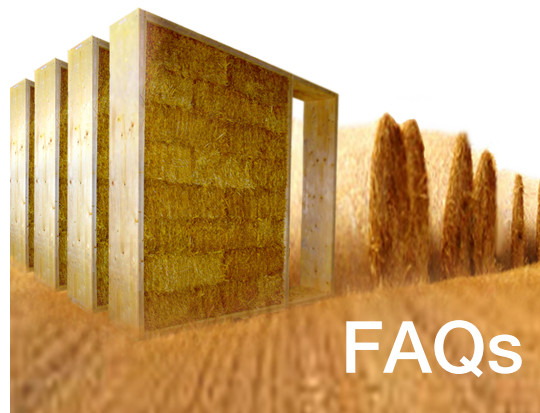




Balehaus

ModCell is a sustainable, prefabricated straw bale cladding panel designed for use in retail, offices, schools, housing, and commercial buildings.



ModCell® FAQs

What about fire? ModCell® Straw bales are tightly packed and covered with lime render. Fire needs a ready supply of oxygen to burn and, without it, no combustion will occur. The panels provide a near airless environment, so fire resistance is very good. Lime rendered ModCell® Traditional panel has a 2 hours and 15 minute fire certificate, over double the current UK Building Regulations requirement.

What about infestation? Straw contains very little nutritional value and will not, in itself, support a pest population. The density of straw discourages rodent activity. Infestation can only occur when a panel has been damaged and straw is open to the outer atmosphere. Lime render is aseptic, further reducing the possibility of infestation.

Won't the straw decompose? ModCell® panels are designed to be breathable and prevent the build up of humidity levels. It is high humidity levels that cause decomposition to take place. It has been established independently that straw has the potential to decompose when the moisture content exceeds 25% for an extended period of time. To

ensure a high level of confidence, it is generally accepted that straw moisture content should not exceed 20%. As a result of the breathable nature of ModCell® panels, moisture levels inside the ModCell® panel rise and fall in synergy with the surrounding environment, preventing the risk of decomposition. Research at the University of Bath has shown that the moisture content in ModCell® rises and falls on a daily basis with an average figure of 15%.

What about damp? ModCell® is delivered to site as fully closed and weather proof panels. Moisture content levels are measured at the factory gate. Research has shown that damp is kept at bay naturally as part of the breathable properties of the materials used.

What about mould? Lime is highly alkaline. The pH, moisture content and air change levels are not conducive to microbial and higher order animals.

What sizes do ModCell® panels come in? There are no standard sizes but the most common sizes are nominally 3.2 m x 3.0 m.

Can I get different sized panels than the standard? Yes, we can manufacture panels outside our standard sizes. If you require these please contact ModCell® to discuss your specific requirements.

How thick are the panels? ModCell® Traditional panels are 480mm deep. ModCell® Core at 400mm deep plus battens and cladding on both the internal and external face. ModCell® Core + 440mm plus internal battens.

Why are they so deep? this thickness accommodates standard size UK straw bales. To meet the same u-Value using brick, block and mineral wool insulation, the wall would need to be 533 mm deep, 53 mm thicker than a ModCell® panel.

Does ModCell® help towards the thermal mass of the building? ModCell® has an optimum combination of mass and super insulation.

What are the u-Values?

ModCell® Traditional	= 0.19
ModCell® Core	= 0.13
ModCell® Core +	= 0.11

Insulation values are nearly 3 times higher than current regulations require.

ModCell® panels can deliver an airtight construction to PassivHaus specifications if required. As a result, buildings using ModCell® can help deliver zero heat requirements, saving money and CO₂ emissions. BaleHaus® at Bath has an air tightness of over 10 times better than current regulations require at 0.86m³/h/m² at 50Pa.

What about Carbon? ModCell® panels are carbon positive. A typical ModCell® panel has the equivalent of 1400kg of atmospheric CO₂ locked up in its fabric. A typical two storey BaleHaus® of 94 m² banks almost 43 tonnes of atmospheric equivalent CO₂.

How are ModCell® panels made? The structural timber frame is 'infilled' with straw bales, which are stacked to form a wall, compressed and held together for stability. The wall is then either rendered using a protective breathable render, or clad with timber or other cladding materials

What are ModCell® panels made of? Straw bale, timber, lime render, breathable renders or wood cladding and small quantities of steel fixings. They are precision-engineered using modern methods of construction (MMC).

Are ModCell® panels sustainable? Yes, ModCell® panels are made from almost 100% renewable materials. ModCell® Panel frames are constructed using certified legal and sustainable timber using the CPET standard and include FSC or PEFC certification as standard. All straw, which is an annual 3m tonne by-product of the agricultural industry, is untreated and locally sourced. At end of life the panels can be disassembled and all elements either re-used, recycled, used as biomass or safely composted.

