

GreenSpec CASE STUDY

Project: Sommerfield, one off house

Date: 14th December 2012, revised 1st  March 2013

Architects: LBR, Near Norwich

Client: Science Fiction Writer, very hands on, carrying out own energy calculations (using his own calculation system, very impressive, thermodynamic heat flows) and detailing to avoid thermal bridging.

Scope:

* Review of Client’s CD of documents, detail solutions, statements,
* Brainstorm project with Architect and Client.
* Proposals on materials, products, methods of construction, procurement, etc.

GreenSpec Proposals:

* MMC using SIPS suggested as replacement for inner leaf and cavity wall insulation
* MMC using SIPS suggested in place of masonry and UK industry workmanship
* MMC using ISPS suggested in place of cut timber roof, but with added decrement delay insulation
* Decrement delay calculations to be considered over U value alone
* Dense wood fibre thermal insulation with acoustic performance in roof
* Breathing construction with ATLs and WTLs in timber construction
* Passivhaus standard windows and doors

Follow Up:

* GreenSpec to provide decrement delay calculation, material data and research paper

CIBSE magazine

* <http://content.yudu.com/A20fwd/CIBSEjan13/resources/index.htm?referrerUrl=http%3A%2F%2Fwww.linkedin.com%2Fgroups%3FviewMemberFeed%3D%26gid%3D4512475%26memberID%3D114270624> pages 70-73

Research paper

* <http://amet-me.mnsu.edu/userfilesshared/solarwall/Solar%20Passive%20(Trombe)%20Wall%20Documents/Technical%20Publications/Numerical%20computation%20of%20time%20lags%20and%20decrement%20factors%20for%20different%20building%20materials.pdf>
* 0360-1323/$ - see front matter r 2005 Elsevier Ltd. All rights reserved.
* doi:10.1016/j.buildenv.2005.02.020
* T +90462 3772965 f +90462 3255526.
* E [asan@ktu.edu.tr](mailto:asan@ktu.edu.tr) [habipasan@hotmail.com](mailto:habipasan@hotmail.com)
* I have converted this information into an excel file GreenSpecDATA

Articles

* <http://www.irishecohomes.ie/index.php?page=decrement-delay>
* <http://www.viking-house.us/decrement-delay.html>
* <http://www.greenspec.co.uk/decrement-delay.php>

Standards

* EN ISO 13786:2007

Calculating decrement delay

* The response of construction elements to periodic cycles in temperature and heat gain can be quantified by using the thermal admittance framework as described in EN ISO 137:2007. The framework also provides the basis for the CIBSE 'Simple Dynamic Model' for calculating cooling loads and summertime space temperatures (CIBSE (2005) Guide A: Environmental design).
* I think there is an incorrect reference above (GreenSpec informed)

Software tools

* Manually calculating thermal response simulations is not for the faint hearted, but a number of programs are available to take the load - notably the freely available, Excel spreadsheet based 'Dynamic Thermal Properties Calculator' developed by Arups and distributed by the Concrete Centre. (<http://bit.ly/9IffCl>)
* But its full of conventional materials and deficient of many eco materials with the decrement characteristic.

CAP’EM LCA Functional Unit calculator

Contacts:

* Bury St Edmonds West Suffolk college Green Building exhibition space to visit for Client
* Elizabeth Bray might be the best person to talk to in this instance,
* E [elizabeth.bray@wsc.ac.uk](mailto:elizabeth.bray@wsc.ac.uk)
* M 07973 802271
* however, I am in my capacity as a chair within the AECB I would of course be happy to help etc.
* Sean Jefferies, [sean.jeffries@wsc.ac.uk](mailto:sean.jeffries@wsc.ac.uk)
* Gerry Harrold Architect re. building in monitoring equipment
* <http://www.ukearthshelteredbuildingphd.co.uk>
* Natural Building Products (supplier of Dense Wood Fibre)
* <http://www.natural-building.co.uk>
* Other UK suppliers of Dense Wood Fibre
* <http://www.ecologicalbuildingsystems.com>

BrianSpecMan aka Brian Murphy

A00 30th December 2012

A01 19th February 2013

A02 20th February 2013

A03 1st March 2013