



Building Regulations - Section 6 (Scotland) (2007 Edition)

ApacheSim User Guide

IES Virtual Environment

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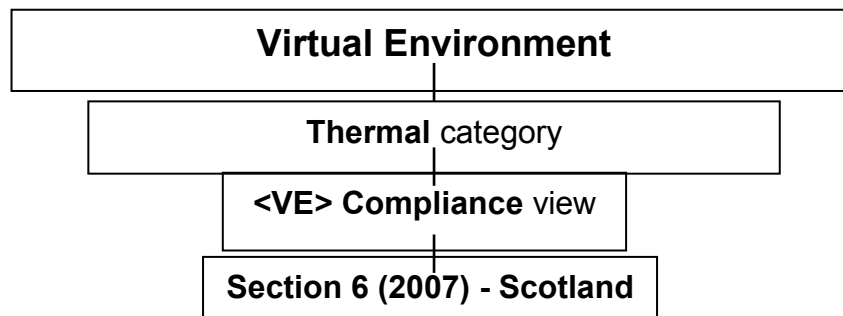
1. Introduction

1.1. What is Section 6?

Section 6 is a facility within the Virtual Environment's <VE> Compliance view providing facilities for testing compliance with Section 6 of the Building Regulations (Scotland), 2007 edition.

Section 6 (2007) applies to all new buildings in Scotland.

The 2007 Section 6 regulations introduced major revisions to the previous (2005) regulations. These revisions have been incorporated into the IES software.



The Section 6 facility covers both dwellings and non-dwellings.

Data for the Section 6 analysis is taken from the <Virtual Environment> model, supplemented where necessary by inputs specific to the requirements of Section 6.

Results of the Section 6 analysis are presented in three levels of detail:

- Pass/fail verdicts for the methods tested.

- A summary of the checks carried out within each method and their results (an HTML file).

- A report setting out the analysis in detail (an HTML file).

Certain analysis results are processed and displayed immediately data is entered, providing instant feedback to the user.

1.2. Part L2 (2006) (England & Wales) and Section 6 (2007) (Scotland)

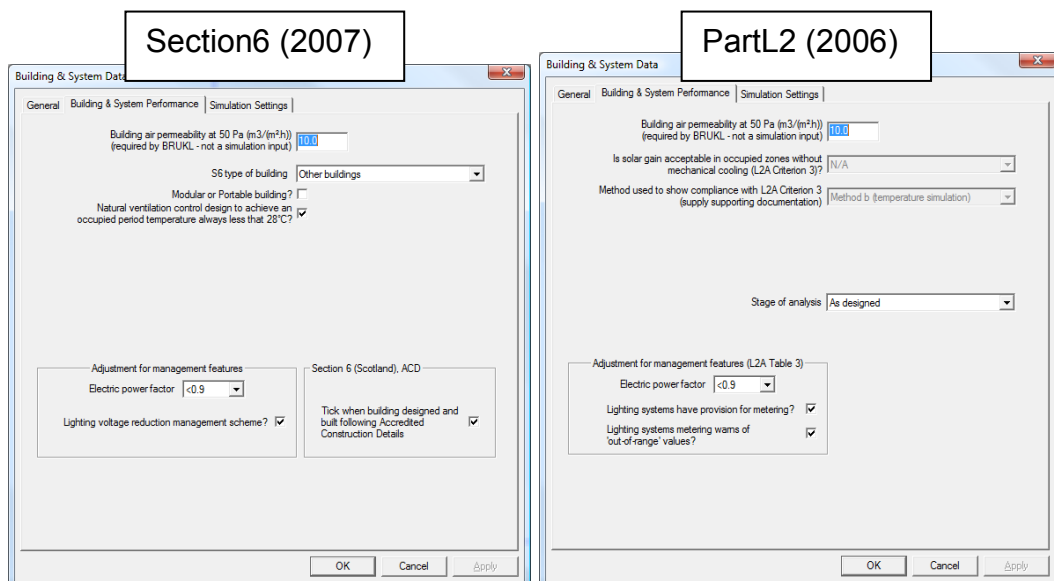
The <VE> software covers both Part L (England & Wales) and Section 6 (Scotland). In fact, the Section6 (2007) functionality is a direct copy of PartL2 (2006) with a few modifications for Scotland-specific settings.

For this reason, in order to avoid duplicating information, this document only describes the **differences** between these two compliance modes. For general information about how the feature works, please see the [PartL2 \(2006\) User Guide](#).

To switch between Part L and Section 6, click on 'Regulatory framework' from the 'Building Regulations' option on the 'Settings' menu.

