

**Project No.:**

**Date:**

**Project data**

Name:

Street:

PC/City:

Telephone:

Fax:

**Investor/Building Owner**

Name:

Street:

PC/City:

Telephone:

Fax:

Email:

Person in charge

**Planner**

Name:

Street:

PC/City:

Telephone:

Fax:

Email:

Person in charge

**Notes**

**Drawing data**

Drawing number:

File: Heating Network.dwg

Content:

Auth.Pers:

Date:

**Project data**

Person in charge:

Notes:



# Heat Pump

# Compilation of flow paths

Flow paths											
Fl. No.	Heat flow rate W	Quantity SP.	Length m	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{val}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	182	11	106.7			19529		23769	35066	0	78365
2	181	11	106.5			19526		23769	35069	0	78365
3	616	11	99.7			23993		23956	30416	0	78365
4	283	15	98.1			19324		28305	30736	0	78365
5	827	11	93.7			26232		24118	28015	0	78365
6	253	17	91.4			19281		28376	30708	0	78365
7	3769	17	76.6			19205		28489	0	20260	67953
8	440	11	74.4			20254		23856	34255	0	78365
9	8136	11	72.2			19063		29352	0	29950	78365
10	417	11	71.3			19963		23846	34556	0	78365
11	486	11	68.4			20036		23877	34452	0	78365
12	170	11	66.6			19088		23767	35510	0	78365
13	169	11	64.0			19062		23767	35536	0	78365
14	441	11	61.2			19443		23856	35065	0	78365
15	542	11	57.5			9755		21850	46760	0	78365
16	178	11	54.3			9095		21710	47559	0	78365
17	178	11	52.3			9074		21710	47581	0	78365
18	852	13	50.7			16965		28373	33026	0	78365
19	117	13	50.6			15733		28795	33837	0	78365
20	3928	13	35.6			15805		29234	0	16150	61189
21	4818	11	15.1			12303		27707	0	18030	58040
22	26891	5	3.4			7623		22737	0	0	30360

# Heat Pump

# Compilation of section parts

Section parts												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
68	26891	4633	0.2	32	1.62	761	183	1.5	1939	0	0	2123
69	26891	4633	0.1	32	1.61	773	110	1.0	1290	0	0	1400
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
4	4827	830	2.3	25	0.47	117	263	5.5	613	0	0	876
16	22156	3803	3.7	32	1.33	534	1984	5.2	4530	0	0	6514
5	3929	675	22.4	20	0.60	235	5253	6.7	1205	0	0	6458
50	898	155	20.4	*20	0.14	18	373	9.2	87	0	0	461
42	486	83	7.0	12	0.21	70	491	4.7	99	34452	0	35042
43	486	83	8.2	12	0.21	72	591	1.2	26	0	0	616
46	169	29	5.6	12	0.07	10	54	4.7	12	35536	0	35602
47	169	29	5.2	12	0.07	10	54	1.2	3	0	0	57
34	440	76	10.1	12	0.19	61	610	4.7	83	34255	0	34948
35	440	76	11.1	12	0.19	62	689	1.2	22	0	0	711
12	181	31	27.0	12	0.08	10	277	4.7	14	35069	0	35361
13	181	31	26.3	12	0.08	11	294	1.2	4	0	0	298
26	827	142	20.8	12	0.35	178	3705	4.7	291	28015	0	32010
27	827	142	19.6	12	0.35	182	3573	1.2	75	0	0	3648
40	417	72	9.6	12	0.18	55	529	4.7	75	34556	0	35159
41	417	72	8.5	12	0.18	57	480	1.2	19	0	0	500
14	616	106	23.8	12	0.26	107	2557	4.7	162	30416	0	33135
15	616	106	22.6	12	0.26	110	2482	1.2	42	0	0	2524
6	182	31	26.4	12	0.08	10	272	4.7	14	35066	0	35352
7	182	31	27.1	12	0.08	11	303	1.2	4	0	0	307
48	441	76	3.5	12	0.19	61	210	4.7	83	35065	0	35358
49	441	76	4.5	12	0.19	62	279	1.2	22	0	0	301
44	170	29	6.9	12	0.07	10	66	4.7	12	35510	0	35588

