

## ACKNOWLEDGEMENTS

**ABSTRACT**

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**Modelling and Optimization of Industrial Energy Systems**

I express here my gratitude to my son Nishantha for the excellent way in which he converted my handwritten notes to computer readable files.

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Finally, I gratefully acknowledge the support and encouragement of my family. I wish to dedicate this work to my wife Charita, my Nishantha, and daughter

The need and potential for energy conservation in the industrial sector is briefly reviewed. Two accounting frameworks for analyzing energy use, Energy Analysis and Exergy Analysis are discussed and the need to use both the First and Second Laws of Thermodynamics in energy optimization studies is highlighted. Several approaches to energy system optimization reported in the literature are presented and discussed. A Multiple Objective Linear Programming Model for the optimization of industrial energy systems incorporating exergy and economic criteria is formulated and its application is illustrated by means of an example problem.