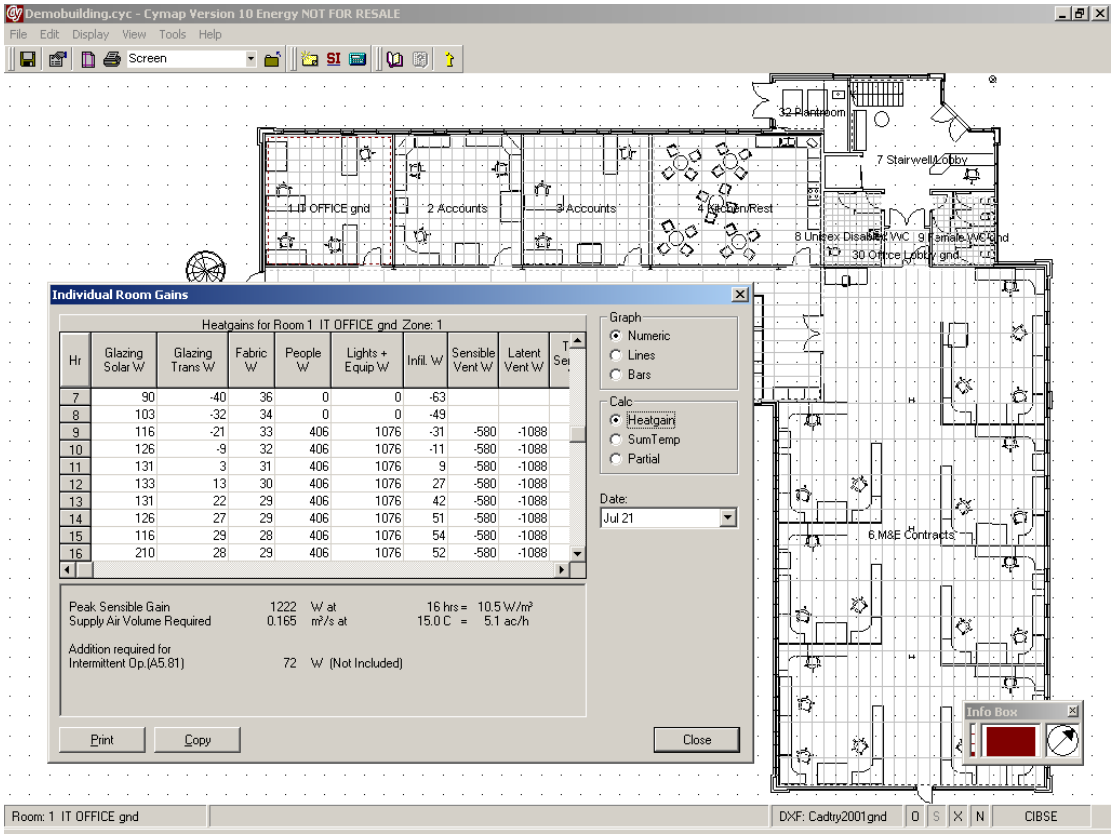
Energy Program

Once the Building Model has been completed the results for heat gains and losses to the space can be considered as well as the Summertime temperatures based on engineering assumptions made by the engineer. For example, the engineer can analyse the effect of pre-cooling the air to the space and the effect this has on any potential plant requirement. The engineer can also experiment with different glazing types and configurations to offer the optimum solution whether it be via natural infiltration, pre-cooled air or full air conditioning.



Heat gain calcs

Summertime temperatures in the spaces can be determined under various conditions.

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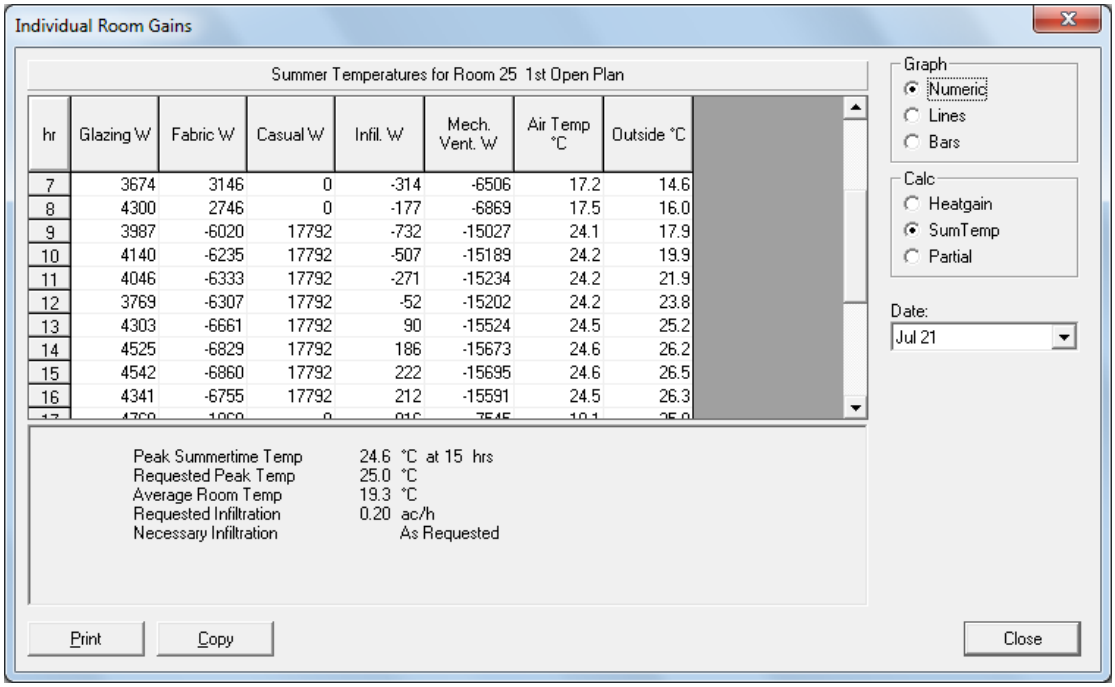

