

عنوان مقاله:

Assessment of PCM s optimized location and building s gas and electricity savings in Iran

محل انتشار:

چهارمین کنفرانس ملی تحقیقات کاربردی در مهندسی برق، مکانیک، کامپیوتر و فناوری اطلاعات (سال: 1397)

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خلاصه مقاله:

In last decades, not only application of Renewable Energy Resources (RES) suggested by environmental experts in order to optimized energy usage, using energy saving methods for declining utilization of fossil fuels and natural resources have been taken into account. Declination of using energy causes to healthier air, water and makes the world the better place for next generation to live. One of the recent-common methods specially in building sector is applying Phase Change Material (PCM) in this regard. In this Research, three types of PCM in three cities of Iran, Bandar Abbas, Tehran and Tabriz have been studied. This survey also, discussed the best location of PCMs in each external wall sides of the building for each city. In this regard, three Bio-PCM with M27/Q21, M27/Q23 and M27/Q25 characteristics with melting point of 21, 23 and 25 have been chosen, respectively. These materials located on external walls of a four-storey building due to better performance of these materials for providing temperature comfort of the occupants. This residential building designed by AutoCad software and simulated by EnergyPlus. For all the studied cities, PCM25 among other PCMs is the best choice for electricity and energy savings. Furthermore, PCM21 only for gas saving, have shown a perfect performance through a year. Generally, PCMs in colder zones have more energy saving manner in comparison with warm locations. In Bandar Abbas, the best location for PCM placement is at .the north side of the building and for Tabriz and Tehran are at the south one

کلمات کلیدی:

Phase change material, EnergyPlus, Residential building, Gas saving, Electricity saving

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