# Heat Pump

# Compilation of section parts

Section parts												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
45	170	29	6.4	12	0.07	10	67	1.2	3	0	0	71
8	3929	675	22.7	20	0.60	239	5418	5.7	1023	0	0	6441
9	4827	830	2.4	25	0.47	119	281	1.0	111	0	0	393
53	898	155	20.6	*20	0.14	19	385	8.7	82	0	0	467
25	22156	3803	3.8	32	1.32	542	2074	1.2	1043	0	0	3118
39	12181	2091	9.2	32	0.73	187	1721	3.7	972	0	0	2694
24	9975	1712	1.6	32	0.60	131	210	3.0	529	0	0	739
37	8136	1396	21.2	32	0.49	90	1910	4.4	517	0	29950	32377
38	8136	1396	21.6	32	0.49	92	1979	4.4	516	0	0	2495
63	4045	694	2.8	25	0.40	87	240	3.0	233	0	0	473
36	12181	2091	9.0	32	0.73	184	1656	3.7	974	0	0	2630
60	4045	694	2.8	25	0.40	85	240	3.0	234	0	0	474
17	9975	1712	1.7	32	0.60	129	225	3.0	530	0	0	755
66	4818	827	0.3	25	0.47	116	30	1.5	166	0	18030	18226
67	4818	827	0.3	25	0.47	118	41	1.0	110	0	0	151
18	5157	885	13.6	25	0.51	131	1772	1.9	241	0	0	2013
23	5157	885	13.5	25	0.50	133	1797	1.9	240	0	0	2037
22	4305	739	17.0	*25	0.42	97	1651	1.9	167	0	0	1819
58	852	146	5.0	12	0.31	126	632	7.1	337	33026	0	33996
59	852	146	4.1	12	0.31	129	533	2.6	124	0	0	657
20	283	49	11.1	12	0.10	12	130	7.8	41	30736	0	30907
21	283	49	11.7	12	0.10	13	149	3.3	17	0	0	166
31	4022	690	0.3	25	0.39	86	26	0.5	38	0	0	65
19	4305	739	16.8	*25	0.42	95	1594	1.9	168	0	0	1762
28	4022	690	0.5	25	0.39	84	43	0.5	39	0	0	81
32	3769	647	0.1	20	0.58	218	29	0.5	83	0	20260	20372
33	3769	647	0.3	20	0.58	222	61	0.5	82	0	0	144
29	253	43	7.2	12	0.09	10	76	8.5	36	30708	0	30819
30	253	43	8.0	12	0.09	11	91	4.0	17	0	0	108
64	3928	674	0.3	20	0.60	234	65	1.5	269	0	16150	16485

# Heat Pump

# Compilation of section parts

Section parts												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
65	3928	674	0.4	20	0.60	239	86	1.0	179	0	0	265
61	117	20	8.2	*12	0.04	5	40	6.8	6	33837	0	33883
62	117	20	7.5	*12	0.04	5	39	2.8	3	0	0	42
51	542	93	4.6	12	0.23	86	393	4.7	125	46760	0	47277
52	542	93	3.7	12	0.23	88	320	1.2	32	0	0	353
56	178	31	1.9	12	0.08	10	19	4.7	14	47581	0	47614
57	178	31	1.2	12	0.08	11	13	1.2	4	0	0	16
54	178	31	2.9	12	0.08	10	29	4.7	14	47559	0	47602
55	178	31	2.2	12	0.08	11	24	1.2	4	0	0	28

# Heat Pump

# Section parts per flow path

Flow path No. 1, Radiators No. 36, Room No. 08, En-suite 4												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
4	4827	830	2.3	25	0.47	117	263	5.5	613	0	0	876
5	3929	675	22.4	20	0.60	235	5253	6.7	1205	0	0	6458
6	182	31	26.4	12	0.08	10	272	4.7	14	35066	0	35352
7	182	31	27.1	12	0.08	11	303	1.2	4	0	0	307
8	3929	675	22.7	20	0.60	239	5418	5.7	1023	0	0	6441
9	4827	830	2.4	25	0.47	119	281	1.0	111	0	0	393
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 2, Radiators No. 65, Room No. 08, En-suite 4												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
4	4827	830	2.3	25	0.47	117	263	5.5	613	0	0	876
5	3929	675	22.4	20	0.60	235	5253	6.7	1205	0	0	6458
12	181	31	27.0	12	0.08	10	277	4.7	14	35069	0	35361
13	181	31	26.3	12	0.08	11	294	1.2	4	0	0	298
8	3929	675	22.7	20	0.60	239	5418	5.7	1023	0	0	6441
9	4827	830	2.4	25	0.47	119	281	1.0	111	0	0	393
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 3, Radiators No. 70, Room No. 04, Bedroom 4/Dressing Area												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239