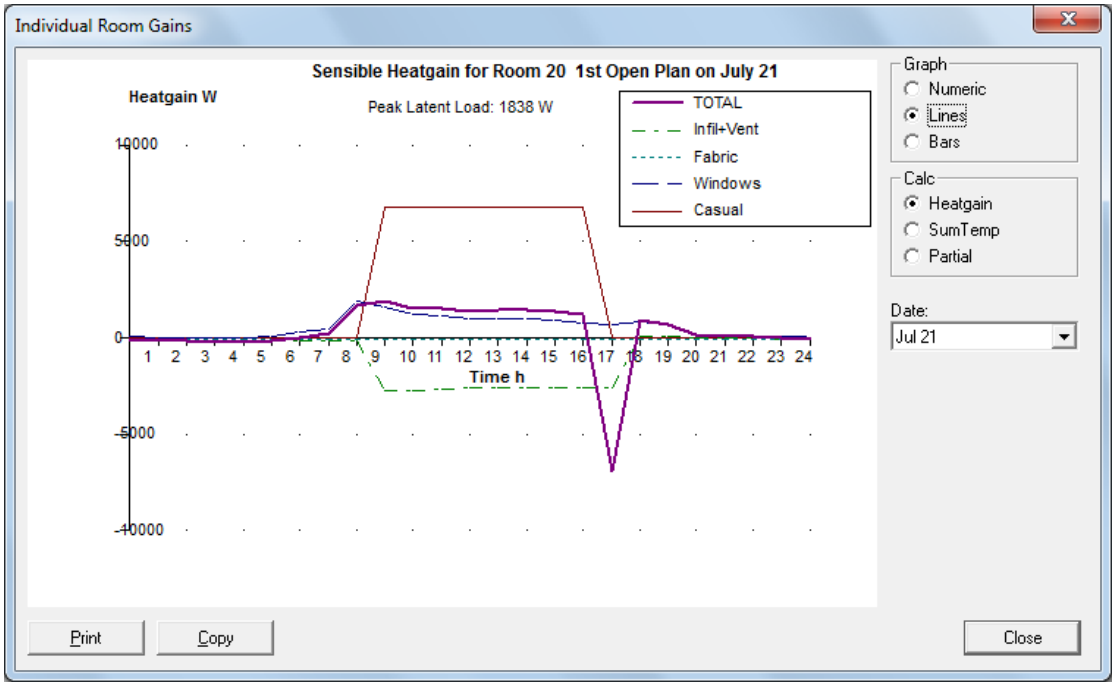

The building model is a wholly dynamic model where room temperature profiles and room positions interact to give gains and losses across partitions if necessary, as well as the effects of cross flow ventilation on gains and losses to internal spaces and zones.

Using imported profiles from the building program, these casual gains such as lighting, occupancy and equipment are considered as part of the core calculation used in the energy results.

