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3.3.5 Model of a simple surge tank with upper and lower chamber 3.3.6 Differential surge tank model; 3.3.7 Example; 3.4 Vessel; 3.4.1 Simple vessel; 3.4.2 Vessel with air valves; 3.4.3 Vessel model; 3.4.4 Example; 3.5 Air valves; 3.5.1 Air valve positioning; 3.5.2 Air valve model; 3.6 Outlets; 3.6.1 Discharge curves; 3.6.2 Outlet model; Reference; Further reading; 4 Water Hammer - Classic Theory; 4.1 Description of the phenomenon; 4.1.1 Travel of a surge wave following the sudden halt of a locomotive; 4.1.2 Pressure wave propagation after sudden valve closure
4.1.3 Pressure increase due to a sudden flow arrest - the Joukowsky water hammer 4.2 Water hammer celerity; 4.2.1 Relative movement of the coordinate system; 4.2.2 Differential pressure and velocity changes at the water hammer front; 4.2.3 Water hammer celerity in circular pipes; 4.3 Water hammer phases; 4.3.1 Sudden flow stop, velocity change v0 ? 0; 4.3.2 Sudden pipe filling, velocity change 0 ? v0; 4.3.3 Sudden filling of blind pipe, velocity change 0 ? v0; 4.3.4 Sudden valve opening; 4.3.5 Sudden forced inflow; 4.4 Under-pressure and column separation; 4.5 Influence of extreme friction
4.6 Gradual velocity changes

Sommario/riassunto

Analysis and Modelling of Non-Steady Flow in Pipe and Channel Networks deals with flows in pipes and channel networks from the standpoints of hydraulics and modelling techniques and methods. These engineering problems occur in the course of the design and construction of hydroenergy plants, water-supply and other systems. In this book, the author presents his experience in solving these problems from the early 1970's to the present day. During this period new methods of solving hydraulic problems have evolved, due to the development of computers and numerical methods. This book