

Full SAP Calculation Printout



Plot Reference	UNIT 05				Issued on Date	08/07/2026	
Assessment Reference	001			Plot Type Ref	UNIT 05		
Plot Address	UNIT 05, Stoney Wood Quarter, 34 The Fairway, LONDON, NW7 3HS				SAP Version	10.2	
SAP Rating	82 B	DER	3.62	TER	15.33		
Environmental	97 A	% DER < TER				76.39	
CO ₂ Emissions (t/year)	0.25	DFEE	34.97	TFEE	41.11		
Compliance Check	See BREL	% DFEE < TFEE				14.93	
% DPER < TPER	52.77	DPER	38.78	TPER	82.11		
Assessor Details	Mr. Ondrej Gajdos				Assessor ID	W452-0001	
Client							

SAP 10 WORKSHEET FOR New Build (As Designed) (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			
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	73.5000		
Dwelling volume			

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) = 0.1484 (8)
Pressure test	Yes
Pressure Test Method	Blower Door
Measured/design AP50	3.0000 (17)
Infiltration rate	0.2984 (18)
Number of sides sheltered	4 (19)
Shelter factor	(20) = 1 - [0.075 x (19)] = 0.7000 (20)
Infiltration rate adjusted to include shelter factor	(21) = (18) x (20) = 0.2089 (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 infiltr rate	0.2663	0.2611	0.2559	0.2298	0.2246	0.1985	0.1985	0.1932	0.2089	0.2246	0.2350	0.2455 (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	0.5355	0.5341	0.5327	0.5264	0.5252	0.5197	0.5197	0.5187	0.5218	0.5252	0.5276	0.5301 (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							
dl			2.1000	1.0000	2.1000		(26)
1			17.4700	0.7940	13.8704		(27)
exposed floor			55.0000	0.1000	5.5000	75.0000	4125.0000 (28b)
exposed wall	36.3000	17.4700	18.8300	0.1500	2.8245	60.0000	1129.8000 (29a)
stair wall	8.2500		8.2500	0.1700	1.4025	9.0000	74.2500 (29a)
corridor wall	5.5000	2.1000	3.4000	0.2500	0.8500	9.0000	30.6000 (29a)
terrace above 1F	6.3000		6.3000	0.1000	0.6300	9.0000	56.7000 (30)
Total net area of external elements Aum (A, m ²)			111.3500				(31)
Fabric heat loss, W/K = Sum (A x U)					(26)...(30) + (32) = 27.1774		(33)
Main dwelling							
pw			67.9250	0.0000	0.0000	110.0000	7471.7503 (32)
pf			18.5000			40.0000	740.0000 (32d)
pc			67.2000			30.0000	2015.9999 (32b)
iw			129.2500			9.0000	1163.2500 (32c)

Heat capacity Cm = Sum(A x k)
Thermal mass parameter (TMP = Cm / TFA) in kJ/m²K
List of Thermal Bridges

Ventilation heat loss calculated monthly (39)m = 0.33 x (25)m x (5)												
(38)m	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	35.7165	35.6246	35.5345	35.1116	35.0325	34.6641	34.6641	34.5959	34.8060	35.0325	35.1925	35.3599 (38)
Heat transfer coeff	74.9314	74.8395	74.7495	74.3265	74.2474	73.8790	73.8790	73.8108	74.0209	74.2474	74.4075	74.5749 (39)
Average = Sum(39)m / 12 =												74.3262
HLP	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	1.0195	1.0182	1.0170	1.0112	1.0102	1.0052	1.0052	1.0042	1.0071	1.0102	1.0123	1.0146 (40)
HLP (average)												1.0112
Days in mont	31	28	31	30	31	30	31	31	30	31	30	31

