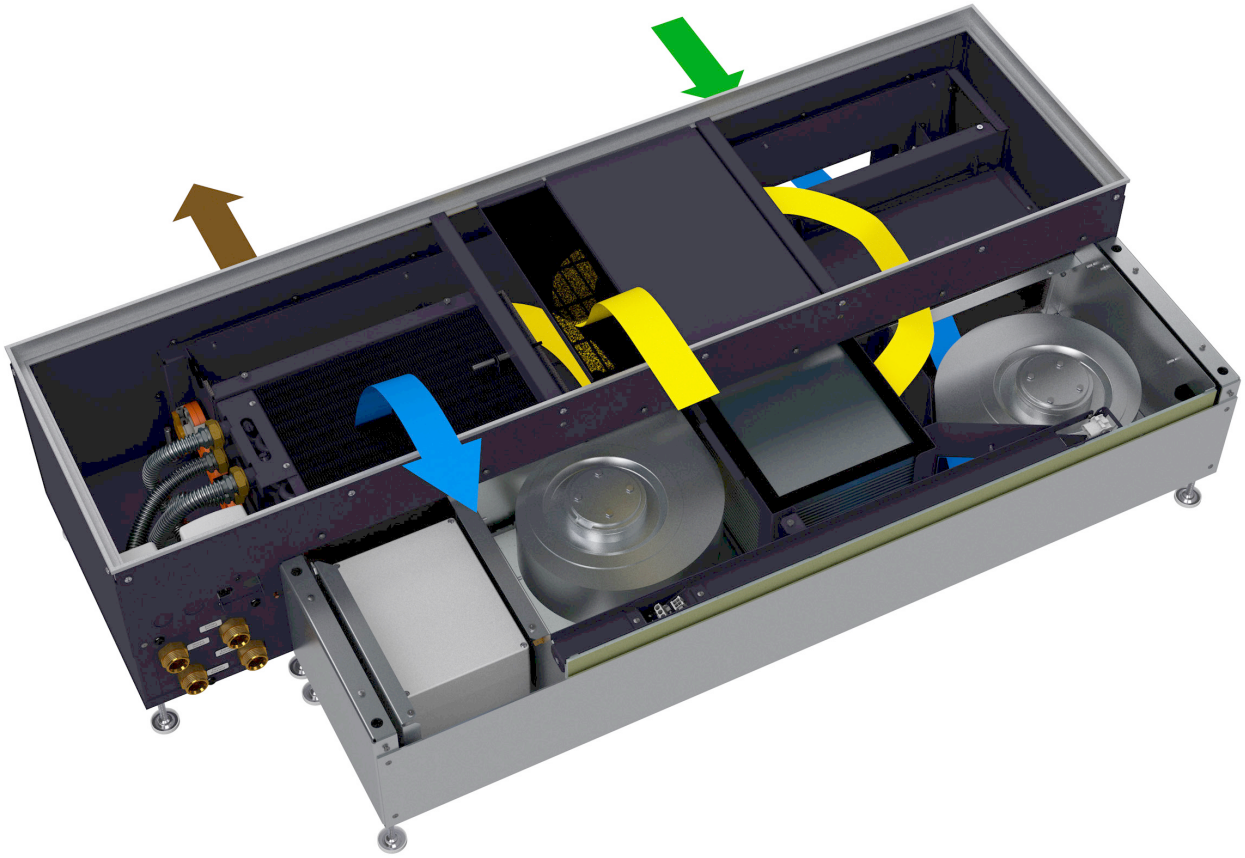
Decentralised Ventilation Units



KAMPMANN

Model UZS ventilation unit for floor installation.
Decentralised ventilation unit for floor installation, for heating, cooling and forced convection ventilation.

Description

Decentralised units are suitable for a broad range of applications within the context of modern building services engineering. In new buildings, their compact and innovative designs allow them to be highly adaptable for integration into the facade structure. Meanwhile, the restricted spaces that accompany renovation tasks in old buildings often make them the only solution when it comes to room ventilation.

The UZS has been designed for use in false floors. Its compact design and useful option of integration into the floor area enables build-ings to incorporate floor-to-ceiling glass facades. A direct external air connection via the facade also makes it possible to do away with complicated networks of air ducts.

A 2-pipe or 4-pipe convector element ensures the temperature of the external air is controlled as necessary.

What is more, the low-noise addition of secondary air by means of an integrated secondary air fan unit means high thermal loads can be removed. Used in conjunction with a conventional floor convector (such as the emcotherm model KQKL), this model is able to increase the useful power supplied to the room several times over. The customisable, flexible control options enabled by the emcovent control units or an existing building management system make the emcovent UZS a particularly user-friendly and energy-efficient unit.

All components conform to VDI 6022.

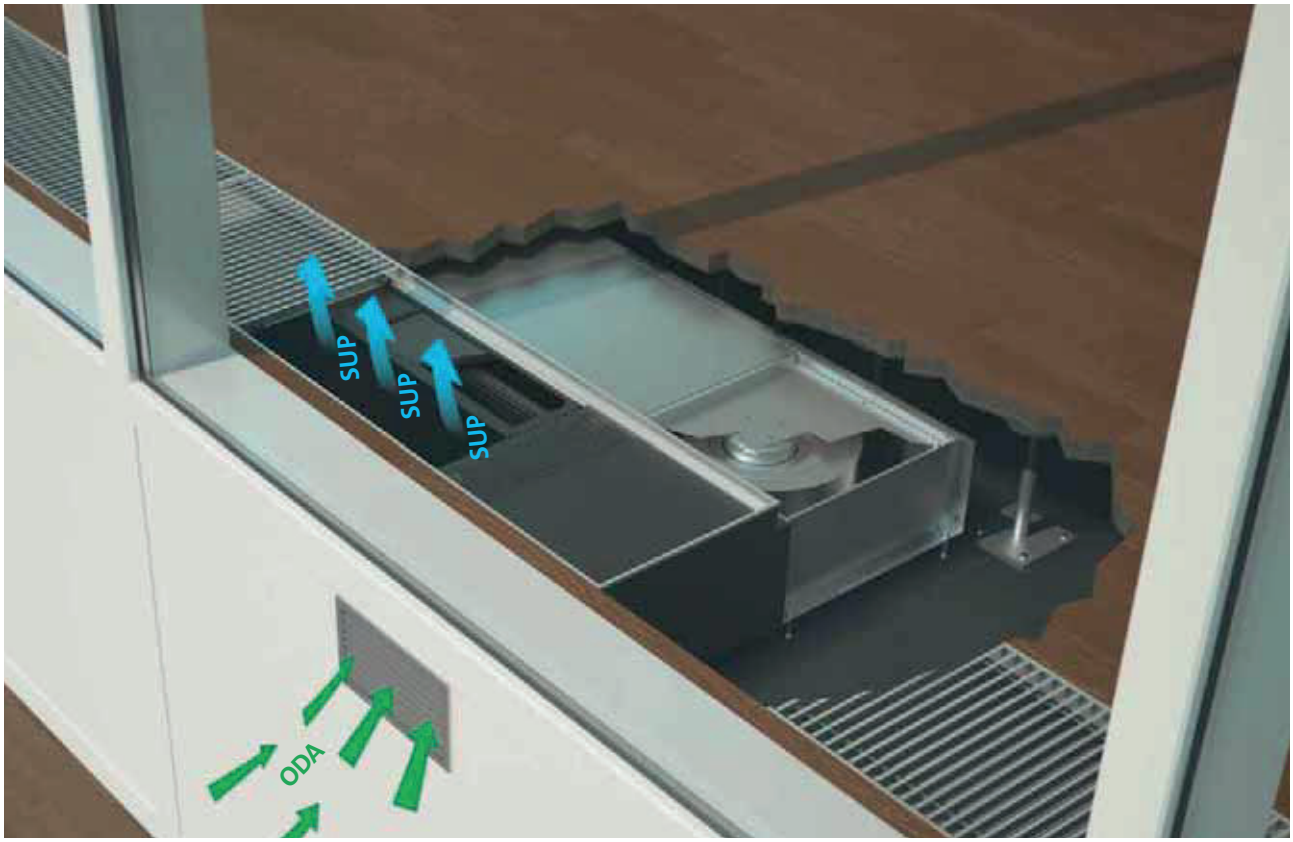
Application areas

Decentralised floor ventilation units are ideally suited to areas with high demands in terms of room air quality and thermal comfort.

- Offices and administration rooms
- Business premises
- Reception areas and foyers
- Exhibition rooms
- Rooms requiring external air
- Rooms where windows cannot be opened
- Rooms whose appearance and layout should not be disturbed by heating components.

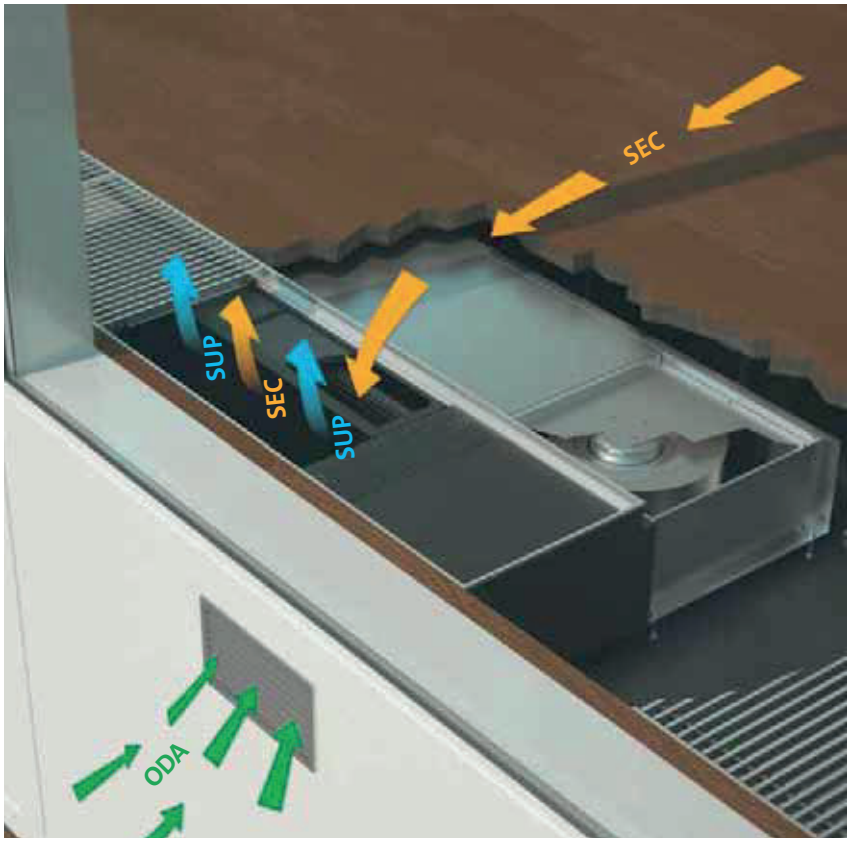
Product benefits

- Eurokonus valve connection for time-saving valve installation
- System for heating, cooling and ventilation
- High caloric output with low acoustic load
- Pleasant room climate thanks to air supply in the vicinity of the facade
- Load-bearing
- For use in false floors
- Can be adapted to suit the specific requirements of the building
- Infinitely adjustable control
- Low installation depth
- Energy-efficient EC fan

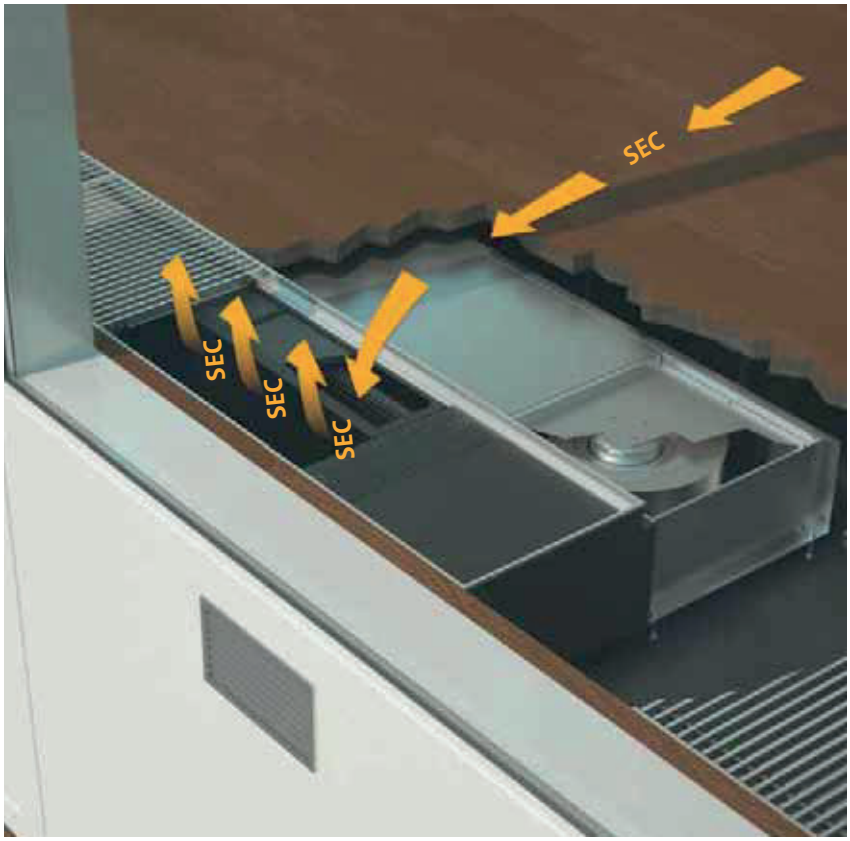


Method of operation

Outdoor air operation only:
The external air (ODA) is drawn in through an opening in the facade, by means of an EC radial fan that controls flow volume, and passes through a filter element (F7). The supply air opening is closed by a return spring motor when the unit is switched off (normal-ly closed). The energy-saving, flow volume-controlling EC fan units compensate for any pressure fluctuations at the facade. The air then reaches a sound absorption unit before flowing under a heat exchanger (available as a 2-pipe or 4-pipe system) and being heated or cooled. It can now be supplied to the room via the entire duct length in the vicinity of the facade.

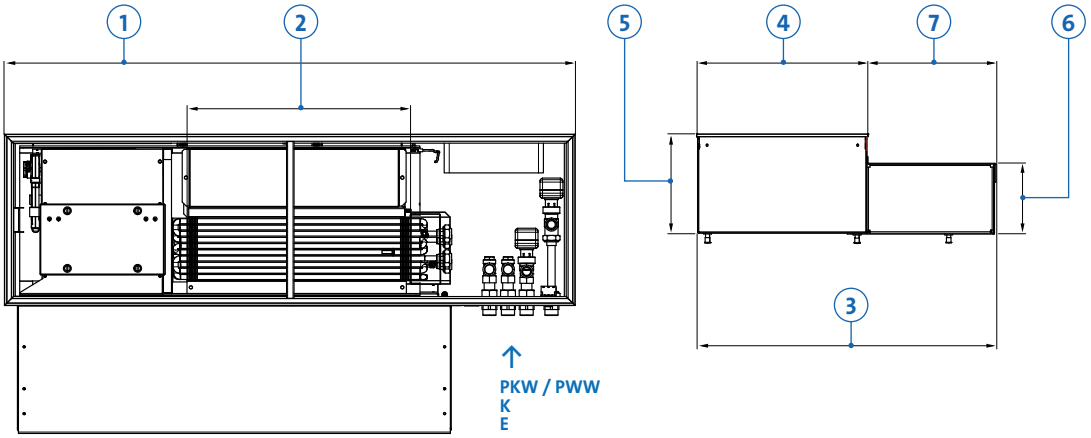


Mixed air operation only:
This type of operation involves a combination of outdoor air (ODA) and secondary air operation (SEC). These two air volume flows are merged underneath the convector element. The mixture of room air and secondary air (SEC) increases the useful power of the unit several times over. The mixed air (MIA) is then adjusted to the required temperature by the convector element and supplied to the room in the vicinity of the facade.



Secondary air operation only:
In the case of secondary air operation, the room air is drawn in by a crossflow fan at the room side, passes through the heat exchanger, and is fed into the room in the vicinity of the facade.

Ventilation unit for floor installation, model UZS – configuration and component description



No.	Dimension	Value	Unit
	Size	**345**	–
1	Duct length	1150	mm
2	Ribbed convector length	451	mm
3	Width (total)	603	mm
4	Width (visible area)	345	mm
5	Height (total)	200	mm
6	Height (underneath floor)	143	mm
7	Width of sound insulating duct	258	mm

Dimensions and position of the external air connection can be individually adapted.

