

# **REINVENTING TRADITIONAL SYSTEM FOR SUSTAINABLE BUILT ENVIRONMENT: AN OVERVIEW OF PASSIVE DOWNDRAUGHT EVAPORATIVE COOLING (PDEC) TECHNIQUE FOR ENERGY CONSERVATION**

*Mohammad Arif Kamal\**

## **ABSTRACT**

There has been a drastic increase in the use of air conditioning system for cooling the buildings all around the world. Interest in reducing emission of greenhouse gases, caused by fossil fuels to power the cooling requirements of the buildings has stimulated the enthusiasm towards adoption of passive cooling techniques for buildings. Passive systems use non-mechanical methods to maintain a comfortable indoor temperature and are a key factor in mitigating the negative impact of buildings on the environment. Of the different methods to reduce the cooling load, passive cooling of houses and buildings is the most suitable and sustainable method. Passive draught evaporative cooling (PDEC) is a passive cooling technique which involves spraying of controlled volumes of microscopic water droplets into hot, dry ambient air, thereby causing it to cool and descend into a required capture zone within a building. This paper is a review paper in which a study of Passive Draught Evaporative Cooling (PDEC) as a passive cooling technique for providing thermal comfort and its significance in energy conservation in buildings has been done. The interrelationship between sustainability and cooling needs of buildings has also been discussed. Further two applications of PDEC in contemporary architecture (Torrent Research Centre, Ahmedabad, India and New office building at Catania, Italy) have also been analyzed. Finally a critical analysis of using PDEC system in the buildings has also been done.

**Key Words:** Passive, draught, evaporative, cooling, energy conservation.