
ENERGY EFFICIENT BUILDING

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INTRODUCTION

- IN India, 30 to 40% of all primary energy is used in buildings
- The main aim of energy efficient building is to produce buildings with a minimum of environmental impact
- Plays a major role in minimizing overall energy consumption and cost
- Around the world, the private and business divisions utilize 2,589 Mtoe (Mega tonnes of oil equivalent) in energy, which represents very nearly 40% of final energy use on the planet

OBJECTIVE

- To modulate the condition such that they are always within or as close as possible to comfort zone
- Increasing demand for building services and comfort levels, together with the rise in time spent inside buildings, assure that the upward trend in energy demand will continue in the future
- For this reason, energy efficiency in buildings is today a prime objective for energy policy at regional, national and international levels

Energy utilized over the life cycle of building

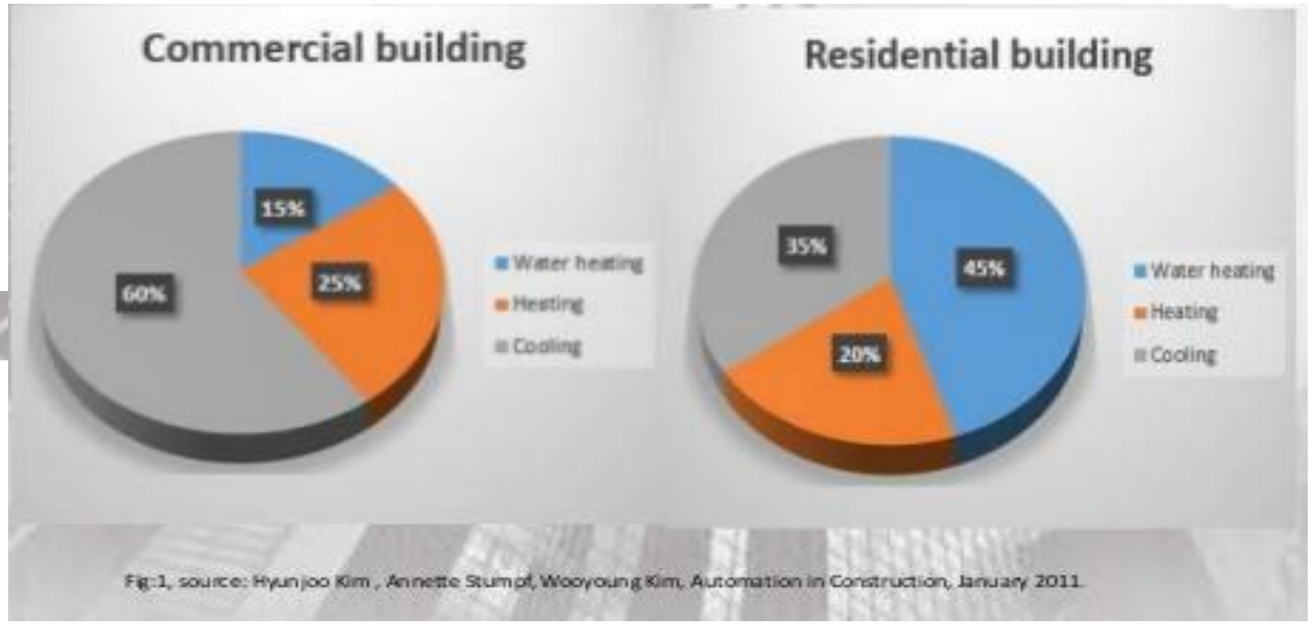

Fig:1, source: Hyunjoo Kim , Annette Stumpf, Wooyoung Kim, Automation in Construction, January 2011.

