z oryginałem

Tytułem wynagrodzenia pobrano -

Augustów, dnia: 23.09.2024 r.

Tłumacz przysięgły języka angielskiego – mgr Piotr Szlauzys (nr TP/4455/05)



Tłumaczenie przysięgłe z jęz. angielskiego na jęz. polski

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne, Brno, Republika Czeska
CERTYFIKAT TESTÓW
Numer: O-B-01399-24

Klient KOŁTON SPÓŁKA KOMANDYTOWA
 ul. Sosnowa 2
 34-480 Jabłonka
 POLSKA

Produkt Zewnętrzne pompy ciepła typu powietrze/woda – monoblok

Oznaczenie typu/
 znak towarowy **Kołton Airadapt 4-20**

Metody testowe ČSN EN 14511-3:2019, ČSN EN 14825:2020; ČSN EN 12102-1:2023,
 Przepisy dotyczące badań EHPA – Badanie pomp ciepła typu powietrze/woda, wersja 2.4a

Podstawa certyfikatu Raporty z testów:
 39-16823/T z 2023-06-21
 39-17801/H z 2024-06-18
 Dokumentacja techniczna KOŁTON SPÓŁKA KOMANDYTOWA

Referencyjny sezon grzewczy „C” = ciepły
 (Referencyjna temperatura projektowa $T_{designh} = +2\text{ }^{\circ}\text{C}$)

Wyniki:

NISKA TEMPERATURA

(Referencyjna temperatura wody 35°C)

ŚREDNIA TEMPERATURA

(Referencyjna temperatura wody 55°C)

16,05	$P_{designh}$ [kW] ... Znamionowa moc cieplna				16,01
6,34 ^(a)	SCOP [-] ... Sezonowy współczynnik efektywności				4,59 ^(a)
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 [-]
$T_j = -7$	-	-	$T_j = -7$	-	-
$T_j = +2$	16,049	3,390	$T_j = +2$	16,009	2,622
$T_j = +7^{(a)}$	10,550	5,730	$T_j = +7^{(a)}$	10,420	3,960
$T_j = +12^{(a)}$	5,620	7,750	$T_j = +12^{(a)}$	5,540	5,780
$T_j = TOL = +2$	16,049	3,390	$T_j = TOL = +2$	16,009	2,622
$T_j = T_{bivalent} = +2$	16,049	3,390	$T_j = T_{bivalent} = +2$	16,009	2,622

[okrągła pieczęć]

O-B-01399-24, strona 1 (2)

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne,
 Hudcova 424/56b, 621 00 Brno, Republika Czeska

www.szutest.cz



NISKA TEMPERATURA
(Referencyjna temperatura wody 35°C)

ŚREDNIA TEMPERATURA
(Referencyjna temperatura wody 55°C)

Pobór mocy w trybach innych niż „tryb aktywny”

17,6	Tryb wyłączony P_{OFF} [W]	17,6
22,0	Tryb wyłączonego termostatu P_{TO} [W]	21,7
17,6	Tryb czuwania P_{SB} [W]	17,6
0,00	Tryb grzałki karteru P_{CK} [W]	0,00

Roczne zużycie energii elektrycznej na ogrzewanie według:

3380,0 ^(a)	ČSN EN 14825:2020 Q_{HE} [kWh]	4655,0 ^(a)
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Sezonowa efektywność energetyczna ogrzewania pomieszczeń

250,7 ^(a)	ČSN EN 14825:2020 η_s [%]	180,8 ^(a)
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Natężenie przepływu cieczy w zewnętrznym wymienniku ciepła:

-	Źródło cieczy	Min./Maks. [m ³ /h]	-
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Natężenie przepływu cieczy w wewnętrznym wymienniku ciepła:

1,000/3,200	Źródło cieczy	Min./Maks. [m ³ /h]	1,000/3,200
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Poziom mocy akustycznej w warunku A7W55* (przy 10%):

Kořton Airadapt 4-20

L_{WA} 54,5±1,5 dB(A)

Klasa dokładności 2 (inżynieria)

-zewnętrzna jednostka-

(*) *Komentarz do skróconego oznaczenia:*

„A” powietrze, „7” = temperatura na wlocie (temperatura termometru suchego) w °C, „W” woda, „55” temperatura na wylocie w °C.

