

Full SAP Calculation Printout



Property Reference	UNIT 36				Issued on Date	02/07/2025	
Assessment Reference	UNIT 36			Prop Type Ref			
Property	Flat 37, Alexander House, 205 Kings Road, READING, RG1 4FW						
SAP Rating	85 B	DER	3.70	TER	10.60		
Environmental	97 A	% DER < TER				65.09	
CO ₂ Emissions (t/year)	0.24	DFEE	39.11	TFEE	44.96		
Compliance Check	See BREL	% DFEE < TFEE				13.01	
% DPER < TPER	31.35	DPER	38.92	TPER	56.70		
Assessor Details	Mr. Ondrej Gajdos				Assessor ID	W452-0001	
Client							

SAP 10 WORKSHEET FOR New Build (As Built) (Version 10.2, February 2022)
CALCULATION OF FABRIC ENERGY EFFICIENCY

1. Overall dwelling characteristics

	Area (m ²)	Storey height (m)	Volume (m ³)
Main dwelling			
Ground floor	71.2000 (1b)	2.5000 (2b)	178.0000 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	71.2000		
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n)	178.0000 (5)

2. Ventilation rate

	m ³ per hour
Number of open chimneys	0 * 80 = 0.0000 (6a)
Number of open flues	0 * 20 = 0.0000 (6b)
Number of chimneys / flues attached to closed fire	0 * 10 = 0.0000 (6c)
Number of flues attached to solid fuel boiler	0 * 20 = 0.0000 (6d)
Number of flues attached to other heater	0 * 35 = 0.0000 (6e)
Number of blocked chimneys	0 * 20 = 0.0000 (6f)
Number of intermittent extract fans	3 * 10 = 30.0000 (7a)
Number of passive vents	0 * 10 = 0.0000 (7b)
Number of flueless gas fires	0 * 40 = 0.0000 (7c)
Infiltration due to chimneys, flues and fans = (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(6g)+(7a)+(7b)+(7c) =	30.0000 / (5) = 0.1685 (8)
Pressure test	Yes
Pressure Test Method	Blower Door
Measured/design AP50	3.3700 (17)
Infiltration rate	0.3370 (18)
Number of sides sheltered	2 (19)
Shelter factor	(20) = 1 - [0.075 x (19)] = 0.8500 (20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) = 0.2865 (21)

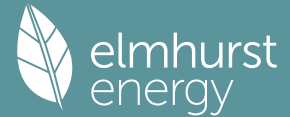
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wind speed	5.1000	5.0000	4.9000	4.4000	4.3000	3.8000	3.8000	3.7000	4.0000	4.3000	4.5000	4.7000 (22)
Wind factor	1.2750	1.2500	1.2250	1.1000	1.0750	0.9500	0.9500	0.9250	1.0000	1.0750	1.1250	1.1750 (22a)
Adj infilt rate	0.3653	0.3581	0.3509	0.3151	0.3080	0.2722	0.2722	0.2650	0.2865	0.3080	0.3223	0.3366 (22b)
If exhaust air heat pump using Appendix N, (23b) = (23a) x Fmv (equation (N5)), otherwise (23b) = (23a)												0.0000 (23b)
If balanced with heat recovery: efficiency in % allowing for in-use factor (from Table 4h) =												0.0000 (23c)
Effective ac	0.5667	0.5641	0.5616	0.5497	0.5474	0.5370	0.5370	0.5351	0.5410	0.5474	0.5519	0.5567 (25)