# Heat Pump

# Section parts per flow path

Flow path No. 3, Radiators No. 70, Room No. 04, Bedroom 4/Dressing Area												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
4	4827	830	2.3	25	0.47	117	263	5.5	613	0	0	876
5	3929	675	22.4	20	0.60	235	5253	6.7	1205	0	0	6458
14	616	106	23.8	12	0.26	107	2557	4.7	162	30416	0	33135
15	616	106	22.6	12	0.26	110	2482	1.2	42	0	0	2524
8	3929	675	22.7	20	0.60	239	5418	5.7	1023	0	0	6441
9	4827	830	2.4	25	0.47	119	281	1.0	111	0	0	393
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 4, Radiator No. 101, Room No. 02, Cloak Room/WC												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
16	22156	3803	3.7	32	1.33	534	1984	5.2	4530	0	0	6514
17	9975	1712	1.7	32	0.60	129	225	3.0	530	0	0	755
18	5157	885	13.6	25	0.51	131	1772	1.9	241	0	0	2013
19	4305	739	16.8	*25	0.42	95	1594	1.9	168	0	0	1762
20	283	49	11.1	12	0.10	12	130	7.8	41	30736	0	30907
21	283	49	11.7	12	0.10	13	149	3.3	17	0	0	166
22	4305	739	17.0	*25	0.42	97	1651	1.9	167	0	0	1819
23	5157	885	13.5	25	0.50	133	1797	1.9	240	0	0	2037
24	9975	1712	1.6	32	0.60	131	210	3.0	529	0	0	739
25	22156	3803	3.8	32	1.32	542	2074	1.2	1043	0	0	3118
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 5, Radiators No. 130, Room No. 02, Sitting Room												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa

# Heat Pump

# Section parts per flow path

Flow path No. 5, Radiators No. 130, Room No. 02, Sitting Room												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
4	4827	830	2.3	25	0.47	117	263	5.5	613	0	0	876
5	3929	675	22.4	20	0.60	235	5253	6.7	1205	0	0	6458
26	827	142	20.8	12	0.35	178	3705	4.7	291	28015	0	32010
27	827	142	19.6	12	0.35	182	3573	1.2	75	0	0	3648
8	3929	675	22.7	20	0.60	239	5418	5.7	1023	0	0	6441
9	4827	830	2.4	25	0.47	119	281	1.0	111	0	0	393
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 6, Radiator No. 145, Room No. 01, En-Suite 2												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
16	22156	3803	3.7	32	1.33	534	1984	5.2	4530	0	0	6514
17	9975	1712	1.7	32	0.60	129	225	3.0	530	0	0	755
18	5157	885	13.6	25	0.51	131	1772	1.9	241	0	0	2013
19	4305	739	16.8	*25	0.42	95	1594	1.9	168	0	0	1762
28	4022	690	0.5	25	0.39	84	43	0.5	39	0	0	81
29	253	43	7.2	12	0.09	10	76	8.5	36	30708	0	30819
30	253	43	8.0	12	0.09	11	91	4.0	17	0	0	108
31	4022	690	0.3	25	0.39	86	26	0.5	38	0	0	65
22	4305	739	17.0	*25	0.42	97	1651	1.9	167	0	0	1819
23	5157	885	13.5	25	0.50	133	1797	1.9	240	0	0	2037
24	9975	1712	1.6	32	0.60	131	210	3.0	529	0	0	739
25	22156	3803	3.8	32	1.32	542	2074	1.2	1043	0	0	3118
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847

# Heat Pump

# Section parts per flow path

Flow path No. 6, Radiator No. 145, Room No. 01, En-Suite 2												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 7, Floor heating manifold No. 159, M1												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
16	22156	3803	3.7	32	1.33	534	1984	5.2	4530	0	0	6514
17	9975	1712	1.7	32	0.60	129	225	3.0	530	0	0	755
18	5157	885	13.6	25	0.51	131	1772	1.9	241	0	0	2013
19	4305	739	16.8	*25	0.42	95	1594	1.9	168	0	0	1762
28	4022	690	0.5	25	0.39	84	43	0.5	39	0	0	81
32	3769	647	0.1	20	0.58	218	29	0.5	83	0	20260	20372
33	3769	647	0.3	20	0.58	222	61	0.5	82	0	0	144
31	4022	690	0.3	25	0.39	86	26	0.5	38	0	0	65
22	4305	739	17.0	*25	0.42	97	1651	1.9	167	0	0	1819
23	5157	885	13.5	25	0.50	133	1797	1.9	240	0	0	2037
24	9975	1712	1.6	32	0.60	131	210	3.0	529	0	0	739
25	22156	3803	3.8	32	1.32	542	2074	1.2	1043	0	0	3118
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 8, Radiators No. 163, Room No. 01, Landing												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
4	4827	830	2.3	25	0.47	117	263	5.5	613	0	0	876
5	3929	675	22.4	20	0.60	235	5253	6.7	1205	0	0	6458
34	440	76	10.1	12	0.19	61	610	4.7	83	34255	0	34948