Key for connection options

PCW = pump cold water
PWW = pump warm water
C = condensate connection (if required)
E = electrical connection

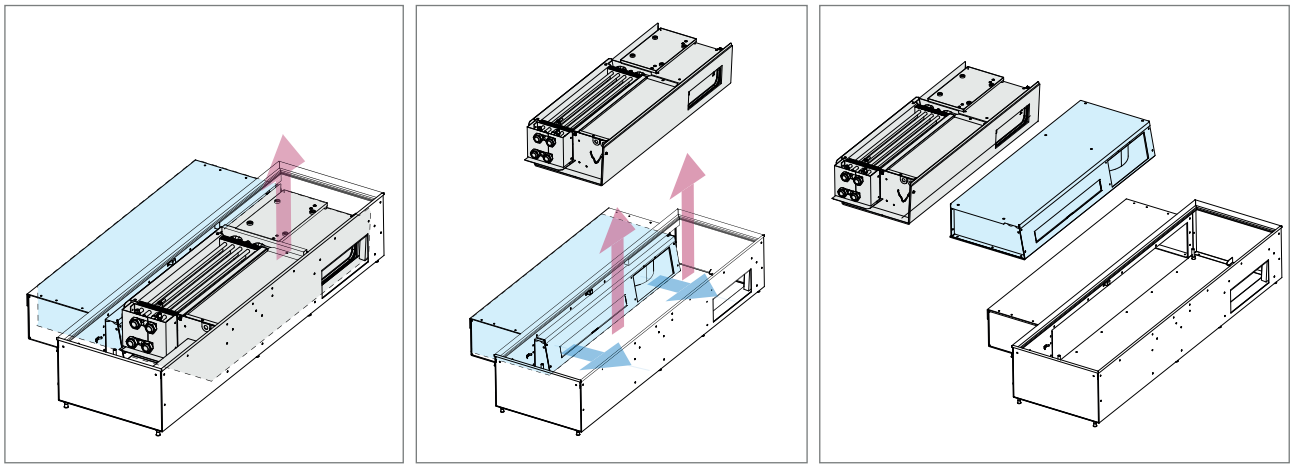
Available as an option:
Preinstalled water connection
Water connections preinstalled at the factory are available as accessories for emcotherm floor convectors. The connection set consists of:

1. Thermostat valve
   Standard TVU-E or TVU-D
   (optional: TVU-V-E or TVU-V-D)
2. Thermoelectric actuator, model TS, 230 V (optional, subject to an additional charge: model TS, 24 V)
3. Shutoff return screw connection
4. Connections inside tray, fully piped and leading outward (connection ¾“ AG); testing for leaks

Benefits:

- Huge time savings during installation
- Dirt cannot get into the floor tray during installation as the tray is able to remain sealed
- The media and electrical connections are supplied outside of the floor tray
- Media connections are fully tested for leaks at the factory

Available as an option:
Ready-to-use electrical version
All electrical components are pre-wired at the factory and attached to the exterior of the tray by means of screw-in connectors. The customer can carry out wiring work outside the tray easily using the mating connectors supplied.



Schema of inspection option

UZS – inspection option
During the development of the UZA, ease of installation and maintenance was placed high on the agenda.
Filter units, actuators, damper registers and so on can be accessed with ease by removing the cover grid.
If required, maintenance can also be performed on the supply air fan units by removing the function modules via the cover grid.
What is more, it is not even necessary to disconnect the water-side connection, meaning that huge time savings can be made when draining the heating system too. The ability to remove all the unit components simply by taking off the cover grid saves the need for additional inspection openings in the floor area.
As a result, the floor covering (carpet, tiles, etc.) can be coordinated directly with the floor unit itself. It is even pos-sible to put down screed, assuming minimum installation height specifi-cations are adhered to.

In most cases, units are integrated into the building structure during the preliminary building work, something which often results in them getting extremely dirty. However, the fixed piping system described previously allows piping to be installed quickly at the water side without the need to reach inside the tray or, therefore, remove the installation protection cover. As a result, not only is the installation process guaranteed to be quick, but it also prevents the units from getting dirty.

As a means of providing electrical components with full protection against damage caused by dirt during preliminary building work, function units containing electrical components can be supplied further down the line thanks to the modular unit structure. The empty housing with installation protection cover is installed and fastened in place during the preliminary building work.
It is possible to connect the piping at the water side to the tray as early as this point. Additionally, the electrical cables required come fully pre-wired and are attached to the exterior of the tray by means of screw-in connectors. The customer can carry out wiring work outside the tray easily using the mating connectors supplied.
Once the preliminary building work is complete, the function units can then be simply inserted and connected up.

The images above illustrate how function units are removed from the UZA.
The first function unit can be removed from above once the cover grating has been removed and the damper register has been folded back. Following this, the second function unit can be pulled into the front empty tray area and then also removed from above.

UZS (width 345 mm, length 1150 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data, summer (cooling)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**6**
Width	m	5.00	Return temperature	t_R	°C	**12**
Depth	m	4.00	Air inlet temperature, secondary air	t_{SEC}	°C	26
Surface area	m^2	20	Relative humidity, secondary air	φ_{SEC}	%	50
Volume	m^3	60	Air inlet temperature, external air	t_{ODA}	°C	32
Distance from sound source[1)]	m	3.00	Relative humidity, external air	φ_{ODA}	%	40

[1)] Direction factor Q=4 (sphere quadrant)

The following values can be derived on the basis of the specified building and climate parameters:

2-pipe and 4-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
External air component	$\dot{V}_{ODA}$	m^3/h	0	0	0	0	0	30	60	90	120
Secondary air component	$\dot{V}_{SEC}$	m^3/h	38	79	130	180	220	0	0	0	0
Supply air quantity	$\dot{V}_{sup}$	m^3/h	38	79	130	180	220	30	60	90	120
Sound power level	L_{WA}	dB(A)	27	30	38	48	56	29	29	35	42
125 Hz	L_{WA125}	dB	30	35	39	44	48	33	38	45	51
250 Hz	L_{WA250}	dB	20	29	37	43	48	35	33	38	45
500 Hz	L_{WA500}	dB	18	25	36	46	56	21	24	31	37
1000 Hz	L_{WA1000}	dB	21	24	33	43	49	13	19	28	35
2000 Hz	L_{WA2000}	dB	15	18	29	40	47	13	14	22	32
4000 Hz	L_{WA4000}	dB	18	22	27	33	41	18	16	17	23
8000 Hz	L_{WA8000}	dB	23	23	23	26	33	23	23	23	23
Sound pressure level[2)]	L_{PA}	dB(A)	21	24	32	42	50	23	23	29	36
Power consumption	p_{el}	W	1	2	5	8	13	3	4	6	10
2-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
Supply air temperature	t_{SUP}	°C	9	11	12	13	13	7	10	11	12
Condensate quantity	$\dot{m}_K$	l/h	0.2	0.3	0.4	0.5	0.6	0.2	0.4	0.6	0.7
Water mass flow rate	$\dot{m}_W$	l/h	50	89	131	165	188	59	102	141	177
Pressure loss, water side	Δp_W	kPa	0.0	0.6	1.4	2.3	2.9	0.2	0.9	1.7	2.6
Cooling power, sensitive	$\dot{Q}_{K,sens}$	W	216	400	608	793	927	250	443	625	796
Cooling power, latent	$\dot{Q}_{K,lat}$	W	134	223	307	362	388	163	271	365	445
Cooling power, total	$\dot{Q}_K$	**W**	**351**	**623**	**915**	**1155**	**1315**	**413**	**714**	**990**	**1241**
Useful cooling power	$\dot{Q}_{K,nutz}$	**W**	**212**	**391**	**595**	**775**	**907**	**182**	**309**	**425**	**531**
4-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
Supply air temperature	t_{SUP}	°C	9	11	12	13	14	8	10	12	12
Condensate quantity	$\dot{m}_K$	l/h	0.2	0.3	0.4	0.5	0.6	0.2	0.4	0.6	0.7
Water mass flow rate	$\dot{m}_W$	l/h	49	87	129	163	186	57	100	139	175
Pressure loss, water side	Δp_W	kPa	0.7	3.2	6.9	10.6	13.5	1.2	4.2	7.9	12.1
Cooling power, sensitive	$\dot{Q}_{K,sens}$	W	211	394	603	787	922	243	435	617	788
Cooling power, latent	$\dot{Q}_{K,lat}$	W	129	217	300	355	380	156	264	357	436
Cooling power, total	$\dot{Q}_K$	**W**	**340**	**611**	**903**	**1142**	**1302**	**399**	**699**	**974**	**1225**
Useful cooling power	$\dot{Q}_{K,nutz}$	**W**	**206**	**386**	**589**	**770**	**902**	**175**	**301**	**418**	**524**

[2)] Approximation in acc. with VDI 2081

Mixed air operation. 2-pipe and 4-pipe system																			
30	30	30	30	30	60	60	60	60	60	90	90	90	90	90	120	120	120	120	120
20	62	115	170	218	10	52	105	160	208	10	31	93	147	199	5	16	68	134	188
50	92	145	200	248	70	112	165	220	268	100	121	183	237	289	125	136	188	254	308
31	33	39	48	56	31	33	39	48	56	36	36	40	48	56	42	42	43	49	56
35	37	40	45	48	38	40	41	45	48	45	46	46	48	50	51	51	51	52	53
35	36	39	44	48	33	35	39	44	48	38	39	41	44	48	45	45	45	47	49
22	26	36	46	56	25	27	36	46	56	31	32	37	47	56	37	37	39	47	56
21	24	33	43	49	23	25	33	43	49	29	30	34	43	49	36	36	37	44	49
17	19	29	40	47	17	20	29	40	47	22	23	30	41	47	32	32	33	41	47
21	23	27	33	41	20	23	27	33	41	21	23	27	33	41	24	26	28	33	41
26	26	26	28	33	26	26	26	28	33	26	26	26	28	33	26	26	26	28	33
25	26	32	42	50	25	26	32	42	50	30	30	34	42	50	36	36	37	43	50
4	6	8	12	17	5	6	9	12	17	7	9	11	14	19	11	12	15	18	23
Mixed air operation. 2-pipe system																			
10	11	12	13	14	11	12	13	14	14	12	12	13	14	15	12	13	14	14	15
0.3	0.4	0.5	0.6	0.6	0.4	0.5	0.6	0.7	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.7
77	114	154	188	212	110	143	179	210	231	149	164	202	229	248	181	188	218	247	264
0.4	1.1	2.0	2.9	3.6	1.0	1.7	2.6	3.5	4.2	1.9	2.2	3.3	4.2	4.8	2.7	2.9	3.8	4.8	5.4
336	512	719	911	1063	483	650	844	1026	1168	663	741	958	1127	1273	814	852	1027	1225	1368
206	285	359	406	421	289	354	412	444	447	379	405	459	476	466	450	461	496	505	481
541	**797**	**1078**	**1317**	**1484**	**772**	**1003**	**1256**	**1469**	**1615**	**1041**	**1146**	**1417**	**1603**	**1739**	**1264**	**1313**	**1523**	**1730**	**1848**
266	**440**	**642**	**831**	**979**	**349**	**513**	**704**	**882**	**1022**	**463**	**540**	**754**	**920**	**1063**	**549**	**587**	**760**	**955**	**1096**
Mixed air operation. 4-pipe system																			
10	12	13	13	14	11	12	13	14	14	12	12	13	14	15	13	13	14	14	15
0.3	0.4	0.5	0.6	0.6	0.4	0.5	0.6	0.7	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.7
75	112	152	186	210	108	141	177	208	229	146	161	200	227	246	178	185	215	245	262
2.4	5.3	9.3	13.5	16.9	4.9	8.1	12.4	16.5	19.7	8.7	10.4	15.5	19.4	22.5	12.5	13.4	17.6	22.3	25.2
329	506	713	906	1057	476	643	838	1020	1162	655	734	951	1121	1266	806	845	1020	1218	1361
199	277	352	398	414	281	346	404	436	438	370	396	451	468	457	441	452	487	496	472
528	**784**	**1064**	**1304**	**1471**	**757**	**989**	**1242**	**1455**	**1601**	**1025**	**1130**	**1402**	**1588**	**1724**	**1248**	**1297**	**1507**	**1714**	**1833**
260	**434**	**636**	**825**	**973**	**342**	**506**	**697**	**876**	**1016**	**456**	**533**	**748**	**914**	**1057**	**542**	**580**	**753**	**949**	**1089**

UZS (width 345 mm, length 1150 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data, summer (cooling)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**10**
Width	m	5.00	Return temperature	t_R	°C	**15**
Depth	m	4.00	Air inlet temperature, secondary air	t_{SEC}	°C	26
Surface area	m^2	20	Relative humidity, secondary air	φ_{SEC}	%	50
Volume	m^3	60	Air inlet temperature, external air	t_{ODA}	°C	32
Distance from sound source[1)]	m	3.00	Relative humidity, external air	φ_{ODA}	%	40

[1)] Direction factor Q=4 (sphere quadrant)

The following values can be derived on the basis of the specified building and climate parameters:

2-pipe and 4-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
External air component	$\dot{V}_{ODA}$	m^3/h	0	0	0	0	0	30	60	90	120
Secondary air component	$\dot{V}_{SEC}$	m^3/h	38	79	130	180	220	0	0	0	0
Supply air quantity	$\dot{V}_{sup}$	m^3/h	38	79	130	180	220	30	60	90	120
Sound power level	L_{WA}	dB(A)	27	30	38	48	56	29	29	35	42
125 Hz	L_{WA125}	dB	30	35	39	44	48	33	38	45	51
250 Hz	L_{WA250}	dB	20	29	37	43	48	35	33	38	45
500 Hz	L_{WA500}	dB	18	25	36	46	56	21	24	31	37
1000 Hz	L_{WA1000}	dB	21	24	33	43	49	13	19	28	35
2000 Hz	L_{WA2000}	dB	15	18	29	40	47	13	14	22	32
4000 Hz	L_{WA4000}	dB	18	22	27	33	41	18	16	17	23
8000 Hz	L_{WA8000}	dB	23	23	23	26	33	23	23	23	23
Sound pressure level[2)]	L_{PA}	dB(A)	21	24	32	42	50	23	23	29	36
Power consumption	p_{el}	W	1	2	5	8	13	3	4	6	10
2-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
Supply air temperature	t_{SUP}	°C	12	14	15	16	16	11	13	14	15
Condensate quantity	$\dot{m}_K$	l/h	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.5
Water mass flow rate	$\dot{m}_W$	l/h	44	75	107	131	146	58	98	134	166
Pressure loss, water side	Δp_W	kPa	0.0	0.4	0.9	1.4	1.8	0.1	0.8	1.5	2.3
Cooling power, sensitive	$\dot{Q}_{K,sens}$	W	172	318	484	630	737	212	376	530	675
Cooling power, latent	$\dot{Q}_{K,lat}$	W	83	119	139	133	112	126	197	253	296
Cooling power, total	$\dot{Q}_K$	**W**	**255**	**437**	**622**	**763**	**849**	**339**	**573**	**783**	**971**
Useful cooling power	$\dot{Q}_{K,nutz}$	**W**	**168**	**311**	**473**	**616**	**721**	**146**	**244**	**334**	**416**
4-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
Supply air temperature	t_{SUP}	°C	13	14	15	16	16	12	14	15	15
Condensate quantity	$\dot{m}_K$	l/h	0.1	0.2	0.2	0.2	0.1	0.2	0.3	0.4	0.5
Water mass flow rate	$\dot{m}_W$	l/h	42	73	105	129	144	56	96	132	164
Pressure loss, water side	Δp_W	kPa	0.4	2.2	4.6	6.9	8.4	1.1	3.9	7.1	10.7
Cooling power, sensitive	$\dot{Q}_{K,sens}$	W	168	314	479	626	733	206	369	524	669
Cooling power, latent	$\dot{Q}_{K,lat}$	W	77	113	132	127	105	119	189	244	287
Cooling power, total	$\dot{Q}_K$	**W**	**245**	**426**	**611**	**753**	**838**	**325**	**558**	**768**	**956**
Useful cooling power	$\dot{Q}_{K,nutz}$	**W**	**164**	**307**	**469**	**612**	**717**	**139**	**238**	**328**	**410**

[2)] Approximation in acc. with VDI 2081

Mixed air operation, 2-pipe and 4-pipe system																			
30	30	30	30	30	60	60	60	60	60	90	90	90	90	90	120	120	120	120	120
20	62	115	170	218	10	52	105	160	208	10	31	93	147	199	5	16	68	134	188
50	92	145	200	248	70	112	165	220	268	100	121	183	237	289	125	136	188	254	308
31	33	39	48	56	31	33	39	48	56	36	36	40	48	56	42	42	43	49	56
35	37	40	45	48	38	40	41	45	48	45	46	46	48	50	51	51	51	52	53
35	36	39	44	48	33	35	39	44	48	38	39	41	44	48	45	45	45	47	49
22	26	36	46	56	25	27	36	46	56	31	32	37	47	56	37	37	39	47	56
21	24	33	43	49	23	25	33	43	49	29	30	34	43	49	36	36	37	44	49
17	19	29	40	47	17	20	29	40	47	22	23	30	41	47	32	32	33	41	47
21	23	27	33	41	20	23	27	33	41	21	23	27	33	41	24	26	28	33	41
26	26	26	28	33	26	26	26	28	33	26	26	26	28	33	26	26	26	28	33
25	26	32	42	50	25	26	32	42	50	30	30	34	42	50	36	36	37	43	50
4	6	8	12	17	5	6	9	12	17	7	9	11	14	19	11	12	15	18	23
Mixed air operation. 2-pipe system																			
13	14	15	16	16	14	15	16	16	17	15	15	16	17	17	15	16	16	17	17
0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.4	0.4	0.4	0.3	0.2	0.5	0.5	0.4	0.3	0.2
72	100	129	152	166	104	128	153	172	182	139	150	175	189	197	169	173	191	205	210
0.3	0.8	1.4	1.9	2.3	0.9	1.4	2.0	2.4	2.7	1.6	1.9	2.5	2.9	3.1	2.4	2.5	3.0	3.4	3.5
279	418	581	734	853	407	538	690	833	945	560	621	790	922	1036	689	719	855	1009	1119
141	165	173	153	113	200	210	202	168	115	253	251	228	180	111	294	290	260	189	104
420	**583**	**754**	**887**	**966**	**608**	**748**	**893**	**1001**	**1060**	**813**	**872**	**1018**	**1103**	**1146**	**983**	**1009**	**1114**	**1198**	**1222**
212	**349**	**508**	**657**	**774**	**276**	**404**	**555**	**695**	**804**	**364**	**424**	**592**	**722**	**833**	**429**	**459**	**594**	**746**	**854**
Mixed air operation. 4-pipe system																			
13	15	15	16	17	14	15	16	16	17	15	15	16	17	17	15	16	16	17	18
0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.4	0.4	0.3	0.3	0.2	0.5	0.5	0.4	0.3	0.2
70	98	127	150	164	102	126	151	169	180	137	147	172	187	194	166	170	189	203	207
2.0	4.1	6.7	9.1	10.7	4.4	6.6	9.2	11.4	12.7	7.7	8.8	11.7	13.6	14.6	11.0	11.5	13.9	15.8	16.4
273	413	577	729	848	401	532	685	828	940	553	615	785	917	1031	683	713	849	1003	1114
134	158	166	146	106	193	203	195	160	108	245	243	220	172	102	285	282	251	181	95
407	**571**	**742**	**875**	**954**	**594**	**735**	**880**	**989**	**1048**	**798**	**858**	**1005**	**1090**	**1133**	**968**	**995**	**1100**	**1184**	**1209**
206	**344**	**504**	**653**	**770**	**270**	**399**	**550**	**690**	**800**	**358**	**419**	**586**	**717**	**828**	**423**	**453**	**588**	**740**	**849**