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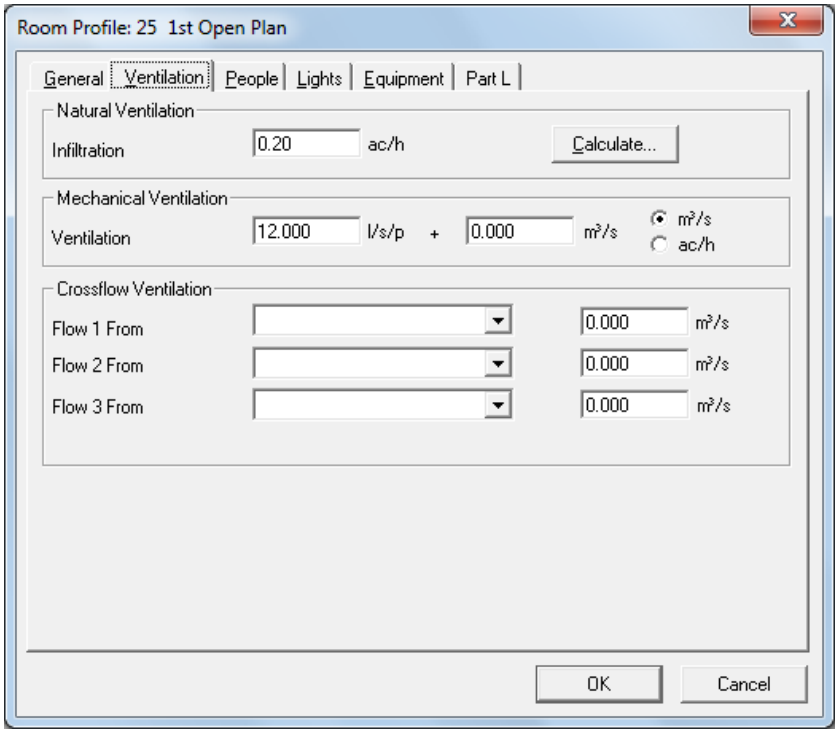
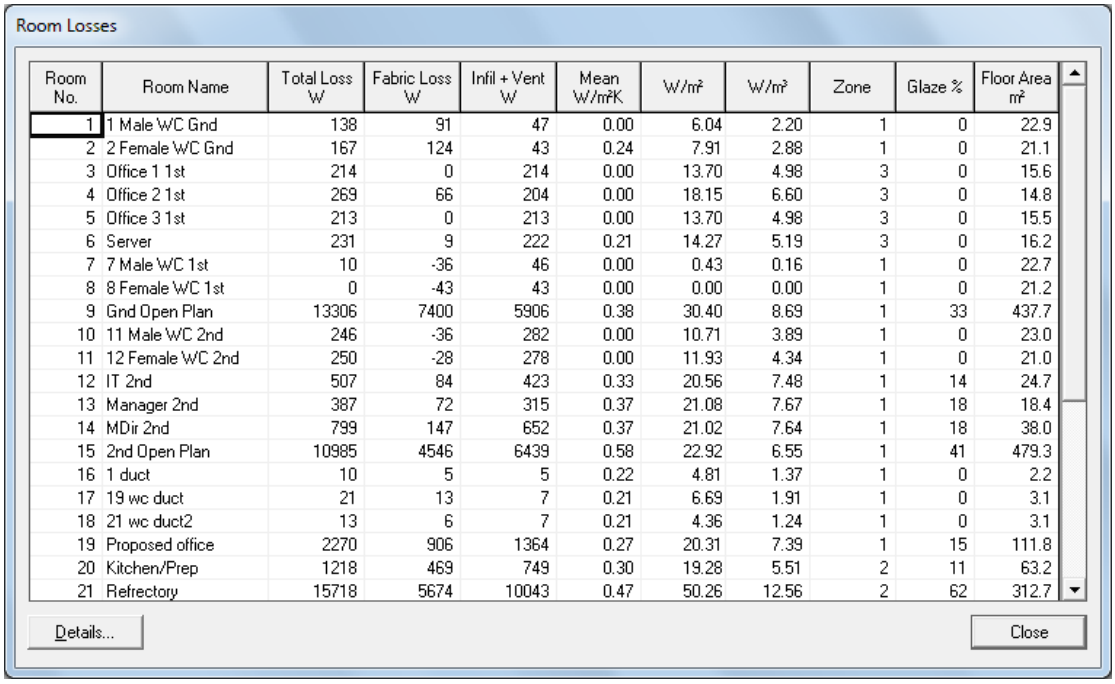
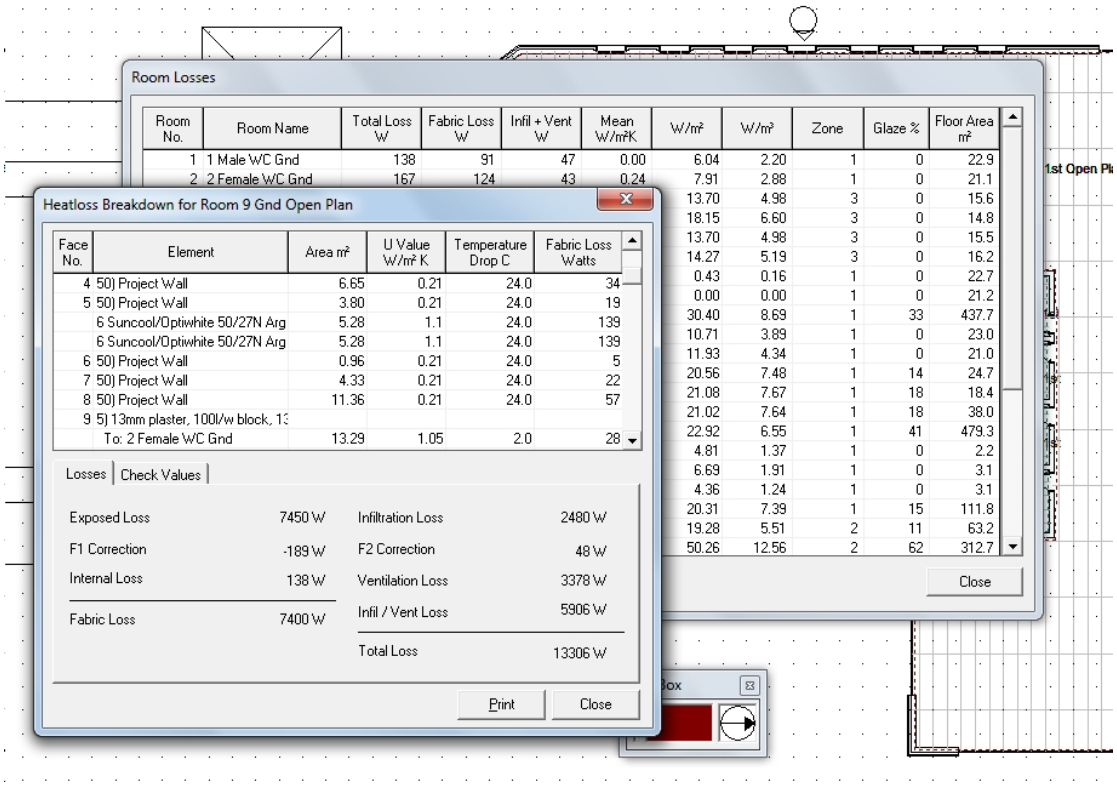


