

# Plenty of room upstairs

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**Off-site construction is revolutionising penthouse extensions, writes Patrick Brightman**

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When clients think of rooftop development, they imagine many months of noise, blanket scaffolding and dust, and they swiftly lose interest. First Penthouse, however, realised there was a better and faster way to develop rooftops.

The company was founded by Håkan and Annika Olsson, Swedish engineers with a background in developing innovative construction techniques; having encountered significant problems when building their own penthouse using traditional methods, they now specialise in off-site modular construction. This results in bespoke rooftop apartments, transforming underused urban spaces into valuable assets with minimal disruption to existing occupiers.

## Swift and Swedish

Although off-site construction has enabled large-scale hospital or university campus developments, there is a niche market for the more advanced modular construction techniques for rooftop development.

First Penthouse modules are hand-built in a facility in Sweden and are tailored to fit particular rooftop designs. After extensive testing of all utilities and equipment, modules are shipped to site, where they are lifted by crane on to the prepared rooftop. In this way, an entire penthouse can be installed on site in one day.

The company uses the same materials as traditional construction methods, and designs to the same codes and standards, but can produce the final penthouse in half the time usually taken on site.

## From the inside out

Until the design, planning and procurement have been finalised, both traditional and off-site construction timescales are roughly the same, with project viability taking 4 months, surveys one month and planning and procurement 4 months each.

Off-site construction design takes 6 months rather than 4, as traditional construction does, because advanced modular construction for rooftop development requires a different technical approach. Taking full advantage of building with modules means they have to be designed from the inside out, so the use of digital tools and to some extent smart factories is crucial.

Designing from the inside out rather than the outside in means starting with the manufacturing constraints and assessing any technical issues. The design is then developed with the final

product at the back of the designer's mind. In contrast, traditional methods will typically ensure that the visual design is paramount and the architect will, in most cases, leave the technical issues to the other professionals involved.

Where time is saved is in the preparation of the roof, which can be carried out with minimal noise over a 4-month period, using fewer people, with specialist tools and, in most instances, a parapet scaffold instead of blanket scaffolding. While this takes place, the penthouse modules are being built off site in controlled conditions. These are nearly complete on leaving the factory, with all white goods, fittings and decoration in place; final snagging and furnishing requires another 1 to 4 weeks after installation, which itself takes only a day. The major benefit for clients is that the total on-site time is typically 6 months or less, whereas traditional construction timelines are usually 18 months or much more.

## **Structural survey**

Before installing any rooftop extension, it is essential to carry out a detailed viability assessment on the property. There are important due diligence measures relating to rooftop extensions that are specific to modular construction. The property must be surveyed by a structural engineer to ensure an additional load can be taken. Means of escape and fire exits must be prioritised as per the Building Regulations, and crane access must be possible for module installation. It is also important to consider the likelihood of planning consent for the property. Is it situated in a conservation area? Is a good height precedent set by the surrounding buildings?

To date, First Penthouse has only considered developments in central London, which is where property values are currently the most commercially viable. Prices in parts of the South East are now becoming high enough to make a development a worthwhile consideration, however. Like most projects, there are significant economies of scale, so roofs of more than 465 sq. m are best and would work outside London.

One of the company's recent projects is Cheyne Place, a 3-bedroom penthouse situated in Chelsea. At 159 sq. m the penthouse covers the entire seventh floor of an art deco block, with 360° views that span the Chelsea Physic Gardens and River Thames.

While remaining sympathetic to the original building, the penthouse interior is also based on the Scandinavian fundamentals of practicality and functionality. It has been built with sustainability in mind: its entire structure is made from solid wood, and high-grade installation is used throughout. Deliveries and waste can be reduced by up to 90% by the off-site construction process. With careful design, use of space that was originally restricted by planning was optimised. Using a cross-laminated timber frame also enabled a considerable increase in the available floor-to-ceiling height, while satisfying the requirements of the planning permission.

## **Broader building benefits**

As part of every development, improvements to the existing building are incorporated: for instance, with a new roof, the old pipework and cables are often rearranged and the common parts and entrance hall upgraded. This means that the property value is increased on average by 5% and every resident benefits.

**Patrick Brightman is Managing Director at [First Penthouse](#)**

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