

The handbook represents the collected wisdom of at least forty-nine named engineers, scientists, economists and attorneys, for each of whom a short biography is appended. The majority have many years of practical solar energy related experience in the private sector. It emphasizes established applications and avoids areas less well documented. One could argue that lesser developed fields should receive some mention, if only to stimulate continuation and expansion of the solar technological momentum. However, the editors conservatively intended the book to be of archival nature, and this is the principal reason for exclusion of some of the newer, evolving developments. On the other hand, the neophyte to the area will find many new and interesting concepts introduced and explored in an informative, straight-forward fashion.

The material is divided into six categories:

(1) Perspective and Basic Principles (six chapters) in which are presented the history of solar energy uses and the scientific principles upon which the entire field rests. Solar irradiance, optical properties of materials, heat transfer, thermodynamics, and energy storage all receive concise but quite adequate coverage and referencing to the original literature.

(2) Solar-Thermal Collection and Conversion Methods (four chapters) considers nonconcentrating and concentrating collectors, as well as nonconvecting solar ponds. The latter represents a fascinating, if complex, system to retrieve solar radiation inexpensively on a large scale without elaborate fabricated collectors. The interactions which can occur between the heat and salinity transfers in such a collector provide a delightful study for all chemical engineers.

(3) Low-Temperature Solar Conversion Systems (nine chapters) details systems which maintain temperatures less than 100°C. These include solar water heating; air and liquid space-heating; space-cooling; performance, design and modeling methods; passive systems; ocean thermal energy conversion; agricultural drying; solar distillation and cooking systems.

(4) High Temperature and Process Heat Systems (three chapters) is devoted to solar-thermal electric power, process heating and solar-powered heat engines. These chapters provide excellent overviews of the technical, economic, societal, equipment and design considerations which shape the decisions being made respecting our energy future. Every engineer interested in the industrial applications of solar energy certainly should read carefully these chapters.

(5) Advanced and Indirect Solar Conversion Systems (three chapters) examines wind energy converters and systems, photo-

voltic devices, and biomass energy conversions. Considerable recent effort has gone into these specialized areas of solar conversion. Technical understanding is improving, but the unfavorable economics continue to plague these areas as far as large scale, general use goes. The biomass area may well be a discipline to watch in the 1980's, especially as problems with oil, fossil fuels and nuclear energy continue to disrupt the smooth operation of the economy.

(6) Architecture, Economics, The Law, and Solar Energy (four chapters) considers the societal issues associated with implementation of solar systems. Legal problems, economic and architectural techniques and energy conservation principles are fully discussed.

Brief appendices of SI Units/Conversion Factor and Nomenclature are included. The handbook seems to be free of typographical mistakes, and the material is attractively presented. In summary, this is the only handbook devoted exclusively to the solar area. The objectives laid down by the editors have been successfully met, and the volume can be recommended for all who expect to deal in any way with this important discipline.

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