UZS (width 345 mm, length 1150 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data, summer (cooling)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**16**
Width	m	5.00	Return temperature	t_R	°C	**18**
Depth	m	4.00	Air inlet temperature, secondary air	t_{SEC}	°C	26
Surface area	m²	20	Relative humidity, secondary air	φ_{SEC}	%	50
Volume	m³	60	Air inlet temperature, external air	t_{ODA}	°C	32
Distance from sound source[1)]	m	3.00	Relative humidity, external air	φ_{ODA}	%	40

[1)] Direction factor Q=4 (sphere quadrant)

The following values can be derived on the basis of the specified building and climate parameters:

2-pipe and 4-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
External air component	$\dot{V}_{ODA}$	m³/h	0	0	0	0	0	30	60	90	120
Secondary air component	$\dot{V}_{SEC}$	m³/h	38	79	130	180	220	0	0	0	0
Supply air quantity	$\dot{V}_{sup}$	m³/h	38	79	130	180	220	30	60	90	120
Sound power level	L_{WA}	dB(A)	27	30	38	48	56	29	29	35	42
125 Hz	L_{WA125}	dB	30	35	39	44	48	33	38	45	51
250 Hz	L_{WA250}	dB	20	29	37	43	48	35	33	38	45
500 Hz	L_{WA500}	dB	18	25	36	46	56	21	24	31	37
1000 Hz	L_{WA1000}	dB	21	24	33	43	49	13	19	28	35
2000 Hz	L_{WA2000}	dB	15	18	29	40	47	13	14	22	32
4000 Hz	L_{WA4000}	dB	18	22	27	33	41	18	16	17	23
8000 Hz	L_{WA8000}	dB	23	23	23	26	33	23	23	23	23
Sound pressure level[2)]	L_{PA}	dB(A)	21	24	32	42	50	23	23	29	36
Power consumption	p_{el}	W	1	2	5	8	13	3	4	6	10
2-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
Supply air temperature	t_{SUP}	°C	17	18	19	19	19	16	18	18	19
Condensate quantity	$\dot{m}_K$	l/h	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Water mass flow rate	$\dot{m}_W$	l/h	50	91	139	181	212	99	158	209	251
Pressure loss, water side	Δp_W	kPa	0.0	0.7	1.6	2.7	3.6	0.8	2.1	3.5	4.9
Cooling power, sensitive	$\dot{Q}_{K,sens}$	W	116	213	325	423	494	164	290	408	520
Cooling power, latent	$\dot{Q}_{K,lat}$	W	0	0	0	0	0	67	79	79	66
Cooling power, total	$\dot{Q}_K$	**W**	**116**	**213**	**325**	**423**	**494**	**230**	**369**	**487**	**586**
Useful cooling power	$\dot{Q}_{K,nutz}$	**W**	**113**	**209**	**317**	**413**	**483**	**99**	**162**	**218**	**267**
4-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
Supply air temperature	t_{SUP}	°C	17	18	19	19	19	16	18	19	19
Condensate quantity	$\dot{m}_K$	l/h	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Water mass flow rate	$\dot{m}_W$	l/h	48	90	138	180	210	94	153	203	246
Pressure loss, water side	Δp_W	kPa	0.7	3.5	7.8	12.7	16.9	3.7	9.4	15.9	22.4
Cooling power, sensitive	$\dot{Q}_{K,sens}$	W	113	211	322	420	491	159	285	403	515
Cooling power, latent	$\dot{Q}_{K,lat}$	W	0	0	0	0	0	60	72	71	58
Cooling power, total	$\dot{Q}_K$	**W**	**113**	**211**	**322**	**420**	**491**	**219**	**356**	**474**	**573**
Useful cooling power	$\dot{Q}_{K,nutz}$	**W**	**110**	**206**	**315**	**411**	**480**	**94**	**157**	**213**	**262**

[2)] Approximation in acc. with VDI 2081

Mixed air operation. 2-pipe and 4-pipe system																			
30	30	30	30	30	60	60	60	60	60	90	90	90	90	90	120	120	120	120	120
20	62	115	170	218	10	52	105	160	208	10	31	93	147	199	5	16	68	134	188
50	92	145	200	248	70	112	165	220	268	100	121	183	237	289	125	136	188	254	308
31	33	39	48	56	31	33	39	48	56	36	36	40	48	56	42	42	43	49	56
35	37	40	45	48	38	40	41	45	48	45	46	46	48	50	51	51	51	52	53
35	36	39	44	48	33	35	39	44	48	38	39	41	44	48	45	45	45	47	49
22	26	36	46	56	25	27	36	46	56	31	32	37	47	56	37	37	39	47	56
21	24	33	43	49	23	25	33	43	49	29	30	34	43	49	36	36	37	44	49
17	19	29	40	47	17	20	29	40	47	22	23	30	41	47	32	32	33	41	47
21	23	27	33	41	20	23	27	33	41	21	23	27	33	41	24	26	28	33	41
26	26	26	28	33	26	26	26	28	33	26	26	26	28	33	26	26	26	28	33
25	26	32	42	50	25	26	32	42	50	30	30	34	42	50	36	36	37	43	50
4	6	8	12	17	5	6	9	12	17	7	9	11	14	19	11	12	15	18	23
Mixed air operation. 2-pipe system																			
17	18	19	19	20	18	19	19	20	20	19	19	20	20	20	19	19	20	20	21
0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
105	126	173	216	250	159	166	209	250	281	208	206	243	280	311	250	247	266	309	339
0.9	1.3	2.5	3.7	4.9	2.1	2.3	3.5	4.9	6.0	3.5	3.4	4.6	6.0	7.3	4.9	4.8	5.5	7.2	8.5
206	295	403	504	583	310	387	488	582	655	427	466	567	653	726	529	548	621	721	791
39	0	0	0	0	62	0	0	0	0	59	16	0	0	0	54	29	0	0	0
245	**295**	**403**	**504**	**583**	**372**	**387**	**488**	**582**	**655**	**486**	**482**	**567**	**653**	**726**	**583**	**577**	**621**	**721**	**791**
141	**228**	**335**	**434**	**511**	**182**	**259**	**358**	**451**	**522**	**236**	**275**	**375**	**460**	**532**	**276**	**295**	**368**	**467**	**536**
Mixed air operation. 4-pipe system																			
18	18	19	19	20	18	19	19	20	20	19	19	20	20	20	19	19	20	20	21
0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
100	125	171	215	248	154	164	208	248	279	203	201	241	278	310	244	242	265	307	338
4.3	6.5	11.6	17.5	22.9	9.6	10.8	16.5	22.9	28.4	15.8	15.6	21.7	28.2	34.3	22.2	21.8	25.7	33.9	40.3
202	291	400	501	580	305	383	485	579	652	422	461	563	649	722	524	543	617	717	788
32	0	0	0	0	55	0	0	0	0	51	8	0	0	0	46	21	0	0	0
234	**291**	**400**	**501**	**580**	**360**	**383**	**485**	**579**	**652**	**473**	**470**	**563**	**649**	**722**	**570**	**564**	**617**	**717**	**788**
137	**225**	**331**	**431**	**508**	**177**	**255**	**355**	**447**	**519**	**232**	**271**	**371**	**456**	**529**	**271**	**290**	**364**	**463**	**533**

UZS (width 345 mm, length 1150 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data winter (heating)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**75**
Width	m	5.00	Return temperature	t_R	°C	**65**
Depth	m	4.00	Air inlet temperature, secondary air	t_{SEC}	°C	20
Surface area	m²	20	Relative humidity, secondary air	φ_{SEC}	%	50
Volume	m³	60	Air inlet temperature, external air	t_{ODA}	°C	–12
Distance from sound source[1)]	m	3.00	Relative humidity, external air	φ_{ODA}	%	50

[1)] Direction factor Q=4 (sphere quadrant)

The following values can be derived on the basis of the specified building and climate parameters:

2-pipe and 4-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
External air component	$\dot{V}_{ODA}$	m³/h	0	0	0	0	0	30	60	90	120
Secondary air component	$\dot{V}_{SEC}$	m³/h	38	79	130	180	220	0	0	0	0
Supply air quantity	$\dot{V}_{SUP}$	m³/h	38	79	130	180	220	30	60	90	120
Sound power level	L_{WA}	dB(A)	27	30	38	48	56	29	29	35	42
Sound pressure level[2)]	L_{PA}	dB(A)	21	24	32	42	50	23	23	29	36
Power consumption	p_{el}	W	1	2	5	8	13	3	4	6	10
2-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
Supply air temperature	t_{SUP}	°C	59.5	58.6	57.5	56.3	55.4	52.8	51.9	50.9	49.8
Water mass flow rate	$\dot{m}_W$	l/h	43	88	140	188	224	56	110	163	214
Pressure loss, water side	Δp_W	kPa	0.1	0.4	1.0	1.8	2.4	0.2	0.7	1.4	2.2
Heating power, total	$\dot{Q}_H$	**W**	**503**	**1024**	**1636**	**2196**	**2615**	**653**	**1288**	**1901**	**2491**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**503**	**1024**	**1636**	**2196**	**2615**	**372**	**724**	**1051**	**1353**
4-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
Supply air temperature	t_{SUP}	°C	54.8	46.5	42.9	40.8	39.4	51.8	35.8	30.1	26.9
Water mass flow rate	$\dot{m}_W$	l/h	38	60	86	108	123	55	83	109	134
Pressure loss, water side	Δp_W	kPa	0.3	0.8	1.5	2.3	2.9	0.7	1.4	2.4	3.4
Heating power, total	$\dot{Q}_H$	**W**	**444**	**703**	**1001**	**1258**	**1432**	**643**	**963**	**1273**	**1568**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**444**	**703**	**1001**	**1258**	**1432**	**361**	**359**	**345**	**314**

[2)] Approximation in acc. with VDI 2081

Mixed air operation. 2-pipe and 4-pipe system																			
30	30	30	30	30	60	60	60	60	60	90	90	90	90	90	120	120	120	120	120
20	62	115	170	218	10	52	105	160	208	10	31	93	147	199	5	16	68	134	188
50	92	145	200	248	70	112	165	220	268	100	121	183	237	289	125	136	188	254	308
31	33	39	48	56	31	33	39	48	56	36	36	40	48	56	42	42	43	49	56
25	26	32	42	50	25	26	32	42	50	30	30	34	42	50	36	36	37	43	50
4	6	8	12	17	5	6	9	12	17	7	9	11	14	19	11	12	15	18	23
Mixed air operation. 2-pipe system																			
54.9	55.7	55.3	54.4	53.5	52.5	53.5	53.4	52.7	51.8	51.2	51.7	51.7	51.1	50.3	49.9	50.1	50.3	49.7	48.9
79	124	177	228	269	122	166	218	267	306	174	195	255	301	342	219	230	279	334	375
0.4	0.8	1.6	2.5	3.4	0.8	1.4	2.3	3.3	4.3	1.5	1.9	3.0	4.1	5.2	2.3	2.5	3.6	5.0	6.2
922	**1450**	**2070**	**2664**	**3141**	**1419**	**1939**	**2541**	**3112**	**3568**	**2026**	**2280**	**2972**	**3513**	**3986**	**2551**	**2681**	**3254**	**3901**	**4370**
659	**1241**	**1934**	**2599**	**3135**	**861**	**1419**	**2081**	**2716**	**3224**	**1181**	**1448**	**2194**	**2788**	**3311**	**1414**	**1548**	**2153**	**2852**	**3365**
Mixed air operation. 4-pipe system																			
43.6	39.9	38.3	37.0	35.8	35.3	34.7	34.4	33.8	32.9	30.3	30.7	31.2	31.0	30.2	27.1	27.4	28.4	28.4	27.8
63	82	107	128	144	87	106	128	147	160	113	123	147	164	175	136	141	160	179	187
0.9	1.4	2.3	3.2	3.9	1.6	2.2	3.1	4.0	4.7	2.5	2.9	4.0	4.9	5.5	3.5	3.7	4.7	5.7	6.2
732	**961**	**1244**	**1497**	**1674**	**1014**	**1232**	**1492**	**1717**	**1864**	**1324**	**1429**	**1713**	**1908**	**2036**	**1592**	**1644**	**1870**	**2084**	**2184**
445	**691**	**1003**	**1286**	**1484**	**404**	**623**	**900**	**1145**	**1306**	**390**	**490**	**777**	**981**	**1116**	**335**	**381**	**595**	**807**	**904**

UZS (width 345 mm, length 1150 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data winter (heating)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**75**
Width	m	5.00	Return temperature	t_R	°C	**65**
Depth	m	4.00	Air inlet temperature, secondary air	t_{SEC}	°C	20
Surface area	m²	20	Relative humidity, secondary air	φ_{SEC}	%	50
Volume	m³	60	Air inlet temperature, external air	t_{ODA}	°C	–12
Distance from sound source[1)]	m	3.00	Relative humidity, external air	φ_{ODA}	%	50

[1)] Direction factor Q=4 (sphere quadrant)

The following values can be derived on the basis of the specified building and climate parameters:

2-pipe and 4-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
External air component	$\dot{V}_{ODA}$	m³/h	0	0	0	0	0	30	60	90	120
Secondary air component	$\dot{V}_{SEC}$	m³/h	38	79	130	180	220	0	0	0	0
Supply air quantity	$\dot{V}_{SUP}$	m³/h	38	79	130	180	220	30	60	90	120
Sound power level	L_{WA}	dB(A)	27	30	38	48	56	29	29	35	42
Sound pressure level[2)]	L_{PA}	dB(A)	21	24	32	42	50	23	23	29	36
Power consumption	p_{el}	W	1	2	5	8	13	3	4	6	10
2-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
Supply air temperature	t_{SUP}	°C	55.5	54.8	53.7	52.7	51.9	49.3	48.5	47.5	46.6
Water mass flow rate	$\dot{m}_W$	l/h	39	79	126	169	202	51	101	149	195
Pressure loss, water side	Δp_W	kPa	0.1	0.4	0.8	1.4	2.0	0.1	0.6	1.1	1.9
Heating power, total	$\dot{Q}_H$	**W**	**453**	**922**	**1473**	**1976**	**2353**	**597**	**1178**	**1739**	**2278**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**453**	**922**	**1473**	**1976**	**2353**	**330**	**641**	**930**	**1195**
4-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
Supply air temperature	t_{SUP}	°C	51.3	43.8	40.6	38.7	37.4	48.4	33.7	28.5	25.5
Water mass flow rate	$\dot{m}_W$	l/h	34	54	77	97	110	50	75	100	123
Pressure loss, water side	Δp_W	kPa	0.2	0.6	1.3	1.9	2.4	0.5	1.2	2.0	2.9
Heating power, total	$\dot{Q}_H$	**W**	**399**	**632**	**899**	**1128**	**1283**	**588**	**881**	**1163**	**1431**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**399**	**632**	**899**	**1128**	**1283**	**319**	**309**	**286**	**248**