Consumption by end use for different building types

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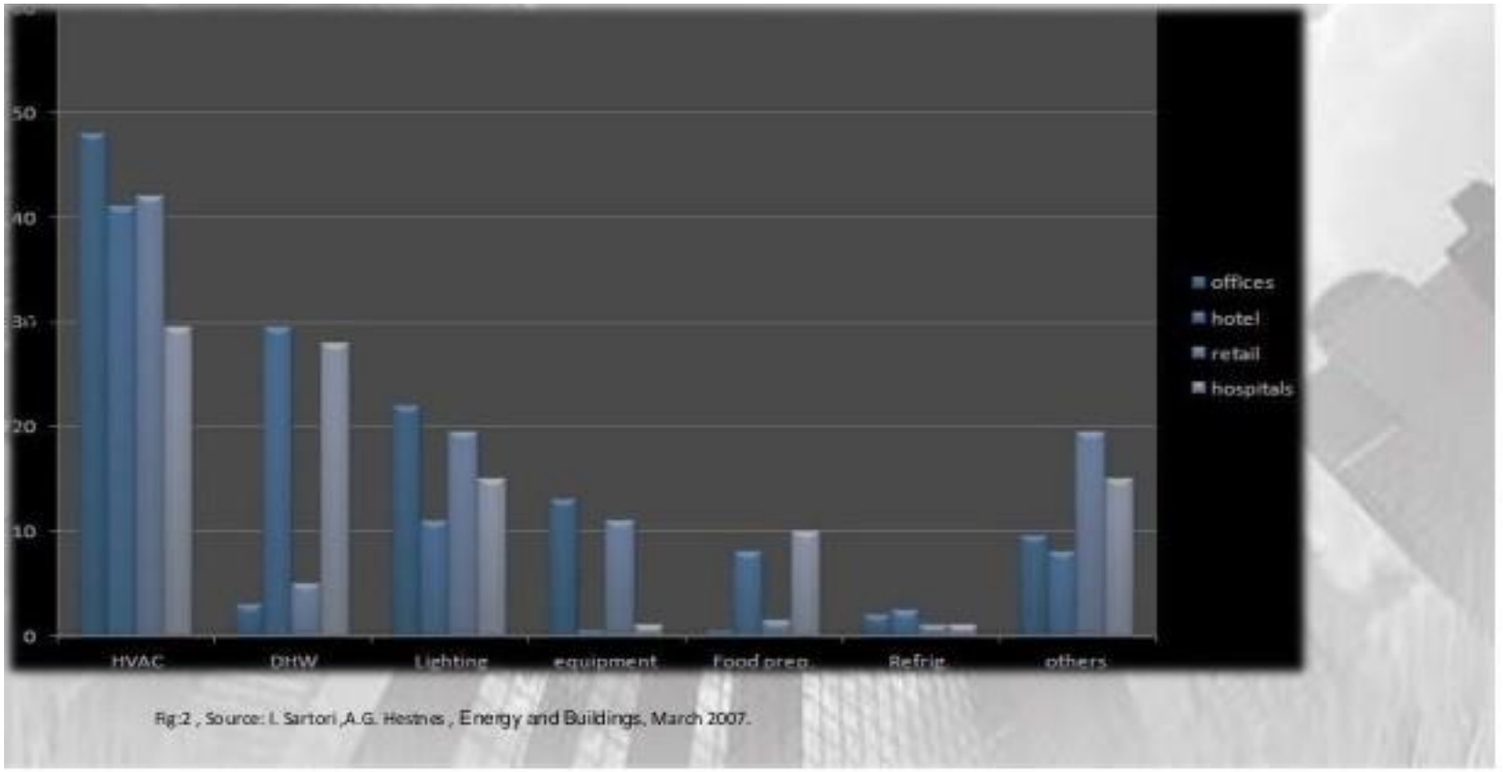


Fig:2 , Source: I. Sartori ,A.G. Hestnes , Energy and Buildings, March 2007.