3. Heat losses and heat loss parameter

Element	Gross m ²	Openings m ²	NetArea m ²	U-value W/m ² K	A x U W/K	K-value kJ/m ² K	A x K kJ/K
Main dwelling							
1			6.5000	1.1450	7.4427		(27)
2			6.5000	1.1450	7.4427		(27)
3			6.5000	1.1450	7.4427		(27)
1			2.1000	1.0000	2.1000		(26)
top floor exposed new	58.7500	19.5000	39.2500	0.2000	7.8500	18.0000	706.5000 (29a)
corridor new	9.7500	2.1000	7.6500	0.2300	1.7595	14.0000	107.1000 (29a)
flat roof new	39.1000		39.1000	0.1300	5.0830	9.0000	351.9000 (30)
roof terrace new	32.1000		32.1000	0.1300	4.1730	9.0000	288.9000 (30)
Total net area of external elements Aum(A, m ²)			139.7000				(31)
Fabric heat loss, W/K = Sum (A x U)				(26)...(30) + (32) =	43.2937		(33)
Main dwelling							
pw			16.0000	0.0000	0.0000	20.0000	320.0000 (32)
pf			71.2000			30.0000	2136.0000 (32d)
iw			105.5000			9.0000	949.5000 (32c)
Heat capacity Cm = Sum(A x k)						(28)...(30) + (32) + (32a)...(32e) =	4859.9000 (34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m ² K							68.2570 (35)
List of Thermal Bridges							

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7. Mean internal temperature (heating season)

Temperature during heating periods in the living area from Table 9, Th1 (C)												21.0000 (85)	
Utilisation factor for gains for living area, nil,m (see Table 9a)													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
tau	15.6895	15.7173	15.7446	15.8743	15.8988	16.0139	16.0139	16.0354	15.9693	15.8988	15.8493	15.7979	
alpha	2.0460	2.0478	2.0496	2.0583	2.0599	2.0676	2.0676	2.0690	2.0646	2.0599	2.0566	2.0532	
util living area	0.9063	0.8652	0.8123	0.7207	0.6029	0.4685	0.3619	0.4026	0.5763	0.7653	0.8716	0.9152 (86)	
MIT	17.7862	18.2599	18.8806	19.6515	20.2824	20.7021	20.8755	20.8406	20.5162	19.6832	18.6079	17.6963 (87)	
Th 2	19.9132	19.9149	19.9166	19.9245	19.9260	19.9328	19.9328	19.9341	19.9302	19.9260	19.9230	19.9199 (88)	
util rest of house	0.8958	0.8508	0.7921	0.6907	0.5594	0.4077	0.2849	0.3235	0.5165	0.7327	0.8554	0.9056 (89)	
MIT 2	17.0021	17.4630	18.0644	18.8009	19.3790	19.7431	19.8733	19.8537	19.6007	18.8515	17.8173	16.9186 (90)	
Living area fraction									fLA = Living area / (4) =				0.4537 (91)
MIT	17.3578	17.8245	18.4346	19.1868	19.7888	20.1782	20.3280	20.3014	20.0160	19.2288	18.1760	17.2714 (92)	
Temperature adjustment												0.0000	
adjusted MIT	17.3578	17.8245	18.4346	19.1868	19.7888	20.1782	20.3280	20.3014	20.0160	19.2288	18.1760	17.2714 (93)	

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Utilisation	0.8634	0.8161	0.7593	0.6675	0.5534	0.4223	0.3144	0.3519	0.5216	0.7081	0.8223	0.8743 (94)
Useful gains	482.3287	556.6527	589.4956	593.5248	535.3569	409.3702	291.2132	298.5686	402.2800	466.6445	466.7674	460.7889 (95)
Ext temp.	4.3000	4.9000	6.5000	8.9000	11.7000	14.6000	16.6000	16.4000	14.1000	10.6000	7.1000	4.2000 (96)
Heat loss rate W	1123.5390	1110.1018	1023.2990	874.8027	686.8257	470.2410	314.2689	328.4483	500.1119	732.6750	943.4005	1116.9866 (97)
Space heating kWh	477.0605	371.9178	322.7498	202.5201	112.6928	0.0000	0.0000	0.0000	0.0000	197.9267	343.1759	488.2111 (98a)
Space heating requirement - total per year (kWh/year)												2516.2546
Solar heating kWh	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (98b)
Solar heating contribution - total per year (kWh/year)												0.0000
Space heating kWh	477.0605	371.9178	322.7498	202.5201	112.6928	0.0000	0.0000	0.0000	0.0000	197.9267	343.1759	488.2111 (98c)
Space heating requirement after solar contribution - total per year (kWh/year)												2516.2546
Space heating per m2										(98c) / (4) =		35.3407 (99)