2. Differences between Section6 (2007) Scotland and Part L2 (2006) (England & Wales)

2.1. User Interface Differences - Building&System Data



2.2. Calculation Differences

	Section6 (2007)	PartL2 (2006)
Notional Building Construction U-values		
Exposed Wall U-value	U=0.30	U=0.35
Pitched Roof U-value	U=0.16	Not specified
Notional building % glazing		
Glazing for "Industrial and storage buildings"	15%	10%
BER calculation		
Lighting Metering And Warning	Not used	If there is metering and warning of out-of-range values: FI = 0.95, otherwise FI=1.0
BER Calculation (see below for details)	$(1.0f-Fnvca*(1.0f-Fnv)) * (Cst - (1.0f-Fe)*Cse + Fe*Flvms*Cl t);$	$Cst - ((1-Fe) * Cse) + (Fe*Fl * Cl t) ;$
"Curtain Walls"		
	"In Section 6, unlike Part L, curtain walls are treated the same as ordinary walls."	Curtain Walls differentiated
U-value Limits		
Walls - L1, L2	0.30	0.35
High-usage entrance doors	2.2 NO EXCEPTION HERE, so same as Personnel doors	6.0

2.2.1. BER Calculation Differences

2.2.1.1. L2

First, to explain the L2 adjustment, it's clearest if I write the expression like this:

$$BER = Cst - Cse + Fe * Cse + Fe * FI * Clt$$

Cst is the total uncorrected system carbon emissions (which doesn't include lights). Cse is the portion of Cst which is attributable to electricity, and which is subject to a correction. We first subtract off this portion from Cst ('- Cse'), then add back the corrected version ('+ Fe * Cse'). Fe is the adjustment factor corresponding to the "Electric Power Factor" selected from the dialog ("Adjustment for management features" section).

Clt is the lights carbon emissions (always electrical), which is separate from Cst. This has two correction factors applied: one because it's electrical (Fe) and one because it's lights (FI) (see "Adjustment for management features" section).

2.2.1.2. Section 6

The Section 6 correction applies to a certain fraction of the total carbon emissions, after these have been adjusted with the corrections described above. If the result of the above sum is

$$BER1 = Cst - (1-Fe)*Cse + Fe*Flvrms*Clt$$

(where the Section 6 factor Flvrms "Lighting voltage reduction management scheme" replaces FI) then the result of this second correction is

$$BER = (1-fraction)*BER1 + Fnv*fraction*BER1$$

where the first term is the portion of BER1 that's not subject to correction, and the second term is the portion of BER1 that is subject to correction, with the correction applied. Fnv = 0.95 if "Natural ventilation control design to achieve an occupied period temperature always less than 28C" is ticked.

Thus (simplifying):

$$BER = (1 - fraction*(1-Fnv))*BER1$$

Combining this with the expression for BER1 then gives

$$BER = (1 - fraction*(1-Fnv))*(Cst - (1-Fe)*Cse + Fe*Flvrms*Clt)$$

2.3. ApacheSim-EPC Method

It is possible to generate EPC's after an ApacheSim calculation for Section 6 (2007) – Scotland.

For further details of EPC's see the Section6(2007) VE-SBEM manual.

2.4. References

0. Domestic Handbook (Section 6), Non-Domestic Handbook (Section 6) – The Scottish Building Standards Agency, 2007. (http://www.sbsa.gov.uk/tech_handbooks/th_pdf_2007/Section_6_Non-domestic_20072.pdf)
1. Scottish Executive. Technical Standards for compliance with the Building Standards (Scotland) Regulations 1990, as amended by the Building Standards (Scotland) Amendment Regulations 1993, the Building Standards (Scotland) Amendment Regulations 1994, the Building Standards (Scotland) Amendment Regulations 1996, the Building Standards and Procedure Amendment (Scotland) Regulations 1999, and the Building Standards Amendment (Scotland) Regulations 2001. Crown Copyright 2001. ISBN 0 11 497294 X.
2. BS EN ISO 13789:1999 Thermal performance of buildings – Transmission heat loss coefficient – Calculation method.
3. BRE, DEFRA, DTLR. The Government's Standard Assessment Procedure for Energy Rating of Dwellings, 2001 Edition (SAP 2001).
4. TM32: 2003. Guidance for the use of the carbon emissions calculation method. CIBSE, ODPM. The Chartered Institution of Building Services Engineers, 222 Balham High Road, London SW12 9BS. 020 8675 5211. www.cibse.org.