^(a) Dane techniczne zostały zadeklarowane przez producenta lub obliczone na podstawie danych zadeklarowanych przez producenta i nie były badane przez Laboratorium Badawcze.

Specyfikacja warunków:

Sterowanie prędkością sprężarki	Zmienne	Przepływ objętościowy wody grzewczej (wewnętrzny wymiennik ciepła)	Zmienny
Temperatura wody na wylocie (wewnętrzny wymiennik ciepła)	Zmienna	Objętość przepływu cieczy źródłowej (zewnętrzny wymiennik ciepła)	-
Funkcja	Odwracalna		

Institut Testůw InŹynieryjnych, Przedsiębiorstwo Publiczne, potwierdza niniejszym Certyfikatem Testůw, Źe badanie danego produktu zostało przeprowadzone z wynikami podanymi powyŹej. Institut Testůw InŹynieryjnych, Przedsiębiorstwo Publiczne, jest akredytowanym Laboratorium Badawczym 1045.1.

Brno, 12.09.2024 r.

[nieczytelny podpis]

Ing. Mario Jankola

Kierownik ds. urzãdzeń grzewczych i produktůw budowlanych

- KONIEC CERTYFIKATU TESTÓW -

[okrągła pieczęć]

O-B-01399-24, strona 2 (2)

Institut Testůw InŹynieryjnych, Przedsiębiorstwo Publiczne,
Hudcova 424/56b, 621 00 Brno, Republika Czeska

www.szutest.cz

Nr rep. 2312/24

Stwierdzam zgodnořć powyŹszego przekładu z oryginałem

Tytułem wynagrodzenia pobrano -

Augustów, dnia: 23.09.2024 r.

Tłumacz przysięgły języka angielskiego – mgr Piotr Szlauzys (nr TP/4253/05)



Tłumaczenie przysięgłe z jęz. angielskiego na jęz. polski

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne, Brno, Republika Czeska

CERTYFIKAT TESTÓW

Numer: O-B-01400-24

Klient KOŁTON SPÓŁKA KOMANDYTOWA
ul. Sosnowa 2
34-480 Jabłonka
POLSKA

Produkt Zewnętrzne pompy ciepła typu powietrze/woda – monoblok

Oznaczenie typu/
znak towarowy **Kolton Airadapt 4-20**

Metody testowe ČSN EN 14511-3:2019, ČSN EN 14825:2020; ČSN EN 12102-1:2023,
Przepisy dotyczące badań EHPA – Badanie pomp ciepła typu powietrze/woda, wersja 2.4a
Raporty z testów:

Podstawa certyfikatu 39-16823/T z 2023-06-21
39-17801/H z 2024-06-18
Dokumentacja techniczna KOŁTON SPÓŁKA KOMANDYTOWA

Referencyjny sezon
grzewczy „C” = chłodny
(Referencyjna temperatura projektowa $T_{designh} = -22\text{ }^{\circ}\text{C}$)

Wyniki:

NISKA TEMPERATURA

(Referencyjna temperatura wody $35\text{ }^{\circ}\text{C}$)

ŚREDNIA TEMPERATURA

(Referencyjna temperatura wody $55\text{ }^{\circ}\text{C}$)

14,42	$P_{designh}$ [kW] ... Znamionowa moc cieplna				14,20
4,30 ^(a)	SCOP [-] ... Sezonowy współczynnik efektywności				3,60 ^(a)
Temperatura zewnętrzna	Deklarowana wydajność grzewcza	Współczynnik efektywności przy deklarowanej wydajności	Temperatura zewnętrzna	Deklarowana wydajność grzewcza	Współczynnik efektywności przy deklarowanej wydajności
T_j [$^{\circ}\text{C}$]	P_{dh} [kW]	COP_d [-]	T_j [$^{\circ}\text{C}$]	P_{dh} [kW]	COP_d [-]
$T_j = -7^{(a)}$	8,850	4,020	$T_j = -7^{(a)}$	8,850	3,080
$T_j = +2^{(a)}$	5,350	4,780	$T_j = +2^{(a)}$	5,450	4,320
$T_j = +7$	4,827	6,530	$T_j = +7$	4,657	5,209
$T_j = +12^{(a)}$	5,590	7,820	$T_j = +12^{(a)}$	5,540	7,060
$T_j = TOL = -20^{(a)}$	10,020	2,510	$T_j = TOL = -20^{(a)}$	9,850	1,810
$T_j = T_{bivalent} = -15$	11,767	2,734	$T_j = T_{bivalent} = -15$	11,582	2,208
$T_j = -15$	11,767	2,734	$T_j = -15$	11,582	2,208

