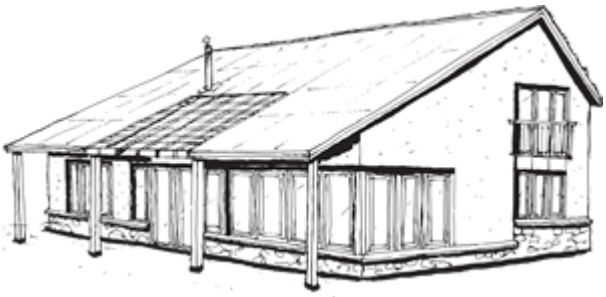
LOWEN – OUR NEW ECO BUILD

(Lowen means happy in Cornish and Low-En is obvious!)



October 2010

Dave and I have been passionate about making our business as sustainable as possible and have been working hard to implement as many resource saving measures at Bosinver as we possibly can. Now we are going a step further by building a zero carbon house from scratch. The brief is for the house to be self sufficient in energy by using the heat from the sun and the ground to heat the house and provide hot water (even more than that Lowen will send surplus electricity back to the grid) We are also aiming to prove that it is possible to build a house that is no more expensive than traditional builds (we have already built 14 houses here at Bosinver in the past 10 years so we know what they cost!) We are also building it ourselves with the help of local skilled craftsmen and trying to source all materials locally, using recycled wherever possible.

Our younger son Mark is a Chartered Engineer and he is Project Managing the build using his knowledge of sustainable building techniques plus his youthful energy and enthusiasm!

We have been discussing a project like this for some considerable time but were finding it difficult to find help and advice as to materials and techniques. With the advent of the Government's Feed in Tariff, all of a sudden the costs became manageable and a plethora of new products came onto the market. I must say the research has proved difficult at times because there is now so much choice and relatively few buildings with track records to study as the technology is so new. If we had wanted to build an EcoCube or PassiveHaus, it would have been simple as you more or less buy those off the shelf. We wanted to build a house in Cornwall, to fit in with our own Cornish village in a hidden rural valley close to the sea and that meant an entirely different (and often more difficult) approach.

Lowen will be constructed using straw bales in a timber frame and lime rendered inside and out. It will produce power from photovoltaic panels on the roof, hot water from evacuated solar tubes and the house will be heated by a ground source heat pump drawing energy directly from the earth. Rainwater from the roof will be captured and used for toilet flushing. Its roof will be turfed

with Cornish plants which will act as insulation and also provide a valuable habitat for insects and other wildlife. All the environmentally friendly materials will be sourced from local suppliers and Lowen will be built using local skills.

We want to make this eco build a proper demonstration project and we're determined to be as open and transparent as we can about costs, materials and more to ensure it helps and inspires as many people as possible – not only our guests but others in the tourism and building industry too.

By building a new, fully sustainable holiday we will be aiming to provide a truly green holiday experience to our customers which demonstrates that you can live in eco buildings affordably without sacrificing creature comforts.

So far we have laid the foundations and erected the giant timber frame. The beams for this were sourced from a local reclamation yard.They were part of the recently demolished St Lawrence's hospital in Bodmin and have probably been holding up that building for 100 years or more.

We had to erect a temporary workshop for our brilliant local carpenters to work on the beams – they were too big to move. As they (George Edyvean and his brother John) were cutting joints in the timber I was able to count the rings on just one of the beams which was almost a whole tree. There were 265! That plus 100 means the tree was alive in the 1600's – wow that beats stress graded timber from B&Q!

We will be putting the roof on next and I will upload some video for you to watch. If anyone is interested and would like to come and watch or join in the straw bale build in January, let us know. 0172672128 or email reception@bosinver.co.uk.

21/12/10 This week saw the erection of the roof trusses and the bolting together of the timber frame. We had to buy a scaffold tower to enable the safe lifting and handling of the frames but luckily we found one advertised in the local paper for £150! Work has slowed down recently as the weather has been a real problem with temperatures below freezing most days with snow causing hazardous driving conditions. Several of us have been off work with flu like symptoms and George has had to go and make some windows to keep the rest of his customers happy.

