

Full SAP Calculation Printout



Property Reference	UNIT 38			Issued on Date	02/07/2025
Assessment Reference	UNIT 38	Prop Type Ref			
Property	Flat 39, Alexander House, 205 Kings Road, READING, RG1 4FW				
SAP Rating	87 B	DER	3.44	TER	9.31
Environmental	97 A	% DER < TER			63.05
CO ₂ Emissions (t/year)	0.22	DFEE	33.50	TFEE	38.14
Compliance Check	See BREL	% DFEE < TFEE			12.16
% DPER < TPER	27.03	DPER	36.30	TPER	49.74
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	68.6000 (1b)	2.5000 (2b)	171.5000 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	68.6000		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n)	171.5000 (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	2 * 10 = 20.0000 (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) =	20.0000 / (5) =	0.1166 (8)
Pressure test	Yes	
Pressure Test Method	Blower Door	
Measured/design AP50		3.5900 (17)
Infiltration rate		0.2961 (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) =	0.2517 (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	0.3209	0.3146	0.3083	0.2769	0.2706	0.2391	0.2391	0.2328	0.2517	0.2706	0.2832	0.2957 (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	0.5515	0.5495	0.5475	0.5383	0.5366	0.5286	0.5286	0.5271	0.5317	0.5366	0.5401	0.5437 (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			3.3800	1.1450	3.8702		(27)
3			6.5000	1.1450	7.4427		(27)
1			2.1000	1.0000	2.1000		(26)
top floor exposed new	42.2500	16.3800	25.8700	0.2000	5.1740	18.0000	465.6600 (29a)
corridor new	18.2500	2.1000	16.1500	0.2300	3.7145	14.0000	226.1000 (29a)
flat roof new	31.6000		31.6000	0.1300	4.1080	9.0000	284.4000 (30)
roof terrace new	37.0000		37.0000	0.1300	4.8100	9.0000	333.0000 (30)
Total net area of external elements A _{um} (A, m ²)			129.1000				(31)
Fabric heat loss, W/K = Sum (A x U)				(26)...(30) + (32) =	38.6622		(33)
Main dwelling							
pw			27.2500	0.0000	0.0000	20.0000	545.0000 (32)
pf			66.4000			30.0000	1992.0000 (32d)
iw			87.5000			9.0000	787.5000 (32c)

Heat capacity Cm = Sum(A x k)	(28)...(30) + (32) + (32a)...(32e) =	4633.6600 (34)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m ² K		67.5461 (35)
List of Thermal Bridges		

SAP 10 Online 2.22.2 Page 2 of 6

Full SAP Calculation Printout



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 from living area, nil,m (see Table 9a)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
tau	16.6989	16.7235	16.7476	16.8619	16.8835	16.9846	16.9846	17.0034	16.9455	16.8835	16.8399	16.7946
alpha	2.1133	2.1149	2.1165	2.1241	2.1256	2.1323	2.1323	2.1336	2.1297	2.1256	2.1227	2.1196
util living area	0.8739	0.8119	0.7466	0.6574	0.5537	0.4307	0.3246	0.3473	0.4914	0.6853	0.8246	0.8874 (86)
MIT	18.2439	18.7888	19.3583	19.9662	20.4428	20.7701	20.9097	20.8923	20.6764	20.0316	19.0331	18.1274 (87)
Th 2	19.9816	19.9830	19.9843	19.9904	19.9916	19.9970	19.9970	19.9980	19.9949	19.9916	19.9893	19.9868 (88)
util rest of house	0.8613	0.7947	0.7238	0.6268	0.5125	0.3756	0.2577	0.2801	0.4370	0.6502	0.8054	0.8759 (89)
MIT 2	17.4891	18.0129	18.5577	19.1326	19.5664	19.8491	19.9529	19.9430	19.7761	19.2090	18.2651	17.3799 (90)
Living area fraction	17.9094	18.4450	19.0036	19.5968	20.0544	20.3620	20.4857	20.4716	20.2774	19.6670	18.6927	17.7961 (92)
MIT	17.9094	18.4450	19.0036	19.5968	20.0544	20.3620	20.4857	20.4716	20.2774	19.6670	18.6927	17.7961 (92)
Temperature adjustment												0.0000
adjusted MIT	17.9094	18.4450	19.0036	19.5968	20.0544	20.3620	20.4857	20.4716	20.2774	19.6670	18.6927	17.7961 (93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Utilisation	0.8295	0.7642	0.6993	0.6139	0.5152	0.3963	0.2910	0.3126	0.4529	0.6378	0.7762	0.8447 (94)
Useful gains	521.6299	609.6720	632.8164	605.3704	521.6528	390.0699	277.4152	287.6753	403.7881	497.9833	506.5515	495.8040 (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	1048.9950	1042.4932	960.9539	816.5253	636.9078	436.6536	294.4648	308.2119	469.2192	691.2344	886.0701	1041.9990 (97)
Space heating kWh	392.3597	290.8558	244.1343	152.0316	85.7497	0.0000	0.0000	0.0000	0.0000	143.7789	273.2534	406.3691 (98a)
Space heating requirement - total per year (kWh/year)												1988.5325
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	392.3597	290.8558	244.1343	152.0316	85.7497	0.0000	0.0000	0.0000	0.0000	143.7789	273.2534	406.3691 (98c)
Space heating requirement after solar contribution - total per year (kWh/year)												1988.5325
Space heating per m2										(98c) / (4) =		28.9874 (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	712.3524	560.7880	575.3058	0.0000	0.0000	0.0000	0.0000 (100)
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	0.8156	0.8636	0.8508	0.0000	0.0000	0.0000	0.0000 (101)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	580.9698	484.2750	489.4781	0.0000	0.0000	0.0000	0.0000 (102)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	1113.8791	1079.5812	1042.6924	0.0000	0.0000	0.0000	0.0000 (103)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	383.6947	442.9079	411.5915	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	95.9237	110.7270	102.8979	0.0000	0.0000	0.0000	0.0000 (107)
Space cooling requirement												309.5485 (107)
Energy for space heating												28.9874 (99)
Energy for space cooling												4.5124 (108)
Total												33.4997 (109)
Fabric Energy Efficiency (DFEE)												33.5 (109)

