Introduction

This book of conversion tables is intended for students, scientists (physical, medical, etc.) and engineers (mechanical, electrical, civil, chemical, etc.) with diverse backgrounds. This collection of tables from many sources and diverse areas has been carefully selected and purposefully presented in a simple and effective way.

The objective of this monograph is to collect, compile and present the conversion factors among the relevant units used in education, design, and research and development during the daily activities in industry and related enterprises. The book has been written from a technical perspective and provides a complete and critical coverage of the conversion factors. It is devoted to one of the most important problems confronting design engineers and scientists during their working days. It is hoped that the book will also serve as a companion for engineering and science students throughout their academic years.

Despite the numerous conversion tables available in various technical books and specialist publications, there is a need for a compilation with users' requirements in mind. This book is very concise without losing its clarity and easy understanding of the conversions between the various units. The conversion tables have been compiled after careful consideration of that need. This compilation will provide the most practical answers to the queries of engineers and scientists in connection with conversion of the widely spread units in the published literature. The user will find an easy access to the conversion factors without looking for and searching into various handbooks.

The presentation of the conversion factors is entirely in tables with a diagonal equality in each horizontal and vertical column. There is no doubt that this type of tabulation can provide the most effective and easily understood conversion between various units and quantities.

Despite the great efforts by governments and various international organizations to introduce and adopt the International System of Units (better known as SI units) in most countries, progress has been slow and persuasion is not effective, particularly economically. The International System of Units (le Système international d'Unités) was agreed during the 11th General Conference of Weights and Measures (*Comptes Rendus des Séances de la onziéme Conference général des Poids et Measures*, Oct. 1960, p. 87 (Paris, Gauthie-Villiers)), and has now been adopted by most countries of the world. The SI units consist of seven basic quantities: length, mass, time, electric current, thermodynamic temperature, amount of substance and luminous intensity. The General Conference also made recommendations for the rules for the prefixes, the derived and supplementary units and other matters. It is intended to adopt the SI units throughout the world in educational circles, science, technology, industry and commerce. Its universal use avoids confusion in international trade and scientific work.

The teaching and understanding of the SI units in schools are the most important aspects of the success. Advice on the correct use of SI terminology, from the simple to the complex, is available in various publications on SI units. The necessary guidelines are available in technical documents or special books.

The commercial and technical literature is still written in various units, and it will take a considerable time to perform all writings in SI units only. The already written information in books, journals and documents cannot be altered and the availability of conversion factors is necessary to understand and convert the old units and measurements into SI units.

This compilation of conversion factors covers a very wide area of interest to students and adults. The following main sections of units and quantities are covered:

1) mechanical units
2) thermodynamic quantities
3) units of light
4) units of electricity
5) units of magnetism
6) units of acoustics
7) units of radiation

For systematic calculations on data from many sources, self-consistent conversion factors are highly desirable. A revised set of conversion factors and defined values based on the values accepted by specialists is therefore used in this compilation.

The units and conversion factors presented in this compilation are based on well-established reference sources, which are listed at the end of the book under the list of references.

A. L. Horvath, *Conversion Tables of Units in Science & Engineering*