



The tile appears black and absorbs heat in the same way as regular terracotta roof tiles | Photo source X-Tile

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## WEATHER-DEPENDENT ROOF TILES CAN HEAT OR COOL A BUILDING

 PROPERTY & CONSTRUCTION

### The design helps homes better regulate interior temperatures and reduces the need for air conditioning

**Spotted:** A new roof tile concept, created by Polytechnic University of Turin student Manuel Ibba, changes colour when the temperature reaches 20 degrees Celsius. Designed explicitly to reduce carbon dioxide emissions from air conditioners and heaters, the tiles make homes and other buildings more sustainable by improving their energy efficiency.

Generally, the tile appears black and absorbs heat in the same way as regular terracotta roof tiles. Above 20 degrees Celsius, however, the tile fades to white, in order to start reflecting the heat away from the building. The tiles are painted three times over: first, with a layer of white thermo-chromatic paint, then a layer of black thermo-chromatic paint and finally with transparent glossy enamel. The tiles are then fired twice to set the paints.

Ibba's design was the Italian National Runner-Up in the James Dyson Award competition. His development plans for the project include reducing production costs and evaluating the longevity of the thermo-chromatic paint and enamel layers, with a longer-term goal of making the tiles available commercially.

Finding new ways to cool increasingly warm locations is the focus of several recent innovations spotted by Springwise. In the Bahariya valley in Egypt, an [energy-efficient design](#) used century-old building techniques to reduce reliance on electrical cooling methods. In Hungary and Taiwan, a [water-filled window](#) design improved buildings' acoustics and reduced their energy usage.

Written by: Keely Khoury

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Website: [xtile.org](http://xtile.org)

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### **Takeaway:**

Fatih Birol, Executive Director of the International Energy Agency, [calls](#) growing demand for air conditioners “one of the most critical [blind spots](#) in today’s energy debate”. As more electricity is consumed, greater proportions of household income are spent on cooling processes, and all the while, the world’s temperature continues to increase. As well as higher efficiency standards and stronger energy regulatory bodies, the most important task (outside stopping the rise in the Earth’s temperature) for innovators is to create new materials, processes and designs that find ways to heat and cool humans and their structures in a carbon-negative way.