

Preface

When Jim Murdock first approached me about the idea for this book, I was impressed. It seemed to me that a book covering the practical side of fluid mechanics would be ideal for the practicing engineer. Jim asked me to become a coauthor of the project, but unfortunately he passed away before we began work. I inherited a partially completed manuscript that was based on his earlier introductory book on the subject, *Fundamental Fluid Mechanics for the Practicing Engineer*.

I completed this “stand-alone” book, trying as much as possible to keep Jim’s original ideas alive. What has resulted is a book that can be used by engineers and technicians who have no memory of or no formal training in the theoretical mathematics that provides a foundation for most of today’s undergraduate fluid mechanics texts. The book is designed as both a reference and a primer. Although intended for the practicing engineer, this book can also be used to augment the material covered in an undergraduate fluid mechanics class because it presents useful design procedures and many hard-to-find fluid properties.

The book is organized into eight chapters. Chapters 1–3 present introductory definitions, equations, and derivations that are useful for the material that follows. The material can be used to refresh the reader’s knowledge in a particular area or it may be skipped and referred to later as questions arise. Chapters 4–8, the heart of the book, cover subjects such as pipe flow

and system design, flow in open channels, flow measurement methods, forces on immersed objects, and unsteady flow. Over 50 fully solved examples are given to illustrate each concept. The examples are solved in the U.S. Customary System (USCS) of units, with conversions provided for use with the System International (SI) units.

Appendixes are provided that give useful supplementary information for this text and many other applications. Appendix A provides engineering conversion factors. Appendix B supplies information on pipe schedules. Appendix C is a compilation of properties of areas, pipes, and tubing. Finally, Appendix D contains the saturated, critical, and gas properties of 49 fluids, and the viscosity and density of compressed water and saturated steam.

Writing a book is an enormous undertaking and it requires the efforts, cooperation, and understanding of many. I wish to thank the editorial staff of Marcel Dekker, Inc., for their belief in this project and the encouragement to finish. I also need to thank my former mentors at Drexel University, my current colleagues at Selas Corporation of America, and the estate of James Murdock for their help at various points during this process. I am most grateful for the support of my Mom and Dad, brothers and sisters, Keenans, and friends (in fact, my Dad and brothers-in-law Ed and Steve are my inspiration for all things practical involving pipe flow). Finally, my heartfelt thanks to my wife, Regina, and my daughter, Mary Beth, for their patience, love, and motivation through this and all my endeavors.

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