Heat loss calculations can also be performed on a building or zonal basis, the zoning of the rooms being undertaken by simply marking the room profile with the appropriate zone. These can be presented as either a tabular format or each room can be displayed individually taking into consideration internal gains, losses etc.



Room No.	Room Name	Total Loss W	Fabric Loss W	Infil + Vent W	Mean W/m²K	W/m²	W/m³	Zone	Glaze %	Floor Area m²
1	1 Male WC Gnd	138	91	47	0.00	6.04	2.20	1	0	22.9
2	2 Female WC Gnd	167	124	43	0.24	7.91	2.88	1	0	21.1
3	Office 1 1st	214	0	214	0.00	13.70	4.98	3	0	15.6
4	Office 2 1st	269	66	204	0.00	18.15	6.60	3	0	14.8
5	Office 3 1st	213	0	213	0.00	13.70	4.98	3	0	15.5
6	Server	231	9	222	0.21	14.27	5.19	3	0	16.2
7	7 Male WC 1st	10	-36	46	0.00	0.43	0.16	1	0	22.7
8	8 Female WC 1st	0	-43	43	0.00	0.00	0.00	1	0	21.2
9	Gnd Open Plan	13306	7400	5906	0.38	30.40	8.69	1	33	437.7
10	11 Male WC 2nd	246	-36	282	0.00	10.71	3.89	1	0	23.0
11	12 Female WC 2nd	250	-28	278	0.00	11.93	4.34	1	0	21.0
12	IT 2nd	507	84	423	0.33	20.56	7.48	1	14	24.7
13	Manager 2nd	387	72	315	0.37	21.08	7.67	1	18	18.4
14	MDir 2nd	799	147	652	0.37	21.02	7.64	1	18	38.0
15	2nd Open Plan	10985	4546	6439	0.58	22.92	6.55	1	41	479.3
16	1 duct	10	5	5	0.22	4.81	1.37	1	0	2.2
17	19 wc duct	21	13	7	0.21	6.69	1.91	1	0	3.1
18	21 wc duct2	13	6	7	0.21	4.36	1.24	1	0	3.1
19	Proposed office	2270	906	1364	0.27	20.31	7.39	1	15	111.8
20	Kitchen/Prep	1218	469	749	0.30	19.28	5.51	2	11	63.2
21	Refrectory	15718	5674	10043	0.47	50.26	12.56	2	62	312.7



Individual space details

Part L checks on the efficiency of the building can be carried out to analyse whether the building considered will pass the Part L2B check calculation as well as looking at the CPR rating of offices etc. Any departures from Part L will be listed enabling the engineer to advise the client or rectify as necessary.

The program also incorporates the solar overheating calculation whether in accordance with CIBSE guide H or the Part L calculation. You can decide which methodology to use.

