

Super E takes on the UK

APPROXIMATELY 500 SUPER E HOMES HAVE BEEN CONSTRUCTED IN THE UK SINCE THE CANADIAN BUILDING METHOD'S INTRODUCTION IN 2000. TIC HEARS FROM THE PROGRAMME'S DEVELOPERS ABOUT HOW NEW REGULATIONS WILL SEE THAT NUMBER RISE EXPONENTIALLY.

SUPER E is a government of Canada-branded program that supports Canadian exporters of energy-efficient housing products and systems. It partners Canadian private-sector exporters with builders, architects and developers in the UK, to construct houses to the voluntary Super E standard. The standard uses the philosophy of house-as-a-system, and demands that all Super E houses pass tests for low air leakage and balanced whole-house mechanical ventilation. Although Super E can use any type of building material in the UK, Super E houses are generally pre-engineered timber frame panel homes.

Super E is based upon the Canadian R2000 Program, which has been operating in Canada since the early 1980s. A renamed Super E, an export version of R2000, was first brought to the Japanese market in the late 1990s. Signals from the UK government that house construction practices and demands were about to change prompted Super E to enter the UK market.

Wind of change

In 2000, Super E had to overcome many barriers. In the south particularly, there was still great suspicion of timber frame housing. The UK has a wet climate, the story goes, and you cannot build durable houses here out of wood. Then, only a tiny fraction of housing was timber frame. Today, there are estimates that over 20% of new housing will be timber frame by 2008. And, for the record, Halifax is wetter than London, and virtually all new housing built in Halifax is timber frame. If you build it right, a wood house can last hundreds of years.

Opening the door to Super E

We spend most of our time indoors, and the air in our houses impacts our health. Although the new Code for Sustainable Homes does address "healthy living," it says not a word about indoor air quality. As UK builders increase their air tightness to reduce carbon impact by saving energy, indoor air quality will become increasingly important.

Super E faces the same challenge as any other form of construction in the UK. How to meet the zero carbon footprint goal of 2016 and still build houses that can be mass-produced and affordable?

Process is the key to whole-building design. An integrated design process brings together a multidisciplinary team right at the beginning to effectively integrate all aspects of site development, building design, construction, operations and maintenance.

It is necessary to bring together architect, developer, builder, mechanical systems designer and, if possible, the eventual owner to create a vision for the project and set design performance goals.

The most effective method of integrated design is through the use of a high-performance charrette. This is an intensive workshop in which various experts are brought together to address a particular design issue.

The Canadian Government recently issued a challenge to the Canadian building industry ▶

Step Change: It is estimated that over 20% of homes will be timber frame by 2008





New Dawn: Super E enhances the use of timber frame

to develop so-called Equilibrium houses, which use zero net energy. An integrated design charrette was a mandatory first step.

Eventually, 12 designs were chosen. Canadian housing experts will closely monitor and examine the performance of various approaches to achieving net zero energy. The Super E Programme is also watching closely, looking at ways to improve the Super E standard as it moves on the road to zero carbon impact.

In each of the 12 house designs, the integrated design team considered how the building design and interior functions affected the building's overall environmental impact. These design decisions addressed site, energy consumption, human comfort and health, building materials and landscaping issues. Key to achieving net zero

Super build: Equilibrium houses use zero-net energy



energy is a metering system that allows excess electricity generated onsite to be sold back to the main grid.

Like Super E houses, Equilibrium houses went through intensive computer simulation tests so that trade-offs could be assessed for energy impact. Resources are never infinite, and one of Equilibrium's goals is to make net zero energy houses affordable. In the UK, this could mean optimization of heating systems, foundations and the use of passive solar energy.

Beyond the technical and cost issues, changes in the Building Regulations will lead to unexpected challenges. In comparison to Canada, the UK is a warm climate. As homes are constructed to lose less heat energy, there may be new demands for summer cooling, adding to the carbon burden. Also, without due consideration to heat flow, air flow and moisture movement (which forms the basis of house-as-a-system), there are likely to be building failures as higher and higher insulation levels change the air tightness properties of buildings.

New challenges mean the work on Super E has just begun. **TTC**

SCOTS HIGHLANDS GOES GREEN WITH SUPER E

Property consultant CKD Galbraith is handling the sale of three registered Super E homes in the Relugas in the Scottish Highlands.

The company describes the homes as three of the most energy efficient contemporary houses to be built in the region.

Ongoing running costs are reduced due to the installation of a Swedish heat exhaust pump and ventilation system rather than a general boiler and thus no gas or oil is required. This system has also resulted in an improvement in air quality within the home due to airtight insulation and construction and additionally

allows for the transfer of heat from one area to another.

Neil Cameron, who is handling the sale for CKD Galbraith says: "The houses are being built to the highest possible eco-friendly standard and truly offer a superior living environment. The rural setting of Relugas was chosen for its tranquil and environmentally friendly offerings that support the whole Super E ethos."

He adds the development is scheduled for completion at the beginning of 2008 and the houses are expected to generate a lot of interest from environmentally conscious homeowners.

SUPER MODERN METHOD OF CONSTRUCTION

If housebuilders and contractors want to use new construction techniques or systems or take a different approach to traditional construction they need to be sure that warranty cover is available to satisfy their lender according to Zurich Building Guarantee.

"Super E fits into the category of a new approach to a known form of construction," the company says. "Timber frame has had a chequered history and press but poses no problems from our point of view and it is clear that the industry wants to use timber

frame construction. Super E enhances the use of timber frame and whilst it uses some new materials the main differences are around delivery to site and the construction processes."

Zurich says it does not give approval for products, processes or systems, but in the case of Super E it looks at the essential features of the design and construction techniques. The company says it benefited from being able to see its practical application in Canada where it had been tried and tested over many years.