

Architect Uses Ancient Techniques to Cool Modern Building in India

Source: treehugger.com

Published: February 29, 2012



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[Lloyd Alter](#)

Kris De Decker of [No Tech Magazine](#) "refuses to assume that every problem has a high-tech solution", and points to yet another example of how low-tech solutions can work very well, without burning a lot of energy or needing a lot of fancy technology. TreeHugger has shown quite a few projects in temperate climates that use old tricks, but Jaipur, India is HOT, like 45 degrees C or 113 F.

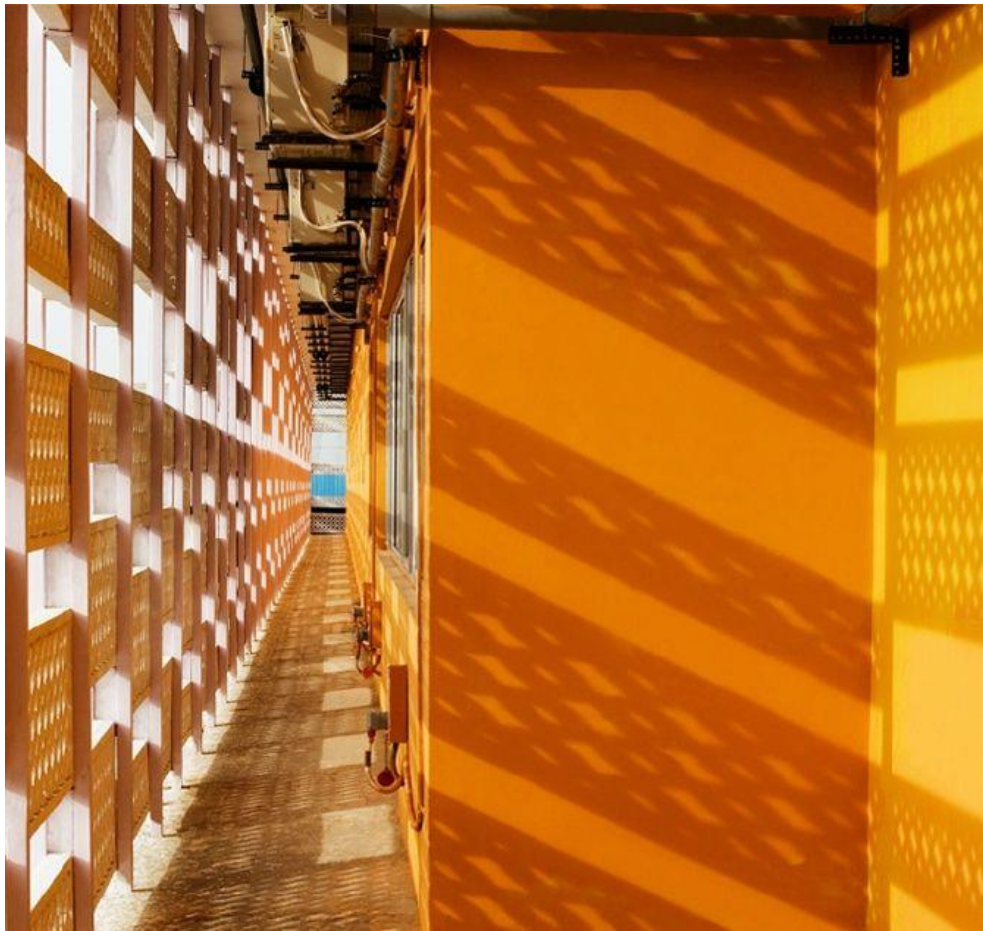
Architect Mani Rastogi or Morphogenesis designed the [Pearl Academy of Fashion](#) in Jaipur using a number of old technologies to create "an environmentally responsive passive habitat."

Using Proven Methods

The exterior is clad in a perforated screen, described by the architect:

"The building is protected from the environment by a double skin which is derived from a traditional building element called the 'Jaali' which is prevalent in Rajasthani architecture. The double skin acts as a thermal buffer between the building and the surroundings. The density of the perforated outer skin has been derived using computational shadow analysis based on orientation. The outer skin sits 4 feet away from the building and reduces the direct heat gain through

fenestrations, yet allowing for diffused daylight. The jaali thus, serves the function of 3 filters- air, light, and privacy.”