Is there waste from the manufacturing process? Straw bales are cut to size in the Flying Factory and trimmings and rejected material are composted, used

as bedding for farm animals or recovered as biomass. Cut materials from the frame manufacturing process are used in the factory's biomass boiler. Cut waste is minimal as each panel is CNC cut from larger sheets. Lime render is spray applied with almost no residual waste. Offcuts of stainless steel for the fixings are minimised by design but are collected and recycled.

Do ModCell® panels cut noise levels?

Yes they produce an reduction of up to 50 db.

How heavy are ModCell® panels? Weight varies by panel size. A fully rendered 3 m x 3.2 m weighs approximately 1.6t.

Are there different finishes available? Yes, natural coloured Lime render, Lime wash colour finishes, breathable renders, as used on ModCell® Core +, is available in a range of shades. Clients who want alternative finishes should contact us to discuss their requirements.

How do you incorporate essential services like power and data? Electrical conduit can be installed behind the lime render face in the flying factory. Alternatively ModCell® Core and ModCell® Core + allows for services to be installed in the void created by the battens between the internal face of the panels and the internal finish layer/plaster board.

Are ModCell® panels structurally load bearing? Yes. On commercial buildings ModCell® is structural up to 3 floors high. Over 3 floors progressive collapse design requires an independent frame into which ModCell® infill panels can be secured. For domestic construction ModCell® can be used for structural load bearing and stabilisation and are structural up to 3 floors high.

How high can you build with ModCell® panels? There is no limit to the height of buildings in which ModCell® can be used.

Can I use ModCell® within a structural frame? Yes, ModCell® can be used with timber, steel and concrete frames as infill panels.

What is the lead time? 12 - 16 weeks from confirmed order.

Do you build ModCell® panels onsite? No, ModCell® is an offsite prefabricated panel system.

Where are ModCell® panels made? ModCell® Panels are either fabricate in a central manufacturing unit or within a local 'Flying Factory™'. If 'Flying Factory™' option is chosen we work with local farmers to identify a source of straw and a suitable location to assemble ModCell® panels, normally within 3 - 15 miles of the construction site. By using local skills labour and materials, we keep more of the project's value within the local economy and reduce CO₂ emissions.

What quality controls do you have? ModCell® panels are entirely manufactured and assembled under controlled conditions. The quality of each panel is assured and signed off at various stages during manufacture. ModCell® is delivered to site as fully closed panels. Moisture content levels are constantly monitored throughout the manufacturing and delivery process.

How long do ModCell® panels take to install? ModCell® is delivered to site in nominal 3 m x 3.2 m panels. A typical 3 bedroom house can be erected and made watertight in 3.5 days. Final finish coat of render, if required, is done at a later date.

What equipment is needed to install them? On construction site – Crane or telescopic lifting device. Scaffolding or cherry picker.

Can I buy them in kit form? No. Currently manufacturing quality controls prevent the manufacture outside of factory environments. Although we are happy to engage with community groups and individuals who want to assemble panels. This would be after appropriate training and supervision.

Do you supply to self builders? This is dependent on the size of the development and will reviewed on a case by case basis. Additional traveling distances from a Flying Factory™ may have an effect on cost per unit and an increase in CO₂ emissions.

What delivery packages does ModCell® offer? ModCell® is able to offer a number of delivery packages including: Supply only; Supply & Fit; Design & Supply; Design only; Design, Supply & fit.

How much do they cost? Costs are dependent on panel type and panel design. Please call to discuss.

What other services can ModCell® provide?

CPD training on the ModCell® system.
Full design indemnified architectural and structural engineering services.
Energy strategy and modeling.
Sustainability consultancy.
Offer advice and guidance to existing design teams.

How long do they last? Life cycle would be the same as a traditionally constructed building. At end of life they can be easily reused or disassembled. Straw and wood are biodegradable and can be used as biomass. All metal fixings can be recovered and recycled. There are a thousands of straw bale buildings throughout the world, some of which are over 120 years old.

Where can I get my building insured? There are a number of insurance brokers who offer insurance, an example is M & DH Insurance Services Ltd (www.mdh-insurance.co.uk).

Do you supply complete building packages? Yes ModCell® are able to offer a number of different whole building solutions across market sectors. Please see the following brochures for more information:
ModCell® Renewable Schools;
ModCell® Renewable Retail;
BaleHaus® by ModCell®.

Where can I see one? There are a number of locations in the UK. These include:
Nucleus Building Hayesfield School, Bath
Inspire Bradford Business Park, Bradford.
May Park Primary School, Bristol
Weydon School, Farnham, Surrey.
Straw Bale Café, Holme Lacy Hereford.
Waterfoot Primary School, Waterfoot.
Castle Park Primary School, Caldicott.
Think Low Carbon building, Barnsley.
LILAC CoHousing Project, Leeds.
Faculty of the Built Environment, UWE, Bristol.
Torfaen EcoBuilding, Cwmbran.
York EcoDepot, York.
Knowle West Media Centre, Knowle West, Bristol.