[2)] Approximation in acc. with VDI 2081

Mixed air operation. 2-pipe and 4-pipe system																			
30	30	30	30	30	60	60	60	60	60	90	90	90	90	90	120	120	120	120	120
20	62	115	170	218	10	52	105	160	208	10	31	93	147	199	5	16	68	134	188
50	92	145	200	248	70	112	165	220	268	100	121	183	237	289	125	136	188	254	308
31	33	39	48	56	31	33	39	48	56	36	36	40	48	56	42	42	43	49	56
25	26	32	42	50	25	26	32	42	50	30	30	34	42	50	36	36	37	43	50
4	6	8	12	17	5	6	9	12	17	7	9	11	14	19	11	12	15	18	23
Mixed air operation. 2-pipe system																			
51.2	52.1	51.7	50.9	50.1	49.1	50.0	49.9	49.3	48.6	47.9	48.3	48.4	47.9	47.2	46.7	46.8	47.1	46.6	45.9
72	113	160	206	243	111	151	197	241	276	159	178	231	273	309	200	210	254	304	340
0.3	0.7	1.3	2.1	2.8	0.7	1.2	1.9	2.8	3.5	1.3	1.6	2.6	3.5	4.3	2.0	2.1	3.0	4.2	5.2
839	**1314**	**1872**	**2405**	**2834**	**1296**	**1763**	**2303**	**2816**	**3225**	**1851**	**2079**	**2700**	**3185**	**3609**	**2332**	**2449**	**2962**	**3542**	**3962**
586	**1106**	**1724**	**2317**	**2795**	**763**	**1261**	**1851**	**2417**	**2870**	**1045**	**1283**	**1948**	**2478**	**2942**	**1250**	**1369**	**1907**	**2530**	**2986**
Mixed air operation. 4-pipe system																			
40.9	37.7	36.3	35.1	34.1	33.3	32.9	32.7	32.1	31.4	28.7	29.1	29.7	29.5	28.9	25.7	26.0	27.0	27.1	26.6
57	75	96	115	129	79	96	116	133	144	103	111	133	148	157	124	128	145	161	169
0.7	1.2	1.9	2.6	3.2	1.3	1.9	2.6	3.3	3.9	2.1	2.4	3.4	4.1	4.5	3.0	3.2	3.9	4.8	5.2
666	**870**	**1121**	**1347**	**1504**	**925**	**1118**	**1348**	**1547**	**1677**	**1207**	**1301**	**1551**	**1722**	**1834**	**1452**	**1498**	**1697**	**1884**	**1970**
392	**609**	**885**	**1135**	**1309**	**348**	**541**	**784**	**1000**	**1141**	**326**	**413**	**665**	**844**	**960**	**267**	**308**	**494**	**678**	**761**

UZS (width 345 mm, length 1150 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data winter (heating)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**75**
Width	m	5.00	Return temperature	t_R	°C	**65**
Depth	m	4.00	Air inlet temperature, secondary air	t_{SEC}	°C	20
Surface area	m²	20	Relative humidity, secondary air	φ_{SEC}	%	50
Volume	m³	60	Air inlet temperature, external air	t_{ODA}	°C	–12
Distance from sound source[1)]	m	3.00	Relative humidity, external air	φ_{ODA}	%	50

[1)] Direction factor Q=4 (sphere quadrant)

The following values can be derived on the basis of the specified building and climate parameters:

2-pipe and 4-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
External air component	$\dot{V}_{ODA}$	m³/h	0	0	0	0	0	30	60	90	120
Secondary air component	$\dot{V}_{SEC}$	m³/h	38	79	130	180	220	0	0	0	0
Supply air quantity	$\dot{V}_{SUP}$	m³/h	38	79	130	180	220	30	60	90	120
Sound power level	L_{WA}	dB(A)	27	30	38	48	56	29	29	35	42
Sound pressure level[2)]	L_{PA}	dB(A)	21	24	32	42	50	23	23	29	36
Power consumption	p_{el}	W	1	2	5	8	13	3	4	6	10
2-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
Supply air temperature	t_{SUP}	°C	51.6	50.9	50.0	49.1	48.3	44.9	44.2	43.3	42.3
Water mass flow rate	$\dot{m}_W$	l/h	35	70	112	151	179	49	97	143	187
Pressure loss, water side	Δp_W	kPa	0.0	0.3	0.7	1.2	1.6	0.1	0.5	1.1	1.7
Heating power, total	$\dot{Q}_H$	**W**	**403**	**820**	**1309**	**1756**	**2091**	**573**	**1131**	**1669**	**2187**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**403**	**820**	**1309**	**1756**	**2091**	**283**	**548**	**791**	**1011**
4-pipe system	**Symbol**	**Unit**	**Secondary air operation**					**External air operation**			
Supply air temperature	t_{SUP}	°C	47.8	41.2	38.3	36.5	35.4	44.0	30.0	24.9	22.1
Water mass flow rate	$\dot{m}_W$	l/h	30	48	68	86	97	48	72	96	118
Pressure loss, water side	Δp_W	kPa	0.2	0.5	1.0	1.5	1.9	0.5	1.1	1.9	2.7
Heating power, total	$\dot{Q}_H$	**W**	**355**	**561**	**796**	**998**	**1135**	**564**	**845**	**1115**	**1372**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**355**	**561**	**796**	**998**	**1135**	**272**	**226**	**167**	**94**

[2)] Approximation in acc. with VDI 2081

Mixed air operation. 2-pipe and 4-pipe system																			
30	30	30	30	30	60	60	60	60	60	90	90	90	90	90	120	120	120	120	120
20	62	115	170	218	10	52	105	160	208	10	31	93	147	199	5	16	68	134	188
50	92	145	200	248	70	112	165	220	268	100	121	183	237	289	125	136	188	254	308
31	33	39	48	56	31	33	39	48	56	36	36	40	48	56	42	42	43	49	56
25	26	32	42	50	25	26	32	42	50	30	30	34	42	50	36	36	37	43	50
4	6	8	12	17	5	6	9	12	17	7	9	11	14	19	11	12	15	18	23
Mixed air operation. 2-pipe system																			
47.0	48.1	47.9	47.2	46.5	44.8	45.9	46.0	45.6	45.0	43.6	44.1	44.5	44.1	43.5	42.4	42.7	43.1	42.8	42.2
68	104	146	187	220	106	142	183	222	253	152	169	216	253	285	192	201	240	284	315
0.3	0.6	1.1	1.7	2.3	0.6	1.0	1.7	2.4	3.0	1.2	1.4	2.3	3.0	3.7	1.8	2.0	2.7	3.7	4.5
791	**1214**	**1709**	**2181**	**2561**	**1237**	**1654**	**2134**	**2588**	**2949**	**1770**	**1974**	**2525**	**2955**	**3327**	**2236**	**2340**	**2797**	**3308**	**3677**
511	**975**	**1527**	**2056**	**2482**	**656**	**1098**	**1623**	**2125**	**2527**	**893**	**1103**	**1691**	**2159**	**2569**	**1059**	**1164**	**1638**	**2185**	**2585**
Mixed air operation. 4-pipe system																			
37.3	34.7	33.7	32.8	32.0	29.7	29.8	30.0	29.7	29.1	25.3	25.9	26.9	27.0	26.6	22.3	22.7	24.1	24.5	24.3
54	69	87	104	116	76	90	107	121	131	99	106	124	136	144	119	123	137	150	156
0.6	1.0	1.6	2.2	2.6	1.2	1.7	2.3	2.9	3.3	2.0	2.2	3.0	3.5	3.9	2.8	2.9	3.5	4.2	4.5
627	**802**	**1021**	**1217**	**1352**	**882**	**1048**	**1246**	**1417**	**1527**	**1154**	**1233**	**1448**	**1592**	**1684**	**1391**	**1430**	**1599**	**1754**	**1821**
327	**512**	**752**	**970**	**1121**	**256**	**415**	**623**	**807**	**926**	**198**	**269**	**478**	**626**	**720**	**108**	**140**	**289**	**435**	**496**

Heating

Cooling

Heat recovery

Supply air (SUP)

Exhaust air (ETA)

Model UZA ventilation unit for floor installation.
Decentralised ventilation unit for floor installation, for heating, cooling and forced convection ventilation with heat recovery.

Description

The UZA is a ventilation unit for floor installation that offers the following functions:

- Supply air (SUP)
- Exhaust air (ETA)
- Heat recovery
- Heating
- Cooling

ventilation units for floor installation of this type have been designed to carry out ventilation and temperature control in rooms whilst adhering to comfort criteria.
The highly compact design of the emcovent UZA allows it to be integrated into the building structure with ease. A grid width of 345 mm in the visible area makes the unit the ideal choice even in buildings with high architectural demands.

All maintenance and inspection work can be carried out via the cover grid. This grid also makes it easy to remove function units.
Special insulation material conforming to VDI 6022 creates optimum thermal and sound insulation.
The heat recovery unit (WRG) reduces the amount of additional energy required for room temperature control to the absolute minimum.
If you are working with the heat recovery unit and there is a large difference in temperature between the external air and the air in the room, a stainless steel condensate trough is used to catch any condensate.
If required, this can then be discharged via a condensate drain. All components conform to VDI 6022.
An integrated heat exchanger, available as a 2-pipe or 4-pipe system, conditions the room air and supplies air to the room whilst taking acoustic and comfort requirements into consideration.

The air volume flow of up to 120 m³/h (supply and exhaust air) is achieved by means of two EC radial fans that are linked from a control perspective.
The unit can be controlled using either external emcovent control components or the building management system.
For the visible area of the unit, a linear grid or roll-up grid cover is available to choose from.

UZA - method of operatino

Application areas
Decentralised floor ventilation units are ideally suited to areas with high demands in terms of room air quality and thermal comfort.

- Offices and administration rooms
- Business premises
- Reception areas and foyers
- Exhibition rooms
- Rooms requiring external air
- Rooms where windows cannot be opened
- Rooms whose appearance and layout should not be disturbed by heating components

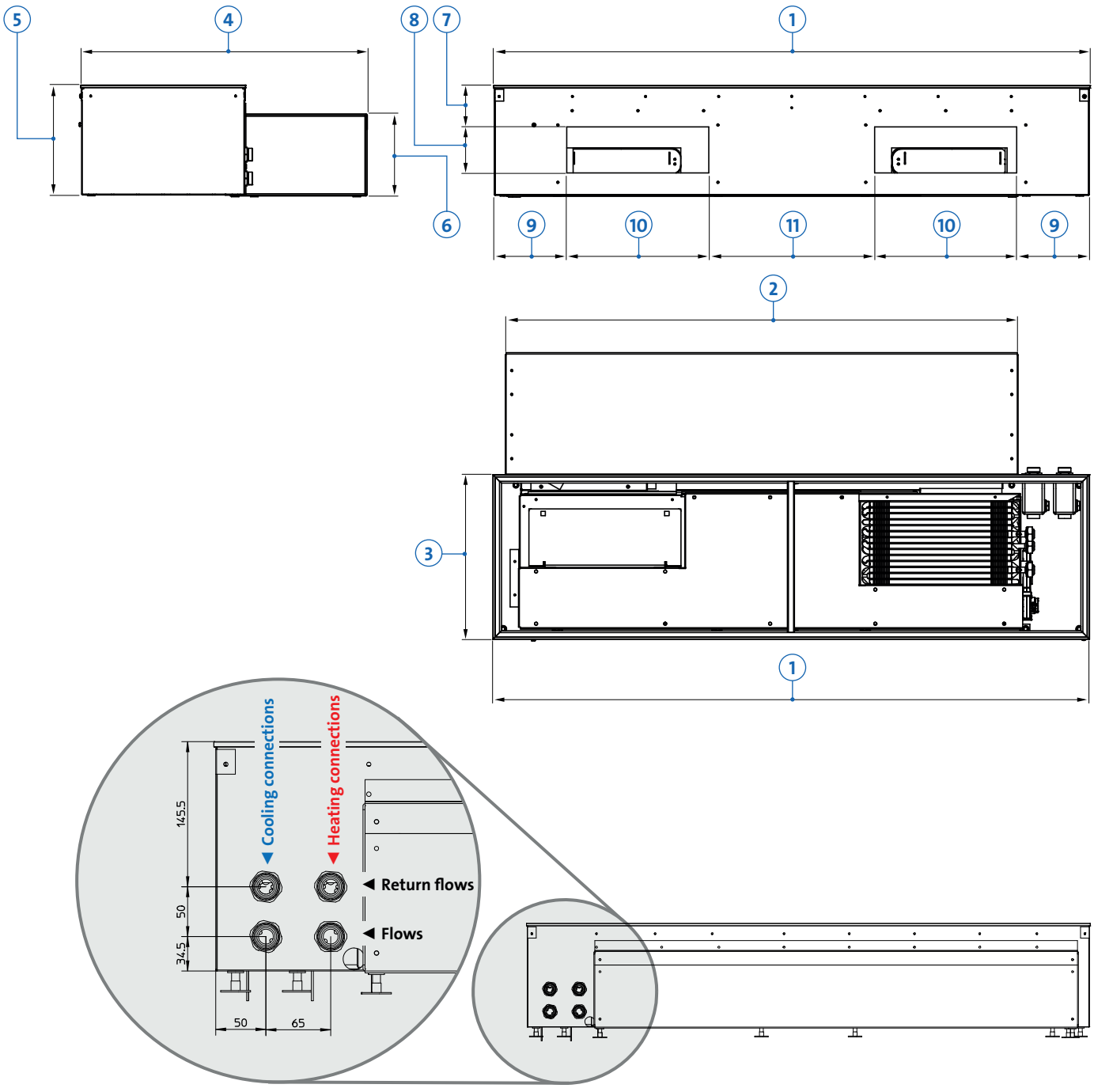
Product benefits
- Eurokonus valve connection for time-saving valve installation
- System for heating, cooling and ventilation
- High caloric output with low acoustic load
- Pleasant room climate thanks to air supply in the vicinity of the facade
- Load-bearing
- For use in false floors
- Can be adapted to suit the specific requirements of the building
- Infinitely adjustable control
- Low installation depth
- No additional inspection opening required thanks to modular structure

UZA – Method of operation

The outdoor air (ODA) is drawn in directly via the facade and passes through a filter element (F7).
The supply air opening is closed automatically by a return spring motor when the unit is switched off (normally closed). The flow volume-controlling EC fans compensate for any pressure fluctuations at the facade.
There is a heat recovery unit located downstream of the supply air fan unit, which is responsible for energy ex-change between the supply air (SUP) and exhaust air (ETA) (heat recovery ratio of up to 60 %).

Air whose temperature is precontrolled using this equipment is heated or cooled by a heat exchanger, according to the room temperature that is required. The conditioned supply air (SUP) is supplied to the room via the cover grating located in the visible area of the unit.
The exhaust air (ETA) is removed from the room via the cover and purified by a coarse dust filter (optional). Once the exhaust air has passed through the heat recovery unit, it is conveyed outdoors (EHA) via an exhaust air opening with flap.
The exhaust air flap performs the same functions as the supply air flap.

UZA – Dimensions



Nr.	Size	Value	Unit
1	Length of empty housing (visible area)	1250	mm
2	Length of empty housing (underneath floor)	1074	mm
3	Width of housing (visible area)	345	mm
4	Width (total)	600	mm
5	Height of housing (total)	230	mm
6	Height of empty housing (underneath floor)	172	mm
7	Distance from air outlet to upper edge	86	mm
8	Height of air inlets	97	mm
9	Distance from air inlets to side	152	mm
10	Width of air inlets	298	mm
11	Distance between air inlets	348	mm

Dimensions and position of the supply and external air connections can be individually adapted.

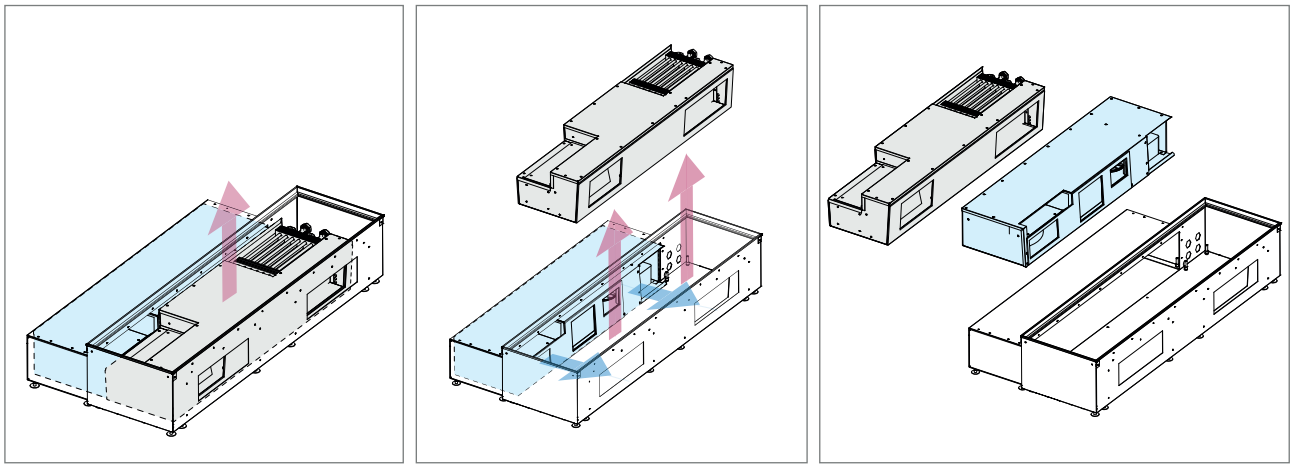
Available as an option:
preinstalled fixed connection
Water connections preinstalled at the factory are available as accessories for emcotherm floor convectors.
The connection set consists of:

1. Thermostat valve
   Standard TVU-E or TVU-D
   (optional: TVU-V-E or TVU-V-D)
2. Continuous actuator emcoMFC-Z-MS-S
3. Shutoff return screw connection
4. Connections inside tray, fully piped and leading outward (connection ¾“ AG); testing for leaks

Benefits:

- Huge time savings during installation
- Dirt cannot get into the floor tray during installation as the tray is able to remain sealed
- The media and electrical connections are supplied outside of the floor tray
- Media connections are fully tested for leaks at the factory

Available as an option:
ready-to-use electrical version.
All electrical components are prewired at the factory and attached to the exterior of the tray by means of screw-in connectors. The customer can carry out wiring work outside the tray easily using the mating connectors supplied.