I have been really busy in the office trying to source ethically made furniture - what a nightmare! Obviously the best way to go is to reuse existing products and give them a new lease of life - down in Cornwall we do not have a great fund of second hand furniture, although I already use old pine chests of drawers and wardrobes in the existing cottages wherever possible. I have found a great deal of 'greenwash', especially in the larger furniture stores I visit. They claim to use FSC wood in their products but when pushed to provide a certificate to prove it, they suddenly lose interest and cannot give me a guarantee. I am trying to save road miles too, trying to source the furniture as close to home as possible and my latest thoughts are to see if I can get a carpenter to make some furniture using the offcuts from our giant beams - the wood is quite beautiful - seasoned and rock hard - watch this space!

The one thing I am beginning to realise is that we as consumers are not using our purchasing power to demand change. Asking for FSC wood is one minute speck in the ocean of the supply chain. Shop managers are saying 'We've never been asked that question before' so obviously unless they are passionate about protecting our fragile planet too, there is no incentive for them to pursue that route. If we step up and demand it be done or we will go elsewhere, it will happen. We can make a difference and it is more effort but if more people try, change is inevitable. Money talks. If you are interested in the debate over where we source our wood and other raw materials, please visit www.ethicalconsumer.org for up to date information on products and suppliers and what you should be looking/asking for when shopping.

6/1/11 Yes, we have been working over Christmas! George was keen to get back to business and was here on 29th December. The weather was dry and we were able to get on with getting the floor joists in. The width of the beams gave us a headache in one direction - not enough room for the stairs, so back to the drawing board and a reorganisation of the upstairs layout. All in a day's work!

18/1/11 Rain, rain and more rain! Mother Nature has been making up for our glorious cold and frosty November and December. We've had gales, floods and mud, glorious mud up to our armpits. We had a massive push to get the plywood and Tyvec on the roof before the rain but we failed and for several

days Paul and Colin our stonemasons have had to stop work and stay at home as the cement was washing out of the joints in their wall. We now have a roof of sorts and I must say that the building is starting to look like a house at last!

Dave and Helen have been cutting stone for facing the block walls at the base of the building. It has come for Trecarne Quarry near Delabole on the North Cornish coast.

Mark is struggling with the requirements for the Code for Sustainable Homes which we are trying to comply with to get our zero carbon rating. Construction and use of our homes has a range of other environmental impacts,created for example through water use, waste generation and use of polluting materials, which can be significantly reduced through the integration of higher sustainability performance standards within the design of a home. More sustainable homes can also provide us with improved overall wellbeing and quality of life.

The Code for Sustainable Homes has been introduced to drive a step change in sustainable home building practice. It is a standard for key elements of design and construction which affect the sustainability of a new home. It will become the single national standard for sustainable homes, used by home designers and builders as a guide to development, and by home-buyers to assist in their choice of home. It will form the basis for future developments of the Building Regulations in relation to carbon emissions from, and energy use in homes, therefore offering greater regulatory certainty to developers. And in this era of environmental awareness amongst consumers and increasing demand for a more sustainable product, it will offer a tool for developers to differentiate themselves

There are endless boxes to tick, made more difficult by the fact that Lowen is going to be a country holiday cottage and therefore not requiring an office or a lockable bike store or security floodlighting that a city home may need. The system seems to have been designed with large building sites in mind and no allowance made for the single homebuilder.

Nevertheless, we will plough on as at the moment it is the only official recognition body of the environmental considerations we are making in the construction of Lowen.

High pressure is back and we are working in the dry with sunshine as a bonus. The snowdrops are out, the nights are getting shorter and the birds are nesting. Spring must be just around the corner!

27/1/11 Work is progressing well. George's neighbour has cut us some hazel poles and they are being mounted on the dwarf walls as pegs to fix the straw bales on. George and John have made some wooden frames to sit the bales on with pea gravel infill to absorb any water and prevent contact with the straw. The bales will sit on the walls and be contained within a vertical wooden frame, battened out lime plastered.

