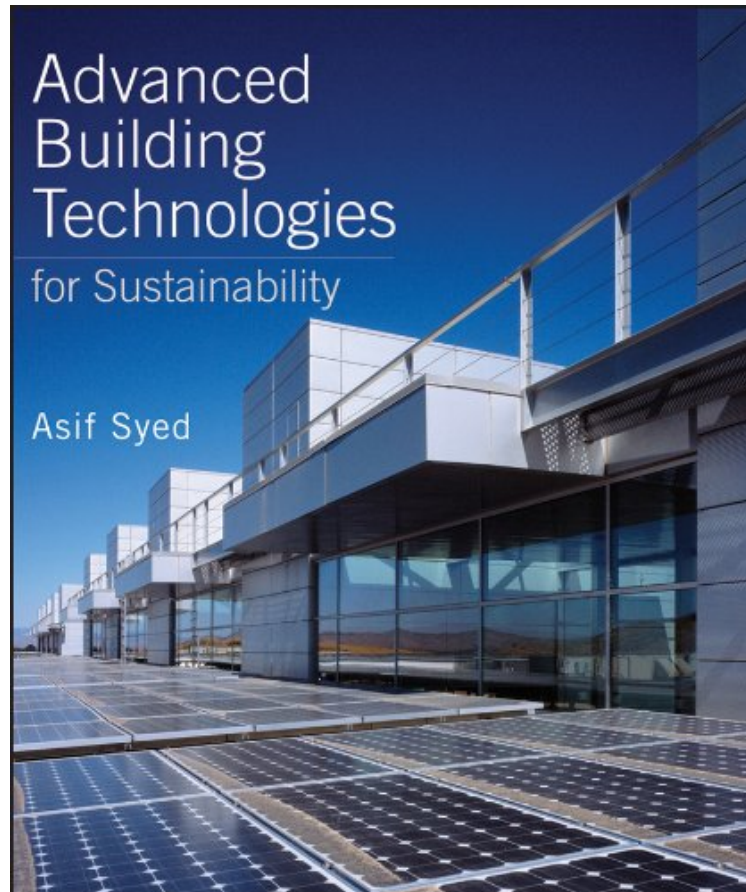


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Advanced Building Technologies for Sustainability (Sustainable Design)

Asif Syed

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Asif Syed : Advanced Building Technologies for Sustainability (Sustainable Design) before purchasing it in order to gauge whether or not it would be worth my time, and all praised Advanced Building Technologies for Sustainability (Sustainable Design):

2 of 2 people found the following review helpful. Required ReadingBy greenmanBuildings are many things, including concrete expressions of a civilization's values. How buildings get built is an enormously complex process that includes political, economic, social and programmatic considerations. When a culture's values begin to shift how does the process of building reflect this? The construction industry is inherently conservative, accepting innovation grudgingly, with a fundamental allegiance to the bottom line. How then does this industry adapt to a new priority, integrate a new dimension, and evolve into a new era of design, construction and operation?Such a transformation occurs by rethinking every aspect of the way we build. In Advanced Building Technologies for Sustainability, mechanical engineer Asif Syed offers an overview of how our basic building systems, delivering light, heat and air, and the building envelope itself, are being rethought. This process amounts to nothing less than a revolution in terms of

design, construction and operation. There are the systems, innovative and efficient, such as radiant cooling, displacement ventilation, chilled beams, under-floor air distribution, displacement induction, geothermal, cogeneration, and solar. But ultimately it is a new attitude towards building design and operation that Syed is describing. By turning our attention to the opportunities for sustainability offered by renewable energy sources, innovative technologies and high-performance envelopes we give expression to a new value of conservation, a fundamental paradigm shift in building. This is a process driven by necessity, as Syed clearly describes in his initial chapters. With world population careening past the seven billion mark a fundamental disparity in the distribution of world resources is increasingly evident. For instance, the average power consumption of developed countries is estimated to be ten times that of developing countries. Where will the resources come from as these developing countries adopt the technologies and consumption patterns of the developed world? Continued reliance on fossil fuels is clearly a prescription for international competition and on-going inequities. For the sake of political stability alone, disregarding the dire consequences of climate change, our patterns of energy consumption must change. And there is no better starting point than with buildings. Syed makes this his starting point. Buildings use 40 percent of total energy and 68 percent of all electricity produced in the United States. Inefficient distribution results in significant losses, compounding the costs, both economic and environmental. Improved efficiency in the building sector calculated across the lifespan of a structure is a new priority, increasingly recognized as such by owners, occupants and regulators. Advanced Building Technologies for Sustainability provides an excellent overview of the current opportunities for more efficient buildings. Suitable as a text for a course on sustainable building systems, this volume can also serve as a valuable reference tool for architects and engineers seeking to deepen their knowledge of available energy efficiency strategies. The systems that deliver conditioned air and artificial light, like the veins and arteries of the human body, are not visible to the casual observer. But these systems are vital to the health of the structures they serve. Asif Syed has served a valuable purpose by describing the implications of these systems for a new type of building.