# Heat Pump

# Section parts per flow path

<b>Flow path No. 8, Radiators No. 163, Room No. 01, Landing</b>												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
35	440	76	11.1	12	0.19	62	689	1.2	22	0	0	711
8	3929	675	22.7	20	0.60	239	5418	5.7	1023	0	0	6441
9	4827	830	2.4	25	0.47	119	281	1.0	111	0	0	393
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

<b>Flow path No. 9, Floor heating manifold No. 175, M4</b>												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
16	22156	3803	3.7	32	1.33	534	1984	5.2	4530	0	0	6514
36	12181	2091	9.0	32	0.73	184	1656	3.7	974	0	0	2630
37	8136	1396	21.2	32	0.49	90	1910	4.4	517	0	29950	32377
38	8136	1396	21.6	32	0.49	92	1979	4.4	516	0	0	2495
39	12181	2091	9.2	32	0.73	187	1721	3.7	972	0	0	2694
25	22156	3803	3.8	32	1.32	542	2074	1.2	1043	0	0	3118
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

<b>Flow path No. 10, Radiators No. 187, Room No. 05, Guest Room 1</b>												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
4	4827	830	2.3	25	0.47	117	263	5.5	613	0	0	876
5	3929	675	22.4	20	0.60	235	5253	6.7	1205	0	0	6458
40	417	72	9.6	12	0.18	55	529	4.7	75	34556	0	35159
41	417	72	8.5	12	0.18	57	480	1.2	19	0	0	500
8	3929	675	22.7	20	0.60	239	5418	5.7	1023	0	0	6441

# Heat Pump

# Section parts per flow path

Flow path No. 10, Radiators No. 187, Room No. 05, Guest Room 1												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
9	4827	830	2.4	25	0.47	119	281	1.0	111	0	0	393
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 11, Radiators No. 192, Room No. 06, Guest Room 2												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
4	4827	830	2.3	25	0.47	117	263	5.5	613	0	0	876
5	3929	675	22.4	20	0.60	235	5253	6.7	1205	0	0	6458
42	486	83	7.0	12	0.21	70	491	4.7	99	34452	0	35042
43	486	83	8.2	12	0.21	72	591	1.2	26	0	0	616
8	3929	675	22.7	20	0.60	239	5418	5.7	1023	0	0	6441
9	4827	830	2.4	25	0.47	119	281	1.0	111	0	0	393
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 12, Radiators No. 197, Room No. 09, Shower Room												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
4	4827	830	2.3	25	0.47	117	263	5.5	613	0	0	876
5	3929	675	22.4	20	0.60	235	5253	6.7	1205	0	0	6458
44	170	29	6.9	12	0.07	10	66	4.7	12	35510	0	35588
45	170	29	6.4	12	0.07	10	67	1.2	3	0	0	71
8	3929	675	22.7	20	0.60	239	5418	5.7	1023	0	0	6441
9	4827	830	2.4	25	0.47	119	281	1.0	111	0	0	393
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847

# Heat Pump

# Section parts per flow path

Flow path No. 12, Radiators No. 197, Room No. 09, Shower Room												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 13, Radiators No. 202, Room No. 09, Shower Room												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
4	4827	830	2.3	25	0.47	117	263	5.5	613	0	0	876
5	3929	675	22.4	20	0.60	235	5253	6.7	1205	0	0	6458
46	169	29	5.6	12	0.07	10	54	4.7	12	35536	0	35602
47	169	29	5.2	12	0.07	10	54	1.2	3	0	0	57
8	3929	675	22.7	20	0.60	239	5418	5.7	1023	0	0	6441
9	4827	830	2.4	25	0.47	119	281	1.0	111	0	0	393
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 14, Radiators No. 207, Room No. 01, Landing												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
4	4827	830	2.3	25	0.47	117	263	5.5	613	0	0	876
5	3929	675	22.4	20	0.60	235	5253	6.7	1205	0	0	6458
48	441	76	3.5	12	0.19	61	210	4.7	83	35065	0	35358
49	441	76	4.5	12	0.19	62	279	1.2	22	0	0	301
8	3929	675	22.7	20	0.60	239	5418	5.7	1023	0	0	6441
9	4827	830	2.4	25	0.47	119	281	1.0	111	0	0	393
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

