Passive developments and training at CREST

Tim Stokes: CREST Manager
Background to CREST

• Provides R&D support to businesses relating to renewable energy and sustainable technologies
• Originally a £2.9m EU Interreg IVa funded project
Companies supported by CREST: Feb 2013 – Feb 2015
CREST Services

Demonstration, testing and monitoring of renewable energy systems and sustainable technologies
CREST Services

Development / design of product prototypes and components relating to renewable energy and sustainable technologies
CREST Services

Bioenergy processing and laboratory facilities
CREST Services

Bespoke and curriculum-based training and events
CREST Services

Industry network facilitation e.g. Northern Passive House Chapter
Advice / consultancy / research regarding renewable energy and sustainable technologies
The CREST Passive Pavilion: In the beginning......there was a derelict wasteland
21 months on........The CREST Passive Pavilion
Building structure

Glulam timber frame – up in two weeks
Structural Insulated Panels (SIPs): Pre-fabricated off-site
<table>
<thead>
<tr>
<th>Element</th>
<th>Insulation</th>
<th>U-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall</td>
<td>225mm SIP + 50mm mineral wool</td>
<td>0.124W/m²K</td>
</tr>
<tr>
<td>Roof</td>
<td>225mm SIP</td>
<td>0.16W/m²K</td>
</tr>
<tr>
<td>Floor</td>
<td>2 x 125mm PIR</td>
<td>0.086W/m²K</td>
</tr>
<tr>
<td>Glazing</td>
<td>Triple</td>
<td>0.76W/m²K</td>
</tr>
</tbody>
</table>
The airtightness challenge

Difficult but 0.6ac/hour achieved
Lesson learned: Plan for airtightness

1. To design for airtightness
2. Build to achieve airtightness
3. Test for airtightness
Airtightness lesson learned: Good site quality management is essential
Observation: All contractors on site Passive House Tradespersons?
Positive feedback on comfort
Impressive levels of solar gain
.....too much?!
How is the building performing in terms of thermal performance and heating energy consumption?

Modelled heat energy demand per annum is 6,230 kWh

Actual heat energy demand to date since 12\textsuperscript{th} December 2014 is 4,266 kWh

The building is performing excellently in terms of energy use for heat
BREEAM covers:
Health and wellbeing
Management
Materials
Energy
Waste
Water
Pollution
Transport
Ecology

BREEAM Lessons:
Appoint a BREEAM AP early on
A lot of paperwork
But some good outcomes.....
Training at CREST

• First Passive House Designer run by SWC completed on 10th October 2015 – next course, 7th Jan 2016 (March exam)

• First Passive House Tradesperson course starts on 12th May 2016 (June exam)

• Events and seminars at CREST e.g. Passive House Conference, airtightness, Biotech 2015, energy storage (Nov 17th)
There will be higher standards of airtightness and thermal performance required come what may........
• Airtightness is the biggest construction site challenge on a passive build – good quality management on site essential
• Training relating to Passive House construction will make it easier and cheaper for construction companies / designers to meet the standard (and building control standards)
• CREST at SWC provides Passive House training – courses spread over longer period to help embed learning
• CREST playing a key role in promoting Passive House in Northern Ireland and the wider region
• CREST is a resource for Northern Ireland and the region
Want to find out more?
Videos on Vimeo (timelapse + construction updates)
Thank You

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