Assumed occupancy												2.3280 (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	27.3240	26.9182	26.3467	25.2931	24.5041	23.6293	23.1568	23.7242	24.3421	25.2782	26.3535	27.2316 (42b)
Hot water usage for other uses	38.4712	37.0722	35.6733	34.2743	32.8754	31.4764	31.4764	32.8754	34.2743	35.6733	37.0722	38.4712 (42c)
Average daily hot water use (litres/day)												60.3075 (43)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Daily hot water use	65.7952	63.9904	62.0200	59.5674	57.3795	55.1057	54.6332	56.5996	58.6164	60.9514	63.4257	65.7028 (44)
Energy content (annual)	104.2035	91.1215	95.3225	81.5448	77.2438	67.7589	66.0741	70.0821	72.2799	82.7105	90.3616	102.8747 (45)
Distribution loss (46)m = 0.15 x (45)m	Total = Sum(45)m = 1001.5779											
Water storage loss (or HIU 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)
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												
	88.5730	77.4533	81.0241	69.3131	65.6573	57.5951	56.1630	59.5698	61.4379	70.3039	76.8074	87.4435 (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	88.5730	77.4533	81.0241	69.3131	65.6573	57.5951	56.1630	59.5698	61.4379	70.3039	76.8074	87.4435 (64)
12Total per year (kWh/year)	Total per year (kWh/year) = Sum(64a)m = 851.3412 (64a)											
Electric shower(s)	851 (64)											
	50.6549	45.1340	49.2846	47.0317	47.9142	45.7055	47.2290	47.9142	47.0317	49.2846	48.3578	50.6549 (64a)
Total Energy used by instantaneous electric shower(s) (kWh/year) = Sum(64a)m = 576.1970 (64a)												
Heat gains from water heating, kWh/month	34.8070	30.6468	32.5772	29.0862	28.3929	25.8251	25.8480	26.8710	27.1174	29.8971	31.2913	34.5246 (65)

Metabolic gains (Table 5), Watts												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(66)m	116.4006	116.4006	116.4006	116.4006	116.4006	116.4006	116.4006	116.4006	116.4006	116.4006	116.4006	116.4006 (66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	103.5625	114.6585	103.5625	107.0146	103.5625	107.0146	103.5625	103.5625	107.0146	103.5625	107.0146	103.5625 (67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	205.3242	207.4549	202.0858	190.6556	176.2270	162.6662	153.6068	151.4762	156.8453	168.2754	182.7040	196.2648 (68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	34.6401	34.6401	34.6401	34.6401	34.6401	34.6401	34.6401	34.6401	34.6401	34.6401	34.6401	34.6401 (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)	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205 (71)
Water heating gains (Table 5)	46.7836	45.6054	43.7865	40.3975	38.1625	35.8682	34.7419	36.1169	37.6630	40.1843	43.4601	46.4040 (72)
Total internal gains	413.5905	425.6389	407.3550	395.9878	375.8722	363.4693	349.8314	349.0758	359.4431	369.9424	391.0989	404.1515 (73)

[Jan					Area	Solar flux	g		FF	Access		Gains
					m2	Table 6a	Specific data		factor	factor		W
						W/m2	or Table 6b		or Table 6c	Table 6d		
North					6.6000	10.6334	0.5300		0.7000	0.7700		18.0436 (74)
Northeast					10.8700	11.2829	0.5300		0.7000	0.7700		31.5325 (75)
Solar gains	49.5761	98.6676	174.2354	284.0334	382.0691	407.8870	381.3186	303.5051	211.3598	119.4862	61.9352	40.7931 (83)
Total gains	463.1666	524.3065	581.5904	680.0212	757.9413	771.3562	731.1500	652.5809	570.8029	489.4287	453.0341	444.9446 (84)

