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BOOK REVIEW

Measurement Techniques in Heat and Mass Transfer

Ed. R. I. Soloukhin and N. H. Afgan

This recent book provides a mass of practical information and guidelines for those involved in evaluating, planning or implementing cogeneration (combined heat and power) projects in industrial, commercial and domestic situations.

The fourteen chapters cover a range of topics, including feasibility assessment, analytical methods for technical and economic feasibility evaluation, computerized system design, cogeneration technologies and application considerations, plus non-conventional technologies (such as waste heat recovery and the use of refuse derived fuel).

Readers will find that the book has been written with the United States regulatory environment in mind.

Cogeneration represents a classic case of how changing economic conditions can give an old technology new life. It has been practised since the turn of the century, but had declined steadily in importance in the USA for several decades. However, the events of the 1970s placed energy efficiency in a new, favourable light and led to a great resurgence of interest. This interest can be appreciated when we read that nearly half the primary energy consumed by US industry and electricity producers is lost as waste heat, totalling over seven million barrels per day of oil equivalent.

Throughout the text there are frequent references to the Public Utility Regulatory Policies Act (PURPA) and the National Energy Act of 1978 which removed many of the institutional and financial barriers to cogeneration. These Acts and other legislation appear to have opened the door to numerous cooperative ventures between industry and local electricity utilities.

One paper examines the potential for fuel cell-based cogeneration. This will continue a growing trend in small-scale prepackaged cogeneration systems.

Reducing the size at which cogeneration becomes economic will mean that these systems will exponentially expand the number of potential sites. Prospective new consumers will include anyone with a demand for both power and heat, such as hospitals, educational establishments, shopping centres, high-density housing developments and small industry. One author thought that more than 10,000 MW of new small cogeneration capacity could be installed in the next decade. These new small-scale, independent electricity producers could have a profound effect on the electricity industry of the USA and ultimately other countries.

Cogeneration will almost certainly continue to increase in importance in the coming years because of both the economic arguments (mainly the high cost of electricity) and the energy conservation potential.

Despite the fact that this book was produced for the USA market (with appropriate examples and non-SI units) it should prove to be of great value to those who are interested in this important field.

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