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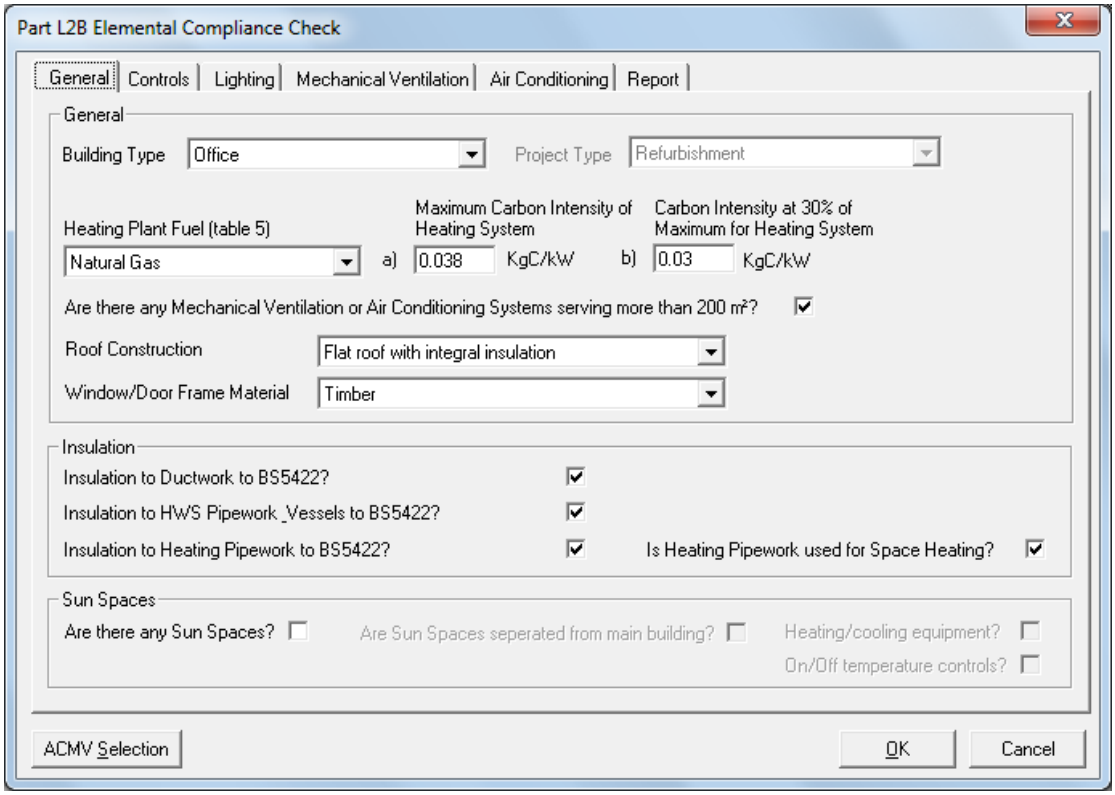