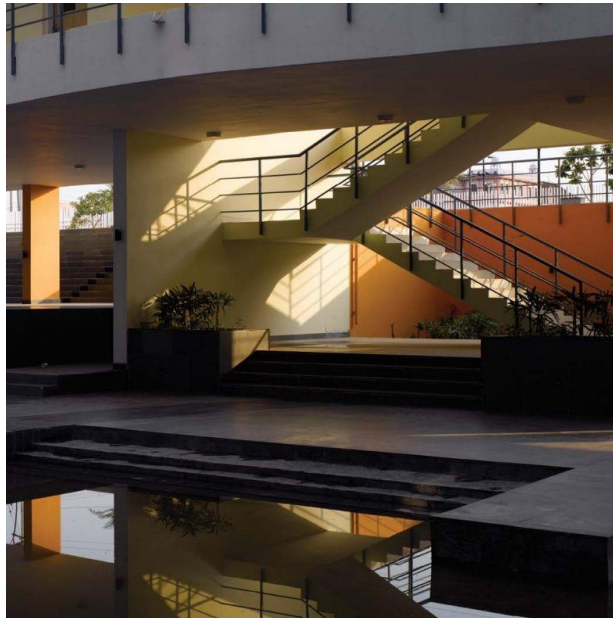
Other Cooling Architecture

A traditional way of cooling in India was the Stepwell, a pond dug into the ground or surrounded by walls above ground so that the air is cooled by evaporating water in an enclosed, shaded zone. Rastogi [tells CNN](#):

"How did they think up something so elaborate and yet so simple in its basic philosophy? "How do you begin to think that you can dig into the ground and use the earth as a heat sink, have access to water, put a pavilion into it so that its comfortable through the year? It takes a lot of technology for us to think up something that simple now."



Not quite as impressive as the [Chand Baori stepwell](#).

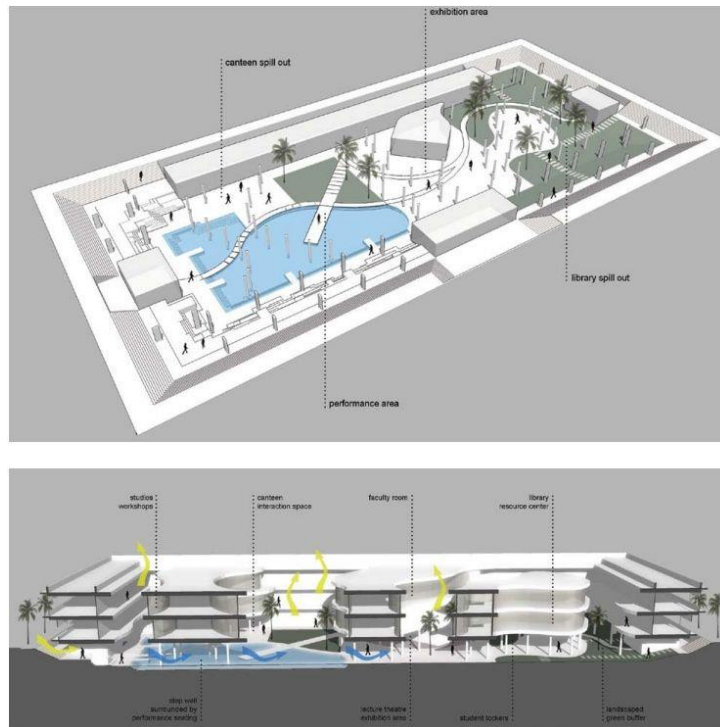


The architect writes:

“The entire building is raised above the ground and a scooped out under belly forms a natural thermal sink which is cooled by water bodies through evaporative cooling. These water bodies are fed by the recycled water from the sewage treatment plant and help in the creation of a microclimate through evaporative cooling.”

“The materials used for construction are a mix of local stone, steel, glass, and concrete chosen keeping in mind the climatic needs of the region while retaining the progressive design intent. Energy efficiency is a prime concern and the

institute is 100% self sufficient in terms of captive power and water supply and promotes rain water harvesting and waste water re-cycling.”



Before air conditioning was invented, people living in hot climates developed many different strategies for coping with heat, many of which have been forgotten or ignored. But what Rastogi [says about the Pearl Academy](#) holds true anywhere in the world:

“We've been able to demonstrate that good green building is not only cheaper to run; it's not only more comfortable to live in -- it's also cheaper to build.”