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 for living area, nil,m (see Table 9a)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
tau	62.3064	62.3829	62.4581	62.8135	62.8804	63.1940	63.1940	63.2524	63.0728	62.8804	62.7451	62.6043
alpha	5.1538	5.1589	5.1639	5.1876	5.1920	5.2129	5.2129	5.2168	5.2049	5.1920	5.1830	5.1736
util living area	0.9962	0.9922	0.9810	0.9305	0.7971	0.5936	0.4410	0.5119	0.7889	0.9635	0.9922	0.9970 (86)
MIT	19.7323	19.9009	20.1758	20.5714	20.8611	20.9759	20.9957	20.9912	20.9027	20.5167	20.0602	19.7000 (87)
Th 2	20.0671	20.0682	20.0692	20.0740	20.0749	20.0790	20.0790	20.0798	20.0774	20.0749	20.0731	20.0712 (88)
util rest of house	0.9951	0.9899	0.9751	0.9095	0.7458	0.5160	0.3506	0.4137	0.7168	0.9483	0.9894	0.9960 (89)
MIT 2	18.9108	19.0791	19.3511	19.7331	19.9839	20.0681	20.0779	20.0772	20.0239	19.6900	19.2420	18.8818 (90)
Living area fraction									fLA = Living area / (4) =			0.4857 (91)
MIT	19.3098	19.4782	19.7517	20.1403	20.4100	20.5090	20.5237	20.5211	20.4508	20.0915	19.6394	19.2792 (92)
Temperature adjustment												0.0000
adjusted MIT	19.3098	19.4782	19.7517	20.1403	20.4100	20.5090	20.5237	20.5211	20.4508	20.0915	19.6394	19.2792 (93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Utilisation	0.9939	0.9880	0.9726	0.9112	0.7654	0.5529	0.3945	0.4614	0.7480	0.9486	0.9877	0.9950 (94)
Useful gains	460.3394	518.0246	565.6375	619.6379	580.1640	426.5142	288.4667	301.1276	426.9582	464.2720	447.4590	442.7174 (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	1124.7039	1091.0296	990.5548	835.4521	646.6943	436.5527	289.8785	304.1825	470.0888	704.7210	933.0268	1124.5276 (97)
Space heating kWh	494.2872	385.0593	316.1385	155.3863	49.4985	0.0000	0.0000	0.0000	0.0000	178.8940	349.6088	507.2668 (98a)
Space heating requirement - total per year (kWh/year)												2436.1393
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	494.2872	385.0593	316.1385	155.3863	49.4985	0.0000	0.0000	0.0000	0.0000	178.8940	349.6088	507.2668 (98c)
Space heating requirement after solar contribution - total per year (kWh/year)												2436.1393
Space heating per m2												(98c) / (4) = 33.1448 (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	694.4628	546.7047	560.9621	0.0000	0.0000	0.0000	0.0000 (100)
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	0.9148	0.9557	0.9264	0.0000	0.0000	0.0000	0.0000 (101)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	635.3228	522.4648	519.6799	0.0000	0.0000	0.0000	0.0000 (102)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	862.3223	817.3502	727.5301	0.0000	0.0000	0.0000	0.0000 (103)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	163.4397	219.3948	154.6405	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	40.8599	54.8487	38.6601	0.0000	0.0000	0.0000	0.0000 (107)
Space cooling requirement												134.3687 (107)
Energy for space heating												33.1448 (99)
Energy for space cooling												1.8281 (108)
Total												34.9729 (109)
Fabric Energy Efficiency (DFEE)												35.0 (109)

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

CALCULATION OF TARGET FABRIC ENERGY EFFICIENCY

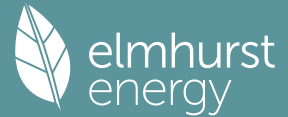
1. Overall dwelling characteristics

	Area (m2)	Storey height (m)	Volume (m3)
Main dwelling	73.5000 (1b)	x 2.7500 (2b)	= 202.1250 (1b) - (3b)
Ground floor			
Total floor area TFA = (1a)+(1b)+(1c)+(1d)+(1e)...(1n)	73.5000		(4)
Dwelling volume		(3a)+(3b)+(3c)+(3d)+(3e)...(3n) =	202.1250 (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)

Full SAP Calculation Printout



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) =
Pressure test
Pressure Test Method
Measured/design AP50
Infiltration rate
Number of sides sheltered