Schema of inspection option

UZA – inspection option During the development of the emcovent UZA, ease of installation and maintenance was placed high on the agenda.
Filter units, actuators, damper registers and so on can be accessed with ease by removing the cover grid.
If required, maintenance can also be performed on the supply and exhaust air fan units, as well as the heat recov-ery unit, by removing the function modules via the cover grid.
What is more, it is not even necessary to disconnect the water-side connection, meaning that huge time savings can be made when draining the heating system too. The ability to remove all the unit components simply by taking off the cover saves the need for additional inspection openings in the floor area.
As a result, the floor covering (carpet, tiles, etc.) can be coordinated directly with the floor unit itself. It is even possible to put down screed, assuming minimum installation height specifications are adhered to.

In most cases, units are integrated into the building structure during the preliminary building work, something which often results in them getting extremely dirty. However, the fixed piping system described previously allows piping to be installed quickly at the water side without the need to reach inside the tray or, therefore, remove the installation protection cover. As a result, not only is the installation process guaranteed to be quick, but it also prevents the units from getting dirty.

As a means of providing electrical components with full protection against damage caused by dirt during preliminary building work, function units containing electrical components can be supplied further down the line thanks to the modular unit structure. The empty housing with installation protection cover is installed and fastened in place during the preliminary building work.
It is possible to connect the piping at the water side to the tray as early as this point. Additionally, the electrical cables required come fully pre-wired and are attached to the exterior of the tray by means of screw-in connectors. The customer can carry out wiring work outside the tray easily using the mating connectors supplied.
Once the preliminary building work is complete, the function units can then be simply inserted and connected up.

The images above illustrate how function units are removed from the UZA.

The first function unit can be removed from above once the cover grating has been removed and the damper register has been folded back. Following this, the second function unit can be pulled into the front empty tray area and then also removed from above.

UZA (length 1250 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data, summer (cooling)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**6**
Width	m	5.00	Return temperature	t_R	°C	**12**
Depth	m	4.00	Relative humidity, room	t_{IDA}	°C	26
Surface area	m^2	20	Air inlet temperature, external air	t_{ODA}	°C	32
Volume	m^3	60	Relative humidity, external air	φ_{ODA}	%	40
Distance from sound source[1)]	m	3.00				

[1)] Direction factor Q=4 (sphere quadrant)

The following values can be derived on the basis of the specified building and climate parameters:

2- and 4-pipe system	**Symbol**	**Unit**	**External air operation**			
Air volume flow	$\dot{V}$	**m^3/h**	**30**	**60**	**90**	**120**
Sound power level	L_{WA}	dB(A)	27	30	38	45
125 Hz	L_{W125}	dB	33	36	43	50
250 Hz	L_{W250}	dB	24	32	40	47
500 Hz	L_{W500}	dB	22	30	37	40
1000 Hz	L_{W1000}	dB	14	23	31	38
2000 Hz	L_{W2000}	dB	8	18	27	35
4000 Hz	L_{W4000}	dB	20	13	17	25
8000 Hz	L_{W8000}	dB	23	15	14	17
Sound pressure level[2)]	L_{PA}	dB(A)	20	24	32	39
Power consumption	p_{el}	W	5	11	18	26
2-pipe system	**Symbol**	**Unit**	**External air operation**			
Supply air temperature	t_{SUP}	°C	4.5	9.5	10.0	10.6
Condensate quantity	$\dot{m}_K$	l/h	0.2	0.3	0.5	0.6
Water mass flow rate	$\dot{m}_W$	kg/h	58	88	131	169
Pressure loss, water side	Δp_W	kPa	2.2	4.9	10.2	16.4
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	38	67	90	112
Cooling power, sensitive	$\dot{Q}_{K,sens}$	W	239	386	574	748
Cooling power, latent	$\dot{Q}_{K,lat}$	W	165	231	340	432
Cooling power, total	**$\dot{Q}_K$**	**W**	**441**	**684**	**1004**	**1291**
Useful cooling power	**$\dot{Q}_{K,nutz}$**	**W**	**216**	**332**	**483**	**619**
4-pipe system	**Symbol**	**Unit**	**External air operation**			
Supply air temperature	t_{SUP}	°C	8.1	12.4	12.8	13.4
Condensate quantity	$\dot{m}_K$	l/h	0.2	0.2	0.3	0.4
Water mass flow rate	$\dot{m}_W$	kg/h	47	69	102	131
Pressure loss, water side	Δp_W	kPa	1.1	2.2	4.6	7.3
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	38	67	90	112
Cooling power, sensitive	$\dot{Q}_{K,sens}$	W	203	328	488	636
Cooling power, latent	$\dot{Q}_{K,lat}$	W	128	156	227	281
Cooling power, total	**$\dot{Q}_K$**	**W**	**368**	**551**	**805**	**1028**
Useful cooling power	**$\dot{Q}_{K,nutz}$**	**W**	**181**	**274**	**397**	**507**

[2)] Approximation in acc. with VDI 2081

UZA (length 1250 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data, summer (cooling)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**10**
Width	m	5.00	Return temperature	t_R	°C	**15**
Depth	m	4.00	Relative humidity, room	t_{IDA}	°C	26
Surface area	m^2	20	Air inlet temperature, external air	t_{ODA}	°C	32
Volume	m^3	60	Relative humidity, external air	φ_{ODA}	%	40
Distance from sound source[1)]	m	3.00	[1)] Direction factor Q=4 (sphere quadrant)			

The following values can be derived on the basis of the specified building and climate parameters:

2- and 4-pipe system	**Symbol**	**Unit**	**External air operation**			
Air volume flow	$\dot{V}$	**m^3/h**	**30**	**60**	**90**	**120**
Sound power level	L_{WA}	dB(A)	27	30	38	45
125 Hz	L_{W125}	dB	33	36	43	50
250 Hz	L_{W250}	dB	24	32	40	47
500 Hz	L_{W500}	dB	22	30	37	40
1000 Hz	L_{W1000}	dB	14	23	31	38
2000 Hz	L_{W2000}	dB	8	18	27	35
4000 Hz	L_{W4000}	dB	20	13	17	25
8000 Hz	L_{W8000}	dB	23	15	14	17
Sound pressure level[2)]	L_{PA}	dB(A)	20	24	32	39
Power consumption	p_{el}	W	5	11	18	26
2-pipe system	**Symbol**	**Unit**	**External air operation**			
Supply air temperature	t_{SUP}	°C	8	12.6	13.3	13.8
Condensate quantity	$\dot{m}_K$	l/h	0.2	0.2	0.3	0.4
Water mass flow rate	$\dot{m}_W$	kg/h	57	81	117	151
Pressure loss. water side	Δp_W	kPa	2.2	4.1	8.3	13.1
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	38	67	90	112
Cooling power. sensitive	$\dot{Q}_{K,sens}$	W	203	323	476	621
Cooling power. latent	$\dot{Q}_{K,lat}$	W	128	149	209	259
Cooling power. total	$\dot{Q}_K$	**W**	**369**	**538**	**775**	**992**
Useful cooling power	$\dot{Q}_{K,nutz}$	**W**	**181**	**269**	**385**	**492**
4-pipe system	**Symbol**	**Unit**	**External air operation**			
Supply air temperature	t_{SUP}	°C	11.1	15	15.6	16.1
Condensate quantity	$\dot{m}_K$	l/h	0.1	0.1	0.1	0.2
Water mass flow rate	$\dot{m}_W$	kg/h	45	60	86	110
Pressure loss. water side	Δp_W	kPa	1	1.7	3.3	5.2
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	38	67	90	112
Cooling power. sensitive	$\dot{Q}_{K,sens}$	W	173	275	404	528
Cooling power. latent	$\dot{Q}_{K,lat}$	W	90	75	99	112
Cooling power. total	$\dot{Q}_K$	**W**	**301**	**416**	**593**	**752**
Useful cooling power	$\dot{Q}_{K,nutz}$	**W**	**150**	**221**	**314**	**398**

[2)] Approximation in acc. with VDI 2081

UZA (length 1250 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data, summer (cooling)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**16**
Width	m	5.00	Return temperature	t_R	°C	**18**
Depth	m	4.00	Room air temperature	t_{IDA}	°C	26
Surface area	m^2	20	Air inlet temperature, external air	t_{ODA}	°C	32
Volume	m^3	60	Relative humidity, external air	φ_{ODA}	%	40
Distance from sound source[1)]	m	3.00	[1)] Direction factor Q=4 (sphere quadrant)			

The following values can be derived on the basis of the specified building and climate parameters:

2- and 4-pipe system	**Symbol**	**Unit**	**External air operation**			
Air volume flow	$\dot{V}$	**m^3/h**	**30**	**60**	**90**	**120**
Sound power level	L_{WA}	dB(A)	27	30	38	45
125 Hz	L_{W125}	dB	33	36	43	50
250 Hz	L_{W250}	dB	24	32	40	47
500 Hz	L_{W500}	dB	22	30	37	40
1000 Hz	L_{W1000}	dB	14	23	31	38
2000 Hz	L_{W2000}	dB	8	18	27	35
4000 Hz	L_{W4000}	dB	20	13	17	25
8000 Hz	L_{W8000}	dB	23	15	14	17
Sound pressure level[2)]	L_{PA}	dB(A)	20	24	32	39
Power consumption	p_{el}	W	5	11	18	26
2-pipe system	**Symbol**	**Unit**	**External air operation**			
Supply air temperature	t_{SUP}	°C	12.8	16.8	17.5	18.0
Condensate quantity	$\dot{m}_K$	l/h	0.1	0	0	0
Water mass flow rate	$\dot{m}_W$	l/h	95	110	150	194
Pressure loss. water side	Δp_W	kPa	5.5	7.1	12.7	20.6
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	38	67	90	112
Cooling power. sensitive	$\dot{Q}_{K,sens}$	W	156	240	348	453
Cooling power. latent	$\dot{Q}_{K,lat}$	W	66	16	1	0
Cooling power. total	$\dot{Q}_K$	**W**	**260**	**322**	**439**	**564**
Useful cooling power	$\dot{Q}_{K,nutz}$	**W**	**133**	**186**	**257**	**323**
4-pipe system	**Symbol**	**Unit**	**External air operation**			
Supply air temperature	t_{SUP}	°C	15.1	18.6	19.3	19.7
Condensate quantity	$\dot{m}_K$	l/h	0	0	0	0
Water mass flow rate	$\dot{m}_W$	l/h	69	87	126	165
Pressure loss. water side	Δp_W	kPa	2.2	3.3	6.6	10.9
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	38	67	90	112
Cooling power. sensitive	$\dot{Q}_{K,sens}$	W	132	203	294	385
Cooling power. latent	$\dot{Q}_{K,lat}$	W	29	0	0	0
Cooling power. total	$\dot{Q}_K$	**W**	**199**	**270**	**384**	**496**
Useful cooling power	$\dot{Q}_{K,nutz}$	**W**	**110**	**149**	**204**	**255**

[2)] Approximation in acc. with VDI 2081

UZA (length 1250 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data, winter (heating)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**75**
Width	m	5.00	Return temperature	t_R	°C	**65**
Depth	m	4.00	Room air temperature	t_{IDA}	°C	20
Surface area	m^2	20	Air inlet temperature, external air	t_{ODA}	°C	–12
Volume	m^3	60				
Distance from sound source[1)]	m	3.00	[1)] Direction factor Q=4 (sphere quadrant)			

The following values can be derived on the basis of the specified building and climate parameters:

2- and 4-pipe system	**Symbol**	**Unit**	**External air operation**			
Air volume flow	$\dot{V}$	**m^3/h**	**30**	**60**	**90**	**120**
Sound power level[2]	L_{WA}	dB(A)	27	30	38	45
125 Hz	L_{W125}	dB	33	36	43	50
250 Hz	L_{W250}	dB	24	32	40	47
500 Hz	L_{W500}	dB	22	30	37	40
1000 Hz	L_{W1000}	dB	14	23	31	38
2000 Hz	L_{W2000}	dB	8	18	27	35
4000 Hz	L_{W4000}	dB	20	13	17	25
8000 Hz	L_{W8000}	dB	23	15	14	17
Sound pressure level[2)]	L_{PA}	dB(A)	20	24	32	39
Power consumption	p_{el}	W	5	11	18	26
2-pipe system	**Symbol**	**Unit**	**External air operation**			
Supply air temperature	t_{SUP}	°C	108.6	73.6	71.3	69.4
Water mass flow rate	$\dot{m}_W$	kg/h	87	117	174	230
Pressure loss. water side	Δp_W	kPa	4.1	7.2	15.2	25.5
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	201	356	481	596
Heating power total	$\dot{Q}_H$	**W**	**1213**	**1723**	**2515**	**3277**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**892**	**1080**	**1550**	**1991**
4-pipe system	**Symbol**	**Unit**	**External air operation**			
Supply air temperature	t_{SUP}	°C	78.4	53.2	51.1	49.4
Water mass flow rate	$\dot{m}_W$	kg/h	61	82	122	161
Pressure loss. water side	Δp_W	kPa	1.5	2.6	5.6	9.3
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	201	356	481	596
Heating power total	$\dot{Q}_H$	**W**	**910**	**1313**	**1905**	**2472**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**588**	**669**	**940**	**1186**

[2)] Approximation in acc. with VDI 2081

UZA (length 1250 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data, winter (heating)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**55**
Width	m	5.00	Return temperature	t_R	°C	**45**
Depth	m	4.00	Room air temperature	t_{IDA}	°C	20
Surface area	m^2	20	Air inlet temperature, external air	t_{ODA}	°C	–12
Volume	m^3	60				
Distance from sound source[1)]	m	3.00	[1)] Direction factor Q=4 (sphere quadrant)			

The following values can be derived on the basis of the specified building and climate parameters:

2- and 4-pipe system	**Symbol**	**Unit**	**External air operation**			
Air volume flow	**$\dot{V}$**	**m^3/h**	**30**	**60**	**90**	**120**
Sound power level[2]	L_{WA}	dB(A)	27	30	38	45
125 Hz	L_{W125}	dB	33	36	43	50
250 Hz	L_{W250}	dB	24	32	40	47
500 Hz	L_{W500}	dB	22	30	37	40
1000 Hz	L_{W1000}	dB	14	23	31	38
2000 Hz	L_{W2000}	dB	8	18	27	35
4000 Hz	L_{W4000}	dB	20	13	17	25
8000 Hz	L_{W8000}	dB	23	15	14	17
Sound pressure level[2)]	L_{PA}	dB(A)	20	24	32	39
Power consumption	p_{el}	W	5	11	18	26
2-pipe system	**Symbol**	**Unit**	**External air operation**			
Supply air temperature	t_{SUP}	°C	73.1	52.8	50.6	48.5
Water mass flow rate	$\dot{m}_W$	kg/h	56	81	121	158
Pressure loss. water side	Δp_W	kPa	1.9	3.8	7.9	13
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	201	356	481	596
Heating power total	**$\dot{Q}_H$**	**W**	**856**	**1304**	**1890**	**2436**
Useful heating power	**$\dot{Q}_{H,\,nutz}$**	**W**	**535**	**661**	**925**	**1149**
4-pipe system	**Symbol**	**Unit**	**External air operation**			
Supply air temperature	t_{SUP}	°C	53.6	38.7	36.6	34.8
Water mass flow rate	$\dot{m}_W$	kg/h	39	57	85	110
Pressure loss. water side	Δp_W	kPa	0.7	1.4	2.9	4.8
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	201	356	481	596
Heating power total	**$\dot{Q}_H$**	**W**	**660**	**1020**	**1467**	**1884**
Useful heating power	**$\dot{Q}_{H,\,nutz}$**	**W**	**338**	**376**	**502**	**597**

UZA (length 1250 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data, winter (heating)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**45**
Width	m	5.00	Return temperature	t_R	°C	**35**
Depth	m	4.00	Room air temperature	t_{IDA}	°C	20
Surface area	m^2	20	Air inlet temperature, external air	t_{ODA}	°C	–12
Volume	m^3	60				
Distance from sound source[1)]	m	3.00	[1)] Direction factor Q=4 (sphere quadrant)			

The following values can be derived on the basis of the specified building and climate parameters:

2- and 4-pipe system	**Symbol**	**Unit**	**External air operation**			
Air volume flow	$\dot{V}$	**m^3/h**	**30**	**60**	**90**	**120**
Sound power level[2)]	L_{WA}	dB(A)	27	30	38	45
125 Hz	L_{W125}	dB	33	36	43	50
250 Hz	L_{W250}	dB	24	32	40	47
500 Hz	L_{W500}	dB	22	30	37	40
1000 Hz	L_{W1000}	dB	14	23	31	38
2000 Hz	L_{W2000}	dB	8	18	27	35
4000 Hz	L_{W4000}	dB	20	13	17	25
8000 Hz	L_{W8000}	dB	23	15	14	17
Sound pressure level[2)]	L_{PA}	dB(A)	24	24	32	39
Power consumption	p_{el}	W	5	11	18	26
2-pipe system	**Symbol**	**Unit**	**External air operation**			
Supply air temperature	t_{SUP}	°C	60.4	45	42.8	40.7
Water mass flow rate	$\dot{m}_W$	kg/h	90	136	201	262
Pressure loss. water side	Δp_W	kPa	4.6	9.9	20.7	33.9
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	201	356	481	596
Heating power total	$\dot{Q}_H$	**W**	**728**	**1146**	**1655**	**2122**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**407**	**503**	**690**	**835**
4-pipe system	**Symbol**	**Unit**	**External air operation**			
Supply air temperature	t_{SUP}	°C	44.7	33.2	31.2	29.4
Water mass flow rate	$\dot{m}_W$	kg/h	63	95	141	183
Pressure loss. water side	Δp_W	kPa	1.7	3.6	7.6	12.4
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	201	356	481	596
Heating power total	$\dot{Q}_H$	**W**	**570**	**909**	**1303**	**1664**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**249**	**265**	**337**	**377**

[2)] Approximation in acc. with VDI 2081

Heating

Cooling

Heat recovery

Sekundary air (SEC)

Supply air (SUP)

Exhaust air (ETA)

Model UZAS - ventilation unit for floor installation. Decentralised ventilation unit for floor installation, for heating, cooling and forced convection ventilation with heat recovery.

