

Setting sail in an ecological 'Earthship'

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Could sustainable architecture address pollution, climate change and resource depletion by helping us build self-sufficient, off-grid, housing from "waste", including vehicle tires and metal drinks containers? That's the question researchers at the University of South Australia hope to answer in the *International Journal of Sustainable Design*.

Martin Freney of the department of Art, Architecture and Design has taken a critical look at the work of architect, Michael Reynolds of Taos, New Mexico, USA, who has experimented with radical house designs, and construction techniques over the past three and half decades. Reynolds designs incorporate passive heating and cooling, water catchment and [sewage treatment](#), renewable energy, and even food production. These houses, which Reynolds calls "Earthships" are essentially independent of external utilities and waste disposal. On the face of it, they offer, an environmentally benign approach to housing.

A common method of responding to unsustainable housing is to design an energy-efficient home using "natural building" methods, Freney points out. He adds that Reynolds has already demonstrated that essentially free building materials resulted in greater financial independence for the owner-occupiers of his houses and when he added off-the-grid power and water systems he found that it was possible to reduce his utilities bills to practically zero.

Freney, while enthusiastic about the potential of Reynolds' approach is also more realistic about the actual sustainability of Earthships that are off the utility grids. After all, he says, to a certain degree, Earthships are

still locked into potentially unsustainable systems because they rely on a technological society for the production of the vehicle tires and aluminum can bricks from which they are constructed and the high-tech components such as solar panels, electronics, pumps, tanks, glass and cement that allow them to go off-grid.

Freney, however, has studied the approach in more detail and suggests that the design of the Earthship could allow precious resources to be used more efficiently, effectively and durably than is possible with conventional housing. They could, he argues, "provide shelter for many decades, possibly even centuries, regardless of what happens to the infrastructure that is essential to the operation of a typical home in the developed world."

Further research is now needed to investigate thoroughly all aspects of sustainable architecture but the early indicators suggest that the Earthship model could be entirely viable "Earthship owners start to appreciate relief from financial stresses and from knowing that they have acted to address environmental problems," concludes Freney.

More information: "Earthships: sustainable housing alternative" *Int. J. Sustainable Design*, 2009, 1, 223-240

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