From sheets to shapes

Words by Florian Sturm - **Images by** Yvonne Witte / Wikkelhouse

A decent-size box, a pair of scissors and the imagination of a child. That's about all it took to turn a cardboard box into a house when we were children. Whilst the concept has grown – just as we have – cardboard homes haven't really made their way into the adult world.

Two guys from the Netherlands – you can call them entrepreneurs, inventors, makers or simply visionaries – have now merged this childhood utopia with sophisticated engineering. René Snel and Oep Schilling designed and developed the Wikkelhouse – the world's first eco-friendly modular home made primarily out of corrugated cardboard. And it all started with a tomato box...

Just before the turn of the millennium, René, who has a professional background in paper packaging, held one of these boxes he had developed in his hands. His was different to the ones already on the market: Instead of folding the cardboard at the edges, he took a mould, wrapped three layers of cardboard around it and glued them togethers. As a result, he ended up with a much more stable and durable box. Of course, the industry didn't really like it. Well...René did and thought: If walls can be so light and strong, with such good static and insulation qualities, why not build an entire home out of it? A modular house which is based on the very same concept of wrapped cardboard as this tomato box.

By 2002, René had laid the groundwork for the Wikkelhouse (the Dutch term "wikkelen" means "to wrap"). He had done the maths, figured out a way of making it waterproof and shown the ingenuity to invent a machine which produces the individual modules. In fact, he was even able to put the machine onto a truck so the segments could be manufactured directly on site.

How the Wikkelhouse Works

If you stay in a Wikkelhouse you're staying in the world's first modular home made out of cardboard. Each segment is 3.5 metres high, 4.5 metres wide and 1.2 metres long – giving it a floor space of 5 square metres. By adding segments, you can make your house as big as you like. Each segment weighs about 500 kilos and consists of 24 layers of corrugated cardboard which are wrapped around a special mould and glued together. The structure of the cardboard itself – with tiny, stationary air gaps within each layer – gives it enormous strength and great insulation qualities. At first, 120 metres of cardboard are wrapped around a unique, rotating house-shaped mould in 12 layers – which takes about 45 minutes. Then, slats of FSA-certified plywood are added to allow for additional stability of each segment, leaving gaps for electric cables and screws holding the segments together when assembled, before the final 12 cardboard layers are added. Manufacturing an entire segment on the machine takes about 6 hours. To protect it from rain, wind and UV rays, the team add a the Wikkelhouse raincoat – a waterproof but still breathable membrane shielding it from rain coming in and allowing humidity to leave the cardboard-wooden sandwich structure. Another layer of protection against the elements is the wooden cladding on the outside. The interior is customizable, windows can be put in pretty much as the owner likes and even a kitchen and a shower cabin are possible to make it a fully equipped home. As the Wikkelhouse is relatively light, it doesn't require a full foundation but is happy to stand on several concrete and wooden beams. Assembly is finished within in one day.

Prices start from 30.000 Euros for 3 segments – excluding transport and assembly. Fiction Factory give you a 10-year guarantee. Within that time, they come around twice to check if everything is intact. For the Wikkelhouse to last long, the raincoat is crucial: "To the best of my knowledge, I'd say the industrial Gore-tex lasts at least 15 years or more, depending on the location of the house and how well it is maintained and cleaned," says Oep.

The concept was revolutionary. Yet it never really caught on. The first attempt of the Wikkelhouse hasn't become a commercial success – because René was ahead of his time. "René's problem was that he conceptualised the idea before Al Gore had put environmental protection on everyone's agenda," says Oep Schilling.

You can safely call Oep the second father of the Wikkelhouse

Ten years after René had put the idea of his cardboard house to rest, Oep stumbled across it – and immediately fell in love. "I looked at it from a very different angle, though, and put my focus on the eco-friendliness of it," he says. In detail, this mainly meant: developing an environmentally neutral glue holding the layers of cardboard together (René had used a polyurethane version) and getting rid of as much plastic as possible.

Together with his team at Fiction Factory, a creative think tank based in Amsterdam which has been known for innovative furniture and exhibition design since 1989, Oep took almost four years to improve the René's initial concept. "At first, we had to learn really a lot about cardboard. It is just as alive as wood and comes in many different shapes and forms, each with different characteristics," he says. Initially, they experimented with recycled cardboard but realized it just wasn't strong enough. Then, the team had to invent an interface which connects the seams between the segments safely, think about the raincoat of the house which shields it from the elements, develop an interior which is functional and makes you feel comfortable at the same time. The final challenge was to find a solution for various technical elements such as proper ventilation, the heating, a shower cabin and a kitchen and making the house fully electric.

What Oep and his team came up with, is nothing short of remarkable. It's not only a prime example of how to construct an eco-friendly house (researchers of TU Delft actually ascertained that the footprint of building a Wikkelhouse is three times smaller than that of a classic wooden house), but it's also a place for the soul. "Most people are fascinated by the eco-aspect," says Oep, "but they often forget about its outstanding design and comfort." Pretty much everyone who sets foot into a Wikkelhouse, does so with a gentle but clearly audible "Wheeeewww" escaping between his or her lips. Shoulders falling down in relaxation at the same time, of course. With its wood panelling, the curved edges, minimalistic layout and unique design, the Wikkelhouse seems to welcome everyone with the intention to put minds at ease immediately, to let heart rates slow down and obstinate thoughts about the everyday problems vanish completely. "It just makes you feel good," says Oep.
Even though the house is currently also available in Belgium, Luxembourg, Germany, France and Scandinavia, the team have only sold units within the Netherlands and the UK. About 35 Wikkelhouses so far with ten more on the order list.

Just as the buildings themselves are unique, so are the spots where you'll find them: on a rooftop venue in London, as a university classroom in Amsterdam, as well as in the tiny-house-experiment in the Dutch city of Almere, in the midst of the wilderness of two Dutch national parks, in Amber Lakes near London or as an art studio in Dorset. There's even a floating Wikkelboat in the Rotterdam Red Apple Marina. Currently, a couple of projects in Germany are also being discussed.

Before we finished our conversation with Oep, he makes sure to add one thing: "I am definitely not an environmental activist, but we think that if you live in the wealthy part of the world and don't consider the environmental impact of what you're doing, that's just stupid." The Wikkelhouse also needs a raincoat and certain glues made out of plastic. And solar panels only have positive eco-balance at the very end of their life cycle, of course. "At the moment, we're just not that far advanced yet but we should keep trying until we're finally there. As long as we are able to sell enough houses, we'll always keep developing," Oep promises.

For him and his team, the Wikkelhouse is not just a revolutionary concept of alternative living but also an attempt to show what's actually possible on a larger scale. If a couple of guys in Amsterdam can build a house from cardboard, why can't our society come up with better solutions for the environmental challenges we face today?

To learn more about Wikkelhouse visit-wikkelhouse.com
For more of Florian's work visit - torial.com/en/florian.sturm