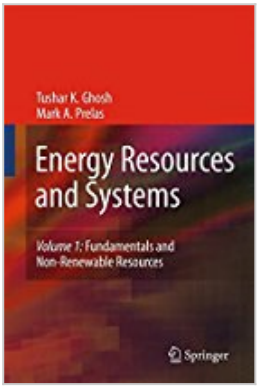

Energy Resources and Systems: Volume 1: Fundamentals and Non-Renewable Resources

By Tushar K. Ghosh, Mark A. Prelas

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In the lifetimes of the authors, the world and especially the United States have received three significant “wake-up calls” on energy production and consumption. The first of these occurred on October 15, 1973 when the Yom Kippur War began with an attack by Syria and Egypt on Israel. The United States and many western countries supported Israel. Because of the western support of Israel, several Arab oil exporting nations imposed an oil embargo on the west. These nations withheld five million barrels of oil per day. Other countries made up about one million barrels of oil per day but the net loss of four million barrels of oil production per day extended through March of 1974. This represented 7% of the free world’s (i. e. , excluding the USSR) oil production. In 1972 the price of crude oil was about $3. 00 per barrel and by the end of 1974 the price of oil had risen by a factor of 4 to over $12. 00. This resulted in one of the worst recessions in the post World War II era. As a result, there was a movement in the United States to become energy independent. At that time the United States imported about one third of its oil (about five million barrels per day). After the embargo was lifted, the world chose to ignore the “wake-up call” and went on with business as usual.

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Editorial Review

Review
From the reviews: “This work is the first in a planned three-volume series dealing with energy … . In this first volume, Ghosh and Prelas (both, Univ. of Missouri, Columbia) offer an outstanding consolidation of technical data and knowledge related to conventional energy sources and conversion systems. … This volume is ideally suited for the serious researcher interested in obtaining a thorough overview of conventional energy conversion systems. … Summing Up: Highly recommended. Upper-division undergraduates through professionals.” (S. R. Walk, Choice, Vol. 47 (6), February, 2010)

From the Back Cover

This is a comprehensive book that addresses renewable, non-renewable, and future energy sources and their utilization. All current and potential future energy sources are discussed in great details including the type of energy, methods of converting the energy to useful forms, the engineering design issues associated with the energy conversion system, the efficiency of the conversion process, the economics of the conversion system, the risks associated with its use, the environmental impact and how it can be applied to meet the energy needs of the world. Current and future energy policy is discussed.

At the end of most of the chapters there are problems to assist instructors. Also, there are a number of worked out problems for the students within the text.

This is the first of a three volume series. In Volume 1, *Fundamentals and Nonrenewable Sources*, the focus is on the basic tools required to understand the complex interactions of energy and society (economy, population, finance, etc.), fundamentals (thermodynamics, heat transfer, etc.). It provides a general overview of various topics including the interrelationship between energy, economy, gross domestic product, and population. A review of engineering economics, thermodynamics, and heat transfer mechanisms is included. Volume 1 also covers nonrenewable energy resources (coal, oil, natural gas and nuclear); how to calculate the total reserve quantities of coal, petroleum and uranium, and how long these resources will last at various levels of consumption. Various technologies for converting these resources to produce electricity and other forms of energy are treated.

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