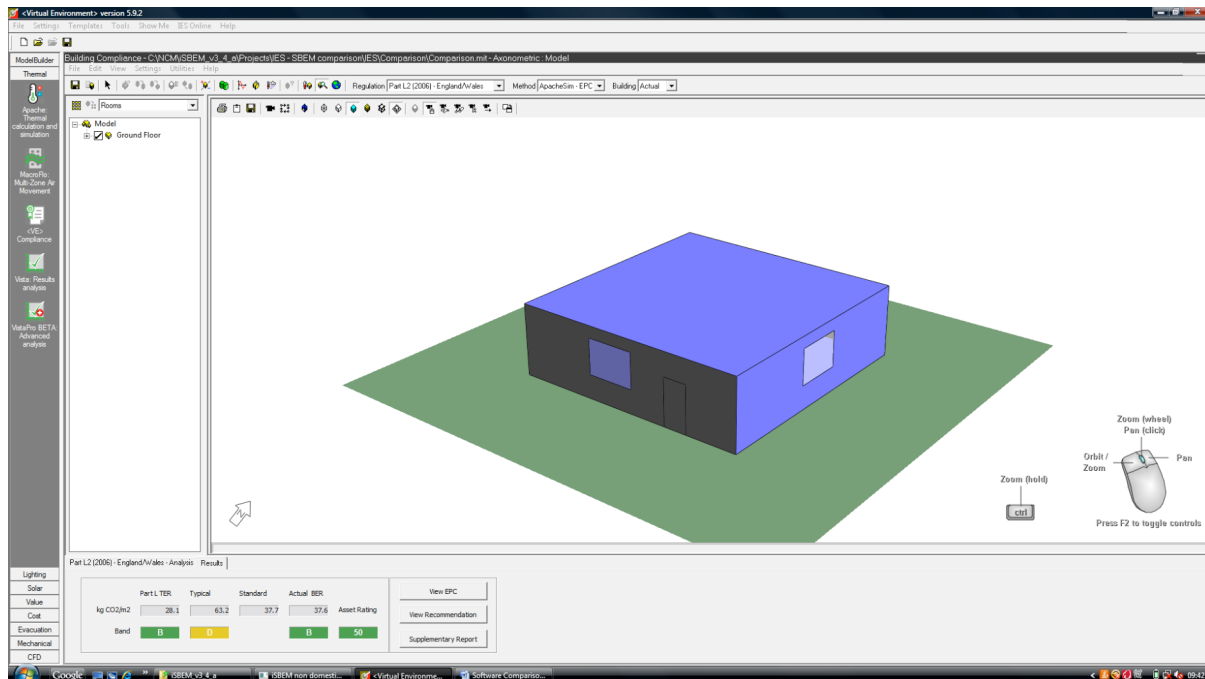


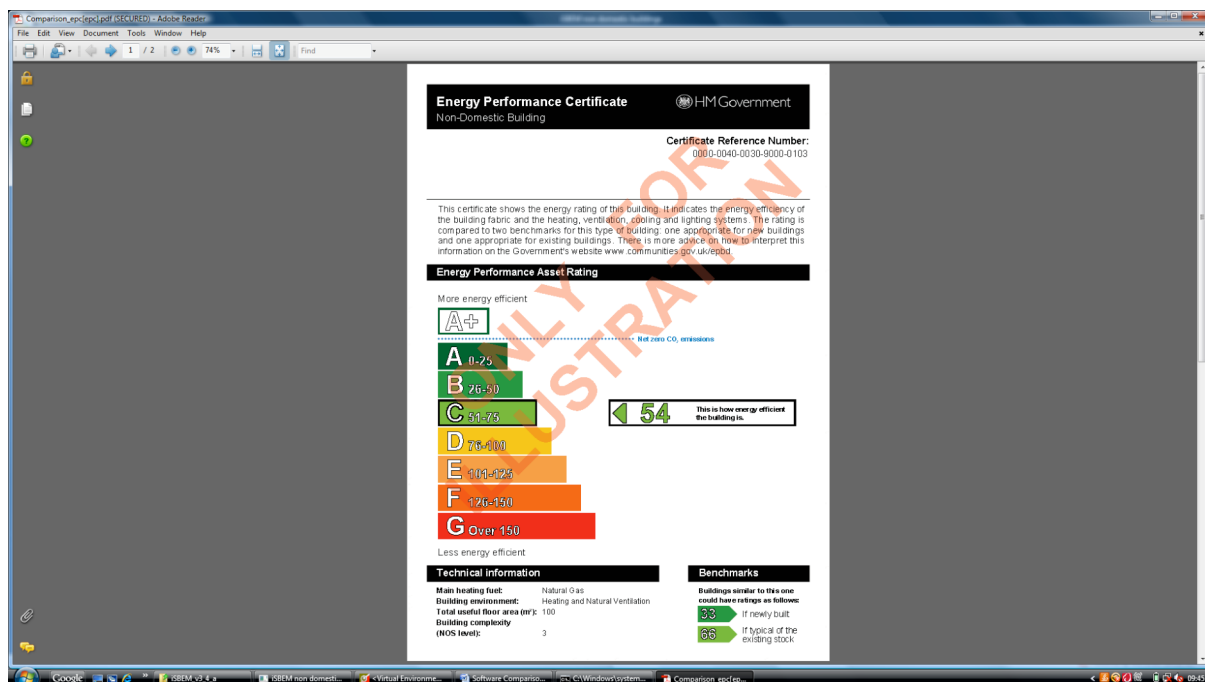
Is your energy certificate worth the paper it's written on?

