



STEEL IS THE KEY

The UK housing shortage requires that we build more homes, more efficiently and for better value. With timber, concrete and steel constantly trading blows as to the more proficient system, we hear from Graham Raven, Convenor of the Steel Homes Group on how delivering sustainable as well as affordable homes is not an easy task for anyone.

The government, together with architects, manufacturers and developers, have already begun to make inroads into addressing the growing demand for quality affordable homes. Sustainable communities are at the top of the agenda, and are helped by developments in offsite technology. Homes are increasingly being constructed from frames and modules that are accurately manufactured in factories and then erected onsite. These techniques are gaining support from builders and developers as this solution satisfies the demand for quality 21st century housing.

For instance, English Partnerships' Design for Manufacture 60K competition demonstrates how offsite techniques can be used to build high quality, energy efficient, sustainable homes for £60K. However, whilst this represents a promising move to

educate the industry, there is still a certain reluctance to utilise offsite technology.

Partly this can be seen to result from the misconception that offsite manufacture means a compromise on quality and design. This is simply not the case, and with prefabrication in the residential market expected to increase three-fold to £300M by 2009, it is clear that a step-change in industry attitudes is beginning to bring the benefits of offsite technology to the fore.

OFFSITE TECHNOLOGY – A MORE COST EFFECTIVE SOLUTION

In 2005, the Steel Homes Group (SHG) statistics showed that the output of steel in the UK residential market was 10,000 units. For 2006 similar sources indicate that all signs point towards a substantial

growth of 20 per cent. Considering the performance of steel and offsite techniques, it can be predicted that this growth will be maintained in the years to come. There has always been a close affinity between steel and offsite construction, however, it is regrettable to notice that the percentage of steel use in residential does not reflect its potential.

The construction process has environmental and social impacts – noise, dust, traffic, waste and health and safety hazards. However, those impacts can be minimised and quality can be improved by moving as much of the construction process as possible into the factory. Offsite manufacturing provides a method of construction that delivers four times as many homes with the same amount of onsite labour as traditional build, whilst also reducing onsite construction time by half –

► delivering major benefits for the client, contractor and local community. In contrast, a report commissioned by the Royal Institute of Chartered Surveyors found that only 63 per cent of traditional building projects are completed on time and 49 per cent to the agreed contract sum.

Already widely utilised by housebuilders in Australia and the US, the reality is that steel system technology maximises cost effectiveness without compromising on design, quality or desirability.

OFFSITE SOLUTIONS: A BETTER FIT FOR STEEL

Steel structures are routinely delivered as an offsite system because automated manufacturing facilities allow greater quality control, dimensional accuracy and volume of production. Modern manufacturing methods enable components to be specifically manufactured for individual jobs, that serves to improve efficiency, minimise waste and maximise use of awkward-shaped land or sites located in busy urban locations.

This is particularly important at a time when the increasing demand for housing in Britain's towns and cities is accompanied by a scarcity of available 'greenfield' sites – forcing developers to build on small plots of land within existing residential areas. This presents various challenges, including a lack of working and storage space, as well as the need to minimise the impact of construction on local residents. Lightweight framed solutions with fewer foundation problems increase the number of viable sites.

Offsite manufacture, which involves a streamlined

supply chain from factory to site, assists just-in-time delivery to minimise onsite disturbance and eliminate problems associated with leaving materials that are vulnerable to theft or damage.

A study, part of a DTI Partners in Innovation Project, shows there are 40 per cent fewer commercial vehicle movements with modular construction compared to traditional methods, and 70 per cent reduction in onsite waste. Providing homes that are built economically, faster, more sustainability and safer, offsite processes allow steel home manufacturers to effectively meet, and even exceed, their client's needs and expectations.

STEEL FOR AFFORDABLE AND SUSTAINABLE HOUSES

The production of sustainable homes must begin at the design stage with the choice of building material and system. Many architects and designers strive to specify materials that minimise harm to the environment and support the drive for buildings to be as environmentally friendly as possible. Regrettably, they remain reluctant to include offsite techniques and/or light-steel-framed solutions in their specification, often because of the unnecessary fear of compromising on innovative design, quality or robustness. This belief is clearly a long way from the real potential and performances.

PERFORMANCE

Steel is 100 per cent recyclable, making its long-term sustainability extremely high and negative

impact on the environment low. Steel recycling programmes reduce the solid waste stream, resulting in saved landfill space and the conservation of natural resources. Research in conjunction with National Federation of Demolition Contractors (NFDC) shows that 84 per cent of the steel arising from demolition sites is recycled and a further 10 per cent re-used.

With housing accounting for a third of all carbon dioxide output and the undeniable link between fossil fuel use and climate change – a reduction in energy consumption is also a critical aspect of sustainable construction. For steel home manufacturers, achieving environmental improvements is simple; by adding supplementary insulation to stud walls, modern steel homes can improve energy efficiency without compromising the amount of useable floor space. Furthermore, modern insulation materials used in steel construction produce low U-values and high standards of airtightness. This promotes a warm, draught-free internal environment, reducing energy consumption and the associated utility bills for the occupant.

The sustainability of a home is also strongly determined by how flexible or adaptable it is throughout its lifetime. Homes standards have gone a long way to ensuring a dwelling will successfully cater for people of all ages, thereby safeguarding residents' independence, and meeting the needs of future generations. The material properties of steel and long-span joist capability enhance the design flexibility and reduce the amount of supporting framework required. This allows for flexible housing that will suit the needs of a changing society and will not be outmoded by future housing trends. Extending the useful lifespan of a home, enables developers to offer a bespoke added value service to their customers.

Lightweight and strong, steel housing systems are made of high-tensile, galvanised steel, engineered to achieve a very high efficiency of material use. The manufactured process for steel components results in fewer defects, minimising the need for expensive and time-consuming follow-up work and long-term maintenance costs after construction. Galvanised steel offers long-term corrosion protection, and sophisticated jointing techniques prevent any movement in response to temperature or humidity variations – offering long-term value and reliability.

STEEL IN THE 21ST CENTURY

There is evidence that the public is becoming far less concerned about the prospect of living in a home built using offsite construction, particularly as it means better quality and performance. The housebuilding sector now needs to catch up.

The push for more sustainable construction is commanding housebuilders enter the 21st century. Wasteful and polluting construction methods are no longer acceptable, when a sufficient level of expertise, proven technology and lean, energy efficient processes are widely available for builders and developers to utilise.

Steel housing systems demonstrate that it is possible to be cost efficient, improve design standards and use an entirely recyclable material at the same time, and as sustainability becomes an effective marketing tool for selling houses, all signs point towards substantial growth of steel in the residential sector. ■

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