Use of Technologies for making a building energy efficient

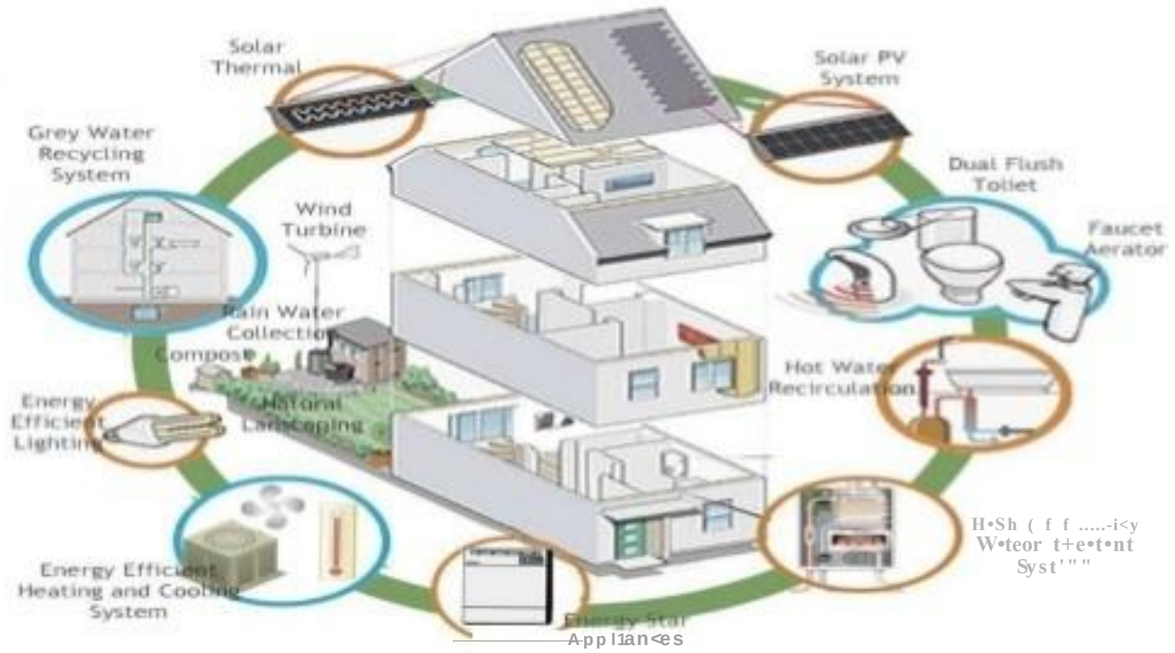


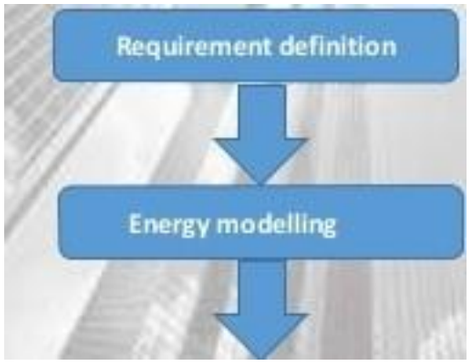
Fig-3, Source: I. Sartori, A.G. Hestnes, Energy and Buildings, March 2007.

Methodology

Data mining technique

- Process of extraction of useful information and patterns from huge data and its also called as knowledge discover process
- Help project teams discover useful patterns to improve the energy efficiency of building design during the design phase
- Fault detection and diagnostics analytic tools provide insights into building systems that help reduce energy consumption, improve building performance and lower costs

Steps used to achieve the data mining technology



Data analysis

Energy Simulation in building design

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Allows architects and engineers to visualize, how energy is consu med and for what reasons

An energy model -allows comparative analysis between proposed d esign and altered design, just providing with th e scope of cuttin g down on energy u sage

Assists in availing green bu ilding certificates

Data mining functionamies

Characterization, discrimination, association , cla.ssification, clustering, outlier, and trend analysis, etc.

