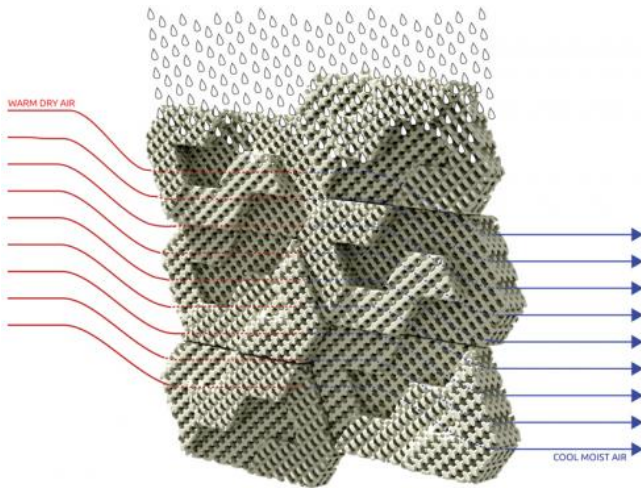


Showing the 3D-printed brick way to cool a room

4 February 2015, by Nancy Owano



Credit: Emerging Objects

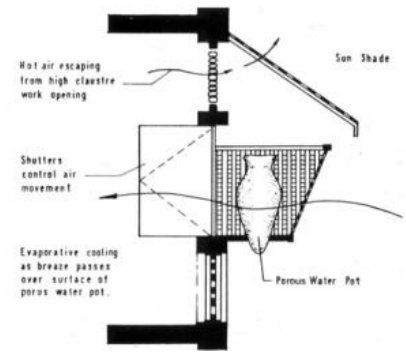
How about cooling a room with a 3D-printed ceramic "Cool Brick" using only water? This is an example of how 3D printing technology can take advantage of a known approach called evaporative cooling, which, long before refrigeration came on the scene, was used.

Evaporative cooling is the addition of [water vapor](#) into air, which causes a lowering of the temperature of the air. Emerging Objects, the company behind the Cool Brick, has used 3D printing to advance the method with the fabrication of their ceramic 3D-printed brick system. "Our Cool Brick couples 3D printed ceramics and traditional passive cooling strategies to [make](#) an innovative new building system," said Ronald Rael, one of the brick's designers, according to *3DPrint.com*.

As the Cool Brick site said, "Porous ceramic vessels were used to cool water by evaporation through their walls. Frescoes from about 2500 BC show slaves fanning jars of water to cool rooms." The company said their "Cool Brick" masonry

system can be used to build walls that passively cool interiors in desert environments. . These blocks can be put together to form entire walls which can be placed inside of a building. Comprised of 3D-printed porous ceramic bricks set in mortar, each brick absorbs water like a sponge and is designed as a 3D lattice that allows air to pass through the wall. As air moves through the 3D-printed brick, the water that is held in the micro-pores of the ceramic evaporates, bringing cool air into an interior environment, lowering the temperature, using the principle of evaporative cooling.

As *Inhabitat* pointed out, this could make a radical change to home energy use in arid regions. With only [water](#) needed, this cooling approach could eventually lead to reduced energy costs by reducing the need for expensive air-conditioning units. The printed bricks are modular and interlocking, and can be stacked together to make a screen. The 3D lattice creates a strong bond when set in mortar. The shape of the brick creates a shaded surface on the wall to keep a large percentage of the wall's surface cool and protected from the sun to improve the wall's performance. The brick system cools the room and also adds moisture to the air.



Credit: Emerging Objects

More information:

www.emergingobjects.com/projects/cool-brick/

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Inhabitat noted too that Cool Bricks have the ability to cool the [air](#) without removing [humidity](#) as well, making a separate humidifier unnecessary, eliminating additional energy costs.

Rael, the company CEO and cofounder, is associate professor of architecture at the University of California Berkeley. The bricks are on exhibit at the Museum of Craft and Design in San Francisco, as part of the "Data Clay: Digital Strategies For Parsing The Earth," which runs through mid-April. The company describes itself as "an independent, creatively driven, MAKE-tank at the forefront of 3D printing architecture and interior design."

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