

## Scandia-Hus Ltd Sustainability Statement

Whilst no building can ever be described as totally 'environmentally friendly', timber frame construction homes come the closest – and have done so since the 12th Century

Scandia-Hus are passionate about building eco-friendly homes for the future. We believe that energy efficient design is essential in any new property. Timber frame is fast becoming established as the method of construction that positively answers many current environmental issues and concerns, enabling self-builders to reduce their environmental footprint and achieve lower running costs.

Scandia-Hus have a full in-house design team and have great pride in their ability to produce fully bespoke designs and varied specifications at all levels.

### Sustainable Timber Frame

Scandia-Hus has been using a well-proven Swedish timber framing system for over 45 years. Our specification is regularly reviewed in light of technical and regulatory advances thereby providing a modern method of construction with a high sustainability rating.

For the construction of all of our frames, we use the best slow growth Scandinavian, PEFC sourced, sustainable timber, harvested under a forestry management policy of long-term renewal where each tree felled is replaced by two healthy saplings.

Scandia-Hus prides itself on being at the forefront of energy efficient design. By incorporating high levels of insulation and adopting air-tight principles, Scandia-Hus achieves exceptional insulation values. High levels of insulation and air-tightness are number one on the sustainability priority list and as the financial and environmental costs of energy continues to rise, we are confident that our methods are compatible with a cleaner and greener future.

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'Low Carbon' output begins with the design. Tinkering with a flawed design at a later stage will have a limited effect so it is important to get it right at the beginning. A new home needs to be designed to capture available solar energy, minimise heat loss by incorporating high levels of thermal insulation and to achieve high levels of air tightness. Our 'U' values for the Scandia-Hus building set are outlined below.

Ground Floor Construction – 'U' value 0.12 W/m<sup>2</sup>k

External Wall Panel Construction – 'U' value 0.15 W/m<sup>2</sup>k

Ceilings – 'U' value between 0.12 and 0.15 W/m<sup>2</sup>k dependent on type

Windows – 'U' value 0.9 W/m<sup>2</sup>k

When taking into account all of the high specification directly related to the Scandia-Hus building set as outlined above and when adding the other renewable energy's that are available (see below), zero carbon is an achievable outcome.

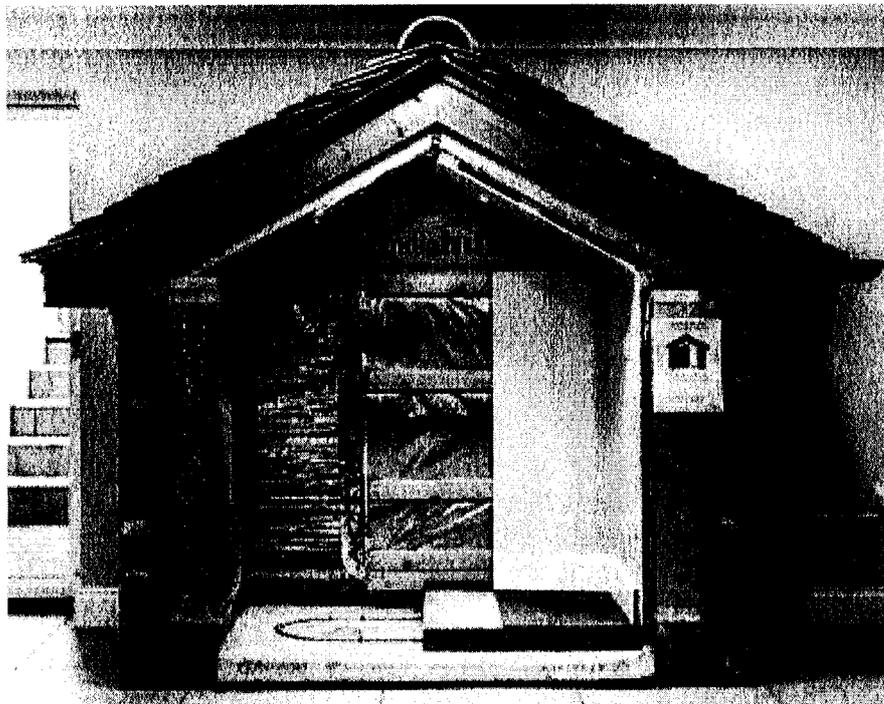
### **Insulation and Air Tightness**

By incorporating high levels of insulation and adopting air-tight principles Scandia-Hus homes achieve exceptional insulation values. High levels of insulation and air tightness are number one on the sustainability priority list and, as the financial and environmental costs of energy continues to rise, we are confident that our methods are compatible with a cleaner and greener future.

It is vitally important to make new homes as airtight as possible. Uncontrolled air migration (in or out) is a significant route for heat loss even in a well-insulated property. It is necessary to provide ventilation at all times of the year and in the colder months this can be achieved using a mechanical ventilation system which incorporates heat recovery.

### **Solar Heat Capture**

Scandia-Hus Timber Frames homes are inherently 'low thermal capacity' structures that benefit from sun rays beaming in. They heat the air in the rooms and not the structure which in doing so provides 'Incidental Heat Gain'. To get the best results from solar capture, south facing windows are maximised and north facing windows are minimised. To avoid over-heating in the summer months our houses feature external shading devices such as wide roof overhangs and loggias etc.



Typical cut through section of a Scandia Hus timber frame.

## **Renewable Energies**

The majority of our customers wherever possible would like to try and incorporate renewable technology in their homes

### **Solar Thermal**

Solar Thermal is a very effective means of heating hot water for domestic use. It can be used all year round but, understandably, the best results are in the summer when sunny days are more likely to occur. It is quite possible to survive from May to October using only solar heated water. It works very well for domestic hot water heating and it is possible to use it to assist with space heating.

The technology for this has been perfected over a number of years and is tried and tested. There are a number of registered installers through the UK.

There are two main types used in the UK – evacuated tubers which are best suited to our latitude and flat plate collectors which look better but are not quite as efficient.

Solar Thermal is at the top of the renewable list and therefore something we highly recommend to all our customers.

### **Solar Photo Voltaics (PV)**

Solar Photo Voltaics are often seen powering road sign lighting, navigation buoy lights and trickle chargers on boats. They remain expensive to make although technology is now catching up and driving costs down. Each silicon-based cell converts sunlight directly into low voltage D.C. electricity using semi-conductor technology.

They are usually set out as roof arrays, covering a minimum of 4 square metres. They generate electricity when there is daylight and their output varies depending upon light intensity. The expected life span is 30 years or more (the oldest cell in existence is not that age yet!) and the current payback period is about the same time. For those customers who wish to use them there are at least two companies who actually produce PV roof slates, tiles and shingles for partial or whole roof covering.

PV cells remain very expensive to make and as there are only a few manufacturers throughout the world; they are expensive to buy, with PV roof tiles being more expensive than frame mounted PV panel arrays.

PV electricity is converted into 240V A.C. using an inverter and any excess may be exported to the national grid. Micro-generation of electricity will become more popular due to the Governments introduction of a 'Feed in Tariff' where a premium price is paid for micro generated electricity. This is an encouraging move which, when coupled with the inevitable escalation of fossil fuel-based energy prices, will see the payback period for photo voltaic installations come tumbling down. This in turn will result in more and more people turning their homes into micro power stations.

### **Heat Pumps**

We work with suppliers who offer ground source and air source pumps to our customers and both are capable of heating large spaces without using conventional fossil fuel sources.

As the financial and environmental costs of energy continue to rise, Scandia-Hus are confident that our building methods are compatible with a cleaner and greener future.