

STEEL COMES OF AGE



MMoC has been hailed as the blueprint for delivering both affordable and sustainable developments, pulling steel framed house building systems out of the shadows and into the picture. Graham Raven argues their case.

Britain faces a housing crisis. Average prices have risen to over five times the average salary in many areas and construction costs are still rising faster than the rate of inflation. As efficient and cost effective building solutions are being sought, the construction community saw the rapid emergence of modern construction methods.

While the market share occupied by steel framed houses is still relatively low, all signs point towards substantial growth in the coming years. Steel framed commercial buildings already account for 70 per cent of the market, up from only 35 per cent in the 1980's. Similar developments are also possible in the residential sector with predictions that steel could surpass traditional methods of construction in the next 10 years.

Forward thinking countries such as the USA and Australia are already selecting steel framed systems as a method to efficiently build environmentally friendly homes. It's now Britain's turn to recognise that steel is coming of age and all eyes are on the Steel Homes Group (SHG) members to meet the challenges of today's housing climate.

With 13 members, 2005 saw the launch of the Steel Homes Group (SHG), an independent organisation representing 70 per cent of the UK's steel manufacturers and builders. The group came together to build upon more than 25 years of experience and to foster a culture of innovation that would benefit the developer and the end user.

Acting as the central voice to talk to the government, the SHG has worked hard to

redeem steel's stale reputation in the residential sector and to overcome the image of prefabricated houses that are reminiscent of the 1940s and '50s.

SHG members use MMoC and off-site manufacturing techniques to exceed standard build quality and reliability. While MMoC is often associated with sacrificing quality in the name of cost, the reality is that steel system technology can achieve a higher degree of precision and predictability. In short, the benefits of steel construction are derived from the unrivalled combination of its processes and material performance.

Off-site manufacturing

Steel structures are frequently delivered as an off-site system. With the rise of world class factories being built across the UK, rewards can be reaped from automated manufacturing facilities that allow greater efficiency of production, reduced waste and improved reliability of building materials. These factory produced systems reduce the emphasis placed upon on site construction, reducing labour requirements and simplifying the site management process. Combining such factors reduces the risk of on site delays and help to cut build costs.

Research demonstrates that getting materials to the right place and at the right time can greatly increase efficiency. Such lean processes, involving just-in-time delivery, are a vital means of minimising on site disturbance and eliminating the problems that are associated with leaving materials that are vulnerable to damage or theft. Off site construction can deliver such a streamlined

supply chain.

Modern factory manufacturing also fabricates components tailored to meet the specific needs of individual jobs. This serves to minimise scrap waste, helping to improve sustainability and reduce costs.

Lightweight but strong, steel frames are made of galvanised steel that is engineered to achieve the highest efficiency. The stable properties of steel help to minimise over engineering and its built-in durability ensures that finishes are not damaged during the pivotal drying out period.

Unlike traditional brick and block or timber materials, light steel framing requires fewer foundations and its components do not shrink or creep, minimising the need for long term maintenance costs. The material also offers hard wearing corrosion protection and its sophisticated jointing techniques prevent any movement in response to temperature change.

In terms of the benefits to the end user, steel's durability encourages fewer defects and curbs the need for costly follow-up work. The multiple and resilient layers of the material also ensures excellent acoustic performance, delivering sound dampened walls as thin as 300mm to suit space conscious designers and contractors.

There is also something of a misconception that steel homes suffer from heat retention problems. This couldn't be further from the truth since SHG can deliver insulated walls and roofs that exceed current building regulations. In fact, the current insulation materials that are used in warm frame construction produce the lowest U

values and highest level of airtightness to minimise consumer utility bills.

Finally and perhaps most importantly, galvanised light steel components can promote the long term performance of a residence, effectively extending its predicted design life by more than 200 years.

Environmental solutions

Energy conservation and environmental benefits sit at the very heart of delivering sustainable communities. Such developments, by definition, help to safeguard the environment by recognising the importance of efficiency and waste reduction.

Today, about half of all carbon dioxide emissions come from buildings and more than 30 per cent of that from the 24m homes in the UK. However, with the much anticipated Part L coming into force in April of this year, the SHG is already set to meet the new regulation head on.

SHG members can simply add supplementary insulation to existing stud walls. This means that modern homes can improve energy efficiency without compromising the thickness of cavity walls or the degree of useable floor space.

What's more, as architects strive to specify materials that minimise harm to the environment and optimise life-cycle costing, steel is often a popular choice. The material is not only 100 per cent recyclable but 50

per cent of all steel is formed from scrap.

With the construction industry identified as the greatest creator of waste in the UK, the recycling programmes go a long way to minimise landfill and optimise the conservation of natural resources. The figures speak for themselves since 84 per cent of steel from demolition sites is recycled and 10 per cent re-used.

There is no doubt that steel is challenging the dominance of more traditional materials in house building and present factors are highlighting that residential steel construction is set for rapid growth.

The cost of building homes has increased by almost 50 per cent, with social housing build costs going up by more than 60 per cent in recent years. However, as sustainable steel systems start to command serious attention, the prospects for change are looking good.

Construction managers, who already use steel in retail and commercial projects, are starting to migrate to the demanding housing sector and bring with them the recognition of steel's speed of construction, cost



effectiveness and sustainable qualities. It is therefore no surprise that more than half of the shortlisted 'Design for Manufacture' entries feature steel frame solutions.

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