Let's take a very simple building with a 10mx10m footprint 3m high. There are 4 windows of 2m x 1.5m (H) and an entrance door in the south elevation. Constructions are to the 2002 building regulations as depicted below. Heating is a standard radiator system and lighting is via T8 fluorescent luminaries.



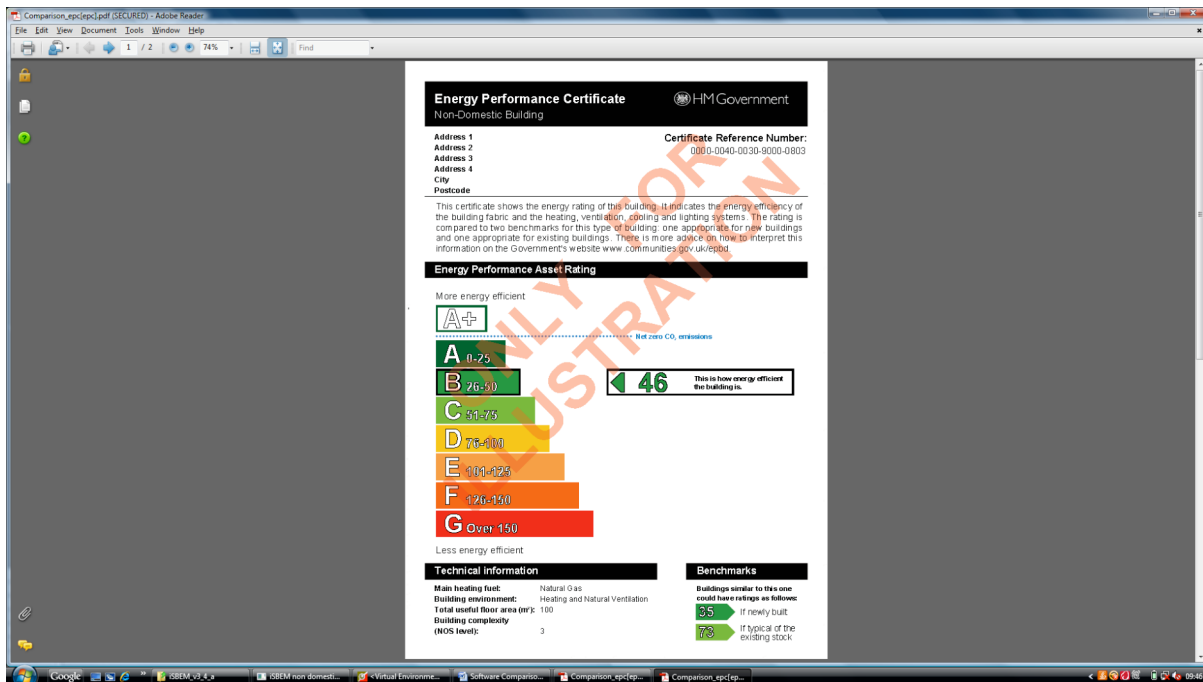
The EPC's below show a significant variation in the rating depending on what software is used from B/46 to C/54. More worrying is the comparison against a typical building with a wide variation indicating that the typical UK office stock is achieving a rating of between C/66 and D/84. We would suggest that a typical office building in the UK is performing much worse than this.