# Heat Pump

# Section parts per flow path

Flow path No. 15, Radiators No. 236, Room No. 03, Thomasbed Room/Dressing Area												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
4	4827	830	2.3	25	0.47	117	263	5.5	613	0	0	876
50	898	155	20.4	*20	0.14	18	373	9.2	87	0	0	461
51	542	93	4.6	12	0.23	86	393	4.7	125	46760	0	47277
52	542	93	3.7	12	0.23	88	320	1.2	32	0	0	353
53	898	155	20.6	*20	0.14	19	385	8.7	82	0	0	467
9	4827	830	2.4	25	0.47	119	281	1.0	111	0	0	393
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 16, Radiators No. 265, Room No. 07, En-suite 3												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
4	4827	830	2.3	25	0.47	117	263	5.5	613	0	0	876
50	898	155	20.4	*20	0.14	18	373	9.2	87	0	0	461
54	178	31	2.9	12	0.08	10	29	4.7	14	47559	0	47602
55	178	31	2.2	12	0.08	11	24	1.2	4	0	0	28
53	898	155	20.6	*20	0.14	19	385	8.7	82	0	0	467
9	4827	830	2.4	25	0.47	119	281	1.0	111	0	0	393
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 17, Radiators No. 270, Room No. 07, En-suite 3												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239

# Heat Pump

# Section parts per flow path

Flow path No. 17, Radiators No. 270, Room No. 07, En-suite 3												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
4	4827	830	2.3	25	0.47	117	263	5.5	613	0	0	876
50	898	155	20.4	*20	0.14	18	373	9.2	87	0	0	461
56	178	31	1.9	12	0.08	10	19	4.7	14	47581	0	47614
57	178	31	1.2	12	0.08	11	13	1.2	4	0	0	16
53	898	155	20.6	*20	0.14	19	385	8.7	82	0	0	467
9	4827	830	2.4	25	0.47	119	281	1.0	111	0	0	393
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 18, Radiator No. 279, Room No. 03, En-Suite 1												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
16	22156	3803	3.7	32	1.33	534	1984	5.2	4530	0	0	6514
17	9975	1712	1.7	32	0.60	129	225	3.0	530	0	0	755
18	5157	885	13.6	25	0.51	131	1772	1.9	241	0	0	2013
58	852	146	5.0	12	0.31	126	632	7.1	337	33026	0	33996
59	852	146	4.1	12	0.31	129	533	2.6	124	0	0	657
23	5157	885	13.5	25	0.50	133	1797	1.9	240	0	0	2037
24	9975	1712	1.6	32	0.60	131	210	3.0	529	0	0	739
25	22156	3803	3.8	32	1.32	542	2074	1.2	1043	0	0	3118
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 19, Radiator No. 296, Room No. 04, Cloak Room												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239

# Heat Pump

# Section parts per flow path

Flow path No. 19, Radiator No. 296, Room No. 04, Cloak Room												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
16	22156	3803	3.7	32	1.33	534	1984	5.2	4530	0	0	6514
36	12181	2091	9.0	32	0.73	184	1656	3.7	974	0	0	2630
60	4045	694	2.8	25	0.40	85	240	3.0	234	0	0	474
61	117	20	8.2	*12	0.04	5	40	6.8	6	33837	0	33883
62	117	20	7.5	*12	0.04	5	39	2.8	3	0	0	42
63	4045	694	2.8	25	0.40	87	240	3.0	233	0	0	473
39	12181	2091	9.2	32	0.73	187	1721	3.7	972	0	0	2694
25	22156	3803	3.8	32	1.32	542	2074	1.2	1043	0	0	3118
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 20, Floor heating manifold No. 308, M3												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
16	22156	3803	3.7	32	1.33	534	1984	5.2	4530	0	0	6514
36	12181	2091	9.0	32	0.73	184	1656	3.7	974	0	0	2630
60	4045	694	2.8	25	0.40	85	240	3.0	234	0	0	474
64	3928	674	0.3	20	0.60	234	65	1.5	269	0	16150	16485
65	3928	674	0.4	20	0.60	239	86	1.0	179	0	0	265
63	4045	694	2.8	25	0.40	87	240	3.0	233	0	0	473
39	12181	2091	9.2	32	0.73	187	1721	3.7	972	0	0	2694
25	22156	3803	3.8	32	1.32	542	2074	1.2	1043	0	0	3118
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 21, Floor heating manifold No. 311, M2												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa

# Heat Pump

# Section parts per flow path

Flow path No. 21, Floor heating manifold No. 311, M2												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
3	26983	4633	0.3	32	1.62	761	207	0.5	646	0	0	853
16	22156	3803	3.7	32	1.33	534	1984	5.2	4530	0	0	6514
17	9975	1712	1.7	32	0.60	129	225	3.0	530	0	0	755
66	4818	827	0.3	25	0.47	116	30	1.5	166	0	18030	18226
67	4818	827	0.3	25	0.47	118	41	1.0	110	0	0	151
24	9975	1712	1.6	32	0.60	131	210	3.0	529	0	0	739
25	22156	3803	3.8	32	1.32	542	2074	1.2	1043	0	0	3118
10	26983	4633	0.3	32	1.61	773	202	0.5	645	0	0	847
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