[okrągła pieczęć]

O-B-01400-24, strona 1 (2)

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne,
Hudcova 424/56b, 621 00 Brno, Republika Czeska

www.szutest.cz



NISKA TEMPERATURA
(Referencyjna temperatura wody 35°C)

ŚREDNIA TEMPERATURA
(Referencyjna temperatura wody 55°C)

Pobór mocy w trybach innych niż „tryb aktywny”

17,6	Tryb wyłączony P _{OFF} [W]	17,6
22,0	Tryb wyłączonego termostatu P _{TO} [W]	21,7
17,6	Tryb czuwania P _{SB} [W]	17,6
0,00	Tryb grzałki karteru P _{CK} [W]	0,00

Roczne zużycie energii elektrycznej na ogrzewanie według:

8267,0 ^(a)	ČSN EN 14825:2020 Q _{HE} [kWh]	9734,0 ^(a)
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Sezonowa efektywność energetyczna ogrzewania pomieszczeń

169,0 ^(a)	ČSN EN 14825:2020 η _s [%]	140,8 ^(a)
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Natężenie przepływu cieczy w zewnętrznym wymienniku ciepła:

-	Źródło cieczy	Min./Maks. [m ³ /h]	-
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Natężenie przepływu cieczy w wewnętrznym wymienniku ciepła:

1,000/3,200	Źródło cieczy	Min./Maks. [m ³ /h]	1,000/3,200
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Poziom mocy akustycznej w warunku A7W55* (przy 10%):

Kolton Airadapt 4-20 L_{WA} 54,5±1,5 dB(A) Klasa dokładności 2 (inżynieria)

-zewnętrzna jednostka-

(*) *Komentarz do skróconego oznaczenia:*

„A” powietrze, „7” = temperatura na wlocie (temperatura termometru suchego) w °C, „W” woda, „55” temperatura na wylocie w °C.

^(a) Dane techniczne zostały zadeklarowane przez producenta lub obliczone na podstawie danych zadeklarowanych przez producenta i nie były badane przez Laboratorium Badawcze.

Specyfikacja warunków:

Sterowanie prędkością sprężarki	Zmienne	Przepływ objętościowy wody grzewczej (wewnętrzny wymiennik ciepła)	Zmienny
Temperatura wody na wylocie (wewnętrzny wymiennik ciepła)	Zmienna	Objętość przepływu cieczy źródłowej (zewnętrzny wymiennik ciepła)	-
Funkcja	Odwracalna		

Institut Testův Inženýrjnych, Prędsiębjorstwo Publiczne, potwiera niniejszym Certyfikatem Testův, Źe badanie danęgo pręduktu zostało pręprawozone z wynikami poanymi powyŹej. Institut Testův Inženýrjnych, Prędsiębjorstwo Publiczne, jest akredytowanym Laboratorium Badawczym 1045.1.

Brno, 12.09.2024 r.

[nieczytelny podpis]

Ing. Mario Jankola

Kierownik ds. urzędeń grzewczych i pręduktův budowlanych

- KONIEC CERTYFIKATU TESTův -

[okręęta pieczęć]

O-B-01400-24, strona 2 (2)

Institut Testův Inženýrjnych, Prędsiębjorstwo Publiczne,
Hudcova 424/56b, 621 00 Brno, Republika Czeska

www.szutest.cz

Nr rep. 2313/24

Stwierdzam zgodność powyŹszego prękładu z oryginałem

Tytułem wynagrozone pobrano -

Augustův, dnia: 23.09.2024 r.

