Introduction

The book was written with the idea of elaborating general principles and practices in water transport and distribution in a practical and straightforward way. The most appropriate readers are expected to be amongst those who know little or nothing about the subject. Experts dealing with advanced problems can use it as a refresher of their knowledge.

The general focus in the contents is on understanding the hydraulics of distribution networks, which has become increasingly relevant after the massive introduction of computers and the exponential growth of computer model applications, also in developing countries. This core is handled in Chapter 3 that discusses the basic hydraulics of pressurised flows, and Chapter 4 that talks about principles of hydraulic design and computer modelling applied in water transport and distribution. Exercises resulting from these chapters are given in Appendices 1 (workshop problems), and 2 (design tutorial), respectively.

The main purpose of the exercises is to develop a temporal and spatial perception of the main hydraulic parameters in the system for given layout and demand scenarios. The workshop problems are a collection of simple problems discussing various supply schemes and network configurations in a vertical cross-section. Manual calculation is recommended here, whilst the spreadsheet lessons illustrated in Appendix 5 help in checking the results and generating new problems. On the other hand, the tutorial in Appendix 2 discusses, step by step, a computer-aided network design looking at the network in a plan i.e. from a horizontal perspective. To facilitate the calculation process, the EPANET software of the US Environmental Protection Agency has been used as a tool. This programme is becoming more and more popular worldwide, owing to its excellent features, simplicity and free distribution via the Internet.

Furthermore, the book contains a rather detailed discussion on water demand (Chapter 2), which is a fundamental element of any network analysis, and chapters on network construction (Chapter 5) and operation and maintenance (Chapter 6).

Complementary to these contents, more on the maintenance programmes and management issues in water distribution is taught by the Water Services Management scientific core group at UNESCO-IHE. Furthermore, the separate subjects on pumping stations, geographical
information systems, water quality and transient flows, all with appropriate
lecture notes, make an integral part of the 6-week programme on water
transport and distribution, which explains the absence of these topics
from the present version.

The book comes with a CD containing the spreadsheet hydraulic
lessons, a copy of the EPANET software (Version 2.10) and the entire
batch of the input files mentioned in the tutorial of the exercise in
Appendix 2. Hence, studying with a PC will certainly help to master the
contents faster. All applications are made to run on a wide range of PCs
and MS Windows operating systems.

The author and UNESCO-IHE are not responsible and assume no
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based on the contents of the book, including the CD. On the other hand,
any notification of possible errors or suggestion for improvement will be
highly appreciated.