Air changes per hour
30.0000 / (5) = 0.1484 (8)
Yes
Blower Door
5.0000 (17)
0.3984 (18)
4 (19)

Shelter factor (20) = 1 - [0.075 x (19)] = 0.7000 (20)
Infiltration rate adjusted to include shelter factor (21) = (18) x (20) = 0.2789 (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	0.3556	0.3486	0.3416	0.3068	0.2998	0.2650	0.2650	0.2580	0.2789	0.2998	0.3138	0.3277 (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	0.5632	0.5608	0.5584	0.5471	0.5449	0.5351	0.5351	0.5333	0.5389	0.5449	0.5492	0.5537 (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			16.2800	1.1450	18.6412		(27)
exposed floor			55.0000	0.1300	7.1500		(28b)
exposed wall	36.3000	16.2800	20.0200	0.1800	3.6036		(29a)
stair wall	8.2500		8.2500	0.1800	1.4850		(29a)
corridor wall	5.5000	2.1000	3.4000	0.1800	0.6120		(29a)
terrace above 1F	6.3000		6.3000	0.1100	0.6930		(30)
Total net area of external elements Aum(A, m2)			111.3500				(31)
Fabric heat loss, W/K = Sum (A x U)					(26)...(30) + (32) = 34.2848		(33)
Main dwelling							
pw			67.9250	0.0000	0.0000		(32)

Thermal mass parameter (TMP = Cm / TFA) in kJ/m2K 228.6714 (35)

List of Thermal Bridges

K1 Element	Length	Psi-value	Total
E2 Other lintels (including other steel lintels)	7.9000	0.0500	0.3950
E3 Sill	6.9000	0.0500	0.3450
E4 Jamb	27.7000	0.0500	1.3850
E20 Exposed floor (normal)	11.3000	0.3200	3.6160
E21 Exposed floor (inverted)	7.6000	0.3200	2.4320
E7 Party floor between dwellings (in blocks of flats)	9.1000	0.0700	0.6370
E24 Eaves (insulation at ceiling level - inverted)	7.3000	0.2400	1.7520
E14 Flat roof	7.2000	0.0800	0.5760
E16 Corner (normal)	5.5000	0.0900	0.4950
E17 Corner (inverted - internal area greater than external area)	2.7500	-0.0900	-0.2475
E18 Party wall between dwellings	8.2500	0.0600	0.4950
E25 Staggered party wall between dwellings	2.7500	0.0600	0.1650

Thermal bridges (Sum(L x Psi) calculated using Appendix K) 12.0455 (36)
Point Thermal bridges (36a) = 0.0000
Total fabric heat loss (33) + (36) + (36a) = 46.3303 (37)

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

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(38)m	37.5677	37.4039	37.2434	36.4895	36.3484	35.6918	35.6918	35.5702	35.9447	36.3484	36.6338	36.9321 (38)
Heat transfer coeff	83.8980	83.7342	83.5737	82.8198	82.6788	82.0221	82.0221	81.9005	82.2751	82.6788	82.9641	83.2624 (39)
Average = Sum(39)m / 12 =												82.8191

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
HLP	1.1415	1.1392	1.1371	1.1268	1.1249	1.1159	1.1159	1.1143	1.1194	1.1249	1.1288	1.1328 (40)
HLP (average)												1.1268
Days in mont	31	28	31	30	31	30	31	31	30	31	30	31