Tłumacz przysięęły języka angielskiego – mgr Piotr SzlauŹys (nr TP/4453/05)



Tłumaczenie przysięgłe z jęz. angielskiego na jęz. polski

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne, Brno, Republika Czeska

CERTYFIKAT TESTÓW

Numer: O-B-000925-24

Klient KOŁTON SPÓŁKA KOMANDYTOWA
ul. Sosnowa 2
34-480 Jabłonka
POLSKA

Produkt Zewnętrzne pompy ciepła typu powietrze/woda – monoblok

Oznaczenie typu/
znak towarowy **Airadapt 3-12**
Airadapt 4-16
Airadapt 4-20

Metody testowe ČSN EN 14511-2:2019, ČSN EN 14511-3:2019,
ČSN EN 14511-4:2019, ČSN EN 12102-1:2023,
Przepisy dotyczące badań EHPA – Badanie pomp ciepła typu powietrze/woda, wersja
2.4a
Raporty z testów:

Podstawa certyfikatu 39-16823/T z 2023-06-21
39-17801/H z 2024-06-18
Dokumentacja techniczna KOŁTON SPÓŁKA KOMANDYTOWA
NISKA TEMPERATURA
(Referencyjna temperatura wody 35°C)

Zastosowana temp. **ŚREDNIA TEMPERATURA**
(Referencyjna temperatura wody 55°C)

Specyfikacja warunków:

Sterowanie prędkością sprężarki	Zmienne	Przepływ objętościowy wody grzewczej (wewnętrzny wymiennik ciepła)	Zmienny
Temperatura wody na wylocie (wewnętrzny wymiennik ciepła)	Zmienna	Objętość przepływu cieczy źródłowej (zewnętrzny wymiennik ciepła)	-
Funkcja	Odwracalna		

[okrągła pieczęć]

O-B-000925-24, strona 1 (2)

[Hologram]

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne,
Hudcova 424/56b, 621 00 Brno, Republika Czeska

www.szutest.cz



Wyniki:

Nazwy modeli		Kolton Airadapt 3-12 (Nietestowany)	Kolton Airadapt 4-16 (Nietestowany)	Kolton Airadapt 4-20 (Testowany)	
Warunki temperaturowe					
A7/W35	Skorygowana wydajność grzewcza	[kW]	6,460	9,192	9,406
	Efektywny pobór mocy	[kW]	1,222	1,734	1,707
	Współczynnik efektywności	[-]	5,286	5,301	5,511
	Ustawienia sterowania	[-]	-	-	-
A7/W55	Skorygowana wydajność grzewcza	[kW]	6,038	9,062	9,539
	Efektywny pobór mocy	[kW]	1,895	2,705	2,668
	Współczynnik efektywności	[-]	3,187	3,350	3,576
	Ustawienia sterowania	[-]	-	-	-
Poziom mocy akustycznej w warunkach A7/W55* (przy 1100 obr./min):					
L _{WA}	Jednostka zewnętrzna	[dB(A)]	53,0 ± 1,5	54,0 ± 1,5	54,5 ± 1,5

Klasa dokładności Jednostka zewnętrzna

Inżynieria (2)

(*) Komentarz do skróconego oznaczenia, np. A7W35:

„A” powietrze, „7” temperatura na wlocie (temperatura termometru suchego) w °C, „W” woda, „35” temperatura na wylocie w °C.

(Testowany) Ta próbka testowa została przetestowana w Laboratorium Badawczym.

(Nietestowany) Dane techniczne zostały zadeklarowane przez Producenta zgodnie ze specyfikacją typoszeregu i nie były sprawdzane przez Laboratorium Badawcze.

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

Brno, 25.06.2024 r.

[nieczytelny podpis]

Mario Jankola

Kierownik ds. urządzeń grzewczych i produktów budowlanych

- KONIEC CERTYFIKATU TESTÓW -

[okrągła pieczęć]

O-B-000925-24, strona 2 (2)

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne,

Hudcova 424/56b, 621 00 Brno, Republika Czeska

www.szutest.cz

Nr rep. 2054/24

Stwierdzam zgodność powyższego przekładu z oryginałem

Tytułem wynagrodzenia pobrano -

Augustów, dnia: 05.09.2024 r.

