

Renewable Energies and Insulation Report

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for

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Dundrum, Dublin

Architect / Builders Report

19 November 2016

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**Ground Floor**

On top of subfloor install 1000g polythene. Then install 125mm foil backed polyurethane (Kingspan or equivalent). Normally 2 layers of Kingspan (75mm + 50mm) or equivalent – stagger all joints.

With first fix plumbing pipes 3 layers, 50mm Kingspan under first fix pipes, 50mm around first fix pipes, 25mm Kingpsan over first fix pipes. Separate first fix pipes with 75mm insulation. Stagger joints where possible.

See drawing

**First Floor – Slabs**

50mm KS insulation. 75mm concrete screed. Seal any hollow cores in slab which terminate inside the house e.g. at stairwell, by inserting a brick and sealing with mortar.

**Screed for UFH**

35N concrete 100mm deep laid as a wet mix with a brush finish (not power float!!). Include a plasticizer e.g. Sika Viscocrete 1060.

Use a laser level to set 25mm Kingspan insulation around all the walls as the guide for concrete level. Install a second layer of polythene under the UFH pipes. This should be 500 gauge.

A sub contractor who has done concrete screeds successfully:-

Noel Corey, 077 7569 7633

Foil backed polyurethane insulation boards are available as Kingspan, Quinntherm, Xtratherm and Celotex – buy on price.

**Wall Structure 200mm cavity**

The wall structure is 100mm outer block, 200mm cavity, 100mm block inner skin. Use 150mm strips of 75mm thick Kingspan as cavity closure at the side of the window and door frames.

Use one row of Quinnlite B5 blocks opposite the floor insulation and floor screed on the ground floor in order to reduce cold bridging. The Quinnlites are required on the inner skin of the cavity wall and on all internal walls.

Walls must be plastered right down to the junction of the floor in order to maintain airtightness. For junction at ceiling see drawing.

**Teplo Wall Ties**

Teplo type 2, 6mm diameter, 325mm long for a 200mm cavity.

**Cavity Closure at top of walls**

Fibre cement board.

**Insulation of Cavities**

Grey beads with glue.

**Warm Flat Roof**

Install 100mm Kingspan or equivalent on top of the joists. Install 150mm Foamlok spray-in foam between the rafters. Use plasterboard with a foil backing as a vapour barrier.

Possible Installer Lyons Insulation, Greystones.

**Warm Sloping Roof**

100mm Kingspan type insulation over rafters. Spray 125mm of Foamlok between the rafters. A 40mm Counter Batten will be required

Best fixings to go through the insulation and batten: Timco Classic Plus 6mm X 200mm Torx drive

**Airtightness**

No silicone sealers to be used. Use only Polymer sealers (CT1, Tex7, Stixall, Fix All).

**Airtightness – Plumber & Electrician**

Conduits which go through the airtight envelope should be closed to prevent air flows. The plumber needs to know to seal any penetration of the airtightness system. Sealing is achieved with approved airtightness tapes or polymer sealer such as CT1 / Tex7.

**Airtightness under slabs on external walls**

Spray the wall between the metal studding and the bottom of the slab with Foamlok.

**Airtightness around Windows and Doors**

Completely fill the space between the opening and the frame with expanding foam from the DPC at the outside to the inside. Seal the foam with polymer sealer (CT1, Tex7). Multisolve (a C-Tec product) helps get a good finish.

**Airtightness behind Cladding**

Plaster before attaching cladding.

**Airtightness Target for this house 1m³/hr/m²**

**Recessed Lights**

Cover downlighters which are close to insulation with Thermahoods.

**Heat Delivery Systems**

100mm space between the pipes in areas with lots of glass, bathroom, en-suite, hallway and all high demand areas.

150mm space between the pipes in all other normal heat demand areas.

UFH pipes should be 16-17mm diameter.

Pipe layout should be laid in “spiral” layout and not in “snake” pattern.

The maximum length of one UFH loop should be 120m.

Electric towel rails in FirstFloor Bathroom/Ensuite with timer switch remotely located.

**Dataterm**

One Dataterm thermostat / controller on ground floor and one on first floor.

Mechanical Ventilation Heat Recovery

Two possible suppliers / installers -

Beam [www.beamcentralsystems.com](http://www.beamcentralsystems.com) (028 7963 2424)

Homecare Villavent [www.homecaresystems.biz](http://www.homecaresystems.biz) (028 8776 9111)

A 175mm gap should be established between first floor slab and suspended ceiling to facilitate MVHR ducting

Ventilation Openings

The heat recovery ventilation system requires a fresh air in-duct and a stale air out-duct.

The only other ventilation openings are for the kitchen extractor fan, which should utilize an external/remote fan to reduce noise in the kitchen.

**Passive Sills**

www.passivesills.com

**Glass / Windows**

Triple glazed. No trickle vents.

**Primary Heating System**

ASHP

**Stove**

Balance flue gas stove, subject to the ASHP fulfilling the renewables requirements of Part (L) building regs

I do not take commissions from any company or individual. When I suggest or recommend a company I do so because I have found their service or equipment fully satisfactory in the past. This report is copyright Eric Davidson. The advice and recommendations are specifically for this project and this set of circumstances.

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