EPC produced using iSBEM at Level 4

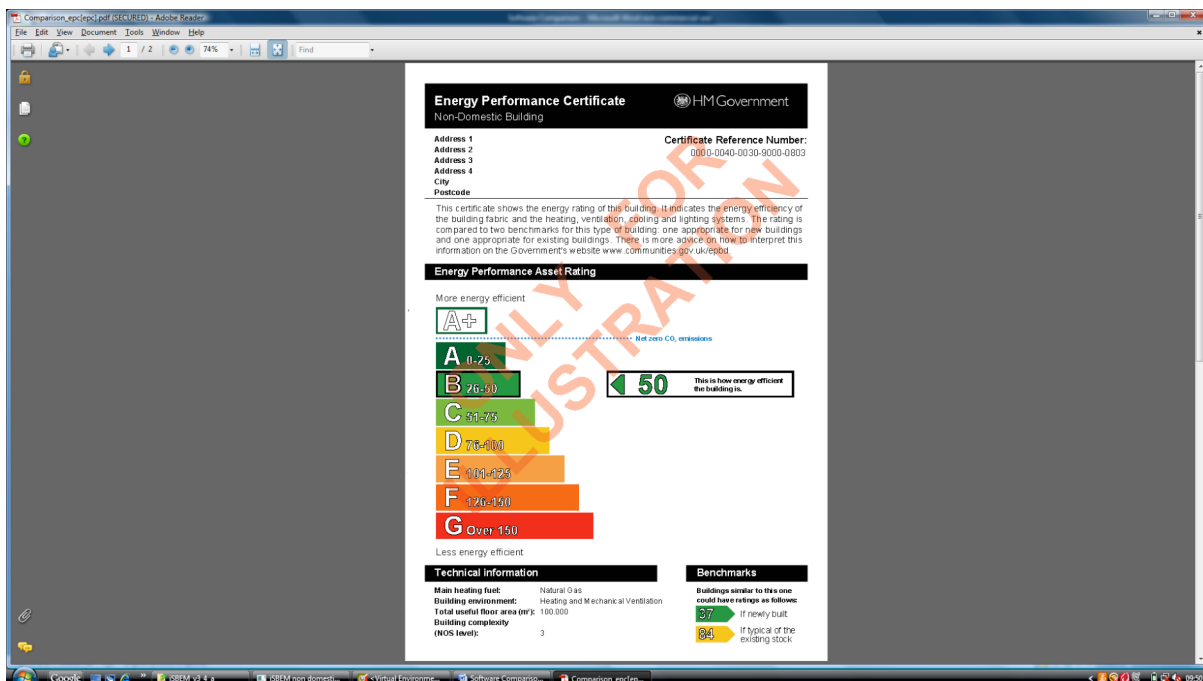


Is your energy certificate worth the paper it's written on?

EPC produced using IES with an SBEM Calculation Engine at Level 4



EPC produced using IES with ApacheSim Dynamic Simulation Modelling (DSM) at Level 5



Let's say you are a developer and you need certification that will demonstrate your building complies with the 2006 edition of the Building Regulations Part L (which deals with building energy efficiency). You know that you need a 25% improvement over the 2002 edition in order to achieve a pass so you decide to have super insulated constructions and a boiler with 96% efficiency and efficient T5 high frequency lighting.

Is your energy certificate worth the paper it's written on?

Part L Compliance Document produced using iSBEM

Comparison_brukl.pdf (SECURED) - Adobe Reader

BRUKL Output Document HM Government
Compliance with England and Wales Building Regulations Part L

Project name
Comparison As built

Date: Wed Jul 08 14:24:17 2009

Administrative information

Building Details
Address: -

Occupier Details
Name: Information not provided by the user
Telephone number: Information not provided by the user
Address: Information not provided by the user
Information not provided by the user

Certification test
Calculation engine: SBEM
Calculation engine version: v3.4.2
Interface to calculation engine: iSBEM
Interface to calculation engine version: v3.4.2
BRUKL compliance check version: v3.4.2

Certifier details
Name: Steven McLean - C Eng, MSc, MSEE, MIMechE, MCIBSE, MEE, LCC
Telephone number: +44(0)273 561955/+44(0)781 811728
Address: 25 Hazlestone Meads, Brighton, BN1 5LR

Criterion 1: Predicted CO2 emission from proposed building does not exceed the target

The building does not comply with England and Wales Building Regulations Part L

	1.1	1.2	1.3	1.4	1.5	1.6	1.7
Calculated CO2 emission rate from national building	43 KgCO2/m2 annum						
Improvement factor	0.15						
LCZ: London class	0.1						
Target CO2 Emission Rate (TER)	32.8 KgCO2/m2 annum						
Building CO2 Emission Rate (BER)	36.1 KgCO2/m2 annum						
Are emissions from building less than or equal to the target?	BER > TER						
Are as built details the same as used in BER calculation?	Separate submission						

Criterion 2: The performance of the building fabric and the building services systems should be no worse than the design limits

2.1 Are the U-values better than the design limits? Better than design limits

Element	Max	Min	Max	Min	Surface where this maximum value occurs
Wall**	0.25	0.22	0.7	0.22	Office
Floor	0.25	0.17	0.7	0.17	Office
Roof	0.25	0.18	0.35	0.18	Office
Windows** roof windows, and rooflights	2.2	1.98	3.3	1.98	Office
External doors	2.2	2.2	3	2.2	Door
Vehicle access & similar large doors	1.5	0	4	0	No Vehicle access doors in project
High usage entrance doors	6	0	6	0	No High usage entrance doors in project

Use = 1: Unweighted average U-value [W/m2K]
Use = 2: Calculated individual element U-values [W/m2K]
Use = 3: Unweighted average U-value [W/m2K]
Use = 4: Calculated individual element U-values [W/m2K]

** Thermal U-value check by the test does not apply to certain walls where limiting standards are similar to those for windows.
*** Display windows and similar glazing are not required to meet the standard given in this table.