8c. Space cooling requirement

Calculated for June, July and August. See Table 10b												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ext. temp.	4.3000	4.9000	6.5000	8.9000	11.7000	14.6000	16.6000	16.4000	14.1000	10.6000	7.1000	4.2000
Heat loss rate W												
	0.0000	0.0000	0.0000	0.0000	0.0000	792.4219	623.8215	639.8228	0.0000	0.0000	0.0000	0.0000 (100)
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	0.7750	0.8258	0.7970	0.0000	0.0000	0.0000	0.0000 (101)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	614.1187	515.1453	509.9520	0.0000	0.0000	0.0000	0.0000 (102)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	1095.0387	1046.5595	957.5147	0.0000	0.0000	0.0000	0.0000 (103)
Space cooling kWh												
	0.0000	0.0000	0.0000	0.0000	0.0000	346.2624	395.3722	332.9867	0.0000	0.0000	0.0000	0.0000 (104)
Cooled fraction									fc = cooled area / (4) =			1.0000 (105)
Intermittency factor (Table 10b)	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500 (106)
Space cooling kWh												
	0.0000	0.0000	0.0000	0.0000	0.0000	86.5656	98.8430	83.2467	0.0000	0.0000	0.0000	0.0000 (107)
Space cooling requirement												268.6553 (107)
Energy for space heating												35.3407 (99)
Energy for space cooling												3.7732 (108)
Total												39.1139 (109)
Fabric Energy Efficiency (DFEE)												39.1 (109)

SAP 10 WORKSHEET FOR New Build (As Built) (Version 10.2, February 2022) CALCULATION OF TARGET FABRIC ENERGY EFFICIENCY

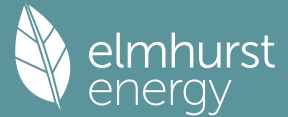
1. Overall dwelling characteristics

Main dwelling	Area (m2)	Storey height (m)	Volume (m3)
Ground floor	71.2000 (1b)	x 2.5000 (2b)	= 178.0000 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	71.2000		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n) =	178.0000 (5)

2. Ventilation rate

	m3 per hour
Number of open chimneys	0 * 80 = 0.0000 (6a)
Number of open flues	0 * 20 = 0.0000 (6b)
Number of chimneys / flues attached to closed fire	0 * 10 = 0.0000 (6c)
Number of flues attached to solid fuel boiler	0 * 20 = 0.0000 (6d)
Number of flues attached to other heater	0 * 35 = 0.0000 (6e)
Number of blocked chimneys	0 * 20 = 0.0000 (6f)
Number of intermittent extract fans	3 * 10 = 30.0000 (7a)
Number of passive vents	0 * 10 = 0.0000 (7b)
Number of flueless gas fires	0 * 40 = 0.0000 (7c)

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Infiltration due to chimneys, flues and fans	= (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(6g)+(7a)+(7b)+(7c) =											Air changes per hour	
Pressure test												30.0000 / (5) =	0.1685 (8)
Pressure Test Method												Yes	
Measured/design AP50												Blower Door	
Infiltration rate												5.0000	(17)
Number of sides sheltered												0.4185	(18)
												2	(19)
Shelter factor												(20) = 1 - [0.075 x (19)] =	0.8500 (20)
Infiltration rate adjusted to include shelter factor												(21) = (18) x (20) =	0.3558 (21)
Wind speed	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Wind factor	5.1000	5.0000	4.9000	4.4000	4.3000	3.8000	3.8000	3.7000	4.0000	4.3000	4.5000	4.7000	(22)
Adj infilt rate	1.2750	1.2500	1.2250	1.1000	1.0750	0.9500	0.9500	0.9250	1.0000	1.0750	1.1250	1.1750	(22a)
	0.4536	0.4447	0.4358	0.3913	0.3824	0.3380	0.3380	0.3291	0.3558	0.3824	0.4002	0.4180	(22b)
If exhaust air heat pump using Appendix N, (23b) = (23a) x Fmv (equation (N5)), otherwise (23b) = (23a)												0.0000	(23b)
If balanced with heat recovery: efficiency in % allowing for in-use factor (from Table 4h) =												0.0000	(23c)
Effective ac	0.6029	0.5989	0.5950	0.5766	0.5731	0.5571	0.5571	0.5541	0.5633	0.5731	0.5801	0.5874	(25)