SAP 10 WORKSHEET FOR New Build (As Built) (Version 10.2, February 2022)

CALCULATION OF TARGET FABRIC ENERGY EFFICIENCY

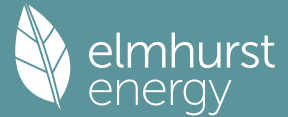
1. Overall dwelling characteristics

Main dwelling	Area (m2)	Storey height (m)	Volume (m3)
Ground floor	68.6000 (1b)	x 2.5000 (2b)	= 171.5000 (1b) - (3b)
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	68.6000		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n) =	171.5000 (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	2 * 10 = 20.0000 (7a)
Number of passive vents	0 * 10 = 0.0000 (7b)
Number of flueless gas fires	0 * 40 = 0.0000 (7c)

Full SAP Calculation Printout



Infiltration due to chimneys, flues and fans	= (6a)+(6b)+(6c)+(6d)+(6e)+(6f)+(6g)+(7a)+(7b)+(7c) =											Air changes per hour	20.0000 / (5) =	0.1166 (8)
Pressure test												Yes		
Pressure Test Method												Blower Door		
Measured/design AP50												5.0000	(17)	
Infiltration rate												0.3666	(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) =											0.3116	(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)	
	0.3973	0.3895	0.3817	0.3428	0.3350	0.2960	0.2960	0.2883	0.3116	0.3350	0.3506	0.3662	(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	0.5789	0.5759	0.5729	0.5588	0.5561	0.5438	0.5438	0.5415	0.5486	0.5561	0.5615	0.5670	(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			15.0500	1.1450	17.2328			(27)
top floor exposed new	42.2500	15.0500	27.2000	0.1800	4.8960			(29a)
corridor new	18.2500	2.1000	16.1500	0.1800	2.9070			(29a)
flat roof new	31.6000		31.6000	0.1100	3.4760			(30)
roof terrace new	37.0000		37.0000	0.1100	4.0700			(30)
Total net area of external elements Aum(A, m2)			129.1000					(31)
Fabric heat loss, W/K = Sum (A x U)				(26)...(30) + (32) =	34.6818			(33)
Main dwelling								
pw			27.2500	0.0000	0.0000			(32)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K								67.5461 (35)
List of Thermal Bridges								
K1 Element				Length	Psi-value	Total		
E2 Other lintels (including other steel lintels)				7.5500	0.0500	0.3775		
E3 Sill				6.5500	0.0500	0.3275		
E4 Jamb				19.2000	0.0500	0.9600		
E7 Party floor between dwellings (in blocks of flats)				0.0000	0.0700	0.0000		
E14 Flat roof				0.0000	0.0800	0.0000		
E15 Flat roof with parapet				17.0000	0.5600	9.5200		
E16 Corner (normal)				2.5000	0.0900	0.2250		
E18 Party wall between dwellings				5.0000	0.0600	0.3000		
E24 Eaves (insulation at ceiling level - inverted)				17.0000	0.2400	4.0800		
Thermal bridges (Sum(L x Psi) calculated using Appendix K)							15.7900 (36)	
Point Thermal bridges							(36a) = 0.0000	
Total fabric heat loss							(33) + (36) + (36a) = 50.4718 (37)	

