

Information Paper

Delivering sustainable, low energy housing with softwood timber frame

Mark Waghorn*, Ed Suttie and Andrew Sutton, BRE

Timber frame is one of the most sustainable methods of delivering new housing. If correctly managed, timber is a renewable resource and has the potential to provide much lower embodied energy than masonry or concrete.

This Information Paper describes the most common approaches to timber framing in the UK and how these are evolving to meet the increasing demand for high performance, low energy housing. Case studies illustrate three different approaches to low energy timber frame residential construction.

Architects, timber technicians, building surveyors, engineers and specifiers will gain valuable insight into how to design timber frame projects.

Introduction

The origins of modern timber-framing methods

Many modern timber-framing methods have their roots in the balloon frame, which was invented in Chicago in 1833. The balloon frame, a product of the industrial age, was made highly economical by the advent of the steam-powered saw and mass-produced nails (Figure 1)^[1].

Although timber frame has been a popular method for delivering housing in much of Europe and the US throughout the last century, this has historically not been the case in the UK. Cultural attitudes for some time have meant a preference for masonry construction for its perceived permanence, while media coverage of timber-frame construction problems in the 1980s further affected people's perceptions of this method^[2]. However, the cost benefits and convenience of construction with timber have meant that it is increasingly favoured as a construction method in the 21st century (Figure 2).

* Mark Waghorn Architects



Figure 1: Construction of a balloon frame house in the United States in 1877 (photograph by William Henry Jackson; ©The National Anthropological Archives, Smithsonian Institution)



Figure 2: Springhill Cohousing, Stroud, by Architype Architects. Timber-framed houses insulated with Warmcel, clad in local timber (image © Stephen Hill, C20 futureplanners)