

BASICS BUILDING SERVICES WATER CYCLES

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Foreword

The availability of drinking water in buildings is taken for granted in developed, industrialized countries. Drinking water is, however, a valuable commodity, and is scarce in many parts of the world. The collection and treatment of drinking water are becoming increasingly expensive for industrialized countries and therefore also for the consumer. Similarly, the disposal and cleaning of waste water are becoming more resource-intensive and complex due to the substances it contains.

The interface between the drinking water and waste water is the distribution, use and disposal of water within buildings, a significant component of the architect's design. The arrangement of supply and disposal pipework and the technical requirements influence the location of sanitary and kitchen areas. Avoiding high water consumption is an important aspect of technical building services planning.

A broad knowledge of the requirements and possibilities for reducing water consumption is necessary to be able to take these key topics into account in the design of a building, right from its inception. This includes, above all, an understanding of the interrelationships and dependencies, as well as technical systems. It is important to think of the water cycle in a building as an integral part of the design.

The volume *Basics Water Cycles* is aimed at students of architecture and recent graduates without previous knowledge of building services. With the aid of easy-to-understand introductions and explanations, the reader is taken through the subject matter step by step. The path of water through the various zones of a building is described and related to their specific roles and requirements, so that students are able to fully understand the interrelationships and introduce them into their own designs.

Bert Bielefeld, Editor

Introduction

Part of the technical services in a modern building is a complex pipe-work system for supplying drinking water and disposing of waste water. This system is a cycle, somewhat similar to the natural water cycle: fresh water is collected, supplied to the building, distributed through a pipe-work system, and heated if required. It is piped to the draw-off points in bathrooms, kitchens and other sanitary rooms. As soon as it leaves the drinking water pipe through the faucet, it becomes waste water and flows through the waste water pipework into the sewers, from where it is cleaned again and finally returned to natural watercourses. Architects must integrate this cycle into the design of their buildings, as without a carefully planned and properly functioning fresh and waste water system, WCs cannot be flushed, washing machines cannot be operated, and no water will emerge from a shower.

The chapters that follow consider the individual positions of water in a building along the water cycle, and describe the functions of the elements connected to this cycle. It should become clear how a drinking water supply system works, how it is designed into a building, and which aspects should be taken into account. There is also an explanation of how waste water is created and conducted into the drainage system, the general problems that arise in the supply and disposal of water, and the options for their solution.