Description

The UZAS is a ventilation unit for floor installation that offers the following functions:

- Supply air (SUP)
- Exhaust air (ETA)
- Secondary air (SEC)
- Heat recovery
- Heating
- Cooling

The highly compact design of the UZAS allows it to be integrated into the building structure with ease. A grid width of 345 mm in the visible area makes the unit the ideal choice even in buildings with high architectural demands. Thanks to the cover grid, simple maintenance tasks such as filter replacement can be performed without any problems.

For more extensive maintenance work, all components can be accessed with ease via an inspection cover in the floor area.

Special insulation material conforming to VDI 6022 creates optimum thermal and sound insulation.

The heat recovery unit reduces the amount of additional energy required for room temperature control to the absolute minimum.

If you are working with the heat recovery unit and there is a large difference in temperature between the external air and the air in the room, a stainless steel condensate trough is used to catch any condensate.

If required, this can then be discharged via a condensate drain.

An integrated heat exchanger (2- or 4-pipe system) conditions the room air and supplies air to the room whilst taking acoustic and comfort requirements into consideration. The external and exhaust air volume flow of up to 120 m³/h (supply and exhaust air) is achieved by means of two EC radial fans that are linked from a control perspective. Sequential activation of the integrated secondary air fan in relation to the room air temperature setpoint allows the useful thermal power that is supplied to the room to be increased several times over.

UZAS - Method of operation

Application areas

Decentralised floor ventilation units are ideally suited to areas with high demands in terms of room air quality and thermal comfort.

- Offices and administration rooms
- Business premises
- Reception areas and foyers
- Exhibition rooms
- Rooms requiring external air
- Rooms where windows cannot be opened
- Rooms whose appearance and layout should not be disturbed by heating components

Product benefits

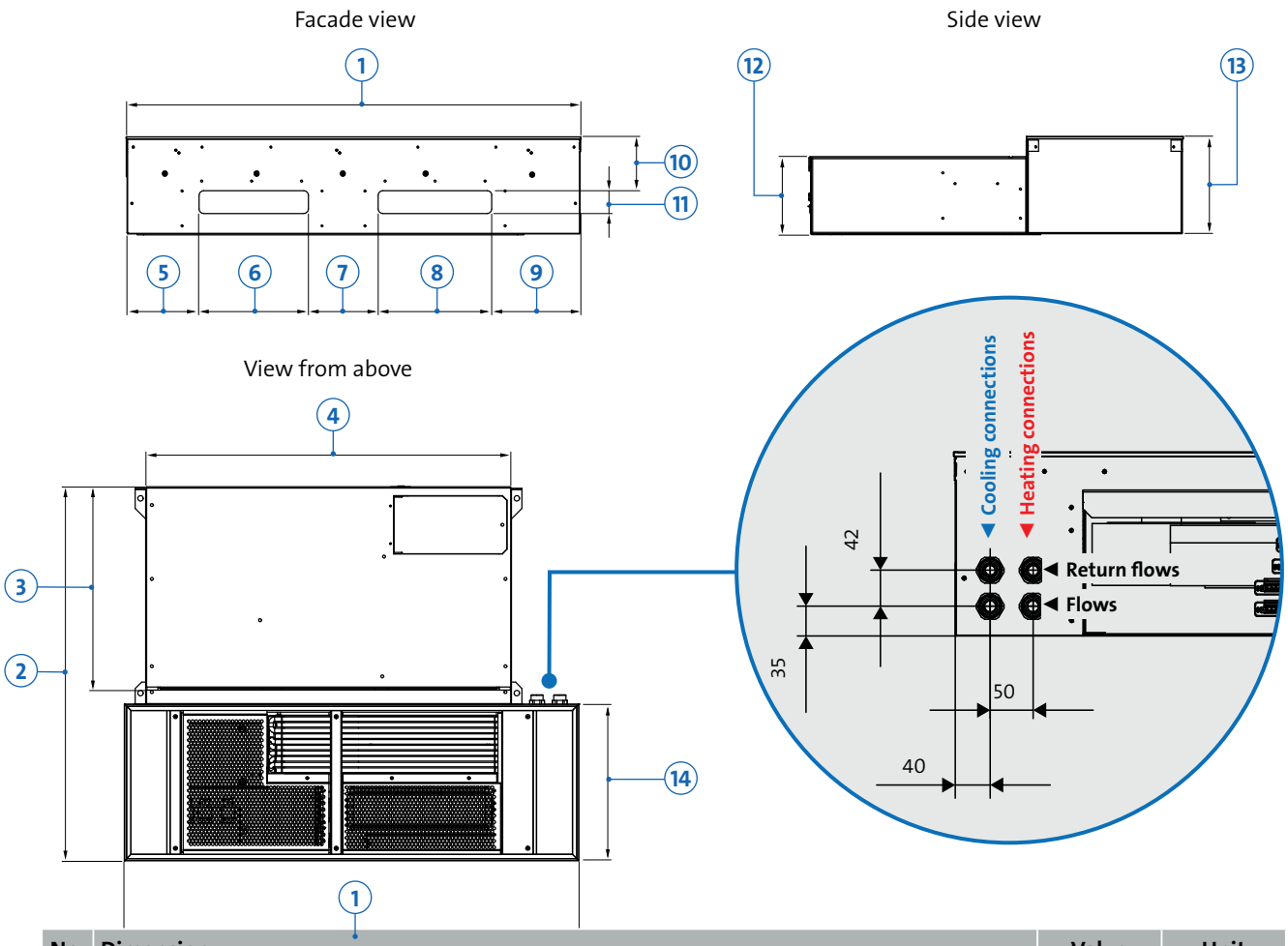
- Eurokonus valve connection for time-saving valve installation
- System for heating, cooling and ventilation
- High caloric output with low acoustic load
- Pleasant room climate thanks to air supply in the vicinity of the facade
- Load-bearing
- For use in false floors
- Can be adapted to suit the specific requirements of the building
- Infinitely adjustable control
- Low installation depth

Method of operation

The outdoor air (ODA) is drawn in directly via the facade and passes through a filter element (F7).
The supply air opening is closed automatically by a return spring motor when the unit is switched off (normally closed). There is a heat recovery unit located downstream of the supply air fan units, which is responsible for energy exchange between the supply and exhaust air (heat recovery ratio of up to 60 %). Air whose temperature is precontrolled using this equipment is heated or cooled by a heat exchanger, according to the room temperature that is required. The conditioned supply air (SUP) is supplied to the room via the cover grating located in the visible area of the unit.

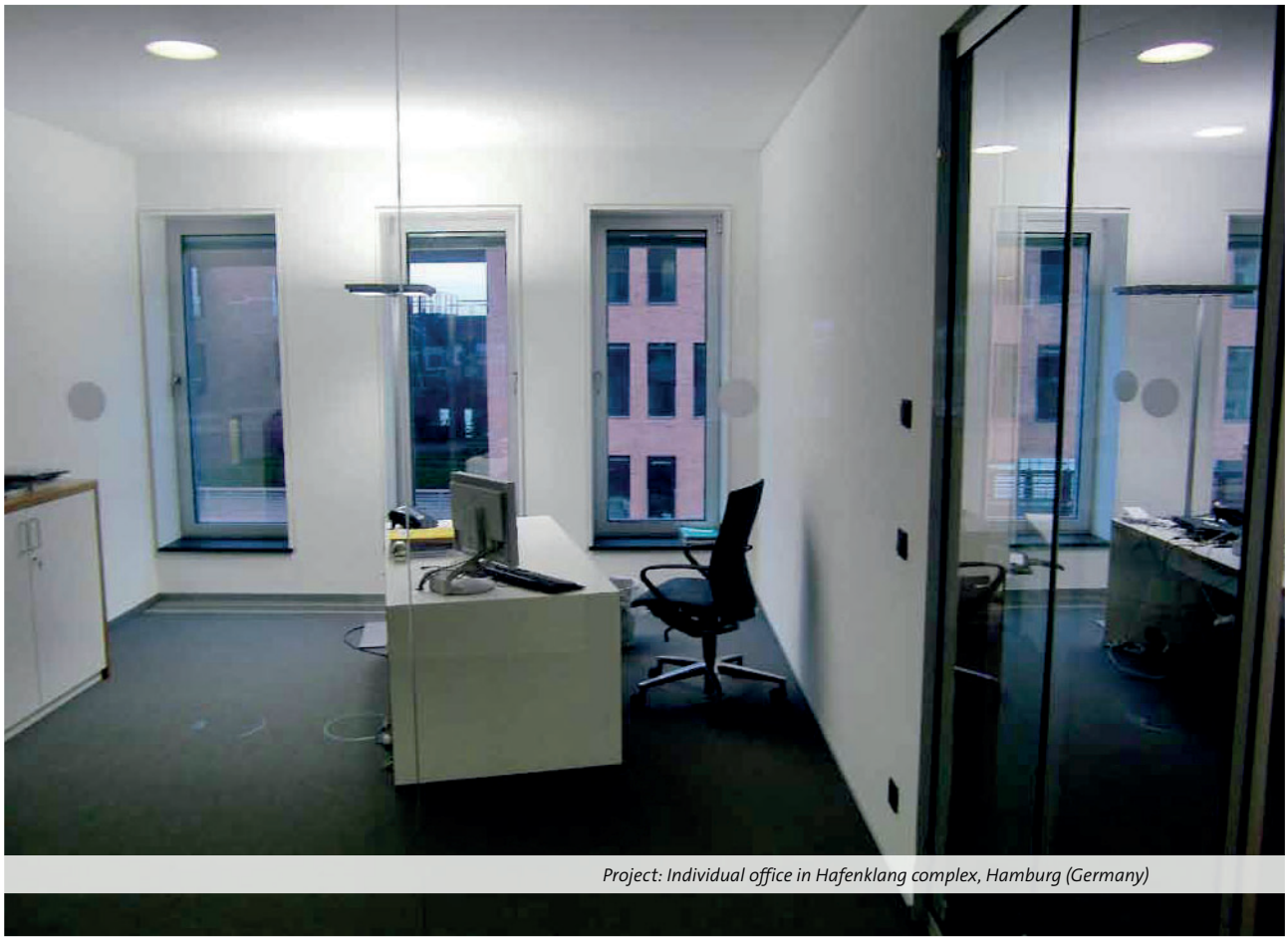
The exhaust air (ETA) is removed from the room via the cover and purified by a coarse dust filter. Once the exhaust air has passed through the heat recovery unit, it is conveyed outdoors as outgoing air (EHA) via an exhaust air opening (with flap). The exhaust air flap performs the same functions as the supply air flap.
Additionally, depending on the required heating or cooling power, room air is drawn in by means of the integrated secondary air fan, brought to the appropriate temperature in the heat exchanger, and fed back into the room as secondary air (SEC). This significantly increases the useful power available to the room.

UZAS – dimensions



No.	Dimension	Value	Unit
1	Length of housing (visible area)	1000	mm
2	Width of entire unit	824	mm
3	Width of function unit under FFB (invisible area)	478	mm
4	Length of function unit under FFB	801	mm
5	Distance between housing and supply air opening	160	mm
6	Width of supply air opening	240	mm
7	Distance between supply air and outgoing air opening	154	mm
8	Width of outgoing air opening	250	mm
9	Distance between housing and outgoing air opening	196	mm
10	Distance from top to supply air opening/outgoing air opening	119	mm
11	Height of supply air opening/outgoing air opening	50	mm
12	Height of function unit under FFB (invisible area)	172	mm
13	Height of housing (visible area)	214	mm
14	Width of housing (visible area)	345	mm

Dimensions and position of the supply and external air connections can be individually adapted.



Project: Individual office in Hafenklang complex, Hamburg (Germany)

Available as an option:
Preinstalled water connection
Water connections preinstalled at the factory are available as accessories for emcotherm floor convectors. The connection set consists of:

1. Thermostat valve
   Standard TVU-E or TVU-D
   (optional: TVU-V-E or TVU-V-D)
2. Continuous actuator
   emcoMFC-Z-MS-S
3. Shutoff return screw connection
4. Connections inside tray, fully piped and leading outward (connection ¾“ AG); testing for leaks

Benefits:

- Huge time savings during installation
- Dirt cannot get into the floor tray during installation as the tray is able to remain sealed
- The media and electrical connections are supplied outside of the floor tray
- Media connections are fully tested for leaks at the factory

Available as an option:
Ready-to-use electrical version
All electrical components are pre-wired at the factory and attached to the exterior of the tray by means of screw-in connectors. The customer can carry out wiring work outside the tray easily using the mating connectors supplied.

UZAS (width 345 mm, length 1000 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data, summer (cooling)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**6**
Width	m	5.00	Return temperature	t_R	°C	**12**
Depth	m	4.00	Air inlet temperature, secondary air	t_{SEC}	°C	26
Surface area	m²	20	Relative humidity, secondary air	φ_{SEC}	%	50
Volume	m³	60	Air inlet temperature, external air	t_{ODA}	°C	32
Distance from sound source[1)]	m	3.00	Relative humidity, external air	φ_{ODA}	%	40

[1)] Direction factor Q=4 (sphere quadrant)

The following values can be derived on the basis of the specified building and climate parameters:

2- and 4-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
External air component	$\dot{V}_{ODA}$	m³/h	0	0	0	0	0	30	30	30	30
Secondary air component	$\dot{V}_{SEC}$	m³/h	32	67	104	147	187	32	67	104	147
Supply air quantity	$\dot{V}_{SUP}$	m³/h	32	67	104	147	187	62	97	134	177
Total sound power level	L_{WA}	dB(A)	22	25	33	41	48	28	29	34	41
Octave band sound power 125 Hz	L_{WA125}	dB	30	33	37	40	43	34	36	38	41
Octave band sound power 250 Hz	L_{WA250}	dB	12	23	32	39	45	22	26	32	39
Octave band sound power 500 Hz	L_{WA500}	dB	8	22	32	41	48	17	24	32	41
Octave band sound power 1000 Hz	L_{WA1000}	dB	3	16	27	36	44	7	17	27	36
Octave band sound power 2000 Hz	L_{WA2000}	dB	3	12	21	29	36	3	13	21	29
Octave band sound power 4000 Hz	L_{WA4000}	dB	8	13	17	22	25	10	14	18	22
Octave band sound power 8000 Hz	L_{WA8000}	dB	22	21	21	22	24	28	27	27	27
Sound pressure level[2)]	L_{PA}	dB(A)	16	19	27	35	42	21	23	28	35
Power consumption	p_{el}	W	2	3	6	11	17	6	7	10	15
2-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
Supply air temperature	t_{SUP}	°C	13	13	13	13	14	13	13	13	14
Condensate quantity	$\dot{m}_K$	l/h	0.1	0.2	0.3	0.4	0.4	0.2	0.3	0.4	0.5
Water mass flow rate	$\dot{m}_W$	l/h	28	61	92	124	147	64	94	121	148
Water-side pressure loss	Δp_W	kPa	0.0	0.4	0.9	1.5	2.0	0.4	0.9	1.4	2.0
Heat recovery	$\dot{Q}_{WRG}$	W	0	0	0	0	0	33	33	33	33
Cooling power, water side	$\dot{Q}_{K,water}$	W	194	429	647	866	1031	446	657	849	1036
Cooling power, latent	$\dot{Q}_{K,lat}$	W	57	134	198	252	279	151	214	263	299
Cooling power, total	$\dot{Q}_K$	**W**	**194**	**429**	**647**	**866**	**1031**	**479**	**690**	**882**	**1070**
Useful cooling power	$\dot{Q}_{K,nutz}$	**W**	**136**	**295**	**449**	**614**	**751**	**270**	**418**	**560**	**713**
4-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
Supply air temperature	t_{SUP}	°C	13.8	13.4	13.5	14.0	14.4	13.6	13.7	14.0	14.4
Condensate quantity	$\dot{m}_K$	l/h	0.1	0.2	0.3	0.3	0.4	0.2	0.3	0.3	0.4
Water mass flow rate	$\dot{m}_W$	l/h	25	56	84	112	133	58	86	110	134
Pressure loss, water side	Δp_W	kPa	0.0	0.3	0.6	1.1	1.4	0.3	0.6	1.0	1.4
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	0	0	0	0	0	33	33	33	33
Cooling power, water side	$\dot{Q}_{K,water}$	W	176	391	588	785	930	407	599	771	937
Cooling power, latent	$\dot{Q}_{K,lat}$	W	47	112	164	204	220	129	181	218	240
Cooling power, total	$\dot{Q}_K$	**W**	**176**	**391**	**588**	**785**	**930**	**441**	**632**	**804**	**971**
Useful cooling power	$\dot{Q}_{K,nutz}$	**W**	**129**	**278**	**424**	**580**	**710**	**253**	**393**	**528**	**672**