Microgeneration have been working this week and the solar thermal panels (to supply hot water) are mounted on the roof. They are putting the frames up for the photovoltaic panels (to generate electricity) and the panels should arrive this week. Dave and Mark have been busy sourcing reclaimed Delabole slate for the roof and have been struggling to get exact sizes and sufficient numbers - it's much more difficult than ringing builders' merchants and buying new!

Slates have been found at Truro Reclamation near Newquay and we start putting them on on Monday. Mark is busy planning the next phase of the build getting final quotes for plumbing, plastering, stairs, windows..... the list goes on!

We are planning to have an open afternoon next Saturday 5th February from 1-5pm. If any of you are interested in coming along to see for yourself, please let us know by telephoning 0172672128 or email reception@bosinver.co.uk

04/02/11 Unfortunately we have had to cancel our open afternoon as Mark has broken his arm. We'll try and rearrange as soon as we can - watch this space for more details.

10/02/11 The house is really starting to take shape now with the photovoltaic panels up on the roof.

The straw bale walls are growing higher every day. Before the bales can be put in place, we have to make a frame to slot them into. Each straw bale has to be cut to the right size and shape and then positioned in the frame and staked in place (using a long wooden stake and rammed with a mallet - interestingly named a 'persuader'). It's important to get the bales to fit snugly as they will bear the load of the house. Already you can feel the difference it's making - it's been wet and windy recently but when we've been working inside the house behind the straw bales it's much warmer there.

Working with straw bales has several advantages. Straw is sustainable as it's an annually renewable product, it's highly insulating (both for warmth and acoustically) and once plastered the walls are less of a fire risk than traditional timber frame. It is low cost, structurally sound and provides a healthier living environment with no associated toxins and pollutants used in conventional building construction.

22/02/11 We've now got a specialist team from Natural Building Solutions working on the lime rendering. Straw needs good ventilation around it to stay healthy and the weatherproof material must also allow it to breathe so the ideal finishes are traditional lime or natural clay painted with limewash or breathable paint.

Once the straw bales are in place, the lime render is sprayed on top, as you can see in the pictures below. You can trowel the lime on but spraying helps it adhere to the straw better. As they apply the first coat of lime render, a fine mesh is pressed in for reinforcement. Two more coats are then sprayed on.

It's fascinating watching the process take place - with each step Lowen feels a bit more like a house.

We've now completed the installation of the photovoltaic panels on the roof. Photovoltaics (PV) is a method of generating electrical power by converting solar radiation into direct current electricity using semiconductors.

The electricity that Lowen produces from the sun should be approximately 9 kilowatts which will be fed back into the grid and should be enough to power itself and two other homes.

10/03/11 Lots has been happening with Lowen this week! The lime render, both inside and out, is now almost complete, thanks to the hard work of the Natural Building Solutions team.

The thermal store has been delivered. It's huge, and because of its weight we had to plan very carefully where we could put it. This will store the heat from the ground source and solar thermal panels and provide hot water for Lowen. We'll be installing it in the next couple of weeks.

The plumbers and the electricians have also started doing the 'first fix'. We've had the electricity connected to Lowen - we've had to upgrade our systems to allow us to export the amount of electricity we'll be generating. As we'll generate a lot more than we need to run Lowen, we're looking into ways to export the electricity to other cottages and offset their demand.

It's looking a lot less muddy up on site now. We've had some of the landscaping done for the car park and the garden, which has enabled us to start work on the shed to house the heat store, logs, bikes and recycling bins.

15/03/11 The lime render is now finished and we have limewashed the walls to make them watertight. They'll be painted later on. Work's also finished on the roof - we put the ridge tiles on at the end of last week.

Today we've started work on the underfloor heating. First we had to put down the insulation, which is 150mm/6 inches thick. The underfloor heating system goes on top of this. Once this is finished, the next job is to get the floor screed done. Looking forward, the next jobs will be to get the renewables connected up and commissioned, put the veranda up and finish the landscaping. Then it won't be long till we can start on the internal decoration and fit out.


