

# THE CARBOARD BICYCLE MADE OF RECYCLED CARDBOARD

By Kim Assaël

The [Cardboard Technologies](#) company, created by Izhar Gafni, Israeli engineer and entrepreneur with a passion for ecology, has developed and patented a bicycle made of corrugated cardboard, supplemented with recycled plastics and car tires and belts. The bicycle is perfectly functioning and above all durable thanks to the [origami folding](#) principles.



The idea was born in 2008 from the thesis of [Phil Bridge](#), a student at Sheffield Hallam University (United Kingdom), but his bike had still some metal components.

The new model of cardboard bicycle manufactured by *Cardboard Technologies* is stronger, lightweight but also resistant to the rainy weathers or hot summers. It is eco-friendly and all made up with recycled materials. It doesn't have any metallic part, neither the frame, nor the handlebars, nor the saddle or the brakes.

The bicycle can support a weight of 125 kg. Cardboard is indeed light and robust at the same time, being used to carry fragile objects. But despite its old origins nobody until today had ever thought to use it to entirely replace the metal.

Nevertheless, cardboard bikes include some plastic components made from recycled bottles and other waste. The chain is made from upcycled rubber. It took four years of testing and trials, but in the end, the technique of the various folds of cardboard in different directions, has been successful. The wheels have no tires so that they cannot be punctured.

The construction process foresees, as for the Japanese technique, many cuts and concentric folds in different directions to give strength by 2-3 times to its structure, making the material much more durable. Finally, it is treated with a special proprietary resin to become waterproof, and stronger towards the shocks. The only substance, which is not of organic origin, is a special lacquer used for the external painting with different colours.

When disposing the bicycle away it will be possible to give it back for re-cycling to the factory that produced it. As for the origami the shape is always recreated in a new life cycle, even the cardboard bicycle is intended to reborn, from recycle to bicycle, as in the best ecological traditions.

The finished bike weighs 9kg, the cost of production does not

## TECHNOLOGY WITH ECO-SHIC DESIGN

Recycled cardboard, reinforced by reused car tires and other organic materials. The result is an innovative technology, fire and waterproof, lighter and stronger than a metal alloy or carbon fibre, and so chip as to enable a low-cost mass production.



exceed 9\$. The cardboard bicycle can be easily produced in every interested country. The project is to create localized production lines around the world in order to provide low cost, bikes to families and individuals. The Cardboard technologies company also plans to work with development organizations interested in producing these bicycles to make them available, to people who do not have the means to buy them. It also plans to implement initiatives with the city administrations, to use the cardboard bicycles in the byke-sharing projects.



In all major cities, such as Tel Aviv, where the bicycle thefts increase exponentially, this new model aims to be so economic that become useless to steal it. The first commercial model was conceived as an urban means of light transport. It is already being projected an electronic version of the bike with a removable battery.



The largely automated production lines of the cardboard bike has the potential to reduce some of the 34 million tons of packaging waste [produced in the European Union](#) each year, generating jobs and providing social benefits for all concerned.

Five years after the initial launch and a long investment in research and development of prototypes, the company recently begun a mass production in Israel, with almost 500,000 bikes. The *Adult City/Urban Cardboard Bike* is scheduled for commercial release in 2020.



In addition to the bicycle mass production line, the Company is working in more different prototypes built with the cardboard technology. The *Cardboard Balance Bike*, wonderful tricycle for kids, is expected to be launched on the market, in early 2019.



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