Part L Compliance document produced using IES with SBEM Calculation Engine

Comparison_brukl.pdf (SECURED) - Adobe Reader

BRUKL Output Document HM Government
Compliance with England and Wales Building Regulations Part L

Project name
Comparison As designed

Date: Wed Jul 08 14:25:36 2009

Administrative information

Building Details
Address: Address 1, Address 2, City, Postcode

Occupier Details
Name: Name
Telephone number: Phone
Address: Street Address, City, Postcode

Certification test
Calculation engine: SBEM
Calculation engine version: v3.4.2
Interface to calculation engine: IES Virtual Environment
Interface to calculation engine version: 5.9.2
BRUKL compliance check version: v3.4.2

Certifier details
Name: Name
Telephone number: Phone
Address: Street Address, City, Postcode

Criterion 1: Predicted CO2 emission from proposed building does not exceed the target

	1.1	1.2	1.3	1.4	1.5	1.6	1.7
Calculated CO2 emission rate from national building	52.2 KgCO2/m2 annum						
Improvement factor	0.15						
LCZ: London class	0.1						
Target CO2 Emission Rate (TER)	40 KgCO2/m2 annum						
Building CO2 Emission Rate (BER)	39.7 KgCO2/m2 annum						
Are emissions from building less than or equal to the target?	BER < TER						
Are as built details the same as used in BER calculation?	Separate submission						

Criterion 2: The performance of the building fabric and the building services systems should be no worse than the design limits

2.1 Are the U-values better than the design limits? Better than design limits

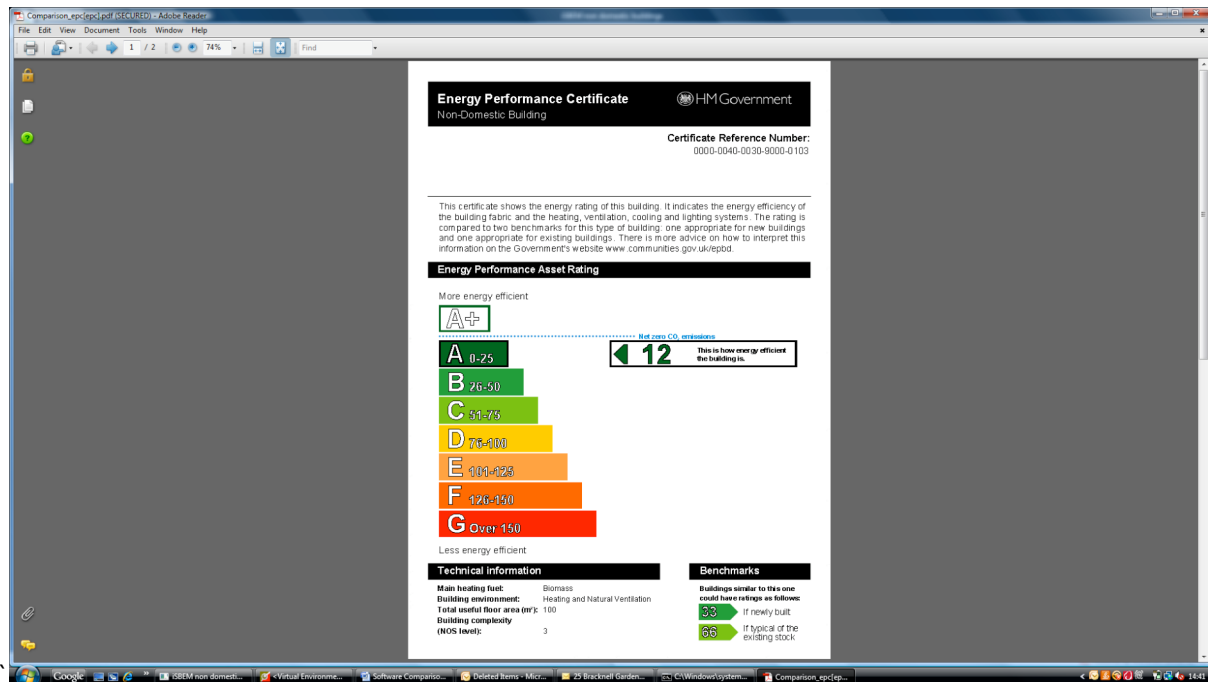
Element	Max	Min	Max	Min	Surface where this maximum value occurs
Wall**	0.25	0.22	0.7	0.22	GRIND0000_VW_B
Floor	0.25	0.25	0.7	0.25	GRIND0000_F_0
Roof	0.25	0.18	0.35	0.18	GRIND0000_C_0
Windows** roof windows, and rooflights	2.2	1.98	3.3	1.98	GRIND0000_VW_WB
External doors	2.2	2.2	3	2.2	GRIND0000_VW_WB
Vehicle access & similar large doors	1.5	0	4	0	No Vehicle access doors in project
High usage entrance doors	6	0	6	0	No High usage entrance doors in project