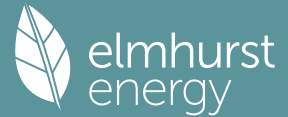
Ventilation heat loss calculated monthly (38)m = 0.33 x (25)m x (5)

(38)m	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Heat transfer coeff	32.7647	32.5912	32.4212	31.6226	31.4731	30.7776	30.7776	30.6487	31.0455	31.4731	31.7754	32.0914	(38)
Average = Sum(39)m / 12 =	83.2365	83.0630	82.8930	82.0944	81.9450	81.2494	81.2494	81.1206	81.5173	81.9450	82.2472	82.5633	(39)
												82.0937	
HLP	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
HLP (average)	1.2134	1.2108	1.2084	1.1967	1.1945	1.1844	1.1844	1.1825	1.1883	1.1945	1.1989	1.2035	(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												2.2117	(42)
Hot water usage for mixer showers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(42a)
Hot water usage for baths	26.4851	26.0917	25.5378	24.5165	23.7518	22.9038	22.4458	22.9958	23.5947	24.5020	25.5444	26.3955	(42b)
Hot water usage for other uses	37.2796	35.9240	34.5684	33.2128	31.8571	30.5015	30.5015	31.8571	33.2128	34.5684	35.9240	37.2796	(42c)
Average daily hot water use (litres/day)												58.4464	(43)
Daily hot water use	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Energy conte	63.7647	62.0157	60.1062	57.7293	55.6089	53.4053	52.9473	54.8529	56.8074	59.0704	61.4684	63.6751	(44)
Energy content (annual)	100.9877	88.3096	92.3810	79.0285	74.8603	65.6681	64.0351	67.9194	70.0492	80.1580	87.5730	99.6999	(45)
Distribution loss (46)m = 0.15 x (45)m	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)
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	(56)
If cylinder contains dedicated solar storage	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	(57)
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	(59)
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	(61)
Total heat required for water heating calculated for each month	85.8395	75.0631	78.5238	67.1742	63.6312	55.8178	54.4299	57.7315	59.5419	68.1343	74.4370	84.7449	(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	85.8395	75.0631	78.5238	67.1742	63.6312	55.8178	54.4299	57.7315	59.5419	68.1343	74.4370	84.7449	(64)
Total per year (kWh/year)	Total per year (kWh/year) = Sum(64)m =											825.0692	(64)
Electric shower(s)	49.0926	43.7419	47.7645	45.5811	46.4364	44.2958	45.7724	46.4364	45.5811	47.7645	46.8664	49.0926	(64a)
Heat gains from water heating, kWh/month	33.7330	29.7013	31.5721	28.1888	27.5169	25.0284	25.0506	26.0420	26.2807	28.9747	30.3258	33.4594	(65)

