A modern and efficient way to beat the heat

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As Agni Nakshatram ends many generations would nostalgically recall Chitra Pournami and Nila Soru at Marina Beach. People managed entire summers with fans and sea breeze. Nowadays we gasp for air conditioning at every turn to make life bearable. Cold chains and refrigeration are critical components to agriculture. Without air conditioning, data centres, server rooms and the internet would crash! Soon the energy demand for cooling could outweigh that for heating.

Fuelled by rising temperatures and a rapidly expanding middle class in all types of climatic zones of Asia and Africa, the surge seems frightening and insatiable. The Asian land mass blocks cold polar ocean currents from connecting, and northern Indian Ocean is actually warming faster, causing the Arctic to lose ice cover faster. Global Environment Facility funded by Rockefeller Foundation has identified Chennai for international assistance to mitigate flooding. Their experts warn Chennai could be sinking!

Not long ago, bedrooms were alone fitted with air conditioners, but of late living, dining and even kitchens are being temperature controlled. As all the spaces are used at different times of the day, a plethora of equipment have been developed with new technologies and improvised features. Window air conditioners that cooled one room gave way to high wall split units, which evolved into ductable splits with variable speed compressors. It seems the most efficient way at present is to cool an entire building with a central system instead of having individual units for each area. Chilled water exchange their cool with the air circulated inside different rooms of a building thereby providing thermal comfort to residents.

One system of cooling which offers up to 40-60% energy savings in large developments or new cities is district cooling. Paris, Singapore, Hong Kong and Dubai are some examples of cities that have deployed this new technology to reduce energy use and carbon emissions. A recent mandate in Malaysia along with the UN Environment led District Energy in Cities Initiative announced a slew of planning guidelines and policies to encourage adoption of district cooling systems.

At the heart of this new idea are giant compressors powered by renewable energy which are cooled by recycled and treated water recovered from municipal sewage. A network of underground pipes, pump cold water to multiple buildings in a district, neighbourhood or city. The entire process is managed by complex integrated building management systems to achieve cooling at optimal costs and energy efficiencies. Boasting many advantages such as lower maintenance, better reliability, longer life of equipment and decreased life cycle costs, these systems are slowly gaining popularity in new urban developments. The reduction in energy saves money to the benefit of both customers and producers alike. Besides they reduce dirty power generation and thereby protect mother earth and humanity.

The world faces a looming “cold crunch”, with demand for air conditioning and refrigeration growing so fast that it could smash pledges made to contain carbon emissions. The challenge is to efficiently cool several buildings in a given area without overdrawing resources and becoming part of a larger problem. GIFT in Gujarat is among the first to attempt district cooling technology. It’s time the rest of India got there too, don’t you agree?