Use = 1: Unweighted average U-value [W/m2K]
Use = 2: Calculated individual element U-values [W/m2K]
Use = 3: Unweighted average U-value [W/m2K]
Use = 4: Calculated individual element U-values [W/m2K]

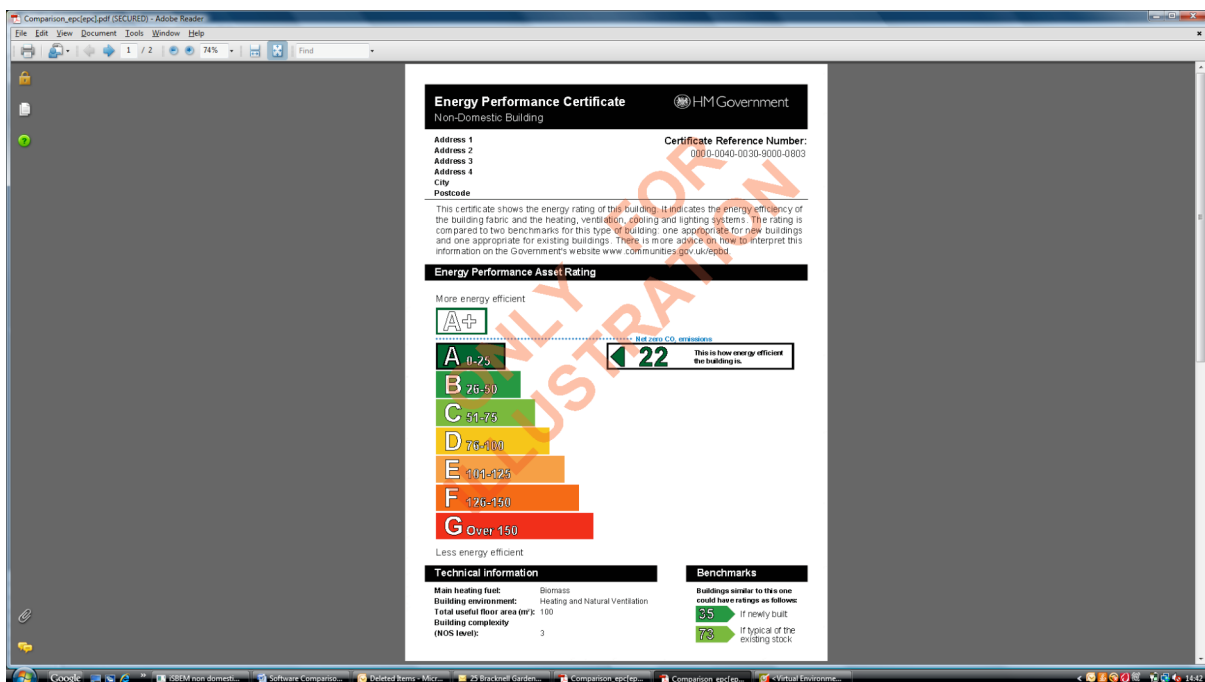
** Thermal U-value check by the test does not apply to certain walls where limiting standards are similar to those for windows.
*** Display windows and similar glazing are not required to meet the standard given in this table.

Is your energy certificate worth the paper it's written on?