Flow path No. 22, Water heater No. 314, HWC												
SP. No.	Heat flow rate W	Mass flow rate kg/h	Length m	DN	v m/s	R Pa/m	$\Sigma(R * l)$ Pa	$\Sigma\zeta$	C Pa	$\Delta p_{valve}$ Pa	$\Delta p_{App}$ Pa	$\Delta p_{Tot}$ Pa
1	26937	> 4633	0.4	32	1.62	761	326	3.9	5042	0	0	5368
2	53874	9265	1.1	32	3.23	2664	2999	1.4	7240	0	0	10239
68	26891	4633	0.2	32	1.62	761	183	1.5	1939	0	0	2123
69	26891	4633	0.1	32	1.61	773	110	1.0	1290	0	0	1400
11	53874	9265	1.5	32	3.23	2700	4005	1.4	7225	0	0	11230

# Heat Pump

# Valve settings

Thermostatic valves/Radiator lockshield valves				
Pos.	Name	cv-value	Position	Location
1	without valve			Room No. 01 En-Suite 2 Flow path 6 Section part 29 Component 145
1R	without Rlv			Room No. 01 En-Suite 2 Flow path 6 Section part 29 Component 145
2	without valve			Room No. 01 Landing Flow path 8 Section part 34 Component 163
2R	without Rlv			Room No. 01 Landing Flow path 8 Section part 34 Component 163
3	without valve			Room No. 01 Landing Flow path 14 Section part 48 Component 207
3R	without Rlv			Room No. 01 Landing Flow path 14 Section part 48 Component 207
4	without valve			Room No. 02 Cloak Room/WC Flow path 4 Section part 20 Component 101
4R	without Rlv			Room No. 02 Cloak Room/WC Flow path 4 Section part 20 Component 101
5	without valve			Room No. 02 Sitting Room Flow path 5 Section part 26 Component 130
5R	without Rlv			Room No. 02 Sitting Room Flow path 5 Section part 26 Component 130
6	without valve			Room No. 03 En-Suite 1 Flow path 18 Section part 58 Component 279

# Heat Pump

# Valve settings

Thermostatic valves/Radiator lockshield valves				
Pos.	Name	cv-value	Position	Location
6R	without Rlv			Room No. 03 En-Suite 1 Flow path 18 Section part 58 Component 279
7	without valve			Room No. 03 Thomasbed Room/Dressing Area Flow path 15 Section part 51 Component 236
7R	without Rlv			Room No. 03 Thomasbed Room/Dressing Area Flow path 15 Section part 51 Component 236
8	without valve			Room No. 04 Bedroom 4/Dressing Area Flow path 3 Section part 14 Component 70
8R	without Rlv			Room No. 04 Bedroom 4/Dressing Area Flow path 3 Section part 14 Component 70
9	without valve			Room No. 04 Cloak Room Flow path 19 Section part 61 Component 296
9R	without Rlv			Room No. 04 Cloak Room Flow path 19 Section part 61 Component 296
10	without valve			Room No. 05 Guest Room 1 Flow path 10 Section part 40 Component 187
10R	without Rlv			Room No. 05 Guest Room 1 Flow path 10 Section part 40 Component 187
11	without valve			Room No. 06 Guest Room 2 Flow path 11 Section part 42 Component 192
11R	without Rlv			Room No. 06 Guest Room 2 Flow path 11 Section part 42 Component 192

## Heat Pump

## Valve settings

Thermostatic valves/Radiator lockshield valves				
Pos.	Name	cv-value	Position	Location
12	without valve			Room No. 07 En-suite 3 Flow path 16 Section part 54 Component 265
12R	without Rlv			Room No. 07 En-suite 3 Flow path 16 Section part 54 Component 265
13	without valve			Room No. 07 En-suite 3 Flow path 17 Section part 56 Component 270
13R	without Rlv			Room No. 07 En-suite 3 Flow path 17 Section part 56 Component 270
14	without valve			Room No. 08 En-suite 4 Flow path 2 Section part 12 Component 65
14R	without Rlv			Room No. 08 En-suite 4 Flow path 2 Section part 12 Component 65
15	without valve			Room No. 08 En-suite 4 Flow path 1 Section part 6 Component 36
15R	without Rlv			Room No. 08 En-suite 4 Flow path 1 Section part 6 Component 36
16	without valve			Room No. 09 Shower Room Flow path 12 Section part 44 Component 197
16R	without Rlv			Room No. 09 Shower Room Flow path 12 Section part 44 Component 197
17	without valve			Room No. 09 Shower Room Flow path 13 Section part 46 Component 202

## Heat Pump

## Valve settings

### Thermostatic valves/Radiator lockshield valves

Pos.	Name	cv-value	Position	Location
17R	without Rlv			Room No. 09 Shower Room Flow path 13 Section part 46 Component 202

