

Removing the headaches of house building

Designing the jeopardy out of house building has been a long-held dream of many in the construction sector. Now innovators Totally Modular are ditching traditional building methods in favour of volumetric construction and making big gains in efficiency, productivity and profitability. Brian Maunder reveals the secrets behind the company's success.

Managing progress on a building site is difficult because there are so many variables. Perhaps the least predictable factor is delays due to the weather, but there are other issues too. For instance, delivery schedules for materials can be hit and miss – and appropriately skilled craftsmen may not be available when they do arrive. Because security is difficult at open-air sites theft is not uncommon, nor is overnight vandalism. Delays can accrue if neighbours complain about noise, litter, traffic – or if they park badly and block access for larger vehicles. The list goes on...

In short, the problems that can beset a site manager are many and varied, and each one is likely to increase the time until project completion and add to the costs.

Totally Modular has developed the technique of volumetric construction, which does away with most of these problems and creates an environment where advanced management techniques can be used to allow steady progress and assure quality. The basic idea is to build houses and flats as transportable modules in factories and then transfer them to site for installation.

The advantages of indoor construction are extensive, most obviously total protection from the weather and greater site security. However, it also brings other advantages, including an improvement in quality control, reduced delays, no rework, very little waste etc. Further, sophisticated management techniques developed in the manufacturing industries can be brought into play. For instance, because production proceeds at a predictable pace just in time deliveries of materials can be used to strip costs out of the process, while inspection and quality checks can be virtually continuous.

Totally Modular has developed an innovative Design for Manufacture and Assembly (DfMA) methodology that it applies to all its 'build in a factory' jobs. This has led to a step change in productivity, predictable scheduling, build quality improvements, a safer and cleaner working environment and ultimately reduced costs.

Heart of steel

Each house or flat module is based on a robust steel frame, to which internal and external walls at fitted and insulation is applied. Fully equipped kitchens and bathrooms are built into each module, as are all the fittings and equipment needed for heating, plumbing, gas, power and lighting. The external walls can be clad in brick, render or other finishes to suit the final location. In fact, the modules are 97% completed on the indoor production line; all that is needed is that they are transported to site, craned onto ready-made foundations and connected to the utilities.

In the factory, traditional building industry craftsmen work alongside structural riggers and fitters from engineering and manufacturing backgrounds. Progress is steady and continuous; more akin to an automotive production line than to a building site.

Totally Modular can provide a range of products from micro-living pods and bed-sits, to flats, starter homes, bungalows, family houses, executive and luxury homes. It also offers temporary workers' accommodation, affordable homes and transition accommodation for rough sleepers. Each module is single storey, but they can be stacked to create two-storey houses and blocks of flats up to 11 storeys high.

On-site

With so much of the construction process taking place off-site, work on-site takes on a new perspective. All that is required is a survey to accurately locate the position of each unit and then the laying of foundation pads and piping-in of utilities. Access must be provided around the site for the crane that will lift the modules into place, but this is highly likely to become the access road that serves the residents once they have moved in.

With the modules arriving fully fitted-out little extra traffic to site is required, so neighbours are not disturbed, and the local environment is not at risk of damage. For most projects, Totally Modular schedules deliveries of modules into a fairly compressed timeframe to minimise disruption to local residents. Its on-site teams can install and connect four, five or more houses in a single day and are always mindful to minimise noise and mess; indeed, landscape teams often work alongside the installers so that the site is ready for occupancy within days.

Photo Captions:

Photo 1: Each house or flat module is based on a robust steel frame, to which internal and external walls are fitted and insulation is applied.

Photo 2: In the factory, traditional building industry craftsmen work alongside structural riggers and fitters from engineering and manufacturing backgrounds.

About Totally Modular

Totally Modular is a leading manufacturer of steel frame, modular homes for social and affordable housing. As a turnkey provider, Totally Modular designs, manufactures and installs homes that are 97% complete when they arrive on site; including pre-installed kitchens, bathrooms and finishes. Ground works, services and landscaping can also be incorporated as part of any housing solution. With the inherent scope and manufacturing capacity to provide multiple housing structures to fully accredited standards with maximum convenience, Totally Modular offers a comprehensive solution to tackle the housing challenges of the future.

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