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2012 SAP Model Design New Build House

The Model Design House can be found on Page 25
to Approved Document L1A 2013 Edition

To help you with your design we have provided some
sample constructions for the floors, walls and roof.

You do not have to follow these but need to aim to achieve the U values

Fabric Efficiency

Note that the 2013 edition of Approved Document L1A has introduced a Fabric Efficiency Target.

This means that you can no longer use renewable energy (e.g. air source heat pump/pv/solar etc. to compensate for excessive glazing / higher U values.

We suggest that when designing you aim to meet the Model Design values given in the following tables.

Disclaimer

We cannot guarantee that if you design to the model design that you will achieve a pass.

It is only when we have fully assessed the design and inputted all of the information into the software that we can see if a pass is achieved or if any modifications are required.

Model Design Values

OPENING AREAS	Model Design as below
<p>These include doors / windows / roof lights and any other form of glazing. In a multi storey house you can include all floors in your floor area calculation but must include all openings at all levels.</p> <p>If the area exceeds 25% then you are likely to require some form of renewable energy even if you meet all the other model design values in the following tables.</p>	<p>25% of total floor area</p>

FLOORS	Example 1	Example 2
Model Design as below	<i>Pot & Beam Suspended Floor</i>	<i>Ground Bearing Slab</i>
	<i>65mm Screed</i>	<i>65mm Screed</i>
	<i>150mm Celotex</i>	<i>160mm Celotex</i>
	<i>1200g polythene</i>	<i>1200g polythene</i>
		<i>100mm Concrete</i>
0.13 w/m²k	<i>This floor achieves a U value of 0.12 w/m²k and therefore achieves the target</i>	<i>This floor achieves a U value of 0.13 w/m²k and therefore achieves the target</i>

WALLS	Example 1	Example 2
Model Design as below	<i>Partial Filled Cavity</i>	<i>Full Filled Cavity</i>
	<i>22mm render</i>	<i>100mm facing brick</i>
	<i>100mm Celcon Standard Blocks</i>	<i>150mm Dritherm 32 Ultimate insulation</i>
	<i>50mm Cavity</i>	<i>100mm Celcon Solar Blocks</i>
	<i>75mm Celotex insulation</i>	<i>13mm Plaster finish</i>
	<i>140mm Celcon Solar Blocks</i>	
	<i>Dot & Dab Plasterboard</i>	
	<i>Skim plaster finish</i>	
0.18 w/m²k	<i>This wall achieves a U value of 0.18 w/m²k and therefore achieves the target</i>	<i>This wall achieves a U value of 0.17 w/m²k and therefore achieves the target</i>

ROOFS	Example 1	Example 2
<i>Model Design as below</i>	<i>Trussed Rafters at 600mm centres</i>	<i>Sloping Ceilings</i>
	<i>100mm Earthwool Loft Roll 44 laid between the ceiling joists</i>	<i>Concrete tiles on breathable felt</i>
	<i>200mm Earthwool Loft Roll 4 laid over the ceiling joists at right angles to the 1st layer</i>	<i>50 x 200mm Rafters at 400mm c/s</i>
	<i>12.5mm plasterboard and skim</i>	<i>150mm Celotex between rafters</i>
		<i>50mm Celotex on underside of rafters</i>
		<i>12.5mm plasterboard and skim</i>
0.13 w/m²k	<i>This roof achieves a U value of 0.13 w/m²k and therefore achieves the target</i>	<i>This roof achieves a U value of 0.13 w/m²k and therefore achieves the target</i>

OPENINGS	<i>Model Design as below</i>
<i>Windows 1.4 w/m²k</i>	1.4 w/m²k
<i>Patio Doors 1.4 w/m²k</i>	1.4 w/m²k
<i>Bi-Fold Doors 1.4 w/m²k</i>	1.4 w/m²k
<i>Doors less than 50% glazed 1.2 w/m²k</i>	1.2 w/m²k
<i>Solid Doors 1.0 w/m²k</i>	1.0 w/m²k
<i>Roof lights 1.4 w/m²k</i>	1.4 w/m²k

AIR TIGHTNESS	<i>Model Design as below</i>
The dwelling will need to be Pressure tested on completion and achieve this figure (or less)	5.0 m³ / (h.m²)

Thermal Bridging	<i>Model Design as below</i>
To achieve this you will need to follow recognized methods of construction throughout which can be referenced back to Accredited Construction Details / Enhanced Construction Details or similar approved details.	Y = 0.05 W/(m²k)

VENTILATION	<i>Model Design as below</i>
Natural Ventilation is assumed in the model house i.e. openable windows to habitable rooms and extract fans to wet rooms.	Natural

LOW ENERGY LIGHTING	<i>Model Design as below</i>
This is more than the minimum requirement in the Building Regulations	100%

HEATING SYSTEM	<i>Model Design as below</i>
<p>If you are proposing electric/oil/LPG heating these do not score so highly and it is likely that you will need some form of renewable energy e.g. solar or pv panels.</p> <p><i>(Given the already high insulation values it is unlikely that you would be able to make up the difference by increasing the insulation.)</i></p>	<p><i>89.5% Efficient Gas Combination Boiler</i> <i>Room Sealed</i> <i>Fan Flue</i> <i>Modulating Boiler with Interlock</i> <i>Weather Compensation¹</i> <i>Delayed Start Stat²</i></p> <p><i>Radiators</i> <i>At least 2 independent Heating zones</i> <i>(e.g. Living Accommodation and Bedroom accommodation – separate room stats to control each zone)</i></p>

Weather Compensation¹ – a temperature sensor on the outside which sends information to the boiler on the external temperature – if the temperature changes outside, the boiler responds and starts to increase or decrease the radiator temperature to compensate. We will need to know the make and model of the sensor installed when producing the Energy Performance Certificate.

Delayed Start Stat² – Delays the start-up of the heating, depending on how warm the room temperature already is at the time the central heating is scheduled to come on. Therefore during milder weather, when the ambient room temperature is normally higher, the heating start time can be delayed to avoid wasting fuel by switching the heating on earlier than necessary.

SECONDARY HEATING	<i>Model Design as below</i>
Should only be required if you fail to meet any other elements of the model design	NONE

WATER HEATING SYSTEM	<i>Model Design as below</i>
	<p><i>From the combination boiler</i></p> <p><i>OR</i></p> <p><i>150 litre hot water cylinder inside the dwelling</i> <i>80mm factory fitted foam insulation</i> <i>Independent time control for space and water heating</i> <i>Cylinder Stat</i> <i>Fully Insulated Primary Pipework</i></p>

SOLAR PANELS	<i>Model Design as below</i>
Should only be required if you fail to meet any other elements of the model design	<i>NONE</i>

Photovoltaic Panels	<i>Model Design as below</i>
Should only be required if you fail to meet any other elements of the model design	<i>NONE</i>