*Legend: R - Radiator lockshield valve*

## Heat Pump

## Circulating pumps

Circulating pumps				
- No.	Name, location	Q m <sup>3</sup> /h	H <sub>pump</sub> m	T °C
1	Liquid pump, general Component 7, Section part 1	4.679	8.07	45.0

### Übersicht über die Wärmeverluste der Rohrleitungen

Heat losses of the pipes at dimensioning operating temperature (w/o branch lines)

- Ambient temperature (min/max): 20.0/ 20.0 °C
- Operating temperature (min/max): 39.9/ 45.0 °C
- Specific heat loss (min/max): 9.4/ 27.5 W/m
- Medium specific pipe heat loss: 14.6 W/m
- Portion of insulated/ non-insulated pipes: 0%/ 100%

- Total of pipe heat losses: 8686 W (8.69 kW)
- Portion of pipe heat losses of total heat flow rate: 16 %

### Vorlauftemperatur vor dem Verbraucher

Fl. No.	Name, location	m kg/h	T <sub>VL,Soll</sub> °C	T <sub>VL,Ist</sub> °C	ΔT C
1	Radiators Component 36, Section part 6, Room No. 08 En-suite 4	31.0	45.0	36.9	8.1
2	Radiators Component 65, Section part 12, Room No. 08 En-suite 4	31.0	45.0	36.8	8.2
3	Radiators Component 70, Section part 14, Room No. 04 Bedroom 4/Dressing Area	106.0	45.0	42.2	2.8
4	Radiator Component 101, Section part 20, Room No. 02 Cloak Room/WC	48.6	45.0	42.1	2.9
5	Radiators Component 130, Section part 26, Room No. 02 Sitting Room	142.0	45.0	43.0	2.0
6	Radiator Component 145, Section part 29, Room No. 01 En-Suite 2	43.4	45.0	42.6	2.4
7	Floor heating manifold Component 159, Section part 32, M1	646.9	45.0	44.2	0.8
8	Radiators Component 163, Section part 34, Room No. 01 Landing	76.0	45.0	43.1	1.9
9	Floor heating manifold Component 175, Section part 37, M4	1396.4	45.0	44.5	0.5
10	Radiators Component 187, Section part 40, Room No. 05 Guest Room 1	72.0	45.0	43.1	1.9
11	Radiators Component 192, Section part 42, Room No. 06 Guest Room 2	83.0	45.0	43.6	1.4
12	Radiators Component 197, Section part 44, Room No. 09 Shower Room	29.0	45.0	42.1	2.9

**Heat Pump****Heat losses**

13	Radiators Component 202, Section part 46, Room No. 09 Shower Room	29.0	45.0	42.5	2.5
14	Radiators Component 207, Section part 48, Room No. 01 Landing	76.0	45.0	44.0	1.0
15	Radiators Component 236, Section part 51, Room No. 03 Thomasbed Room/Dressing Area	93.0	45.0	42.6	2.4
16	Radiators Component 265, Section part 54, Room No. 07 En-suite 3	31.0	45.0	42.2	2.8
17	Radiators Component 270, Section part 56, Room No. 07 En-suite 3	31.0	45.0	42.5	2.5
18	Radiator Component 279, Section part 58, Room No. 03 En-Suite 1	146.2	45.0	44.3	0.7
19	Radiator Component 296, Section part 61, Room No. 04 Cloak Room	20.1	45.0	41.0	4.0
20	Floor heating manifold Component 308, Section part 64, M3	674.2	45.0	44.8	0.2
21	Floor heating manifold Component 311, Section part 66, M2	826.9	45.0	44.9	0.1
22	Water heater Component 314, Section part 68, HWC	4632.7	45.0	45.0	0.0

Building project: \_\_\_\_\_

Building section: \_\_\_\_\_

Building Owner repres. by: \_\_\_\_\_

Contractor represented by: \_\_\_\_\_

	Yes	No
During the pressure check all radiators, heat exchangers, tanks, devices and armatures which are not suitable for the applied pressure have to be removed from the system or section part that is checked.	<input type="checkbox"/>	<input type="checkbox"/>

The system / the section part to be checked is filled with filtrated and if necessary softened water and is deaerated completely:	<input type="checkbox"/>	<input type="checkbox"/>
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**Operational test of the fittings:**

In case of large temperature differences (approx. 10 K) between the ambient temperature and the fill-up water temperature, a waiting time of 30 minutes was adhered to after the filling of the system.	<input type="checkbox"/>	<input type="checkbox"/>
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Pressure is equivalent to the available supply pressure of \_\_\_\_\_ bar  
but **6,5 bar at most!**

Visual inspection of the pipe system/ Inspection per manometer** was conducted	<input type="checkbox"/>	<input type="checkbox"/>
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Did a pressure drop occur during the operational test?	<input type="checkbox"/>	<input type="checkbox"/>
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Has a leakage been detected during the operational test?	<input type="checkbox"/>	<input type="checkbox"/>
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**Impermeability test of the system:**

The impermeability test for the heating installation was accomplished with a minimum testing pressure of: $p = 1,3 \cdot$ blowing-off pressure of safety relief valve. _____ bar	<input type="checkbox"/>	<input type="checkbox"/>
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The testing period amounts to 10 minutes.