Full SAP Calculation Printout



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	110.5831	110.5831	110.5831	110.5831	110.5831	110.5831	110.5831	110.5831	110.5831	110.5831	110.5831	110.5831 (66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	97.8973	108.3863	97.8973	101.1606	97.8973	101.1606	97.8973	97.8973	101.1606	97.8973	101.1606	97.8973 (67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	194.0077	196.0209	190.9477	180.1475	166.5142	153.7008	145.1407	143.1275	148.2007	159.0009	172.6342	185.4476 (68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	34.0583	34.0583	34.0583	34.0583	34.0583	34.0583	34.0583	34.0583	34.0583	34.0583	34.0583	34.0583 (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	0.0000 (70)
Losses e.g. evaporation (negative values) (Table 5)	-88.4665	-88.4665	-88.4665	-88.4665	-88.4665	-88.4665	-88.4665	-88.4665	-88.4665	-88.4665	-88.4665	-88.4665 (71)
Water heating gains (Table 5)	45.3401	44.1983	42.4356	39.1511	36.9851	34.7617	33.6701	35.0026	36.5010	38.9445	42.1192	44.9723 (72)
Total internal gains	393.4201	404.7805	387.4556	376.6342	357.5716	345.7980	332.8830	332.2024	342.0372	352.0176	372.0889	384.4921 (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	
South	11.9400		46.7521		0.6300		0.7000		0.7700		170.5992 (78)	
West	3.1100		19.6403		0.6300		0.7000		0.7700		18.6672 (80)	
Solar gains	189.2664	315.9145	416.0412	489.9557	526.6565	513.4258	498.8952	472.7474	441.7259	344.6870	225.4940	162.7644 (83)
Total gains	582.6865	720.6950	803.4968	866.5899	884.2280	859.2238	831.7782	804.9498	783.7631	696.7046	597.5830	547.2565 (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	15.4635	15.4958	15.5276	15.6786	15.7072	15.8417	15.8417	15.8668	15.7896	15.7072	15.6495	15.5896
alpha	2.0309	2.0331	2.0352	2.0452	2.0471	2.0561	2.0561	2.0578	2.0526	2.0471	2.0433	2.0393
util living area	0.8930	0.8450	0.7930	0.7162	0.6208	0.4967	0.3831	0.4071	0.5566	0.7367	0.8528	0.9034 (86)
MIT	17.8733	18.3789	18.9651	19.6507	20.2275	20.6608	20.8586	20.8343	20.5414	19.7715	18.7079	17.7774 (87)
Th 2	19.9093	19.9113	19.9133	19.9226	19.9244	19.9325	19.9325	19.9340	19.9294	19.9244	19.9208	19.9172 (88)
util rest of house	0.8813	0.8292	0.7716	0.6860	0.5775	0.4345	0.3029	0.3275	0.4971	0.7023	0.8349	0.8928 (89)
MIT 2	17.0846	17.5745	18.1411	18.7988	19.3325	19.7143	19.8642	19.8501	19.6185	18.9285	17.9113	16.9963 (90)
Living area fraction	fLA = Living area / (4) =											
MIT	17.5238	18.0224	18.6000	19.2732	19.8309	20.2414	20.4179	20.3982	20.1324	19.3979	18.3549	17.4312 (92)
Temperature adjustment	0.0000											
adjusted MIT	17.5238	18.0224	18.6000	19.2732	19.8309	20.2414	20.4179	20.3982	20.1324	19.3979	18.3549	17.4312 (93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Utilisation	0.8487	0.7956	0.7415	0.6657	0.5734	0.4533	0.3406	0.3634	0.5091	0.6832	0.8031	0.8611 (94)
Useful gains	494.5058	573.3964	595.7616	576.9183	507.0490	389.5241	283.2837	292.5295	399.0242	476.0186	479.9047	471.2566 (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	1100.7015	1089.9864	1003.0024	851.5799	666.2835	458.3581	310.2019	324.3334	491.7436	720.9472	925.6845	1092.4142 (97)
Space heating kWh	451.0096	347.1485	302.9872	197.7563	118.4705	0.0000	0.0000	0.0000	0.0000	182.2269	320.9615	462.1412 (98a)
Space heating requirement - total per year (kWh/year)												2382.7016
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	451.0096	347.1485	302.9872	197.7563	118.4705	0.0000	0.0000	0.0000	0.0000	182.2269	320.9615	462.1412 (98c)
Space heating requirement after solar contribution - total per year (kWh/year)												2382.7016
Space heating per m ²												(98c) / (4) = 34.7333 (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	763.7441	601.2454	616.5163	0.0000	0.0000	0.0000	0.0000 (100)
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	0.7483	0.8062	0.7914	0.0000	0.0000	0.0000	0.0000 (101)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	571.5388	484.7446	487.9236	0.0000	0.0000	0.0000	0.0000 (102)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	967.5545	937.3926	907.9332	0.0000	0.0000	0.0000	0.0000 (103)
Space cooling kWh												
	0.0000	0.0000	0.0000	0.0000	0.0000	285.1313	336.7701	312.4871	0.0000	0.0000	0.0000	0.0000 (104)
Cooled fraction	fC = cooled area / (4) =											
Intermittency factor (Table 10b)												1.0000 (105)
	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	71.2828	84.1925	78.1218	0.0000	0.0000	0.0000	0.0000 (107)
Space cooling requirement												233.5971 (107)
Energy for space heating												34.7333 (99)
Energy for space cooling												3.4052 (108)
Total												38.1385 (109)
Fabric Energy Efficiency (TFEE)												38.1 (109)

