

Scholarly Paper Presentation

A Study on Energy Efficient Building Technologies

by
Soner Unver
MSEE Candidate

Advisor: Dr. Janos Gertler

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Abstract:

Buildings today represent 40% of world's energy demand according to Organization for Economic Co-operation and Development (OECD). Worldwide energy consumption for buildings is expected to grow 45% from 2002 to 2025. The International Energy Agency (IEA) estimates that current trends in energy demand for buildings will stimulate about half of energy supply investments to 2030. Electricity generated from fossil fuels- oil and coal- impact the environment in an adverse ways. Since 1990, the generation of electricity through coal combustion, has produced the largest portion (34%) as of 2000 of US greenhouse gas emissions. Scenarios forecast an acute increase in global carbon emissions; 92% increase from 2002 to 2050, if current trends are not altered.

Commercial buildings account for 34 percent of total U.S. energy consumption. According to 1997 study, about 84% of total building energy is typically consumed during the use phase, assuming a building life of more than 50 years, reducing a building's energy consumption has major beneficial impact both to investors and on the environment.

For the purpose of this study, energy use of the commercial buildings will be explored, particularly of the commercial buildings and shown ways to improve efficiency and conserve energy using actual engineering design data through energy modeling. Energy modeling can help designers to understand the peak cooling and heating loads thus; it aids evaluation of energy-saving concepts, such as the effects of daylighting, efficient artificial lighting, HVAC optimization strategies, high-performance glazing, roof and wall insulations.