2 of 2 people found the following review helpful. plentitude of ideas, especially to minimise energy use By W BoudvilleGripe. The book seems written exclusively for an American audience. Why? The temperatures are all in Fahrenheit. Need I remind you that only the US uses this. All other nations have standardised on Celcius. You might think that the author could at least have wanted to expand the readership by providing both. The text spans the gamut of how to minimise energy consumption in designing new buildings. There are the obvious things, like using double glazed glass in the windows for reducing heat loss in cold climates or for the converse of retaining a cooler indoor temperatre in warm weather. But more elaborate methods are also described. Including chilled beams, which can be used if there is a chilled water system. We are also made aware of the energy cost of running a lab or clean room. These can use 5-10 times more energy than an office of the same area. All due to the common need for heating and cooling the air, where this is exacerbated by having to push more volume thru the lab than thru an office. Plus, if there are fume hoods in the lab, these have their own stringent requirements for rapidly cycling air flow. The metric is the air change per hour (ACPH). The book points out that a more careful look at this has recently emerged. The 5-10 multiple does not need to hold for every lab. Instead, the author recommends that using ideas like chilled beams can reduce the heating requirements. Another source of saving is by using displacement induction cooling units that use water to transport heat. A given volume of water has more heat capacity than the same volume of air. This means that the ducts used to transport the cooling medium can be made smaller, by 2/3s. Easing the cost of the duct material and the geometry of threading ducts through the building. Readers might also check out the discussion of net zero buildings. A catchy phrase, but it's much more than that. The concept of minimising the net energy use of a building is compelling. Of the methods, solar energy is the clear favourite. But other simple ideas are mooted, like occupancy sensors that can turn off the room lights when the room is vacant.

1 of 1 people found the following review helpful. Good Reference By LEED Professional Advanced Building Technologies for Sustainability offers a wonderful blueprint on how to incorporate the latest proven sustainable technologies into building design. Moving beyond the mixed air overhead VAV distribution system, Mr. Syed describes the history and applicability of displacement ventilation with application of displacement induction units (DIU) at St. Johns University, as well as chilled beams and underfloor air distribution. With each topic, the history and science is given with context on how the technology builds or improves over conventional systems. The role of high performance envelope with emphasis on interaction between the architect, mechanical engineer, and owner is given which certainly is more involved than "add more insulation and a low-e coating on the glass". Poorly understood technologies such as geothermal systems and cogeneration are explained with relevance given for use in commercial and even residential buildings. This book is a good reference and indispensable resource for architects, developers, and engaged owners who want to be conversant in the technologies that translate into lower energy use buildings. For design engineers and design managers the topics presented are a cornerstone of sustainable design knowledge. Although innovation in the HVAC building industry moves at a slow pace, Advanced Building Technologies for Sustainability offers the latest proven approaches and technologies to give the green building professional a competitive advantage.

Practical solutions for sustainability In this timely guide, one of the world's leaders in advanced building technology

implementation shows architects and engineers proven and practical methods for implementing these technologies in sustainably-designed buildings. Because of the very limited time architects are given from being awarded a project to concept design, this book offers clear and workable solutions for implementing solar energy, radiant heating and cooling floors, displacement ventilation, net zero, and more. It provides helpful tips and suggestions for architects and engineers to work together on implementing these technologies, along with many innovative possibilities for developing a truly integrated design. This book also explores and explains the many benefits of advanced technologies, including reduced greenhouse gas emissions, lower operating costs, noise reduction, improved indoor air quality, and more. In addition, *Advanced Building Technologies for Sustainability*: Offers detailed coverage of solar energy systems, thermal energy storage, geothermal systems, high-performance envelopes, chilled beams, under-floor air distribution, displacement induction units, and much more. Provides case studies of projects using advanced technologies and demonstrates their implementation in a variety of contexts and building types. Covers the implementation of advanced technologies in office towers, large residential buildings, hospitals, schools, dormitories, theaters, colleges, and more. Complete with a clear and insightful explanation of the requirements for and benefits of acquiring the U.S. Green Building Council's LEED certification, *Advanced Building Technologies for Sustainability* is an important resource for architects, engineers, developers, and contractors involved in sustainable projects using advanced technologies.

About the Author ASIF SYED, PE, LEED-AP, is currently a partner at AKF Engineers and was a senior vice president at Flack + Kurtz until 2003. Syed is responsible for the design and analysis of mechanical systems including advanced building technologies, energy analysis, life-cycle costs, cost-effective energy-saving strategies, and sustainable design. He has worked on several LEED projects for commercial property developers, where he introduced pragmatic and cost-effective energy-saving strategies.