

Sustainable Building Design for Energy Efficiency and Healthier Electromagnetic Environment

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Abstract : Sustainable design is one of the emerging milestones in building construction. This concept is defined as buildings that on a yearly average consume as much energy as they generate using renewable energy sources. Realization of sustainable buildings requires a wide range of technologies, systems and solutions with varying degrees of complexity and sophistication, depending upon the location and surrounding environmental conditions. This paper will address not only the role of the above technologies and solutions but will provide solutions to reduce the electromagnetic fields (EMFs) in the building as much as possible so that the occupiers can recover from electro-hyper-sensitivity, if any. The objective is to maximize energy efficiency, optimize occupant comfort, reduce dependency on the grid and provide safer and healthier EMF environment especially for hypersensitive people. Creative architectural and engineering solutions that capitalize on the design of energy efficient technologies; combined cooling, heating and power (CCHP) microgrid (MG); and EMF mitigation will be presented.

Keywords : sustainable buildings, energy efficiency, thermal simulation, electromagnetic environment

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