# FALCON HOUSE - COTSWOLDS

## Upside-down Living using CLT Technology

Project: Falcon House

Company: Paramount Structures

Sector: Residential

Technology: Mass timber

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The aim was to create an upside-down house using CLT to create two cabins that merged with the surrounding area and provided an energy efficient and striking design through it's 45 degree offset layout.

The concept of the upside-down home intends to maximise the views of the surrounding nature from the living spaces. The upper floor creates the feeling of living within the trees, whilst the lower floor was designed to accommodate more intimate and cosy spaces.

This project illustrates what can be achieved when engineering and design come together. Aesthetically the cantilever provides a wow factor to the design and allows the house to offer views across the countryside surrounding the house. The entire building has been constructed out of CLT including the cantilever which has been created through using the CLT wall, roof and floor slab which allows us to the walls to form a deep beam.

The use of market leading software has allowed us to finite test the elements of the build to create something that hopefully benchmarks a step away from the need for steel in timber frame.

The engineering had to be doubled up as we started with the concept of using the CLT panel strength to create the building and then once completed we had to rerun the engineering to test the panels under lifting stress to create the lifting details so as the project could be created offsite and craned in to place.

The concept evolved from using glulam beams to add the support to just using the strength of the CLT itself through the finite testing in our software, this allowed us to test every element and find the most efficient solution and see how far we could push the boundaries of timber engineering.

The aim of the offsite was to create a showpiece home that could be integrated to an existing and established nature friendly estate. The location has been repopulated with wildlife and wildflowers so by creating offsite and final assembly being done by hand we have managed to remove the disturbance to the surrounding area.

As well as this the CLT form allows us to create a well-insulated and high efficiency home, which can be heated by a wood burner and creates a natural finish with the exposed CLT slabs. By removing the need for formal heating this reduces the carbon footprint further.

Prior to starting the clients expectations were to use a steel frame to create the overhang. The concept allowed us to reduce the bill of materials by removing the steel beams that had originally been costed in which given the current state of steel prices saved £1,000s and removed the potential for a cold bridging issue at the joints.

The finished design has provided a feature house that can be used as a benchmark for clients upmarket estate as well as for the mass timber industry and what can be achieved by thinking outside the box.