

Energy performance of residential housing plays an important role in sustainable development of the building sector. Sustainable building design is the application of sustainability to the built environment and it takes into account the economic, social and ecological impact of buildings on their surroundings. As air conditioning systems are not costwise affordable to the occupants of rural residential buildings, it is essential to take care of their thermal comfort by other means. Natural ventilation is preferred over mechanical and is a sustainable building technology that can provide a good indoor environment and save energy. The walls release the absorbed heat from the environment into the interiors of buildings which causes discomfort to the inhabitants. It is essential to reduce or eliminate the heat in the interior spaces while constructing the walls of residential buildings. Hence the objective of this paper is to compare the sustainable building materials for wall, the conventional brick and stabilized mud block towards the thermal energy flow into the building using computational fluid dynamics (CFD) simulation. CFD software Fluent was used to create a virtual model of the building interior and simulate air flow, temperature profile and humidity which are directly related to thermal comfort, before the actual construction can be done. It was observed from this study that stabilized mud block-walled construction will minimize heat conductivity from the environment in to the interior of houses and make buildings self cooling, which helps to achieve a considerable level of thermal comfort in rural residences having no power consuming devices for comfort.

