

Kor Ecologic Urbee 2 car will move from 3-D printer to road

28 February 2013, by Nancy Owano



(Phys.org)—Let's put it simply. An engineer named Jim Kor is printing, as in building, a car. The Winnipeg, Manitoba, car visionary is responsible for the Urbee 2, being readied for the road, intended eventually as an about-town car, with three wheels, and built for two passengers. It looks like a big, shiny red bug cruising down the road. Interest grows in its means of production and implications for car manufacturing in the future.

If printing cars develop, conventional [manufacturing plants](#) might operate as very small "cottage" plants deploying lights-out manufacturing. Kor's company, Kor Ecologic, is responsible for the Urbee 2, described as strong as steel yet lightweight. (The motto for the company is "Reasonable Design.")

By using 3-D printing, there is a special focus on lightness but strength; he is creating large pieces with varied thicknesses. The Urbee's car body will be assembled from about 50 separate parts. The team's practice is to take small part from a big car and make them into single large pieces. The less

pieces, the less car weight. The lighter the car, the more [miles per gallon](#). The less spaces between parts and the Urbee becomes the more aerodynamic. The teardrop-shaped car has a curb weight of 1,200 pounds. The bumper, which is made in two pieces, required 300 hours to finish. The entire car takes about 2,500 hours.

The [printing process](#) to make the car is called Fused Deposition Modeling. (FDM), where one lays down thin layers (0.04 mm) of melted plastic filament. The FDM approach enables tight control by the designer, who is able to add thickness and rigidity to special sections. (Kor likes to compare the fender of a future Urbee with a bird bone. As shown in a cross section of a bird bone, he said there is bone only where the bird needs strength, and the FDM process can replicate a bird bone.) Kor has been printing the body pieces at RedEye, a business unit of Stratasys, which uses 3-D printers to produce on-demand parts and prototypes.

Kor Ecologic has drawn up specific design ideals that are applied to the Urbee car project. A few of them are highlighted here. "Use the least amount of energy possible for every kilometer traveled. Cause as little pollution as possible during manufacturing, operation and recycling of the car. Use materials available as close as possible to where the car is built. Use materials that can be recycled again and again.... Be simple to understand, build, and repair. Be as safe as possible to drive. Be affordable."

Kor does not have a high-priced toy in mind but rather an economy car. He has received orders for 14 cars. Most of the orders are from those involved in designing the car. Kor is presently planning to make one [car](#) and to drive it, when it is ready, with a partner, from San Francisco to New York City. They hope to do it on ten gallons of gas; Kor would prefer to use pure ethanol. They will try to prove without argument that they did the drive with existing traffic.

More information:

www.stratasys.com/Resources/Case-Studies/Urbee.aspx
www.urbee.net/home/

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