Hertfordshire Growth Board

Hertfordshire Offsite Manufacture

Factsheet 4

27.05.2022

Factsheet 4: What are the benefits of using OSM?

The key advantages of utilising OSM are shown below but first, here are some key points to help the reader access those benefits:

Key to realising the benefits

Early engagement between the client, design team, contractor and OSM Supplier, the earlier the better.

Early engagement will:

- Assist with initial feasibility and viability appraisals
- Assist with value engineering to improve costs through design development
- Assist with SAP Calculation improvement
- Reduce build duration = reduce build costs
- Save on foundation design and costs
- Enable the house/scheme to be designed for less waste
- Enable a quicker return on capital outlay

The benefits of OSM

Speed: OSM projects can save anything from 30 to 50% of construction time. Offsite construction can significantly reduce the site programme, as components and assemblies can be manufactured concurrently in multiple locations.

Unaffected by weather conditions (60 to 90% of the construction is completed inside a factory) or other trades, factory assembly provides certainty of delivery. Installation is also much faster and all associated travel implications for secondary materials and labour can be vastly reduced, improving site logistics.

Safety: OSM improves efficiency and productivity, allows significant use of automation and appropriate tools and handling methods. This offers an opportunity to address some of the fundamental causes of accidents, including lifting and falls from height, by reducing the number of trades on site, reducing the need for scaffolding, as well as reducing manual handling and materials storage.

Sustainability: The use of OSM has a direct impact on the sustainability and carbon content of a project, both in construction and in use, due to more rigorous and fundamental design procedures, factory quality control, higher degrees of air tightness, and fewer transport loads.

50% of waste produced in the UK comes from construction. By constructing building elements at a fixed facility, onsite waste can be virtually eliminated, below 1% of the total in comparison with traditional construction which typically varies between 18% and 22%. Any waste produced can be controlled and recycled. Careful programming ensures efficient production and units can be designed to maximise the use of space in delivery vehicles, reducing carbon emissions. Site noise and dust produced by onsite cutting and cleaning can also be removed.

Quality: When you have more thorough processes and are carrying out those processes in a regulated, dry and easily accessible environment, it is much easier to control the quality of the end product. This results in increased levels of accuracy and reduced defect variability, flaws are caught at the source, greatly minimised, and fit and finish are improved leading to a reduction in whole life costs.

Cost: Early engagement with specialist contractors to produce an advanced design earlier in the process drives out risk allocations and leads to improved cost predictability. The use of standardised components can give economies of scale, particularly when consistently applied beyond a single project. Rapid delivery also provides financial benefits, improving cash-flow and offering developers a faster return on investment.

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Reduced disruption: OSM methods not only minimise the amount of time spent on-site, but they also minimise the amount of space necessary for car parking, welfare facilities, and materials storage. This has a direct influence on the neighbourhood, as traffic movements are minimised and inhabitants and users of the area are disturbed less. This is especially useful in contexts where community stakeholders are more vulnerable to the influence of building activities, such as hospitals, schools, or highly populated neighbourhoods.

Predictability: As a direct result of using OSM tactics on a project, the risk of unforeseen events affecting the project's schedule or expenses is reduced, boosting project certainty and ensuring project completion on time and on budget. This could have significant project benefits where opening dates are critical to a project's performance, such as student housing, where if the September access date is missed, occupancy levels may not be maximised for up to a year.

Better build performance and lower defects: The performance of the buildings is more predictable, and there are fewer defects, both initially and over time, due to the more robust design process, manufacturing assembly, and better quality control methods accessible within all sorts of OSM procedures. Fewer defects reduce on costs and friction with occupiers. OSM homes achieve a circa 37% better thermal performance than current Building Regulations. It's always difficult to compare two dissimilar buildings, however in long-term OSM programmes estate maintenance expenses were one third lower.

Improved social value: There are numerous advantages to shifting work away from the construction site, whether it is because factory jobs are safer and more sustainable, or because the less peripatetic nature of factory employment provides employment opportunities to individuals with caring responsibilities or disabilities due to the fixed location nature of factory employment.

Productivity and resources: Productivity within manufacturing is significantly higher than the construction industry. A reduction in the number of workers required on site and access to a significantly wider labour pool away from site, reducing the number of people on subsistence during the working week.

Lower costs in use: Lower running costs due to higher building performance. The use of Building Information Modelling (BIM) software which is a database that tracks the unit from its original design through to occupation, information which can be shared with stakeholders and therefore has the potential to improve stakeholder confidence in the system and make management of the homes easier and more efficient.

Greater flexibility and reuse: OSM buildings can be disassembled (and, in the case of modular, can be relocated or refurbished for new use), reducing the demand for raw materials and minimising the amount of energy expended to create a building to meet the new need.

Better engineered building and BIM: Pre-Manufactured Construction (PMC) relies on advanced BIM for visualisation to assess the energy performance and identify the most cost-effective efficiency measures. PMC is ideal for the use of this technology where the construction process is already a collaboration of systems, materials and people—much like the software itself.