

The carbon benefits of a refurbished modular building

Wernick Refurbished Buildings is one of the UK's largest suppliers of pre-owned modular buildings. Our industry-leading approach to refurbishment ensures we can supply a high-quality building at a more competitive price.



**SUSTAINABLE
DESIGN &
CONSTRUCTION**



**WE
PROMOTE
CIRCULARITY**



**46% LESS
EMBODIED
CARBON**



**UP TO 50%
FASTER BUILDING
METHOD**

An academic study was recently conducted to quantify and substantiate the embodied carbon emissions of a relocated and refurbished modular building versus that of a newly built modular building.

The process involved removing an 8-bay modular building from site A, refurbishing at the York factory and reinstalling it at site B, with the results compared to a newly built modular building at site B.

The report demonstrates that carbon reductions can be achieved with refurbishing modular buildings. Wernick Refurbished Buildings can offer both circular and lower carbon options for your building requirements.

Embodied carbon emissions (kgCO₂e/m²) for an 8-bay modular structure building, lifecycle stages A1-A5

The results of the study conclude that a refurbished 8-bay modular building produces **46% less embodied carbon emissions** when compared against a new build equivalent (Figure 1). The reduction is mainly due to the reuse of the steel frame structure which has been re-purposed and had its life extended.

Figure 2 demonstrates that the end module of a refurbished building produces 42% less embodied carbon emissions when compared to a newly-built structure and 48% less emissions in the case of the middle module.

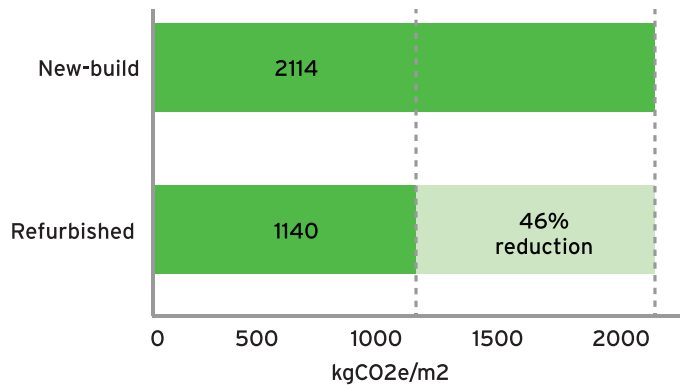


Figure 1. Embodied carbon emissions of an 8-bay modular building

8-bay modular building comprising of 2 no. gable modules and 6 no. middle modules

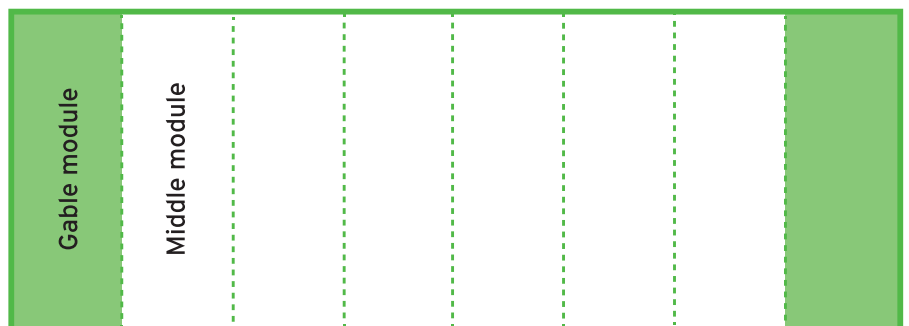


Figure 2. Diagrammatic representation of an 8-bay modular building

Disclaimer: The study was based on the materials and manufacturing process followed at the Wernick Refurbished Buildings factory in York. The structure chosen for the study was a single-bay commercial RapidPlan® module. This was then scaled to a typical 8-bay Wernick Hire depot, which comprised two end modules and six middle modules. Only the shell and core of one end and middle modules of the structure were considered for the study, and other fittings and installations were excluded. The scope of the project was restricted only for the production and construction stage (A1-A5). The One Click LCA® (2015) tool was utilised to undertake the LCA in compliance with BS EN 15978 with the study based on certain assumptions. Each standard module floor space was 29.66 m², consisting of 1 door and 1 window (2 windows for mid modules). The results are not 3rd party certified.