Weeping Brick

The Modular Living Wall System Using 3D Printed Porous Ceramic Materials

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Abstract. The goal of this research is to design and fabricate a modular living wall brick system that purifies and cools air for various indoor environments. The research utilizes ceramic 3d printing techniques for fabrication; and living plants in conjunction with evaporative cooling techniques for indoor air quality control. The brick is made of soil which become porous after firing or drying. Water from the reservoirs slowly weep through the porous brick, creating a layer of water on the surface of the brick. The air movement around the saturated brick creates evaporative cooling and the hydro-seeded plants absorb water from the surface. The shape and texture of the Weeping Brick maximizes the cooling effect via large surface area. As an aggregated wall system, the water circulates from unit to unit by gravity through interconnected reservoirs embedded within each unit. The plants and moss transform the Weeping Brick into a living wall system, purifying and conditioning the indoor air.

Keywords: Living Wall System, Modular Brick, Ceramic 3D Printing, Evaporative Cooling