EPC produced using iSBEM at Level 4

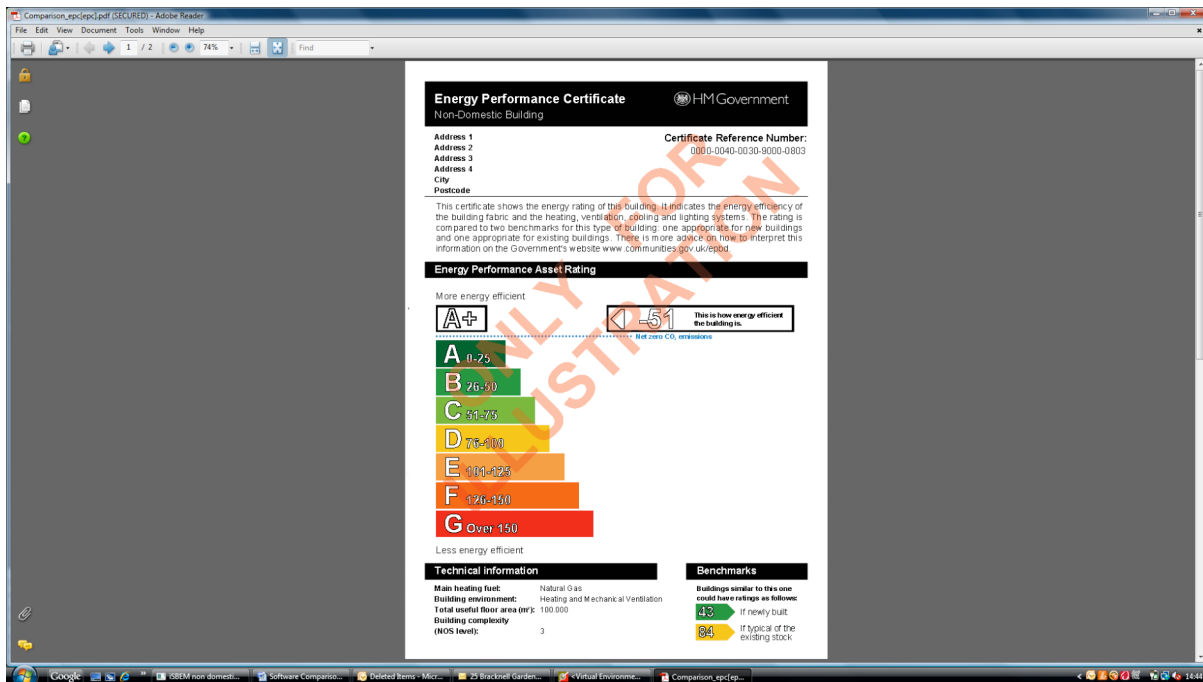


EPC produced using IES with an SBEM Calculation Engine at Level 4



Is your energy certificate worth the paper it's written on?

EPC produced using IES with ApacheSim Dynamic Simulation Modelling (DSM) at Level 5



This would require a substantial investment in renewable energy much more than the minimum required by the building regulations and I know from experience that it would be possible for this arrangement to cater for all the buildings energy needs and have surplus energy that can be exported.

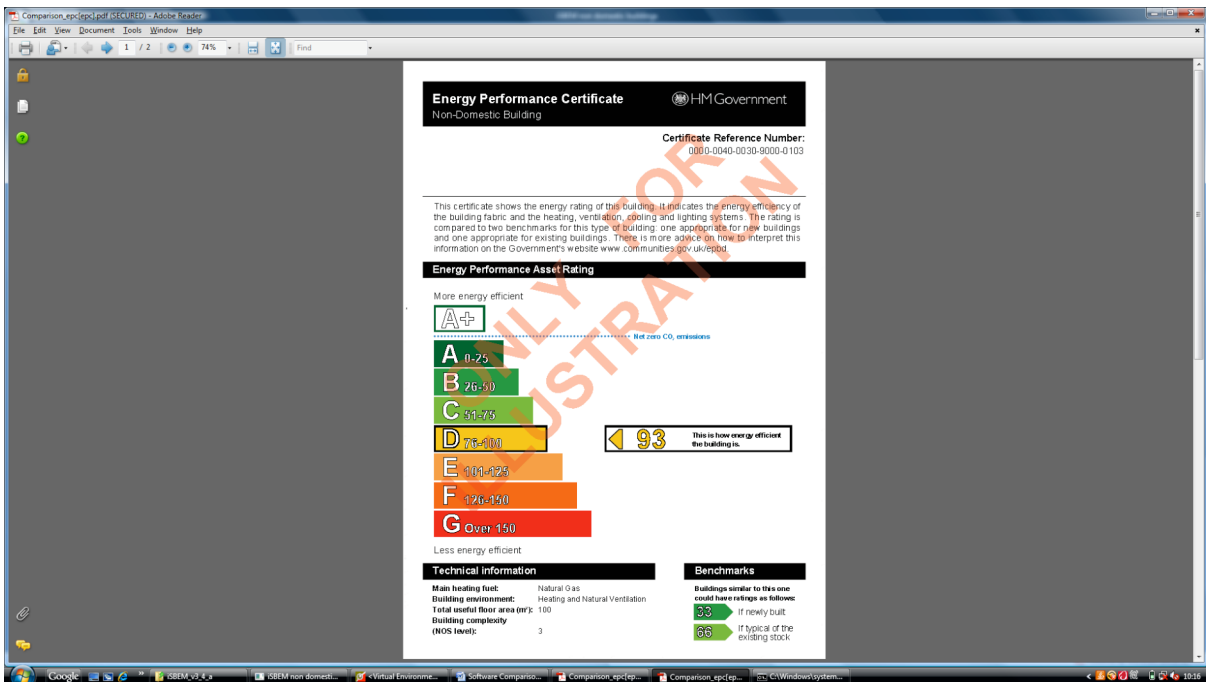
The only software that is capable of properly analysing this degree of renewable energy is the IES Level 5 software which indicates that the building will be A+ rated and net zero carbon emissions (in fact the building will be a significant net energy generator and could be used to export energy potentially)

The questions asked by iSBEM are entirely inadequate to assess the impact of the renewable energy systems under consideration and this predicts that the building will not achieve A+ of zero carbon and has an A/12 rating. The worst analysis comes out of the IES software which despite asking the right questions on things like the solar energy systems gives the most pessimistic prediction with a B/22 rating.

