CONCLUSION

An integrated cooling system of desiccant dehumidifier and PDEC was evaluated for a typical dwelling in a hot humid climate in India after being combined with an earthtube ventilation system. A process for enabling the simulation of the proposed system has been reported. The system's performance was investigated with a parametric analysis and it was found that by using the EAT+DW+PDEC system as opposed to using natural ventilation the peak indoor summer temperatures were reduced by about 8 °C while indoor relative humidity remained below 75%. The proposed system could provide space cooling in hot-humid climates and could be an alternative to high energy consuming conventional vapour compression AC units.This study analysed a worst-case scenario of a building without any shading and by assuming typical materials that are not of high thermal standards. With improvements however in building designs, the proposed system could ensure good levels of indoor thermal comfort.

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