3. Heat losses and heat loss parameter

Element	Gross m2	Openings m2	NetArea m2	U-value W/m2K	A x U W/K	K-value kJ/m2K	A x K kJ/K	
Main dwelling								
TER Opaque door			2.1000	1.0000	2.1000			(26)
TER Opening Type			15.6900	1.1450	17.9656			(27)
top floor exposed new	58.7500	15.6900	43.0600	0.1800	7.7508			(29a)
corridor new	9.7500	2.1000	7.6500	0.1800	1.3770			(29a)
flat roof new	39.1000		39.1000	0.1100	4.3010			(30)
roof terrace new	32.1000		32.1000	0.1100	3.5310			(30)
Total net area of external elements Aum(A, m2)			139.7000					(31)
Fabric heat loss, W/K = Sum (A x U)				(26)...(30) + (32) =	37.0254			(33)
Main dwelling								
pw			16.0000	0.0000	0.0000			(32)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K								68.2570 (35)
List of Thermal Bridges								
K1 Element				Length	Psi-value	Total		
E2 Other lintels (including other steel lintels)				8.8000	0.0500	0.4400		
E3 Sill				7.8000	0.0500	0.3900		
E4 Jamb				19.2000	0.0500	0.9600		
E7 Party floor between dwellings (in blocks of flats)				0.0000	0.0700	0.0000		
E15 Flat roof with parapet				24.0000	0.5600	13.4400		
E16 Corner (normal)				5.0000	0.0900	0.4500		
E17 Corner (inverted - internal area greater than external area)				0.0000	-0.0900	-0.0000		
E18 Party wall between dwellings				5.0000	0.0600	0.3000		
E24 Eaves (insulation at ceiling level - inverted)				24.0000	0.2400	5.7600		
Thermal bridges (Sum(L x Psi) calculated using Appendix K)							21.7400 (36)	
Point Thermal bridges							(36a) = 0.0000	
Total fabric heat loss							(33) + (36) + (36a) = 58.7654 (37)	

Ventilation heat loss calculated monthly (38)m = 0.33 x (25)m x (5)

(38)m	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Heat transfer coeff	35.4127	35.1781	34.9481	33.8678	33.6657	32.7248	32.7248	32.5505	33.0872	33.6657	34.0746	34.5020	(38)
Average = Sum(39)m / 12 =	94.1782	93.9436	93.7136	92.6332	92.4311	91.4902	91.4902	91.3160	91.8526	92.4311	92.8400	93.2675	(39)
												92.6323	
HLP	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
HLP (average)	1.3227	1.3194	1.3162	1.3010	1.2982	1.2850	1.2850	1.2825	1.2901	1.2982	1.3039	1.3099	(40)
Days in mont	31	28	31	30	31	30	31	31	30	31	30	31	