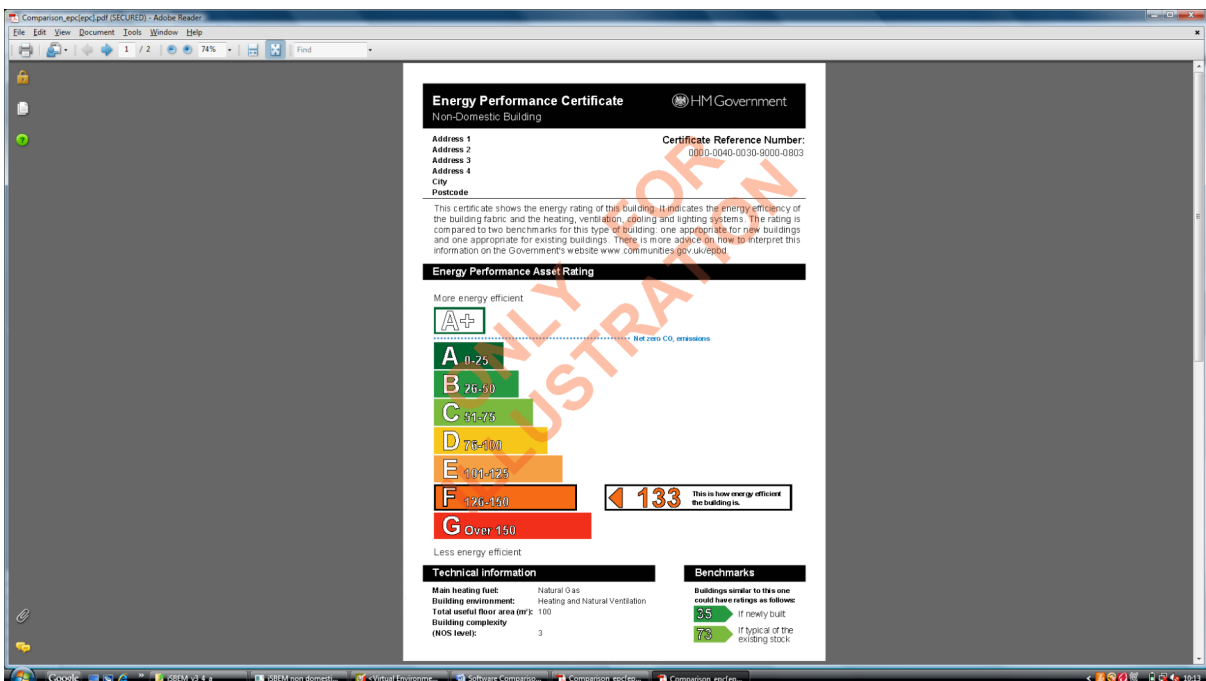
Let's say this isn't a building built to 2002 standards but is typical of the existing stock of poorly insulated building with solid walls, uninsulated roof and floor and single Glazing. 90% of buildings in the UK do not have proper (or any) insulation and this is the type of building that the EPC scheme is intended to address.

Is your energy certificate worth the paper it's written on?

