

## AREALASSET

With Sustainable Communities top of the Government's priority list, and affordable housing in short supply, housebuilders will be hard-pushed to deliver at a rate fast enough to meet demand. But there is one method that could be reducing time to market by 30 per cent, improving quality, reducing accidents and significantly cutting both cost and construction time. Here, **Dennis Lenard**, Chief Executive of supply-chain membership organisation Constructing Excellence in the Built Environment (formed from a merger between DTI-funded Constructing Excellence and independent supply-chain body Be), clears up the mystery behind Modern Methods of Construction (MMC), and explains how this still untapped resource could be bringing significant benefits to both contractor and end-user alike...



So what exactly is a modern method of construction? The term is generally used to refer to off-site manufacture (OSM) – volumetric, panelised, hybrid or sub-assembly, but it also encompasses non-OSM techniques that are familiar to sectors other than housing. In essence, a modern method of construction is a cutting-edge product or technique that is helping to achieve productivity and profitability savings. Why then, in 2004, was nearly 90 per cent of all housebuilding completed using non-MMC methods, and why did as many as three MMC manufacturers go bust? These are surprising revelations given the benefits that MMC can bring.

### ECO-FRIENDLY CONSTRUCTION

Sustainability and environmental impact are major concerns for industry at present. With global warming on the increase, we all have a part to play in conserving energy and monitoring waste – and the construction industry is no exception. At Constructing Excellence in the Built Environment, we are working with industry and clients to deliver individual, corporate and industry excellence and superior value in construction and the built environment. With UK construction contributing nearly nine per cent to GDP this is no mean feat, but modern

methods of construction – particularly OSM – could provide the answer.

Measured against Constructing Excellence in the Built Environment Sustainability indicators, off-site manufacture is proven to be extremely eco-friendly – both in the short, and longer term. Off-site manufacture takes place in a factory controlled environment, immediately allowing for more stringent quality checks and health and safety checks, which in turn lead to the following positive outcomes:

- Operational energy – improvements in build quality ensure consistent standards of insulation and service installation;
- Embodied energy – OSM significantly reduces waste and increases recycling;
- Waste – manufacture of components in a factory environment reduces waste currently associated with site activity;
- Water – manufacturing components that require water in a factory allows for more control and water recycling than currently occurring on site;
- Species per hectare – by undertaking manufacture in a controlled environment, pollution on site is reduced and the impact on existing species is limited.

**M**odern methods of construction are suffering from an image problem. Straight off the construction-industry problem pages, they are misunderstood, under-valued and under-utilised. And yet, if maximised, they could be a real asset both to contractors and clients.



IMAGE courtesy of John Lang Partnership

**TACKLING THE BARRIERS**

But modern methods of construction still face significant barriers, as the Barker 33 Review makes more than clear.

*The Top Ten barriers to MMC*

- 1 Lack of understanding;
- 2 Lack of confidence / process of change;
- 3 Cost perception;
- 4 Lack of positive track-record to date;
- 5 Lack of agreement on product and process standards;
- 6 Traditional process management;
- 7 Design bias;
- 8 Supply-chain immaturity;
- 9 Lack of skills;
- 10 Turning MMC from a requirement into a want.

It is essential that these barriers are addressed both by client and project team, in order to allow OSM to play an essential role in providing the additional capacity that is so desperately needed in both housing and public-sector construction. Commitment to volume and continuity of workload continues to be an ongoing problem, with clients using small test sites to reduce innovation risk. This effectively increases the likelihood that the OSM pilot will not deliver the expected benefits.

As a client of the housing industry, local authorities have an essential role and responsibility in pushing innovation forward and driving it down the supply chain. Without this pressure from the client the industry will continue to stick to traditional processes, demand for MMC will remain low, and MMC manufacturers will fail.

We are also in serious need of project-specific research. There is currently no standard means of comparison or historic cost data. Constructing Excellence in the Built Environment, amongst other organisations, is pushing for greater availability of information – lack of understanding is a significant barrier.

