

EU market development of MODCELL: a prefabricated eco-building system utilising renewable materials

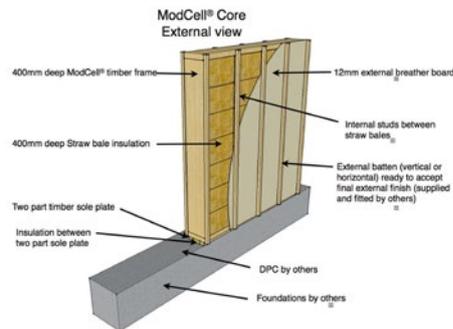
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INFORMATION ON THE ECO-INNOVATIVE SOLUTION PROVIDER

This eco-innovative solution is the output from the project titled “EU market development of MODCELL: a prefabricated eco-building system utilizing renewable materials” co-funded by the European Commission within the framework of the Competitive and Innovation Program. This solution has been developed by a team coordinated by the University of Bath (UK) in partnership with BB-Architecten (NL), Integral Engineering Design (UK), Modcell Ltd (UK) and White Design Association (UK).

SHORT DESCRIPTION OF THE ECO-INNOVATIVE SOLUTION

The innovation consists of a prefabricated low carbon panel building system designed for use in a wide variety of construction sectors, including housing, schools and retail projects. The core is a finished, fully closed straw or cellulose insulated timber panel. Externally, the panel is closed with a vapour-permeable timber-based panel. ModCell® panels have been further developed for use in BaleHaus®, a wholly prefabricated low carbon renewable housing system in which ModCell® panels are used to form structural loadbearing external walls. The ModCell® Core + System deliver on the demanding PassivHaus specification requirements for thermal performance (U-values), air-tightness and thermal bridging and have been certified as a PassivHaus component system.

INDUSTRIAL SECTOR – MARKET SEGMENT AND ACTUAL APPLICATION IN INDUSTRY

15-17 Construction

INDUSTRIAL CLASSIFICATION - NACE CODE;

41 Construction of buildings

1. DESCRIPTION OF ECO-INNOVATIVE SOLUTION

Technical aspects of the eco-innovative solution

The innovation consists of the know-how of the prefabricated timber panels, typically a glue-laminated timber frame filled with straw bales and protected by wood fibre and compressed straw boards. ModCell is a prefabricated system for off-site construction. There is no need for capital investment to set up a centralised fabrication facility. Instead, ModCell developed the “Flying Factory” delivery system that enables entirely localised manufacturing, using local skills, labour and materials. The Flying Factory can be installed in rented farmers’ barns, where assembly will be organised close to the building construction site. In the case of loose straw, machinery will be used to blow the straw into the frames with predefined humidity and density levels.

Panels have a typical dimension of 3mx3m and a thickness of 40cm. The panels are then transported on trucks to the construction site. The panels can be lifted using vehicles with a telescopic arm and forklift. The panels have a weight of 1.5 to – 2 tonnes.

Economic and environmental benefits of the eco-innovative solution

The cost of a house constructed with this system is comparable with the costs of a standard building in the UK. The Flying Factory business model, enables significant reductions in manufacturing costs as savings can be achieved by using local skills, labour and materials. There is no capital investment cost required.

Significant energy savings can be achieved due to reduced heating and cooling requirements (up to 85% for the passive housing system) during the lifetime of the eco-innovative solution. In addition, compared to the use of fossil fuel based materials manufactured in centralised factories, the life-cycle costs are considerably reduced by the use of renewable materials for the construction and the localised manufacturing.

2. AVAILABILITY OF THE ECO-INNOVATIVE SOLUTION AND BUSINESS PARTNERSHIP

Market readiness, Trade mark, existing market coverage, commercialization strategy

Trade mark available: ModCell®. The system is already in use across a number of construction sectors and meets or exceeds the UK Building Regulation requirements. EuroCell achieved PassivHaus Component Certification and QMark product certification, which allows mainstream UK banks to provide mortgages for the ModCell construction system. The system has already been implemented in Spain where the experiences made demonstrate its effectiveness for Mediterranean climates.

Requirements to adapt the solution to the local market and potential applications/market size

With the concept of the Flying Factory business model, the components are generally locally available. The system uses glue-laminated timber which may need to be imported into North Africa, however, local spruce can also be processed and locally grown wheat straw can be used for the insulation.

On-site after-sales services support and the technical assistance requirements

In the full franchised license system, the technology owner will provide the necessary support. A licensee would have local market knowledge, the UK partner provides the system know-how.

Targeted local business partners

Potential local partners are local building construction companies with engineering know-how for the panel assembly and passive house construction/installation.

Type of local business partnership sought

Franchise/licensing