EPC produced using iSBEM at Level 4

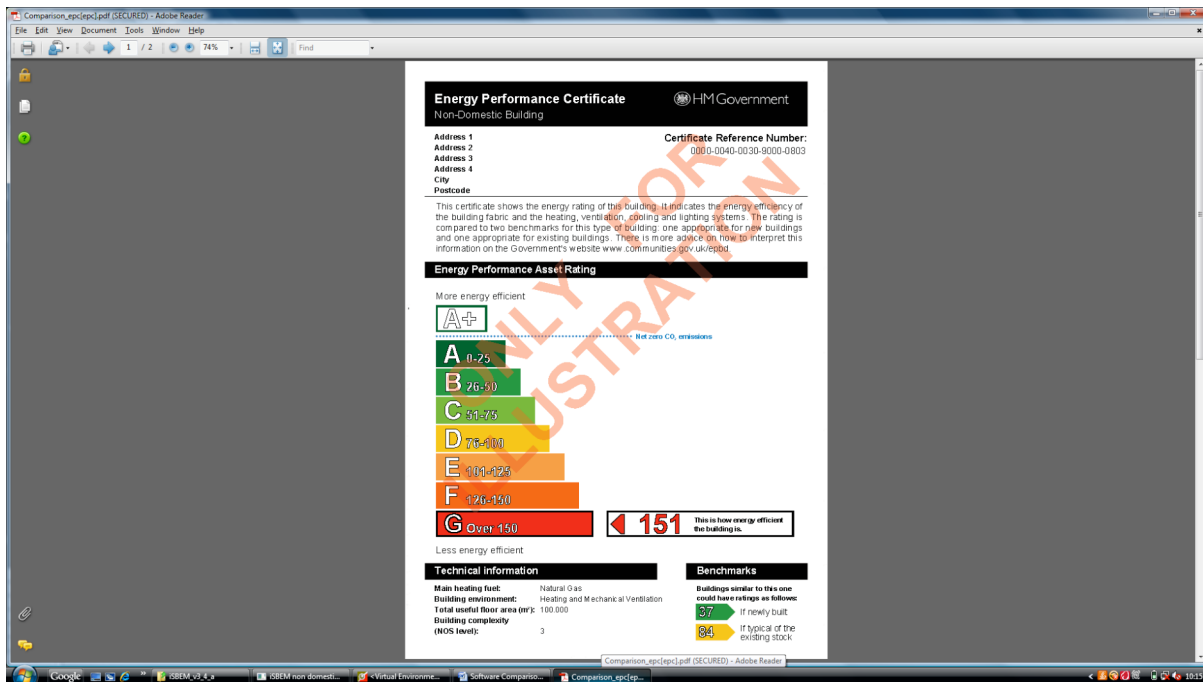


EPC produced using IES with an SBEM Calculation Engine at Level 4



Is your energy certificate worth the paper it's written on?

EPC produced using IES with ApacheSim Dynamic Simulation Modelling (DSM) at Level 5



This comparison reveals a wide range of results with the Asset Rating varying between D/93 and G/151. So depending what software your energy assessor is using you can receive an EPC that is actually quite good considering this building has no insulation at all and an inefficient heating system or the worst rating in the scale. All these results are obtained with precisely the same inputs using standard National Calculation Methodology (NCM) inputs simply changing the fabric U values so we are comparing like for like. I would suggest that the G/151 rating produced using Dynamic Simulation Modelling (DSM) is the most realistic but if you want the best rating for your building you should employ an assessor with the most basic tools available to produce your EPC. This makes a mockery of the stated intention of this scheme to drive up the efficiency of our existing buildings. It also makes a mockery of the advanced tools that are available to analyse your building which lead to unfavourable results compared to the free (largely unsupported and fundamentally flawed) software produced by the government.

However there is a major catch with going down this route. LED and other responsible energy assessing organisations have been repeatedly raising problems with the government's SBEM software since the scheme was introduced on 1st October 2008. To date we have logged several hundred such issues none of which have been satisfactorily addressed by the governments Communities and Local Government (CLG) department who are ultimately responsible for the EPC scheme or the Building Research Establishment (BRE) who are responsible for producing the software and its associated methodology. Around 80% of these issues have been sponsored and supported by CIBSE but BRE and CLG continue to publicly ignore the feedback from their energy assessors and accreditation bodies although privately they acknowledge there are major flaws with this.

LED understands from senior sources that are close to CLG and BRE that they have considered scrapping the SBEM software that is used to produce energy certificates because of the flaws that exist. LED are involved with a judicial review of this scheme which will be heard in September 2009 so this matter may be taken out of the hands of CLG and BRE.

Where this will leave the several hundred thousand clients that have commissioned EPC's to date is unclear but there is a serious risk that existing EPC certificates produced using SBEM could become worthless.

Is your energy certificate worth the paper it's written on?

LED's view is that CLG and BRE have failed to properly implement the Energy Performance Directive in Buildings and are costing the industry Millions of pounds on an exercise that has little merit at a time when the industry is suffering the worst recession in living memory. Whilst we and other professional energy assessing organisations continue to provide EPC certificates in order to assist clients to meet their legal obligations and we produce certification in full compliance with the requirements of the EPC scheme we have serious concerns about the validity of this information due to flaws' with the software which are outside the control of LED.

We believe CLG and BRE are acting in an irresponsible manner that is against the public interest by refusing to recognise the legitimate issues raised by LED and other professional organisations. When the government implements its stated intention of linking EPC's to taxation because of the unreliability of the EPC certificates this will lead to grossly unfair taxation arrangements.

LED call on CLG and BRE to ensure a programme is put in place in a timely fashion to ensure that energy certificates are produced in a robust manner. LED also calls in CLG and BRE to review all EPC's issued to date and put right at their own cost defective certificates.