Did a pressure drop occur during the testing period?	<input type="checkbox"/>	<input type="checkbox"/>
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Did a leakage occur during the testing period?	<input type="checkbox"/>	<input type="checkbox"/>
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Comment:

Location: \_\_\_\_\_  
(Signature Building Owner/ Representative)

Date: \_\_\_\_\_  
(Signature Contractor/ Representative)

\* Consider the notes of the data sheet ZVSHK "Impermeability tests of potable water installations" Paragraph 4.5. Plastic materials.  
\*\* Only measuring devices that permit proper metering of a pressure change of 0,1 bar are permitted to be applied.

Pipes				
Quantity	Dim.	Short text	Item No.	Alt.
62.8	m	Copper, DIN EN 1057 15 x 1		
87.2	m	Copper, DIN EN 1057 22 x 1		
72.5	m	Copper, DIN EN 1057 28 x 1,5		
75.9	m	Copper, DIN EN 1057 35 x 1,5		
296.4	m	PE-X pipe 16 x 2		

Fittings				
Quantity	Dim.	Short text	Item No.	Alt.
2	Pce	Ball valve set 1" for heating manifold	KUGLHAHN	
2	Pce	Distribution cabinet, Size 5	VERTSCH5	
8	Pce	Pipe bend 90°, rough, r/d=4 Further material for connection(s) if necessary: - CU DN12		
24	Pce	Pipe bend 90° Further material for connection(s) if necessary: CU DN12		
34	Pce	Pipe bend 90° Further material for connection(s) if necessary: CU DN20		
8	Pce	Pipe bend 90° Further material for connection(s) if necessary: CU DN25		
14	Pce	Pipe bend 90° Further material for connection(s) if necessary: CU DN32		
2	Pce	T-piece Further material for connection(s) if necessary: CU DN25 - CU DN12 - CU DN20		
4	Pce	T-piece Further material for connection(s) if necessary: CU DN25 - CU DN12 - CU DN25		
2	Pce	T-piece Further material for connection(s) if necessary: CU DN25 - CU DN20 - CU DN12		
2	Pce	T-piece Further material for connection(s) if necessary: CU DN25 - CU DN20 - CU DN20		
2	Pce	T-piece Further material for connection(s) if necessary: CU DN32 - CU DN25 - CU DN25		
2	Pce	T-piece Further material for connection(s) if necessary: CU DN32 - CU DN25 - CU DN32		
2	Pce	T-piece Further material for connection(s) if necessary: CU DN32 - CU DN32 - CU DN25		
4	Pce	T-piece Further material for connection(s) if necessary: CU DN32		

Armatures				
Quantity	Dim.	Short text	Item No.	Alt.
1	Pce	Shut-off armature, general Further material for connection(s) if necessary: CU DN25		
1	Pce	Shut-off armature, general Further material for connection(s) if necessary: CU DN32		
1	Pce	Liquid pump, general Delivery height 8.07 m Flow rate 4.68 m³/h Further material for connection(s) if necessary: CU DN32		

Consumers / Generators				
Quantity	Dim.	Short text	Item No.	Alt.
2	Pce	Stelrad Compact RLxRHxRT = 1000x450x100		
1	Pce	Stelrad Compact RLxRHxRT = 900x450x100		
2	Pce	Stelrad CLASSIC TOWEL RAIL RLxRHxRT = 500x1744x100		
2	Pce	Stelrad Compact RLxRHxRT = 900x600x100		
7	Pce	Stelrad CLASSIC TOWEL RAIL RLxRHxRT = 600x1744x100		
1	Pce	Stelrad Compact RLxRHxRT = 1100x600x100		
1	Pce	Stelrad Compact RLxRHxRT = 1200x450x100		
1	Pce	Stelrad CLASSIC TOWEL RAIL RLxRHxRT = 500x1211x100		
1	Pce	Boiler Further material for connection(s) if necessary: CU DN32		
2	Pce	Floor heating manifold Further material for connection(s) if necessary: CU DN20		
1	Pce	Floor heating manifold Further material for connection(s) if necessary: CU DN25		
1	Pce	Floor heating manifold Further material for connection(s) if necessary: CU DN32		
1	Pce	Water heater Further material for connection(s) if necessary: CU DN32		