Water Transport and Distribution

Training program

Introduction:

The Water Transport and Distribution short course from BTS introduces participants to the basics of planning, hydraulic- and engineering design, construction, operation and maintenance of water transport and distribution systems.

Who should attend?

Mid-career professionals dealing with technical aspects of drinking water transport & distribution, working for municipal assemblies, water supply companies or consulting bureau's.

Learning objectives

Upon completion, the participant should be able to:

- demonstrate understanding of the steady-state hydraulics by being able to select appropriate pipe diameters, indicate optimum location of reservoirs and identify pumps capable to supply the demand;
- apply the above theoretical knowledge by learning to perform computer-aided hydraulic calculations and predict the consequences of demand growth on the hydraulic performance of particular WTD system
- analyse the implications of various operational modes of pumping stations and compare the investment and operational costs for various network layouts and supplying schemes;
- propose preliminary hydraulic design that will integrate economic aspects, choose adequate components, and judge technical solutions dealing with the network maintenance, rehabilitation, and expansion.
- distinguish between different network configurations and supplying schemes; recognise various consumption categories and their growth patterns, including water leakage; define the relation between the main hydraulic parameters.

Outline

The course covers the following subjects:

- Introduction: Main objectives and components of water transport and distribution systems.
- Water Demand: Categories, patterns, calculation, forecasting.
- Hydraulics of Pressurised Flows: Basic equations, single pipe calculation, branched and looped networks, system- and pump characteristics, pressure related demand. Hydraulics of storage and pumps.
- Main Components of Hydraulic Design: Design parameters, choice of supply scheme, network layouts.
- Engineering design: Choice of pipe materials, valves and other equipment.
- Pumps and Mechanical Equipment: Review of pump types and their applications, design of pumping stations, power requirements and energy consumption, auxiliary equipment.
- Network construction: pipe laying, testing and disinfection.
- Operation and Maintenance: Regular and irregular supply, unaccounted-for water and leakage, network cleaning and rehabilitation procedures, water demand management.