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THERMAL DESIGN AND OPTIMIZATION

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PREFA

This book provides a comprehensive and rigorous introductio system design and optimization from a contemporary perspect sentation is intended for engineering students at the senior or fi uate level and for practicing engineers and technical managers w energy field. The book is appropriate for use in a capstone desi a technical elective course, and for self-study. Sufficient end-of- lems are provided for these uses. In class testing, the material ha to work well with the intended audience.

We assume readers have had introductory courses in enginee dynamics and heat transfer and are familiar with the basics of flu Some background in engineering economics is also desirable but For readers with limited backgrounds in engineering thermody transfer, and engineering economics, reviews are provided in C and 7, respectively. Our presentation does not provide a detail of component design or extensive operating and cost data. In these topics is available in various standard references, handboo ufacturers' catalogs. Readers should refer to such sources as nee provided extensive reference lists to facilitate this. The book has to allow flexibility in the use of units. It can be studied using System (SI) units only or a mix of SI and English units.

In the area of thermal systems, engineering curricula are large and design analysis oriented. Students initially learn to apply ma balances and, increasingly, entropy and exergy balances. Then of known engineering descriptions and specifications, students culate the size, performance, and cost of heat exchangers, turb and other components. These activities are important, but the s neering design is much wider. Design is primarily system orie objective is to effect a design solution: to devise a means for a a stated purpose subject to real-world constraints. Design requi selecting and putting together components to form a smoothly w Design also often requires that principles from different disciplin