23/03/11 The scaffolding's just come off and Lowen's looking lovely in the sunshine today. Paul and Colin are hard at work landscaping outside - as you can see from the photo below, while the rest of the team is putting the plasterboard up inside. The shed to house the thermal store, firewood and bikes is also finished externally. Pat's already thinking about the interior fixtures and fittings, from bathrooms to furniture and decor and trying to source FSC certified furniture. She's also just found some amazing lampshades- it's all those little touches that will turn it from a house into a home. It won't be long now!



28/03/11 This week we've been installed the ground source heat pump. Ground source heat pumps extract heat from under the ground (through 'slinkies') which can then be used for space and water heating. They are an efficient, renewable way of heating space, particularly when combined with underfloor heating.

Here you can see the 'slinky' coils being put in. They are flattened coils of overlapping piping, which are buried in trenches beneath the ground and connected to the pump.

Mark's busy getting ready for the upcoming Code for the Sustainable Homes inspection. Next week, the plasterers are due to return to start on the inside of the house.

07/04/11 We're now working on plastering the inside of the house - as you can see from the pictures, the interior is really starting to take shape. Windows are arriving next well, and once those are in it will give Lowen more definition. Paul and Colin have done a great job on the porch, and Mark's currently sanding it ready to put the finishing touches to it.

14/04/11 Most of the windows are now in!

We're continuing with the landscaping and creating what will be Lowen's driveway, using a permeable paving system. Once the surface has been prepared, a framework of plastic mesh is laid down and then covered with small pieces of stone. This provides a surface that is firm enough to drive over, but still allows and even aids natural drainage, unlike using tarmac, concrete or paving tiles.

26/04/11 Work continues in the glorious sunshine! Lowen's windows have been made by David Salisbury Conservatories out of carefully selected FSC certified hardwood sourced from well-managed forests. They are entirely bespoke, created to suit the ethos of the build. David Salisbury's green credentials are second to none, and recycling and reducing waste is an integral part of the way they run their business, from using waste timber shavings to generate heat for their paint plant and factory to filtering and reusing spray from their spray plant and recycling packaging.

It is very heartening to find a company like this who are so committed to reducing their impact on the environment wherever possible.

10/05/11 The end is now in sight! The team is busy putting the finishing touches to Lowen, from tiling the wetroom with beautiful mosaic tiles to putting in all the light fittings. Pat's still busy sourcing all the furnishings and interior decoration. From the samples we've seen so far, Lowen is certainly going to make an impression! We'll post more photos as soon as we have them, but for now, here are some of the latest images of the cottage.

One of Lowen's quirky features is the small cut-out internal window, which shows part of one of the straw bales that Lowen's been constructed with.

24/05/11 Lots of activity happening in Lowen at the moment, from finalising the electrics inside the house to tiling the bathrooms and laying carpet. The landscaping is going well, as you can see from the pictures below. Chris has created some lovely looking beds which will continue to grow and develop.


The wetroom downstairs has been tiled with some beautiful turquoise mozaic tiles and there are some beautiful handmade wardrobes made by local carpenter John Edyvean in place already. Some of the artwork has started arriving, and we were particularly delighted with the arrival of the cows...watch this space for more details soon!


*****ECO-BUILD OPEN DAY THURSDAY 2 JUNE*****

If you'd like to have a look around Lowen and find out more about how we built it, come along to our Open Day on Thursday 2 June, 11am-5pm. We'll be doing tours every hour from 11am, and there will be light refreshments available. For more information call us on 01726 72128 or email reception@bosinver.co.uk. We hope to see you there!

2/6/11 Our Open Day has arrived! We'll be on **BBC Spotlight at 6.30pm this evening.**

If you'd like to find out more about exactly how we built it, including all the suppliers we used, download our Lowen info pack.

Here's a sneak preview of Lowen's interior. To see all the photos, go to www.facebook.com/bosinverholidaysincornwall and look at the Lowen album.

15/06/11 Hill Tribe TV recently filmed Bosinver as a case study for Business Link. See Pat talking about researching renewable technology for Lowen and get a glimpse of the construction process.

2012 updates

Feb 2012
At long last we have finally achieved our Code for Sustainable Homes Grade Level 5!

June 2012
Lowen has a 6 page spread in Ideal Homes Magazine.