

Helping to solve the UK's housing crisis

It is widely acknowledged that more homes need to be built in the UK. The government has been issuing (and revising) targets since 2015, and although numbers have increased during that period, the fact is the industry is still not building as many new houses as it did ten years ago. West Midlands based housing constructor Totally Modular believes it has the answer, or at least a major part of the puzzle solved.

Volumetric modular construction of houses essentially enables homes to be built on a production line, in a factory, with all the inherent advantages of being an engineered product built in a controlled environment. Repeatability helps to speed up construction, while also allowing for the very latest construction methods and materials to be used.

The materials are supplied to the production line as they are needed, ensuring everything is in place for a just in time (JIT) build process. Trained engineers and tradesmen work side-by-side to assemble the pre-fabricated steel structure, attach all the internal wall panels, insulation and external finishing's such as bricks, renders or cladding and fully fit out the internal areas incorporating the necessary kitchen, bathrooms and central heating with all utilities connected ready for site erection.

The whole process is fast, efficient and precise while also being compliant with the company's ISO 9001, 18001, 14001 and 1090 CE certifications. All work is carried out in line with internally developed QA plans and controlled by QC inspectors who certify compliance at specific hold points. They liaise with both customers and third parties to witness and approve the key build stages as would a building inspector during a traditional development.

As the build process is not subject to the outside elements it can carry on all year round, while lean manufacturing and purchasing procedures ensure minimal waste is created. In scaling up the process to the company's planned levels of operation, a standard two-bedroom house can be manufactured in just 96 hours at either of the company's West Midlands factory locations, resulting in the delivery of up to 900 homes per year at full capacity for the two sites.

A scalable and repeatable solution

The plan doesn't end there though, the business model is infinitely scalable and according to company director Mick Pettitt, the company's plans could help start modular building factories all over the UK, using vacant industrial units, creating local jobs, pulling-in education centres and developing new communities with a vested interest in where they live, having played a part in its construction.

"This model is not only efficient, it is productive and sustainable. It is working extremely well in the West Midlands and so there is no reason why it wouldn't work in any other industrial town in the UK and Ireland. We have done the hard work in developing the housing modules and the construction techniques, along with the management systems and even the marketing process. It's a housing solution in-a-box and it is ready to go – we are also actively interested in supporting organisations and individuals that want to set-up their own Totally Modular community and factory."

Housing associations, according to the company are very much on-side, frustrated by the need for developers to maximise profitability, affordable housing is proving very difficult to create in anywhere near the numbers needed. Volumetric modular house building on the other hand lends itself to building affordable housing, with compact, high-quality living accommodation built to a modern optimised design being economically repeatable, in volume supported by an approved CML warranty.

Once a factory is set-up and the necessary skills and training are put in place the plan is for the process to be self-fulfilling as it will generate local employment, wealth and much needed affordable housing, benefiting the community and society as a whole.

The model has been established in the West Midlands where two factories are being fully converted into lean dynamic cellular manufacturing facilities specifically laid out for the production of housing modules. Both sites can build a wide range of housing solutions based on single modules or multiple units which simply lock together onsite and can be occupied within 4 days of positioning. The designs have been developed and refined over the last ten years so are tried and tested and offer a range of layouts.

Training and communities

The community aspect becomes far stronger when local education institutions are involved. In the West Midlands Totally Modular is currently working with Dudley College (DCFE), regarded as one of the country's leading BIM, CAD and Volumetric educational facilities.

The Institute of Engineering and Technology (IET), the Institute for Apprenticeships and the new National Housing Academy are also involved and committed to creating an 'Apprenticeship in Volumetric Engineering' in order to provide the necessary workforce the industry will need to ensure sustainability of growth in the modular process going forwards.

Totally Modular and its local supporters believe volumetrically engineered housing will enable the creation of a new skilled workforce to produce the houses required at an affordable cost in factories located near the places of demand. This reduces nuisance construction traffic in urban areas and the carbon footprint of the house build.

Using the Totally Modular model, the scalability of the opportunity is easy to appreciate with a 40,000 sq. ft factory being able to produce 1200 modules annually resulting in the supply of 45,000 sqm of living space which equates to the equivalent of 600 houses being delivered per year. With a national requirement for an increase of an extra 120,000 homes per year (National Housing Federation and the homeless charity Crisis recent statistics) from what is being built now, no-one in the trade will be out of a job as a result.

It will require 200 new factories and a newly trained semi and skilled workforce of 40,000 to meet this demand alone, alongside the increased jobs created within the supply chain to produce an estimated 250,000 tonnes of steel, 30,000,000 square metres of wooden panels, plaster board, insulation and external finish, alongside 10,000,000 square metres of wooden and composite flooring. Each home will also need factory-built kitchens, bathrooms, boilers, radiators, doors, windows, tiles, pipes, cables and so on.

Government endorsement

The government is taking the suggestion very seriously; written evidence provided by Totally Modular on the advantages and challenges of modular housing has been accepted as part of the evidence for the current Lords inquiry on "Off-site manufacture for construction". This document has been requested by the commons and got underway in March this year to help the Government to shape future building policies.

Mick concludes, "Factory building is fast and efficient, it's why we don't build cars and consumer white goods outside! All it needed was a team of people with the right skills, experience and will to come together and commit to the challenge. We are a self-funded enterprise, so we have the added incentive of commercial reality to make sure we succeed."

"It would be great to be able to access some government funding, especially for the education and up-skilling of the workforce, but local housing associations and educational institutions are already creating opportunities and putting valued time and resources in, which is very encouraging for us."

"We believe this opportunity will deliver significant change in the housing market and support traditional methods not hinder them while the benefits of cheaper, better, quicker affordable and social houses will bring benefits to all."

Photo Captions

Photo 1: It is widely acknowledged that more homes need to be built in the UK.

Photo 2: Volumetric modular construction of houses essentially enables homes to be built on a production line, in a factory, with all the inherent advantages of being an engineered product built in a controlled environment.

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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