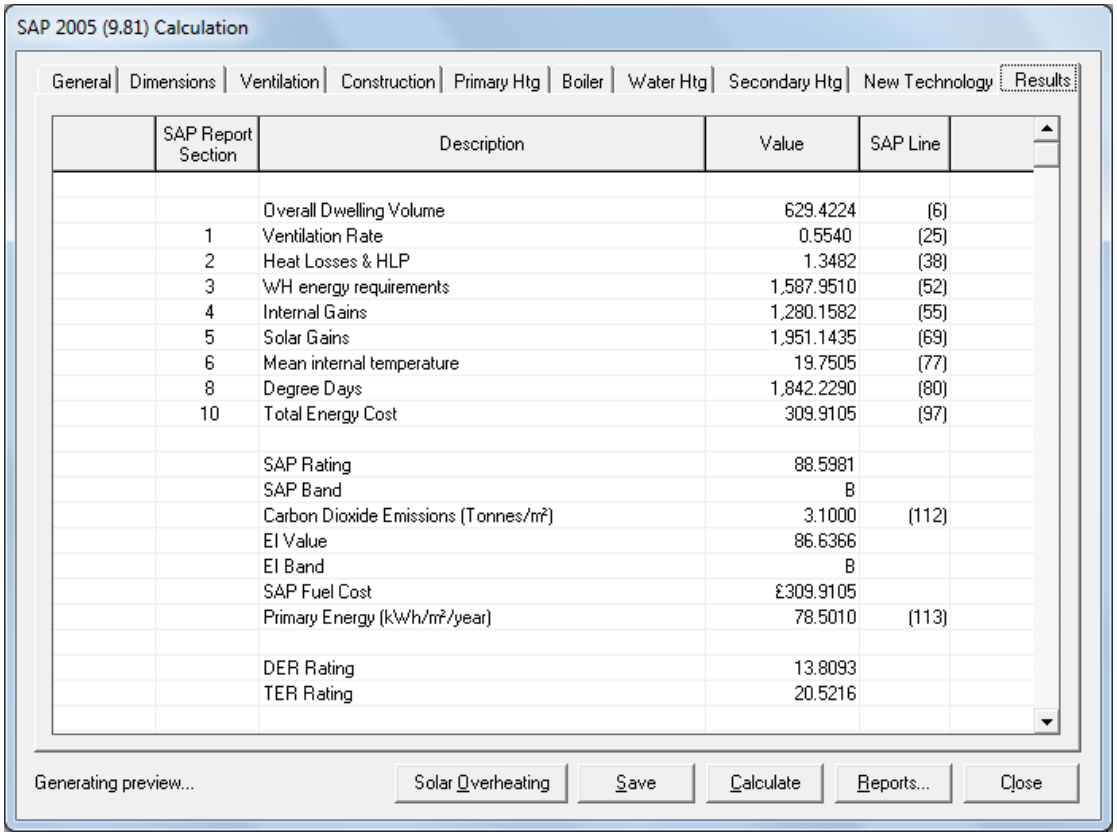
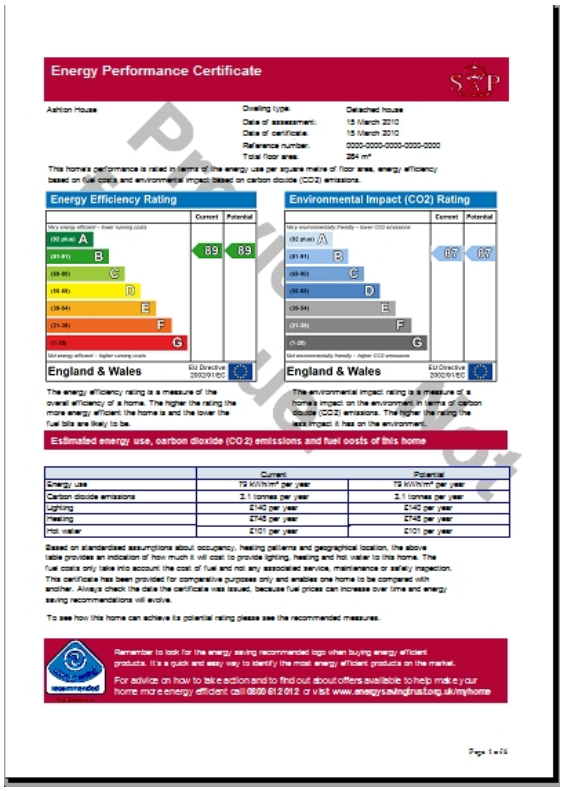
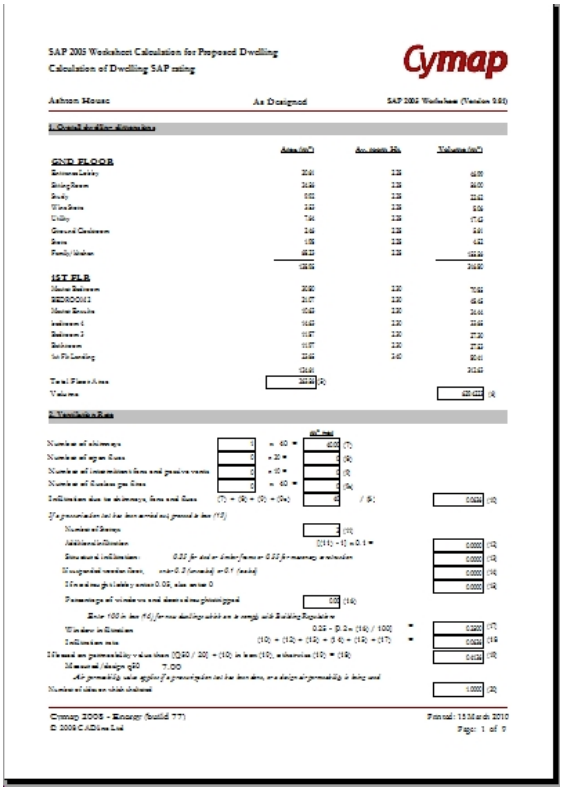


