



## Avalon Timber Frame Homes

### **Timber Frame Construction**

To describe Timber Frame as a futuristic construction method would be true but, in another way, would be glossing over its highly successful past. Timber Frame has a far greater claim to the title "Traditional" than does "block and brick".

Traditions are made by people and as over 70% of the population of the developed world lives in timber frame housing, timber frame has more than a good claim to the "traditional" tag.

There are many 15th century timber frame properties still standing in the UK but these tend to be of the variety built with full timbers from oak. The modern style of timber framed house, built using sawn timber and panels, was developed in the US where nowadays over 90% of low-rise dwellings use this construction method.

The Scandinavians took the timber frame concept and honed it to perfection in order to meet the needs of their exceptionally harsh winters.

However, it has taken legislation alongside heightened environmental awareness, for timber frame construction to make any real headway in England... and real headway is what it is currently making.

Timber frame is the fastest growing sector of the market. In 2006 Timber frame increased its market share to over 20% and by 2008, it is predicted that one house in four will be built from timber.

So what does timber frame offer that is so exceptional. First we should take a look at its green credentials as "low and zero carbon homes" are the "talk of the moment".



# Carbon Neutral

### **Environmental credentials**

Wood is organic, non toxic and renewable. 99% of the timber used in UK timber frame construction is European softwood and those trees throughout Europe's managed forests are responsible for sequestering some 95 million tonnes of CO<sub>2</sub> from our atmosphere. In Europe we are committed to planting more trees than we fell, by using wood we are effectively increasing the afforestation of the planet.

Wood is essentially carbon neutral, even accounting for transport. It uses far less energy to produce than conventional brick and block materials, and at the end of its long working life in a building it can be recycled and reused.

Using 1m<sup>3</sup> of wood instead of other materials results in 0.8 tonnes of CO<sub>2</sub> sequestration. As a typical 100 square metre two-storey detached timber frame dwelling contains 5 - 6 cubic metres more wood than a comparable masonry house, this means that each timber frame home saves over 4 tonnes of CO<sub>2</sub>.

During 2006, over 51,700 timber frame units were built in the UK saving approximately 210,000 tonnes of CO<sub>2</sub>, roughly equal to the emissions from 75,000 small cars each driving 10,000 miles.

### **Energy saving benefits**

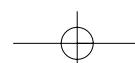
Timber frame construction's green credentials don't stop when the building is completed. Those thermal insulation properties honed by the Scandinavians are now coming into their own, saving energy and reducing fuel bills.

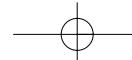
U-value calculations and independent SAP assessments now have to be submitted along with all new-build planning applications. Building Regulation requirements are becoming increasingly difficult to meet using conventional building methods. Some designs simply could not meet these requirements using brick and block construction, but maybe acceptable when built from timber with its better thermal insulation properties.

Where calculated U-values are concerned, the smaller the number, the better the insulation performance and the more energy the construction method and materials is able to save.

A brick and block wall with full cavity insulation has a typical U-value 0.35 W/m<sup>2</sup>K but this can be improved to 0.30 W/m<sup>2</sup>K by using thermal blocks and render combinations.

A wall constructed of a conventional brick





outer leaf with 184mm mineral wool insulated and sealed timber frame panels inside, as constructed by quality timber frame manufacturers has a U-value of 0.24 or less.

This 25% improvement in energy efficiency can generate a marked saving in fuel costs and a proportionate reduction in CO<sub>2</sub> emissions... savings that recur year after year.

#### **Government Intervention**

Recognising the fact that greenhouse gases, particularly carbon dioxide, are contributing to global warming, the UK Government is putting into place strategies to reduce emissions. One of these involves the long awaited modification of Part L1 of the Building Regulations, which has been in effect since 2002. Instituted in April 2006, the new standards require a notional 20% overall reduction in the CO<sub>2</sub> emissions in building performance from the previous regulation targets.

Adopting low U-value solutions for external wall, roof and floor components could deliver a significant proportion of the 20% improvement required.

It is undoubtedly this emphasis, stimulated by Government legislation, that has triggered national economic and environmental conscience. This has encouraged many to investigate "alternative", more eco-friendly methods of construction, the reason why increasing numbers are opting for timber frame.

A high-performance timber frame specification is capable of making a significant, highly cost-effective contribution towards the

total energy savings requirement.

#### **A robust alternative**

The unenlightened still view timber frame construction as building log cabins, but little could be further from the truth. Modern timber frame properties, especially those built with the increasingly popular 184mm sealed panels have the solid feel and permanence to equal that of conventional build and in many instances have improved sound insulation.

However, the majority of timber frame dwellings in the UK are still constructed with brick outer leaf to meet customers' aesthetic expectations and comply with the adage that "an Englishman's home remains his castle".

In short, a timber frame property does not have to look like a chalet or a 22nd century space age structure as some television programmes would have us believe. Whatever your personal preference for design aesthetics you can still enjoy the benefits of timber frame construction...

- Speed... a weather tight unit can be erected in a matter of days
- Precision... dimensional accuracy for airtight construction
- Efficiency... in terms of energy savings
- Environmental sustainability... low carbon footprint.

The future is certainly looking bright for timber frame, the futuristic construction method with green credentials and a proven track record.