**PLANNING FOR THE FUTURE**

Decisions by planners continue to play a major role in the uptake of modern methods of construction, triggering fluctuations in demand for units. The Housing Corporation and English Partnerships are doing their bit – working towards a goal of 25 per cent of homes being constructed using MMC from April 2005. As part of this, they state specific levels of MMC to be included in a project in their site brief – these will be monitored over a two-year period and reviewed. It is support such as this that is essential in moving the uptake of MMC forward but a lack of certainty continues to rock the boat. Profitability depends on consistent demand, and effective collaboration is essential, as is an early time investment.

**WELCOME TO THE SPACE AGE**

With the remnants of '60s' prefabs in their minds, architects remain seriously concerned about the impact of MMC upon design. But projects such as that of Westbury Homes serve to quell concerns. Striving to respond to rising customer expectations, and a growing shortage of trade skills, Westbury created their very own modern method of construction: Space4.

Space4 technology was developed in partnership with the University of Warwick for manufacturing homebuilding components. By using a patented manufacturing process Space4 is able to produce a unique high-performance wall and floor system. Westbury has built 4000 homes (at its Space4 factory) with modern methods of construction to date – it has the capacity to build 6000 homes a year, to individual specification. The manufacturing process ensures a high quality, traditionally designed, and energy-efficient end-product, which has had the minimum impact on the environment.

**THE ENLIGHTENED**

Westbury Homes is not alone in its innovative feats, with companies like Midlands-based contractor Thomas Vale also using modern methods of construction such as lean working to achieve productivity benefits of up to 45 per cent for clients and end-users. Thomas Vale employs a Master Lean Improvement practitioner who is responsible for applying lean and continuous process improvement methods to strengthen operations, management and performance at all levels of the organisation, as well as for its local-authority clients, and supply chain. By cutting out waste, pioneering companies such as Thomas Vale are successfully adopting modern methods of construction to achieve the very best for every member of the project team.

Keen to share its knowledge with the health, education and housing sectors, Thomas Vale has recently held a seminar to showcase the successes and lessons learnt on MMC from mainland Europe to enhance the client's perspective. Working with Holland Composites BV, a Dutch manufacturer and supplier of construction products, and Mtech, a leading specialist consultancy for Off Site Construction, Thomas Vale is doing its bit in providing a platform for discussion of the issues, and opening the industry's eyes to the best-value options available for clients, its businesses and its end-users.

**A CONCENTRATED EFFORT**

The work of pioneering companies such as Thomas Vale, M-tech and Westbury Homes pays testament to the significant benefits that a wider adoption of MMC could bring. But no matter what the potential benefits it cannot, and will not, succeed without the full and concentrated commitment of industry and clients. Constructing Excellence in the Built Environment is working with organisations such as the Housing Corporation and English Partnerships to raise awareness of MMC and promote the success stories, but more must be done. The bar needs to be raised, with the threshold of MMC increased from 25 per cent through to a full 100 per cent on public-sector schemes. Whilst industry profit margins, and client-satisfaction levels appear top of the hit list, it is in fact the needs of the population, and the environment that grow ever more pressing by the day. Modern Methods of Construction provide a solution: supply chain, client and planning authorities have a responsibility to maximise it



IMAGE courtesy of John Lang Partnership

Environmental concerns are not to be taken lightly by industry. But if industry and client are to embrace modern methods of construction, there needs to be more than an environmental incentive. Do MMC really make sense in business terms? The short response is yes, but the path forward is not a straight-forward one.

**CREATING THE BUSINESS CASE FOR MMC, COME RAIN OR SHINE**

Modern methods of construction – particularly off site – can reduce time to market by a staggering 30 per cent; cost can be reduced by 15 per cent; the construction period by 20 per cent; and the operational impact by 30 per cent. The potential benefits are indeed considerable but much of this benefit and added value is indirect.

Modern methods of construction ensure greater certainty for a project, with less dependency on the weather, and greater opportunity to reduce risk by transferring work off-site. A higher standard of quality is derived from OSM, and enhanced specification and build quality can reduce occupancy costs related to energy use, defects and repairs. Safety and working conditions are also greatly improved, thanks to a controlled environment.