Tłumacz przysięgły języka angielskiego – mgr Piotr Szlauzys (nr TP/4453/05)



Tłumaczenie przysięgłe z jęz. angielskiego na jęz. polski

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne, Brno, Republika Czeska

CERTYFIKAT TESTÓW

Numer: O-B-000926-24

Klient KOŁTON SPÓŁKA KOMANDYTOWA
ul. Sosnowa 2
34-480 Jabłonka
POLSKA

Produkt Zewnętrzne pompy ciepła typu powietrze/woda – monoblok

Oznaczenie typu/
znak towarowy **Airadapt 3-12**
Airadapt 4-16
Airadapt 4-20

Metody testowe ČSN EN 14511-2:2019, ČSN EN 14511-3:2019,
ČSN EN 14511-4:2019, ČSN EN 12102-1:2023,
Przepisy dotyczące badań EHPA – Badanie pomp ciepła typu powietrze/woda,
wersja 2.4a
Raporty z testów:

Podstawa certyfikatu 39-16823/T z 2023-06-21
39-17801/H z 2024-06-18
Dokumentacja techniczna KOŁTON SPÓŁKA KOMANDYTOWA

Zastosowana temp. **NISKA TEMPERATURA**
(Referencyjna temperatura wody 35°C)

Referencyjny sezon grzewczy „A” = umiarkowany / „W” = ciepły / „C” = chłodny
(referencyjny warunek projektowy dla ogrzewania $T_{designh} = -10\text{ °C}/+2\text{ °C}/-22\text{ °C}$)

Specyfikacja warunków:

Sterowanie prędkością sprężarki	Zmienne	Przepływ objętościowy wody grzewczej (wewnętrzny wymiennik ciepła)	Zmienny
Temperatura wody na wylocie (wewnętrzny wymiennik ciepła)	Zmienna	Objętość przepływu cieczy źródłowej (zewnętrzny wymiennik ciepła)	-
Funkcja	Odwracalna		

[okrągła pieczęć]

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Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne,
Hudcova 424/56b, 621 00 Brno, Republika Czeska

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[Hologram]



Wyniki:

Zastosowanie niskiej temperatury (Referencyjna temperatura wody 35°C)

Nazwy modeli			Kolton Airadapt 3-12 (Nietestowany)	Kolton Airadapt 4-16 (Nietestowany)	Kolton Airadapt 4-20 (Testowany)
Ogrzewanie przy pełnym obciążeniu	$P_{designh}$ [kW]	A	8,98	10,08	13,85
		W	10,10	13,05	16,05
		C	9,49	11,65	14,42
Temperatura biwalentna	$T_{bivalent}$ [°C]	A	-10	-10	-7
		W	2	2	2
		C	-15	-15	-15
Sezonowy współczynnik efektywności	SCOP [-]	A	4,58	4,64	4,66
		W	6,31	6,52	6,34 (Nietestowany)
		C	4,26	4,26	4,30 (Nietestowany)
Sezonowa efektywność energetyczna ogrzewania pomieszczeń	n_s [%]	A	180,2	182,6	183,5
		W	249,4	257,6	250,7 (Nietestowany)
		C	167,3	167,4	169,0 (Nietestowany)

(Testowany) Ta próbka testowa została przetestowana w Laboratorium Badawczym.

(Nietestowany) Dane techniczne zostały zadeklarowane przez Producenta zgodnie ze specyfikacją typoszeręgu i nie były sprawdzane przez Laboratorium Badawcze.

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne, potwierdza niniejszym Certyfikatem Testów, że badanie danego produktu zostało przeprowadzone z wynikami podanymi powyżej. Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne, jest akredytowanym Laboratorium Badawczym 1045.1. Brno, 25.06.2024 r.

[nieczytelny podpis]

Mario Jankola

Kierownik ds. urządzeń grzewczych i produktów budowlanych
- KONIEC CERTYFIKATU TESTÓW -

[okrągła pieczęć]

O-B-000926-24, strona 2 (2)

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne,
Hudcova 424/56b, 621 00 Brno, Republika Czeska

www.szutest.cz

Nr rep. 2055/24 *

Stwierdzam zgodność powyższego przekładu z oryginałem

Tytułem wynagrodzenia pobrano -

Augustów, dnia: 05.09.2024 r.

Tłumacz przysięgły języka angielskiego – mgr Piotr Szlauzys (nr TP/4453/05)



Tłumaczenie przysięgłe z jęz. angielskiego na jęz. polski

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne, Brno, Republika Czeska

CERTYFIKAT TESTÓW

Numer: O-B-000927-24

Klient KOŁTON SPÓŁKA KOMANDYTOWA
ul. Sosnowa 2
34-480 Jabłonka
POLSKA

Produkt Zewnętrzne pompy ciepła typu powietrze/woda – monoblok

Oznaczenie typu/
znak towarowy **Airadapt 3-12**
Airadapt 4-16
Airadapt 4-20

Metody testowe ČSN EN 14511-2:2019, ČSN EN 14511-3:2019,
ČSN EN 14511-4:2019, ČSN EN 12102-1:2023, Przepisy dotyczące badań EHPA –
Badanie pomp ciepła typu powietrze/woda, wersja 2.4a
Raporty z testów:

Podstawa certyfikatu 39-16823/T z 2023-06-21
39-17801/H z 2024-06-18
Dokumentacja techniczna KOŁTON SPÓŁKA KOMANDYTOWA

Zastosowana temp. **ŚREDNIA TEMPERATURA**
(Referencyjna temperatura wody 55°C)

Referencyjny sezon grzewczy „A” = umiarkowany / „W” = ciepły / „C” = chłodny
(referencyjny warunek projektowy dla ogrzewania $T_{designh} = -10\text{ °C}/+2\text{ °C}/-22\text{ °C}$)

Specyfikacja warunków:

Sterowanie prędkością sprężarki	Zmienne	Przepływ objętościowy wody grzewczej (wewnętrzny wymiennik ciepła)	Zmienny
Temperatura wody na wylocie (wewnętrzny wymiennik ciepła)	Zmienna	Objętość przepływu cieczy źródłowej (zewnętrzny wymiennik ciepła)	-
Funkcja	Odwracalna		

[okrągła pieczęć]

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Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne,
Hudcova 424/56b, 621 00 Brno, Republika Czeska
www.szutest.cz

[Hologram]



Wyniki:

Zastosowanie średniej temperatury (Referencyjna temperatura wody 55°C)

Nazwy modeli			Kołton Airadapt 3-12 (Nietestowany)	Kołton Airadapt 4-16 (Nietestowany)	Kołton Airadapt 4-20 (Testowany)
Ogrzewanie przy pełnym obciążeniu	$P_{designh}$ [kW]	A	8,15	10,02	12,30
		W	9,89	12,46	16,01
		C	9,54	11,41	14,20
Temperatura biwalentna	$T_{bivalent}$ [°C]	A	-10	-10	-10
		W	2	2	2
		C	-15	-15	-15
Sezonowy współczynnik efektywności	SCOP [-]	A	3,83	3,83	3,93
		W	4,67	4,56	4,59 (Nietestowany)
		C	3,55	3,51	3,60 (Nietestowany)
Sezonowa efektywność energetyczna ogrzewania pomieszczeń	n_s [%]	A	150,1	150,2	154,1
		W	184,0	179,2	180,8 (Nietestowany)
		C	138,9	137,3	140,8 (Nietestowany)

(Testowany) Ta próbka testowa została przetestowana w Laboratorium Badawczym.

(Nietestowany) Dane techniczne zostały zadeklarowane przez Producenta zgodnie ze specyfikacją typoszeręgu i nie były sprawdzane przez Laboratorium Badawcze.

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne, potwierdza niniejszym Certyfikatem Testów, że badanie danego produktu zostało przeprowadzone z wynikami podanymi powyżej. Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne, jest akredytowanym Laboratorium Badawczym 1045.1. Brno, 25.06.2024 r.

[nieczytelny podpis]

Mario Jankola

Kierownik ds. urządzeń grzewczych i produktów budowlanych
- KONIEC CERTYFIKATU TESTÓW -

[okrągła pieczęć]

O-B-000927-24, strona 2 (2)

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne,
Hudcova 424/56b, 621 00 Brno, Republika Czeska

www.szutest.cz

Nr rep. 2057/24

Stwierdzam zgodność powyższego przekładu z oryginałem

Tytułem wynagrodzenia pobrano -

Augustów, dnia: 05.09.2024 r.

Tłumacz przysięgły języka angielskiego – mgr Piotr Szlauzyś (nr TP/4453/05)



Tłumaczenie przysięgłe z jęz. angielskiego na jęz. polski

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne, Brno, Republika Czeska

CERTYFIKAT TESTÓW

Numer: O-B-01287-24

Klient KOŁTON SPÓŁKA KOMANDYTOWA
ul. Sosnowa 2
34-480 Jabłonka
POLSKA

Produkt Zewnętrzne pompy ciepła typu powietrze/woda – monoblok

Oznaczenie typu/
znak towarowy **Airadapt 4-20**

Metody testowe ČSN EN 14511-4:2023, ČSN EN 12102-1:2023
Raporty z testów:
Podstawa certyfikatu 39-17801/T z 2024-07-26
39-17801/H z 2024-06-18
Dokumentacja techniczna KOŁTON SPÓŁKA KOMANDYTOWA