The Cymap program also enables engineers involved in domestic and residential energy efficiency to undertake SAP2009 analysis based on the pre-determined building model.

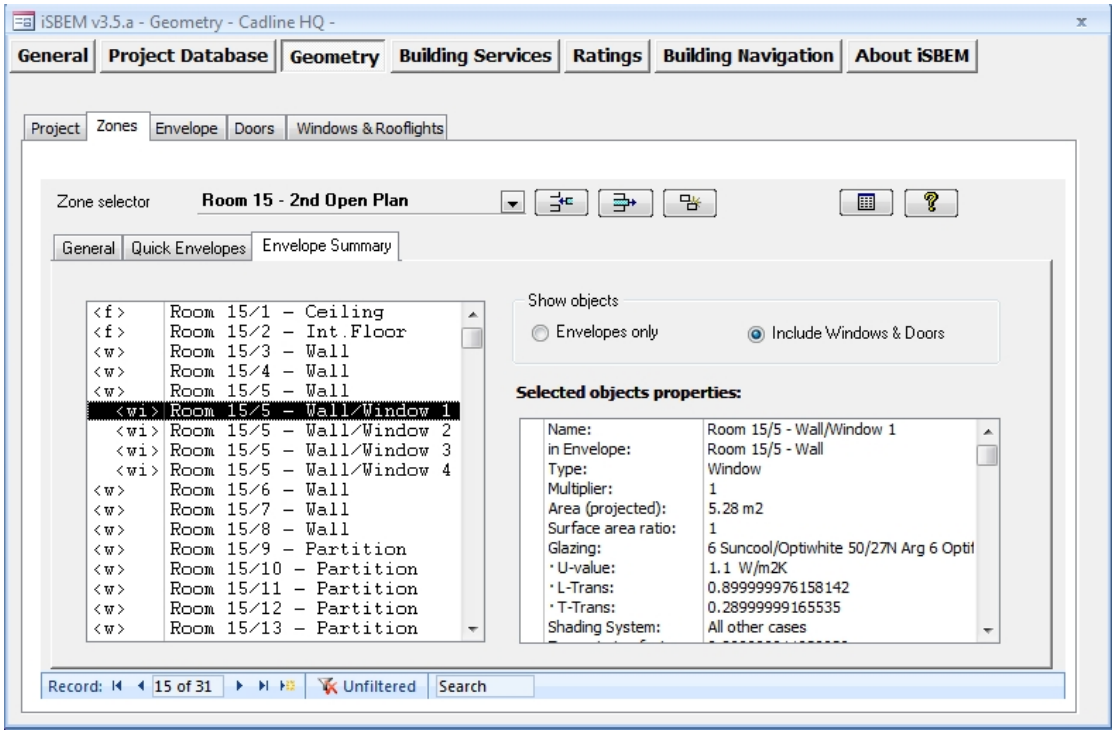


	SAP Report Section	Description	Value	SAP Line
		Overall Dwelling Volume	629.4224	(6)
	1	Ventilation Rate	0.5540	(25)
	2	Heat Losses & HLP	1.3482	(38)
	3	WH energy requirements	1,587.9510	(52)
	4	Internal Gains	1,280.1582	(55)
	5	Solar Gains	1,951.1435	(69)
	6	Mean internal temperature	19.7505	(77)
	8	Degree Days	1,842.2290	(80)
	10	Total Energy Cost	309.9105	(97)
		SAP Rating	88.5981	
		SAP Band	B	
		Carbon Dioxide Emissions (Tonnes/m²)	3.1000	(112)
		EI Value	86.6366	
		EI Band	B	
		SAP Fuel Cost	£309.9105	
		Primary Energy (kWh/m²/year)	78.5010	(113)
		DER Rating	13.8093	
		TER Rating	20.5216	





The program also has an accredited interface with the Governments latest SBEM program which entails transferring building geometric and constructional data information into the freely downloadable industry standard iSBEM interface. This enables production of EPCs to the various standards and jurisdictions involved as set by the various legislative bodies in the UK.



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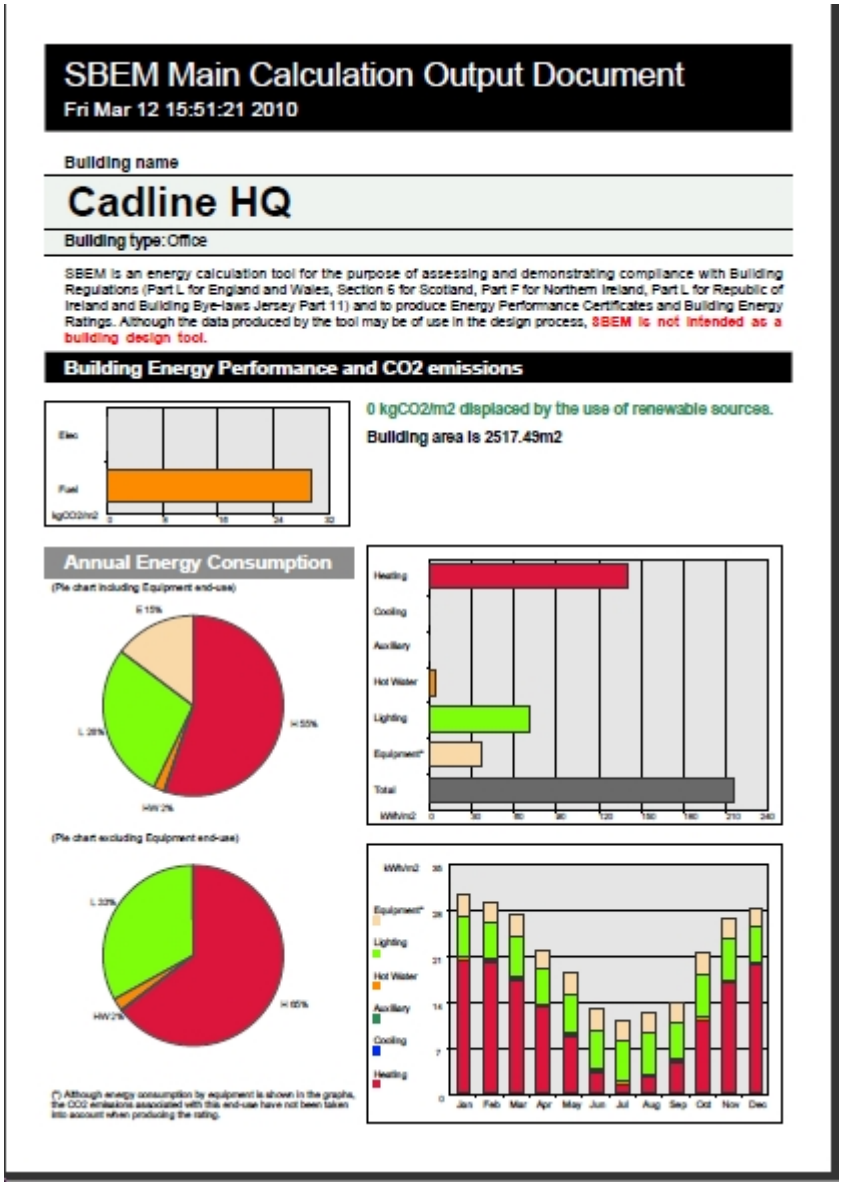