[2)] Approximation in acc. with VDI 2081

Mixed air operation. 2-pipe and 4-pipe system															
30	60	60	60	60	60	90	90	90	90	90	120	120	120	120	120
187	32	67	104	147	187	32	67	104	147	187	31	64	99	140	178
217	92	127	164	207	247	122	157	194	237	277	151	184	219	260	298
48	31	32	35	42	48	36	36	38	42	48	42	42	42	44	49
44	40	41	42	43	45	45	45	46	46	47	50	50	50	51	51
45	34	35	36	40	45	40	40	41	43	46	46	46	46	47	49
48	29	29	34	41	48	34	34	36	42	48	39	39	40	43	48
44	22	22	28	36	44	28	28	30	37	44	33	34	34	38	44
36	17	18	22	29	36	21	21	24	30	36	25	25	26	31	36
25	16	17	20	23	26	17	17	20	23	26	18	19	21	23	26
28	22	23	24	25	26	20	21	23	24	25	21	22	23	24	25
42	25	26	29	35	42	30	30	32	36	42	36	36	36	38	43
21	12	13	16	21	27	19	20	23	28	34	27	28	31	36	42
Mixed air operation. 2-pipe system															
14	13	13	14	14	15	13	14	14	15	15	14	14	15	15	16
0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.5
167	97	123	147	169	184	128	151	170	187	198	155	173	188	201	207
2.5	1.0	1.5	2.0	2.6	3.0	1.6	2.1	2.6	3.1	3.4	2.2	2.7	3.1	3.5	3.7
33	67	67	67	67	67	90	90	90	90	90	112	112	112	112	112
1171	677	863	1028	1183	1286	895	1054	1190	1311	1383	1084	1211	1316	1404	1448
308	234	282	315	331	322	303	336	353	348	319	358	375	376	355	313
1204	**744**	**930**	**1094**	**1249**	**1353**	**985**	**1144**	**1281**	**1402**	**1473**	**1195**	**1322**	**1428**	**1515**	**1560**
838	**394**	**531**	**663**	**802**	**915**	**508**	**634**	**754**	**880**	**980**	**606**	**716**	**820**	**929**	**1015**
Mixed air operation. 4-pipe system															
14.9	13.8	14.0	14.4	14.9	15.4	14.2	14.5	14.9	15.4	15.9	14.6	14.9	15.3	15.8	16.3
0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.4
150	88	112	133	152	165	117	137	154	168	176	141	157	170	180	184
1.8	0.7	1.1	1.4	1.8	2.1	1.1	1.5	1.8	2.2	2.3	1.6	1.9	2.2	2.4	2.5
33	67	67	67	67	67	90	90	90	90	90	112	112	112	112	112
1053	619	786	932	1067	1153	817	958	1077	1178	1233	987	1097	1187	1257	1287
238	200	237	259	262	242	258	280	286	268	229	301	308	299	267	215
1086	**686**	**853**	**999**	**1133**	**1219**	**907**	**1048**	**1167**	**1268**	**1324**	**1098**	**1209**	**1299**	**1369**	**1398**
790	**369**	**499**	**623**	**755**	**861**	**475**	**594**	**707**	**826**	**920**	**566**	**669**	**767**	**870**	**952**

UZAS (width 345 mm, length 1000 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data, summer (cooling)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**10**
Width	m	5.00	Return temperature	t_R	°C	**15**
Depth	m	4.00	Air inlet temperature, secondary air	t_{SEC}	°C	26
Surface area	m²	20	Relative humidity, secondary air	φ_{SEC}	%	50
Volume	m³	60	Air inlet temperature, external air	t_{ODA}	°C	32
Distance from sound source[1)]	m	3.00	Relative humidity, external air	φ_{ODA}	%	40

[1)] Direction factor Q=4 (sphere quadrant)

The following values can be derived on the basis of the specified building and climate parameters:

2- and 4-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
External air component	$\dot{V}_{ODA}$	m³/h	0	0	0	0	0	30	30	30	30
Secondary air component	$\dot{V}_{SEC}$	m³/h	32	67	104	147	187	32	67	104	147
Supply air quantity	$\dot{V}_{SUP}$	m³/h	32	67	104	147	187	62	97	134	177
Total sound power level	L_{WA}	dB(A)	22	25	33	41	48	28	29	34	41
Octave band sound power 125 Hz	L_{WA125}	dB	30	33	37	40	43	34	36	38	41
Octave band sound power 250 Hz	L_{WA250}	dB	12	23	32	39	45	22	26	32	39
Octave band sound power 500 Hz	L_{WA500}	dB	8	22	32	41	48	17	24	32	41
Octave band sound power 1000 Hz	L_{WA1000}	dB	3	16	27	36	44	7	17	27	36
Octave band sound power 2000 Hz	L_{WA2000}	dB	3	12	21	29	36	3	13	21	29
Octave band sound power 4000 Hz	L_{WA4000}	dB	8	13	17	22	25	10	14	18	22
Octave band sound power 8000 Hz	L_{WA8000}	dB	22	21	21	22	24	28	27	27	27
Sound pressure level[2)]	L_{PA}	dB(A)	16	19	27	35	42	21	23	28	35
Power consumption	p_{el}	W	2	3	6	11	17	6	7	10	15
2-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
Supply air temperature	t_{SUP}	°C	15.7	15.3	15.5	15.8	16.2	15.5	15.6	15.8	16.2
Condensate quantity	$\dot{m}_K$	l/h	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
Water mass flow rate	$\dot{m}_W$	l/h	22	49	73	96	112	53	77	98	116
Water-side pressure loss	Δp_W	kPa	0.0	0.3	0.6	0.9	1.2	0.3	0.6	1.0	1.3
Heat recovery	$\dot{Q}_{WRG}$	W	0	0	0	0	0	33	33	33	33
Cooling power, water side	$\dot{Q}_{K,water}$	W	126	285	427	562	654	311	450	569	676
Cooling power, latent	$\dot{Q}_{K,lat}$	W	17	50	69	71	54	72	92	98	83
Cooling power, total	$\dot{Q}_K$	**W**	**126**	**285**	**427**	**562**	**654**	**345**	**483**	**602**	**709**
Useful cooling power	$\dot{Q}_{K,nutz}$	**W**	**109**	**235**	**358**	**490**	**600**	**214**	**332**	**446**	**568**
4-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
Supply air temperature	t_{SUP}	°C	16.3	15.9	16.1	16.4	16.7	16.2	16.2	16.4	16.8
Condensate quantity	$\dot{m}_K$	l/h	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1
Water mass flow rate	$\dot{m}_W$	l/h	19	43	64	84	98	48	68	86	101
Pressure loss, water side	Δp_W	kPa	0.0	0.2	0.4	0.6	0.8	0.2	0.4	0.7	0.9
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	0	0	0	0	0	33	33	33	33
Cooling power, water side	$\dot{Q}_{K,water}$	W	111	252	376	492	569	278	399	501	590
Cooling power, latent	$\dot{Q}_{K,lat}$	W	8	30	38	28	0	52	61	56	30
Cooling power, total	$\dot{Q}_K$	**W**	**111**	**252**	**376**	**492**	**569**	**311**	**432**	**535**	**623**
Useful cooling power	$\dot{Q}_{K,nutz}$	**W**	**103**	**222**	**338**	**463**	**569**	**201**	**312**	**420**	**535**

[2)] Approximation in acc. with VDI 2081

Mixed air operation. 2-pipe and 4-pipe system															
30	60	60	60	60	60	90	90	90	90	90	120	120	120	120	120
187	32	67	104	147	187	32	67	104	147	187	31	64	99	140	178
217	92	127	164	207	247	122	157	194	237	277	151	184	219	260	298
48	31	32	35	42	48	36	36	38	42	48	42	42	42	44	49
44	40	41	42	43	45	45	45	46	46	47	50	50	50	51	51
45	34	35	36	40	45	40	40	41	43	46	46	46	46	47	49
48	29	29	34	41	48	34	34	36	42	48	39	39	40	43	48
44	22	22	28	36	44	28	28	30	37	44	33	34	34	38	44
36	17	18	22	29	36	21	21	24	30	36	25	25	26	31	36
25	16	17	20	23	26	17	17	20	23	26	18	19	21	23	26
28	22	23	24	25	26	20	21	23	24	25	21	22	23	24	25
42	25	26	29	35	42	30	30	32	36	42	36	36	36	38	43
21	12	13	16	21	27	19	20	23	28	34	27	28	31	36	42
Mixed air operation. 2-pipe system															
16.6	15.7	15.9	16.2	16.6	17.0	16.0	16.3	16.6	17.0	17.4	16.3	16.6	17.0	17.4	17.8
0.1	0.2	0.2	0.2	0.2	0.1	0.3	0.2	0.2	0.1	0.1	0.3	0.3	0.2	0.1	0.0
127	82	102	118	132	139	109	125	137	145	148	132	143	151	155	158
1.6	0.7	1.1	1.4	1.7	1.8	1.2	1.5	1.8	2.0	2.0	1.7	1.9	2.1	2.2	2.3
33	67	67	67	67	67	90	90	90	90	90	112	112	112	112	112
742	479	595	690	769	809	636	728	799	848	863	769	835	881	904	923
49	117	123	114	82	31	150	142	117	66	0	170	149	113	49	0
775	**546**	**662**	**757**	**836**	**875**	**726**	**818**	**889**	**938**	**953**	**880**	**947**	**993**	**1016**	**1035**
668	**312**	**422**	**526**	**638**	**728**	**402**	**502**	**597**	**697**	**778**	**478**	**565**	**648**	**734**	**802**
Mixed air operation. 4-pipe system															
17.1	16.4	16.5	16.8	17.2	17.5	16.7	16.9	17.2	17.6	18.0	17.0	17.3	17.6	17.9	18.3
0.0	0.1	0.1	0.1	0.1	0.0	0.2	0.2	0.1	0.0	0.0	0.2	0.2	0.1	0.0	0.0
113	73	90	104	115	126	97	110	120	127	140	117	126	132	138	150
1.1	0.5	0.7	0.9	1.1	1.3	0.8	1.0	1.2	1.3	1.6	1.1	1.3	1.4	1.5	1.8
33	67	67	67	67	67	90	90	90	90	90	112	112	112	112	112
657	427	527	607	668	737	566	643	699	739	815	682	735	767	807	872
0	85	82	62	19	0	107	89	55	0	0	117	87	42	0	0
690	**494**	**594**	**674**	**735**	**804**	**656**	**733**	**789**	**829**	**905**	**794**	**846**	**879**	**919**	**984**
632	**292**	**395**	**494**	**599**	**687**	**374**	**469**	**559**	**654**	**730**	**444**	**527**	**605**	**686**	**751**

UZAS (width 345 mm, length 1000 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data, summer (cooling)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**16**
Width	m	5.00	Return temperature	t_R	°C	**18**
Depth	m	4.00	Air inlet temperature, secondary air	t_{SEC}	°C	26
Surface area	m²	20	Relative humidity, secondary air	φ_{SEC}	%	50
Volume	m³	60	Air inlet temperature, external air	t_{ODA}	°C	32
Distance from sound source[1)]	m	3.00	Relative humidity, external air	φ_{ODA}	%	40

[1)] Direction factor Q=4 (sphere quadrant)

The following values can be derived on the basis of the specified building and climate parameters:

2- and 4-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
External air component	$\dot{V}_{ODA}$	m³/h	0	0	0	0	0	30	30	30	30
Secondary air component	$\dot{V}_{SEC}$	m³/h	32	67	104	147	187	32	67	104	147
Supply air quantity	$\dot{V}_{SUP}$	m³/h	32	67	104	147	187	62	97	134	177
Total sound power level	L_{WA}	dB(A)	22	25	33	41	48	28	29	34	41
Octave band sound power 125 Hz	L_{WA125}	dB	30	33	37	40	43	34	36	38	41
Octave band sound power 250 Hz	L_{WA250}	dB	12	23	32	39	45	22	26	32	39
Octave band sound power 500 Hz	L_{WA500}	dB	8	22	32	41	48	17	24	32	41
Octave band sound power 1000 Hz	L_{WA1000}	dB	3	16	27	36	44	7	17	27	36
Octave band sound power 2000 Hz	L_{WA2000}	dB	3	12	21	29	36	3	13	21	29
Octave band sound power 4000 Hz	L_{WA4000}	dB	8	13	17	22	25	10	14	18	22
Octave band sound power 8000 Hz	L_{WA8000}	dB	22	21	21	22	24	28	27	27	27
Sound pressure level[2)]	L_{PA}	dB(A)	16	19	27	35	42	21	23	28	35
Power consumption	p_{el}	W	2	3	6	11	17	6	7	10	15
2-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
Supply air temperature	t_{SUP}	°C	19.1	18.8	18.9	19.1	19.4	19.0	19.0	19.2	19.4
Condensate quantity	$\dot{m}_K$	l/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water mass flow rate	$\dot{m}_W$	l/h	31	68	104	142	174	72	106	139	174
Water-side pressure loss	Δp_W	kPa	0.1	0.5	1.1	1.9	2.7	0.6	1.1	1.8	2.7
Heat recovery	$\dot{Q}_{WRG}$	W	0	0	0	0	0	33	33	33	33
Cooling power, water side	$\dot{Q}_{K,water}$	W	73	159	242	331	406	168	248	324	407
Cooling power, latent	$\dot{Q}_{K,lat}$	W	0	0	0	0	0	0	0	0	0
Cooling power, total	**$\dot{Q}_K$**	**W**	**73**	**159**	**242**	**331**	**406**	**201**	**281**	**358**	**440**
Useful cooling power	**$\dot{Q}_{K,nutz}$**	**W**	**73**	**159**	**242**	**331**	**406**	**142**	**222**	**299**	**382**
4-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
Supply air temperature	t_{SUP}	°C	19.5	19.2	19.3	19.5	19.8	19.5	19.5	19.6	19.8
Condensate quantity	$\dot{m}_K$	l/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water mass flow rate	$\dot{m}_W$	l/h	30	64	98	134	164	68	100	131	165
Pressure loss, water side	Δp_W	kPa	0.0	0.4	0.8	1.4	2.1	0.4	0.9	1.4	2.1
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	0	0	0	0	0	33	33	33	33
Cooling power, water side	$\dot{Q}_{K,water}$	W	69	150	228	313	383	158	234	306	384
Cooling power, latent	$\dot{Q}_{K,lat}$	W	0	0	0	0	0	0	0	0	0
Cooling power, total	**$\dot{Q}_K$**	**W**	69	150	228	313	383	**192**	**267**	**340**	**418**
Useful cooling power	**$\dot{Q}_{K,nutz}$**	**W**	69	150	228	313	383	**133**	**208**	**281**	**359**

[2)] Approximation in acc. with VDI 2081

Mixed air operation. 2-pipe and 4-pipe system															
30	60	60	60	60	60	90	90	90	90	90	120	120	120	120	120
187	32	67	104	147	187	32	67	104	147	187	31	64	99	140	178
217	92	127	164	207	247	122	157	194	237	277	151	184	219	260	298
48	31	32	35	42	48	36	36	38	42	48	42	42	42	44	49
44	40	41	42	43	45	45	45	46	46	47	50	50	50	51	51
45	34	35	36	40	45	40	40	41	43	46	46	46	46	47	49
48	29	29	34	41	48	34	34	36	42	48	39	39	40	43	48
44	22	22	28	36	44	28	28	30	37	44	33	34	34	38	44
36	17	18	22	29	36	21	21	24	30	36	25	25	26	31	36
25	16	17	20	23	26	17	17	20	23	26	18	19	21	23	26
28	22	23	24	25	26	20	21	23	24	25	21	22	23	24	25
42	25	26	29	35	42	30	30	32	36	42	36	36	36	38	43
21	12	13	16	21	27	19	20	23	28	34	27	28	31	36	42
Mixed air operation. 2-pipe system															
19.7	19.2	19.3	19.5	19.7	20.0	19.4	19.6	19.8	20.1	20.3	19.7	19.9	20.1	20.3	20.6
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
203	110	142	172	204	230	149	178	206	235	258	185	210	234	259	278
3.6	1.2	1.9	2.7	3.6	4.5	2.1	2.9	3.7	4.7	5.5	3.1	3.8	4.7	5.6	6.4
33	67	67	67	67	67	90	90	90	90	90	112	112	112	112	112
474	257	331	402	477	537	349	416	480	547	601	432	491	546	604	649
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
508	**324**	**398**	**468**	**543**	**604**	**439**	**506**	**570**	**637**	**691**	**544**	**602**	**657**	**715**	**761**
449	**207**	**280**	**351**	**426**	**487**	**263**	**330**	**395**	**462**	**515**	**310**	**368**	**424**	**481**	**527**
Mixed air operation. 4-pipe system															
20.1	19.7	19.7	19.9	20.1	20.4	19.9	20.0	20.2	20.5	20.7	20.2	20.3	20.5	20.7	21.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
192	104	134	163	193	218	141	168	194	221	243	175	199	221	244	263
2.7	0.9	1.4	2.0	2.8	3.4	1.6	2.2	2.8	3.5	4.2	2.3	2.9	3.5	4.2	4.8
33	67	67	67	67	67	90	90	90	90	90	112	112	112	112	112
448	243	313	379	450	508	329	393	453	517	567	408	463	515	570	613
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
481	**310**	**379**	**446**	**517**	**574**	**419**	**483**	**544**	**607**	**658**	**520**	**575**	**627**	**682**	**725**
423	**192**	**262**	**329**	**399**	**457**	**243**	**307**	**368**	**431**	**482**	**286**	**341**	**393**	**448**	**491**

