THOMAS ARMSTRONG
(CONCRETE BLOCKS)
LIMITED

SIM Wall Construction

Using Airtec aerated blocks from Thomas Armstrong (Concrete Blocks) Ltd

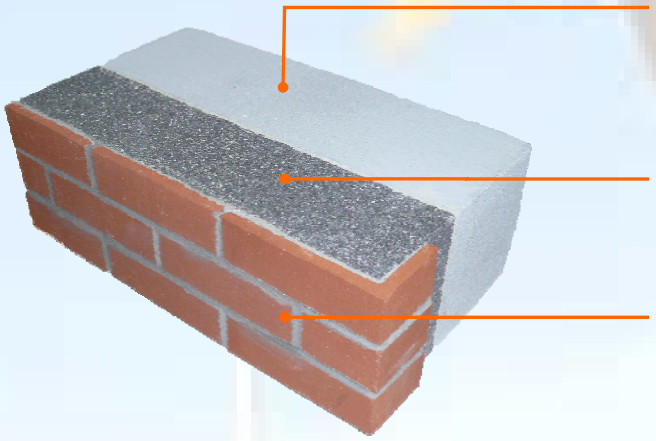
AIRTEC

A Simple & Cost Effective Way to Meet the Code

- ✓ **U-Values below 0.10W/m²K are achievable using only 2 main layers plus finishes**
- ✓ **A fast, proven, flexible, effective and repeatable build technique**
- ✓ **Up to 15% lower in build costs than framed equivalent constructions**
- ✓ **Code 4 can be achieved without the need for additional renewable energy**
- ✓ **A+ green guide rating**
- ✓ **Zero thermal bridging**
- ✓ **Zero condensation risk**
- ✓ **Maximises the thermal mass of the build meaning less seasonal temperature fluctuation throughout the year**
- ✓ **Future-proof, robust and resilient build, which is easily modified when required**

An Introduction to Super Insulated Masonry (SIM) Walls

A SIM wall consists of a solid aerated block with a layer of high performing insulation fixed externally to the masonry wall with a choice of finishes. This system enables the building designer to reduce thermal bridging, increase air tightness, and reduce costs. Further enhanced design details to the floors and roof can then increase the 'u' value performance of the whole of the building.



The Solid Masonry Core:

A super lightweight aerated block with a thermal value of just 0.07 W/mK. Furthermore, the benefits of the Thermal Mass effects of masonry walls is maximised as the insulation is on the outside.

The External Insulation:

An external surface of Neopor is then fixed to the block. Neopor is a unique insulating material using much less energy in its manufacture and is 20% more effective than similar materials.

External Finishes:

There is an extensive choice of finishes for the external wall, including high performance renders in various textures and colours. A wide range of brick slips, conventional brickwork or stone can be used.

Performance:

The wall is then enhanced in its performance with window and doors with 'u' values ranging from 1.2 to 0.8 W/m^{2}K.

The windows and doors are double or triple glazed and are manufactured within the UK from fully recyclable UPVC.

Thin Joint Masonry:

A mortar joint of 2mm provides a stronger bond than conventional mortar joints. The thin joint mortar is quick setting, gaining strength within 20 minutes, allowing walls to be built continuously without height restrictions.

The reduced area of the thin joint further improves the u-value of the wall and restricts air leakage. Air leakage tests on site show that 0.6m^3/hr/m^2 is readily achieved.

Recommendations for SIM Walls

To complement the high performance wall, it is necessary to consider the other elements within the construction in order to achieve CSH 4-5 & 6

- Floors and roof to be designed to a high specification, where 0.11 W/m^{2}K is easily achievable.
- Detailed attention to the junction of the dwelling to avoid cold bridging can offer figures typically Y = 0.02
- By adopting these designs a construction can be built to CSH 4 without the need for additional renewable energy components.
- By enhancing elements of the Code and adding MVHR, Code 5 & 6 can be achieved.
- Advice on obtaining CSH 4 and above is available.

Economic Benefits

- Code 4 is achievable without the need for expensive renewable energy technology.
- Low maintenance costs – no expensive solar panels, damage to walls and reduced energy costs.
- Lower build costs – up to 15% on framed buildings with same build time.
- Quicker lead times, no bulk purchases required for servicing site.

Environmental Benefits

- The fabric used in the construction is at the core of our ethos that the materials used should show ecological and sustainable benefits and most importantly provide the dwelling with a long service life with low maintenance.
- We offer full technical support on design and construction, training and supervision of site staff to ensure that the project is designed and built to the clients' satisfaction.
- It is our desire to see the UK build low energy use homes following the principles of PassivHaus in design construction to the highest standards with reductions in energy usage and costly renewable energy sources.

THOMAS ARMSTRONG (CONCRETE BLOCKS) LIMITED

Bridge Road
Brompton-on-Swale
Richmond, North Yorkshire. DL10 7HW
T. 01748 810 204
F. 01748 813 950
E. airtec@thomasarmstrong.co.uk
W. www.thomasarmstrong.co.uk

thinjoint TECHNOLOGY LTD

3, Albright Road,
Speke Approach Estate,
Widnes, Cheshire. WA8 8FY
T. 0151 422 8000
F. 0151 422 8001
E. sales@thinjoint.com
W. www.thinjoint.com