4. Water heating energy requirements (kWh/year)

Assumed occupancy 2.3280 (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 27.3240 26.9182 26.3467 25.2931 24.5041 23.6293 23.1568 23.7242 24.3421 25.2782 26.3535 27.2316 (42b)
Hot water usage for other uses 38.4712 37.0722 35.6733 34.2743 32.8754 31.4764 31.4764 32.8754 34.2743 35.6733 37.0722 38.4712 (42c)
Average daily hot water use (litres/day) 60.3075 (43)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Daily hot water use	65.7952	63.9904	62.0200	59.5674	57.3795	55.1057	54.6332	56.5996	58.6164	60.9514	63.4257	65.7028 (44)
Energy conte	104.2035	91.1215	95.3225	81.5448	77.2438	67.7589	66.0741	70.0821	72.2799	82.7105	90.3616	102.8747 (45)
Energy content (annual)										Total = Sum(45)m =		1001.5779
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 (or HIU 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												
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 (57)
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 (59)
Total heat required for water heating calculated for each month	88.5730	77.4533	81.0241	69.3131	65.6573	57.5951	56.1630	59.5698	61.4379	70.3039	76.8074	87.4435 (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	88.5730	77.4533	81.0241	69.3131	65.6573	57.5951	56.1630	59.5698	61.4379	70.3039	76.8074	87.4435 (64)
Total per year (kWh/year) = Sum(64)m =												851.3412 (64)

Full SAP Calculation Printout



12Total per year (kWh/year)	851 (64)										
Electric shower(s)	Total Energy used by instantaneous electric shower(s) (kWh/year) = Sum(64a)m =										
50.6549	45.1340	49.2846	47.0317	47.9142	45.7055	47.2290	47.9142	47.0317	49.2846	48.3578	50.6549 (64a)
Heat gains from water heating, kWh/month											576.1970 (64a)
34.8070	30.6468	32.5772	29.0862	28.3929	25.8251	25.8480	26.8710	27.1174	29.8971	31.2913	34.5246 (65)

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	116.4006	116.4006	116.4006	116.4006	116.4006	116.4006	116.4006	116.4006	116.4006	116.4006	116.4006	116.4006 (66)
Lighting gains (calculated in Appendix L, equation L9 or L9a), also see Table 5	103.5780	114.6756	103.5780	107.0306	103.5780	107.0306	103.5780	103.5780	107.0306	103.5780	107.0306	103.5780 (67)
Appliances gains (calculated in Appendix L, equation L13 or L13a), also see Table 5	205.3242	207.4549	202.0858	190.6556	176.2270	162.6662	153.6068	151.4762	156.8453	168.2754	182.7040	196.2648 (68)
Cooking gains (calculated in Appendix L, equation L15 or L15a), also see Table 5	34.6401	34.6401	34.6401	34.6401	34.6401	34.6401	34.6401	34.6401	34.6401	34.6401	34.6401	34.6401 (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)	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205	-93.1205 (71)
Water heating gains (Table 5)	46.7836	45.6054	43.7865	40.3975	38.1625	35.8682	34.7419	36.1169	37.6630	40.1843	43.4601	46.4040 (72)
Total internal gains	413.6060	425.6560	407.3704	396.0038	375.8876	363.4852	349.8469	349.0912	359.4590	369.9579	391.1149	404.1670 (73)