Currently used analytical techniques

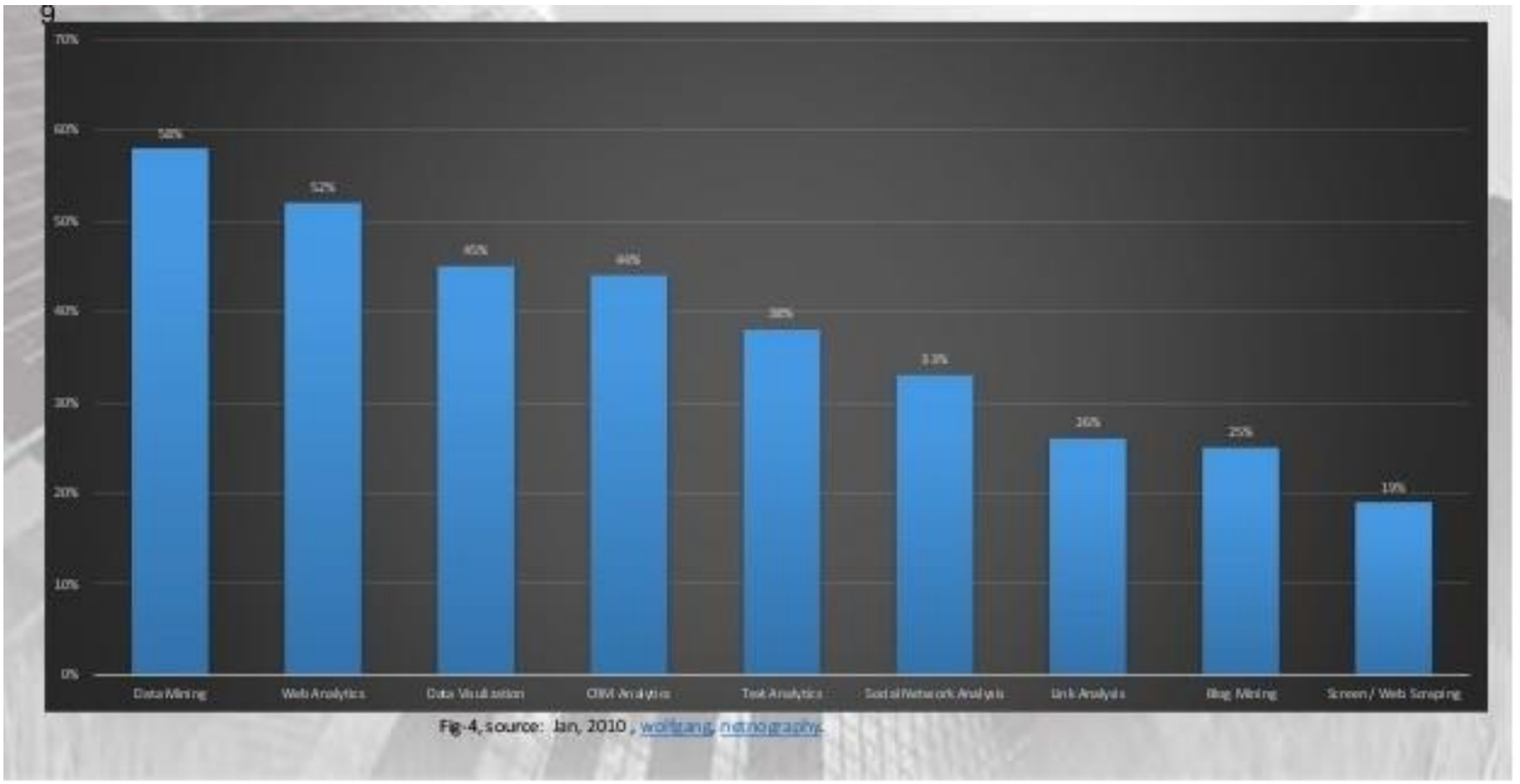

Fig-4, source: Jan, 2010 , wolfgang, netnography

Conclusion

- Toimprove the energy efficiency of building design during the design phase
- Because of detecting the fault in the building design, this reduces the energy consumption and increases the energy efficiency in the building sector
- Energy savings were significantly ranging between 10 to 12% of the total energy consumption

References

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