SBEM Main Calculation Output Document

Fri Mar 12 15:51:21 2010

Building name

Cadline HQ

Building type: Office

SBEM is an energy calculation tool for the purpose of assessing and demonstrating compliance with Building Regulations (Part L for England and Wales, Section 6 for Scotland, Part F for Northern Ireland, Part L for Republic of Ireland and Building Bye-laws Jersey Part 11) and to produce Energy Performance Certificates and Building Energy Ratings. Although the data produced by the tool may be of use in the design process, SBEM is not intended as a building design tool.

Building Energy Performance and CO2 emissions

0 kgCO2/m2 displaced by the use of renewable sources.

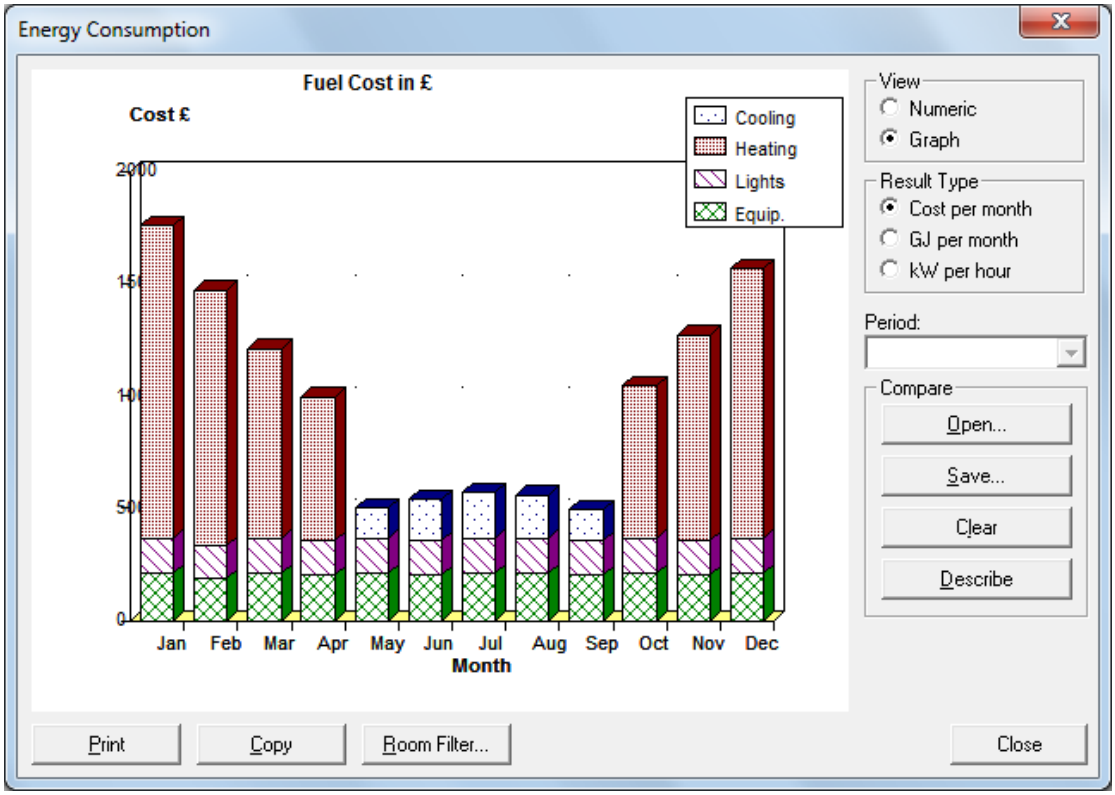
Building area is 2517.49m2

Annual Energy Consumption

(Pie chart including Equipment end-use)

(Pie chart excluding Equipment end-use)

Energy consumption of buildings can also be undertaken to calculate the cooling, heating, lighting and equipment costs based on plant efficiencies, building and plant operating times as well as diversity of occupation.



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