6. Solar gains

[Jan]						Area m2	Solar flux Table 6a W/m2	g Specific data or Table 6b	FF Specific data or Table 6c	Access factor Table 6d	Gains W	
North						6.1500	10.6334	0.6300	0.7000	0.7700	19.9857 (74)	
Northeast						10.1300	11.2829	0.6300	0.7000	0.7700	34.9304 (75)	
Solar gains	54.9161	109.2955	193.0032	314.6284	423.2241	451.8229	422.3927	336.1975	234.1266	132.3566	68.6064	45.1870 (83)
Total gains	468.5220	534.9515	600.3737	710.6322	799.1117	815.3081	772.2395	685.2887	593.5857	502.3145	459.7213	449.3540 (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)												
tau	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
55.6474	55.7563	55.8633	56.3719	56.4680	56.9201	56.9201	56.9201	57.0046	56.7451	56.4680	56.2738	56.0722
alpha	4.7098	4.7171	4.7242	4.7581	4.7645	4.7947	4.7947	4.8003	4.7830	4.7645	4.7516	4.7381
util living area	0.9962	0.9923	0.9814	0.9342	0.8102	0.6137	0.4608	0.5353	0.8081	0.9664	0.9924	0.9969 (86)
MIT	19.5363	19.7191	20.0238	20.4686	20.8091	20.9613	20.9920	20.9844	20.8615	20.4115	19.9054	19.5079 (87)
Th 2	19.9671	19.9689	19.9707	19.9790	19.9806	19.9878	19.9878	19.9892	19.9850	19.9806	19.9774	19.9741 (88)
util rest of house	0.9950	0.9899	0.9754	0.9132	0.7571	0.5285	0.3581	0.4247	0.7337	0.9516	0.9896	0.9959 (89)
MIT 2	18.6383	18.8213	19.1237	19.5570	19.8555	19.9704	19.9857	19.9846	19.9085	19.5129	19.0140	18.6154 (90)
Living area fraction	fLA = Living area / (4) =											0.4857 (91)
MIT	19.0744	19.2574	19.5609	19.9998	20.3187	20.4517	20.4745	20.4702	20.3714	19.9493	19.4470	19.0489 (92)
Temperature adjustment												0.0000
adjusted MIT	19.0744	19.2574	19.5609	19.9998	20.3187	20.4517	20.4745	20.4702	20.3714	19.9493	19.4470	19.0489 (93)

8. Space heating requirement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Utilisation	0.9936	0.9877	0.9724	0.9137	0.7760	0.5687	0.4081	0.4785	0.7645	0.9510	0.9876	0.9947 (94)
Useful gains	465.5287	528.3740	583.7960	649.3250	620.1403	463.6507	315.1308	327.8846	453.8219	477.7036	454.0351	446.9823 (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	1239.5453	1202.2030	1091.5471	919.2844	712.5816	479.9709	317.7950	333.3527	515.9789	772.9927	1024.3562	1236.3548 (97)
Space heating kWh	575.8684	452.8131	377.7668	194.3707	68.7763	0.0000	0.0000	0.0000	0.0000	219.6951	410.6312	587.2931 (98a)
Space heating requirement - total per year (kWh/year)												2887.2148
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	575.8684	452.8131	377.7668	194.3707	68.7763	0.0000	0.0000	0.0000	0.0000	219.6951	410.6312	587.2931 (98c)
Space heating requirement after solar contribution - total per year (kWh/year)												2887.2148
Space heating per m2												(98c) / (4) = 39.2818 (99)

8c. Space cooling requirement

Calculated for June, July and August. See Table 10b												
Ext. temp.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Heat loss rate W	4.3000	4.9000	6.5000	8.9000	11.7000	14.6000	16.6000	16.4000	14.1000	10.6000	7.1000	4.2000
Utilisation	0.0000	0.0000	0.0000	0.0000	0.0000	771.0081	606.9638	622.4441	0.0000	0.0000	0.0000	0.0000 (100)
Useful loss	0.0000	0.0000	0.0000	0.0000	0.0000	0.8895	0.9375	0.9010	0.0000	0.0000	0.0000	0.0000 (101)
Total gains	0.0000	0.0000	0.0000	0.0000	0.0000	685.8137	569.0128	560.8379	0.0000	0.0000	0.0000	0.0000 (102)
Space cooling kWh	0.0000	0.0000	0.0000	0.0000	0.0000	913.6774	865.3604	765.7439	0.0000	0.0000	0.0000	0.0000 (103)
Cooled fraction	0.0000	0.0000	0.0000	0.0000	0.0000	164.0619	220.4826	152.4501	0.0000	0.0000	0.0000	0.0000 (104)
Intermittency factor (Table 10b)	fc = cooled area / (4) =											1.0000 (105)
Space cooling kWh	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	41.0155	55.1207	38.1125	0.0000	0.0000	0.0000	0.0000 (107)

Full SAP Calculation Printout



Space cooling requirement	134.2486 (107)
Energy for space heating	39.2818 (99)
Energy for space cooling	1.8265 (108)
Total	41.1083 (109)
Fabric Energy Efficiency (TFEE)	41.1 (109)