

Estimates from demographic trends and a projected increase in single occupancy, are that the UK will require about three million new homes by the year 2020. Yet in 2001 construction of new houses in the UK fell to its lowest level since the Second World War.

Aircrete as a Modern Method of Construction (MMC)



The Barker Review of Housing Supply has suggested that to bring house price inflation down to the European average (1.1%) an additional 120,000 private house will have to be built every year. The Review also suggests that social and affordable housing needs to be increased by 17,000 units a year. The housing shortfall – and how to resolve it – has been the subject of much debate, which has led the government to promote Modern Methods of Construction (MMC) as a means of both improving build quality and reducing build costs.

What are Modern Methods of Construction?

The term Modern Methods of Construction (MMC) is used to describe specific, identifiable 'products' developed to manufacture homes, both off-site in specifically designed factories and on-site with innovative methods, which offer potential benefits such as faster construction, fewer defects and reductions in energy use and wastage. Although primarily building systems, MMC also include the back-up and support systems to make them work, such as training and technical assistance throughout the planning and construction process.

H+H Celcon and MMC

Celcon's Thin-Joint system reflect the enhanced building efficiencies required in Scandinavian countries pioneered by Celcon's sister companies. With a shorter building season due to longer and harder winters, their techniques have to be both robust and quick to construct.

Classified as MMC by The Housing Corporation, the social housing regulator for England and Wales, Celcon's Thin-Joint System speeds the build process and result in a better insulated, more environmentally friendly home.

- Celcon's Thin-Joint System is a Non-OSM MMC (see over for details), a traditional form of construction that has been adapted using an innovative method to enhance the build process.

Quality and Accreditation

Major investment in research and development in the UK has been essential in bringing these building systems to the UK market. Although proven within Scandinavian countries the products have had to be tested and certified in the UK. The Thin-Joint System has gained approval from the British Board of Agrément (BBA). The National House Builders Council (NHBC) also recognises it as an accepted form of construction for their insurance schemes.

Celcon's Thin-Joint products are manufactured to the most exacting standards at the company's newest plant at Pollington in Yorkshire and distributed nationwide.

Training

Training of operatives is also key to ensuring the build goes to plan. Celcon offers both on-site, and other training options for their building systems. Training for Thin-Joint Systems has been added as a module to the Bricklaying NVQ and demonstrations are also given on sites and at builders' merchants' yards.

The Housing Corporation & MMC

For 2004-2006 the Housing Corporation set a target of a quarter of the new housing it funds (circa 5,000 homes per year or 3% of new UK construction) to be built using MMC.

The Housing Corporation's objectives for MMC are:

Better quality – meets or improves on the Building Regulation requirements with a reduction in the number of defects

Safer – with more construction taking place in a controlled environment and less time on site

Environmentally friendly – reduced transportation and wastage levels, an improvement in the efficiency of the homes combined with less impact on the local residents during construction.

Economic – fewer defects and a quicker build time resulting in a reduction in cost.

The Housing Corporation has divided MMC into five categories:

- 1 Off-site manufactured (OSM) – Volumetric
- 2 OSM – Panellised
- 3 OSM – Hybrid
- 4 OSM – Sub-Assemblies and Components
- 5 Non-off-site manufactured (Non-OSM) Modern Methods of Construction



Aircrete as a material for MMC

Aircrete has qualities which make it an outstanding material on which to base MMC products. Its key benefits are:

- Thermal efficiency – the microcellular composition makes it easier to achieve the demands of Part L of the Building Regulations.
- Acoustic performance – the sound insulation properties of aircrete enable the requirements of the new Part E Regulations to be comfortably met
- Productivity – quick-setting thin-layer mortar and large-size blocks cut building time
- Light weight – means easier, safer handling and larger blocks
- Easy to work with – can be easily cut on site with hand tools, minimising waste
- Design flexibility – as flexible as traditional blockwork and more so than lightweight frame constructions
- Strong – impressive loadbearing capabilities, can be used for multistorey buildings
- Water resistant – highly resistant to the passage of moisture
- Fire resistant – non combustible
- Durable – an inert material which will not degrade
- Ease of fixing – is easy to cut and chase for services, forms a secure base for fixtures
- Variety of finishes – can take a wide variety of finishes, both internally and externally
- Environmentally friendly – around 75% of the raw material is Pulverised Fuel Ash (PFA), a by-product of coal-fired power stations. This would otherwise be sent for landfill
- Consumer preference – householders prefer a solid, masonry-built home

build with ease

The Housing Corporation names Celcon's Thin-Joint System as an example of a Non-Off Site Manufacture MMC and as such it is a candidate for Housing Corporation funding. H+H Celcon's Thin-Joint System can be used to enhance EcoHomes assessment figures, an environmental assessment scheme developed and administered by the BRE.