4. Water heating energy requirements (kWh/year)

Assumed occupancy												2.2749	(42)
Hot water usage for mixer showers												0.0000	(42a)
Hot water usage for baths	26.9410	26.5409	25.9775	24.9386	24.1607	23.2981	22.8322	23.3917	24.0009	24.9239	25.9842	26.8500	(42b)
Hot water usage for other uses	37.9273	36.5481	35.1689	33.7897	32.4106	31.0314	31.0314	32.4106	33.7897	35.1689	36.5481	37.9273	(42c)
Average daily hot water use (litres/day)												59.4579	(43)
Daily hot water use	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Energy conte	64.8683	63.0890	61.1464	58.7284	56.5713	54.3295	53.8636	55.8023	57.7907	60.0928	62.5323	64.7772	(44)
Energy content (annual)	102.7356	89.8379	93.9798	80.3962	76.1558	66.8045	65.1434	69.0949	71.2617	81.5454	89.0887	101.4255	(45)
Distribution loss (46)m = 0.15 x (45)m												987.4692	
Water storage loss:													
Total storage loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(46)
If cylinder contains dedicated solar storage													
Primary loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(47)
Combi loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(48)
Total heat required for water heating calculated for each month	87.3252	76.3622	79.8828	68.3368	64.7324	56.7838	55.3719	58.7307	60.5724	69.3136	75.7254	86.2117	(62)
WWHRS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(63a)
PV diverter	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(63b)
Solar input	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(63c)
FGHRS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(63d)
Output from w/h	87.3252	76.3622	79.8828	68.3368	64.7324	56.7838	55.3719	58.7307	60.5724	69.3136	75.7254	86.2117	(64)
Total per year (kWh/year)												839.3488	(64)
Electric shower(s)	49.9418	44.4985	48.5907	46.3695	47.2396	45.0620	46.5641	47.2396	46.3695	48.5907	47.6770	49.9418	(64a)
Heat gains from water heating, kWh/month	34.3168	30.2152	32.1184	28.6766	27.9930	25.4615	25.4840	26.4926	26.7355	29.4761	30.8506	34.0384	(65)

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5. Internal gains (see Table 5 and 5a)

Metabolic gains (Table 5), Watts												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(66)m	113.7451	113.7451	113.7451	113.7451	113.7451	113.7451	113.7451	113.7451	113.7451	113.7451	113.7451	(66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	100.9476	111.7635	100.9476	104.3126	100.9476	104.3126	100.9476	100.9476	104.3126	100.9476	104.3126	(67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	200.0814	202.1576	196.9256	185.7873	171.7272	158.5126	149.6845	147.6083	152.8403	163.9786	178.0387	(68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	34.3745	34.3745	34.3745	34.3745	34.3745	34.3745	34.3745	34.3745	34.3745	34.3745	34.3745	(69)
Pumps, fans	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(70)
Losses e.g. evaporation (negative values) (Table 5)	-90.9961	-90.9961	-90.9961	-90.9961	-90.9961	-90.9961	-90.9961	-90.9961	-90.9961	-90.9961	-90.9961	(71)
Water heating gains (Table 5)	46.1247	44.9631	43.1699	39.8286	37.6250	35.3631	34.2527	35.6083	37.1326	39.6184	42.8481	(72)
Total internal gains	404.2773	416.0077	398.1667	387.0520	367.4234	355.3119	342.0084	341.2878	351.4090	361.6682	382.3229	(73)

6. Solar gains

[Jan]	Area m ²		Solar flux Table 6a W/m ²		Specific data or Table 6b		Specific data or Table 6c		Access factor Table 6d		Gains W	
North	10.4600		10.6334		0.6300		0.7000		0.7700		33.9919 (74)	
South	5.2300		46.7521		0.6300		0.7000		0.7700		74.7264 (78)	
Solar gains	108.7183	187.3429	266.2771	353.4978	422.4495	432.3850	411.3610	357.0523	295.5660	209.3279	130.5097	92.9078 (83)
Total gains	512.9956	603.3506	664.4438	740.5497	789.8729	787.6969	753.3694	698.3401	646.9750	570.9960	512.8326	487.9828 (84)

