Summary

Surabaya represents the city in Indonesia which has high temperature; the temperature is range from 20° - 34.7°C, while its humidity is 35 – 98%

Light weight concrete wall is wall which is often utilized for the house of “mass production”. In housing of Indonesia, example Surabaya; light weight concrete is known by people as wall which affects uncomforted condition into the room.

Concrete wall have the: U-Value, time-lag, admittance and decrement factor, which called thermal properties material. Uncomforted condition into the room is often affected by the weakness of these thermal properties.

Main problem at this research is how to degrade the temperature into the room which has light weight concrete wall, with used design, namely: room design and wall design, to get efficient of energy.

Method utilized in this research is: simulation, which uses the computer program of Archipak 5.0, for kinds of variables are thickness of wall; dimension of room, and dimension of opening.

Result of research is: the room of building of housing which is energy efficient, namely heat energy and embodied energy. It exists between rooms; its area of exterior wall is minimal; thickness of exterior wall is 9 cm, while interior walls are 6 cm; wide of room is 3 m, long is 4 m and height is 3 m; and wide of opening is 0.8 m, height 1.3 m.

Element design which is very important, it can protects exterior wall from direct sun shine; mainly it uses roof sun shading or trees.

Key words: thermal properties, heat energy, embodied energy, thickness of wall, opening, roof sun shading.