UZAS (width 345 mm, length 1000 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data, winter (heating)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**75**
Width	m	5.00	Return temperature	t_R	°C	**65**
Depth	m	4.00	Air inlet temperature, secondary air	t_{SEC}	°C	20
Surface area	m²	20	Relative humidity, secondary air	φ_{SEC}	%	50
Volume	m³	60	Air inlet temperature, external air	t_{ODA}	°C	–12
Distance from sound source[1)]	m	3.00	Relative humidity, external air	φ_{ODA}	%	50

[1)] Direction factor Q=4 (sphere quadrant)

The following values can be derived on the basis of the specified building and climate parameters:

2- and 4-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
External air component	$\dot{V}_{ODA}$	m³/h	0	0	0	0	0	30	30	30	30
Secondary air component	$\dot{V}_{SEC}$	m³/h	32	67	104	147	187	32	67	104	147
Supply air quantity	$\dot{V}_{SUP}$	m³/h	32	67	104	147	187	62	97	134	177
Total sound power level	L_{WA}	dB(A)	22	25	33	41	48	28	29	34	41
Sound pressure level[2)]	L_{PA}	dB(A)	16	19	27	35	42	21	23	28	35
Power consumption	p_{el}	W	2	3	6	11	17	6	7	10	15
2-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
Supply air temperature	t_{SUP}	°C	59.6	58.9	58.1	57.1	56.2	59.0	58.3	57.4	56.4
Water mass flow rate	$\dot{m}_W$	l/h	37	75	114	157	195	80	117	154	195
Water-side pressure loss	Δp_W	kPa	0.1	0.6	1.3	2.3	3.3	0.7	1.3	2.2	3.4
Heat recovery	$\dot{Q}_{WRG}$	W	0	0	0	0	0	200	200	200	200
Heating power, water side	$\dot{Q}_{H,\,water}$	W	429	877	1326	1832	2271	935	1366	1797	2280
Heating power, total	$\dot{Q}_H$	**W**	**429**	**877**	**1326**	**1832**	**2271**	**1135**	**1566**	**1997**	**2480**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**429**	**877**	**1326**	**1832**	**2271**	**815**	**1246**	**1677**	**2160**
4-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
Supply air temperature	t_{SUP}	°C	61.7	51.1	47.2	44.6	42.9	50.9	46.8	44.5	42.5
Water mass flow rate	$\dot{m}_W$	l/h	39	60	81	104	123	66	85	104	125
Pressure loss, water side	Δp_W	kPa	0.1	0.3	0.6	0.9	1.2	0.4	0.6	0.9	1.3
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	0	0	0	0	0	200	200	200	200
Heating power, water side	$\dot{Q}_{H,\,water}$	W	452	700	946	1214	1434	765	991	1217	1459
Heating power, total	$\dot{Q}_H$	**W**	**452**	**700**	**946**	**1214**	**1434**	**965**	**1191**	**1417**	**1659**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**452**	**700**	**946**	**1214**	**1434**	**645**	**871**	**1097**	**1339**

[2)] Approximation in acc. with VDI 2081

Mixed air operation. 2-pipe and 4-pipe system															
30	60	60	60	60	60	90	90	90	90	90	120	120	120	120	120
187	32	67	104	147	187	32	67	104	147	187	31	64	99	140	178
217	92	127	164	207	247	122	157	194	237	277	151	184	219	260	298
48	31	32	35	42	48	36	36	38	42	48	42	42	42	44	49
42	25	26	29	35	42	30	30	32	36	42	36	36	36	38	43
21	12	13	16	21	27	19	20	23	28	34	27	28	31	36	42
Mixed air operation. 2-pipe system															
55.4	58.1	57.4	56.6	55.5	54.6	56.7	56.1	55.4	54.4	53.5	55.4	54.9	54.2	53.4	52.5
231	122	157	193	232	266	165	199	233	270	302	206	237	267	301	330
4.6	1.4	2.3	3.3	4.6	5.9	2.5	3.5	4.6	6.1	7.4	3.7	4.8	5.9	7.4	8.8
200	400	400	400	400	400	542	542	542	542	542	671	671	671	671	671
2698	1418	1833	2246	2706	3103	1923	2321	2715	3152	3526	2398	2760	3118	3515	3854
2898	**1818**	**2234**	**2646**	**3107**	**3503**	**2464**	**2863**	**3257**	**3694**	**4068**	**3068**	**3431**	**3789**	**4186**	**4525**
2578	**1178**	**1594**	**2006**	**2467**	**2863**	**1504**	**1903**	**2297**	**2734**	**3108**	**1788**	**2151**	**2509**	**2906**	**3245**
Mixed air operation. 4-pipe system															
41.0	46.0	43.8	42.3	40.7	39.3	42.2	41.0	39.9	38.5	37.3	39.5	38.7	37.8	36.7	35.5
141	89	108	125	144	158	114	131	147	162	173	137	151	164	177	185
1.6	0.7	1.0	1.3	1.6	1.9	1.1	1.4	1.7	2.0	2.3	1.5	1.8	2.1	2.4	2.6
200	400	400	400	400	400	542	542	542	542	542	671	671	671	671	671
1650	1043	1256	1462	1676	1839	1330	1526	1710	1893	2022	1593	1762	1915	2062	2158
1851	**1443**	**1656**	**1863**	**2077**	**2239**	**1872**	**2068**	**2252**	**2435**	**2564**	**2264**	**2432**	**2586**	**2732**	**2829**
1531	**803**	**1016**	**1223**	**1437**	**1599**	**912**	**1108**	**1292**	**1475**	**1604**	**984**	**1152**	**1306**	**1452**	**1549**

UZAS (width 345 mm, length 1000 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data, winter (heating)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**55**
Width	m	5.00	Return temperature	t_R	°C	**45**
Depth	m	4.00	Air inlet temperature, secondary air	t_{SEC}	°C	20
Surface area	m²	20	Relative humidity, secondary air	φ_{SEC}	%	50
Volume	m³	60	Air inlet temperature, external air	t_{ODA}	°C	–12
Distance from sound source[1)]	m	3.00	Relative humidity, external air	φ_{ODA}	%	50

[1)] Direction factor Q=4 (sphere quadrant)

The following values can be derived on the basis of the specified building and climate parameters:

2- and 4-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
External air component	$\dot{V}_{ODA}$	m³/h	0	0	0	0	0	30	30	30	30
Secondary air component	$\dot{V}_{SEC}$	m³/h	32	67	104	147	187	32	67	104	147
Supply air quantity	$\dot{V}_{SUP}$	m³/h	32	67	104	147	187	62	97	134	177
Total sound power level	L_{WA}	dB(A)	22	25	33	41	48	28	29	34	41
Sound pressure level[2)]	L_{PA}	dB(A)	16	19	27	35	42	21	23	28	35
Power consumption	p_{el}	W	2	3	6	11	17	6	7	10	15
2-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
Supply air temperature	t_{SUP}	°C	43.8	43.4	42.9	42.3	41.7	43.4	43.0	42.4	41.8
Water mass flow rate	$\dot{m}_W$	l/h	22	45	68	94	117	52	74	96	121
Water-side pressure loss	Δp_W	kPa	0.0	0.2	0.5	0.9	1.3	0.3	0.6	1.0	1.4
Heat recovery	$\dot{Q}_{WRG}$	W	0	0	0	0	0	200	200	200	200
Heating power, water side	$\dot{Q}_{H,\,water}$	W	258	527	796	1099	1362	609	868	1126	1414
Heating power, total	$\dot{Q}_H$	**W**	**258**	**527**	**796**	**1099**	**1362**	**809**	**1068**	**1326**	**1614**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**258**	**527**	**796**	**1099**	**1362**	**489**	**748**	**1006**	**1294**
4-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
Supply air temperature	t_{SUP}	°C	45.0	38.6	36.2	34.6	33.5	38.0	35.5	34.1	33.0
Water mass flow rate	$\dot{m}_W$	l/h	23	36	48	62	72	43	54	65	76
Pressure loss, water side	Δp_W	kPa	0.0	0.1	0.2	0.3	0.5	0.2	0.3	0.4	0.5
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	0	0	0	0	0	200	200	200	200
Heating power, water side	$\dot{Q}_{H,\,water}$	W	271	418	562	718	844	496	625	753	890
Heating power, total	$\dot{Q}_H$	**W**	**271**	**418**	**562**	**718**	**844**	**696**	**825**	**953**	**1090**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**271**	**418**	**562**	**718**	**844**	**376**	**505**	**633**	**770**

[2)] Approximation in acc. with VDI 2081

Mixed air operation. 2-pipe and 4-pipe system															
30	60	60	60	60	60	90	90	90	90	90	120	120	120	120	120
187	32	67	104	147	187	32	67	104	147	187	31	64	99	140	178
217	92	127	164	207	247	122	157	194	237	277	151	184	219	260	298
48	31	32	35	42	48	36	36	38	42	48	42	42	42	44	49
42	25	26	29	35	42	30	30	32	36	42	36	36	36	38	43
21	12	13	16	21	27	19	20	23	28	34	27	28	31	36	42
Mixed air operation. 2-pipe system															
41.2	42.7	42.3	41.8	41.2	40.6	41.6	41.3	40.9	40.3	39.8	40.6	40.4	40.0	39.5	39.0
142	81	102	123	147	167	112	132	152	174	193	141	160	178	198	215
1.9	0.7	1.1	1.5	2.0	2.5	1.2	1.7	2.2	2.7	3.3	1.9	2.3	2.8	3.4	4.0
200	400	400	400	400	400	542	542	542	542	542	671	671	671	671	671
1662	943	1192	1438	1712	1946	1305	1543	1776	2034	2254	1648	1864	2076	2309	2507
1862	**1344**	**1593**	**1839**	**2112**	**2347**	**1846**	**2084**	**2318**	**2576**	**2796**	**2319**	**2535**	**2747**	**2980**	**3178**
1542	**704**	**953**	**1199**	**1472**	**1707**	**886**	**1124**	**1358**	**1616**	**1836**	**1039**	**1255**	**1467**	**1700**	**1898**
Mixed air operation. 4-pipe system															
32.1	34.5	33.3	32.5	31.6	30.7	31.6	31.1	30.5	29.8	29.1	29.4	29.2	28.8	28.3	27.6
85	59	69	79	89	97	77	86	94	103	108	93	101	107	114	118
0.6	0.3	0.4	0.6	0.7	0.8	0.5	0.7	0.8	0.9	1.0	0.8	0.9	1.0	1.1	1.1
200	400	400	400	400	400	542	542	542	542	542	671	671	671	671	671
997	689	808	923	1042	1130	894	1002	1102	1199	1265	1083	1174	1254	1328	1373
1197	**1089**	**1209**	**1324**	**1442**	**1530**	**1436**	**1544**	**1644**	**1741**	**1806**	**1754**	**1844**	**1925**	**1999**	**2043**
877	**449**	**569**	**684**	**802**	**890**	**476**	**584**	**684**	**781**	**846**	**474**	**564**	**645**	**719**	**763**

UZAS (width 345 mm, length 1000 mm) – dimensioning examples

Basic conditions: building/room type T [s] according to VDI 2081 (individual office)						
Room data	**Unit**	**Value**	**Climate data, winter (heating)**	**Symbol**	**Unit**	**Value**
Height	m	3.00	Flow temperature	t_V	°C	**45**
Width	m	5.00	Return temperature	t_R	°C	**40**
Depth	m	4.00	Air inlet temperature, secondary air	t_{SEC}	°C	20
Surface area	m^2	20	Relative humidity, secondary air	φ_{SEC}	%	50
Volume	m^3	60	Air inlet temperature, external air	t_{ODA}	°C	–12
Distance from sound source[1)]	m	3.00	Relative humidity, external air	φ_{ODA}	%	50

[1)] Direction factor Q=4 (sphere quadrant)

The following values can be derived on the basis of the specified building and climate parameters:

2- and 4-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
External air component	$\dot{V}_{ODA}$	m^3/h	0	0	0	0	0	30	30	30	30
Secondary air component	$\dot{V}_{SEC}$	m^3/h	32	67	104	147	187	32	67	104	147
Supply air quantity	$\dot{V}_{SUP}$	m^3/h	32	67	104	147	187	62	97	134	177
Total sound power level	L_{WA}	dB(A)	22	25	33	41	48	28	29	34	41
Sound pressure level[2)]	L_{PA}	dB(A)	16	19	27	35	42	21	23	28	35
Power consumption	p_{el}	W	2	3	6	11	17	6	7	10	15
2-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
Supply air temperature	t_{SUP}	°C	37.9	37.6	37.2	36.7	36.3	37.6	37.2	36.8	36.3
Water mass flow rate	$\dot{m}_W$	l/h	33	68	102	141	175	83	117	150	187
Water-side pressure loss	Δp_W	kPa	0.1	0.5	1.1	1.9	2.8	0.7	1.3	2.1	3.1
Heat recovery	$\dot{Q}_{WRG}$	W	0	0	0	0	0	200	200	200	200
Heating power, water side	$\dot{Q}_{H,\,water}$	W	194	395	597	824	1021	487	681	874	1089
Heating power, total	$\dot{Q}_H$	**W**	**194**	**395**	**597**	**824**	**1021**	**687**	**881**	**1074**	**1289**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**194**	**395**	**597**	**824**	**1021**	**367**	**561**	**754**	**969**
4-pipe system	**Symbol**	**Unit**	**Secondary air operation**								
Supply air temperature	t_{SUP}	°C	38.8	33.9	32.1	30.8	30.0	33.2	31.3	30.3	29.4
Water mass flow rate	$\dot{m}_W$	l/h	35	54	72	92	107	68	84	100	116
Pressure loss, water side	Δp_W	kPa	0.1	0.3	0.5	0.7	1.0	0.4	0.6	0.9	1.1
Heat recovery (WRG)	$\dot{Q}_{WRG}$	W	0	0	0	0	0	200	200	200	200
Heating power, water side	$\dot{Q}_{H,\,water}$	W	203	312	419	534	626	396	488	581	679
Heating power, total	$\dot{Q}_H$	**W**	**203**	**312**	**419**	**534**	**626**	**596**	**688**	**781**	**879**
Useful heating power	$\dot{Q}_{H,\,nutz}$	**W**	**203**	**312**	**419**	**534**	**626**	**276**	**368**	**461**	**559**

[2)] Approximation in acc. with VDI 2081

Mixed air operation. 2-pipe and 4-pipe system															
30	60	60	60	60	60	90	90	90	90	90	120	120	120	120	120
187	32	67	104	147	187	32	67	104	147	187	31	64	99	140	178
217	92	127	164	207	247	122	157	194	237	277	151	184	219	260	298
48	31	32	35	42	48	36	36	38	42	48	42	42	42	44	49
42	25	26	29	35	42	30	30	32	36	42	36	36	36	38	43
21	12	13	16	21	27	19	20	23	28	34	27	28	31	36	42
Mixed air operation. 2-pipe system															
35.9	37.0	36.7	36.3	35.8	35.4	36.0	35.8	35.5	35.1	34.6	35.0	34.9	34.7	34.3	34.0
218	131	163	195	230	259	184	214	244	277	305	234	262	289	318	343
4.1	1.7	2.4	3.3	4.5	5.6	3.0	4.0	5.0	6.3	7.5	4.7	5.7	6.8	8.2	9.4
200	400	400	400	400	400	542	542	542	542	542	671	671	671	671	671
1274	765	952	1136	1339	1513	1073	1251	1425	1616	1778	1367	1528	1685	1857	2002
1474	**1166**	**1352**	**1536**	**1740**	**1914**	**1614**	**1793**	**1967**	**2158**	**2320**	**2038**	**2199**	**2356**	**2528**	**2673**
1154	**526**	**712**	**896**	**1100**	**1274**	**654**	**833**	**1007**	**1198**	**1360**	**758**	**919**	**1076**	**1248**	**1393**
Mixed air operation. 4-pipe system															
28.7	30.2	29.4	28.8	28.2	27.6	27.7	27.4	27.1	26.6	26.1	25.6	25.6	25.5	25.1	24.8
130	95	110	124	138	149	125	138	150	162	169	153	164	173	181	186
1.4	0.8	1.0	1.3	1.5	1.7	1.3	1.5	1.8	2.0	2.2	1.8	2.1	2.3	2.5	2.6
200	400	400	400	400	400	542	542	542	542	542	671	671	671	671	671
756	557	642	724	807	868	732	807	877	943	986	894	956	1010	1057	1084
956	**957**	**1042**	**1124**	**1208**	**1269**	**1274**	**1349**	**1418**	**1484**	**1528**	**1565**	**1626**	**1680**	**1728**	**1754**
636	**317**	**402**	**484**	**568**	**629**	**314**	**389**	**458**	**524**	**568**	**285**	**346**	**400**	**448**	**474**

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