7. Mean internal temperature (heating season)

Temperature during heating periods in the living area from Table 9, Th1 (C)												21.0000 (85)
Utilisation factor for gains for living area, nil,m (see Table 9a)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
tau	14.3342	14.3700	14.4053	14.5733	14.6052	14.7554	14.7554	14.7835	14.6972	14.6052	14.5408	14.4742
alpha	1.9556	1.9580	1.9604	1.9716	1.9737	1.9837	1.9837	1.9856	1.9798	1.9737	1.9694	1.9649
util living area	0.9218	0.8936	0.8571	0.7884	0.6914	0.5630	0.4495	0.4896	0.6575	0.8156	0.8954	0.9282 (86)
MIT	17.3801	17.7921	18.3950	19.2164	19.9575	20.5249	20.7863	20.7385	20.3048	19.3521	18.2424	17.3141 (87)
Th 2	19.8231	19.8256	19.8282	19.8400	19.8423	19.8526	19.8526	19.8486	19.8486	19.8423	19.8378	19.8331 (88)
util rest of house	0.9123	0.8809	0.8394	0.7607	0.6476	0.4943	0.3546	0.3953	0.5952	0.7856	0.8808	0.9194 (89)
MIT 2	16.5519	16.9561	17.5468	18.3453	19.0405	19.5477	19.7509	19.7228	19.3716	18.4931	17.4133	16.4931 (90)
Living area fraction	fLA = Living area / (4) =											
MIT	16.9276	17.3354	17.9316	18.7405	19.4565	19.9910	20.2206	20.1835	19.7949	18.8828	17.7894	16.8656 (92)
Temperature adjustment	0.0000											
adjusted MIT	16.9276	17.3354	17.9316	18.7405	19.4565	19.9910	20.2206	20.1835	19.7949	18.8828	17.7894	16.8656 (93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Utilisation	0.8802	0.8455	0.8033	0.7296	0.6311	0.5033	0.3869	0.4243	0.5919	0.7552	0.8467	0.8886 (94)
Useful gains	451.5315	510.1403	533.7375	540.3188	498.4986	396.4326	291.4542	296.3165	382.9421	431.1880	434.2362	433.6182 (95)
Ext temp.	4.3000	4.9000	6.5000	8.9000	11.7000	14.6000	16.6000	16.4000	14.1000	10.6000	7.1000	4.2000 (96)
Heat loss rate W	1189.2465	1168.2229	1071.2966	911.5546	716.9430	493.2265	331.2483	345.4973	523.0932	765.5892	992.4034	1181.2851 (97)
Space heating kWh	548.8599	442.2315	399.9440	267.2898	162.5226	0.0000	0.0000	0.0000	0.0000	248.7945	401.8804	556.2642 (98a)
Space heating requirement - total per year (kWh/year)												3027.7868
Solar heating kWh	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000 (98b)
Solar heating contribution - total per year (kWh/year)												0.0000
Space heating kWh	548.8599	442.2315	399.9440	267.2898	162.5226	0.0000	0.0000	0.0000	0.0000	248.7945	401.8804	556.2642 (98c)
Space heating requirement after solar contribution - total per year (kWh/year)												3027.7868
Space heating per m ²												(98c) / (4) = 42.5251 (99)

8c. Space cooling requirement

Calculated for June, July and August. See Table 10b												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ext. temp.	4.3000	4.9000	6.5000	8.9000	11.7000	14.6000	16.6000	16.4000	14.1000	10.6000	7.1000	4.2000
Heat loss rate W	0.0000	0.0000	0.0000	0.0000	0.0000	860.0080	677.0275	694.0013	0.0000	0.0000	0.0000	0.0000 (100)
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	0.6734	0.7351	0.7039	0.0000	0.0000	0.0000	0.0000 (101)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	579.1491	497.6705	488.5191	0.0000	0.0000	0.0000	0.0000 (102)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	882.5891	844.4402	782.0809	0.0000	0.0000	0.0000	0.0000 (103)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	218.4768	257.9967	218.4100	0.0000	0.0000	0.0000	0.0000 (104)
Cooled fraction	fC = cooled area / (4) =											
Intermittency factor (Table 10b)	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500 (106)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	54.6192	64.4992	54.6025	0.0000	0.0000	0.0000	0.0000 (107)
Space cooling requirement												173.7209 (107)
Energy for space heating												42.5251 (99)
Energy for space cooling												2.4399 (108)
Total												44.9650 (109)
Fabric Energy Efficiency (TFEE)												45.0 (109)

