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Efficient HVAC System in Green Building Design

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Abstract : Buildings designed and built as high performance, sustainable or green are the vanguard in a movement to make buildings more energy efficient and less environmentally harmful. Although Heating, Ventilating, and Air Conditioning (HVAC) systems offer many opportunities for recovery and re-use of thermal energy; however, the amount of energy used annually by these systems typically ranges from 40 to 60 percent of the overall energy consumption in a building, depending on the building design, function, condition, climate, and the use of renewable energy strategies. HVAC systems may also damage the environment by unnecessary use of non-renewable energy sources, which contribute to environmental pollution, and by creating noise and discharge of contaminated water and air containing chemicals, lubricating oils, refrigerants, heat transfer fluids, and particulate (gases matter). In fact, HVAC systems will significantly impact how “green” a building is, where an efficient HVAC system design can result in considerable energy, emissions and cost savings as well as providing increased user thermal comfort. This paper presents the basic concepts of green building design and discusses the role of efficient HVAC system and practical strategies for ensuring high performance sustainable buildings in design and operation.

Keywords : green building, hvac system, design strategies, high-performance equipment, efficient technologies
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