



# FROM ART TO ARCHITECTURE: A SUSTAINABLE SWITCH TO COOLANT

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**In an age of rising urban temperatures and soaring electricity bills, ancient wisdom meets modern innovation to redefine the way we stay cool.**

In the sweltering summers of urban India, air conditioners offer instant relief. But this comfort comes at a hefty environmental cost. These devices are among the largest contributors to greenhouse gas emissions, releasing both CO<sub>2</sub> and chlorofluorocarbons (CFCs) into the atmosphere. Infact, air conditioners are estimated to consume nearly 20% of the total electricity generated in metropolitan areas. While they solve the immediate problem of heat, they quietly intensify the long-term issue of climate change the very crisis they were designed to help us cope with.

As our cities grow denser and hotter, the need to seek sustainable and climate-friendly alternatives becomes more pressing than ever. Fortunately, inspiration lies not just in new technology but in our cultural past.

Long before mechanical cooling took over our lives, traditional communities embraced

environmentally mindful ways to combat heat.

Among the most effective and beautiful solutions was **terracotta**, a material crafted from baked earth.

Deeply woven into the cultural and climatic history of Bengal, terracotta architecture thrived in the temple towns of Bishnupur between the 16th and 19th centuries. Originally used to depict religious narratives and folklore, these artistic creations served more than just aesthetic purposes. Their porous texture enabled natural ventilation, helping regulate indoor temperatures even in hot and humid conditions.

This architectural intelligence wasn't limited to Bengal. From the Indus Valley to Mesopotamia and Ancient Egypt, early civilizations used clay, lime, and mud in their buildings to create cool, breathable spaces without electricity or emissions.

Today, that same age-old wisdom is making a comeback—this time in the language of climate action. An innovative example of this transformation is '**CoolAnt**', a project by Delhi-based Ant Studio.

Drawing inspiration from evaporative cooling methods, they've created a system that uses terracotta cylinders arranged in a beehive pattern to cool the surrounding air.

Here's how it works: recycled water is pumped to the top of the structure and allowed to flow over the surface of the terracotta tubes. As the water evaporates from the clay's porous surface, it absorbs heat from the air, creating a cooling effect similar to how a clay pot keeps water cool. This system achieves a temperature reduction of around 9°C, offering an indoor environment up to 3–4°C cooler than the outside.

The use of clay is critical to this design. Thanks to its hygroscopic properties meaning it attracts and retains water clay keeps the system moist and efficient. A small 20-watt submersible pump ensures continuous water circulation. It's a brilliant blend of low-tech design and high-impact cooling elegant, sustainable, and rooted in tradition.

Despite some operational challenges, terracotta is emerging as a credible and scalable solution for passive cooling. In today's fast-paced world,

where aesthetics and functionality go hand in hand, this natural material offers an exciting alternative to conventional air conditioning. It provides not just comfort, but also a reminder of how traditional practices can help solve modern-day crises.

Looking forward, with continued research, advanced thermal modelling, and architectural innovation, terracotta-based cooling systems could become an integral part of climate-resilient construction—customized for urban apartments, industrial settings, and rural homes alike.

As we confront the realities of climate change and unsustainable energy consumption, perhaps the answers don't always lie ahead—but behind us. By listening to the past and embracing the legacy of sustainable design, we can create a future that is both cool and conscious.

Terracotta, once a humble medium for art and devotion, might just hold the key to revolutionizing the way we cool our spaces—naturally, beautifully, and responsibly.



The multipurpose Gallery House caters to a locality of Bansberia in India Image: Edmund Sumner



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