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Nota di contenuto	1. Heating, cooling, and lighting as form-givers in architecture -- 2. Sustainable design and energy sources -- 3. Basic principles -- 4. Thermal comfort -- 5. Climate -- 6. Solar geometry -- 7. Passive solar -- 8. Photovoltaics and active solar -- 9. Shading and light colors -- 10. Passive cooling -- 11. Site design, community planning, and landscaping -- 12. Lighting -- 13. Daylighting -- 14. Electric lighting -- 15. The thermal envelope : keeping warm and staying cool -- 16. Mechanical equipment for heating and cooling -- 17. Tropical architecture -- 18. Recommended energy case studies -- 19. Checklist for designing integrated sustainable buildings -- App. A. Horizontal sun-path diagrams -- App. B. Vertical sun-path diagrams -- App. C. Solar altitude and azimuth angles -- App. D. Methods for estimating the height of trees, buildings, etc -- App. E. Sundials -- App. F. Sun-path models -- App. G. The water table for ventilation studies -- App. H. Site evaluation tools -- App. I. Heliodons -- App. J. Tables of R-values -- App. K. Resources -- App. L. Conversion factors between the

inch-pound (I-P0 and System International (SI) systems.

Sommario/riassunto

Sustainable environmental control through building design Heating, Cooling, and Lighting is the industry standard text on environmental control systems with the emphasis on sustainable design. By detailing the many factors that contribute to the comfort in a building, this book helps architects minimize mechanical systems and energy usage over the life of the building by siting, building design, and landscaping to maximize natural heating, cooling, and lighting. This new fourth edition includes new information on integrated design strategies and designing for the Tropics. Resources include helpful case studies, checklists, diagrams, and a companion website featuring additional cases, an image bank, and instructor materials. Designing buildings that require less energy to heat, cool, and light means allowing the natural energy of the sun and wind to reduce the burden on the mechanical and electrical systems. Basic design decisions regarding size, orientation, and form have a great impact on the sustainability, cost, and comfort of a building. Heating, Cooling, and Lighting provides detailed guidance for each phase of a design project. Readers will: Understand the concept of sustainability as applied to energy sources Review the basic principles of thermal comfort, and the critical role of climate Learn the fundamentals of solar responsive design, including active and passive solar systems as well as photovoltaics Discover how siting, architectural design, and landscaping can reduce the requirements for mechanical and electrical systems In sustainable design, mechanical, and electrical systems should be used to only accomplish what the architect could not by the design of the building itself. With this in mind, designers require a comprehensive understanding of both the properties of energy and the human factors involved in thermal comfort. Heating, Cooling, and Lighting is the complete, industry-leading resource for designers interested in sustainable environmental control.