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Book review

***Air-Cooled Heat Exchangers and Cooling Towers*, Detlev G. Kröger (Department of Mechanical Engineering, University of Stellenbosch) (1998), 875 p. Distributed by Begell House, Inc., New York**

While the wider field of Heat transfer and Heat Exchangers has been extensively treated in the technical book literature of the second half of the 20th century, the special field of cooling towers and air-cooled heat exchangers seems to have led only to five books over the last four decades. So, Kröger's new book on air-cooled heat exchangers and cooling towers, covering all aspects of thermal and fluid mechanical design and rating of such equipment, obviously fills a gap in the relevant technical literature. It provides students, teachers, and practising engineers with a huge amount of useful information. It will help to find better solutions for the various cooling problems encountered in energy conversion, in process industry, in air conditioning, in automotive cooling and in several other industrial branches. The book is subdivided into 10 chapters, treating the various types of Air-Cooled Heat Exchangers and Cooling Towers (chapter 1, 59 pp.), Fluid Mechanics (2, 79 pp.), Heat Transfer (3, 99 pp.), Mass Transfer and Evaporative Cooling (4, 112 pp.), Heat Transfer Surfaces (5, 126 pp.), Fans (6, 137 pp.), Natural Draft Cooling Towers (7, 81 pp.), Air-Cooled Heat Exchangers (8, 87 pp.), Meteorological Effects (9, 108 pp.), and Cooling System Selection and Optimization (10, 36 pp.). Each chapter starts with an introduction and ends with a list of references in chronological order. The whole book contains a total number of 97 pages of references, with probably 900 single sources. This huge amount of sources makes the book extremely valuable for all those interested in the scientific development of this area over the past century. The encyclopedic width of this book reflects the lifetime experience of a dedicated teacher and a known expert in the field, who has been and still is keeping in direct contact with the industrial applications by his consulting activities worldwide. The chapters are subdivided into 3 upto 11 subchapters, leading to a total number of 97 subchapters. Pages, equations and figures are numbered subchapter-wise. Appendices on Properties of Fluids, Temperature Correction Factor (LMTD-Correction), and Conversion Factors, as well as a Subject Index are useful additions, which make it easier to work with the book. The figures include some color photographs of equipment and nearly each chapter contains examples with detailed solutions. Especially this feature of the book makes it so useful for all those, who have to decide on the planning, design, construction, selling or buying of cooling equipment. The book is highly recommended for libraries in Chemical, Mechanical, and Power Engineering Departments in Technical Universities or Colleges, and it should certainly be bought by the R&D departments of industrial companies involved in these technical applications. It was certainly not yet possible for the reviewer to check the huge amount of information in this book in detail, but a few chapters, or rather subchapters, have already proven in the meantime to be very useful for the solution of my own problem in evaporative cooling. One might wish to find a slightly more uniform, i.e., more general heat, mass, and momentum transfer approach for the solution of all these problems in place of the variety of different correlations and methods suggested in the literature of a whole century. On the other hand, from the point of view of the historical development of the art and science of evaporative cooling, the book is unique in its kind. A more uniform, may be much shorter version of a possible future edition might prove to be an even greater success.

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