

The house that *hemp* built

Cousin to the dagga plant, hemp has 101 uses – and could even prove to be the perfect green building material!

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Photographs: Francois Oberholster



Linear and contemporary, this ecofriendly house appears larger than its 187m².

LEFT Proud homeowner Tony Budden.

Practically everything in the house is from a renewable or sustainable resource, from the hemp carpets (from Coirtex) to the cork floors and an ashwood staircase. >>





Hemp predominates in the lounge: the built-in sofa is made of hemp fibreboard with a veneer layer and the curtains and scatter covers are made of hemp material – as is the artwork!

Serious savings

The house cost about R7 500/m² to build; R10 500/m² with finishes, which compares favourably with building costs in Tony's neighbourhood of about R12 000 to R15 000/m². Yet it was not intended to be a low cost project. 'Building was quite stressful at times because our local builders were not familiar with this method,' says Tony. Fortunately, he had regular email consultations with the experts he met at the International Hemp Building Symposium in Ireland two years ago.

If you thought hemp was just another word for marijuana, think again.

While the two are related, it's how they're cultivated that sets them apart. And not only does hemp contain minimal THC – the psychoactive compound found in marijuana – but it is also as incredibly versatile as bamboo, if not more so. With the soft, durable fibres of the *Cannabis sativa* plant you can make anything from carpets, curtains and clothes to beauty and food products such as hemp seed oil; the seeds are rich in omega 3, 6 and 9 fatty acids.

You can even build a house with it.

This is exactly what Tony Budden and Duncan Parker of Hemporium did in Noordhoek, Cape Town, along with Erwin van der Weerd of Perfect Places. They wanted to prove that hemp is a successful alternative building material and that you can move away from mined materials and synthetic materials to renewable resources.

Apart from hemp, several other building methods were used to ensure the house is as ecofriendly as possible.

Structural significance

The structure is completely modular – all the panels are made in a factory within two-and-a-half weeks and brought to the site to be put together. The walls consist of four layers: the outer part is made of magnesium oxide (mgo) panels, followed by a breathable foil membrane and a double layer of hemp insulation – hemp particle board panels were used inside. 'Ironically, the magnesium oxide comes from South Africa, is exported to China to be processed and then the completed mgo panels are bought back! We really hope this practice will be stopped in future,' remarks Tony.

Some of the walls have been built with 'hempcrete' – a natural cement made from the stalk of the plant and lime. The walls are 'carbon negative' and more environmentally friendly than conventional building materials like brick and cement.

And though they're barely 20cm thick, the walls breathe – so they keep cool in summer and warm in winter.

Painted in a durable, water-resistant non-toxic paint from B-earth, the walls only have to be repainted every four to five years, as opposed to other ecofriendly

paints that have to be repainted annually.

As the roof is flat, a special scaffold had to be installed to accommodate the solar geyser. And a vygie garden on the roof also adds further to energy consumption savings.

The interior walls

The interior walls were finished with a layer of hemp screed. This mixture, consisting of chipped pieces of hemp stalk mixed with lime and sand, has thermal and humidity properties that ensure it's not nearly as cold as a cement wall. 'Our electricity bill was only R450 per month in winter, as only one wall-mounted heater was necessary to heat the whole house,' says Tony who shares the house with his partner Melanie Ravot. Other walls were painted with paint from B-earth and as the hemp screed is not suitable for kitchens and bathrooms, tiles were used there.

Old Oregon pine ceiling panels were reused as cupboards and sealed with a non-toxic product from B-earth to preserve their natural look. The recycled counters are from Cannata, the hemp chandelier is from Moonbasket and the tablecloth from Hemporium.



How does hemp work?

Insulation mats are made of the strong long hollow fibres of the hemp stalk (1), while the rest of the chipped stalk is mixed with lime to make bricks (2) or compressed into particle boards (3 and 4). The shavings are also mixed with a lime-based binder to use as screed.



After much deliberation, good old SA pine was used for the deck as it's not on the endangered list.

Innovative viewpoints

The double-glazed windows are filled with gas that prevents heat from escaping. 'Initially it was a big expense, but you definitely save energy with time,' says Tony. In addition, the windows are automated with a thermostat and the temperature is regulated by opening the windows on the cooler or warmer part of the house; this system was installed by Green Wind Power Automation.

Floor finishes

Cork flooring was a logical choice because cork is a sustainable renewable source as only the stem is harvested. Cork is extremely durable, soft and anti-allergenic and has excellent insulating properties. But as it has to be imported, the carbon footprint is quite high.

Light on track

All the light bulbs in the house are energy-saving LED bulbs supplied by Earth Power. Large windows on the south side ensure a beautiful view of the Noordhoek beach while small windows were used on the north side. >>



The bed is made of bamboo and all the bedding, of hemp.

Tony and Erwin's green tips

- Do not pressure yourself to be 100% green. Use what you have rather than not trying at all. As the industry grows, we will have more options and the costs will decrease.
- Sustainability is more important than simply following an ecofriendly trend – use environmentally friendly paint that has to be reapplied every three to five years rather than one

that has to be applied annually – it will cost you five times more and uses more energy to manufacture.

- The most sustainable thing you can do in your house is to insulate it. About 20% of a home's heat or coolness is lost through the roof.
- Choose double glass for your windows.
- Wood panels for interior walls will assist with insulation and can be added later.



Tony's study (above) have hemp particle boards veneered with a thin layer of wood on the walls, ideal for insulation. The bath (below) is clad in bamboo, enhanced by water-saving fittings from Hansgrohe.

The future of hemp

'More and more, hemp is being seen as the "better than zero carbon footprint" building method to consider,' says Tony, 'yet it is still almost impossible to grow commercially in South Africa – even though it's being cultivated in more than 40 countries worldwide.' All the hemp used to build this home had to be imported from France.

The Department of Agriculture recognises hemp as an agricultural crop, but legally there is still no distinction between dagga and industrial hemp. However, efforts are being made to have legislation amended in order to create a hemp industry. Hemp can be grown and harvested within four to five months; seeds can be harvested in six months. This is an annual plant and it uses a rotation system. No pesticides are used and it is only fertilised once. Hemp can be used as a renewable source for paper, fuel, textiles, building materials, food, beauty products and more.

Great green contacts

- **Hemporium 021 762 4380, hemporium.com** for hemp fabric and products.
- **Perfect Places 0861 002 025, perfect-places.co.za** for modular ecofriendly houses.
- **B-earth 079 900 0218, b-earth.co.za** for ecofriendly paints and sealers.
- **Massclusivity 076 290 7120, dgglass.co.za** for double glass windows.
- **Green Wind Power & Automation 072 479 4215, greenwind.co.za** for automated windows.
- **Coirtex 021 762 2227, coirtex.co.za** for hemp rugs.
- **Cannata 021 510 8553, cannatagranite.com** for recycled kitchens and countertops. 🏠