Celcon's Thin-joint System



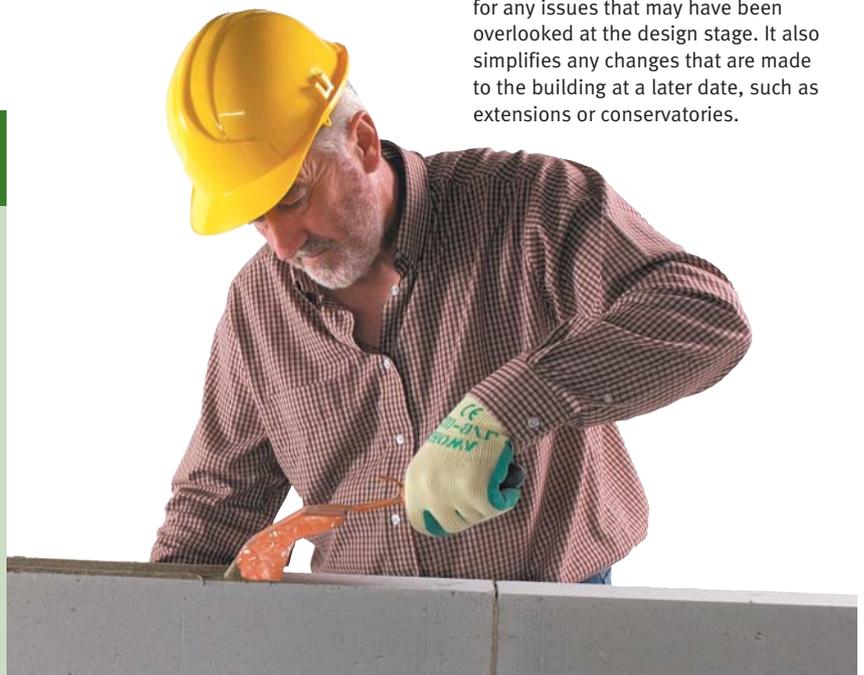
Simply explained Celcon's Thin-Joint System combines Celcon's Plus range of high quality, accurately dimensioned aircrete blocks with Celfix, a quick-setting mortar using 2mm joints rather than the traditional 10mm joint. The process, generally known as thin layer technology, allows the structure to be built quicker and potentially to a better quality. It can be used for solid or cavity wall construction. For the latter, the brickwork can usually be taken off the critical path with the inner leaf being constructed ahead of the outer brickwork, making the build less weather dependant, allowing follow on trades to work in a weather-tight environment. It is important to understand how the complete system works, as without planning the benefits of the quicker build time can be lost.

Plus blocks are the key to making Celcon's Thin-Joint System work most effectively and develop its full potential, not least because the larger block size means fewer blocks to lay. Manufactured at the company's most technologically advanced factory, Plus blocks are made to the exacting tolerances of the new European Standard EN771-4. This reduces the work required on-site, allowing services etc. to be built in as the work progresses. Celcon's Thin-Joint System can generally be used anywhere that traditional blockwork is used, and offers the benefit of improved U-values over traditional build by reducing thermal bridging. There is also potentially better air-tightness and better sound insulation due to a better integrity of the blockwork.

Being a Non-OSM MMC, work is completed on site as with traditional build. This allows for adaptations on site for any issues that may have been overlooked at the design stage. It also simplifies any changes that are made to the building at a later date, such as extensions or conservatories.

The benefits of Celcon's Thin-Joint System

- Improved thermal performance
- Improved sound insulation
- Improved airtightness
- Robust construction
- Reduced construction times
- Increased productivity
- Waste reduction (mortar and blocks)
- Flexibility
- Off the shelf product
- Simplicity of design and construction
- Readily understood material used in an innovative way



build with ease

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CELCON

An architect who is passionate about low-energy buildings chose a solid wall solution with Celcon Solar Plus blocks and the Thin-Joint System for a £1.5m new community centre at Swaffham in Norfolk.

Case Study Swaffham

Jeremy Stacey of Jeremy Stacey Architects, specialises in low energy public buildings and was a finalist in the Prime Minister's Award for Better Public Building in 2002. "We found Celcon solid walls with their Thin-Joint System a very attractive solution because of its simplicity – one product achieved the required U-value without the need for a cavity, insulation, ties or other components. The blocks are very accurate and there was little wastage.

Externally we had a choice of finish – render, boarding or hung tiling and internally it is easy to apply dry-lining. The solid wall went up very quickly and the Celfix quick-setting mortar was very easy to work with. Overall the system is excellent and falls in line with the Government's demand for more use to be made of Modern Methods of Construction."

The new community centre comprises two large halls with adjoining kitchen and café together with offices for four organisations which will use the halls for training, meetings and social events. Other users will include a crèche and the client, Iceni Partnership, a community organisation serving Swaffham and the surrounding area.

Thin-Jointed Celcon blocks form the entire envelope of the building, which is clad in a combination of Cedar boarding and Sto render. There are high performance windows with Low E glass from Scandinavian Window Systems (SWS) and an air-handling system for fresh air and ventilation with a heat recovery system. An unusual feature is the Sedum roof, a 'living' or 'green' roof comprising a waterproof membrane covered in a sweet succulent that blooms in spring with tiny white, yellow, red, and purple flowers. The vegetation provides insulation and protection from ultraviolet light.

The contractor was H Smith & Son of Honingham.