Zastosowana temp. **ŚREDNIA TEMPERATURA**
(Referencyjna temperatura wody 55°C)

Poziom mocy akustycznej w warunkach temperaturowych A7W55*:

Zewnętrzne pompy ciepła typu powietrze/woda – monoblok AirAdapt 4-20
-jednostka zewnętrzna-
Poziom mocy akustycznej LWA 54,5 ± 1,5 dB(A)
Klasa dokładności Inżynieria (klasa 2)

(*) Komentarz do skróconego oznaczenia: np. A7/W55

A (powietrze), 7 (powietrze wejściowe - temperatura termometru suchego w °C) / W (woda),
55 (wyjściowa temperatura wody grzewczej (chłodzącej) w °C)
[okrągła pieczęć]

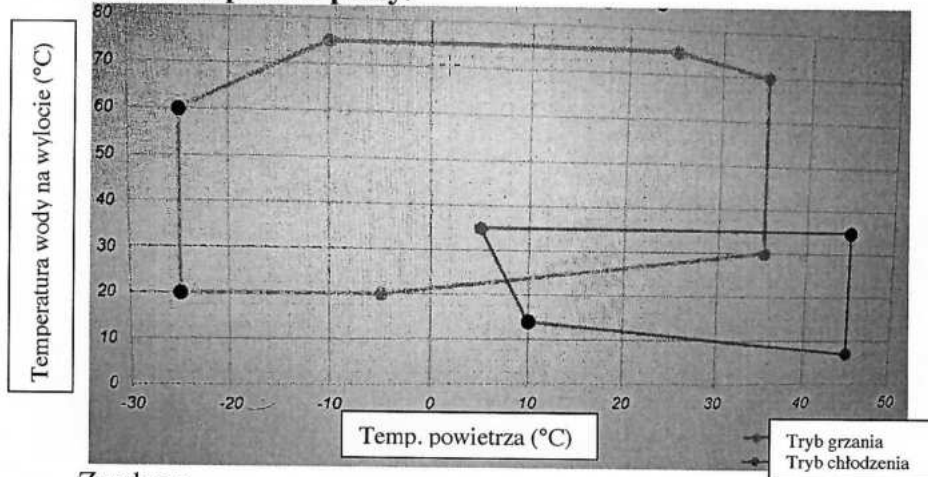
O-B-01287-24, strona 1 (2)

[Hologram]

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne,
Hudcova 424/56b, 621 00 Brno, Republika Czeska
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Zakres temperatur pracy:



Natężenie przepływu cieczy:

w zewnętrznym wymienniku ciepła

Minimalne 1,000 m³/h

Maksymalne 3,200 m³/h

w wewnętrznym wymienniku ciepła

Minimalne 1,000 m³/h

Maksymalne 3,200 m³/h

Zgodne z

ČSN EN 14511-4:2023, artykuły: 4.2.1.2, 4.2.1.3

Specyfikacja warunków:

Sterowanie prędkością sprężarki	Zmienne	Przepływ objętościowy wody grzewczej (wewnętrzny wymiennik ciepła)	Zmienny
Temperatura wody na wylocie (wewnętrzny wymiennik ciepła)	Zmienna	Objętość przepływu cieczy źródłowej (zewnętrzny wymiennik ciepła)	-
Funkcja	Odwracalna		

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

Brno, 30.07.2024 r.

[nieczytelny podpis]

Mario Jankola

Kierownik ds. urządzeń grzewczych i produktów budowlanych

- KONIEC CERTYFIKATU TESTÓW -

[okrągła pieczęć]

O-B-01287-24, strona 2 (2)

Instytut Testów Inżynieryjnych, Przedsiębiorstwo Publiczne,

Hudcova 424/56b, 621 00 Brno, Republika Czeska

www.szutest.cz

Nr rep. 2056/24

Stwierdzam zgodność powyższego przekładu z oryginałem

Tytułem wynagrodzenia pobrano -

Augustów, dnia: 05.09.2024 r.

Tłumacz przysięgły języka angielskiego – mgr Piotr Szlauzys (nr TP/4453/05)

